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Town of New Castle
450 W. Main Street
PO Box 90
New Castle, CO 81647

Administration Department
Phone: (970) 984-2311
Fax: (970) 984-2716
www.newcastlecolorado.org

Agenda

New Castle Planning and Zoning Commission Regular Meeting Wednesday, August 24, 2022, 7:00 PM

Virtual Meetings are subject to internet and technical capabilities.

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**If you prefer to telephone in:
Please call: 1-346-248-7799
Meeting ID: 709 658 8400**

**Follow the prompts as directed. Be sure to set your
phone to mute until called on.**

Call to Order, Roll Call, Meeting Notice

Conflicts of Interest

Citizen Comments on Items NOT on Agenda

Public Hearing

- [A.](#) Resolution PZ2022-04 A Resolution of the New Castle Planning and Zoning Commission Approving a Preliminary PUD Development Plan and Preliminary Subdivision Plat for Lakota Canyon Ranch PUD Filing 8 (Longview)

Comments/Reports

- Items for Next Planning and Zoning Agenda
- Commission Comments/Reports
- Staff Reports

Review Minutes of Previous Meetings

- [B.](#) Draft Minutes August 10, 2022

Adjournment



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Staff Report

**Lakota Canyon Ranch - Filing 8
Combined PUD and Subdivision Preliminary Plan
Planning Commission – August 24th, 2022**

Report Compiled: 8/18/2021

Project Information

Name of Applicant: Dwayne Romero

Applicant's Mailing Address: 350 Market St. #304 Basalt, CO 81621

Phone/Email: 970-273-3100/dromero@romero-group.com

Property Address: TBD

Property Owner: RG Lakota Holdings, LLC

Owner Mailing Address Same as applicant

Proposed Use: 185 residential units; 51,407sf commercial space; 28 Mixed-Use Flats, 108 Rental Apartments, 20 Townhomes, & 29 Single-Family Homes

Legal Description: Section: 32 Township: 5 Range: 90 Subdivision: WHITEHORSE VILLAGE AT LAKOTA CANYON RAN AMENDED PARCEL 3 FUTURE DEVELOPMENT PHASE 1 A RE-SUB OF BLK A, B1 & B2 LAKOTA CANYON RANCH FILING 1 4.42 ACRES

Section: 29 Township: 5 Range: 90 Subdivision: LAKOTA CANYON RANCH FILING #3 PHASE 1 FUTURE DEVELOPMENT PARCEL AS PLATTED PER RECEPTION NO. 665843 5.844 ACRES

Section: 29 Township: 5 Range: 90 PARCEL C-2 2ND AMENDED PLAT OF LAKOTA CANYON RANCH FKA EAGLES RIDGE RANCH. 5.321 ACRES

Street Frontage: Castle Valley Blvd.
Faas Ranch Rd.
Lakota Dr.
Blackhawk Dr.
Whitehorse Dr.

Existing Zoning:	Mixed Use (MU)
Surrounding Zoning:	Single Family Residential; Multifamily Residential (Shibui, Senior Housing) Nonresidential (CRFR Fire House)

I Introduction – Application History & Review Process

On June 21, 2021 the applicant submitted a sketch plan for Filing 8 in Lakota Canyon Ranch (“LCR”). The application was reviewed by the Planning Commission (“Commission”) on July 28th, 2021 followed by Town Council (“Council”) on September 7th, 2021. The applicant also introduced the proposal at the required community meeting on October 21st, 2021. The preliminary plan is the second of three PUD/subdivision application steps. Like the sketch plan, the preliminary plan should demonstrate zoning conformance, compliance with the town code, provisions for utilities and infrastructure, compatibility with the comprehensive plan, and address any adverse impacts to the town. Unlike the sketch plan, however, the preliminary plan is assessed through a public hearing and will evaluate the application according to the following approval criteria:

1. Consistency with the comprehensive plan;
2. Compliance with zoning and density requirements;
3. Compatibility to neighboring land uses;
4. Availability of town services from public works (including water and sewer services), fire, and police;
5. Adequacy of off-street parking and vehicle, bicycle, and pedestrian circulation;
6. The extent to which any required open space or parks are designed for active or passive use by residents of the subdivision or the public; and
7. Development consistent with the natural character, contours, and viewsheds of the land.

Within thirty (30) days after the close of the public hearing, or within such time as is mutually agreed by the planning commission and the applicant, the commission shall make one (1) of three (3) decisions regarding the application: 1) approve the application unconditionally; 2) approve the application with conditions; 3) deny the application. The commission's decision will be made by written resolution. A continuance may be granted pursuant to Section 16.08.040(G) of the code.

II Changes from July 28th, 2021 Sketch Plan:

The sketch plan meetings generated useful feedback from staff, P&Z, Council, and the public concentrating on New Castle’s vision for smart-growth and quality-of-life. To these ends, certain themes emerged over the sketch plan discussions. Some of those included:

- Prioritizing trails, open space, connectivity, net-zero alternatives, & increased commercial amenities;
- Concern with traffic congestion at the intersection of Faas Ranch Rd and CVB and the possibility of a roundabout at Faas Ranch and CVB;
- Preservation of view planes with three-story buildings that exceeding the allowed building height; Building mass close to CVB;
- Elevated noise levels near commercial businesses;
- Strategies for snow maintenance and storage on public rights-of-way;
- Concerns with building heights, massing along CVB, and viewsheds;
- Excessive lighting of parking lots and buildings;

- Employee/deed restricted housing;
- “Shared” parking;
- Project phasing;

From these themes, the applicant submitted a revised proposal on July 28th, 2022 for preliminary review. The table below summarizes many of the adjustments from sketch plan to preliminary plan.

Sketch Plan	Preliminary Plan
• 196 residential units: 120apt, 48twnh, 7flats, 21sf	• 185 residential units: 111apt, 20twnh, 25flats, 29sf
• 12.58 units/acre	• 11.8 units/acre
• 40% gross area open space	• 40% gross area open space; No change;
• 75,900sf commercial	• 51,407sf commercial
• 42ft maximum building height	• 37ft maximum building height
• 392 off-street residential parking spaces	• 450 off-street residential spaces incl. driveways
• 253 commercial parking spaces	• 163 commercial parking spaces (40% reduction)
• Shared Parking: discussed	• Shared Parking: 272 apartments; 163 commercial
• Drive G: emergency egress only	• Drive G: open to two-way traffic
• Snow storage: not provided	• Snow Storage: 0.85acres
• Apartment B-3: aligned along CVB	• Apartment B-3: aligned along Shibui property line
• Apartments B-1&2: parallel with Lakota Dr	• Apartments B-1&2: skewed to accommodate topo
• Building CR-5: vehicle access along CVB	• Building CR-5: access removed & landscaped
• Building CR-4: located corner of Faas & CVB	• Building CR-4 : located at Lakota Dr intersection
• Building CR-3B: building not included	• Building CR-3B: building w/ two-level flats
• Townhomes: two-story four and five-plexes	• Townhomes: two-story duplexes and triplexes
• Townhomes adjacent to Lakota Dr	• Townhomes replaced with SF homes
• Affordable housing: discussed	• Affordable housing: see Exhibit H

III Staff Review:

According to the 2002 Lakota Master Plan (**Ord. 2002-18**):

“The *planning concept for the mixed use zone* is to create an attractive environment for community, commercial and retail in a pleasant central location. The community commercial area would be located close to the highway intersection for easy access to non-resident shoppers and would be convenient to the main Boulevard to cut down on traffic trip length and be located near residential areas to cut down on vehicle trips. In keeping with the objective to reduce motor vehicle trips, non-motorized trail systems shall be designed throughout the project and connect residential and commercial districts in a convenient and logical manner. Office and service uses would be mixed into the development in non-store front locations including at the periphery of retail areas as well as on second stories. This would cut down on employee day trips. In some cases, smaller residential units may be mixed in with the commercial/office development, provided that in any building containing both residential and commercial space, there shall be no ground floor residential dwelling units on the same side of the building as ground floor commercial space.”

The application process is meant to assure that the present proposal conforms to these expectations. Additionally, the major elements of the 2009 Comprehensive Plan (“CP”) were originally based on the community’s core values resulting from various public input opportunities such as surveys, stakeholder interviews, meetings, and Steering Committee contributions. Applicants are expected to clearly demonstrate substantial conformity with the comprehensive plan in all applications (**Policy CG-1B, CP pg. 50**). The following checklist should assist the Commission’s conformance review:

- Foster distinctive, attractive communities with a strong sense of place and quality of life.

- Demonstrate that individual project fits into a fully-balanced community land use structure.
- Ensure a mix of uses that complement the existing New Castle land-use patterns.
- Create walkable communities with non-vehicular interconnection between use areas.
- Guarantee a balance of housing types that support a range of affordability.
- Preserve open space, farmland, natural beauty, critical environmental areas, and wildlife habitat.
- Encourage economic development and supporting hard & soft infrastructure.
- Concentrate development in ways which provide efficient and cost-effective services.

1) *Is the proposal consistent with the comprehensive plan?*

Quality of Life: As proposed, Filing 8 represents a community advocating health and wellness. The concept seeks to augment the lifestyle amenities already available to residents of New Castle. The commercial core of the development plans to attract health and medical services, recreation-oriented retail, potential restaurants or cafes, co-working space for remote work, and a plaza. The applicant has strategically placed open space courts, trails, and landscape buffers to diffuse building mass. The entirety of the development will “maintain the concept of a compact community with a defined urban edge thereby avoiding sprawl” (**See CP section “Community Growth”, pg. 50**). The CP posits that the town should strive for a healthy relationship of land uses that effectively integrate convenience retail, employment, services, open space, trails, and public transit (**Policy CG-4A, CP pg. 52**).

Affordability: Surrounding this commercial core is a range of residential housing options fostering an authentic mixed-use, urban experience accessible to a wide income demographic. The applicant has communicated that units are to be priced competitively with affordability in mind. Though unit prices are not finalized, the applicant is sympathetic to the housing crisis and the need to “attract and retain a stable, local workforce”. **Exhibit I** lists affordable housing possibilities that are being considered such as: H4H units, anchor tenant employee housing, and potential deed restricted housing for town, school district, and fire district workers. The Commission is encouraged to collaborate with the applicant during the review process to help achieve these goals (**Policy HO-2A, CP pg. 59**). As the application moves forward, staff recommends that the applicant identify the area median income (“AMI”) for each residential building type (e.g., 80% AMI for apartments, 100% AMI for townhomes, 120% AMI for single-family homes). The hope is that the expected unit prices will align with actual housing needs and median income levels of New Castle residents.

Commercial Development: The proposal is the first of its kind to contemplate commercial development beyond the downtown core and highway interchange. The scarcity of commercial uses in New Castle has perhaps been one of the more obvious inconsistencies between the expectations of the Comprehensive Plan and past development proposals. In response, the current application presents a commercial core surrounded by a diverse offering of residential typologies. This kind of land use distribution is one of the key components to smart-growth (**Policy CG-5A, pg. 53; See Exhibit A, pg. 5**).

Lakota Canyon Ranch allows up to 100,000sf of commercial space and, to date, none has been built. With the ongoing imbalance between residential and commercial space in New Castle, optimizing the available commercial properties has become a town priority. In the present plan, the applicant is reducing the commercial space from the sketch plan by 32% to 51,407 square feet. According to **Exhibit H** the change is broadly premised on the need to balance demand with market conditions. The upside is that a slimmed-down commercial core will have a better chance of thriving long-term. On

downside, any sacrificed commercial space will likely be lost permanently. With very little commercial space left within town limits, this sacrifice could be costly. Therefore, the Commission should carefully weigh the perceived benefits with the likely costs of such a reduction and whether it is indeed in the best interests of the town.

Fiscal Impact: The fiscal impact study performed by Triple Point Strategic Consulting states that revenues for Filing 8 will average \$1.15 million from 2023 to 2045. Expenses will average approximately \$560,000 over the same timeframe. By 2029, 501 people will be housed in the proposed expansion. Also, by 2029, it is anticipated that 114 total jobs will be created, including 62 direct construction jobs, (**Exhibit A, pg. 259**). The intent of the fiscal impact analysis is to demonstrate that the town can manage the economic effects of new development (**Policy CG-7B, CP pg. 54**). Staff is confident the development is fiscally viable based on the assumptions and conclusions of the analysis.

Natural Environment: The application narrative is considerate of various “net zero” measures to minimize the carbon footprint. Solar collectors, alternative transportation, and higher density residential units are all proposed. EV charging capacity will also be required in all residential units with garages per the updated code section 15.10.020. In the plan, solar panel arrays are intended for the roofs of the three-story apartment buildings, two-story triplexes, as well as the mixed-use buildings. Adjacent commercial use may help reduce reliance on motor vehicles. Details on anticipated commercial tenants or uses should help validate this assertion (**Goal EN-7, CP pg. 67**).

All development will be expected to comply with the town’s dark-sky recommendations prior to building permit (**Goal EN-4, CP pg. 66**). To conserve water, staff recommends that the balance of common areas be landscaped with native grasses and perpetually weed-free, similar to the current conditions along CVB. In consultation with the Parks Department, reduced landscape irrigation, minimized mowing and manicuring, and creative xeriscaping are recommended (**Policy EN-2C, CP pg. 66**).

Wildlife Impact: According to Brian Gray’s input from Colorado Parks and Wildlife (CPW), the proposal will likely only impact small mammals and ground nesting birds because of the “degraded” conditions of the property already. Though negative impacts are to be expected, mitigation steps such as wildlife movement corridors should be considered during the design/review process. Lakota and Castle Valley Ranch do have weed-free and undisturbed open space which coincidentally serve as movement corridors. However, purposely designed corridors would ideally prohibit dog use, minimize manicured lawns, and protect and promote native grasses, forbs and shrubs. Limiting manicured landscaping and fences, as observed elsewhere, may be enough to promote wildlife egress between buildings and throughout the overall parcel. (**Exhibit J**). (**Policy EN-1A, CP pg. 65**)

2) Does the proposal demonstrate compliance with zoning and density requirements?

The proposal is comprised of three parcels originally zoned as mixed-use. In Lakota, mixed use development is allowed:

- a maximum density of 12 units per useable acre
- 10 units per building
- 100,000sf of commercial space
- Maximum 35’ building height
- Off-street parking of:
 - 2 off-street parking spaces per residential unit
 - 2 spaces per 300sf retail
 - 1 space per 300sf office
 - 2 space per 300sf medical + 1space/two employees
- 15% gross area committed to open space

The proposed residential density of 11.8 units per acre is less than the 12 units per acre allowed for Lakota mixed-use zoning. Conversely, all apartment buildings will exceed the units allowed per building. Apartments B-1 & B-2 show 21 units per building. Apartments B-4 & B-5 each show 24 units. Similarly, three buildings at the Lakota Senior Housing exceeded the allowed 10 units per building. With generally higher density than the rest of Lakota, the applicant has been considerate of aesthetic transitions with the existing development by means of reducing the density towards already existing single-family homes along Blackhawk Dr. and Whitehorse Dr. The density decreases from the southeast to northwest with higher density apartments bordering the existing Shibui complex, moderately dense townhomes and commercial in the development's core, and single-family homes adjacent to Blackhawk Dr. and Whitehorse Village Dr. Off-street parking is covered in section 5.) below.

*****NOTE: The applicant is requesting a variance with one Lakota zoning requirement, namely the number of units per building.**

3) Does the proposal demonstrate compatibility to neighboring land uses?

The parcels are adjacent to single-family homes (LCR), apartments (Shibui), condominiums (Senior Housing, Castle Ridge), townhomes (Eagle's Ridge Ranch), and the local fire station. It is staff's opinion that mixed-use development is a consistent to these adjacent uses. In locations where building types have more abrupt transitions with existing buildings, the applicant has been careful to heavily screen or reorient buildings to mollify concerns with building mass.

The applicant maintains that only a portion of the development will be incorporated into the Lakota HOA (**Exhibit R**). This portion will be subject to the HOA's design standards. The remaining portion of the development shall conform to the design standards described in section 17.128.070 of the municipal code. Specifically,

To maintain visual quality in the mixed use zone, building facades should be varied and articulated to provide visual interest to pedestrians and motorists. Street level windows and numerous building entries are required in commercial areas. Arcades, porches, bays and balconies are encouraged. In no case shall the streetside facade of a building consist of an unarticulated blank wall or an unbroken series of garage doors. Building designs should provide as much visual stimulus as possible, without creating a chaotic image. Buildings should incorporate design elements at the street level that draw in pedestrians and reinforce street activity. Facades should vary from one building to the next, rather than create an overly unified frontage. Building materials such as concrete, masonry, tile, stone and wood are encouraged; glass curtain walls and reflective glass are discouraged. Development shall comply with any design guidelines or illustrations that may be approved as part of the site plan review process described in Section 17.128.030.

Definitive building designs, facades, and materials shall demonstrate compliance with this section by final application. In all instances the applicant is committed to architectural fidelity with the aesthetic norms for which Lakota is known (**Precedent images found in Exhibit A, pg. 72**).

4) Is there availability of town services from public works (including water and sewer services), fire, and police?

The application narrative projects an increase of 200-400 new residents and the possibility of 100-150 employees at full build. The New Castle Police Department is confident that the residential increase would not compromise their services (**Exhibit F**). After consideration by staff, the increase in population as a result of this development should not require an additional officer. Similarly, Colorado River Fire Rescue does not currently anticipate adverse impacts on their services to the town. Both

departments will provide referral comments at the preliminary application.

The Public Works Department has been consulted throughout the application process and has provided comment in **(Exhibit B)**. Lakota Canyon Ranch was originally approved for 827 residential units (EQRs) and 100,000sf commercial space. These totals were primarily the result of calculations performed on the basis of water dedicated from Elk Creek. As of 6/23/21, Lakota has 240 rooftops connected to town water with sixteen additional homes under construction. No commercial property currently exists within the PUD. With 185 additional units for Filing 8, the running total of rooftops in Lakota would be 425 units or 51% of the limit. The sewage treatment plant was upgraded years ago to accommodate the full PUD. In short, the town water & sewer service has a greater capacity than would be necessary to meet the needs of the proposal.

The final plat shall indicate all public rights-of-way maintained by the town and the responsibility of maintenance of other private drives and open spaces. The town is committed to maintaining Lakota Dr. and Faas Ranch Rd as well as the Drives A, B, & C which all service the single-family units. Drives A, B, & C do not currently meet town right-of-way standards. The streets shall be widened to town standards or, alternatively, be provided with features that compensate for the narrower drive lanes. For instance, Drives A & B may be dedicated as one-way roads with on-street parking on one side and a wider sidewalk than typical. Or, Drives A & B may prohibit all on-street parking in exchange for a two-way street. In no instance shall parking be allowed on both sides of Drives A, B, or C. As a dead-end street, Drive C shall be modified as a cul-de-sac, or some variant. This alteration would likely involve a reorientation of the adjacent townhome units. Staff is also concerned that safety might be compromised with structures directly abutting the drive lanes. Modest setbacks are recommended to improve the quality of life for these residents **(Exhibit A, pg. 5)**.

Public works has also reiterated the need for sufficient snow storage provisions. Sheet L.4.00 calls out 0.85 acres of snow storage. The public works director recommends that snow storage sites, in aggregate, have a functional area of at least 15% of the paved area inclusive of driveways and sidewalks. All snow storage areas shall be contiguous to the right-of-way. According to the **Exhibit A, pg. 8** the snow storage requirement has been met.

5) Is there adequate off-street parking and vehicle, bicycle, and pedestrian circulation?

Filing 8 proposes to be a community focusing on health and wellness. Instances of open space, trails, and non-vehicular connectivity are shown dispersed throughout the site plan. A 1/3 acre park is centered in the southeast parcel amidst higher density apartment and commercial structures. Trails and sidewalks border every parcel, although sidewalks are omitted for the single-family homes on Drive A. Staff requests that an additional trail connector be added from the CVB trail near the storm water detention area creating a short-cut which traverses more directly from the Blackhawk Dr. trail towards the commercial core. Otherwise, pedestrians must travel downhill from Blackhawk to Faas Ranch Rd. to access these commercial amenities **(Exhibit A, pg. 5)**. Trails with crusher fines may be ideal for perimeter trails, while asphalt/ paths will be recommended for any paths maintained by the town.

Parking has been tabulated and reported in **Exhibit A, pg. 6**. A minimum of two off-street parking places will be designated for each dwelling unit. All single family homes will have a two car driveway for an additional two spaces per home. The applicant has requested a 40% reduction in commercial parking as part of a shared parking initiative. The applicant cites the parking study performed by the Fox Tuttle Transportation Group **(Exhibit A, pg. 254)** to justify this request.

Staff evaluated the parking on the basis of practicality and has the following observations:

- Building CR-3B composed of 9 units, requires 18 off-street parking per the Lakota standards **(Exhibit A, pg. 48)**. Tenants of these units would likely compete with patrons of Building

CR-3A for adjacent parking places. The applicant should demonstrate how parking will be managed for these corner buildings (e.g., will parking be assigned?). Staff worries that the limited parking will lead to persistent complaints to the town/PD from future tenants or patrons.

- No driveways are indicated for the triplexes abutting Drive A & C. Though the two-car garages meet the off-street parking standard, the narrow streets which lack on-street parking will create conditions more equivalent to a parking lot. Pedestrian egress may also be constrained in these areas. Utility easements are generally required around the perimeter of all buildings.
- Apartments B-4 & B-5 show 48 units. Per the Lakota zoning, 98 off-street parking spaces are anticipated. The site plan shows only 56 spaces in proximity to the buildings which is 1.2 spaces per unit. The Commission must decide whether roughly one space per apartment unit is adequate for the residents in that location based on the zoning, guidance from the Comprehensive Plan, and past precedents such as the Lakota Senior Housing.

For the “shared parking” concept to be a success, staff feels management will be paramount. Prior to approval, the applicant should defend the practical logistics of this strategy, otherwise the Commission only has the assumptions of the parking study as their guide. **Exhibit I**, indicates that all parking near apartments and flats is parking common (i.e., unassigned) with commercial uses. Based on the parking habits of those already living in town, staff has concerns that common parking or even one space per dwelling unit of assigned parking will make parking inconvenient if not inaccessible for many residents. In the end, staff would prefer to have greater confidence that no residents would be potentially cut-off from parking in the vicinity of their homes. Again, management will be key to the success of this model. At sketch plan the applicant was also encouraged, “to provide a comparison study which juxtaposes parking in one or two mixed-use developments elsewhere in the valley (e.g. Willits, Riverwalk in Edwards, Meadows in Glenwood) with the parking configuration proposed here. These analogs will help P&Z and Council determine whether a reduction is justified.” Nothing yet has been provided.

The traffic study offered by Fox Tuttle (**Exhibit A, pg. 119**) assessed the traffic flows at the intersection of Faas Ranch Rd. and CVB. Their study concluded that traffic control measures will be required at the intersection. Though the town does not currently anticipate widening CVB, the study concluded that the steep grades at the intersection make a roundabout infeasible and cost prohibitive. A traffic signal was ultimately recommended by the time of full build-out (**Exhibit A, pg.135**). The applicant would assume the installation of the signal while Public Works would control the signaling based on traffic flow. Traffic signal override systems, as required by CRFR, will also be furnished by the applicant (**Exhibit D**). Whitehorse Dr and Blackhawk Dr have been designed to accommodate future traffic loads for all of Whitehorse Village, Lakota Dr. is slated for completion during the first phase of construction and will likely absorb some of the load from Whitehorse Village as well as residents of Longview.

6) Are the required open space or parks designed for active or passive use by residents of the subdivision or the public?

According to section 17.128.070 of the municipal code, commercial uses in the mixed-use zone shall have landscaped at least 10% of the gross project area. Additionally, all outside parking facing a residential-only use shall have a landscape buffer or fence obscure vehicles from view. **Exhibit A, pg. 13** indicates the extent of landscaping in the commercial district. Landscape buffers will still be required along parking for all commercial buildings as necessary.

For residential uses, the code requires open space greater than or equal to 15% of the gross project area. The proposal shows 40% of the gross area as open space. Active space includes the park fronting apartment building B-3, a court at building CR-1, pocket parks surrounding the townhomes

of Drive C, and all trails within the development. Passive space is comprised mainly of various easements at the perimeter of the development.

7) Is the development consistent with the natural character, contours, and viewsheds of the land?

With Lakota Dr. as a benchmark, the property drops uniformly in elevation for roughly 95' from northwest to southeast (**Exhibit A, pg. 21**). In theory, units and/or blocks will step with the natural grade. The applicant has improved the sketch design by angling the single family units northeast of Drive B to reflect the terrain features at those locations. In a similar move, the multifamily units southwest of Drive B were reduced to single family homes. Apartment buildings B-1 & B-2 were likewise realigned to step with the topography.

Compliance with the Lakota building height requirements has proven challenging to the proposed buildings. At sketch plan, staff explained the nuances of the specifically Lakota height requirement MC 17.128.010:

"Building height" means the maximum vertical distance measured from the lowest point of natural or finished grade on the lot within five (5) feet of the tallest side of the building to the uppermost point of the roof of the building.

Building heights of structures close to the edge of a hill are typically affected negatively and, as a result, must be either distanced from the hill's edge or reduced in height. Following sketch plan the renderings were updated to show that the maximum building height was lowered five feet from 42 feet to 37 feet. However, this measurement is taken from the building's slab not from the lowest point of natural grade, per the definition above. For most structures this will make little difference. Moreover, building B-3 was repositioned away from CVB to the Shibui area in order mitigate these slope affects. Still, structures along the golf course, especially the three level Apartments B-4 & B-5 may maintain a taller appearance from the vantage point of Faas Ranch Rd. Preservation of viewsheds is a value expressed in the CP (**Goal EN-6, pg. 67**). The Commission will have to decide whether the potential compromise of views is compensated by the increase in density.

******NOTE: The applicant is requesting an additional variance with respect to building height.***

IV Staff Recommendations

Staff recommends that the Planning Commission explore the following suggestions to the Filing 8 preliminary PUD application prior to deciding on Resolution 2022-04:

- a. Amend the Preliminary Plat to identify the following as public rights-of-way: Lakota Drive, Drive A, and Drive B.
- b. Revise the Longview at Lakota covenants to include provisions regarding shared parking. Such provisions shall specify management and enforcement requirements, including, but not limited to location, hours of use, penalties for violation, and maintenance responsibilities.
- c. Drive A & B shall serve as a one-way street with parking on one side and a single six foot sidewalk.
- d. Drive C shall not dead-end. Construct Drive C as a cul-de-sac or an alternative that satisfies the street design requirements of the Public Works Manual.
- e. Parking along Lakota Drive from Whitehorse Drive to Drive A shall allow on-street parking only on the west side of Lakota Drive. The east side of Lakota Drive from Whitehorse Drive to Drive A shall be

signed "No Parking".

- f. Townhomes directly adjacent to Drives A and C shall be setback at least 10 feet from the street to improve egress and pedestrian safety.
- g. All outside parking areas facing a residential-only use shall have a landscape buffer to obscure vehicles from view per code section 17.128.070.
- h. Identify all permanent snow storage easements on the final plat and any temporary locations on the phasing drawings.
- i. Provide a construction phasing plan. Identify, at minimum, each of the following components:
 - Buildout phases;
 - Schedule that identifies the sequencing of construction, sequencing of occupancy, traffic flow, and traffic control plans during construction;
 - Storage and staging areas for construction equipment and materials;
 - Illustrate drainage and erosion control best management practices (BMP's);
 - Conformance to all requirements and specifications approved by the fire marshal concerning temporary access for each phase including, but not limited to, temporary hammerhead turnarounds at dead end streets and any necessary ingress/egress routes for emergency personnel and equipment during construction;
- j. Request approval of street names through Garfield County Communications to avoid any duplication of names in the county dispatch area.
- k. Demonstrate that all exterior illumination shall comply with acceptable International Dark-sky Association (IDA) standards.
- l. Provide a conceptual landscape plan to staff for each phase illustrating size, type and location of plant materials and an irrigation plan, if applicable. Landscaping shall incorporate native grasses and plants that minimize maintenance, moving, and irrigating. The landscaping plan shall be approved by the Parks Department. Plans submitted to obtain a building permit for any building shall demonstrate no more than 2,500 square feet of sod per dwelling unit as specified in 13.20.060 of the Municipal Code.
- m. Designate locations of mailbox kiosks with written authorization from the local postmaster.
- n. Prior to the recordation of the Filing 8 plat, the Applicant shall enter into a subdivision improvements agreement with the Town for development of the first phase of Filing 8 in a form acceptable to the Town Attorney. A subdivision improvement agreement for each subsequent phase shall be recorded before work commences in each phase.
- o. All representations of the Applicant made verbally or in written submittals presented to the Town in conjunction with the Application before the Commission or Town Council shall be considered part of the Application and binding on the Applicant.
- p. The Applicant shall comply with all applicable building, residential, electrical and municipal code requirements, including all sign code regulations, as well as all recommendations of the Town Engineer and Town Public Works Director set forth in their letters dated July 21, 2022, and July 22, 2022, respectively, when developing the property.
- q. The Applicant shall reimburse the Town for any and all expenses incurred by the Town regarding this approval, including, without limitation, all costs incurred by the Town's outside consultants such as legal and engineering costs.

- r. The sale of individual lots or units within Filing 8 may not occur until a plat creating the lot or unit is recorded with Garfield County.
- s. Consider allowing buildings CR-3, CR-4 and CR-5 to exceed the maximum building height up to 37 feet. No other structure shall exceed the maximum 35 foot building height as defined code section 17.128.010.
- t. Consider allowing buildings B-1, B-2, B-4, and B-5 to exceed the maximum units per building to the extent shown on the submittal sheet titled "Site Plan Unit Counts".

V Next Steps

Within thirty (30) days after the close of the public hearing, or within such time as is mutually agreed by the planning commission and the applicant, the commission shall make one (1) of three (3) decisions regarding the application: 1) approve the application unconditionally; 2) approve the application with conditions; 3) deny the application. The commission's decision will be made by written resolution. A continuance may be granted pursuant to Section 16.08.040(G) of the code.

VI Sketch Plan Application Exhibits:

- A. Project Submittal Packet – August 18th, 2022
- B. Referral from Public Works Director – July 22nd, 2022
- C. Referral from Town Engineer – July 21st, 2022
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- N. Public Comment, Jennifer Hawley – August 15th, 2022
- O. Public Comment, Andrew Hawley – August 15th, 2022
- P. Affidavit of Public Notice – August 18th, 2022
- Q. Agreement to Pay Consulting Fees – June 16th, 2021
- R. HOA Inclusion/Exclusion Intent Letter from Applicant – August 10th, 2022
- S. Filing 8 Plat – August 18th, 2022
- T. Xcel Will-Serve Letter – July 11th, 2022
- U. Chris Manera Engineering Response to SGM Letter – August 18th, 2022

**TOWN OF NEW CASTLE, COLORADO
RESOLUTION NO. PZ 2022-4**

**A RESOLUTION OF THE NEW CASTLE PLANNING AND ZONING
COMMISSION APPROVING A PRELIMINARY PUD DEVELOPMENT PLAN
AND PRELIMINARY SUBDIVISION PLAT FOR LAKOTA CANYON RANCH
PUD FILING 8 (LONGVIEW)**

WHEREAS, RG Lakota Holdings, LLC and RG Lakota II, LLC are the owners of certain real property within the Town of New Castle described in the attached Exhibit A, which property located within the Lakota Canyon Ranch PUD (the “Property,” or “Filing 8” or “Longview”); and

WHEREAS, on April 11, 2022, Dwayne Romer (“Applicant”) submitted an application on behalf of the owners of the Property requesting approval of a Preliminary PUD Development Plan (“Preliminary Plan”) and a Preliminary Plat (“Preliminary Plat”) for Filing 8 (collectively, the “Application” as further defined below);

WHEREAS, the Property is zoned Mixed Use (MU) within the Lakota Canyon Ranch PUD; and

WHEREAS, the Application proposes the construction of 185 residential units (108 rental apartments, 20 townhomes, and 29 single-family homes), 28 Mixed-Use Flats, and 51,407 square feet of commercial space on a total of 16.336 acres; and

WHEREAS, the Applicant intends to develop the Property and the public improvements associated with the same in up to five phases; and

WHEREAS, the Town of New Castle Planning & Zoning Commission (“Commission”) held a duly noticed public hearing on August 24, 2022, to consider the Application; and

WHEREAS, the Commission has considered testimony and other evidence from Staff, the Applicant, and members of the public concerning the Application; and

WHEREAS, based on the testimony and other information presented, subject to compliance with the terms and conditions of this Resolution, the Commission finds that the Application complies with the following review criteria set forth in Sections 16.16.020(G) and 17.100.050(H):

1. Consistency with the comprehensive plan;
2. Compliance with zoning and density requirements;
3. Availability of town services from public works (including water and sewer services), fire, and police;
4. Adequacy of off-street parking and vehicle, bicycle, and pedestrian circulation;

5. Required open space or parks designed for active or passive use by residents of the subdivision and the public; and
6. Development consistent with the natural character, contours, and viewsheds of the land

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING AND ZONING COMMISSION OF THE TOWN OF NEW CASTLE, COLORADO:

1. Recitals. The foregoing recitals are incorporated by reference as findings and determinations of the Planning and Zoning Commission.
2. Definition of the Application. The “Application” consists of the documents and information identified by the Town Clerk on Exhibit B, plus all representations of and other documents presented by the Applicant reflected in the minutes of the Planning and Zoning Commission public hearing held on August 24, 2022.
3. Action regarding Preliminary Plan, as amended: The Preliminary Plan proposes:
 - a. The construction of 185 residential units (108 rental apartments, 20 townhomes, and 29 single-family homes), 28 Mixed-Use Flats, and 51,407 square feet of commercial space as depicted on the most updated site plan included in the Application;
 - b. The subdivision of the Property into 39 lots as shown on the Preliminary Plat dated May 30, 2022, and updated August 18, 2022;
 - c. That Filing 8 will be platted with a single plat and developed in up to five phases as shown on the preliminary plat and plan with phasing dated March 21, 2022; and
 - d. Amended final plats for the multi-family buildings will be submitted for approved at the staff level upon construction of said buildings, provided that the amended final plats and multi-family buildings are in substantial conformance with the Application.

The Planning Commission hereby approves the Preliminary Plan and Preliminary Plat, subject to compliance with all conditions set forth in Section 5 of this Resolution.

4. Zoning. Upon approval of a final PUD plan for the Property, the development and use of the Property shall be subject to the following restrictions and requirements:
 - a. the restrictions and requirements of the MU Zone District of the Lakota Canyon Ranch PUD Zoning Regulations, Section 17.128.070 of the Code (Zone District), subject to the following modifications:
 - i. The maximum height of Buildings CR-3, CR-4, and CR-5 shown on the Application site plan shall be 37 feet. The maximum height of

all other structures within Filing 8 shall be 35 feet as provided in Section 17.128.010.

- ii. Buildings B-1, B-2, B-4, and B-5 shown on the Application site plan shall be allowed to exceed the maximum units per building to the extent shown on the Application sheet titled "Site Plan Unit Counts";
 - iii. The number of commercial parking spaces required for Filing 8 shall be reduced by 40% from what's otherwise required under the Lakota Canyon Ranch PUD standards;
 - iv. any modifications approved by the Town and shown on the final plat for the Property. In the event of any conflict between the Zone District text and the final plats for the Property, the final plat shall control.
- b. all other applicable provisions of the Code; and
 - c. all applicable Ordinances of the Town.

5. Conditions. Approval of the Application is subject to and contingent up on satisfaction of the following conditions:

- a. Amend the Preliminary Plat to identify the following as public rights-of-way: Lakota Drive, Drive A, and Drive B
- b. Revise the Longview at Lakota covenants to include provisions regarding shared parking. Such provisions shall specify management and enforcement requirements, including, but not limited to location, hours of use, penalties for violation, and maintenance responsibilities.
- c. Drive A & Drive B shall serve as a one-way street with parking on one side and a single six-foot sidewalk.
- d. Drive C shall not dead-end. Construct Drive C as a cul-de-sac or an alternative that satisfies the street design requirements of the Public Works Manual.
- e. Parking along Lakota Drive from Whitehorse Drive to Drive A shall allow on-street parking on the west side of Lakota Drive only. The east side of Lakota Drive from Whitehorse Drive to Drive A shall be signed "No Parking."
- f. Townhomes directly adjacent to Drive A and Drive C shall be setback at least 10 feet from the street to improve egress and pedestrian safety.
- g. All outside parking areas facing a residential-only use shall have a landscape buffer

- to obscure vehicles from view per Code Section 17.128.070.
- h. Identify all permanent snow storage easements on the final plat and any temporary locations on the phasing drawings.
 - i. Provide a construction phasing plan that includes, at a minimum, each of the following components:
 - i. Buildout phases;
 - ii. Schedule that identifies the sequencing of construction, sequencing of occupancy, traffic flow, and traffic control plans during construction;
 - iii. Storage and staging areas for construction equipment and materials;
 - iv. Drainage and erosion control best management practices (BMP's);
 - v. Conformance to all requirements and specifications approved by the fire marshal concerning temporary access for each phase including, but not limited to, temporary hammerhead turnarounds at dead end streets and any necessary ingress/egress routes for emergency personnel and equipment during construction
 - j. Request approval of street names through Garfield County Communications to avoid any duplication of names in the county dispatch area.
 - k. Demonstrate that all exterior illumination shall comply with acceptable International Dark-sky Association (IDA) standards.
 - l. Provide a conceptual landscape plan to staff for each phase illustrating size, type and location of plant materials and an irrigation plan, if applicable. Landscaping shall incorporate native grasses and plants that minimize maintenance, moving, and irrigating. The landscaping plan shall be approved by the Parks Department. Plans submitted to obtain a building permit for any building shall demonstrate no more than 2,500 square feet of sod per dwelling unit as specified in 13.20.060 of the Municipal Code.
 - m. Designate locations of mailbox kiosks with written authorization from the local postmaster.
 - n. Prior to the recordation of the Filing 8 plat, the Applicant shall enter into a subdivision improvements agreement with the Town for development of the first phase of Filing 8 in a form acceptable to the Town Attorney. A subdivision improvement agreement for each subsequent phase shall be recorded before work commences in each phase.
 - o. All representations of the Applicant made verbally or in written submittals presented to the Town in conjunction with the Application before the Commission or Town Council shall be considered part of the Application and binding on the Applicant.

- p. The Applicant shall comply with all applicable building, residential, electrical, and municipal code requirements, including all sign code regulations, as well as all recommendations of the Town Engineer and Town Public Works Director set forth in their letters dated July 21, 2022, and July 22, 2022, respectively, when developing the Property;
 - q. The Applicant shall reimburse the Town for any and all expenses incurred by the Town regarding this approval, including, without limitation, all costs incurred by the Town's outside consultants such as legal and engineering costs.
 - r. The sale of individual lots or units within Filing 8 may not occur until a plat creating the lot or unit is recorded with Garfield County.
6. Severability. Each section of this Resolution is an independent section and a holding of any section or part thereof to be unconstitutional, void, or ineffective for any cause or reason shall not be deemed to affect the validity or constitutionality of any other section or part hereof, the intent being that the provisions of this Resolution are severable.
7. Effective Date. This Resolution shall be effective upon adoption.

SO RESOLVED this 24th day of August, 2022, by a vote of ____ to ____.

TOWN OF NEW CASTLE
PLANNING & ZONING
COMMISSION

Chuck Apostolik, Commission Chair

ATTEST:

Mindy Andis, Deputy Town Clerk

Exhibits:

- Exhibit A: Legal Description
- Exhibit B: List of Application materials

EXHIBIT A
Legal Description

Section: 32 Township: 5 Range: 90 Subdivision: WHITEHORSE VILLAGE AT
LAKOTA CANYON RAN AMENDED PARCEL 3 FUTURE DEVELOPMENT
PHASE 1 A RE-SUB OF BLK A, B1 & B2 LAKOTA CANYON RANCH FILING 1
4.42 ACRES

Section: 29 Township: 5 Range: 90 Subdivision: LAKOTA CANYON RANCH FILING
#3 PHASE 1 FUTURE DEVELOPMENT PARCEL AS PLATTED PER RECEPTION
NO. 665843 5.844 ACRES

Section: 29 Township: 5 Range: 90 PARCEL C-2 2ND AMENDED PLAT OF
LAKOTA CANYON RANCH FKA EAGLES RIDGE RANCH. 5.321 ACRES

EXHIBIT B
Preliminary PUD Application Materials

- A. Project Submittal Packet – August 18th, 2022
- B. Referral from Public Works Director – July 22nd, 2022
- C. Referral from Town Engineer – July 21st, 2022
- D. Referral from Fire Marshal – August 17th, 2022
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- S. Filing 8 Plat – August 18th, 2022



Planning Department
 (970) 984-2311
 Email:
 psmith@newcastlecolorado.org

Town of New Castle
 PO Box 90
 450 W. Main Street
 New Castle, CO 81647

LAND DEVELOPMENT APPLICATION

Note: All land use applications must be filed with the Town Clerk. Please consult the Town Planner for codes specific to the Land Development Application. All application materials are subject to the Colorado Open Records Act (CORA), C.R.S. §24-72-201 to 207.

Applicant: Dwayne Romero	
Address: 350 Market St. #304 Basalt, CO 81623	Phone: 970-273-3100 E-mail:
Property Owner: RG Lakota Holdings, LLC	
Address: 350 Market St. #304 Basalt, CO 81623	Phone: 970-273-3100 E-mail:
Contact Person: Heather Henry	
Address: 435 N 8th St. Carbondale, CO 81623	Phone: 970-618-3324 E-mail:
Property Location/Address: Faas Ranch Rd.	
Legal Description: Garfield County Parcel # 212332200187, #212332116001, #212332100189	Acres: 15.58
Existing Zone (e.g., Residential R-1, Commercial C-1): M/U/PUD	Existing Land Use: Vacant

TYPE(S) OF LAND USE(S) REQUESTED

- | | |
|--|--|
| <input type="checkbox"/> Pre-Annexation Agreement | <input type="checkbox"/> Conditional Use Permit or Special Review Use Permit |
| <input type="checkbox"/> Annexation | <input type="checkbox"/> Lot Line Adjustment or Dissolution |
| <input type="checkbox"/> Subdivision (including Minor and Major Subdivisions, Lot Splits, Sketch Plans, Subdivision Preliminary Plans, Subdivision Final Plans, & Condominiumizations) | <input type="checkbox"/> Site Specific Development Plan/Vested Rights |
| <input type="checkbox"/> Amended Plat | <input type="checkbox"/> Variance |
| <input checked="" type="checkbox"/> Planned Unit Development (including PUD Sketch Plans, Preliminary PUD Development Plans, PUD Master Plans and Final PUD Development Plans) | <input type="checkbox"/> Zoning |
| <input type="checkbox"/> Master Plan Amendment | <input type="checkbox"/> Zoning Amendment |
| | <input type="checkbox"/> Re-zoning |

	4/11/2022
Applicant Signature	Date

PROJECT NARRATIVE

This submittal includes the planning of a mixed-use development on title parcels 4, 6 and 7 within the existing PUD of Lakota Canyon Ranch in New Castle, Colorado.

Existing Conditions

These parcels are nestled between a golfing fairway to the north, existing single-family developments to the south and west and multi-family apartment complexes to the east. The parcels are half bordered to the west by Castle Valley Boulevard which provides the primary access to the project via Faas Ranch Road. The land is vacant and has been used for haul-off from other projects and several spoils piles can be seen throughout the property, especially on the northern parcels. On a close walk of the site various remnants of the Lakota Ranch's history can be seen such as an old ditch alignment and old fence fragments scattered throughout.

The parcels are currently zoned as 'Mixed-Use' within the Town and PUD's zoning map. Other than the clubhouse, these parcels are the only location within the Lakota PUD where commercial is allowed. With an original approved PUD allocation of 300 units and 100,000 square feet of commercial the original mixed-use parcels were clearly intended to be a hub of activity that serves the Lakota and surrounding residential with commercial amenities. It is the intention of this application to develop these parcels with 185 living units and 51,407 SF of commercial and by doing so, provide amenities that serve the residents of Lakota and the surrounding neighborhoods.

Commercial

This proposed development aligns with the existing zoning of mixed-use. It incorporates a commercial node off of Faas Ranch Road that is surrounded by small single-family lots, townhomes, apartments, mixed use building, commercial buildings, and public/semi-public amenities sprinkled throughout the development. Building on everything that makes New Castle an amazing community and the 'place to be' for outdoor enthusiasts, the commercial uses at the development's center intend to be heavily curated toward health, wellness, and lifestyle. Ground floor uses accommodate a limited amount of recreation-oriented retail and food/beverage, providing neighborhood scale lifestyle uses, and purposefully not competing with the community's downtown core. Second and third floor uses will cater to health, wellness, and recreation e.g. gyms, yoga studios, wellness services, and medical offices. Other office space might be geared toward work from home users who live close by that need a small, affordable space to have some dedicated quiet space. Given proximity and walkability this area will be very appealing. This area might accommodate approximately 100-150 employees.

The commercial node encircles an entrance to the north and an entrance to the south off of Faas Ranch Road. The northern road is not located within the existing ROW so that ROW would need to be adjusted throughout this process. The commercial buildings to the south range from 2 stories directly adjacent to Faas to a 3 story building set back from the road. The commercial buildings to the north of Faas are all 2 stories with a single mixed-use building with commercial on the ground floor and residential above. These buildings form a small retail feel to the entrance to the north parcels.

Residential

Residential uses include rental apartments at the highest density, townhomes, and single-family homes. These land uses engage the site and respect surrounding residential uses with single-family homes abutting other existing homes to the north and apartments abutting another existing apartment complex to the south. The development might accommodate 200-400 residents (not including children) and will contain varying occupancy in the apartments.

PROJECT NARRATIVE CONT'D...

Energy & Climate

Several energy and climate concepts are being explored at this time including net zero or net zero ready single-family homes, car and bike charging infrastructure throughout, all electrified buildings, and solar collectors over larger parking areas/appropriate buildings. These concepts will be further articulated at preliminary plan review.

Alternative Transportation

The project will provide bike and walking connectivity throughout and will connect to existing trails and sidewalks on Castle Valley Boulevard and Faas. Areas will be reserved in the public amenity spaces to accommodate WeCycle once it completes future expansion. Consideration could be given to reserving space for a shuttle or bus stop as well should Newcastle implement a circulator in the future, and areas for car-share parking. While these forms of transportation are not in place yet, we believe this project should consider that future infrastructure and plan for it now.



the longview at lakota canyon ranch

march 2022 | preliminary PUD



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2	PROJECT NOTES
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4	SITE PLAN NORTH
5	SITE PLAN SOUTH
6	UTILITY OVERVIEW
7	GRADING AND DRAINAGE OVERVIEW
8	ROADS, TRAFFIC AND SIGNAGE OVERVIEW
9	NORTH PRELIMINARY PLAN AND PROFILE
10	SOUTH PRELIMINARY PLAN AND PROFILE
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13	DRIVE A PLAN AND PROFILE
14	DRIVE B PLAN AND PROFILE
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18	DRIVE D PLAN AND PROFILE
19	DRIVES D2 AND D3 PLAN AND PROFILES
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L.5.00	3D RENDERINGS
L.5.01	3D RENDERINGS
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A1-4.2	APARTMENT 1 EXT ELEVATIONS
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A2-4.1	APARTMENT 2 EXT ELEVATIONS
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TH-4.1	TRIPLEX TOWNHOME EXT ELEVATIONS
CR-1	CR-1 FLOOR PLANS
C1-4.1	CR-1 EXT ELEVATIONS
C1-4.2	CR-1 EXT ELEVATIONS
CR-2	CR-2 FLOOR PLANS
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C5-4.1	CR-5 EXT ELEVATIONS
C5-4.2	CR-5 EXT ELEVATIONS
PREC	PRECEDENT IMAGES

project directory

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dromero@romero-group.com

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crested butte, co, 81224
contact: jeff moffett
jmoffett@tpsconsulting.net



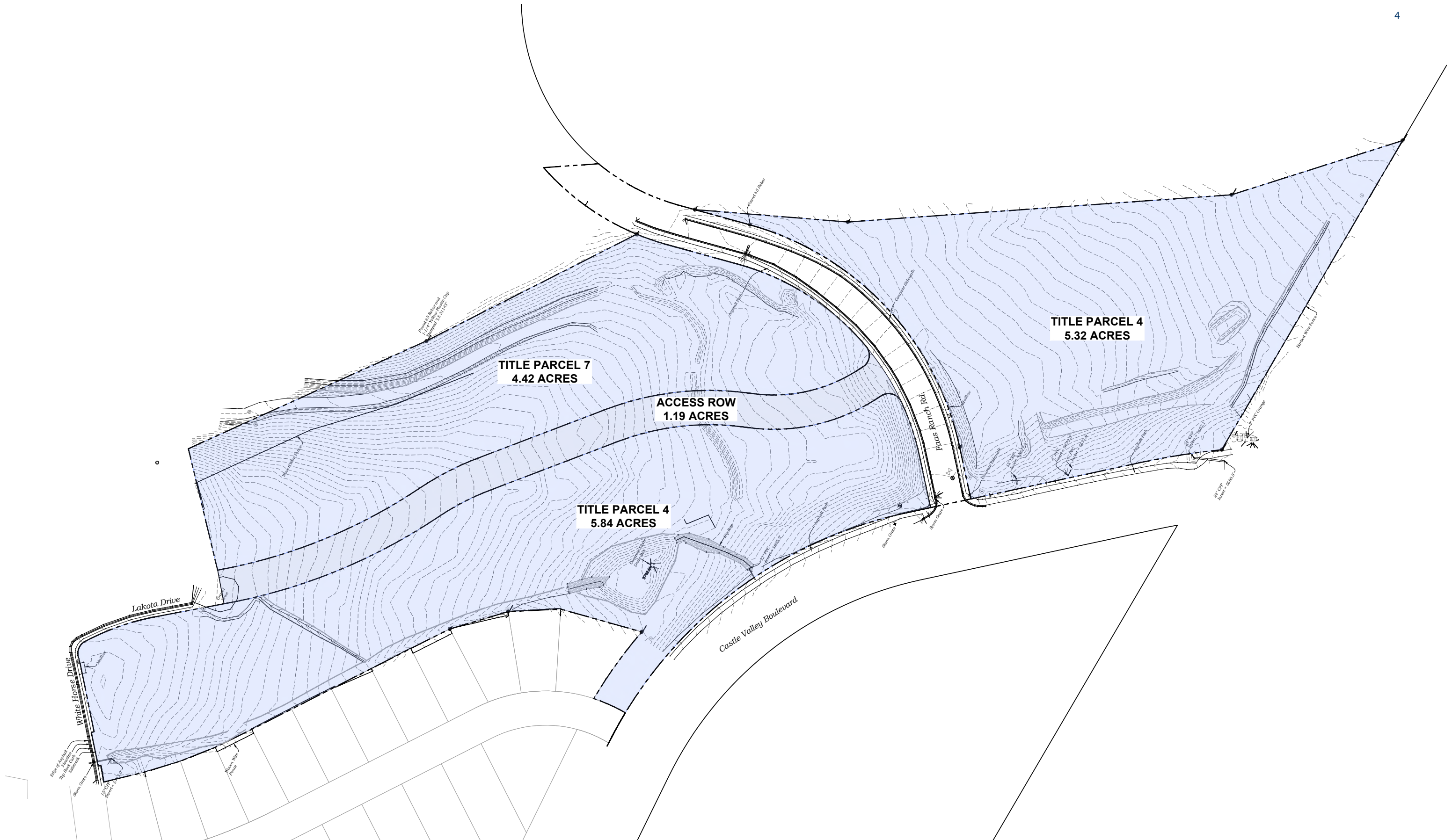
CONTEXT MAP
NOT TO SCALE

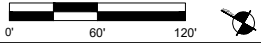



Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
Horiz. Scale:	
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.	

Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	



Sheet Name: COVER PAGE	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number: CVR	
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621	



Print Date: FEBRUARY 25, 2022 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH Horiz. Scale: 1" = 60' 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">Issue & Revisions</th> </tr> <tr> <th style="width: 15%;">Date:</th> <th style="width: 35%;">Comments:</th> <th style="width: 15%;">Drawn by:</th> <th style="width: 35%;">Checked by:</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Issue & Revisions				Date:	Comments:	Drawn by:	Checked by:													  	Sheet Name: Existing Conditions- Site Size Sheet Number: L.0.01	THE LONGVIEW AT LAKOTA CANYON RANCH Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Issue & Revisions																								
Date:	Comments:	Drawn by:	Checked by:																					
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Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 60'

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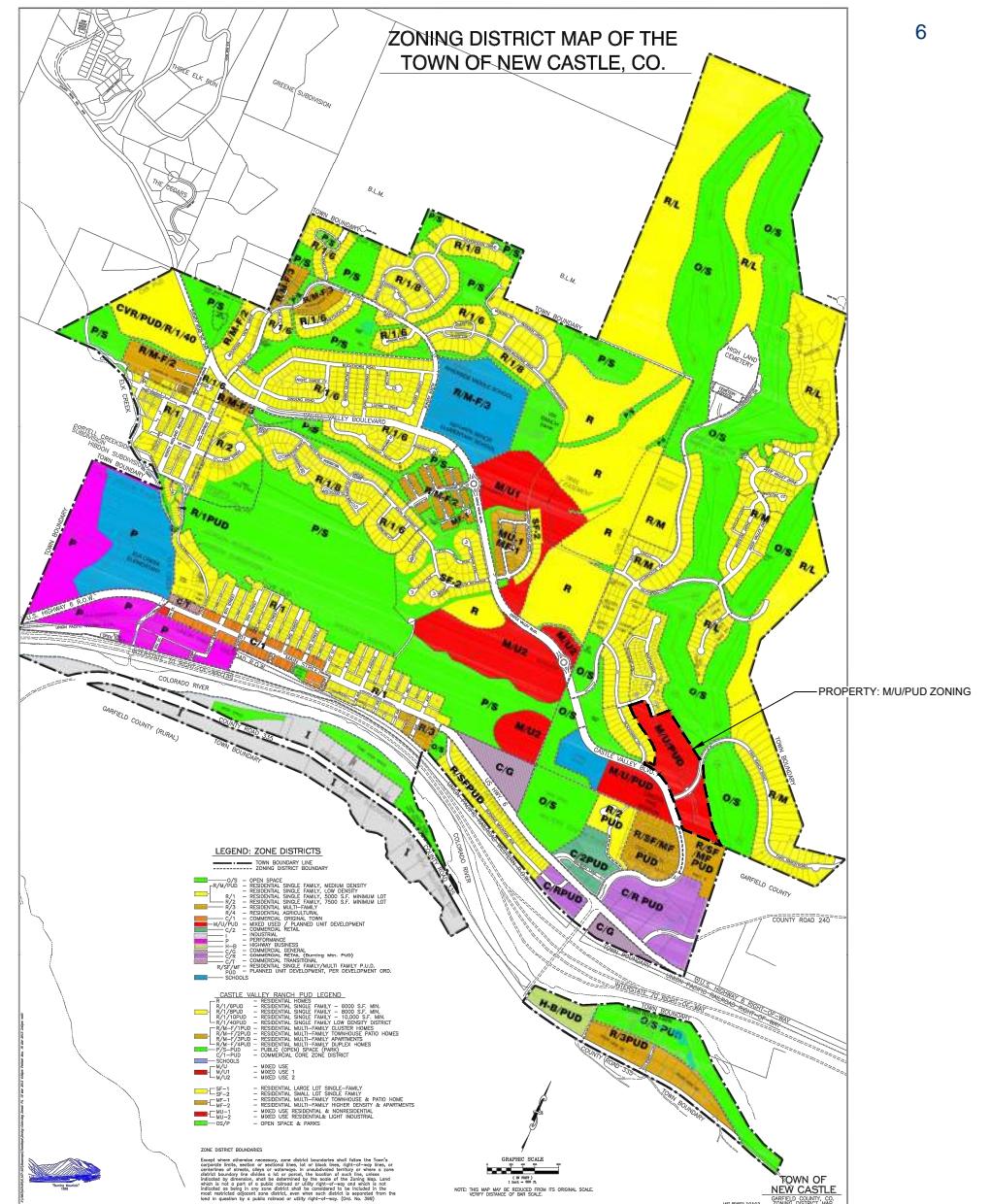
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: Site Plan
 Sheet Number: L.1.00

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

MIXED USE ZONING LCR PUD MATRIX	
Allowed per Code Multifamily residential dwellings Residential & commercial in same building Retail sales Services Recreation & entertainment Other Single family	Proposed yes yes yes yes yes yes yes
Required per Code 15% gross area as open space Max residential density = 12 units/acre & 300 dwelling units total Max residential units = 10 units per building Max commercial space - 100,000 SF of interior space Max building height = 35 feet	Proposed 40% gross area as open space 11.8 units/acre & 185 units Apartments = 21 & 24 units/building Townhomes = 2 & 3 units/building Mixed-Use = 6, 9 & 10 units /building 51,407 SF of interior space 37 feet = 2 feet increase



PARKING REQUIREMENT MATRIX			
Required per Code Residential Single Family Home = 2 spaces per unit Residential Multi-Family Townhomes = 2 spaces per unit Residential Multi-Family Apartments = 2 spaces per unit Commercial = 2 spaces per 300 SF Commercial Office = 1 space per 300 SF	Required per Application 29 units = 58 parking spaces 20 units = 40 parking spaces 136 units = 272 parking spaces 31,853 SF = 212 parking spaces 19,554 SF = 65 parking spaces	Proposed Parking Spaces 58 parking spaces 40 parking spaces 272 parking spaces 163 total commercial and office parking spaces (40% reduction per code)	Shared Parking Scenario per the Institute of Transportation Engineer's (ITE) Shared Parking Matrix (see parking study) 58 parking spaces 40 parking spaces 272 parking spaces 163 parking spaces 435 shared spaces / 253 spaces needed per ITE's highest projected parking demand = 172% parked

Print Date: FEBRUARY 25, 2022 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH Horiz. Scale: 1" = 60'	<table border="1"> <thead> <tr> <th colspan="4">Issue & Revisions</th> </tr> <tr> <th>Date:</th> <th>Comments:</th> <th>Drawn by:</th> <th>Checked by:</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Issue & Revisions				Date:	Comments:	Drawn by:	Checked by:																	  	Sheet Name: ZONING DIAGRAM Sheet Number: L.2.00	THE LONGVIEW AT LAKOTA CANYON RANCH Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Issue & Revisions																												
Date:	Comments:	Drawn by:	Checked by:																									

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Print Date: FEBRUARY 25, 2022
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:








Sheet Name: Open Space Plan
 Sheet Number: L.3.00

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



TOTAL PLOWABLE HARDSCAPE = 5.25 ACRES
 15% = .79 ACRES

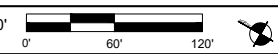
ZONING SCHEDULE

SYMBOL	NOTES	ACRES
	SNOW STORAGE AREA	0.85

Print Date: FEBRUARY 25, 2022

File Name: THE LONGVIEW AT LAKOTA CANYON RANCH

Horiz. Scale: 1" = 60'



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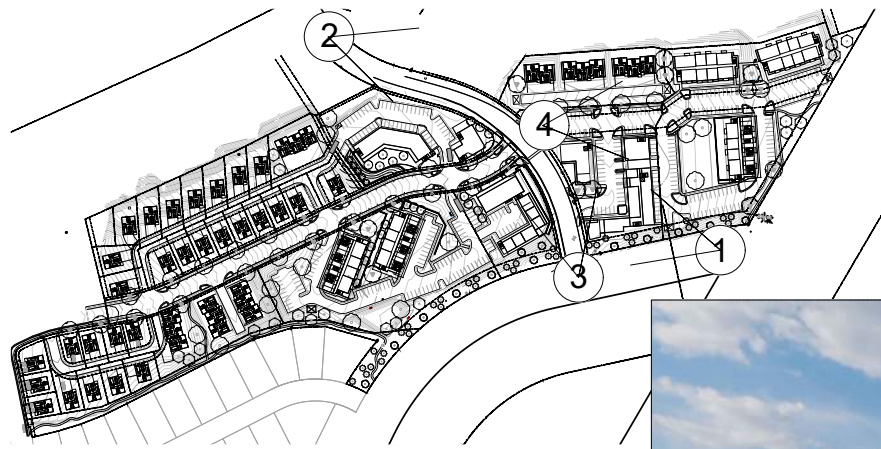


Sheet Name: Service Areas + Snow Storage Plan

Sheet Number: L.4.00

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



3D REPRESENTATION NOTES

- THE IMAGES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE INCLUDED TO CONVEY SCALE, PROPORTION, AND MASS ONLY



4 VIEW TOWARDS SHIBUI
NOT TO SCALE



2 VIEW FROM FAAS RANCH ROAD
NOT TO SCALE



3 VIEW FROM INTERSECTION OF CVB AND FAAS RANCH
NOT TO SCALE



1 VIEW FROM CASTLE VALLEY BOULEVARD
NOT TO SCALE

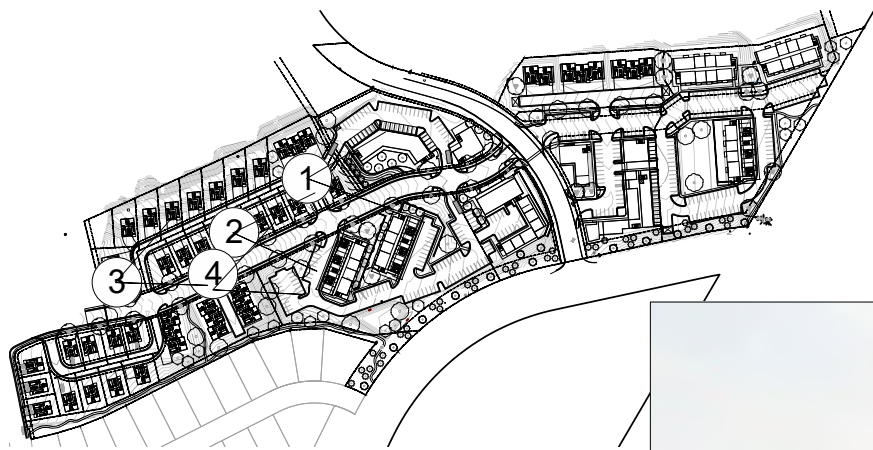
Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name:	3D REPRESENTATION	THE LONGVIEW AT LAKOTA CANYON RANCH Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Sheet Number:	L.5.00	

3D REPRESENTATION NOTES

- THE IMAGES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE INCLUDED TO CONVEY SCALE, PROPORTION, AND MASS ONLY



4 VIEW OF LAKOTA DRIVE SIDEWALKS
NOT TO SCALE



2 VIEW OF APTS FROM LAKOTA DRIVE
NOT TO SCALE

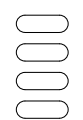


3 VIEWS OF SINGLE FAMILY FROM LAKOTA DRIVE
NOT TO SCALE



1 VIEW OF COMMERCIAL PLAZA
NOT TO SCALE

Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
Horiz. Scale:	
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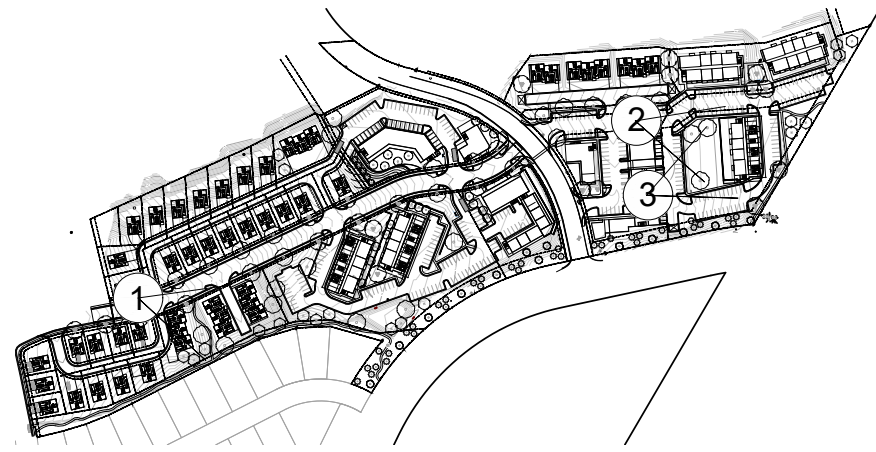


Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name:	3D REPRESENTATION
Sheet Number:	L.5.01

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



3D REPRESENTATION NOTES

- THE IMAGES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE INCLUDED TO CONVEY SCALE, PROPORTION, AND MASS ONLY



2 VIEW OF PARK
NOT TO SCALE



3 VIEW OF PARK PLAYGROUND
NOT TO SCALE



1 VIEW OF TRAIL INTO COMPLEX
NOT TO SCALE

Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
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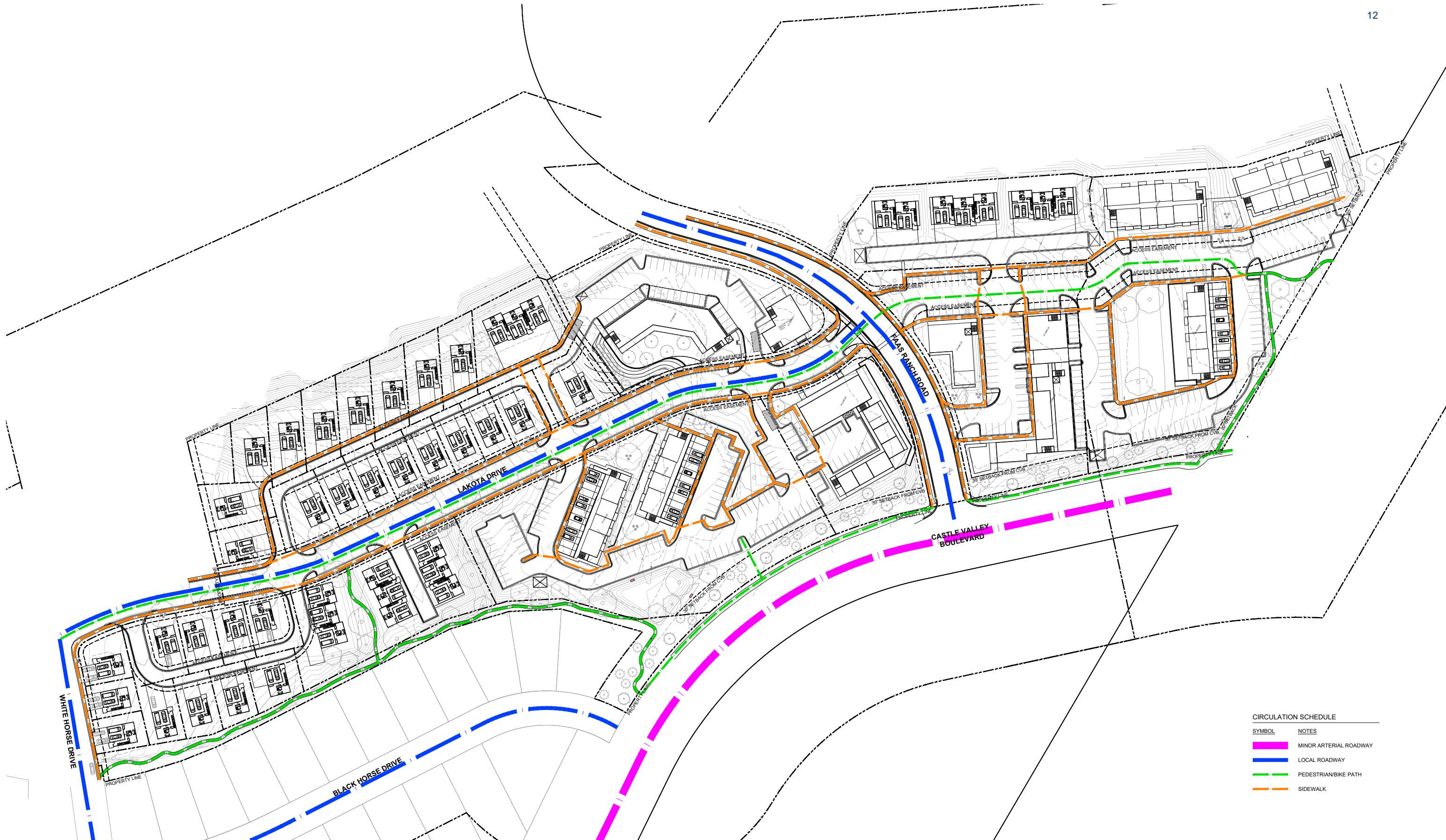


Sheet Name: 3D REPRESENTATION

Sheet Number: L.5.02

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



CIRCULATION SCHEDULE

SYMBOL	NOTES
	MINOR ARTERIAL ROADWAY
	LOCAL ROADWAY
	PEDESTRIAN/BIKE PATH
	SIDEWALK

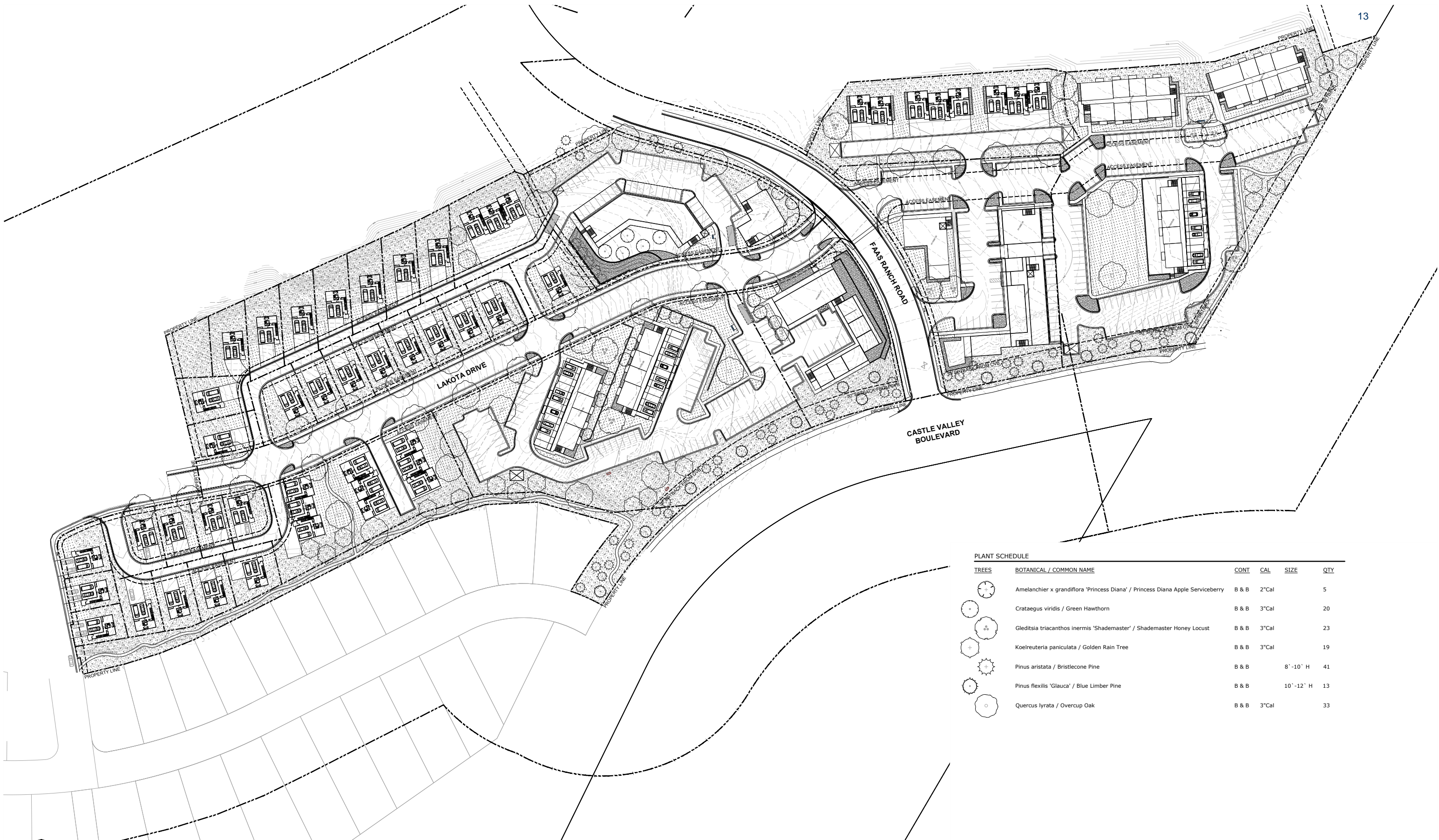
Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 60'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: Circulation Diagram
 Sheet Number: L.6.00

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
	Amelanchier x grandiflora 'Princess Diana' / Princess Diana Apple Serviceberry	B & B	2"	Cal	5
	Crataegus viridis / Green Hawthorn	B & B	3"	Cal	20
	Gleditsia triacanthos inermis 'Shademaster' / Shademaster Honey Locust	B & B	3"	Cal	23
	Koelreuteria paniculata / Golden Rain Tree	B & B	3"	Cal	19
	Pinus aristata / Bristlecone Pine	B & B		8' - 10' H	41
	Pinus flexilis 'Glauca' / Blue Limber Pine	B & B		10' - 12' H	13
	Quercus lyrata / Overcup Oak	B & B	3"	Cal	33

Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 60'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: Landscape Plan
 Sheet Number: L.7.00

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT
	Amelanchier x grandiflora 'Princess Diana' / Princess Diana Apple Serviceberry	B & B
	Crataegus viridis / Green Hawthorn	B & B
	Gleditsia triacanthos inermis 'Shademaster' / Shademaster Honey Locust	B & B
	Koelreuteria paniculata / Golden Rain Tree	B & B
	Pinus aristata / Bristlecone Pine	B & B
	Pinus flexilis 'Glauca' / Blue Limber Pine	B & B
	Quercus lyrata / Overcup Oak	B & B

Print Date: FEBRUARY 25, 2022

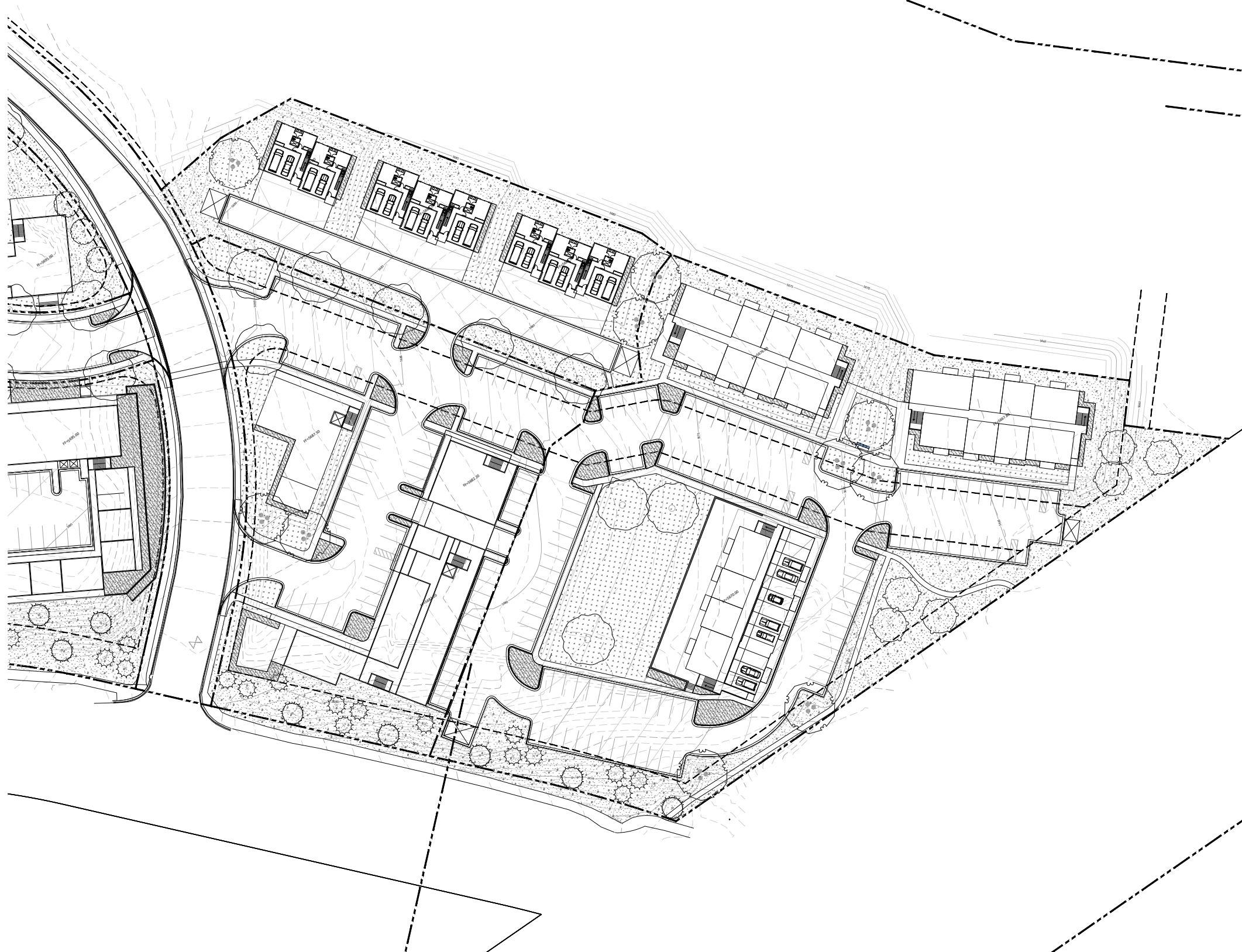
File Name: THE LONGVIEW AT LAKOTA CANYON RANCH

Horiz. Scale: 1" = 40'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: Landscape Plan Enlargement	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number: L.7.01	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT
	Amelanchier x grandiflora 'Princess Diana' / Princess Diana Apple Serviceberry	B & B
	Crataegus viridis / Green Hawthorn	B & B
	Gleditsia triacanthos inermis 'Shademaster' / Shademaster Honey Locust	B & B
	Koelreuteria paniculata / Golden Rain Tree	B & B
	Pinus aristata / Bristlecone Pine	B & B
	Pinus flexilis 'Glauca' / Blue Limber Pine	B & B
	Quercus lyrata / Overcup Oak	B & B

Print Date: FEBRUARY 25, 2022
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 Horiz. Scale: 1" = 40'

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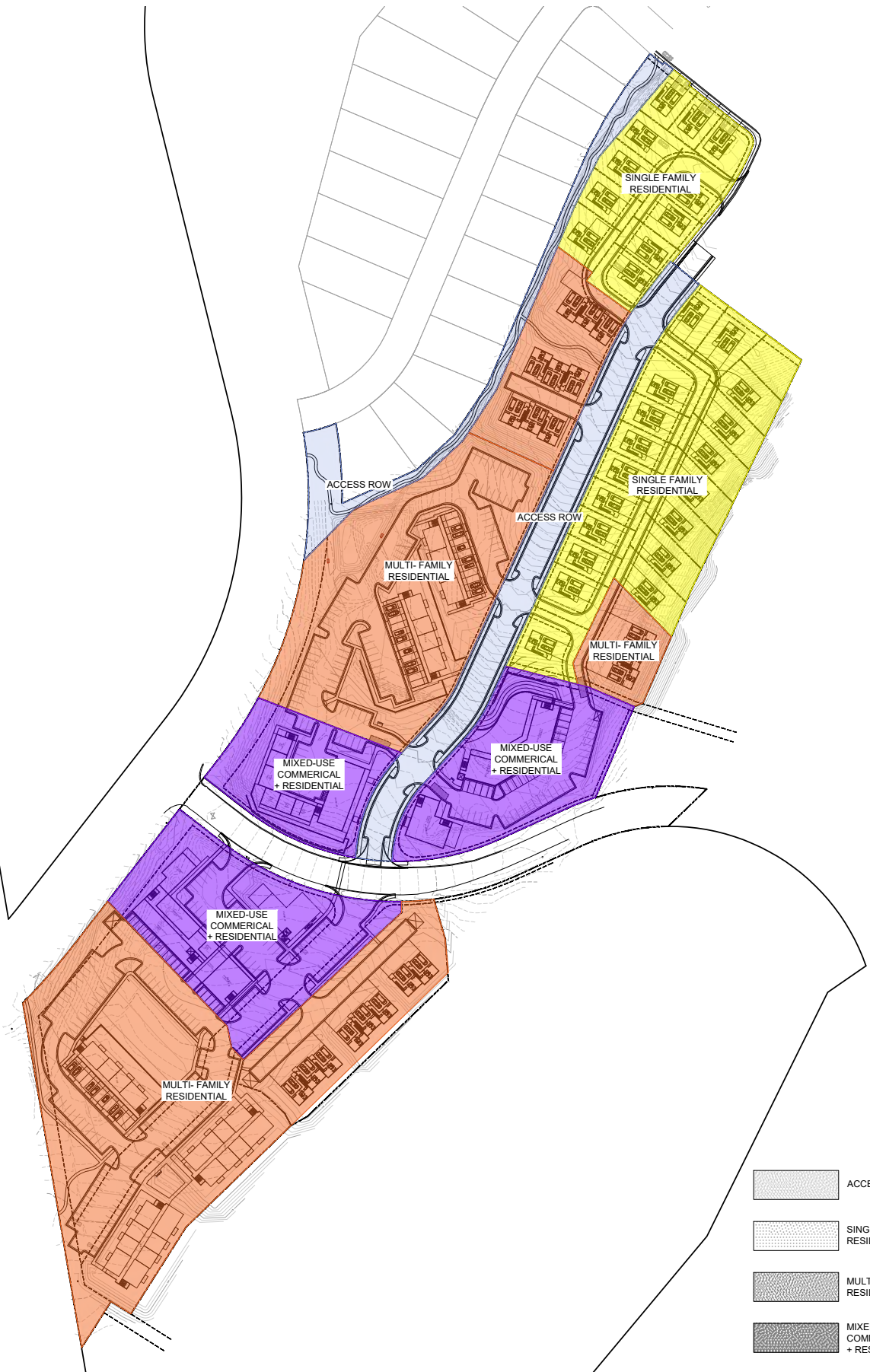
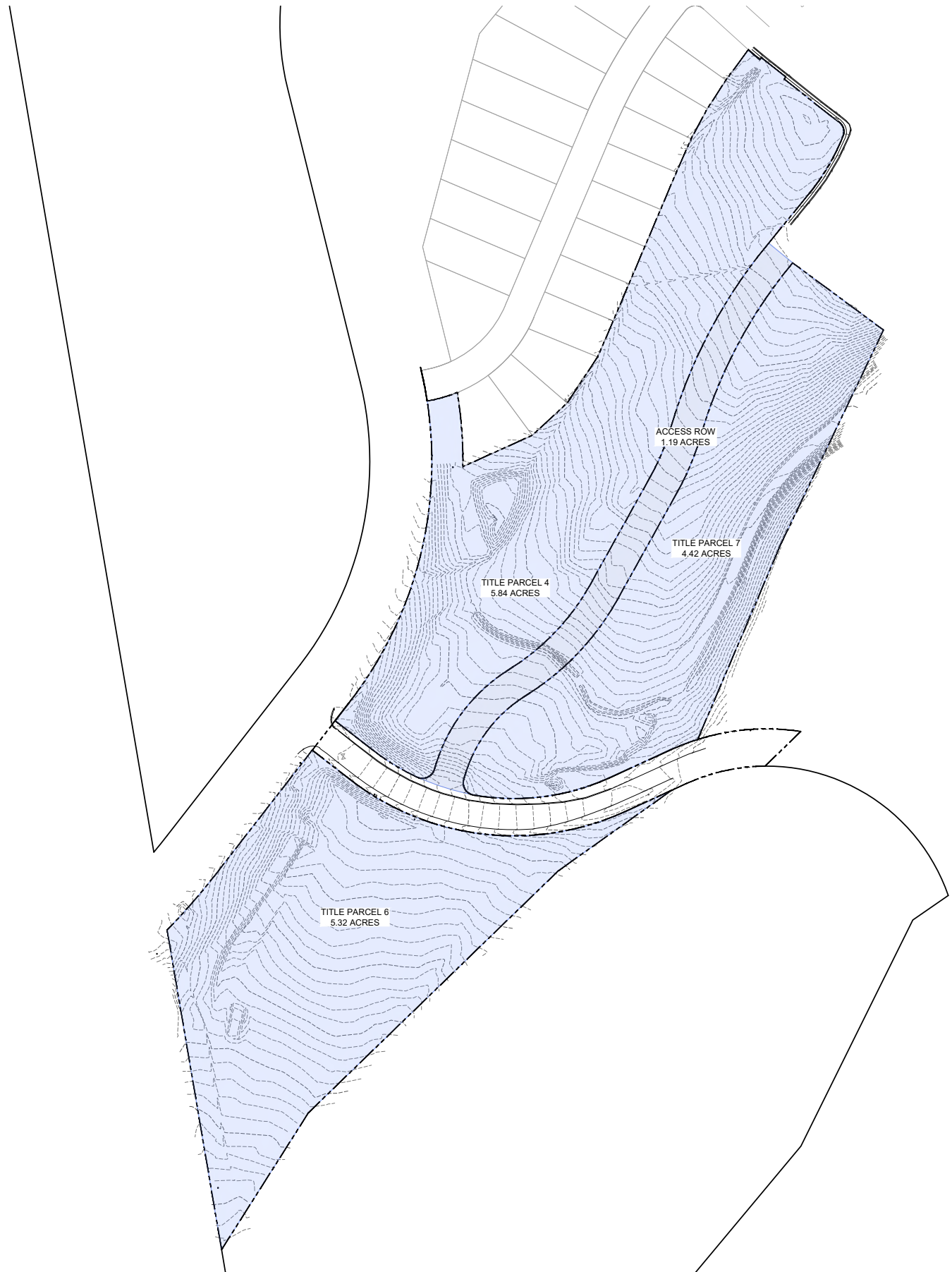
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Date:	Comments:	Drawn by:	Checked by:







Sheet Name: Landscape Plan Enlargement
 Sheet Number: L.7.02

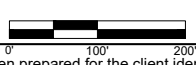
THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



-  ACCESS ROW - 1.83 ACRES
-  SINGLE FAMILY RESIDENTIAL - 3.73 ACRES
-  MULTI-FAMILY RESIDENTIAL - 7.97 ACRES
-  MIXED-USE COMMERCIAL + RESIDENTIAL - 3.90 ACRES

Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 100'



These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

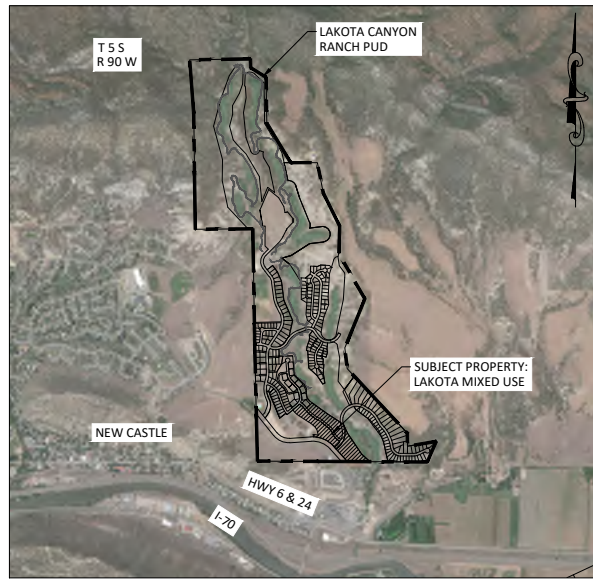




Sheet Name: Acreage Use Diagram
 Sheet Number: L.8.00

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

LAKOTA CANYON RANCH PUD FILING 8, LONGVIEW PRELIMINARY PLAT AND PLAN



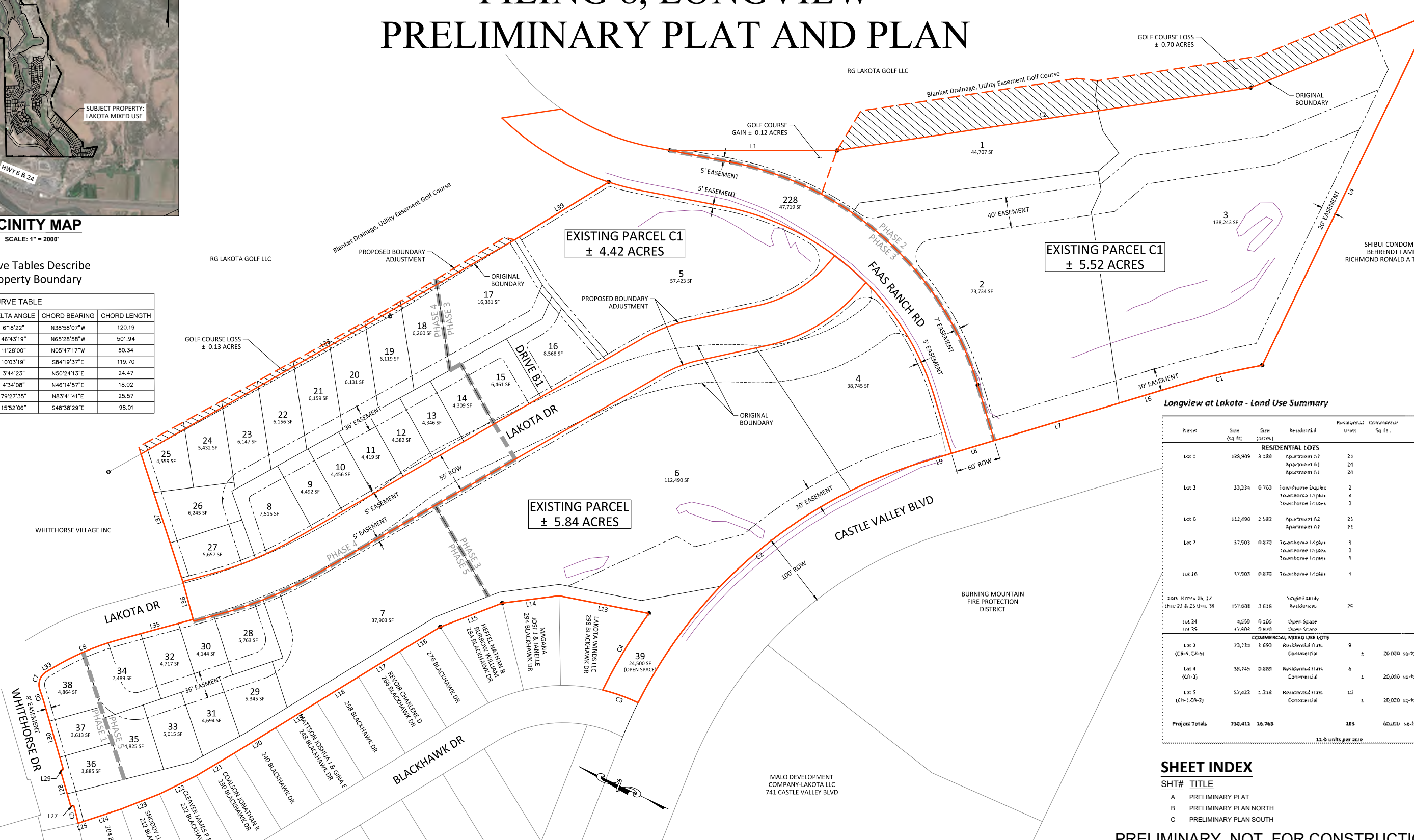
VICINITY MAP

SCALE: 1" = 2000'

Line & Curve Tables Describe Existing Property Boundary

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	120.25	1092.58	6°18'22"	N38°58'07"W	120.19
C2	516.12	632.92	46°43'19"	N65°28'58"W	501.94
C3	50.43	251.97	11°28'00"	N05°47'17"W	50.34
C4	119.85	682.92	10°03'19"	S84°19'37"E	119.70
C5	24.48	375.00	3°44'23"	N50°24'13"E	24.47
C6	18.02	226.00	4°34'08"	N46°14'57"E	18.02
C7	27.74	20.00	79°27'35"	N83°41'41"E	25.57
C8	98.32	355.00	15°52'06"	S48°38'29"E	98.01

LINE TABLE		
LINE #	BEARING	DISTANCE
L1	S25°21'48"E	223.52
L2	S34°03'38"E	560.40
L3	S47°34'59"E	261.31
L4	N89°40'33"W	521.96
L6	N42°07'18"W	77.98
L7	N42°07'18"W	174.40
L8	N42°07'18"W	60.00
L9	N42°07'18"W	36.75
L13	N14°16'23"W	122.61
L14	N32°45'41"W	76.67
L15	N46°32'57"W	88.97
L16	N56°32'45"W	63.26
L17	N56°58'50"W	65.00
L18	N56°58'50"W	65.00
L19	N56°58'50"W	65.00
L20	N56°58'50"W	65.00
L21	N56°12'01"W	59.05
L22	N51°44'16"W	54.94
L23	N46°55'51"W	54.94
L24	N43°35'36"W	53.37
L25	N43°35'36"W	7.54
L27	N41°27'59"W	4.00
L28	N48°32'01"E	50.00
L29	S41°27'59"E	4.00
L30	N48°32'01"E	93.09
L33	S56°34'32"E	8.86
L35	S40°42'26"E	102.82
L36	N49°09'31"E	52.50
L37	N46°28'29"E	179.57
L38	S55°13'57"E	576.42
L39	S56°55'10"E	147.77



Longview at Lakota - Land Use Summary

Parcel	Size (sq ft)	Size (acres)	Residential Units	Commercial Sq Ft
RESIDENTIAL LOTS				
Lot 1	128,996	3.189	23	
			Apartment A1	24
			Apartment A3	28
Lot 2	33,234	0.763	2	
			Townhouse Duplex	8
			Townhouse Triplex	3
Lot 6	112,690	2.582	21	
			Apartment A2	22
Lot 7	57,503	0.870	9	
			Townhouse Triplex	3
			Townhouse Triplex	3
Lot 16	57,503	0.870	4	
			Townhouse Triplex	4
Lot 24	4,550	0.105		
Lot 35	47,602	0.870	76	
			Single Family Residences	76
Lot 3	72,734	1.663	9	
(CR-4, CR-5)			Residential Units	9
Lot 4	38,745	0.888	6	
(CR-3)			Residential Units	6
Lot 5	57,422	1.318	10	
(CR-1, CR-2)			Residential Units	10
Commercial				20,000 sq-ft
Commercial				20,000 sq-ft
Project Totals	798,413	18.768	185	60,000 sq-ft

13.6 units per acre

SHEET INDEX

SHT#	TITLE
A	PRELIMINARY PLAT
B	PRELIMINARY PLAN NORTH
C	PRELIMINARY PLAN SOUTH

PRELIMINARY, NOT FOR CONSTRUCTION

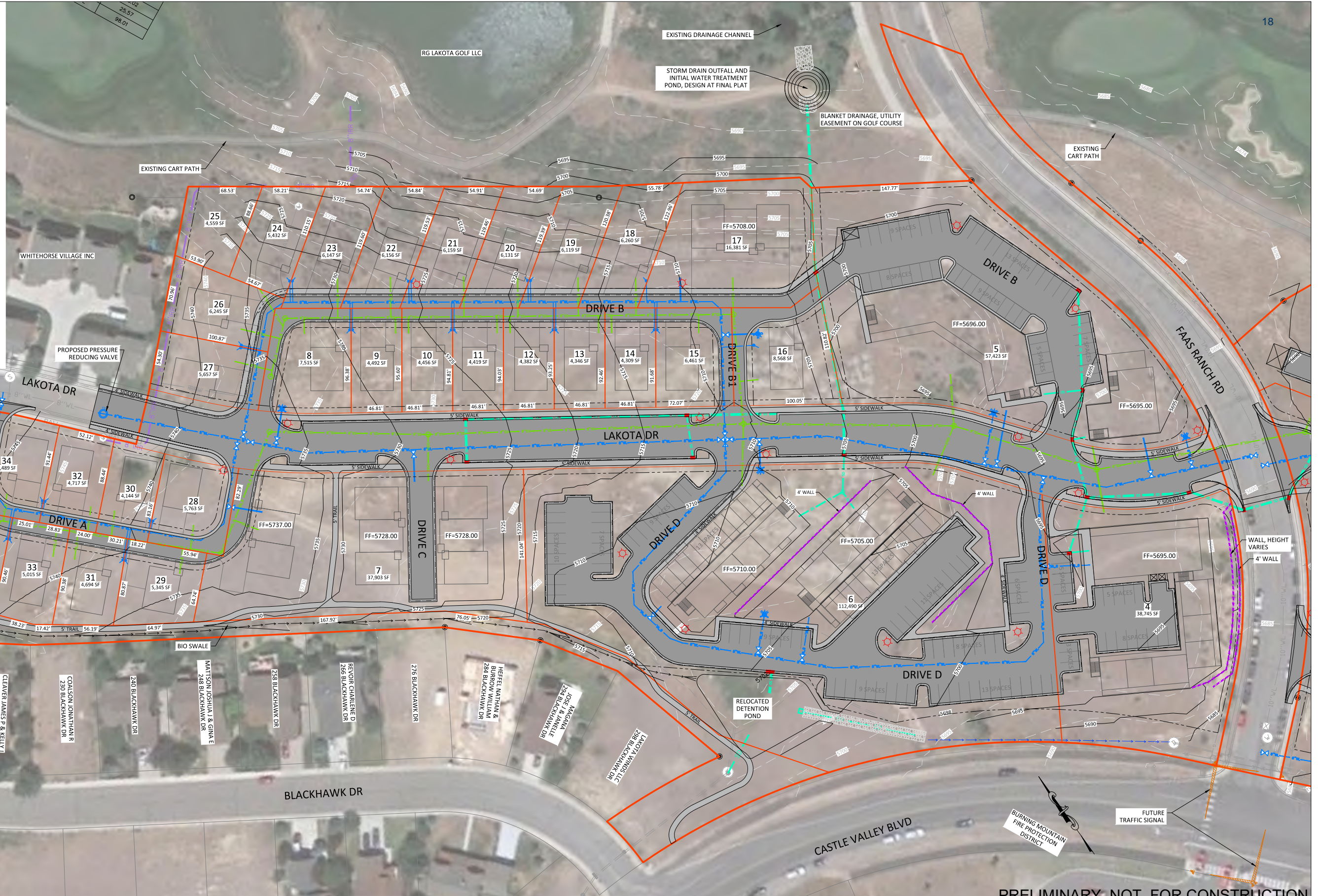
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 60'

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: PRELIMINARY PLAT
 Sheet Number: A

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client: The Romero Group
 350 Market Street Suite 304 Basalt, CO 81621

- LEGEND**
- PROPERTY BOUNDARY
 - PROPOSED LOT LINE
 - ROAD CENTERLINE
 - FLOWLINE
 - 8"IRR PROPOSED IRRIGATION
 - 8"WL PROPOSED 8" WATER
 - PROPOSED WATER SERVICE
 - 8"SS PROPOSED 8" SEWER
 - SSVL PROPOSED SEWER SERVICE
 - SD PROPOSED STORM SEWER, SIZE AS NOTED
 - PROPOSED MINOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - EXISTING MAJOR CONTOUR
 - 10"WL EXISTING 10" WATER
 - 8"SS EXISTING 8" SEWER
 - EXISTING ELECTRIC PEDESTAL
 - EXISTING TELEPHONE PEDESTAL
 - EXISTING ELECTRIC TRANSFORMER
 - EXISTING UTILITY STUB (T-POST)
 - EXISTING TELEVISION PEDESTAL
 - EXISTING SEWER MANHOLE
 - EXISTING WATER VALVE
 - EXISTING FIRE HYDRANT
 - EXISTING WATER SERVICE
 - EXISTING STREET LIGHT
 - PROPOSED STREET LIGHT
 - PROPOSED SEWER MANHOLE
 - PROPOSED WATER VALVE
 - PROPOSED FIRE HYDRANT
 - PROPOSED STORM TYPE 2 CURB INLET
 - PROPOSED STORM DRAIN MANHOLE



PRELIMINARY, NOT FOR CONSTRUCTION

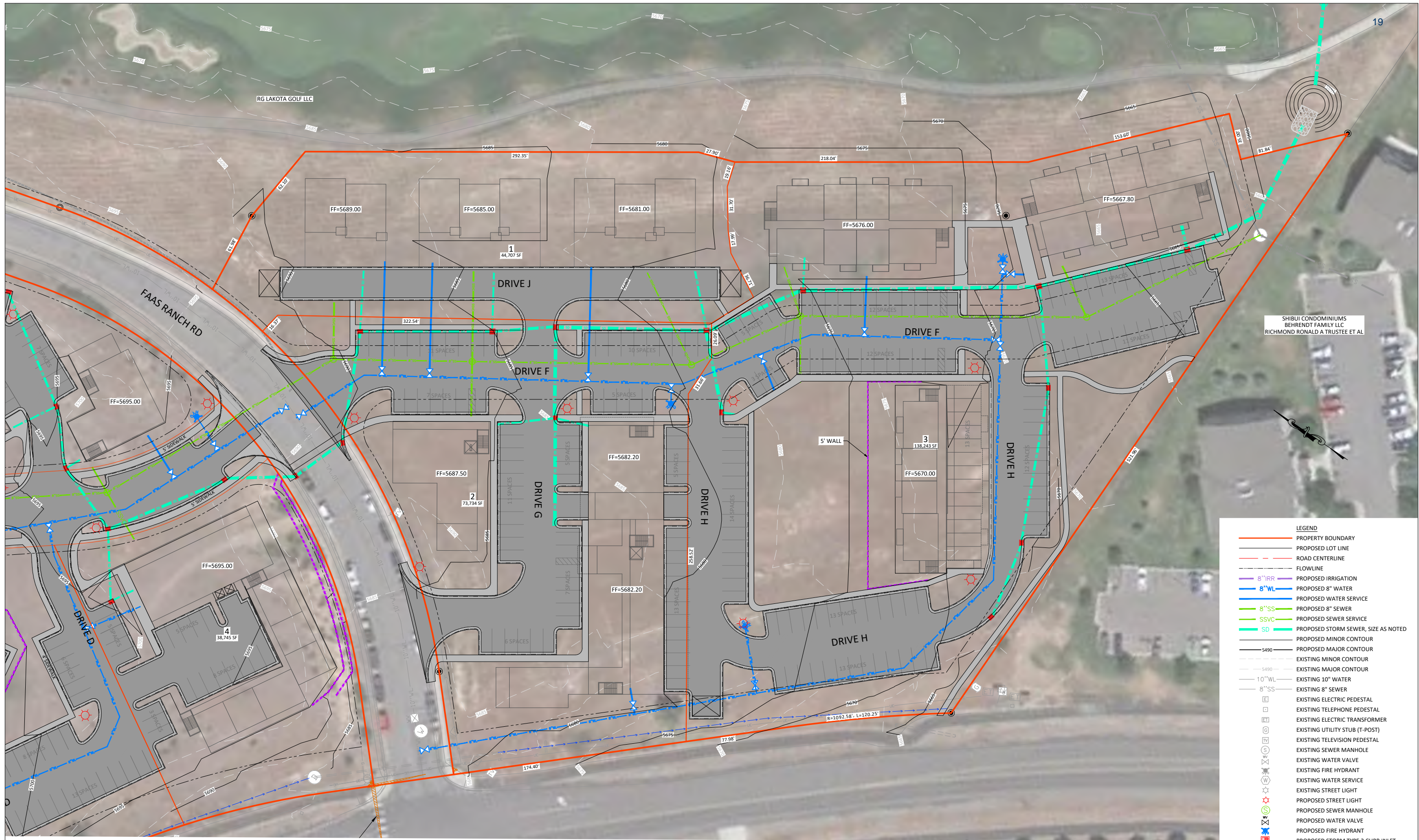
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: PRELIMINARY PLAN NORTH
 Sheet Number: B

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



SHIBUI CONDOMINIUMS
BEHRENDT FAMILY LLC
RICHMOND RONALD A TRUSTEE ET AL

LEGEND	
	PROPERTY BOUNDARY
	PROPOSED LOT LINE
	ROAD CENTERLINE
	FLOWLINE
	PROPOSED IRRIGATION
	PROPOSED 8" WATER
	PROPOSED WATER SERVICE
	PROPOSED 8" SEWER
	PROPOSED SEWER SERVICE
	PROPOSED STORM SEWER, SIZE AS NOTED
	PROPOSED MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING 10" WATER
	EXISTING 8" SEWER
	EXISTING ELECTRIC PEDESTAL
	EXISTING TELEPHONE PEDESTAL
	EXISTING ELECTRIC TRANSFORMER
	EXISTING UTILITY STUB (T-POST)
	EXISTING TELEVISION PEDESTAL
	EXISTING SEWER MANHOLE
	EXISTING WATER VALVE
	EXISTING FIRE HYDRANT
	EXISTING WATER SERVICE
	EXISTING STREET LIGHT
	PROPOSED STREET LIGHT
	PROPOSED SEWER MANHOLE
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED STORM TYPE 2 CURB INLET

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 30'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: PRELIMINARY PLAN SOUTH
 Sheet Number: C

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

GENERAL UTILITIES NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH THESE CONSTRUCTION PLANS PREPARED BY COLORADO RIVER ENGINEERING, INC.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF NEW CASTLE PUBLIC WORKS MANUAL AND SPECIFICATIONS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST TWO BUSINESS DAYS IN ADVANCE OF ANY CONSTRUCTION WHICH REQUIRES UTILITY LOCATES AND TO VERIFY LOCATION AND DEPTH BEFORE WORK BEGINS.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES DURING CONSTRUCTION. ALL UTILITIES SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO, OR INTERRUPTION OF, SERVICES CAUSED BY THE CONSTRUCTION.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND SCHEDULE ALL EARTHWORK, ROAD CONSTRUCTION, TRAFFIC REGULATION, UTILITY CONSTRUCTION, CONSTRUCTION INSPECTION AND GEOTECHNICAL TESTING.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ROAD ACCESS AND TRAFFIC CONTROL AT ALL TIMES DURING CONSTRUCTION.
7. STORMWATER BEST MANAGEMENT PRACTICES SHALL BE UTILIZED FOR ALL CONSTRUCTION ACTIVITIES IN ALL PHASES OF CONSTRUCTION, UNTIL THE FINAL ACCEPTANCE OF THE PROJECT. THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE AS NECESSARY AS REQUIRED BY THE STATE OF COLORADO AND THE TOWN OF NEW CASTLE. CONTRACTOR SHALL TAKE PREVENTIVE MEASURES TO INSURE THAT MUD FROM VEHICLES AND/OR CONSTRUCTION DEBRIS ARE NOT DEPOSITED ON THE EXISTING STREETS. ANY SUCH MUD OR DEBRIS THAT IS TRACKED ON TO THE EXISTING STREETS FROM THIS SITE SHALL BE COMPLETELY REMOVED BEFORE CONSTRUCTION ACTIVITIES HAVE ENDED FOR THE DAY. NO SUCH MUD OR DEBRIS SHALL BE ALLOWED TO REMAIN IN ANY STREET OVER NIGHT.
8. SILT FENCE SHALL BE PLACED AT THE TOE OF ALL FILL SECTIONS. THE BOTTOM OF ALL SILT FENCE SHALL BE TRENCHED IN THE SOIL AS SHOWN IN THE DETAILS.
9. ALL EROSION CONTROL DEVICES SHALL REMAIN IN-PLACE AND MAINTAINED UNTIL A 70% RE-VEGETATION IS ESTABLISHED.
10. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER AND HIS REPRESENTATIVES. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY MATERIALS AND/OR WORKMANSHIP THAT DO NOT CONFORM TO THE APPROVED DRAWINGS AND SPECIFICATIONS.
11. THE MINIMUM DEPTH OF BURY FOR ALL WATER LINE IS TO BE 5.5 FEET FROM FINISHED GRADE TO CROWN OF PIPE PER TOWN OF NEW CASTLE DETAILS.
12. THE TOPOGRAPHIC, AND SITE PLAN INFORMATION SHOWN ON THESE PLANS WAS PROVIDED BY BOOKCLIFF SURVEY SERVICES.
13. ALL WATERLINE AND SEWERLINE CONSTRUCTION SHALL COMPLY WITH COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REGULATIONS.
14. ALL WATERLINE SHALL BE C900 PVC SCHEDULE 200 PIPE, INSTALLED IN ACCORDANCE WITH AWWA AND MANUFACTURER'S SPECIFICATIONS.
15. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE MUTCD.
16. ALL PEDESTRIAN RAMPS SHALL BE IN ACCORDANCE WITH ADA.
17. ALL CURB, GUTTER AND SIDEWALK TO CONSIST OF MONOLITHIC POUR.
18. CURRENT PAVEMENT DESIGN BY GROUND ENGINEERING (8-27-07) CALLS FOR 5.5" HBP OVER MIN. 12" SUBGRADE STABILIZED WITH FLY ASH OR PORTLAND CEMENT. SEE REPORT DATED 8-13-2007 FOR FLY ASH RECOMMENDATION.

EROSION CONTROL NOTES:

1. THIS RE-VEGETATION AND EROSION CONTROL PLAN IS INCLUDED IN THE CONSTRUCTION PLAN SET AS A GUIDE. THE CONTRACTOR IS REQUIRED TO REVIEW, ADHERE TO, AND KEEP CURRENT, THE LAKOTA CANYON RANCH DEER VALLEY, PHASE II GRADING PERMIT APPLICATION PACKAGE. THE APPLICATION PACKAGE INCLUDES BEST MANAGEMENT PRACTICES (BMP'S) AND OTHER PERTINENT INFORMATION. STORMWATER BEST MANAGEMENT PRACTICES SHALL BE UTILIZED FOR ALL CONSTRUCTION ACTIVITIES.
- 2.
3. SILT FENCE SHALL BE PLACED AT THE TOE OF ALL FILL SECTIONS. THE BOTTOM OF ALL SILT FENCE SHALL BE TRENCHED IN THE SOIL AS SHOWN IN THE DETAILS.
4. ALL EROSION CONTROL DEVICES SHALL REMAIN IN-PLACE AND MAINTAINED UNTIL A 70% RE-VEGETATION IS ESTABLISHED.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ALL UTILITY COMPANIES FOR FIELD LOCATIONS OF UTILITIES PRIOR TO CONSTRUCTION AND TO VERIFY LOCATION AND DEPTH BEFORE WORK BEGINS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES DURING CONSTRUCTION.
6. ALL UTILITIES SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO, OR INTERRUPTION OF, SERVICES CAUSED BY THE CONSTRUCTION.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND SCHEDULE ALL EARTHWORK, ROAD CONSTRUCTION, TRAFFIC REGULATION, UTILITY CONSTRUCTION, CONSTRUCTION INSPECTION AND GEOTECHNICAL TESTING.
8. THROUGHOUT ALL PHASES OF CONSTRUCTION, UNTIL THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE AS NECESSARY AS REQUIRED BY THE STATE OF COLORADO AND THE TOWN OF NEW CASTLE. CONTRACTOR SHALL TAKE PREVENTIVE MEASURES TO INSURE THAT MUD FROM VEHICLES AND/OR CONSTRUCTION DEBRIS ARE NOT DEPOSITED ON THE EXISTING STREETS. ANY SUCH MUD OR DEBRIS THAT IS TRACKED ON TO THE EXISTING STREETS FROM THIS SITE SHALL BE COMPLETELY REMOVED BEFORE CONSTRUCTION ACTIVITIES HAVE ENDED FOR THE DAY. NO SUCH MUD OR DEBRIS SHALL BE ALLOWED TO REMAIN IN ANY STREET OVER NIGHT.
9. RE-VEGETATION IS TO BE ACCOMPLISHED IN ACCORDANCE WITH LAKOTA CANYON RANCH SPECIFICATIONS AND REQUIREMENTS.
10. OWNER MAY ADJUST REVEGETATION PLAN FROM DETAILS SHOWN ON THESE DRAWINGS. ULTIMATE ACCEPTANCE BY THE TOWN OF NEW CASTLE WILL BE SUBJECT TO VEGETATION ESTABLISHMENT AND CRITERIA SET FORTH IN NPDES PERMITS.

ROAD P&P NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH THESE CONSTRUCTION PLANS PREPARED BY COLORADO RIVER ENGINEERING, INC.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF NEW CASTLE PUBLIC WORKS MANUAL AND SPECIFICATIONS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST TWO BUSINESS DAYS IN ADVANCE OF ANY CONSTRUCTION WHICH REQUIRES UTILITY LOCATES AND TO VERIFY LOCATION AND DEPTH BEFORE WORK BEGINS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES DURING CONSTRUCTION. ALL UTILITIES SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO, OR INTERRUPTION OF, SERVICES CAUSED BY THE CONSTRUCTION.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND SCHEDULE ALL EARTHWORK, ROAD CONSTRUCTION, TRAFFIC REGULATION, UTILITY CONSTRUCTION, CONSTRUCTION INSPECTION AND GEOTECHNICAL TESTING.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ROAD ACCESS AND TRAFFIC CONTROL AT ALL TIMES DURING CONSTRUCTION.
7. STORMWATER BEST MANAGEMENT PRACTICES SHALL BE UTILIZED FOR ALL CONSTRUCTION ACTIVITIES IN ALL PHASES OF CONSTRUCTION, UNTIL THE FINAL ACCEPTANCE OF THE PROJECT. THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE AS NECESSARY AS REQUIRED BY THE STATE OF COLORADO AND THE TOWN OF NEW CASTLE. CONTRACTOR SHALL TAKE PREVENTIVE MEASURES TO INSURE THAT MUD FROM VEHICLES AND/OR CONSTRUCTION DEBRIS ARE NOT DEPOSITED ON THE EXISTING STREETS. ANY SUCH MUD OR DEBRIS THAT IS TRACKED ON TO THE EXISTING STREETS FROM THIS SITE SHALL BE COMPLETELY REMOVED BEFORE CONSTRUCTION ACTIVITIES HAVE ENDED FOR THE DAY. NO SUCH MUD OR DEBRIS SHALL BE ALLOWED TO REMAIN IN ANY STREET OVER NIGHT.
8. SILT FENCE SHALL BE PLACED AT THE TOE OF ALL FILL SECTIONS. THE BOTTOM OF ALL SILT FENCE SHALL BE TRENCHED IN THE SOIL AS SHOWN IN THE DETAILS.
9. ALL EROSION CONTROL DEVICES SHALL REMAIN IN-PLACE AND MAINTAINED UNTIL A 70% RE-VEGETATION IS ESTABLISHED.
10. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER AND HIS REPRESENTATIVES. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY MATERIALS AND/OR WORKMANSHIP THAT DO NOT CONFORM TO THE APPROVED DRAWINGS AND SPECIFICATIONS.
11. THE MINIMUM DEPTH OF BURY FOR ALL WATER LINE IS TO BE 5.5 FEET FROM FINISHED GRADE TO CROWN OF PIPE PER TOWN OF NEW CASTLE DETAILS.
12. THE TOPOGRAPHIC, AND SITE PLAN INFORMATION SHOWN ON THESE PLANS WAS PROVIDED BY BOOKCLIFF SURVEY SERVICES.
13. ALL WATERLINE AND SEWERLINE CONSTRUCTION SHALL COMPLY WITH COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REGULATIONS.
14. ALL WATERLINE SHALL BE C900 PVC SCHEDULE 200 PIPE, INSTALLED IN ACCORDANCE WITH AWWA AND MANUFACTURER'S SPECIFICATIONS.
15. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE MUTCD.
16. ALL PEDESTRIAN RAMPS SHALL BE IN ACCORDANCE WITH ADA.
17. ALL CURB, GUTTER AND SIDEWALK TO CONSIST OF MONOLITHIC POUR.
18. CURRENT PAVEMENT DESIGN BY GROUND ENGINEERING (8-27-07) CALLS FOR 5.5" HBP OVER MIN. 12" SUBGRADE STABILIZED WITH FLY ASH OR PORTLAND CEMENT. SEE REPORT DATED 8-13-2007 FOR FLY ASH RECOMMENDATION.

COVER SHEET NOTES:

1. WATER AND SEWER SERVICE STUBS SHOWN. FUTURE EXTENSION TO EACH HOUSE ACCOMPLISHED WHEN HOME CONSTRUCTED.
2. WATER MAINS SHOWN BASED ON APPROVED MASTER UTILITY PLAN OR AS APPROVED BY TOWN ENGINEER
3. ALL UTILITY DEVELOPMENT TO BE IN ACCORDANCE WITH THE TOWN OF NEW CASTLE PUBLIC WORKS MANUAL
4. SHALLOW DRY UTILITIES (ELEC, GAS, PHONE, CATV) DESIGN LAYOUT BY UTILITY PROVIDERS. COPIES OF EACH UTILITY PROVIDERS' LAYOUTS SHALL BE PROVIDED TO THE TOWN OF NEW CASTLE PRIOR TO CONSTRUCTION.
5. CONTRACTOR RESPONSIBLE FOR COORDINATING ALL UTILITY LOCATES AND AVOIDANCE.
6. OWNER TO HAVE IMPROVEMENTS SURVEYED DURING CONSTRUCTION FOR RECORD DRAWINGS.
7. WATER PIPE JOINT DEFLECTION TO BE APPROVED IF CONTRACTOR PRODUCES MANUFACTURES SPECIFICATIONS APPROVING DEFLECTION. ALTERNATIVELY, CONTRACTOR TO PROVIDE STRAIGHT RUNS WITH NECESSARY ELBOWS AS SHOWN ON PLANS.
8. ALL WATER PIPE AND FITTINGS TO MEET TOWN OF NEW CASTLE PUBLIC WORKS MANUAL SPECIFICATIONS.
9. C-900 PVC DR14 ON ALL WATER MAINS. DIP WATER FITTINGS TO BE POLY WRAPPED FOR CORROSION PROTECTION.
10. WATER SERVICE STUBS SEAMLESS COPPER "TYPE K". NO SADDLE TAPS WITHIN 4-FT OF FITTINGS OR OTHER TAPS
11. ALL SEWER PIPE MAINS AND SERVICE STUBS TO MEET ASTM 3034 WITH SDR 35 AS MINIMUM WALL THICKNESS.
12. 4" DIAMETER ON ALL SEWER SERVICE STUBS TO INDIVIDUAL HOMES, 2% SLOPE.
13. WATER LINES NOT SHOWN ON PROFILE, MINIMUM 5.5' BURY DEPTH.
14. SEWER SYSTEM DESIGN SHOWS TABLE OF APPROXIMATE ELEVATION OF SERVICE STUB DEPTH TO THE LOTS BUILDING ENVELOPE ON THE STREET SIDE. SEWER SERVICE BY GRAVITY LIMITED ON SOME LARGER LOTS WITH BUILDING ENVELOPES DOWNHILL OF ROADWAYS. FUTURE LOT PURCHASERS COULD REQUIRE LIFT PUMPS FOR BASEMENTS ON STEEPER DOWNHILL LOTS.
15. FINAL PAVEMENT DESIGN BY HP-GEOTECH RECOMMENDS 4" MINIMUM ASPHALT MAT WITH 8" BASE COURSE DEPTH. THE 4" MAT WILL REQUIRE TWO LIFTS. ALTERNATIVE 3" SINGLE LIFT MAT DESIGN IS PROVIDED BY GEOTECHNICAL ENGINEER. CONTRACTOR MUST PROVIDE A MINIMUM 1/4" LIP OF ASPHALT ABOVE GUTTER PAN FOR EITHER ASPHALT SCENARIO. THE 3" ALTERNATIVE WILL REQUIRE A TOWN INSPECTOR BE ON-SITE, AT THE COST OF THE CONTRACTOR, TO INSURE LIP IS PROVIDED.
16. OWNER TO OBTAIN STORMWATER DISCHARGE PERMIT PRIOR TO CONSTRUCTION.
17. CONTRACTOR TO MEET ALL SPECIFICATIONS AND TESTING REQUIREMENTS OF OVERLOT GRADING AS PER GEOTECHNICAL ENGINEER OVERSIGHT AND DESIGN REPORT BY HP-GEOTECH INC DATED 2-12-06
18. CONTRACTOR TO OBTAIN AND PERFORM ALL WORK IN ACCORDANCE WITH TOWN OF NEW CASTLE ACCEPTANCE CHECKLIST FOR PUBLIC IMPROVEMENTS. SIGNATURES TO BE PROVIDED FOR ALL APPLICABLE WORK TO FACILITATE ACCEPTANCE BY TOWN AT THE END OF PROJECT.
19. ALL SEWER MAINS IN PROJECT ARE GRAVITY PIPES. SOME LOTS COULD REQUIRE SEWAGE LIFT STATIONS FOR BASEMENT SERVICE. SEWER STUB DEPTH AND LOCATIONS PROVIDED THIS DRAWING SET.

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022		Issue & Revisions					Sheet Name: PROJECT NOTES	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: CRE Design - Lakota Mixed Use.dwg		Date:	Comments:	Drawn by:	Checked by:		Sheet Number: 2	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:								
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: EXISTING CONDITIONS
 Sheet Number: 3

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



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Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: SITE PLAN NORTH
 Sheet Number: 4

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



SHIBUI CONDOMINIUMS
 BEHRENT FAMILY LLC
 RICHMOND RONALD A TRUSTEE ET AL

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 30'

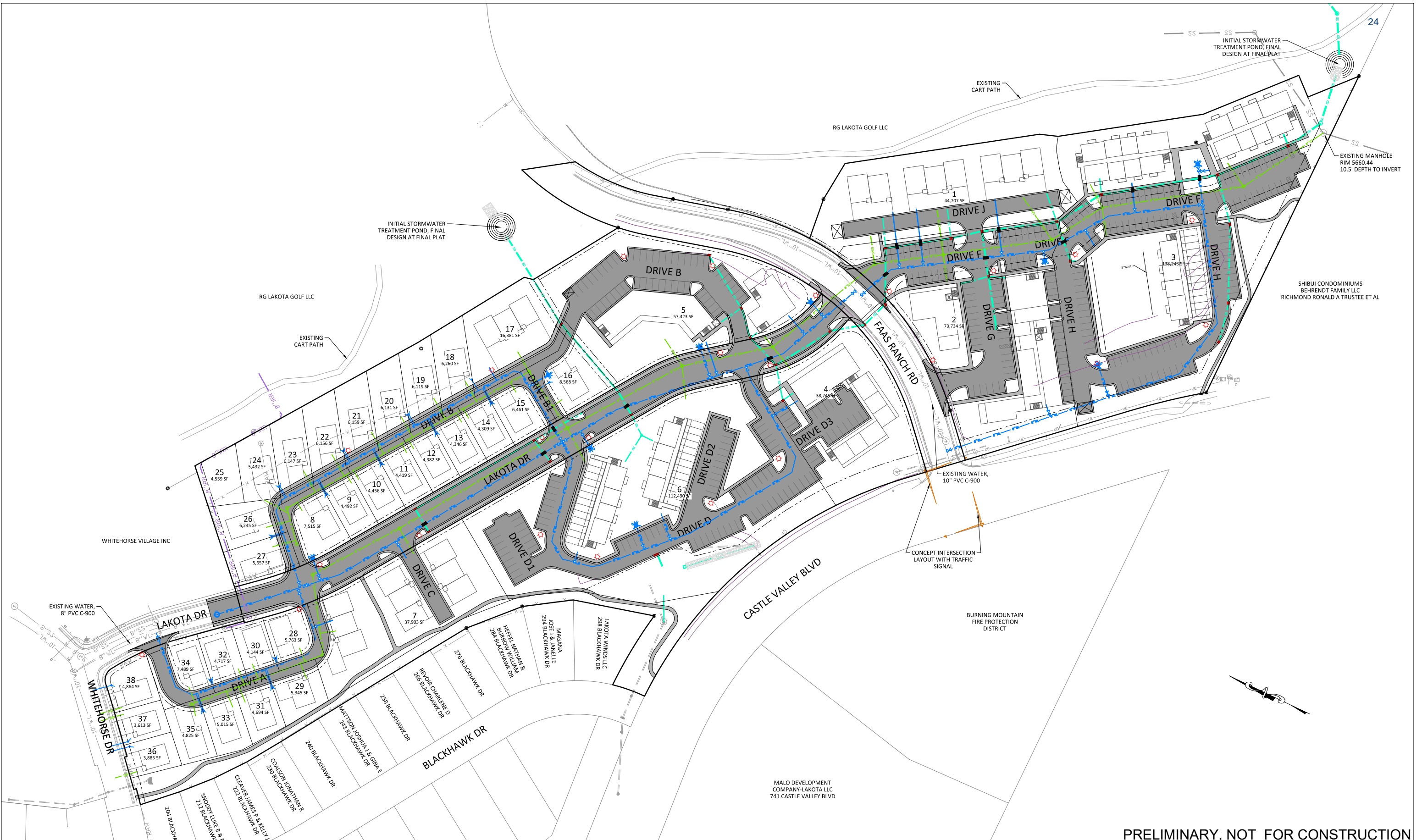
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: SITE PLAN SOUTH
 Sheet Number: 5

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

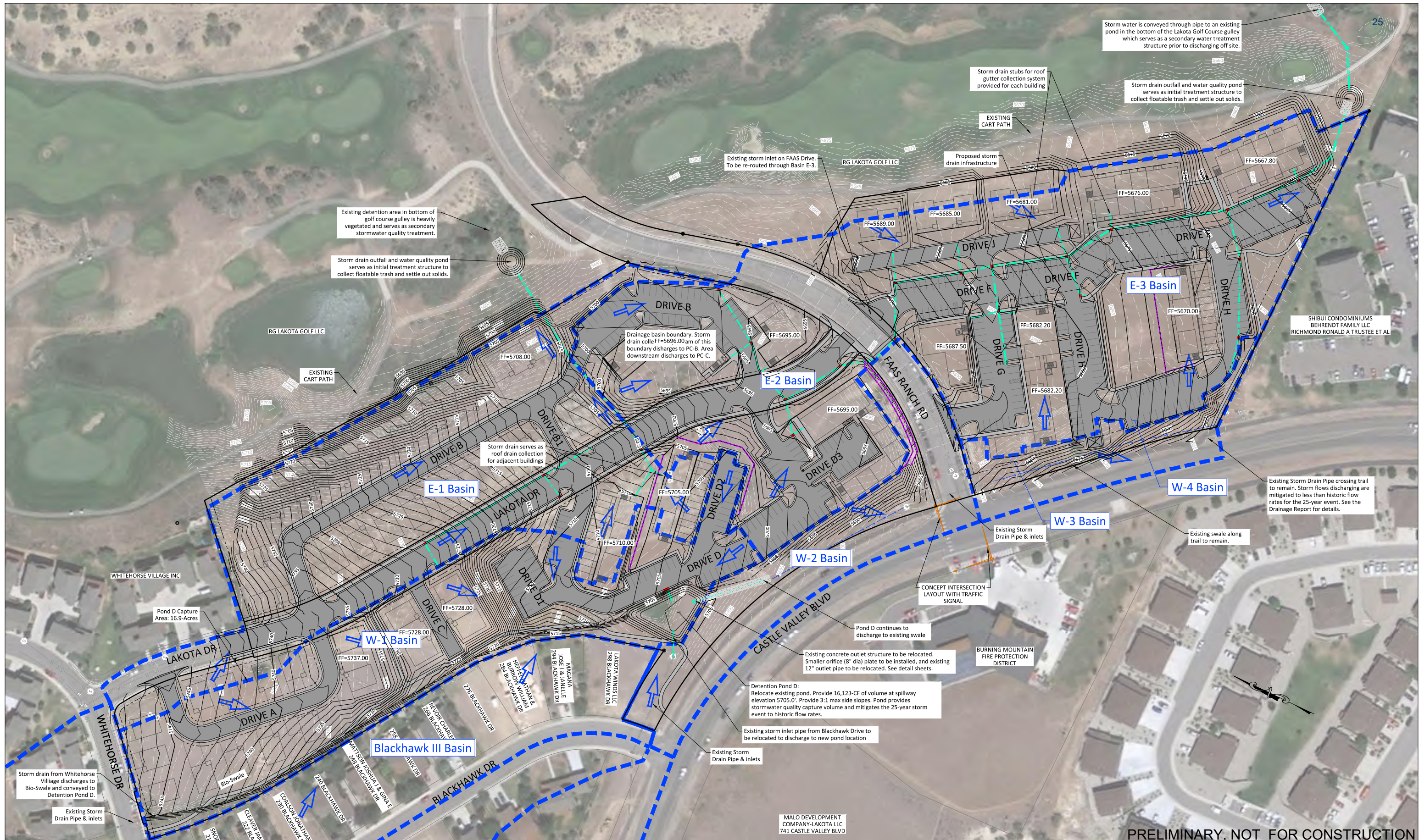
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: UTILITY OVERVIEW
 Sheet Number: 6

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



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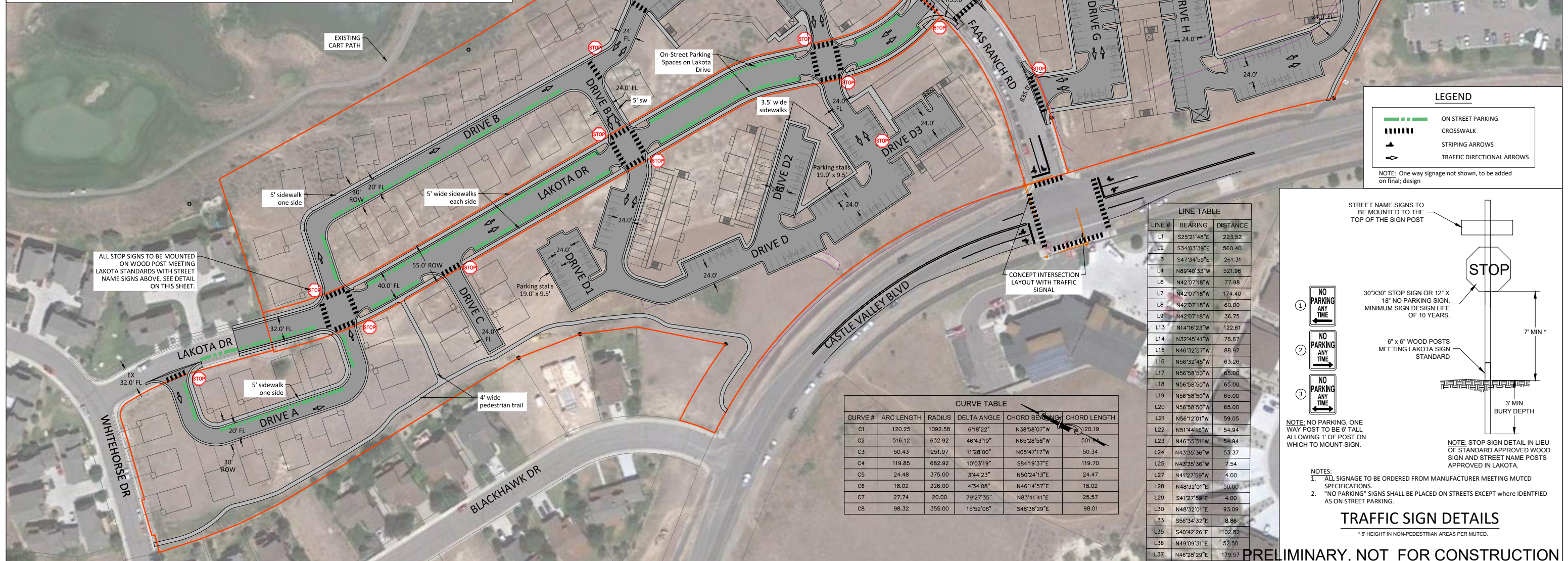
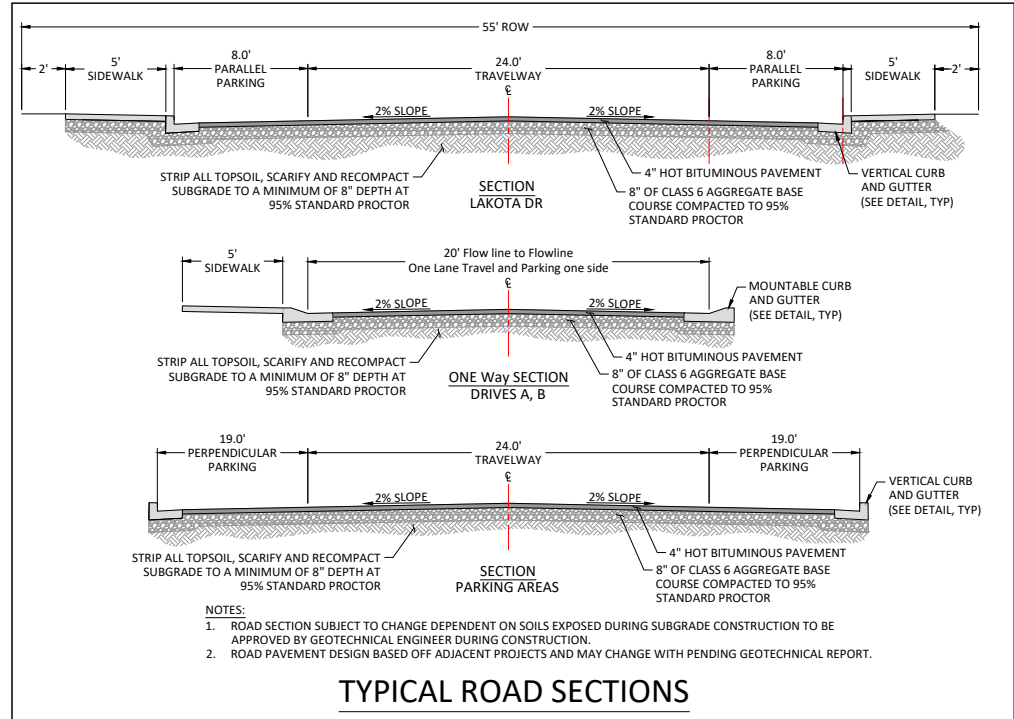
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: GRADING AND DRAINAGE OVERVIEW
 Sheet Number: 7

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



Print Date: March 21, 2022

File Name: CRE Design - Lakota Mixed Use.dwg

Horiz. Scale: SCALE: 1" = 60'

Issue & Revisions

Date:	Comments:	Drawn by:	Checked by:
8/17/2022	Drive A&B to one way, parking one side, added 5'SW, crosswalks		

connect one DESIGN

COLORADO RIVER ENGINEERING INCORPORATED

architects

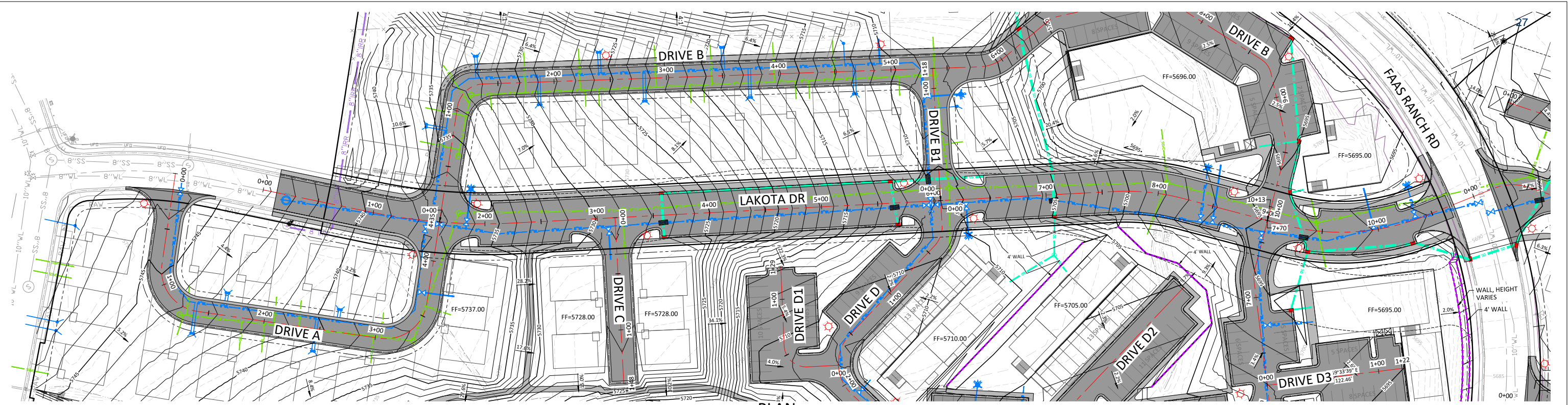
Sheet Name: ROADS, TRAFFIC AND SIGNAGE OVERVIEW

Sheet Number: 8

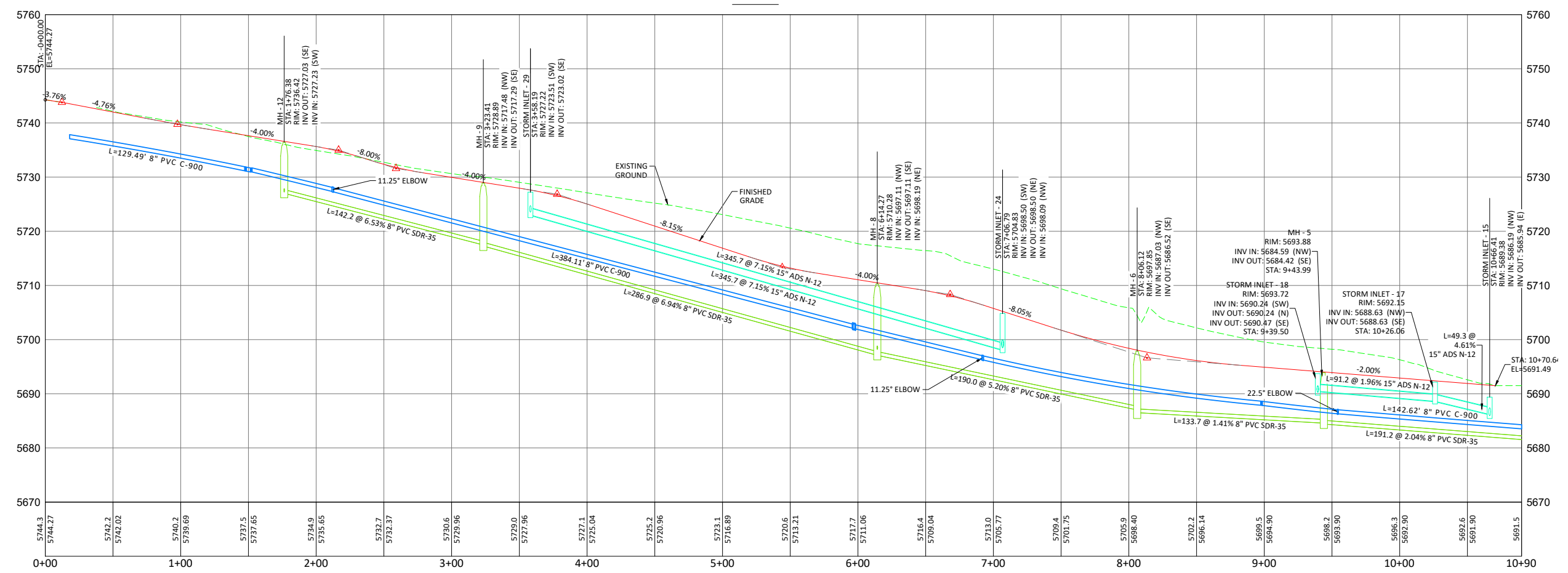
THE LONGVIEW AT LAKOTA CANYON RANCH

Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621

PRELIMINARY, NOT FOR CONSTRUCTION



PLAN



LAKOTA DR PROFILE

HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 10'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
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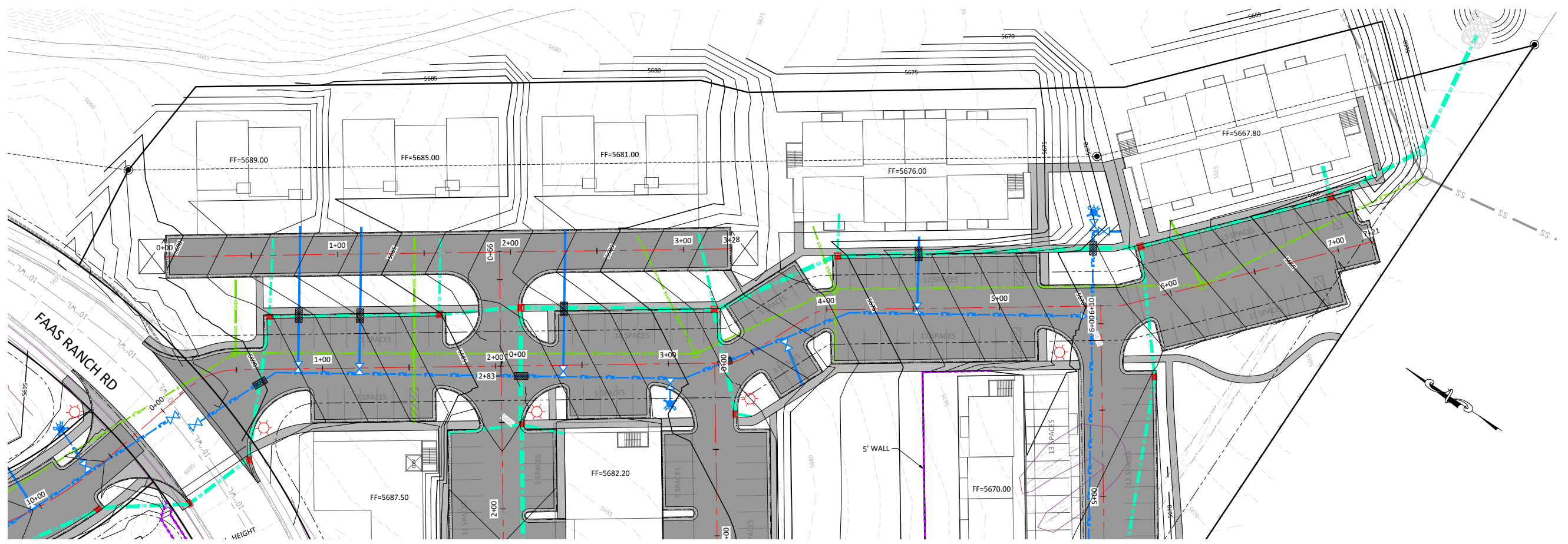
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Issue & Revisions			
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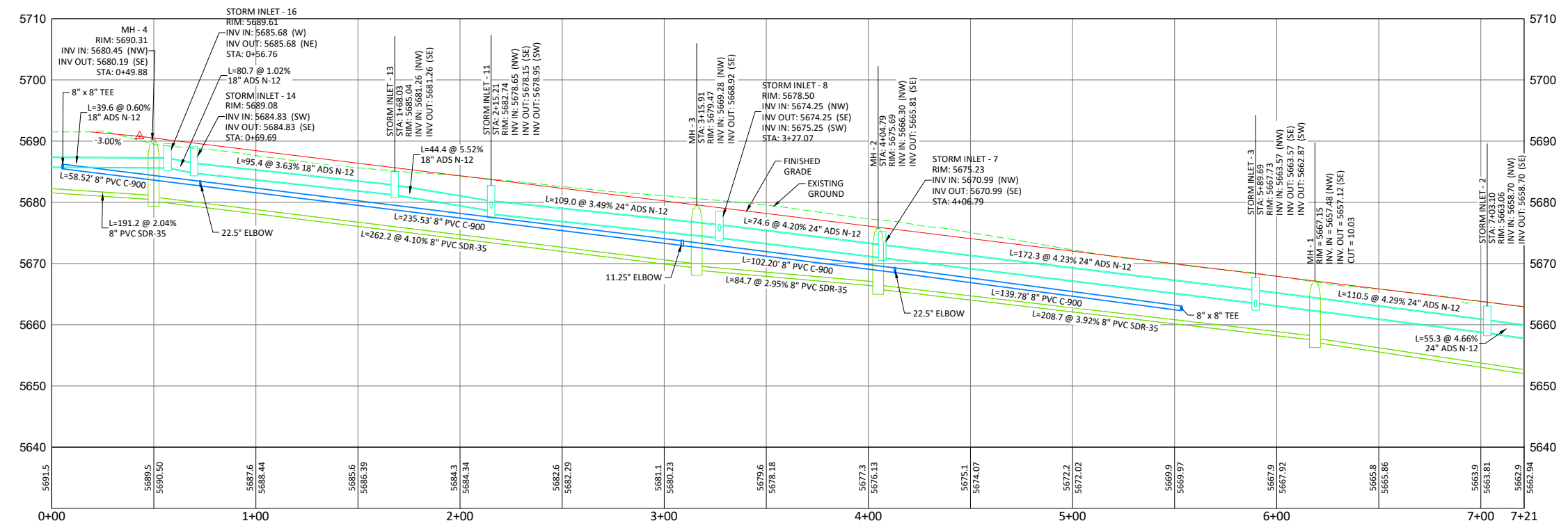


Sheet Name: NORTH PRELIMINARY PLAN & PROFILE
Sheet Number: 9

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PLAN



DRIVE F PROFILE

HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 10'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
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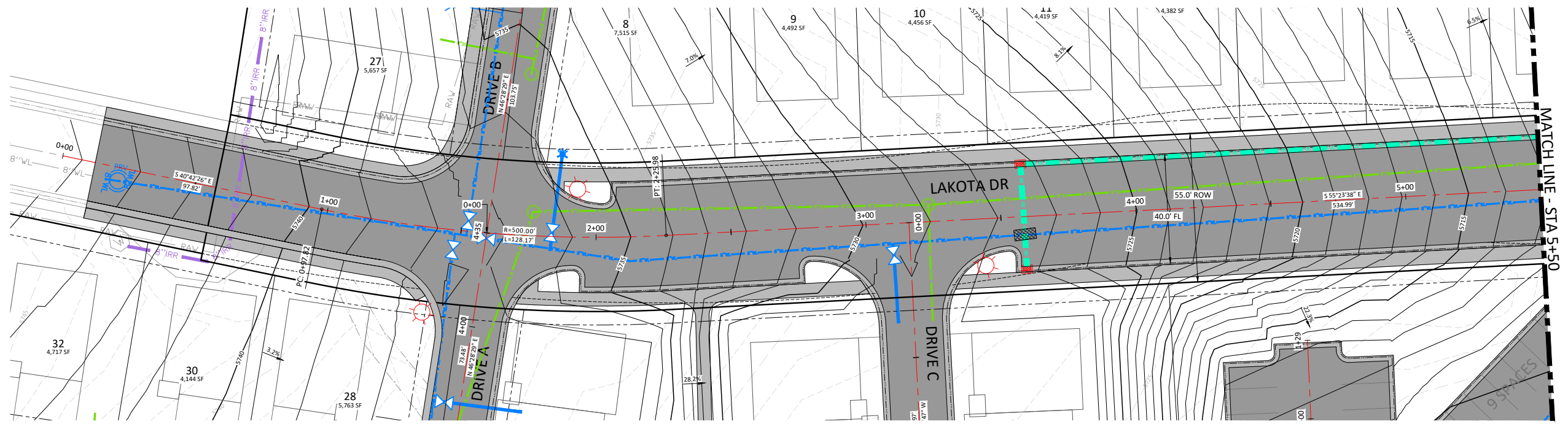
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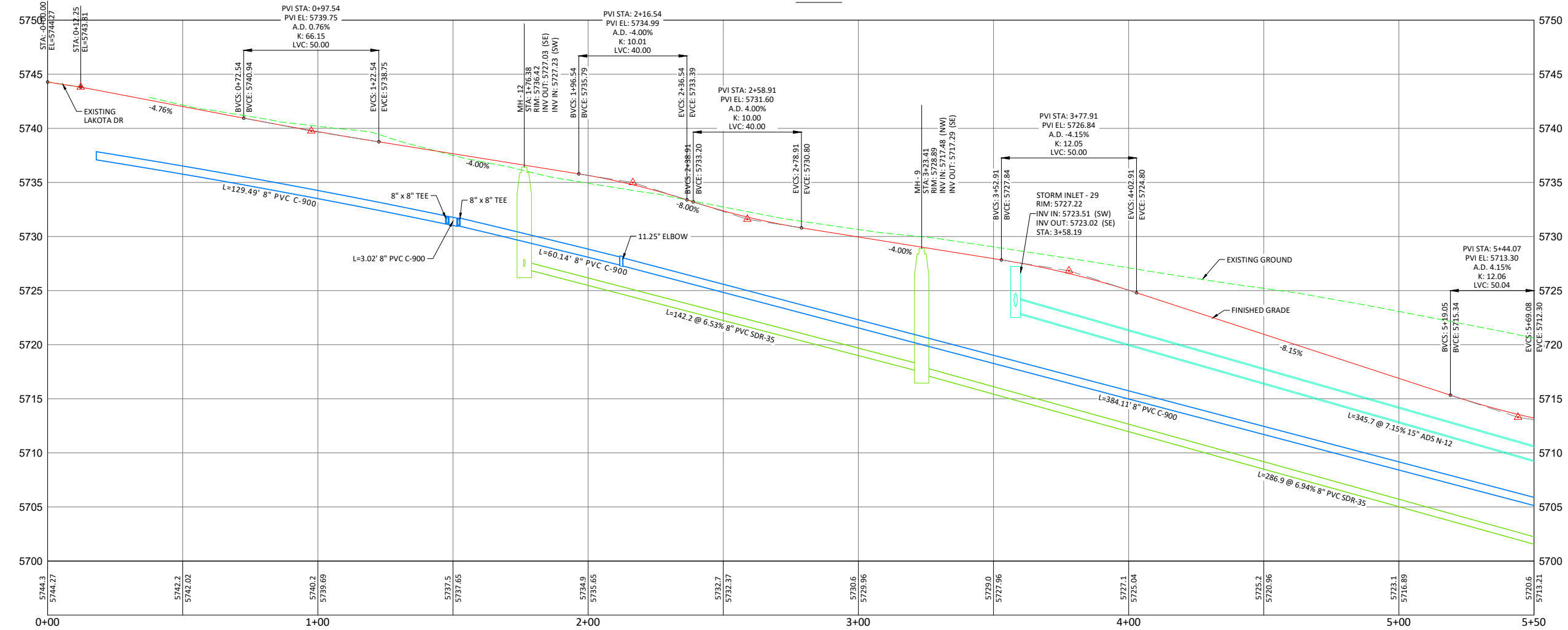


Sheet Name: SOUTH PRELIMINARY PLAN & PROFILE
Sheet Number: 10

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group
350 Market Street
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PLAN



LAKOTA DR PROFILE

HORIZ. SCALE: 1" = 20'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

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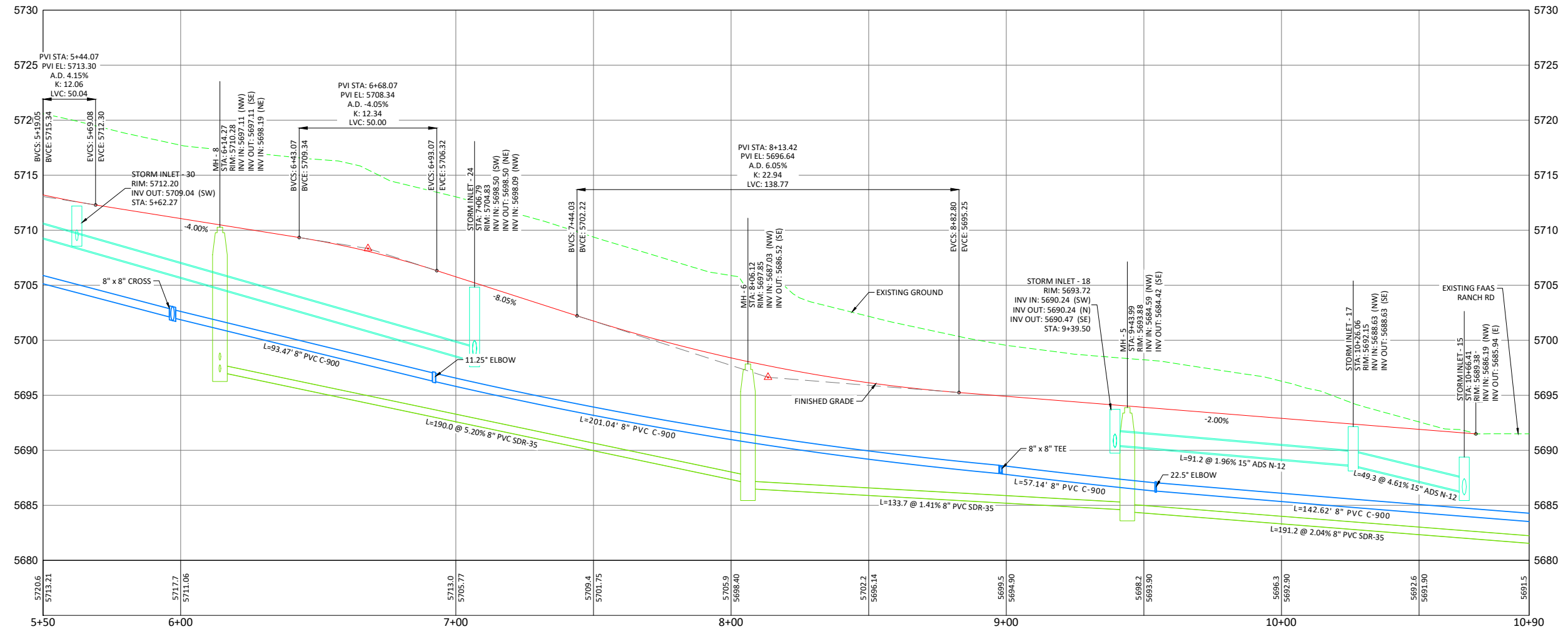
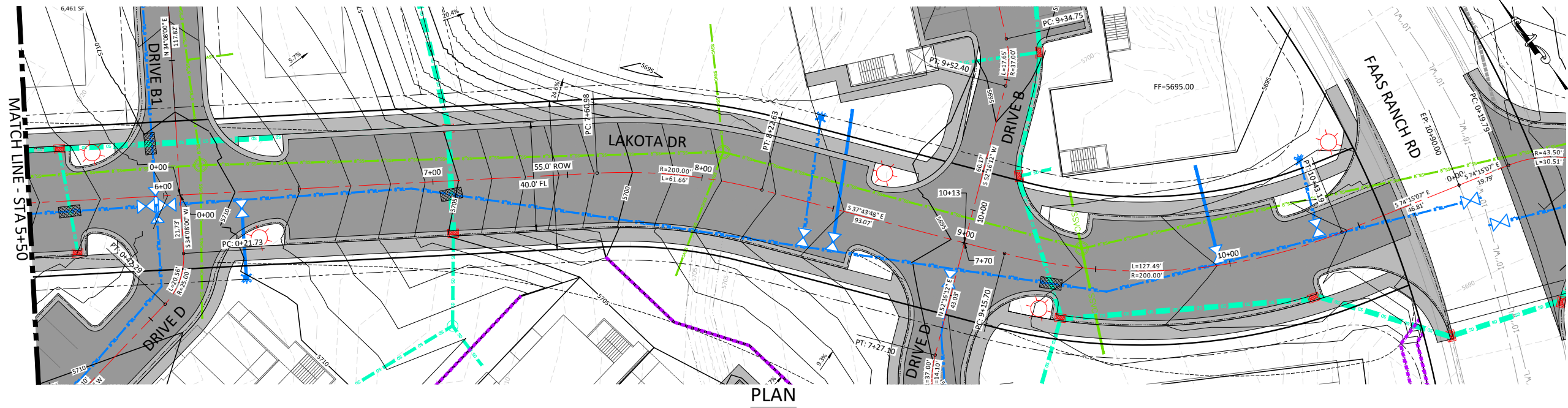
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: LAKOTA DR
 PLAN & PROFILE
 STA: 0+00 TO 5+50

Sheet Number: 11

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
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 350 Market Street
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Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

connect one DESIGN ARCHITECTS

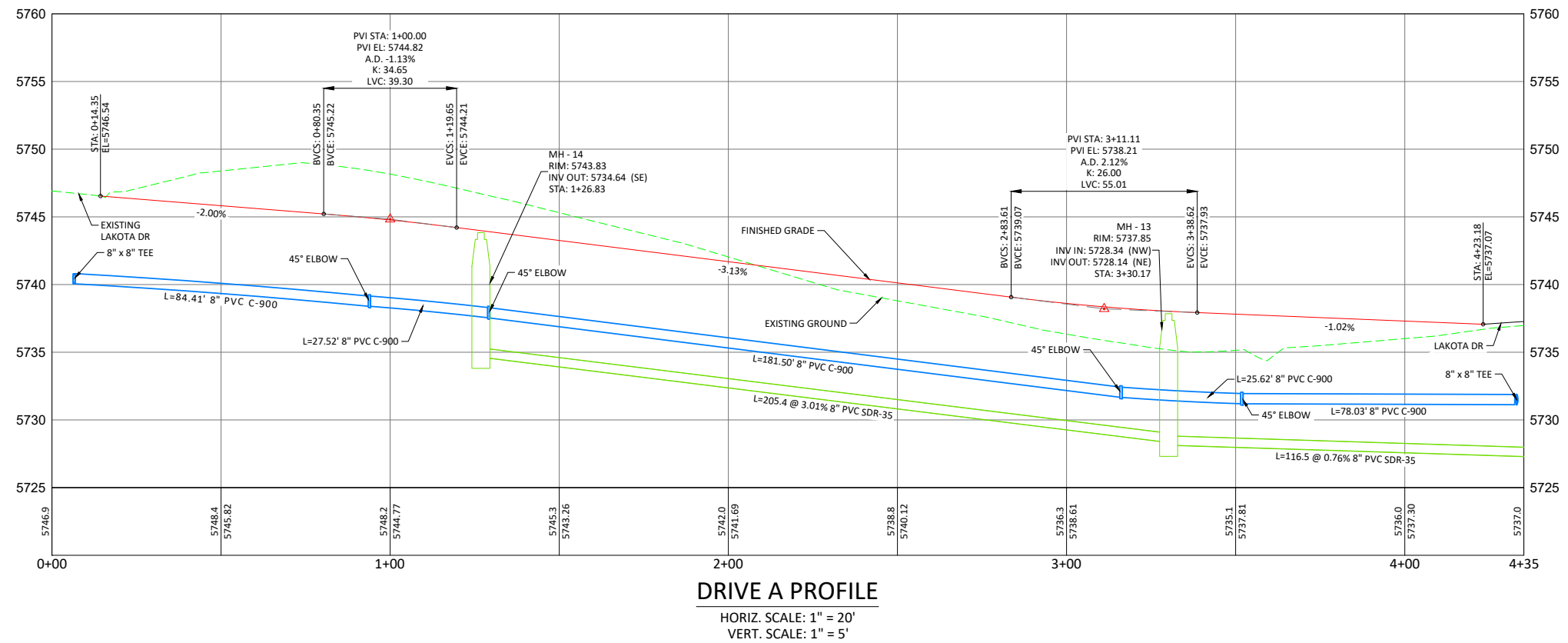
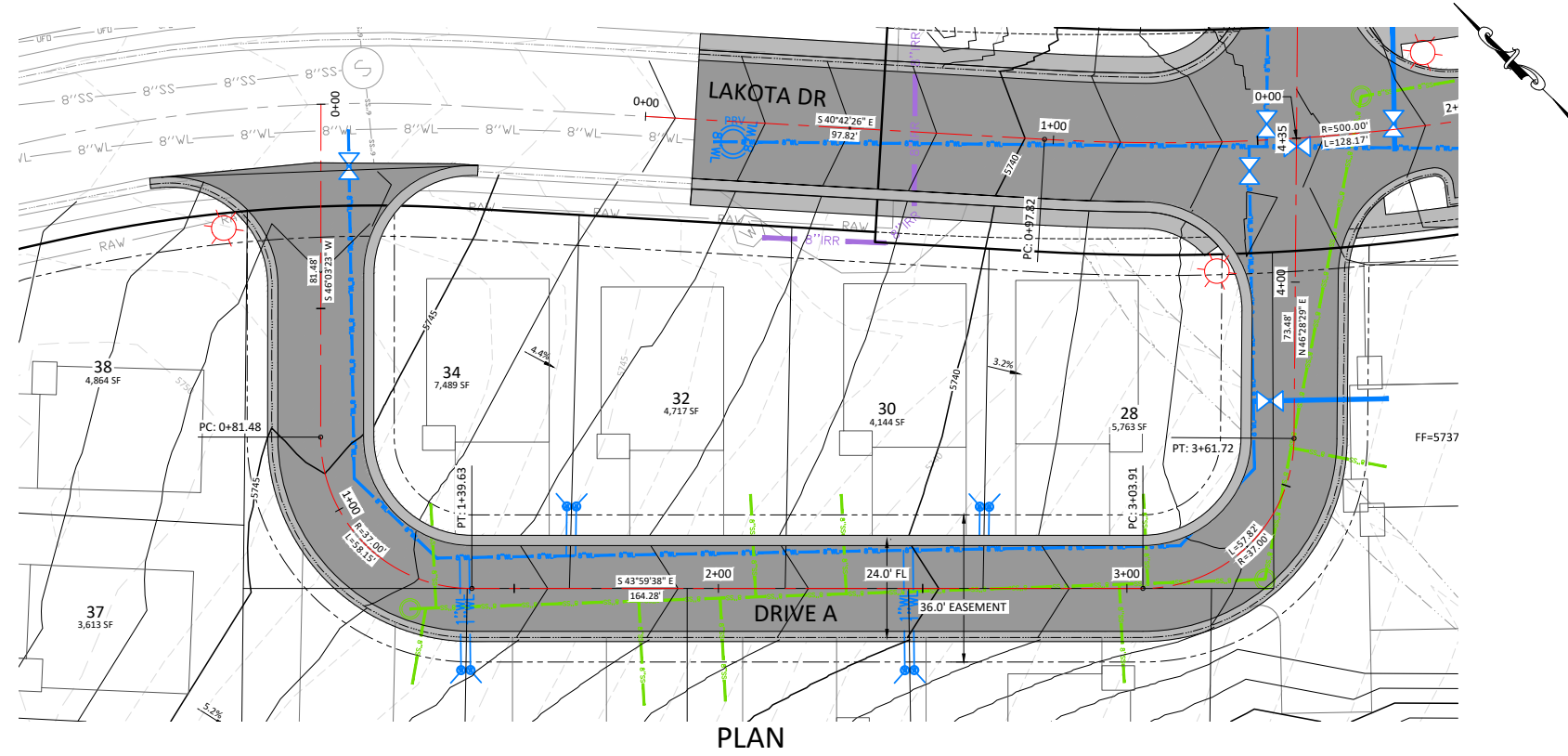
COLORADO RIVER ENGINEERING INCORPORATED

Sheet Name: LAKOTA DRIVE PLAN & PROFILE
 STA: 5+50 TO 10+90

Sheet Number: 12

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
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Print Date: March 21, 2022
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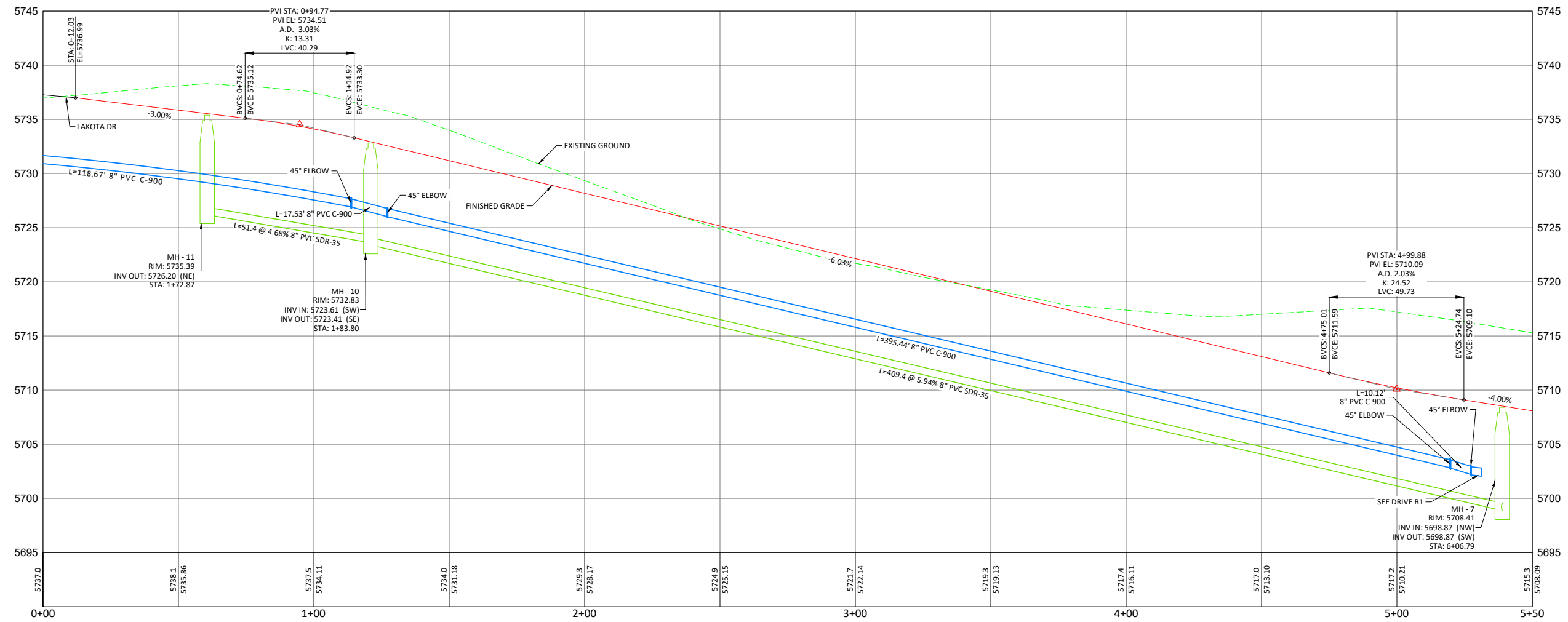
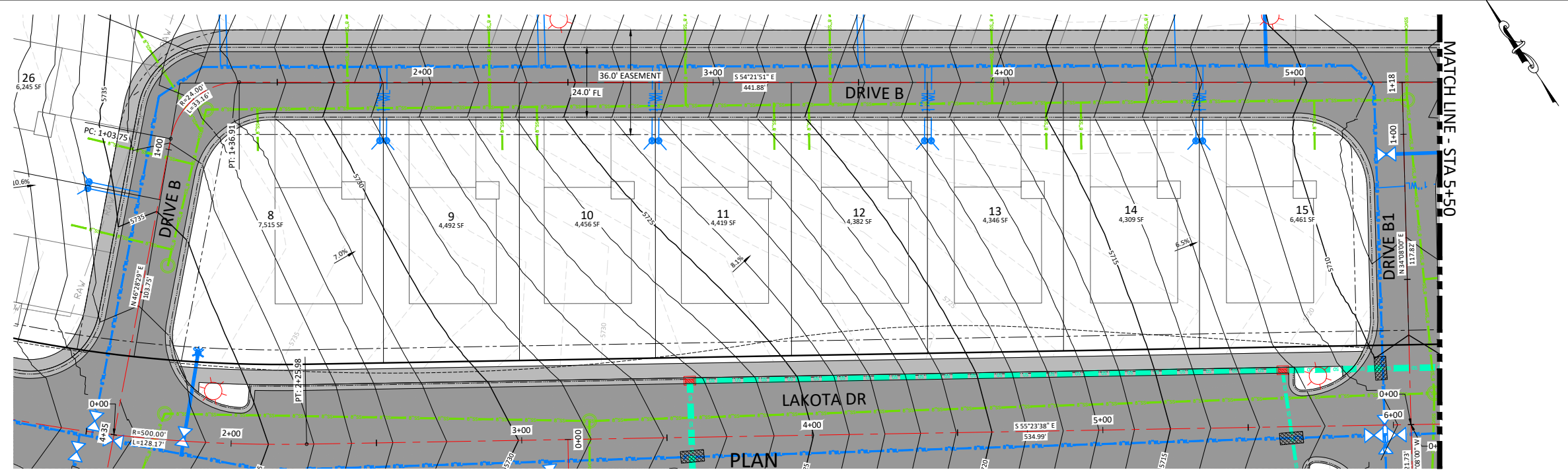
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: DRIVE A PLAN & PROFILE
 Sheet Number: 13

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
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PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

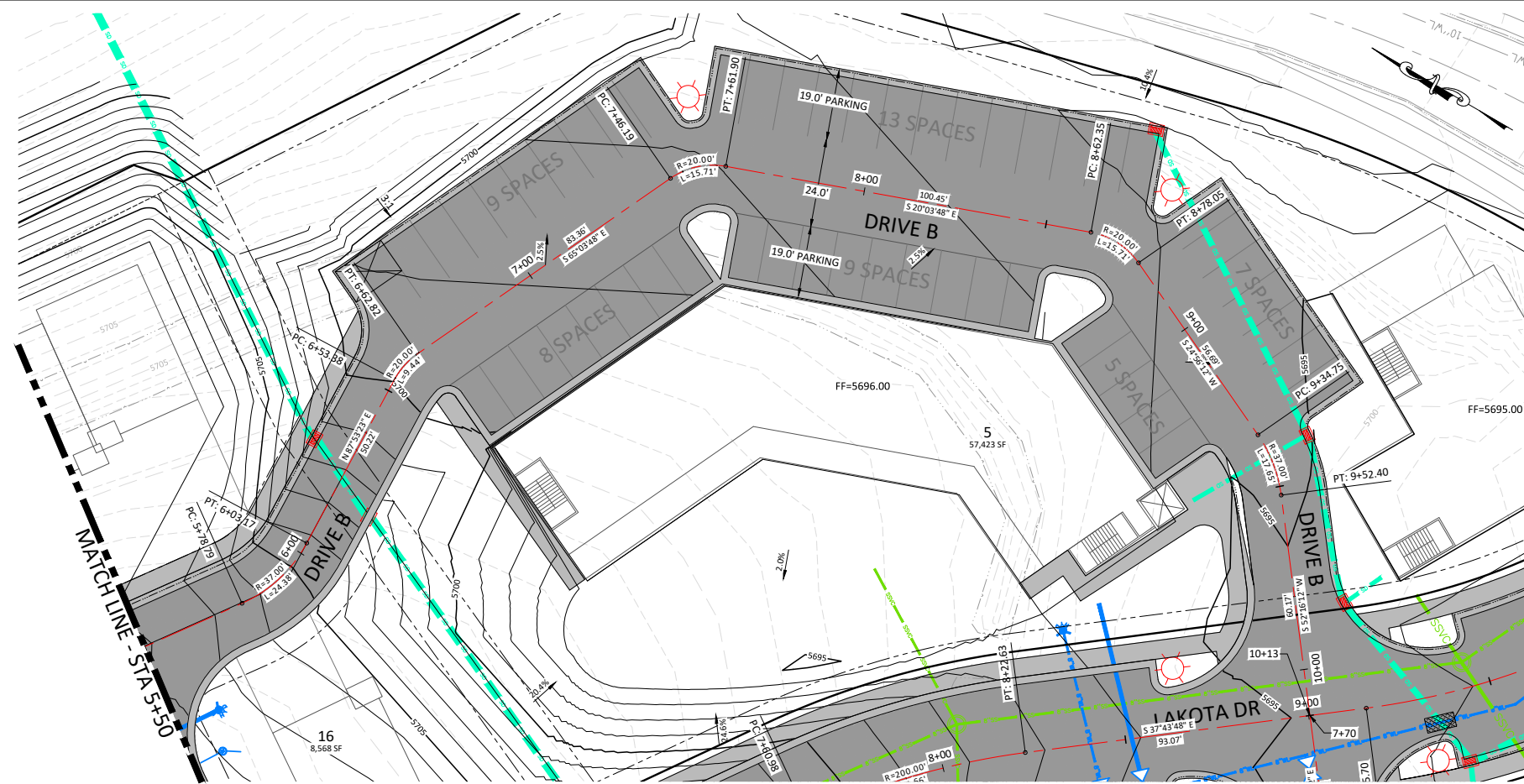


Sheet Name: DRIVE B PLAN & PROFILE
 STA: 0+00 TO 5+50

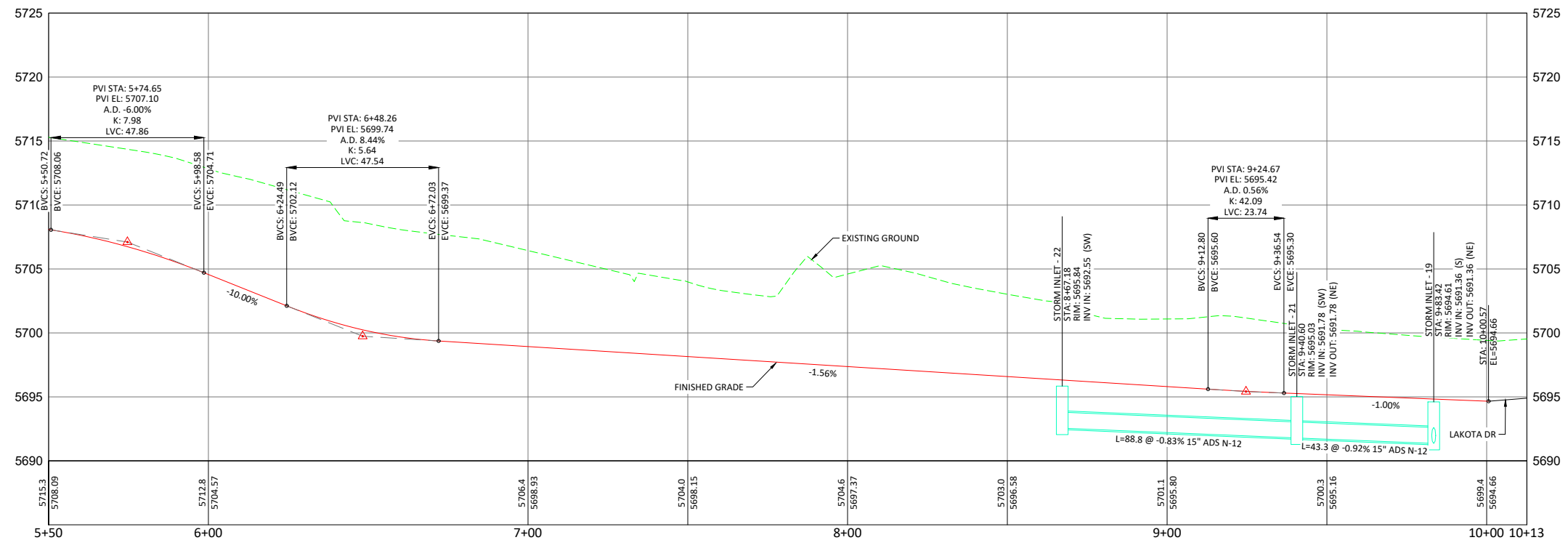
Sheet Number: 14

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN



DRIVE B PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

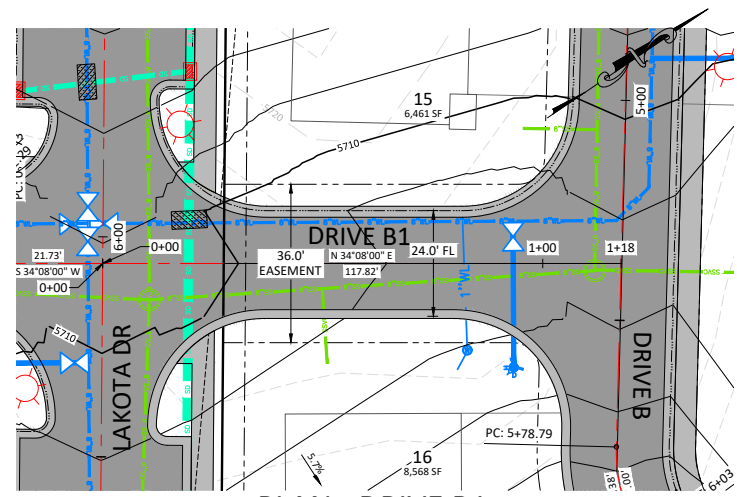


Sheet Name: DRIVE B PLAN & PROFILE
STA: 5+50 TO 10+00

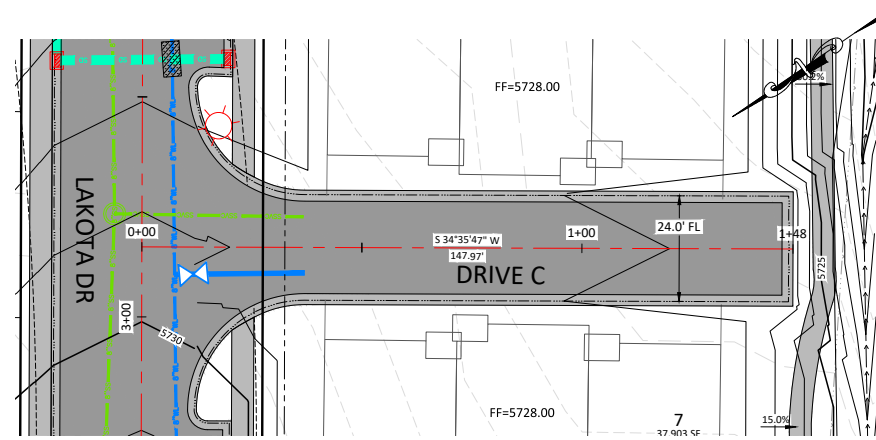
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THE LONGVIEW AT LAKOTA CANYON RANCH

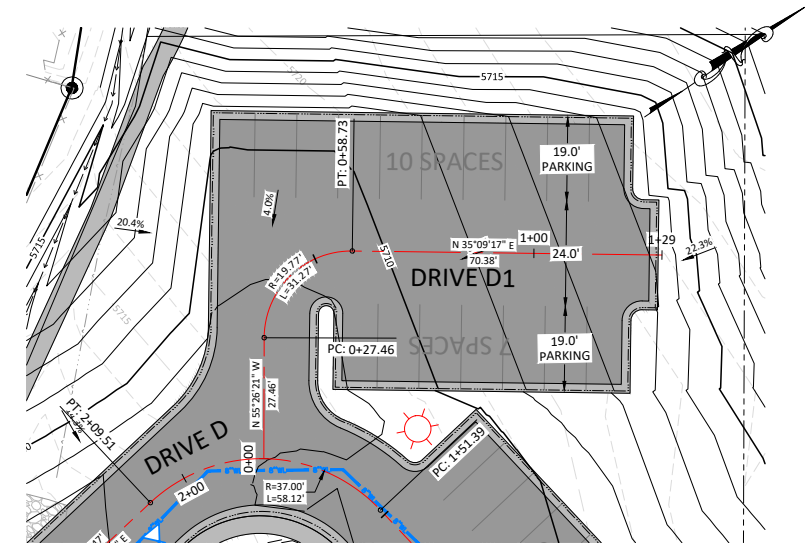
Client:
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Basalt, CO 81621



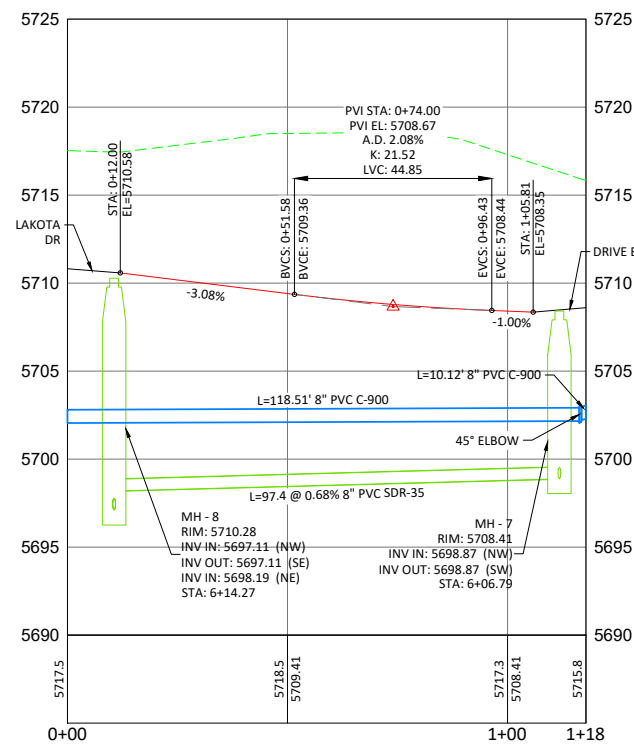
PLAN - DRIVE B1



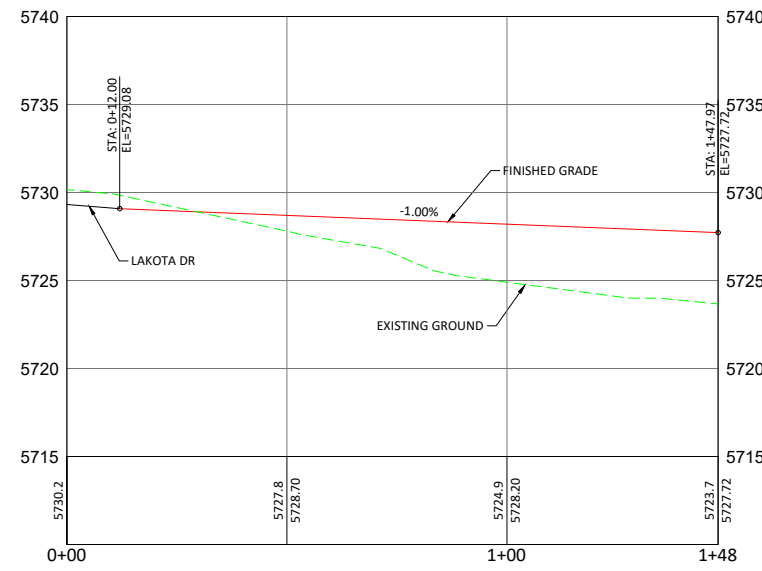
PLAN - DRIVE C



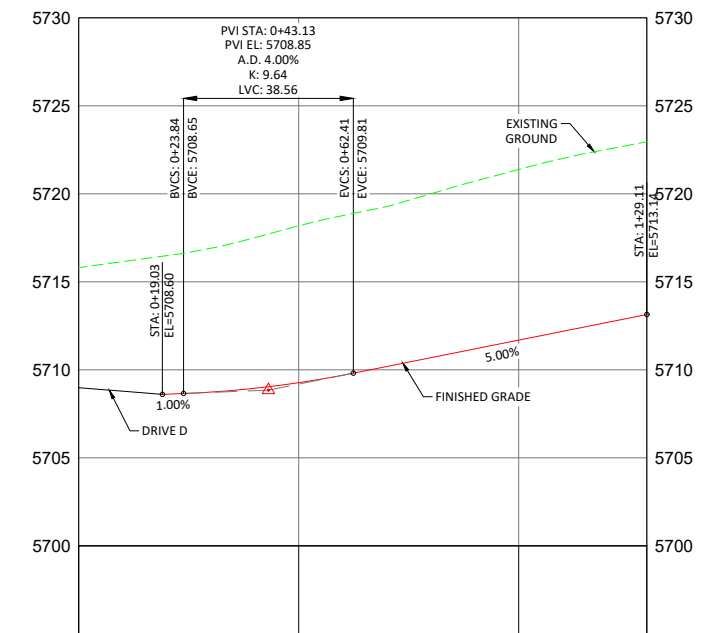
PLAN - DRIVE D1



DRIVE B1 PROFILE
HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



DRIVE C PROFILE
HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



DRIVE D1 PROFILE
HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date:	March 21, 2022
File Name:	CRE Design - Lakota Mixed Use.dwg
Horiz. Scale:	SCALE: 1" = 20'

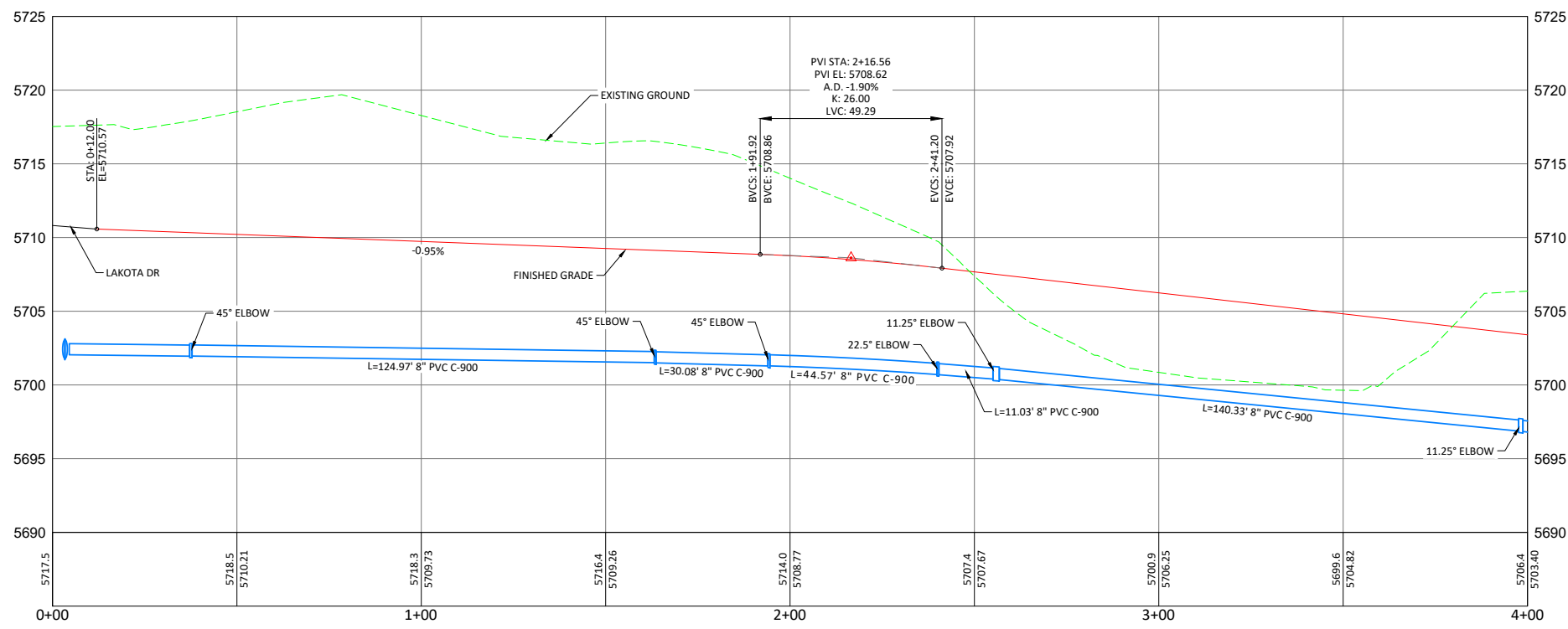
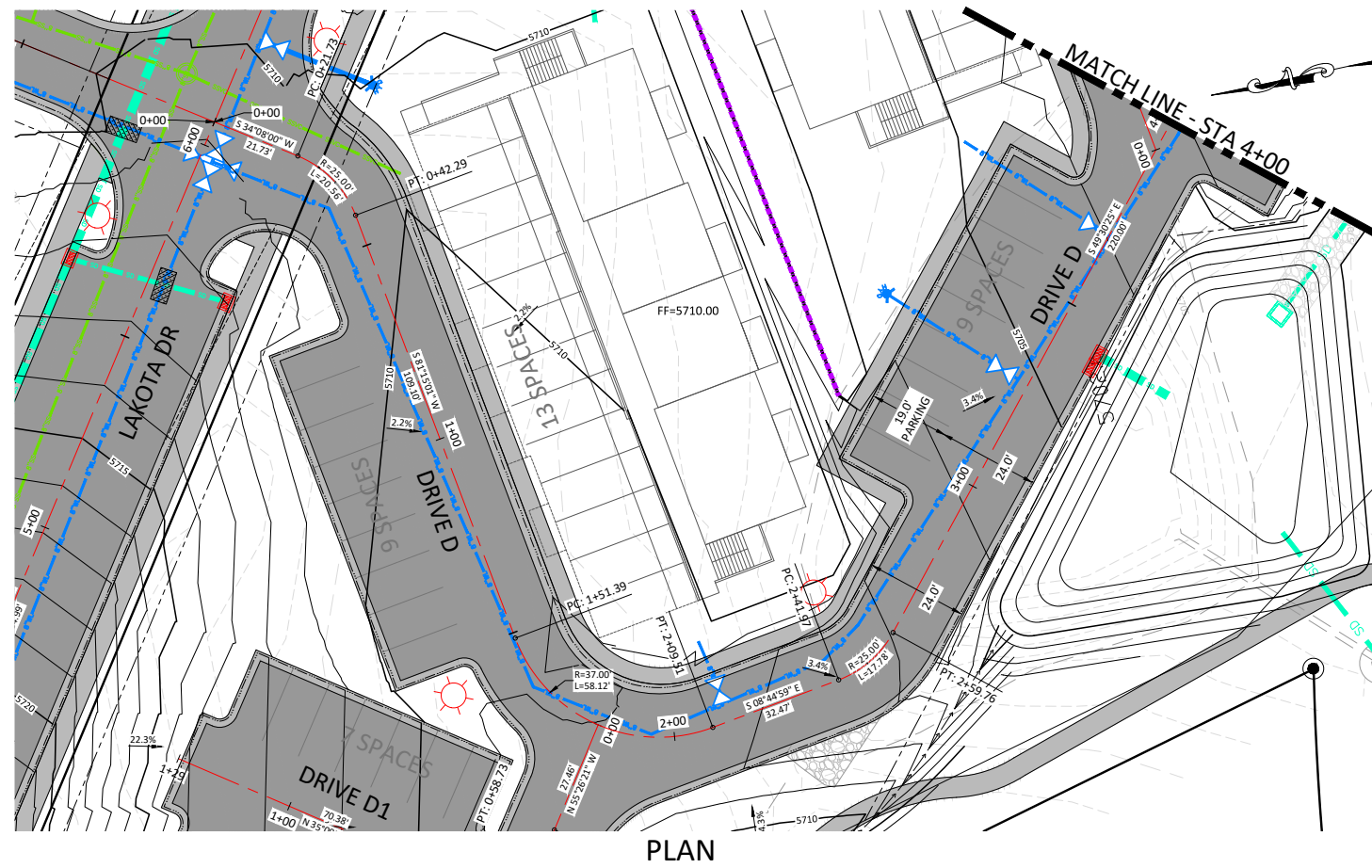
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: DRIVES B1, C AND D
PLAN & PROFILES

Sheet Number: 16

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date:	March 21, 2022
File Name:	CRE Design - Lakota Mixed Use.dwg
Horiz. Scale:	SCALE: 1" = 20'

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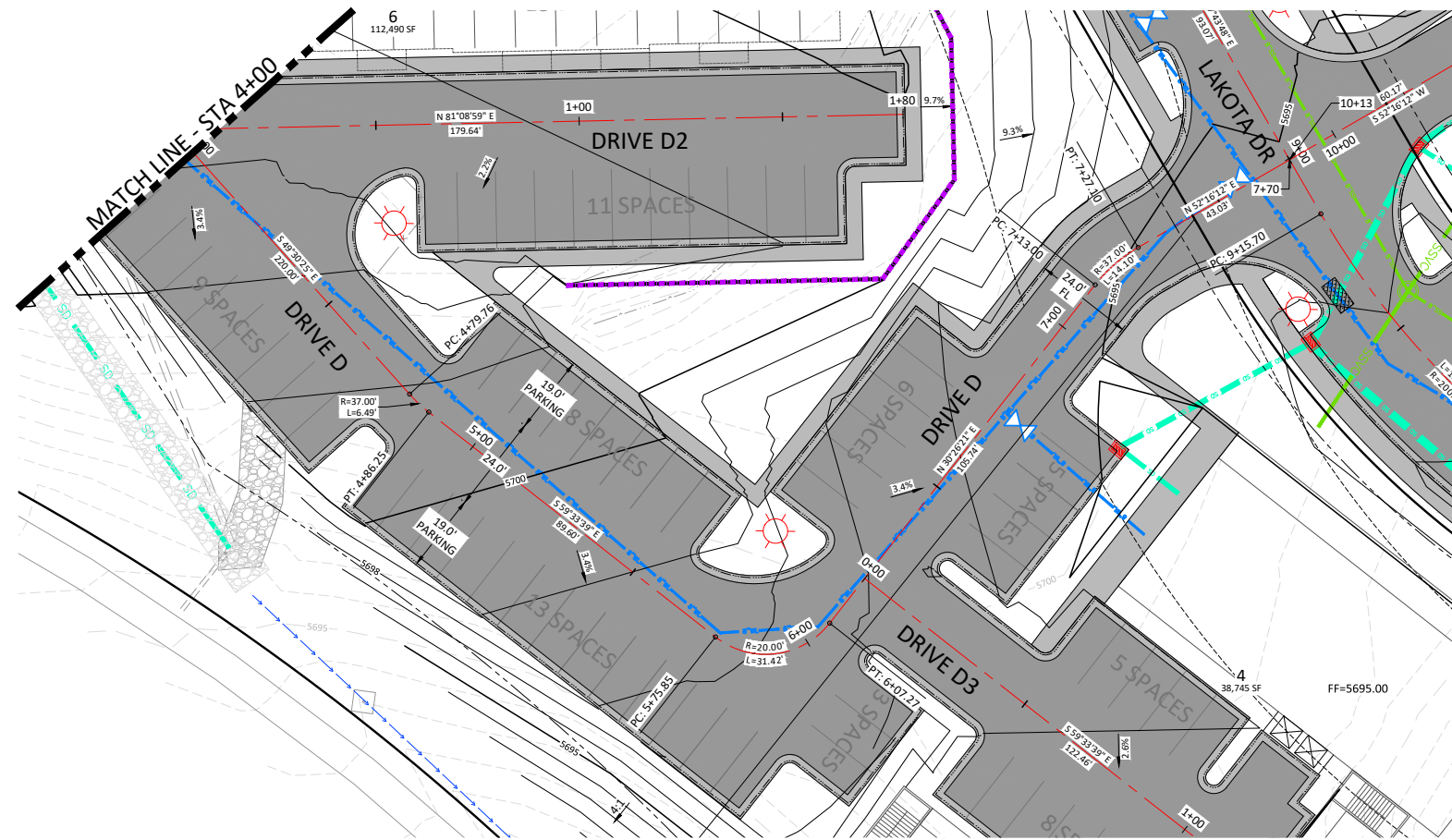
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Date:	Comments:	Drawn by:	Checked by:

Sheet Name: DRIVE D PLAN & PROFILE
STA: 0+00 TO 4+00

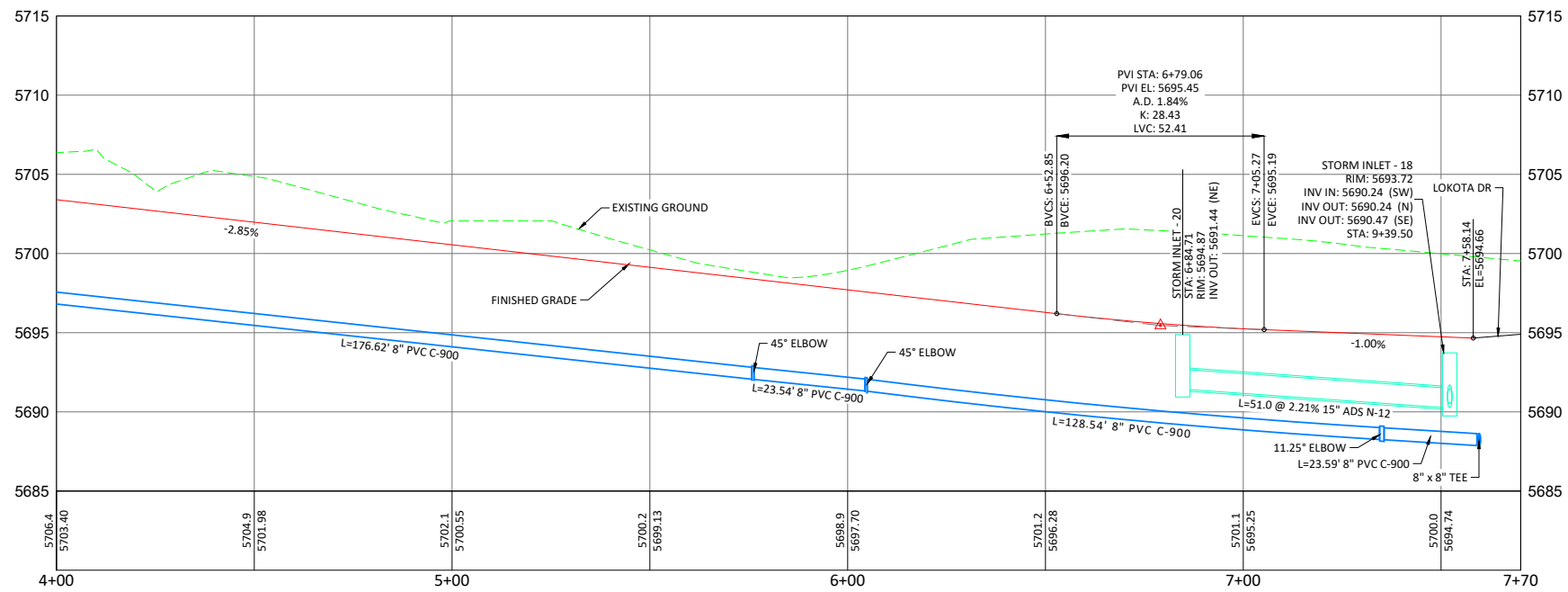
Sheet Number: 17

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PLAN



DRIVE D PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

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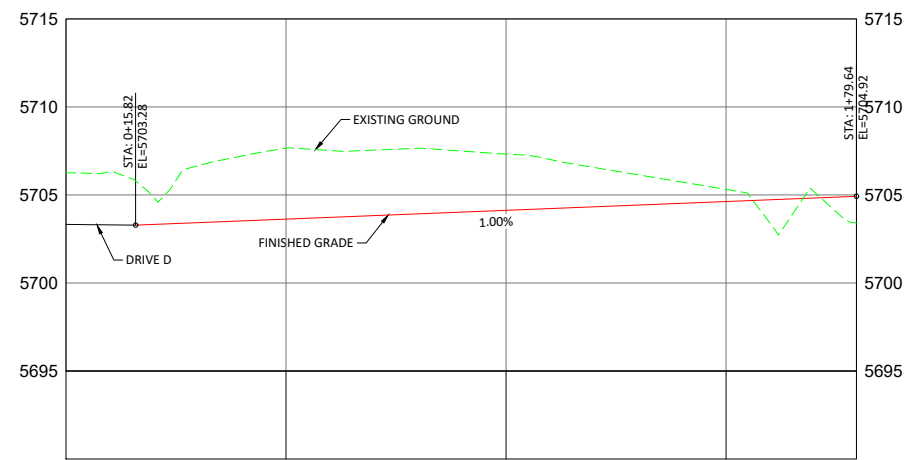
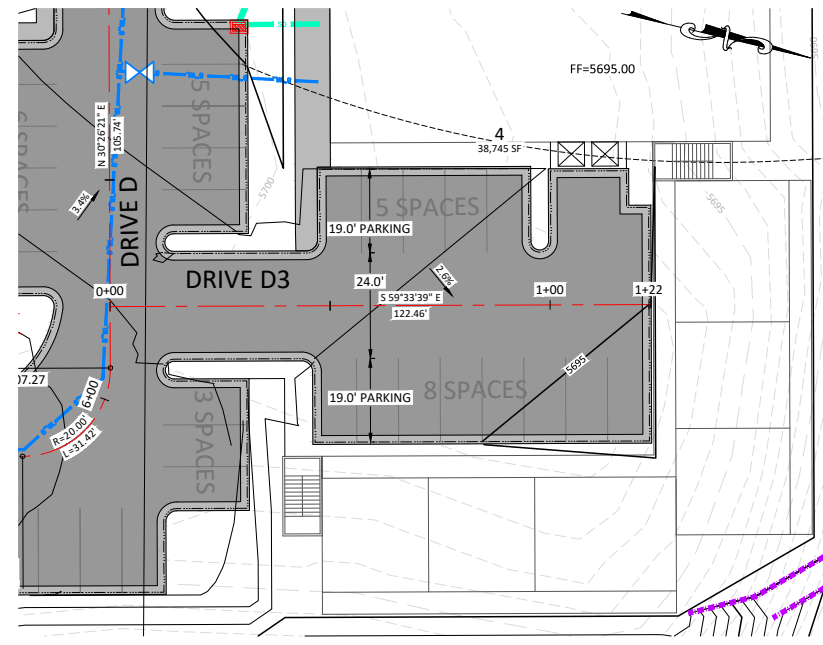
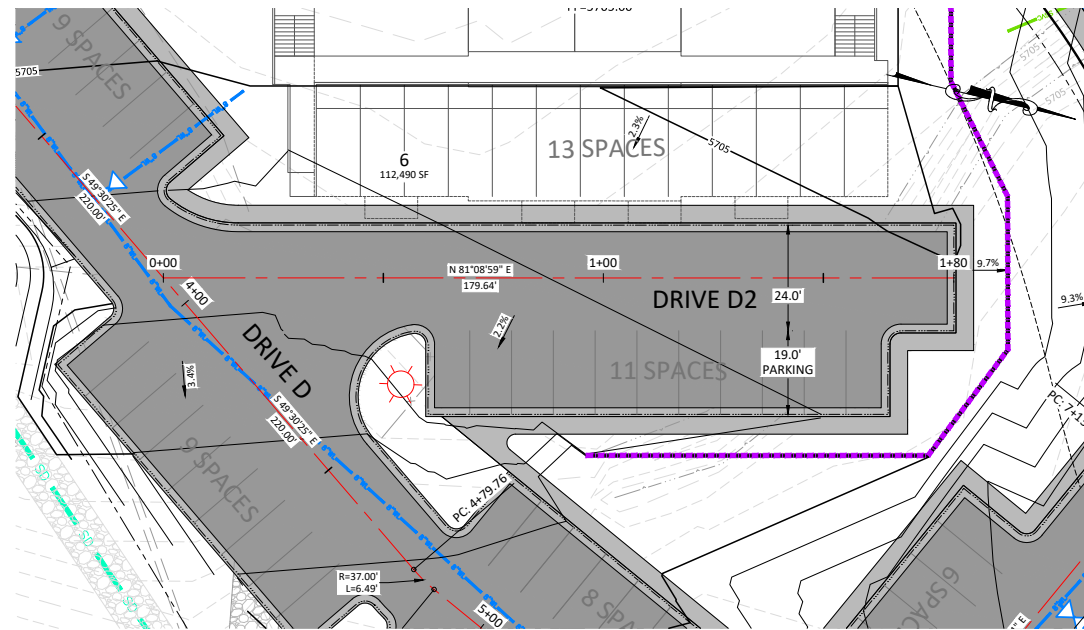
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: DRIVE D PLAN & PROFILE
 STA: 5+50 TO 7+70

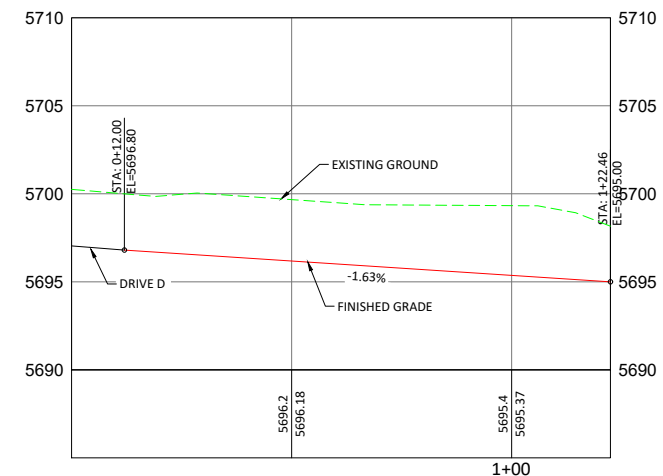
Sheet Number: 18

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



DRIVE D2 PROFILE
 HORIZ. SCALE: 1" = 20'
 VERT. SCALE: 1" = 5'



DRIVE D3 PROFILE
 HORIZ. SCALE: 1" = 20'
 VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

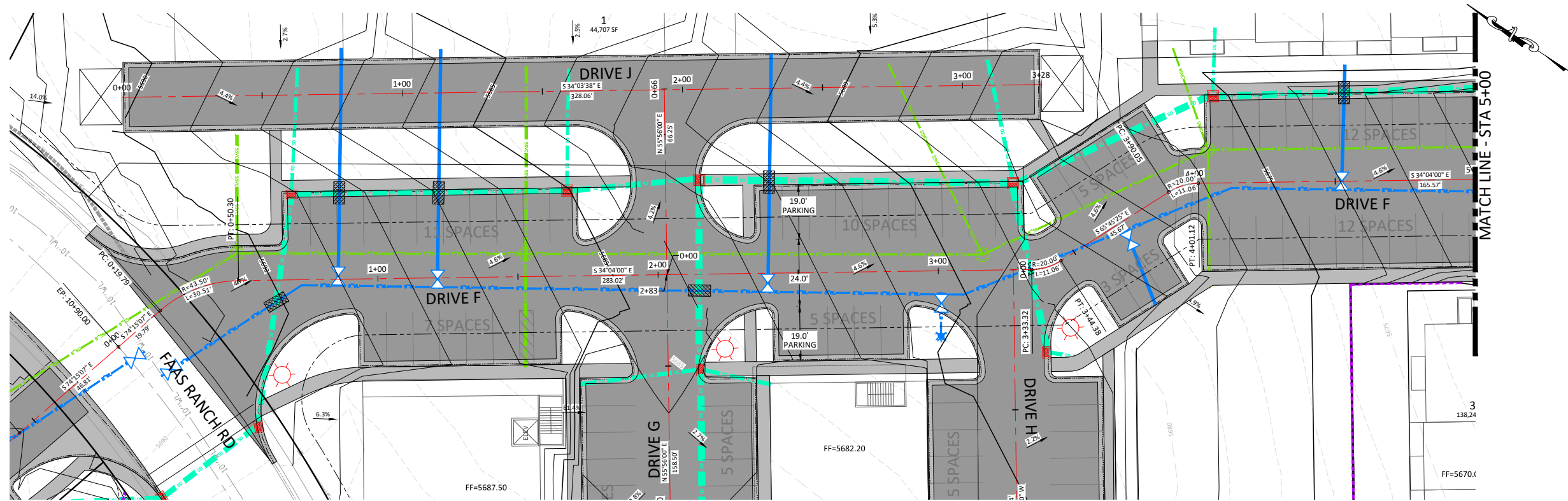
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale:
 These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

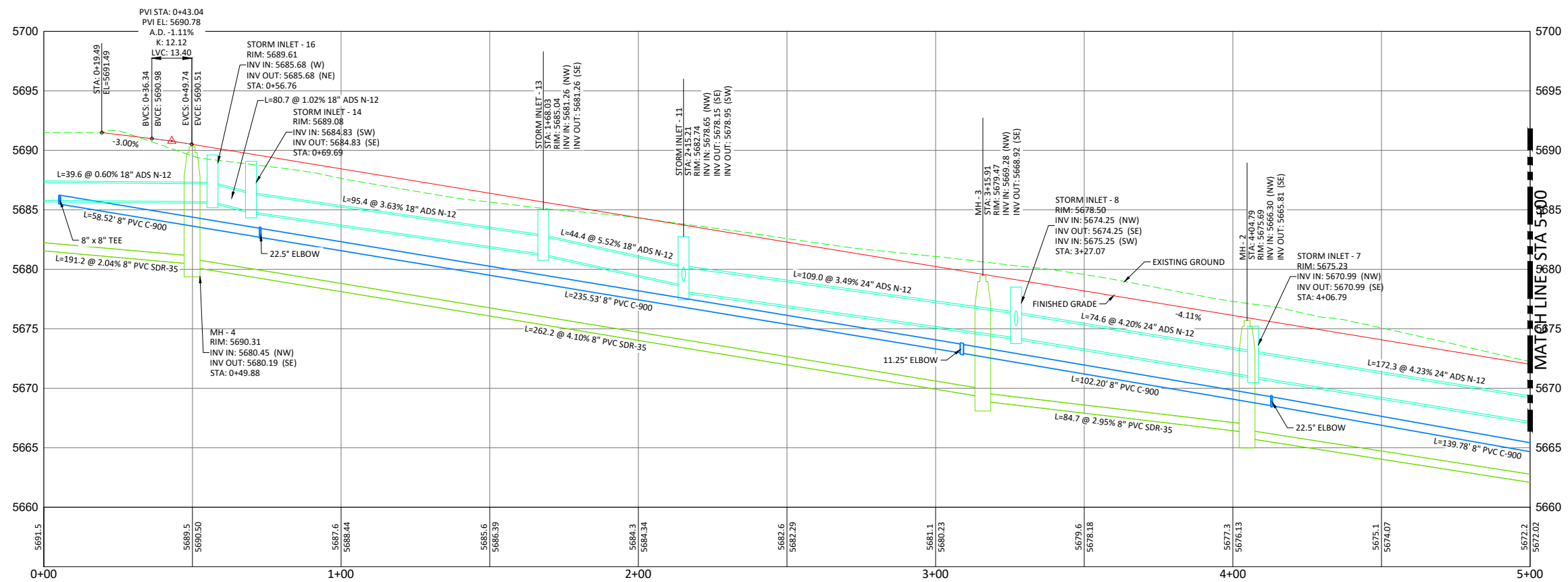


Sheet Name: DRIVES D2 AND D3
 PLAN & PROFILES
 Sheet Number: 19

THE LONGVIEW AT LAKOTA
 CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN



DRIVE F PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 20'

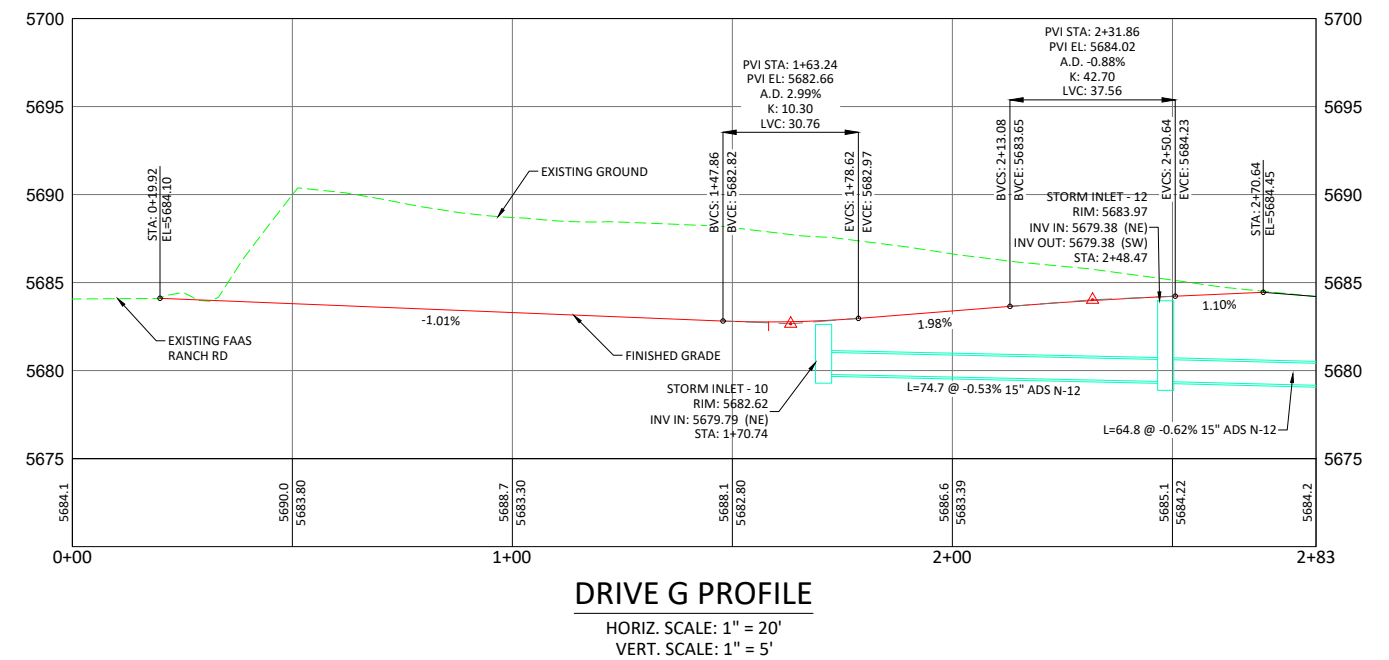
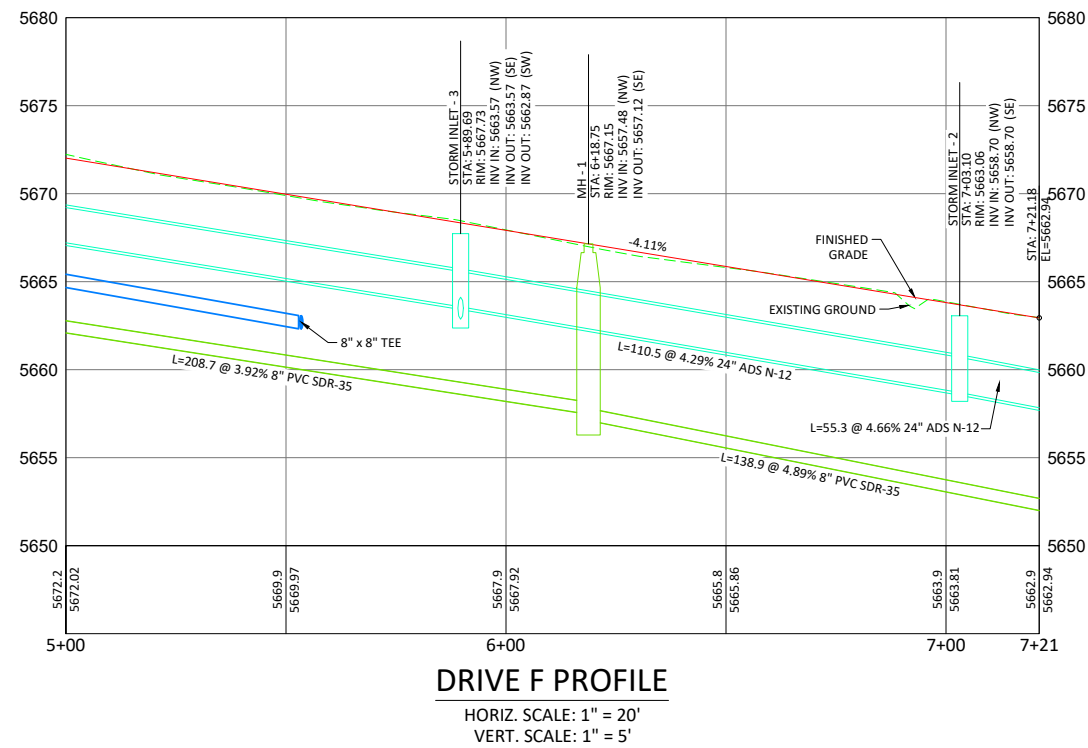
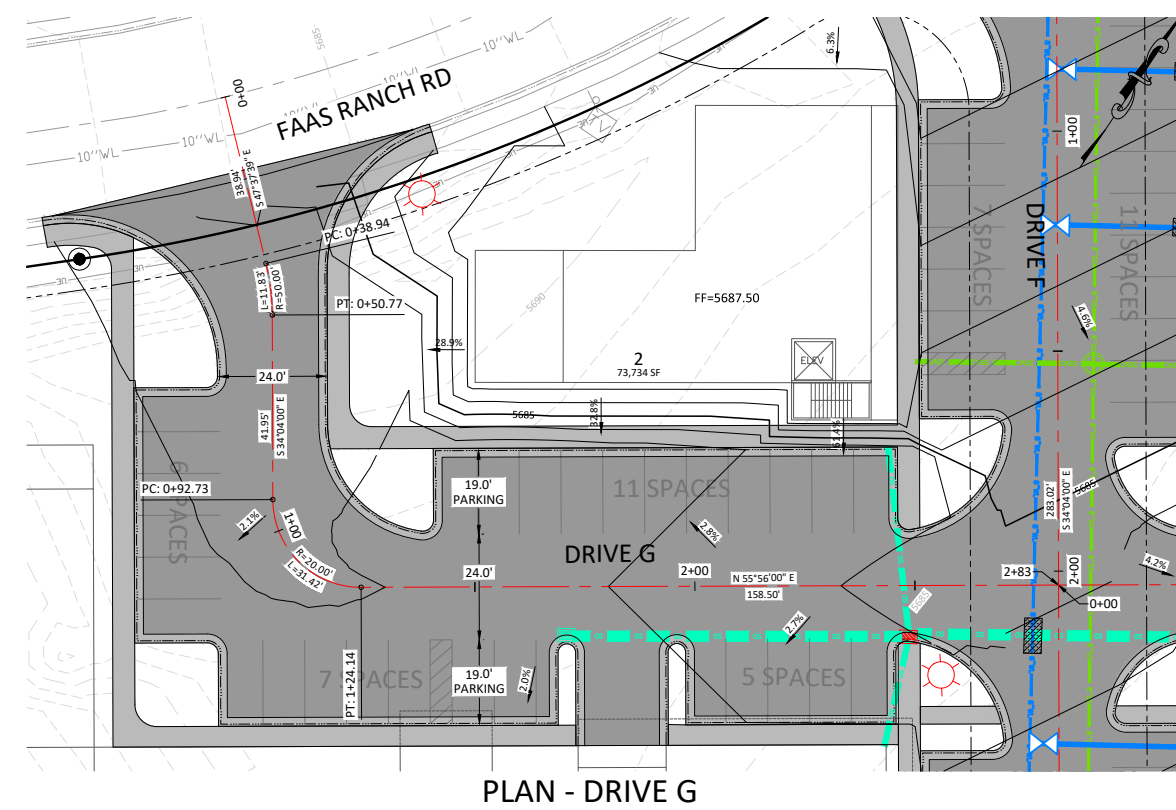
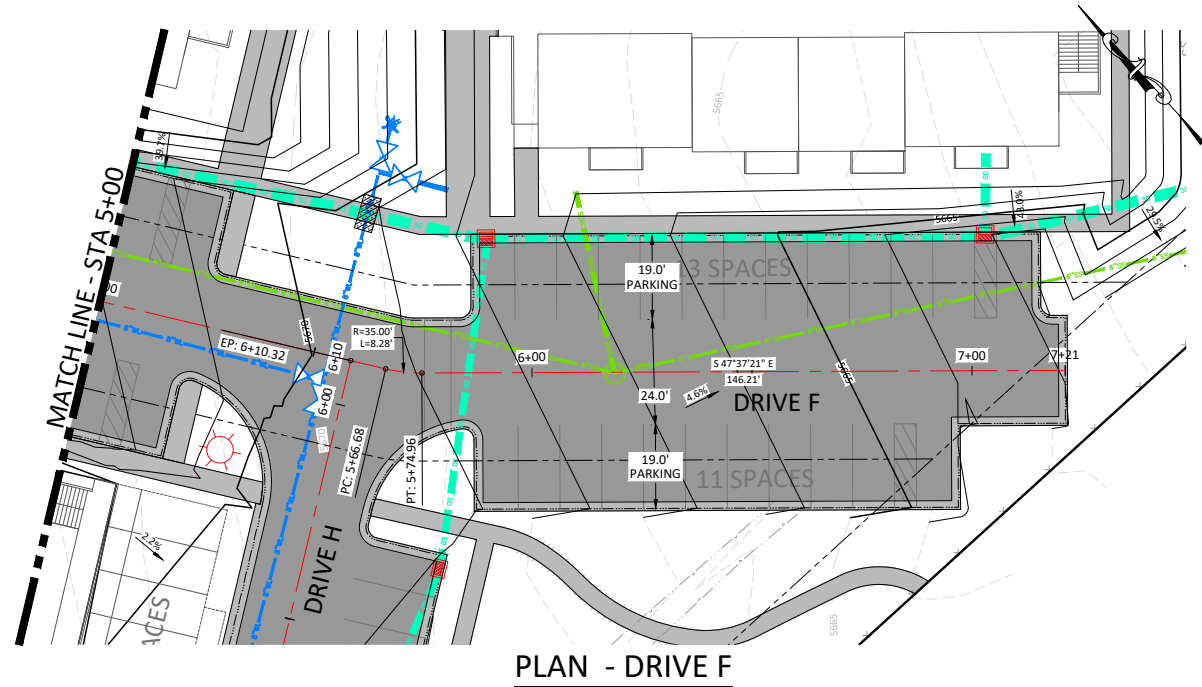
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

connect one DESIGN
COLORADO RIVER ENGINEERING INCORPORATED

Sheet Name: DRIVE F PLAN & PROFILE
STA: 0+00 TO 5+00
Sheet Number: 20

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

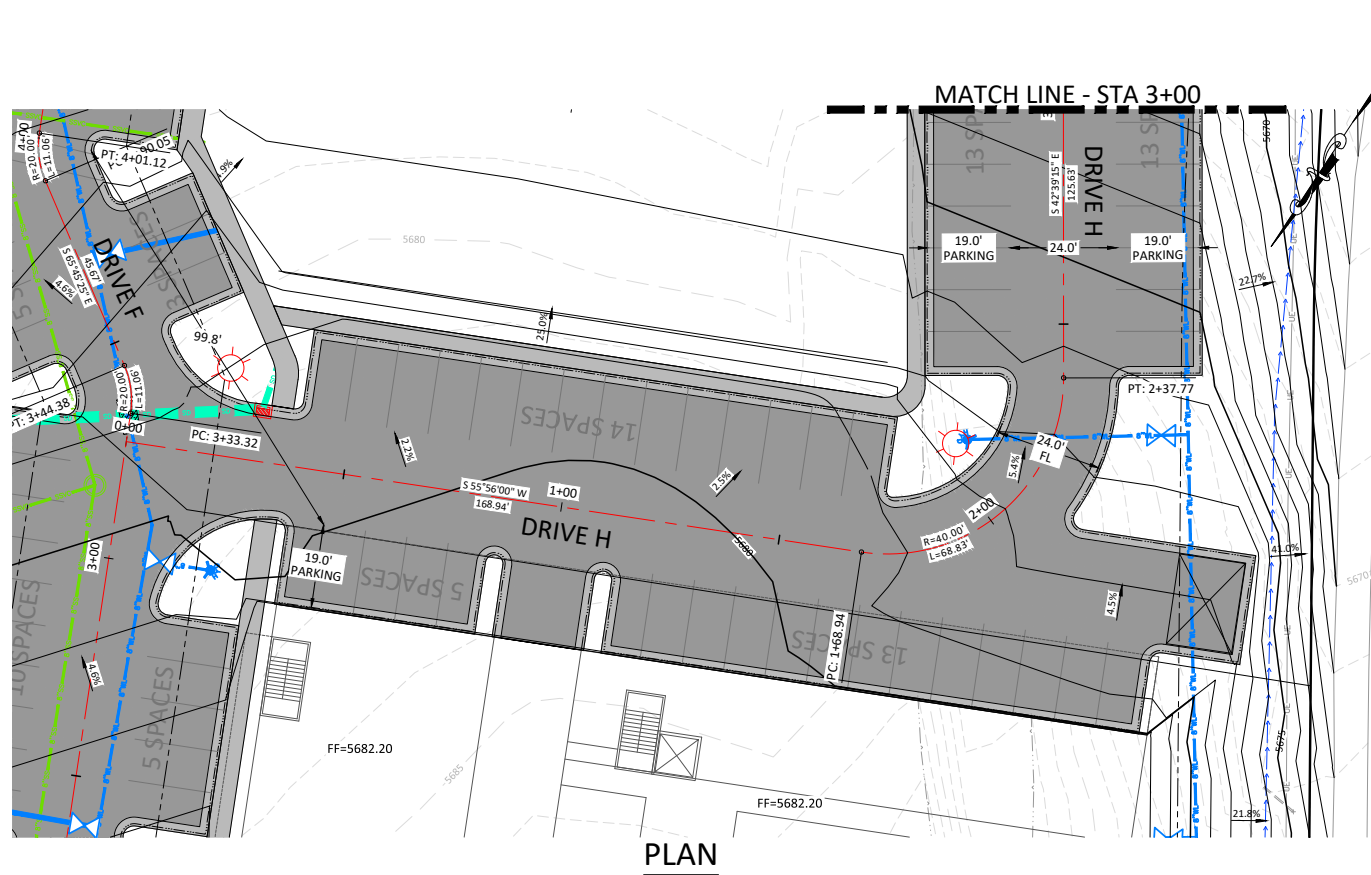
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: DRIVES F STA: 5+00 TO 7+21 AND G PLAN & PROFILES
 Sheet Number: 21

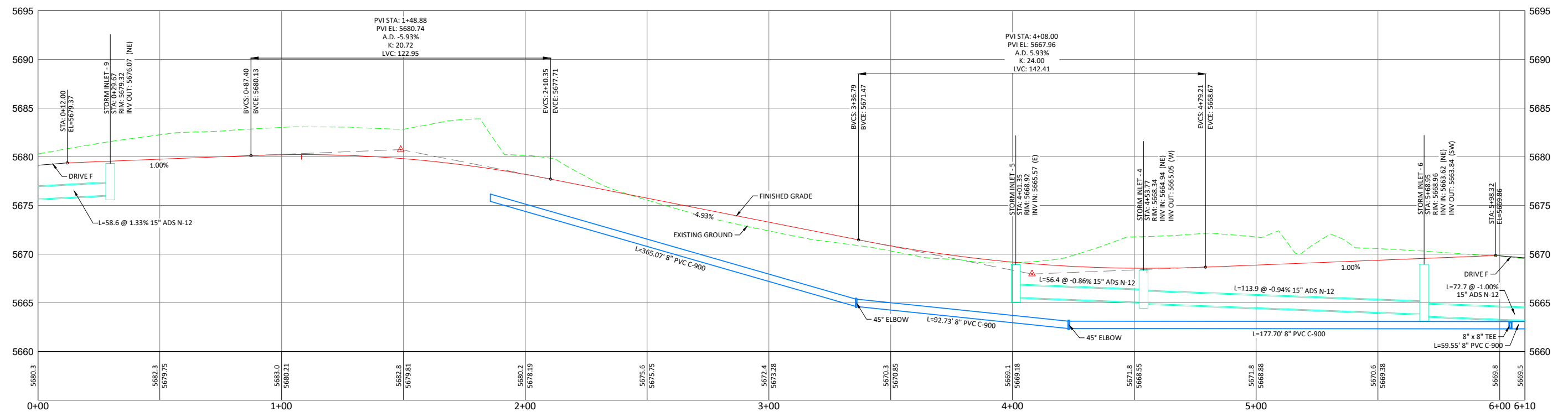
THE LONGVIEW AT LAKOTA CANYON RANCH
 Client: The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN



PLAN



DRIVE H PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

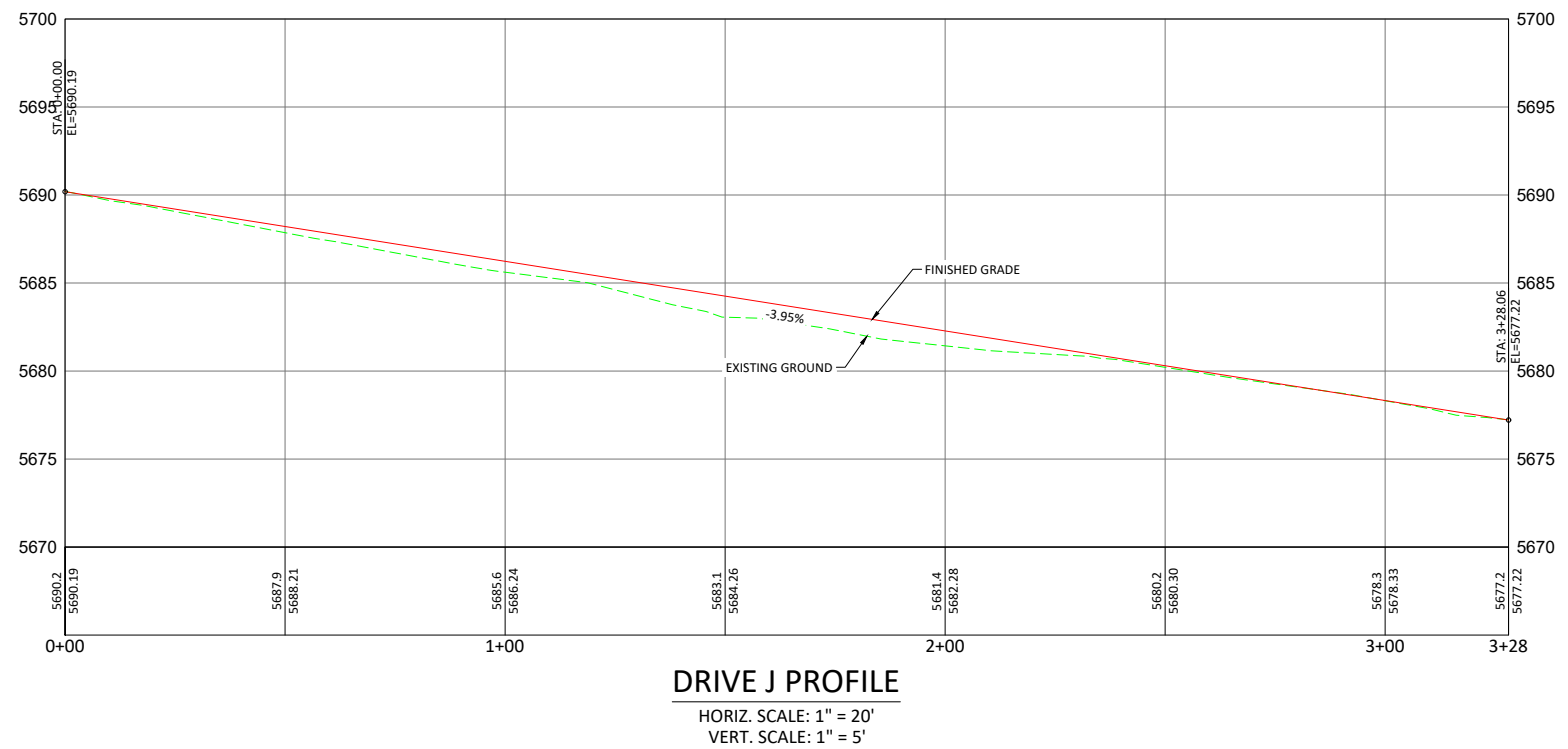
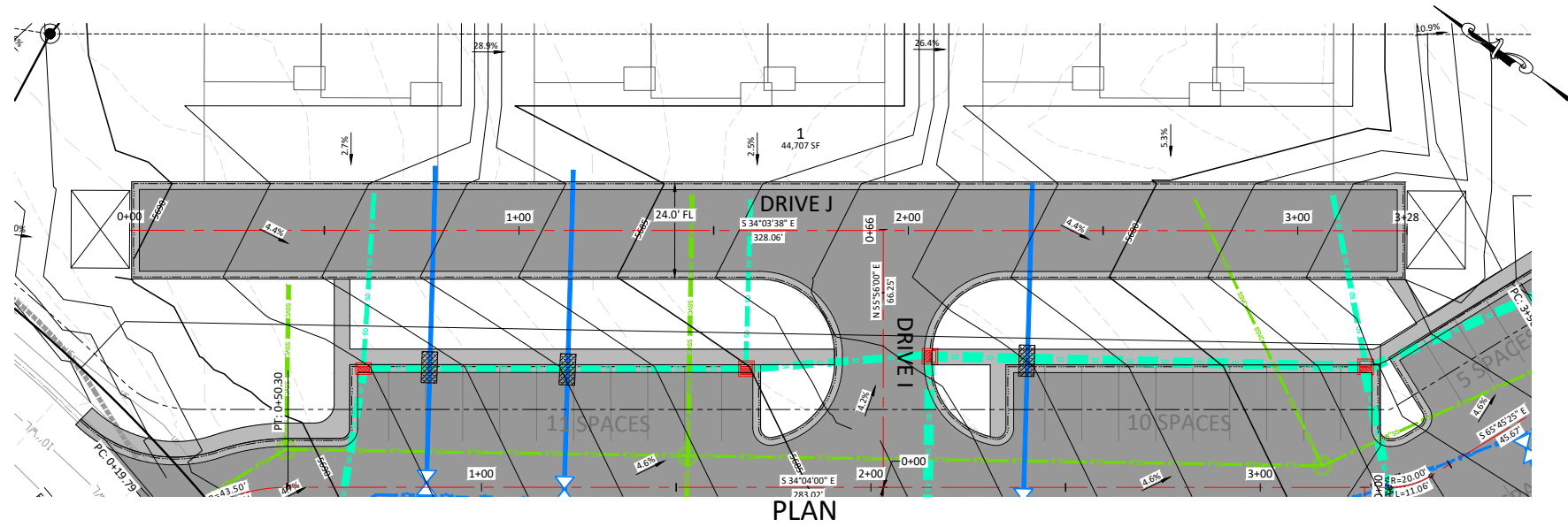
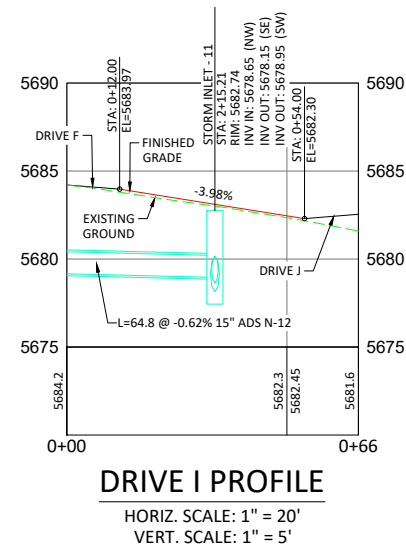
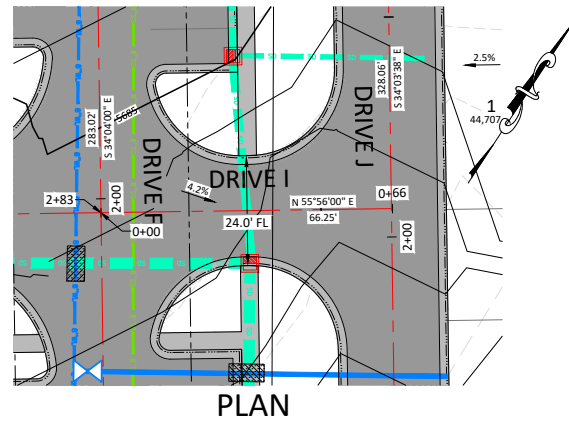
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: DRIVE H PLAN & PROFILE
 Sheet Number: 22

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

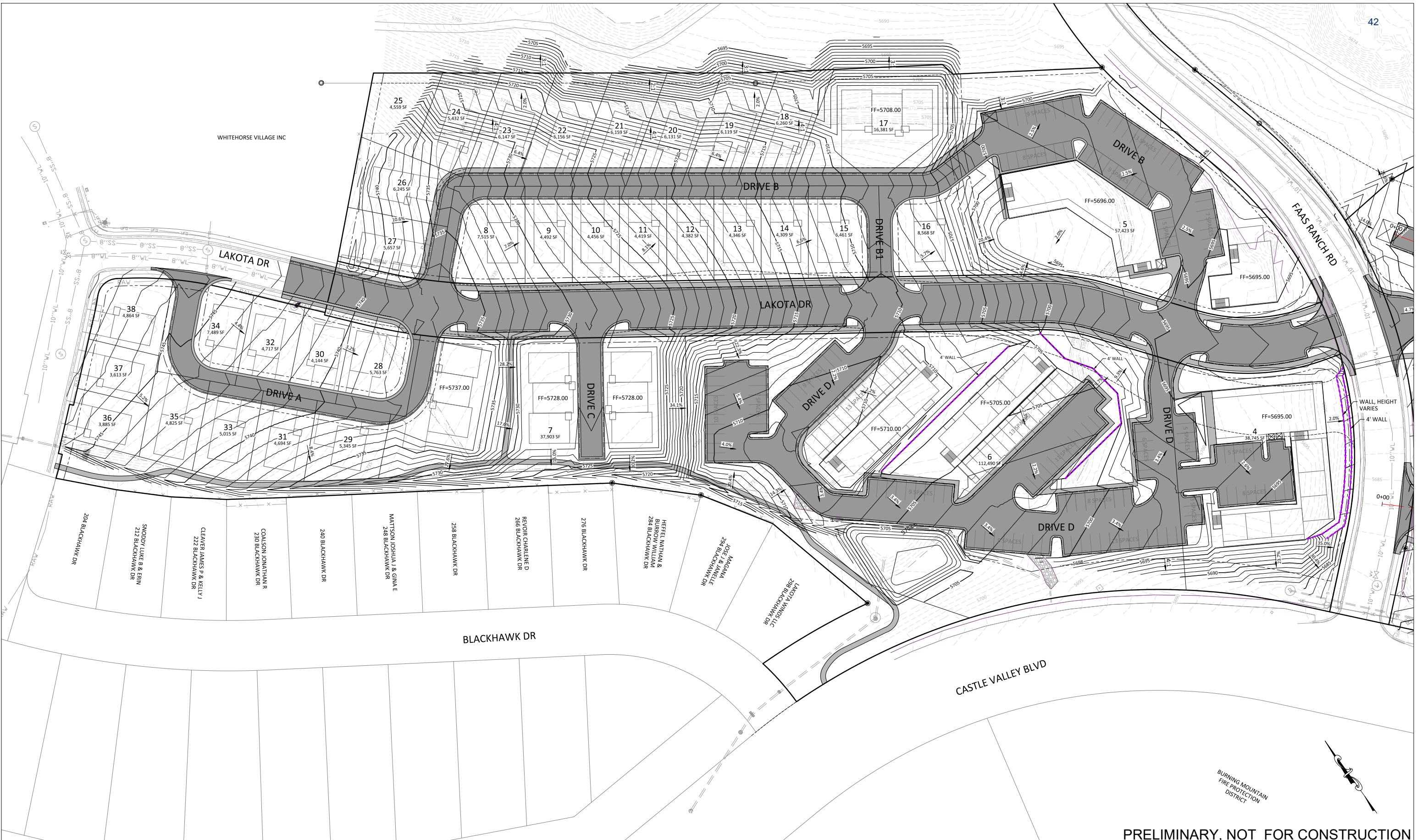
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: DRIVES I AND J
PLAN & PROFILES

Sheet Number: 23

THE LONGVIEW AT LAKOTA
CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

connect one DESIGN
 COLORADO RIVER ENGINEERING INCORPORATED
 ARCHITECTS

Sheet Name: NORTH GRADING PLAN
 Sheet Number: 24

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



SHIBUI CONDOMINIUMS
 BEHRENDT FAMILY LLC
 RICHMOND RONALD A TRUSTEE ET AL

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 30'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

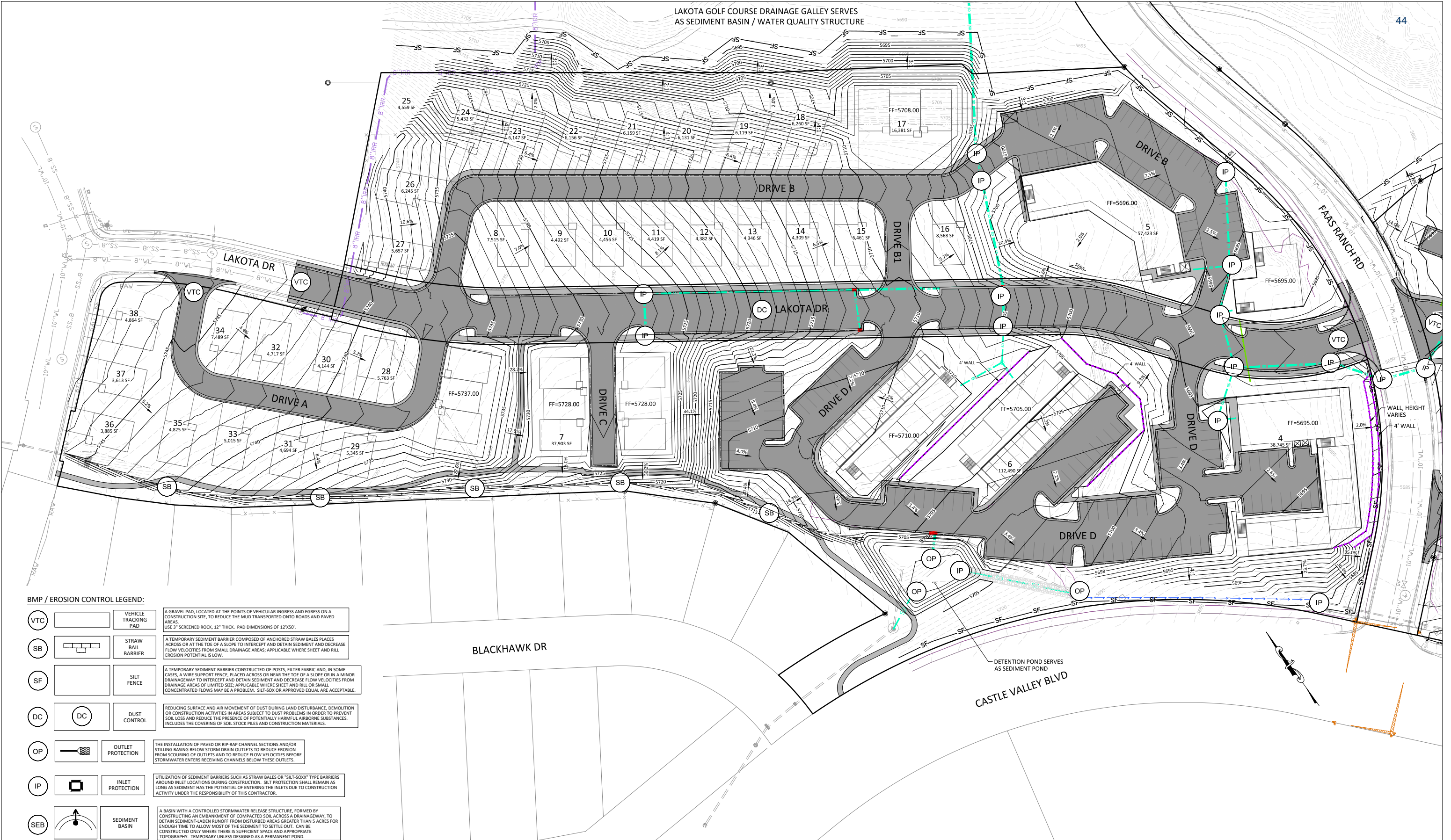
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: SOUTH GRADING PLAN
 Sheet Number: 25

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

LAKOTA GOLF COURSE DRAINAGE GALLEY SERVES AS SEDIMENT BASIN / WATER QUALITY STRUCTURE



BMP / EROSION CONTROL LEGEND:

	VEHICLE TRACKING PAD	A GRAVEL PAD, LOCATED AT THE POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE, TO REDUCE THE MUD TRANSPORTED ONTO ROADS AND PAVED AREAS. USE 3" SCREENED ROCK, 12" THICK. PAD DIMENSIONS OF 12'X50'.
	STRAW BALE BARRIER	A TEMPORARY SEDIMENT BARRIER COMPOSED OF ANCHORED STRAW BALES PLACED ACROSS OR AT THE TOE OF A SLOPE TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM SMALL DRAINAGE AREAS; APPLICABLE WHERE SHEET AND RILL EROSION POTENTIAL IS LOW.
	SILT FENCE	A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS, FILTER FABRIC AND, IN SOME CASES, A WIRE SUPPORT FENCE, PLACED ACROSS OR NEAR THE TOE OF A SLOPE OR IN A MINOR DRAINAGEWAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE; APPLICABLE WHERE SHEET AND RILL OR SMALL CONCENTRATED FLOWS MAY BE A PROBLEM. SILT-SOX OR APPROVED EQUAL ARE ACCEPTABLE.
	DUST CONTROL	REDUCING SURFACE AND AIR MOVEMENT OF DUST DURING LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES IN AREAS SUBJECT TO DUST PROBLEMS IN ORDER TO PREVENT SOIL LOSS AND REDUCE THE PRESENCE OF POTENTIALLY HARMFUL AIRBORNE SUBSTANCES. INCLUDES THE COVERING OF SOIL STOCK PILES AND CONSTRUCTION MATERIALS.
	OUTLET PROTECTION	THE INSTALLATION OF PAVED OR RIP-RAP CHANNEL SECTIONS AND/OR STILLING BASING BELOW STORM DRAIN OUTLETS TO REDUCE EROSION FROM SCOURING OF OUTLETS AND TO REDUCE FLOW VELOCITIES BEFORE STORMWATER ENTERS RECEIVING CHANNELS BELOW THESE OUTLETS.
	INLET PROTECTION	UTILIZATION OF SEDIMENT BARRIERS SUCH AS STRAW BALES OR "SILT-SOX" TYPE BARRIERS AROUND INLET LOCATIONS DURING CONSTRUCTION. SILT PROTECTION SHALL REMAIN AS LONG AS SEDIMENT HAS THE POTENTIAL OF ENTERING THE INLETS DUE TO CONSTRUCTION ACTIVITY UNDER THE RESPONSIBILITY OF THIS CONTRACTOR.
	SEDIMENT BASIN	A BASIN WITH A CONTROLLED STORMWATER RELEASE STRUCTURE, FORMED BY CONSTRUCTING AN EMBANKMENT OF COMPACTED SOIL ACROSS A DRAINAGEWAY, TO DETAIN SEDIMENT-LADEN RUNOFF FROM DISTURBED AREAS GREATER THAN 5 ACRES FOR ENOUGH TIME TO ALLOW MOST OF THE SEDIMENT TO SETTLE OUT. CAN BE CONSTRUCTED ONLY WHERE THERE IS SUFFICIENT SPACE AND APPROPRIATE TOPOGRAPHY. TEMPORARY UNLESS DESIGNED AS A PERMANENT POND.

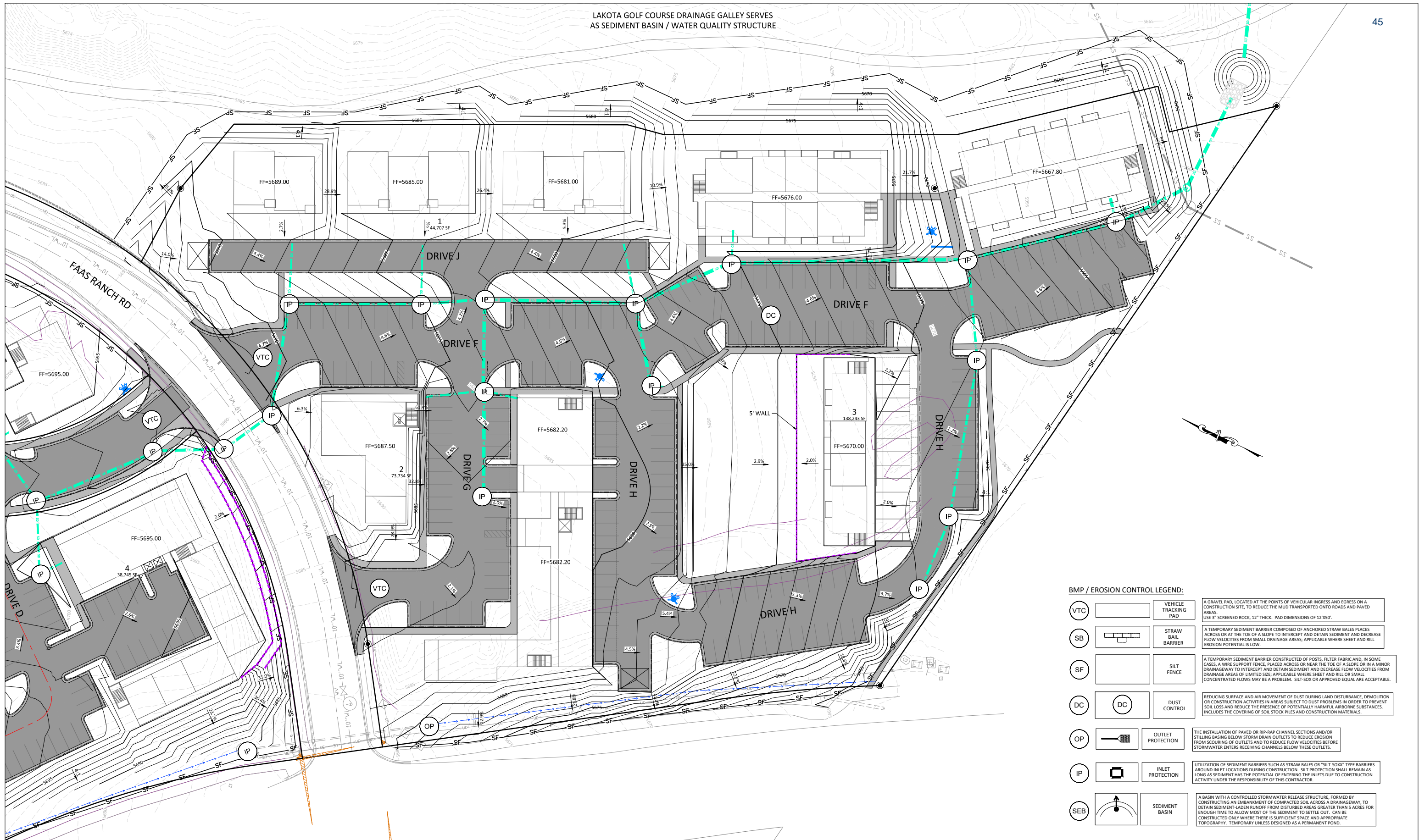
PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: NORTH EROSION CONTROL PLAN
 Sheet Number: 26

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



BMP / EROSION CONTROL LEGEND:

	VTC	VEHICLE TRACKING PAD	A GRAVEL PAD, LOCATED AT THE POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE, TO REDUCE THE MUD TRANSPORTED ONTO ROADS AND PAVED AREAS. USE 3" SCREENED ROCK, 12" THICK. PAD DIMENSIONS OF 12'X50'.
	SB	STRAW BAIT BARRIER	A TEMPORARY SEDIMENT BARRIER COMPOSED OF ANCHORED STRAW BALES PLACED ACROSS OR AT THE TOE OF A SLOPE TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM SMALL DRAINAGE AREAS; APPLICABLE WHERE SHEET AND RILL EROSION POTENTIAL IS LOW.
	SF	SILT FENCE	A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS, FILTER FABRIC AND, IN SOME CASES, A WIRE SUPPORT FENCE, PLACED ACROSS OR NEAR THE TOE OF A SLOPE OR IN A MINOR DRAINAGEWAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE; APPLICABLE WHERE SHEET AND RILL OR SMALL CONCENTRATED FLOWS MAY BE A PROBLEM. SILT-SOX OR APPROVED EQUAL ARE ACCEPTABLE.
	DC	DUST CONTROL	REDUCING SURFACE AND AIR MOVEMENT OF DUST DURING LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES IN AREAS SUBJECT TO DUST PROBLEMS IN ORDER TO PREVENT SOIL LOSS AND REDUCE THE PRESENCE OF POTENTIALLY HARMFUL AIRBORNE SUBSTANCES. INCLUDES THE COVERING OF SOIL STOCK PILES AND CONSTRUCTION MATERIALS.
	OP	OUTLET PROTECTION	THE INSTALLATION OF PAVED OR RIP-RAP CHANNEL SECTIONS AND/OR STILLING BASING BELOW STORM DRAIN OUTLETS TO REDUCE EROSION FROM SCOURING OF OUTLETS AND TO REDUCE FLOW VELOCITIES BEFORE STORMWATER ENTERS RECEIVING CHANNELS BELOW THESE OUTLETS.
	IP	INLET PROTECTION	UTILIZATION OF SEDIMENT BARRIERS SUCH AS STRAW BALES OR "SILT-SOX" TYPE BARRIERS AROUND INLET LOCATIONS DURING CONSTRUCTION. SILT PROTECTION SHALL REMAIN AS LONG AS SEDIMENT HAS THE POTENTIAL OF ENTERING THE INLETS DUE TO CONSTRUCTION ACTIVITY UNDER THE RESPONSIBILITY OF THIS CONTRACTOR.
	SEB	SEDIMENT BASIN	A BASIN WITH A CONTROLLED STORMWATER RELEASE STRUCTURE, FORMED BY CONSTRUCTING AN EMBANKMENT OF COMPACTED SOIL ACROSS A DRAINAGEWAY, TO DETAIN SEDIMENT-LOADED RUNOFF FROM DISTURBED AREAS GREATER THAN 5 ACRES FOR ENOUGH TIME TO ALLOW MOST OF THE SEDIMENT TO SETTLE OUT. CAN BE CONSTRUCTED ONLY WHERE THERE IS SUFFICIENT SPACE AND APPROPRIATE TOPOGRAPHY. TEMPORARY UNLESS DESIGNED AS A PERMANENT POND.

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

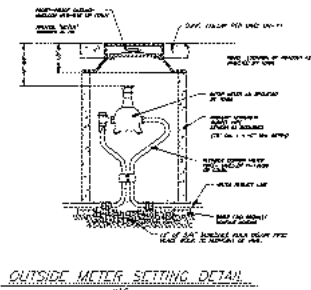
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

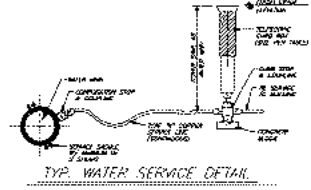


Sheet Name: SOUTH EROSION CONTROL PLAN
 Sheet Number: 27

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

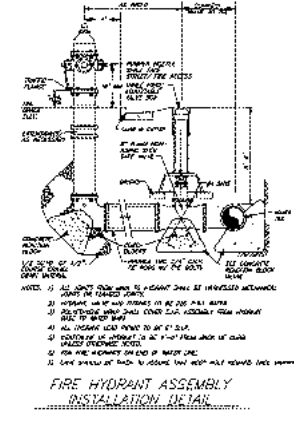


OUTSIDE METER SETTING DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-70



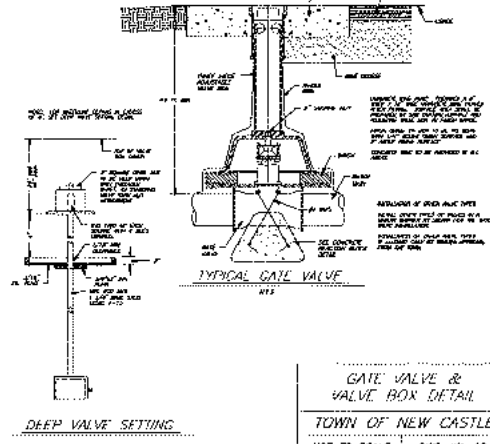
TYP. WATER SERVICE DETAIL
MODIFIED
WATER SERVICE INSTALLATION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-70

Note: May use continuous 1" diameter PURE-CORE instead of copper for water service. Bed with 3/8" screened gravel. Install tracer wire. SS INSERTS required at all fittings. See Water Main Trench Detail for bedding and cover requirements.

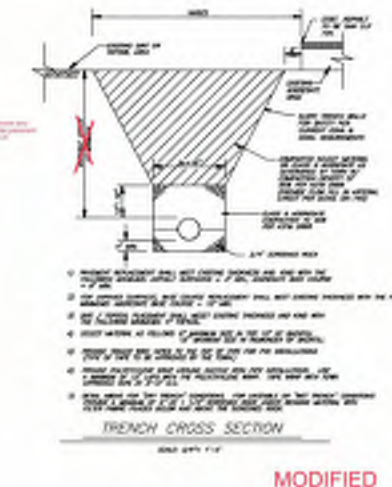


FIRE HYDRANT ASSEMBLY INSTALLATION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-20

Note: Below grade concrete min. compressive strength 3000 psi. Minimum clearance between valve and trench bottom is 4".



TYPICAL GATE VALVE
GATE VALVE & VALVE BOX DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-10



TRENCH CROSS SECTION
MODIFIED
STANDARD WATER MAIN TRENCH SECTION
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-40

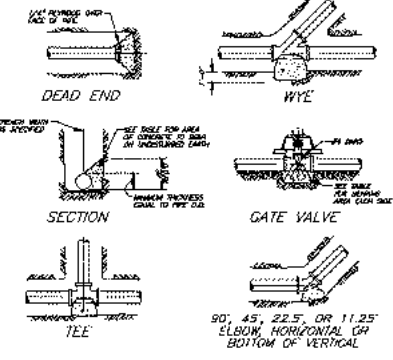
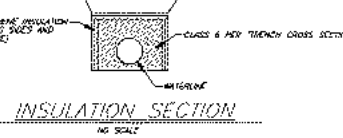
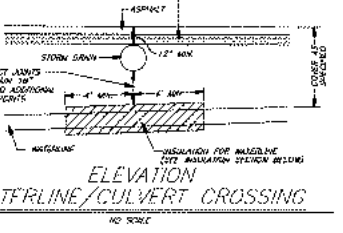


Table with columns for size (inches), gate valves, and elbows. Rows include 8, 10, 12, 14, 16, 18 inch sizes.

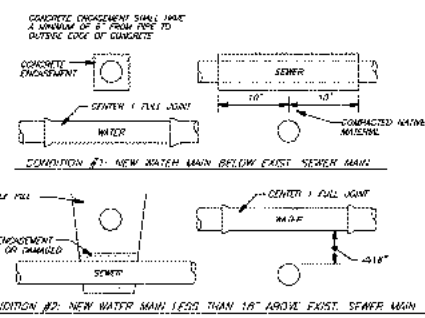
NOTE: OTHER TABLES MAY APPLY WITH VARYING STRENGTHS OF PIPE AND JOINTS. SEE TOWN OF NEW CASTLE SPECIFICATIONS FOR PIPE AND JOINTS. ALL CONNECTIONS SHALL BE APPROVED BY THE TOWN ENGINEER.

TABLE OF BEARING AREAS IN SQ. FT.
TYP. CONCRETE REACTION BLOCK DETAILS



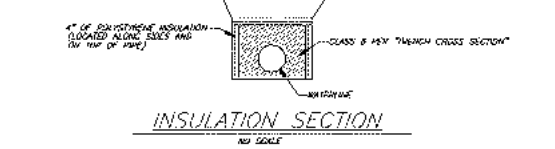
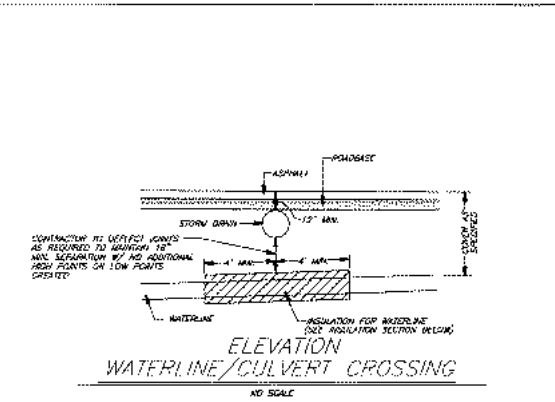
ELEVATION WATERLINE/CULVERT CROSSING
INSULATION SECTION
WATERLINE INSULATION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-80

NOTE: AS SHOWN THE INSULATION DETAIL ADDRESSES EXISTING CROSSINGS. PROVIDE THE SAME DETAIL FOR THESE INSTANCES WHERE THE WATERLINE IS INSTALLED WITHIN 5' OF OPEN AIR.



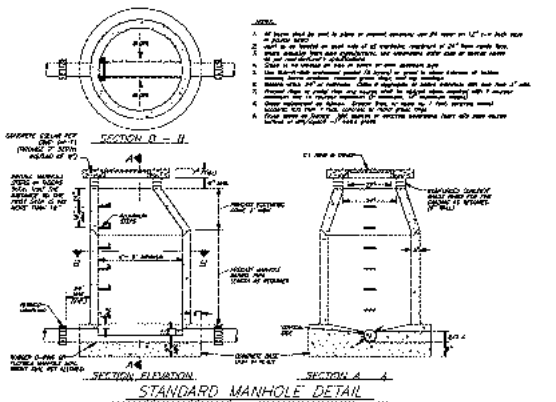
CONDITION #1: NEW WATER MAIN BELOW EXIST. SEWER MAIN
CONDITION #2: NEW WATER MAIN LESS THAN 18" ABOVE EXIST. SEWER MAIN
WATER / SEWER CROSSING
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-60

1) SEWER/WATER LINE TO BE CONSTRUCTED OF ONE JOINT (MAXIMUM OF 5' MAX PVC) 10'-0" DIA. SCHEDULE 40 SEWER/WATER LINE FOR PERPENDICULAR CROSSING. FOR OTHER CROSSINGS, USE 7'-0" DIA. PIPE UNLESS OTHERWISE SPECIFIED. EXCESSIVE TO

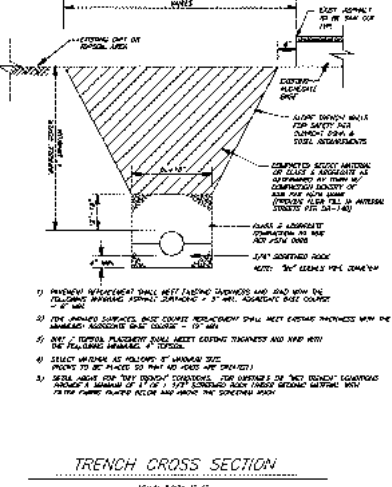


ELEVATION WATERLINE/CULVERT CROSSING
INSULATION SECTION
WATERLINE INSULATION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-80

NOTE: AS SHOWN THE INSULATION DETAIL ADDRESSES EXISTING CROSSINGS. PROVIDE THE SAME DETAIL FOR THESE INSTANCES WHERE THE WATERLINE IS INSTALLED WITHIN 5' OF OPEN AIR.



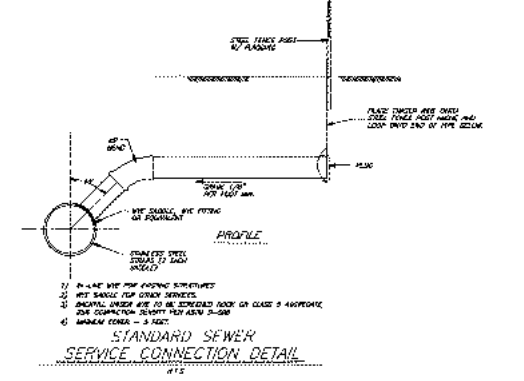
STANDARD MANHOLE DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-10



TRENCH CROSS SECTION
STANDARD SEWER MAIN TRENCH SECTION
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-50

1) PREVIOUS REPAIRS SHALL MEET EXISTING CONDITIONS AND SHALL BE REPAIRED TO MEET EXISTING CONDITIONS. ALL REPAIRS SHALL BE APPROVED BY THE TOWN ENGINEER.

MODIFIED
THRUST BLOCKING DETAILS
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-50



STANDARD SEWER SERVICE CONNECTION DETAIL
MODIFIED
SEWER SERVICE CONNECTION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-40

- Notes: 1. Water and sewer service stubs shown. Future extension to each house accomplished when home constructed. 2. Water mains shown based on approved master utility plan or as approved by town engineer. 3. All utility development to be in accordance with the Town of New Castle Public Works Manual. 4. Shallow dry utilities (elec-gas-phone-cab) design layout by utility providers. Copies of each utility providers' layouts shall be provided to the Town of New Castle prior to construction. 5. Contractor responsible for coordinating all utility locates and avoidance of existing utilities. 6. Owner to have improvements surveyed during construction for Record Drawings. 7. Water pipe joint deflection to be approved if contractor produces manufacturer's specifications approving deflection. Alternatively, contractor to provide straight runs with necessary elbows AS SHOWN ON PLANS. 8. All water pipe and fittings to meet Town of New Castle Public Works Manual specifications. 9. All water main fittings to have megalugs. 10. C-500 PVC DR14 on all water mains. DIP water fittings to be poly wrapped for corrosion protection. 11. Water service stubs seamless copper "Type K" or 1" diameter HDPE pure-core. No saddle laps within 4-ft of fittings or other Taps. 12. All sewer pipe mains and service stubs to meet ASTM 3034 with SDR 35 as minimum wall thickness. 13. 4" diameter on all sewer Service stubs to individual homes. 2" slope. 14. Water lines not shown on profile, minimum 5.5' bury depth. 15. Sewer system design shows table of approximate elevation of service stub depth to the lots building envelope on the street side. Sewer service by gravity limited on some larger lots with building envelopes downhill of roadways. Future lot purchasers could require lift pumps for basements on steeper downhill lots. 16. Owner to obtain stormwater discharge permit prior to construction. 17. Contractor to meet all specifications and testing requirements of oversight grading as per geotechnical engineer oversight and design report. 18. Contractor to obtain and perform all work in accordance with Town of New Castle Acceptance Checklist for Public Improvements. Signatures to be provided for all applicable work to facilitate acceptance by town at the end of project. 19. All sewer mains in project are gravity pipes. Some lots could require sewage lift stations for basement service. Sewer stub depth and locations provided this drawing set.

PRELIMINARY, NOT FOR CONSTRUCTION

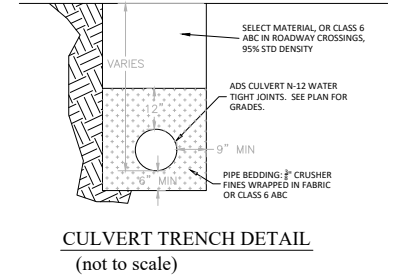
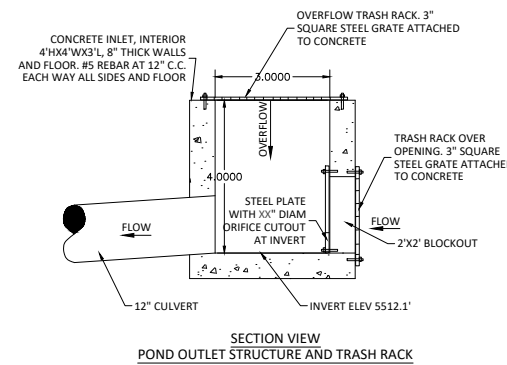
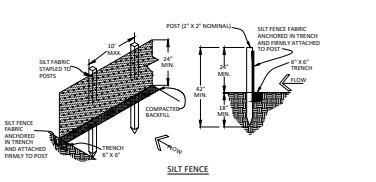
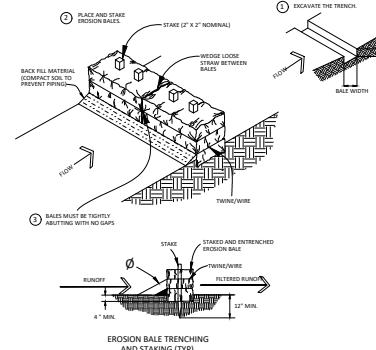
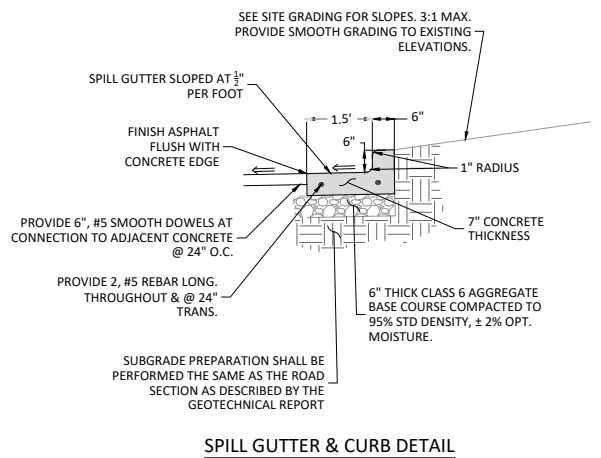
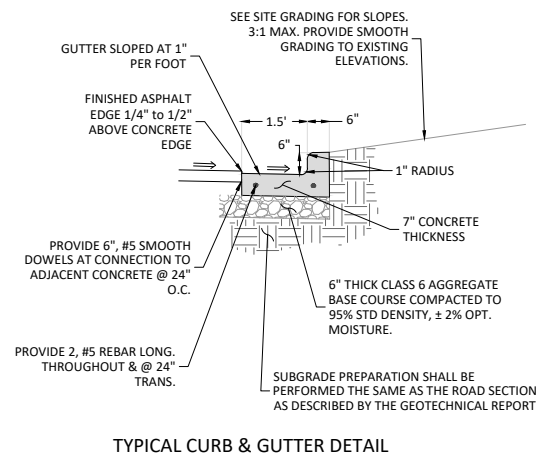
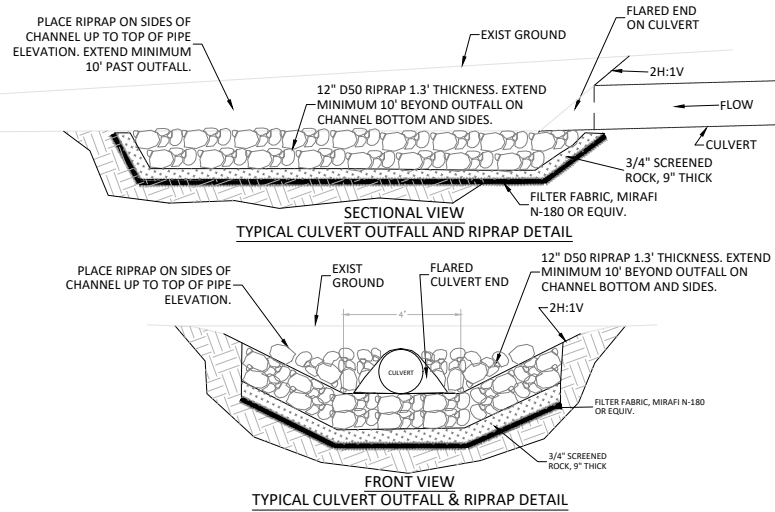
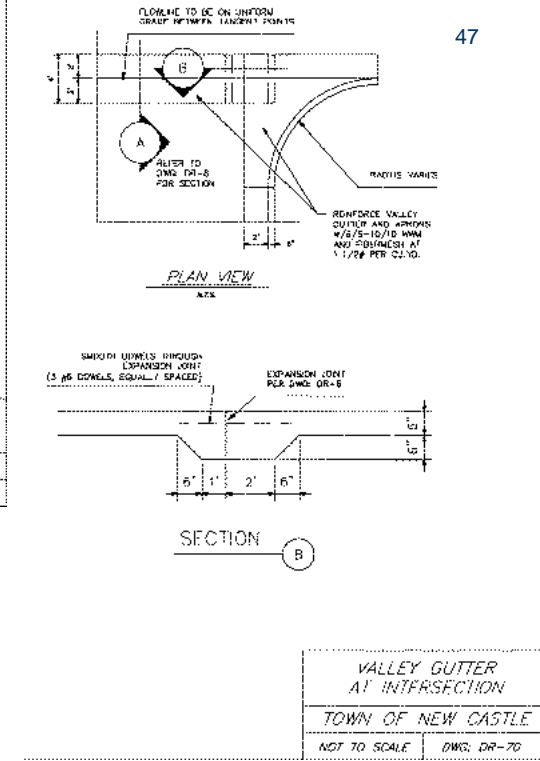
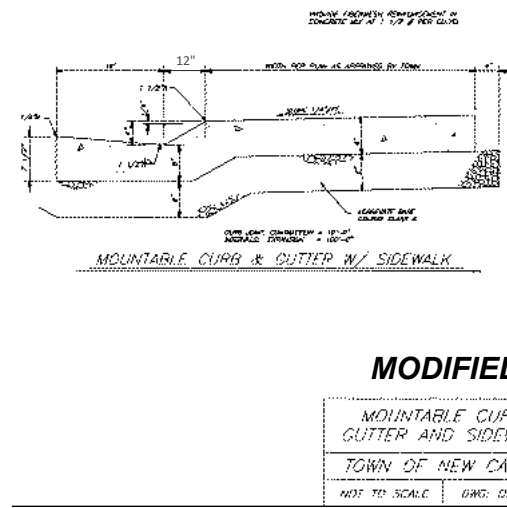
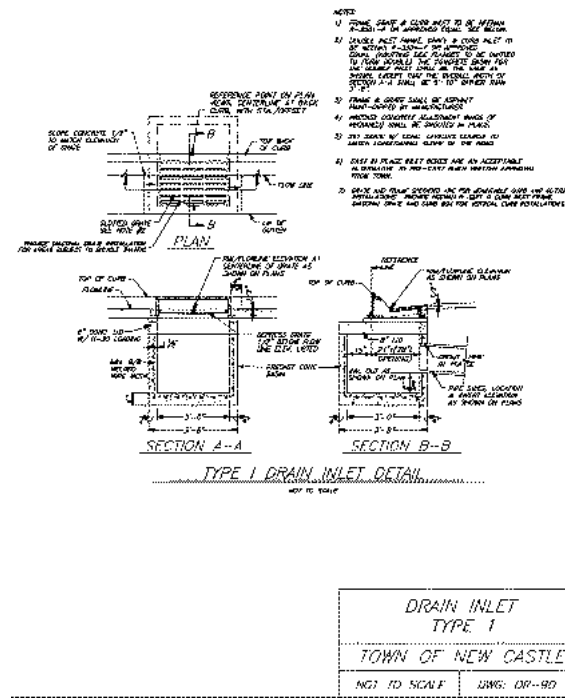
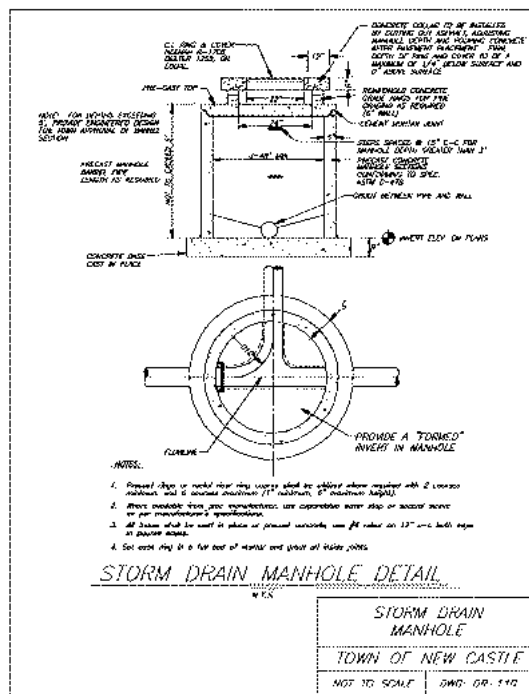
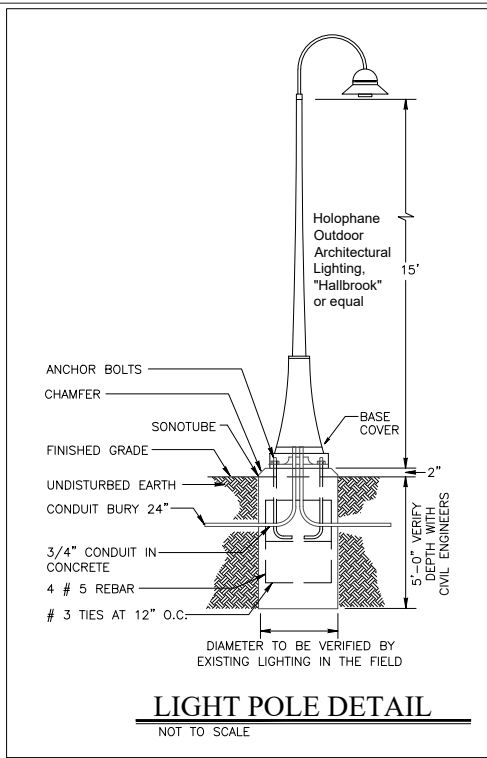
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Horiz. Scale:
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Table with columns for Date, Comments, Drawn by, and Checked by. Includes a section for Issue & Revisions.

Logo for Colorado River Engineering Incorporated and connect one DESIGN ARCHITECTS.

Sheet Name: DETAILS WATER & SEWER
Sheet Number: 28

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date:	March 21, 2022
File Name:	Details.dwg
Horiz. Scale:	
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.	

Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	

connect one DESIGN

COLORADO RIVER ENGINEERING INCORPORATED

ARCHITECTS

Sheet Name: DETAILS - GENERAL

Sheet Number: 29

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



LAKOTA RESIDENTIAL TOTALS	
TOWNHOMES: 20 UNITS DUPLEX & TRIPLEX	TOWNHOMES: 43,040 sf = avg 2,152 sf/unit avg
APARTMENTS: 20(3) = 60 24(2) = 48 108 UNITS TOTAL	APARTMENTS: avg sf 19254 sf (2) = 38,508 sf avg sf 16511 sf (3) = 49,533 sf 88,041/108 = 815 sf/unit avg
MIXED USE (FLATS) RESIDENCES: 28 UNITS TOTAL	MIXED USE (FLATS) RESIDENCES: 25,960/28 = 927 sf/unit avg
LAKOTA RESIDENCES: 156 TOTAL UNITS	
SINGLE FAMILY LOTS 29 UNITS	

Print Date: MARCH 18, 2022
 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
 These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

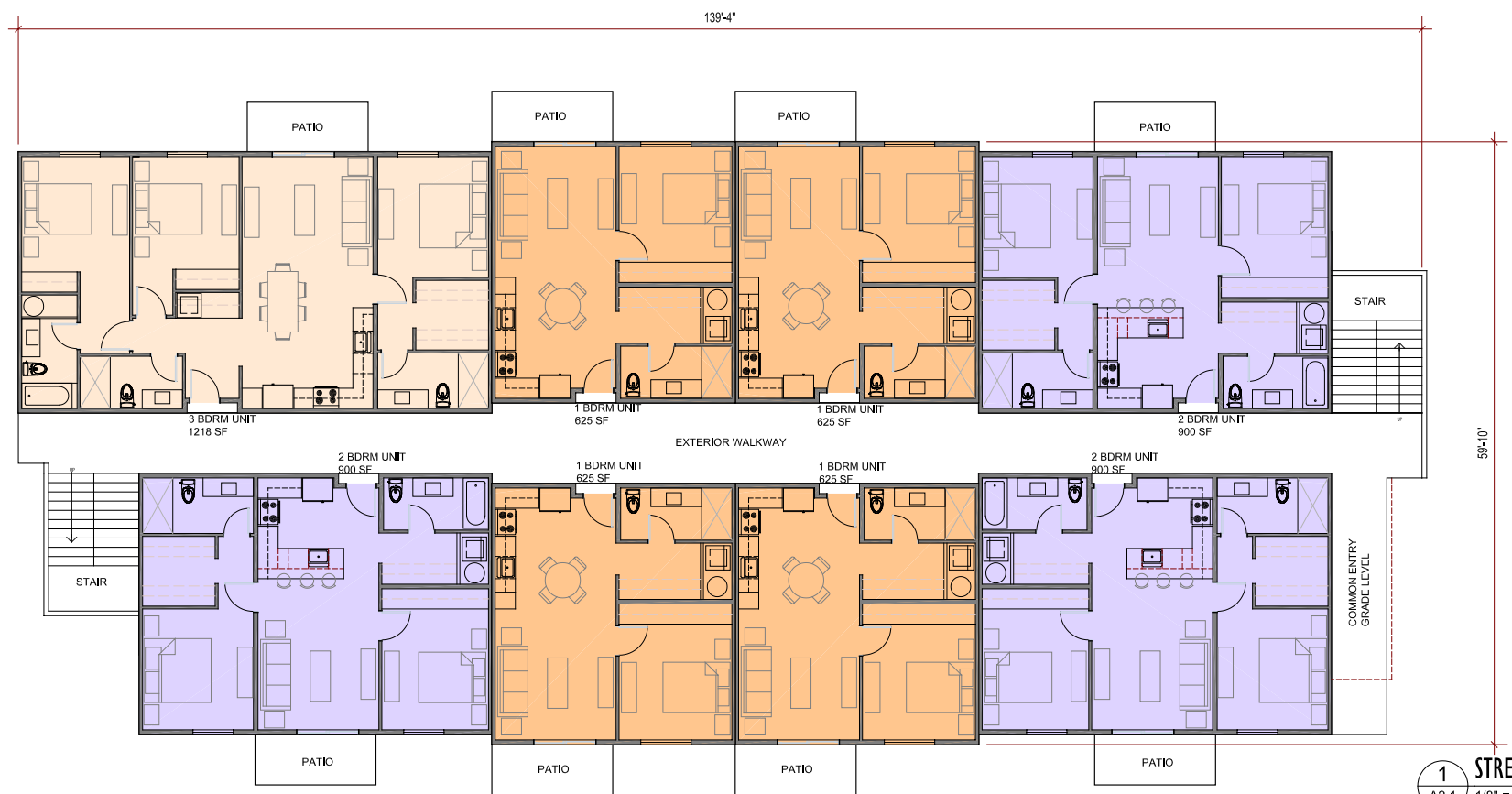


Sheet Name: SITE PLAN UNIT COUNTS INFO
 Sheet Number:

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

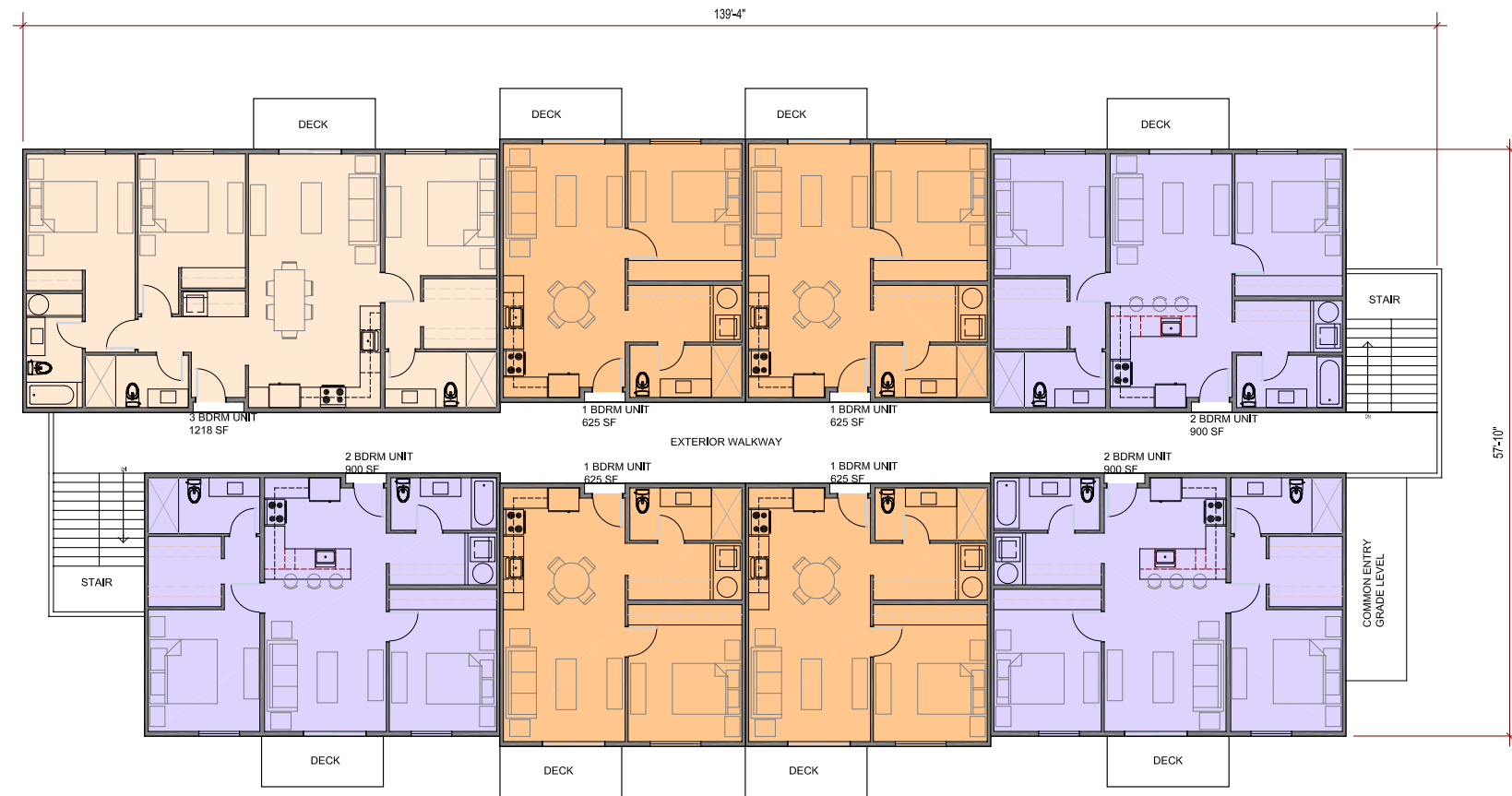


2 SECOND LEVEL FLOOR PLAN
A2.1 1/8" = 1'-0"



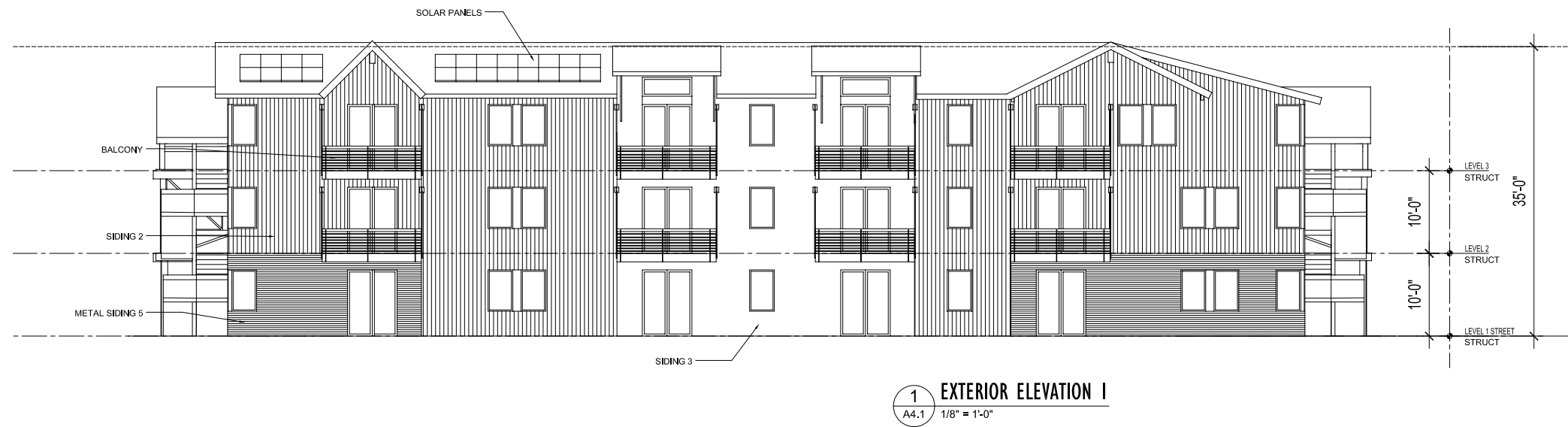
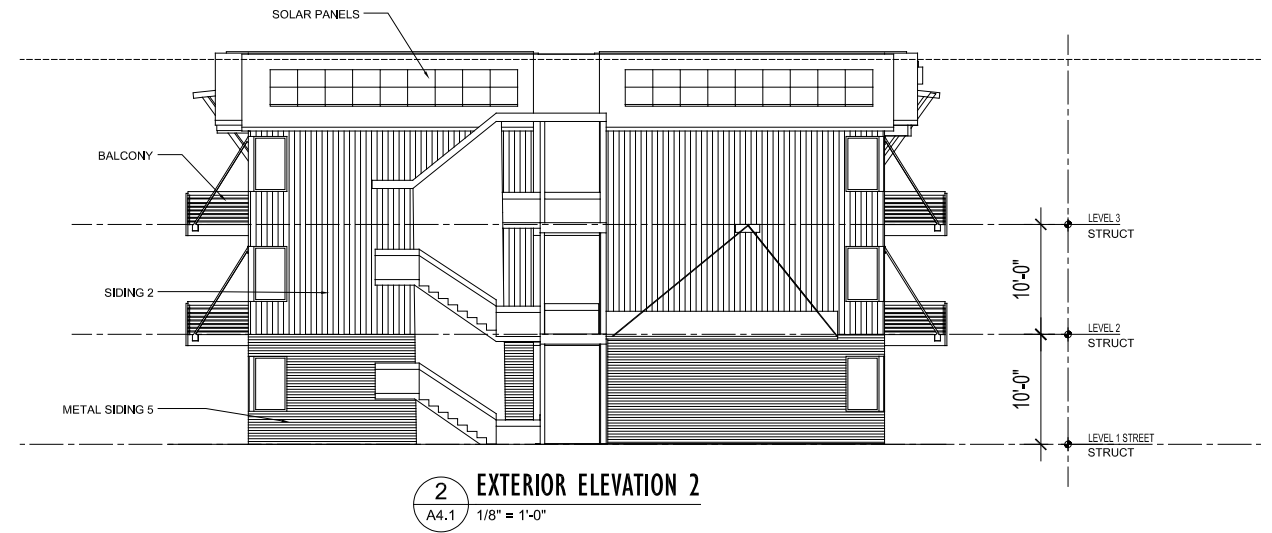
1 STREET LEVEL FLOOR PLAN
A2.1 1/8" = 1'-0"

Print Date: MARCH 18, 2022	Issue & Revisions							Sheet Name: APARTMENT 1 FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH	Date:	Comments:	Drawn by:	Checked by:				Sheet Number: AI-2.1	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:									
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.									



1 THIRD LEVEL FLOOR PLAN
A2.2 1/8" = 1'-0"

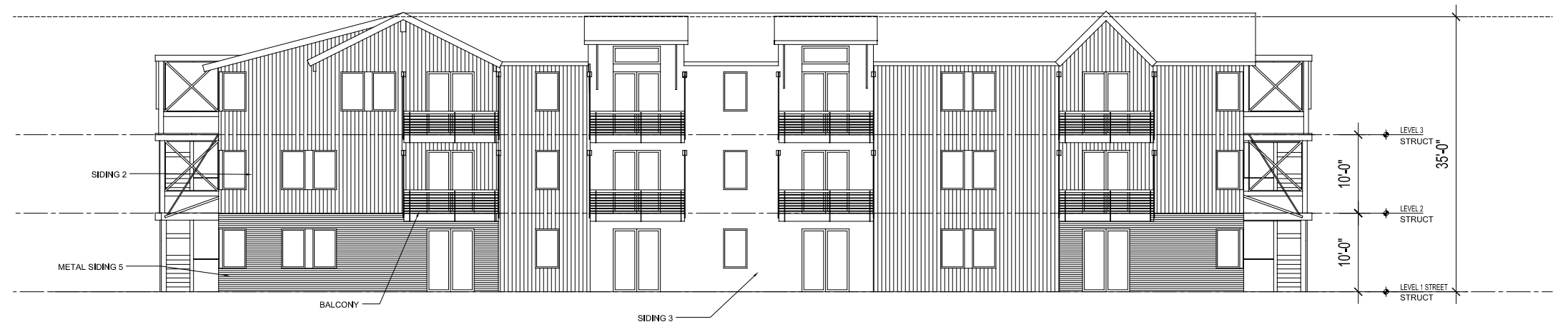
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File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:				Client: The Romero Group	
Horiz. Scale:									Suite 304	
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.									Basalt, CO 81621	
Sheet Number: AI-2.2										



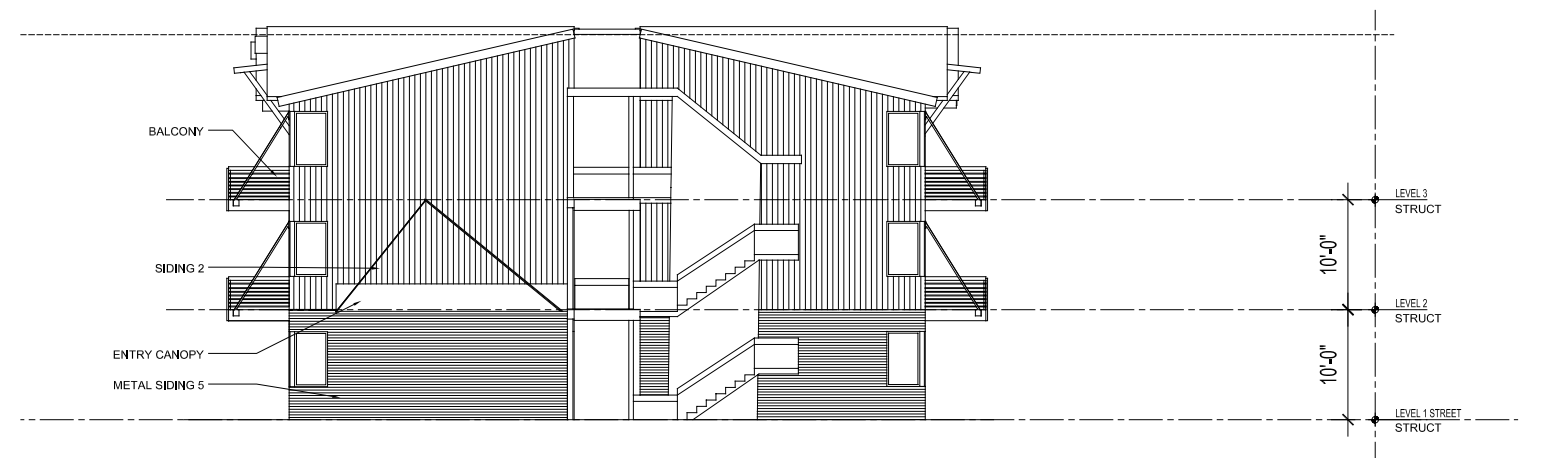
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Horiz. Scale:	
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.	

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:




Sheet Name:	APARTMENT I EXT ELEVATIONS	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number:	AI-4.1	
		Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621

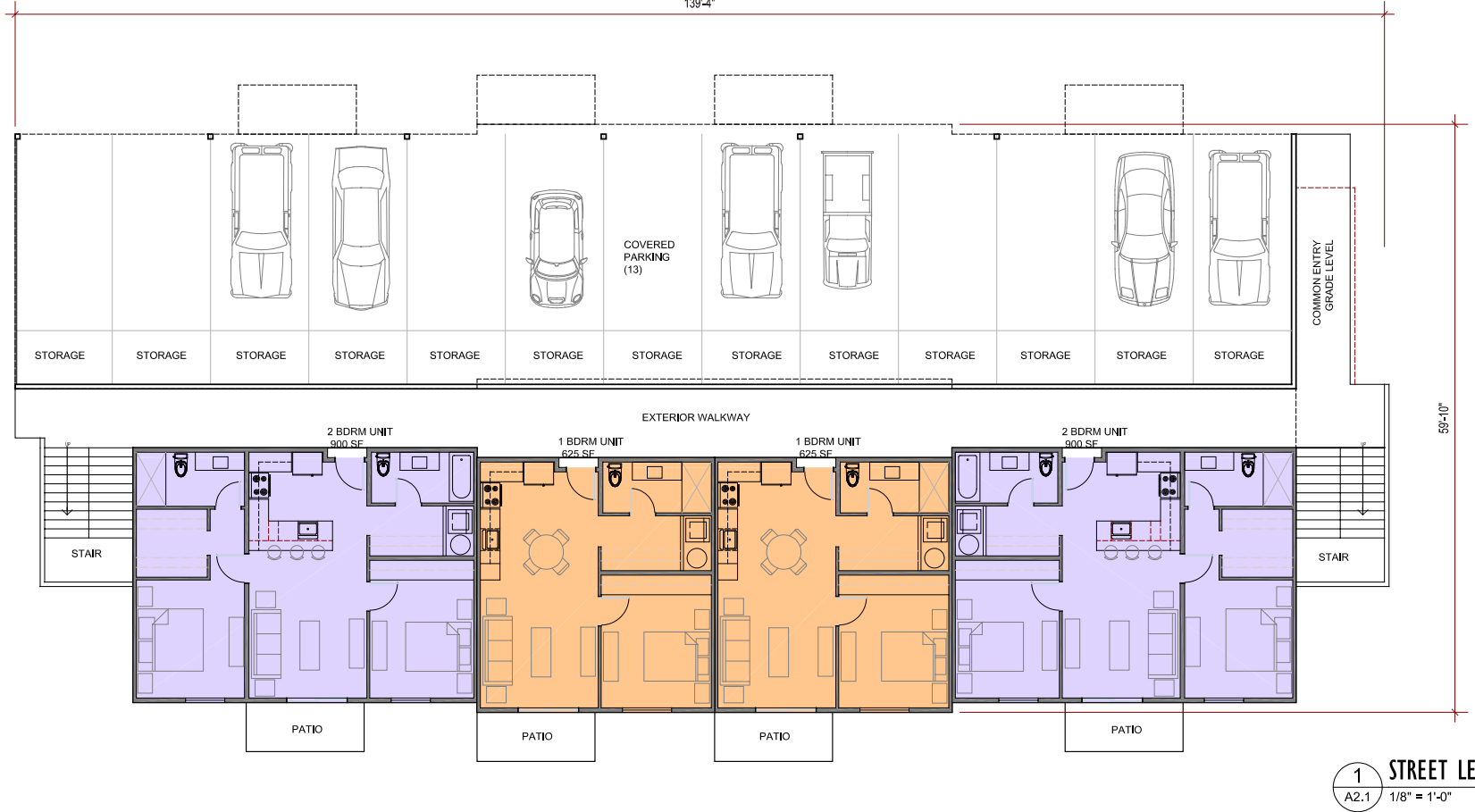


4 EXTERIOR ELEVATION 4
A4.1 1/8" = 1'-0"



3 EXTERIOR ELEVATION 3
A4.1 1/8" = 1'-0"

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File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:		Sheet Number:		
Horiz. Scale:								The Romero Group 350 Market Street Suite 304 Basalt, CO 81621	
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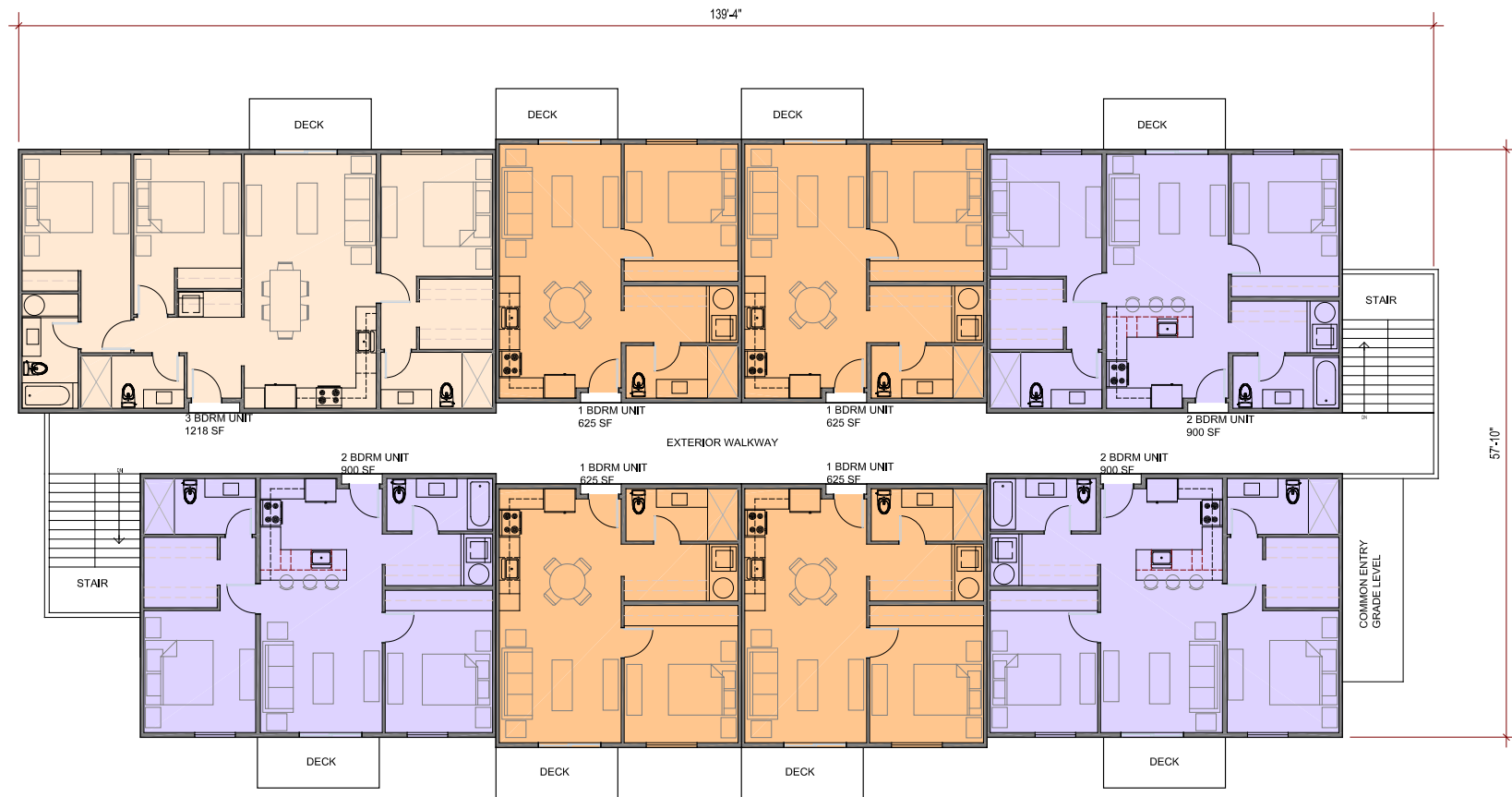
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 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
 These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: APARTMENT 2 FLOOR PLANS
 Sheet Number: **A2-2.1**

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client: The Romero Group
 350 Market Street Suite 304
 Basalt, CO 81621



1 THIRD LEVEL FLOOR PLAN
A2.2 1/8" = 1'-0"

Print Date: MARCH 18, 2022

File Name: THE LANDING AT LAKOTA CANYON RANCH

Horiz. Scale:

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
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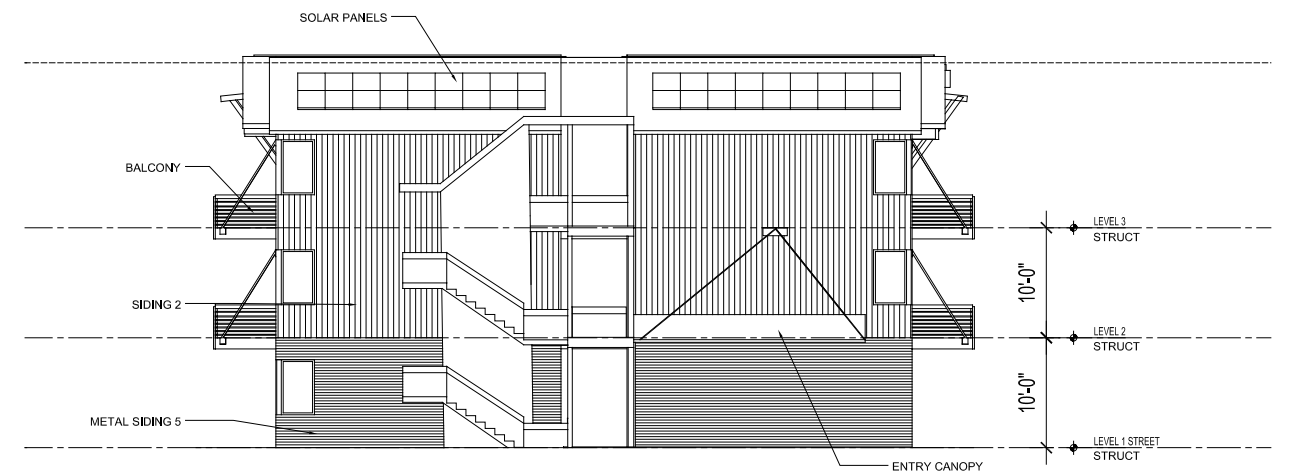


Sheet Name: APARTMENT 2 FLOOR PLANS

Sheet Number: **A2-2.2**

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



2 EXTERIOR ELEVATION 2
A4.1 1/8" = 1'-0"



1 EXTERIOR ELEVATION 1
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
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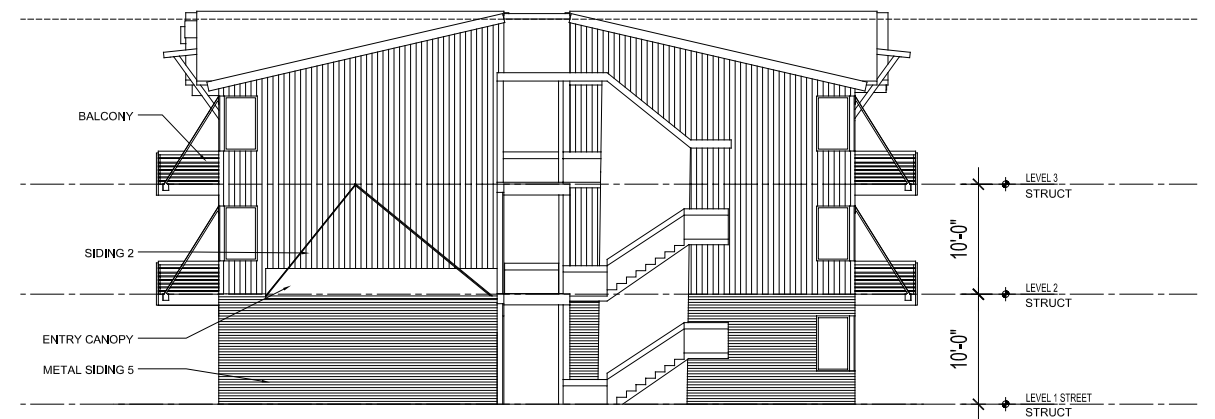


Sheet Name:	APARTMENT 2 EXT ELEVATIONS
Sheet Number:	A2-4.1

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



4 EXTERIOR ELEVATION 4
A4.1 1/8" = 1'-0"



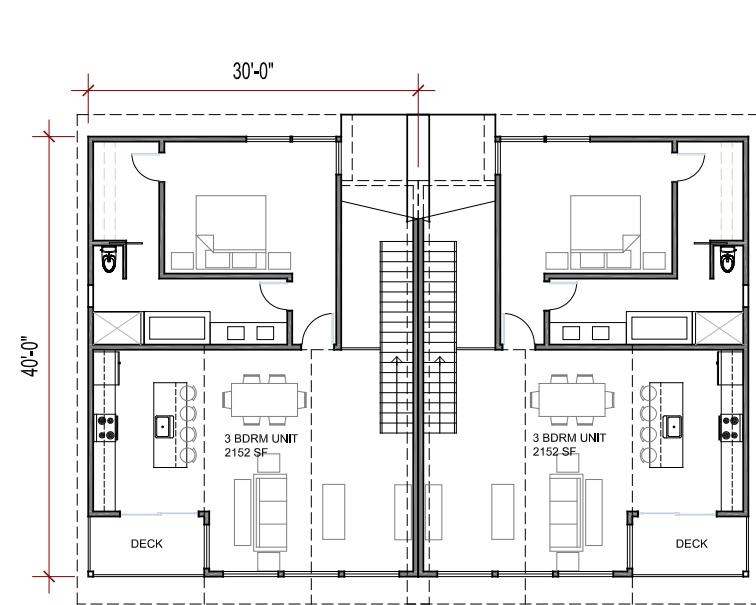
3 EXTERIOR ELEVATION 3
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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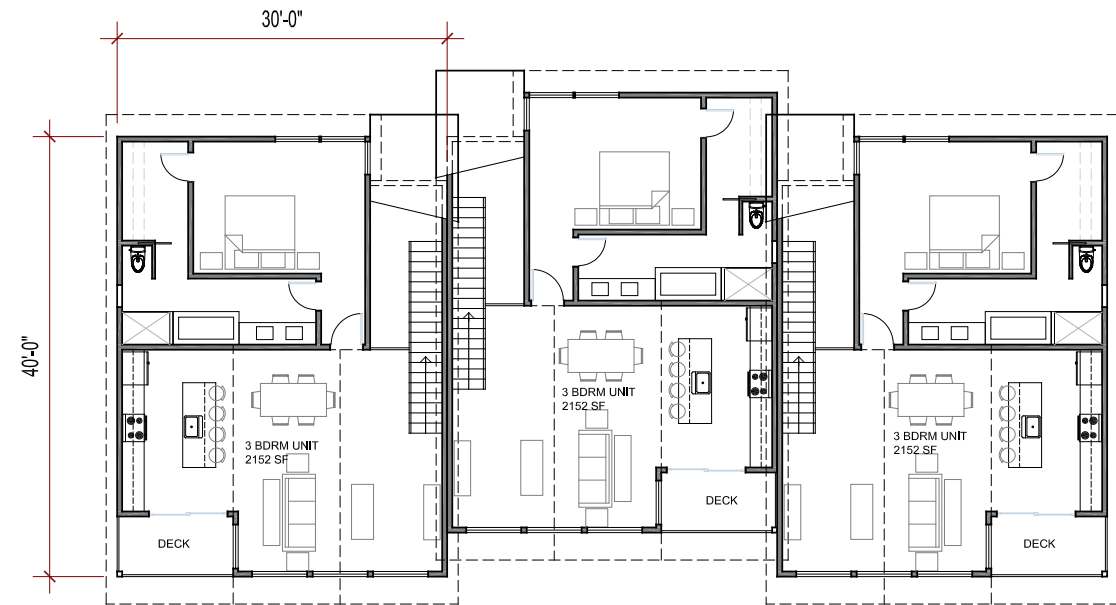
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Date:	Comments:	Drawn by:	Checked by:



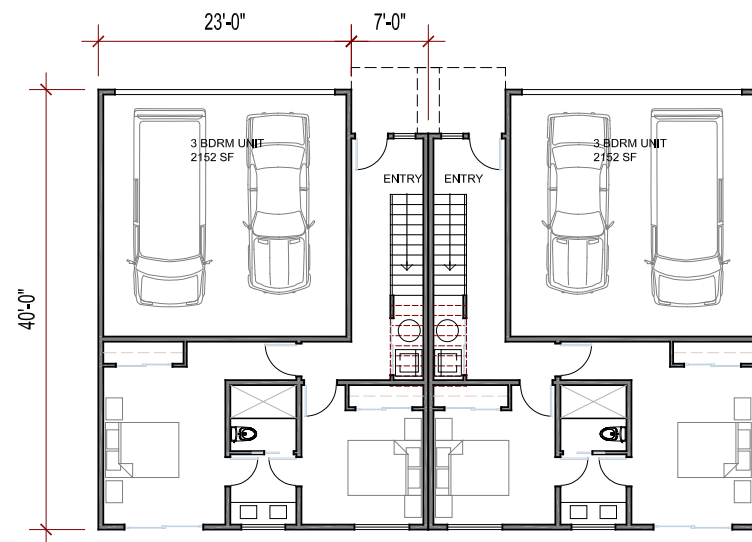
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Sheet Number:	A2-4.2	
		Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



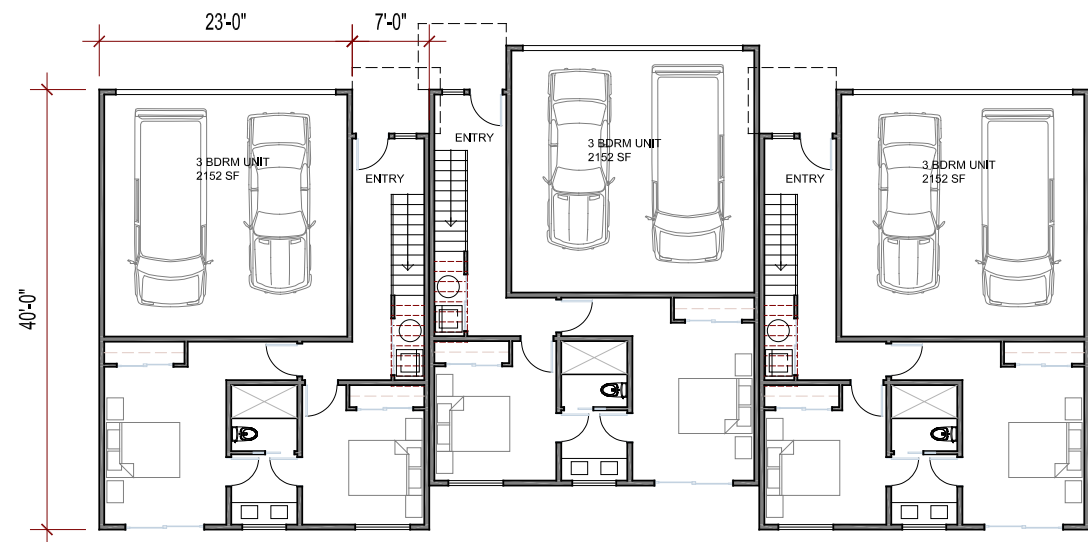
4 SECOND LEVEL FLOOR PLAN - DUPLEX
A2.1 1/8" = 1'-0"



2 SECOND LEVEL FLOOR PLAN - TRIPLEX
A2.1 1/8" = 1'-0" 



3 STREET LEVEL FLOOR PLAN - DUPLEX
A2.1 1/8" = 1'-0"



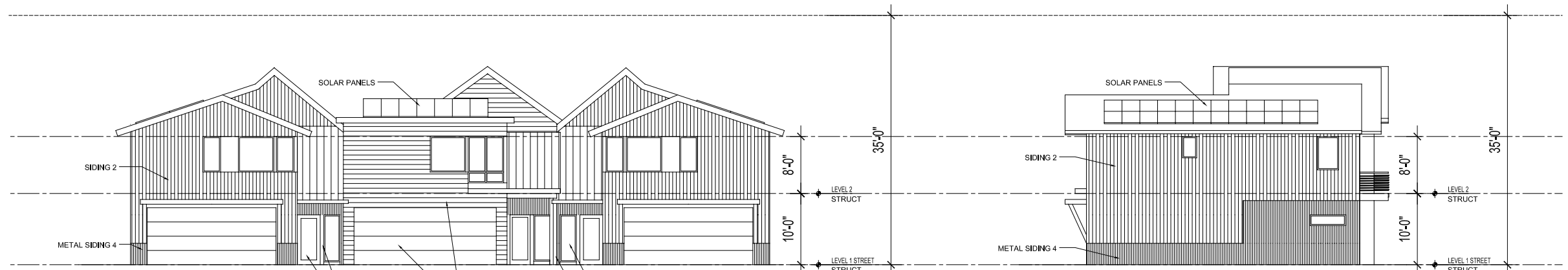
1 STREET LEVEL FLOOR PLAN - TRIPLEX
A2.1 1/8" = 1'-0" 

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
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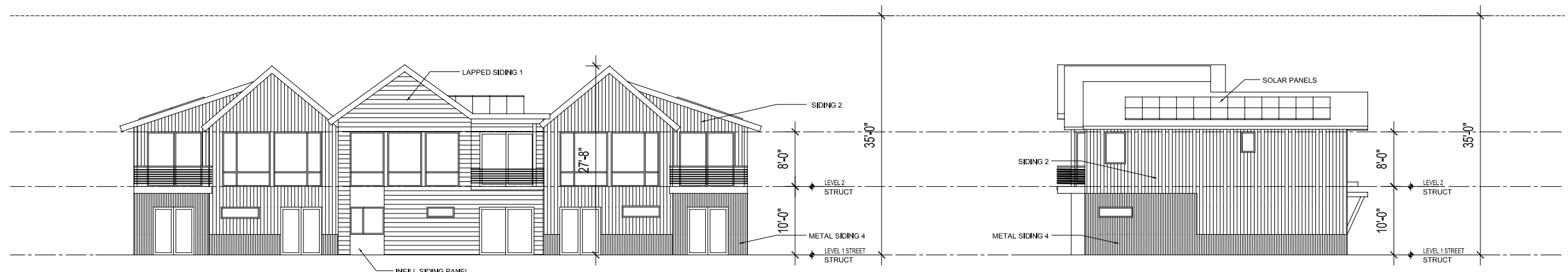


Sheet Name:	TOWNHOME FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number:	TH-2.1	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



4 EXTERIOR ELEVATION - NORTH
A4.1 1/8" = 1'-0"

3 EXTERIOR ELEVATION - WEST
A4.1 1/8" = 1'-0"



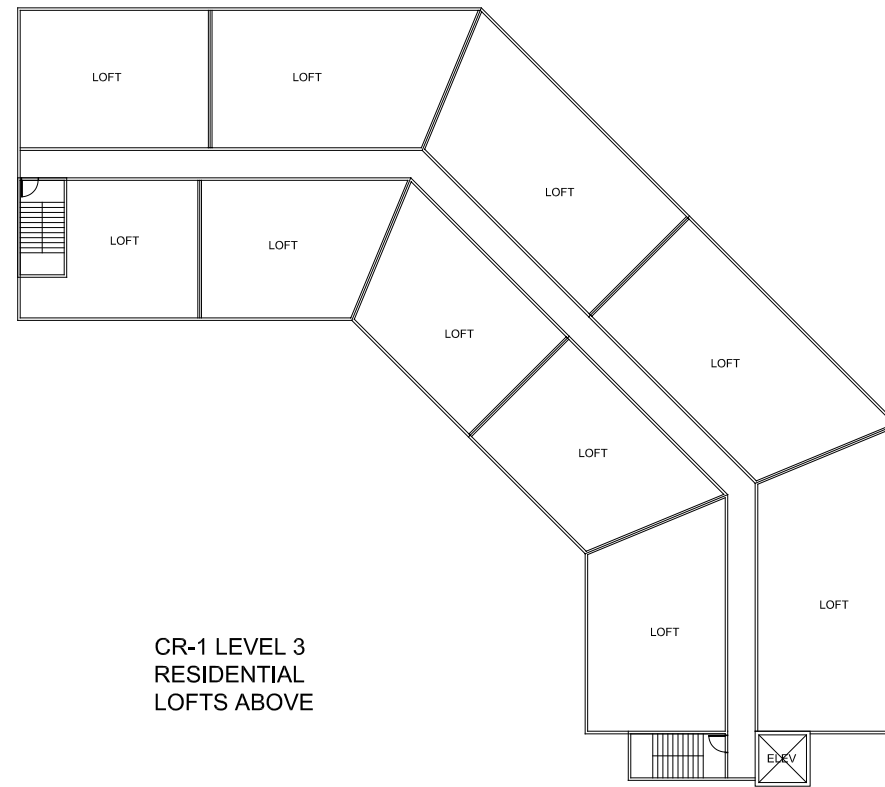
2 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

1 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"

Print Date: MARCH 18, 2022
 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
 These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

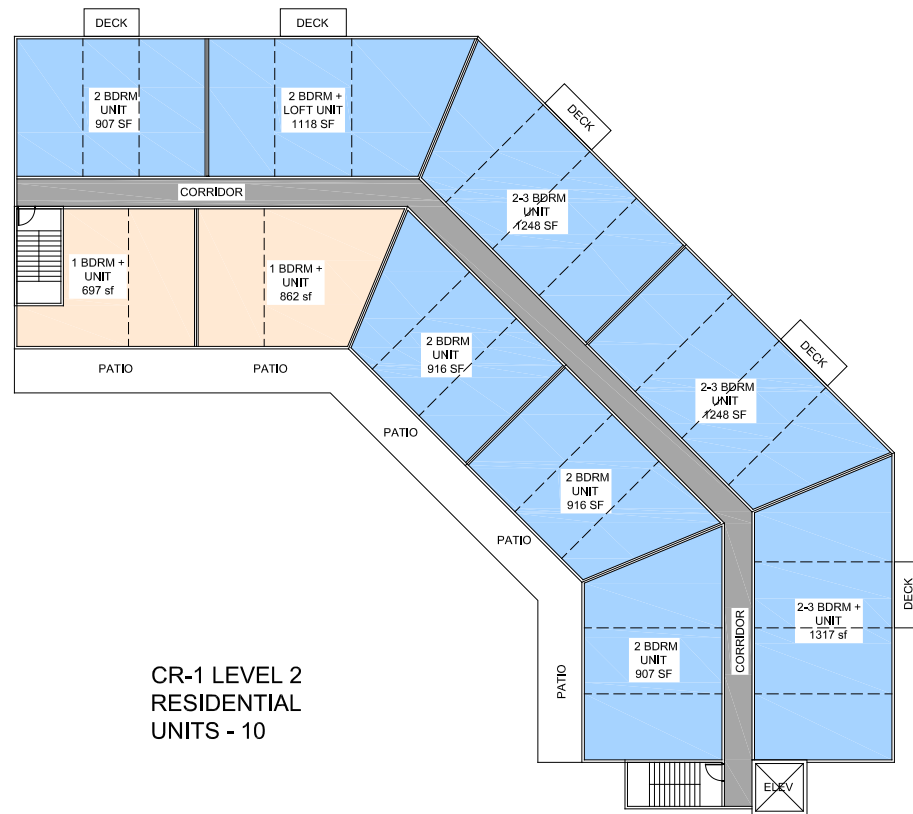
Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	

Sheet Name: **TRIPLEX TOWNHOME EXT ELEVATIONS**
 Sheet Number: **TH-4.1**
 Client: **The Romero Group**
 350 Market Street
 Suite 304
 Basalt, CO 81621



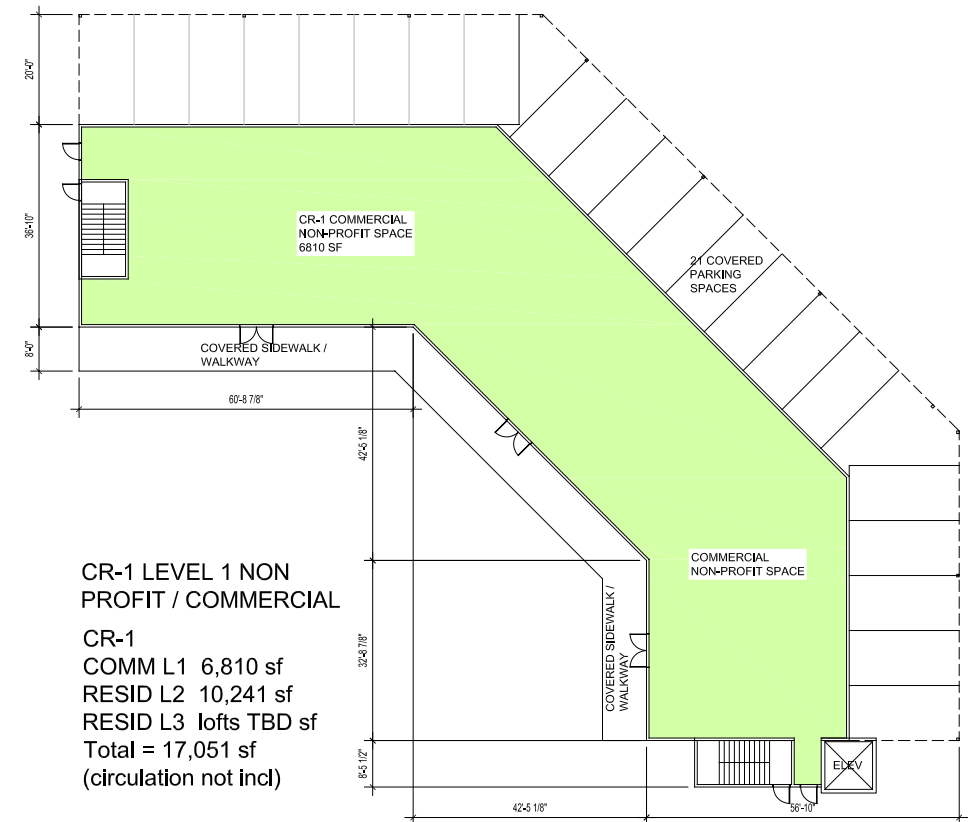
CR-1 LEVEL 3
RESIDENTIAL
LOFTS ABOVE

3 THIRD LEVEL FLOOR PLAN
CR-1 1/16" = 1'-0"



CR-1 LEVEL 2
RESIDENTIAL
UNITS - 10

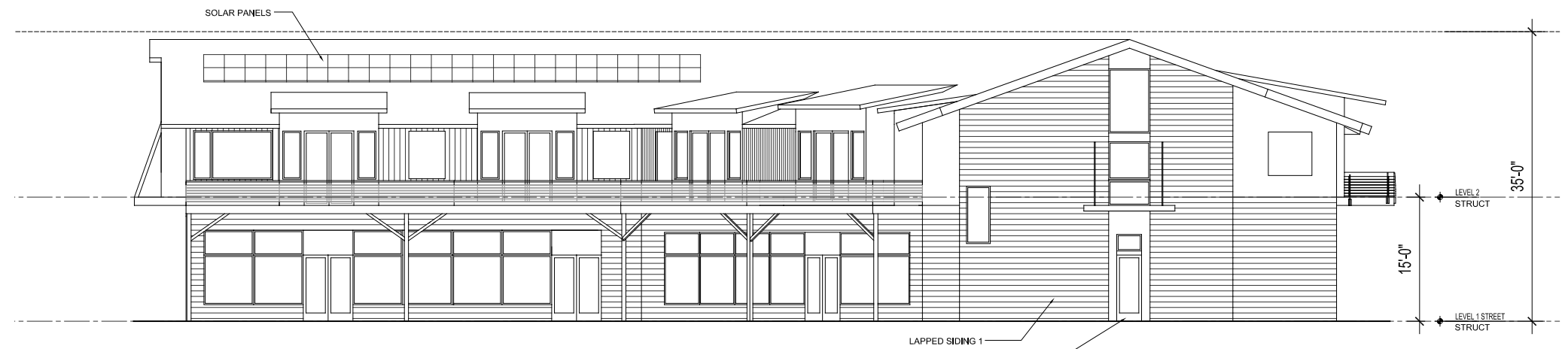
2 SECOND LEVEL FLOOR PLAN
CR-1 1/16" = 1'-0"



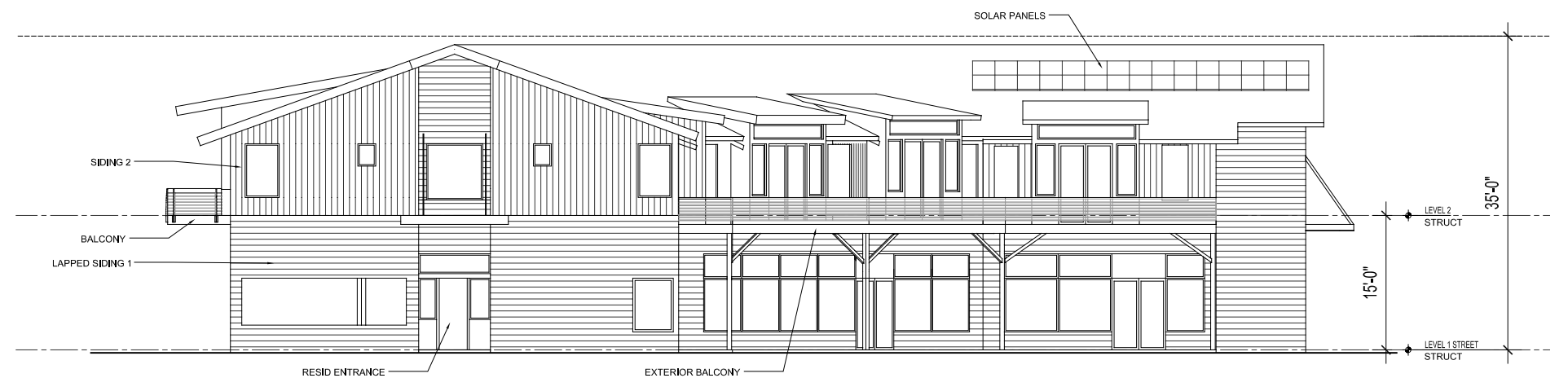
CR-1 LEVEL 1 NON
PROFIT / COMMERCIAL
CR-1
COMM L1 6,810 sf
RESID L2 10,241 sf
RESID L3 lofts TBD sf
Total = 17,051 sf
(circulation not incl)

1 STREET LEVEL FLOOR PLAN
CR-1 1/16" = 1'-0"

Print Date: MARCH 18, 2022	Issue & Revisions							Sheet Name: CR-1 FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH	Date:	Comments:	Drawn by:	Checked by:				Sheet Number: CR-1	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:									
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2 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"



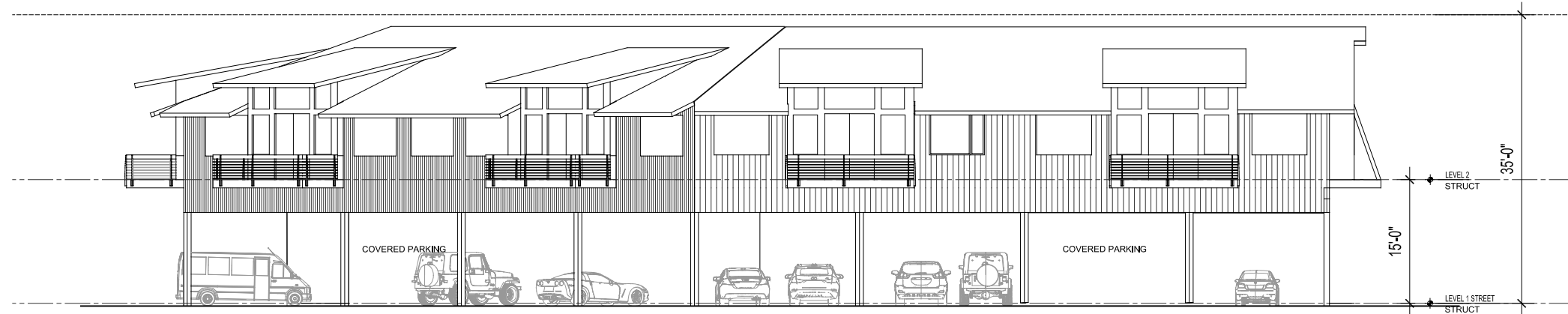
1 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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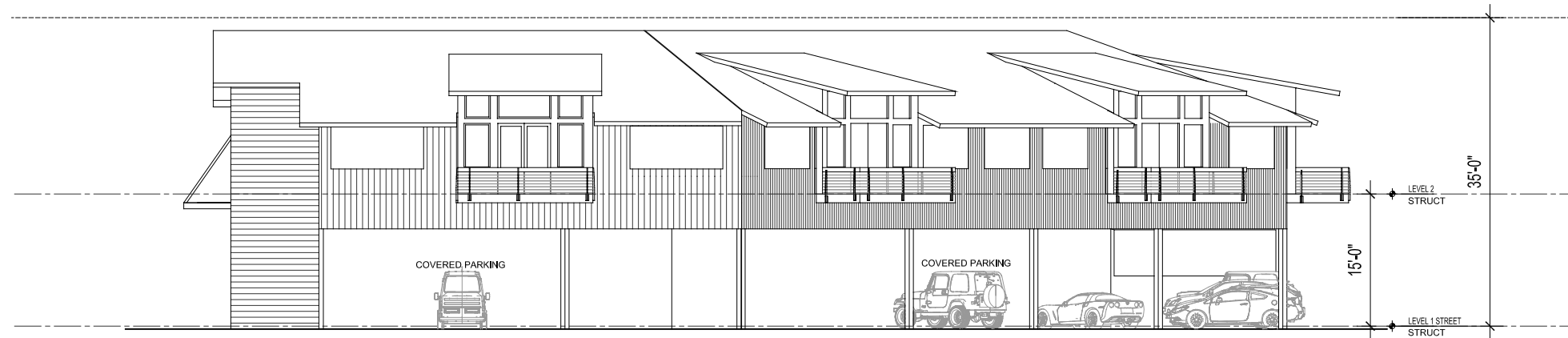
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Date:	Comments:	Drawn by:	Checked by:






Sheet Name:	CR-1 EXTERIOR ELEVATIONS	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number:	CI-4.1	
		Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621

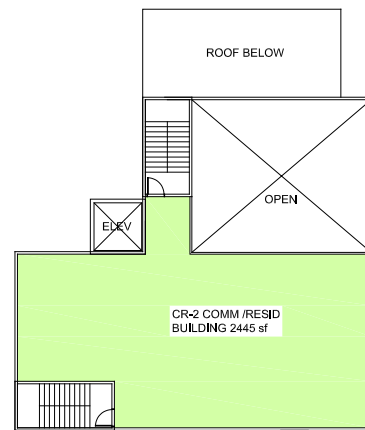


4 EXTERIOR ELEVATION - WEST
A4.1 1/8" = 1'-0"

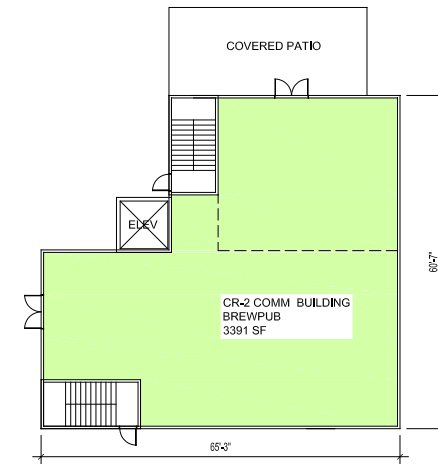


3 EXTERIOR ELEVATION - NORTH
A4.1 1/8" = 1'-0"

Print Date: MARCH 18, 2022	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Issue & Revisions				  	Sheet Name: CR-1 EXTERIOR ELEVATIONS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:		Sheet Number: CI-4.2	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:								
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.								



CR-2 LEVEL 2
BREWPUB COMM



CR-2 LEVEL 1
BREWPUB /
COMMERCIAL

CR-2
COMMERCIAL
L1 3,391 sf
L2 2,445 sf
Total = 5,836 sf

2 SECOND LEVEL FLOOR PLAN
CR-2 1/16" = 1'-0" 

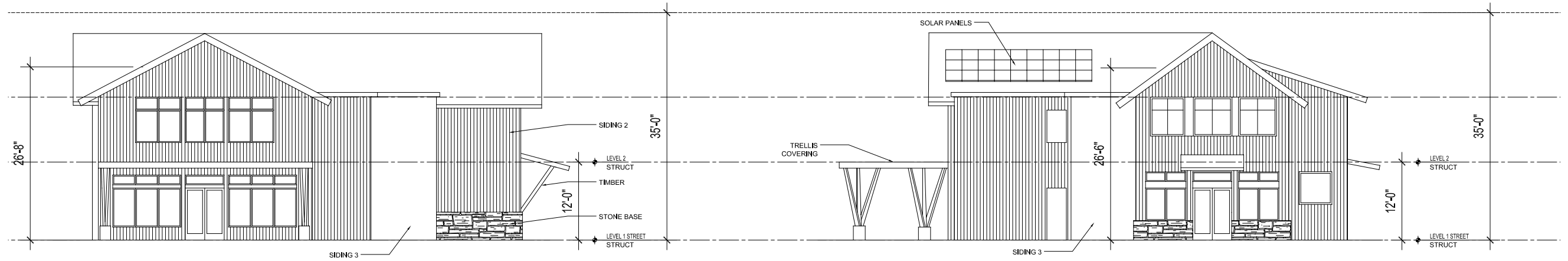
1 STREET LEVEL FLOOR PLAN
CR-2 1/16" = 1'-0" 

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
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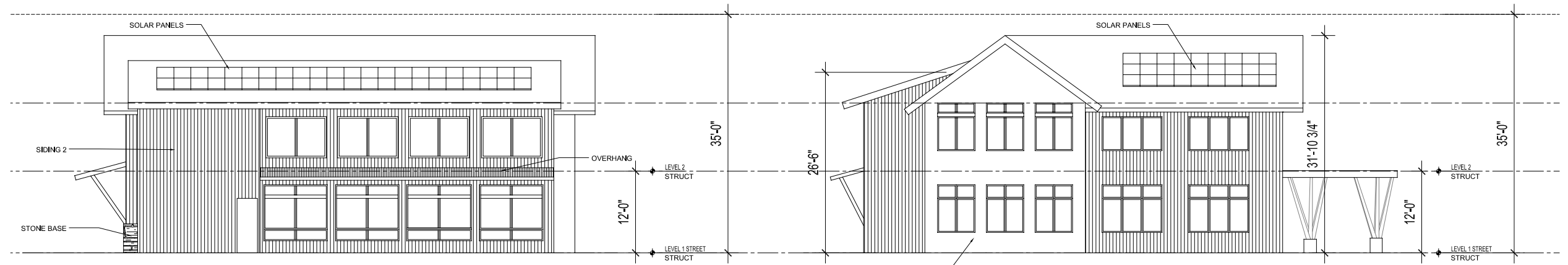


Sheet Name:	CR-2 FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number:	CR-2	
		Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



4 EXTERIOR ELEVATION - NORTH
A4.1 1/8" = 1'-0"

3 EXTERIOR ELEVATION - WEST
A4.1 1/8" = 1'-0"



2 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

1 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"

Print Date: MARCH 18, 2022
 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

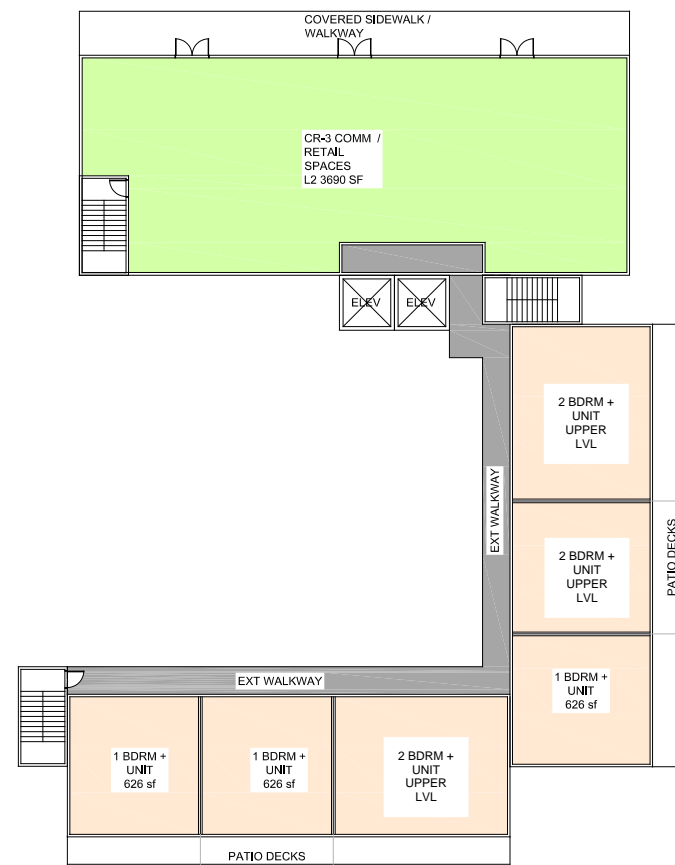


Sheet Name: CR-2 EXTERIOR ELEVATIONS

Sheet Number: **C2-4.1**

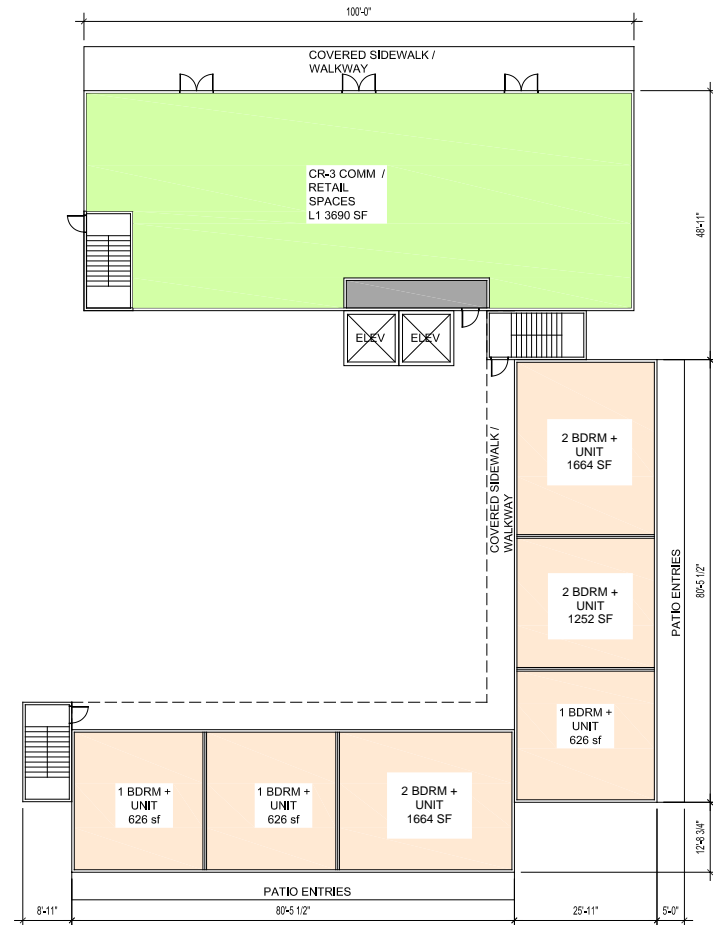
THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



CR-3 LEVEL 2 COMM / RESIDENTIAL
RESIDENTIAL UNITS - 6

2 SECOND LEVEL FLOOR PLAN
CR-3 1/16" = 1'-0"



CR-3 COMM L1 3,690 sf
COMM L2 3,690 sf
RESID L1 4,168 sf
RESID L2 4,168 sf
Total = 15,716 sf
(not incl circulation)

CR-3 LEVEL 1 COMM / RESIDENTIAL
RESIDENTIAL UNITS - 6

1 STREET LEVEL FLOOR PLAN
CR-3 1/16" = 1'-0"

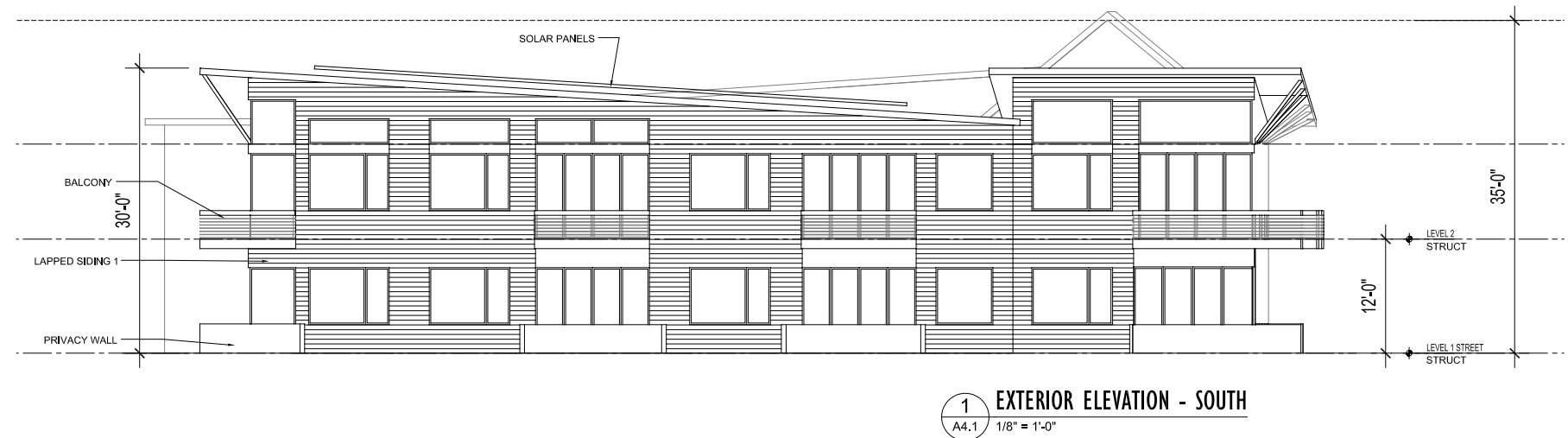
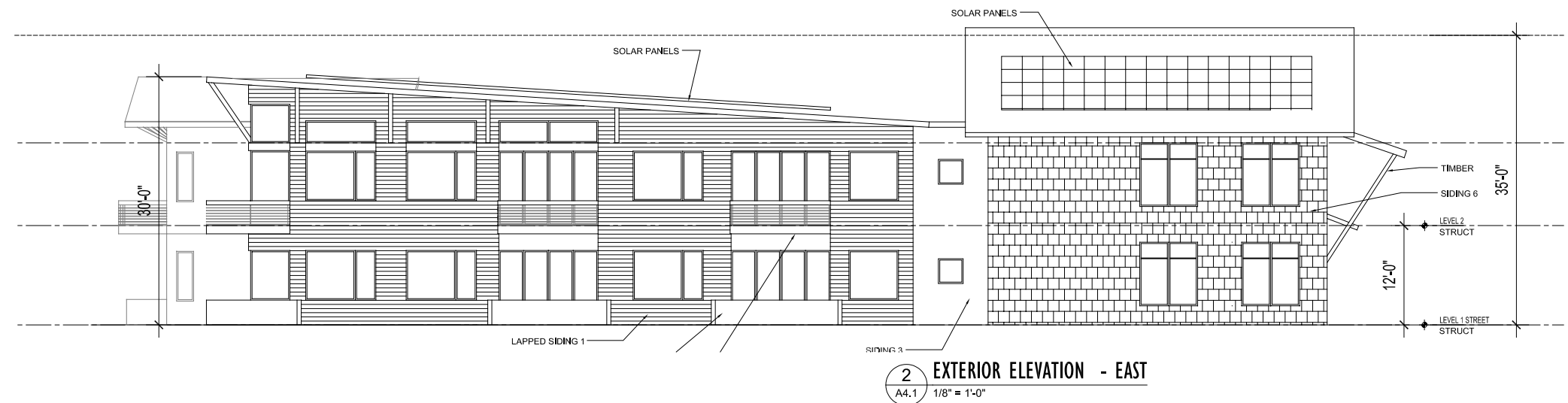
Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.	

Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	



Sheet Name:	CR-3 FLOOR PLANS
Sheet Number:	CR-3

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



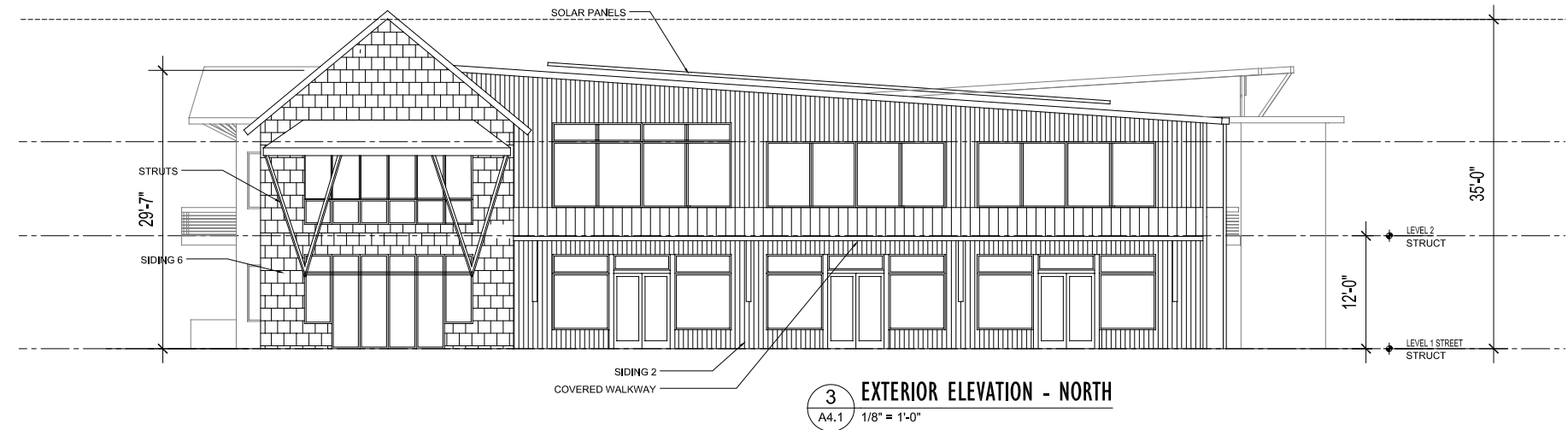
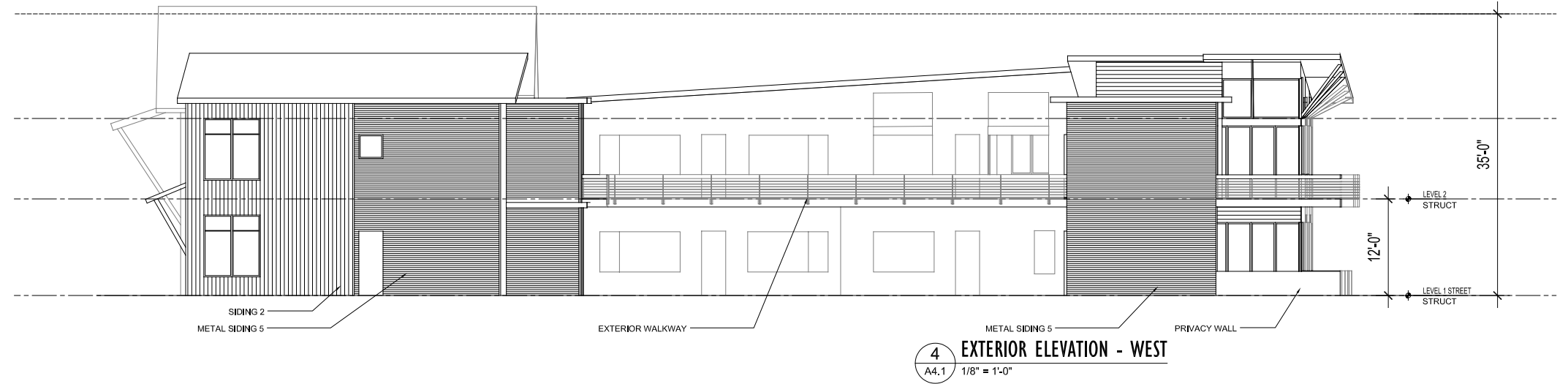
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File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



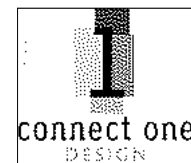
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Sheet Number:	C3-4.1

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



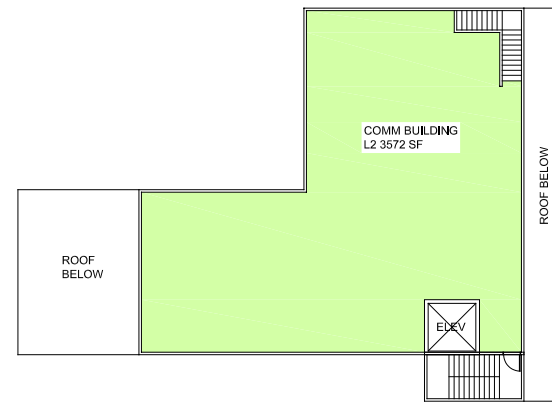
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File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



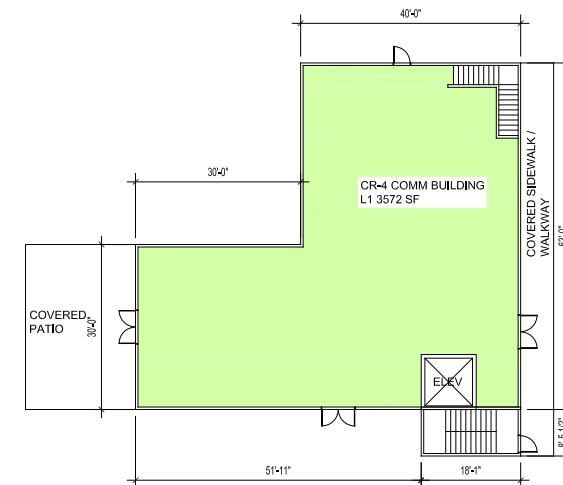
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Sheet Number:	C3-4.2

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



CR-4 LEVEL 2 COMMERCIAL

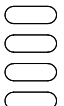



2 SECOND LEVEL FLOOR PLAN
CR-4 1/16" = 1'-0" 

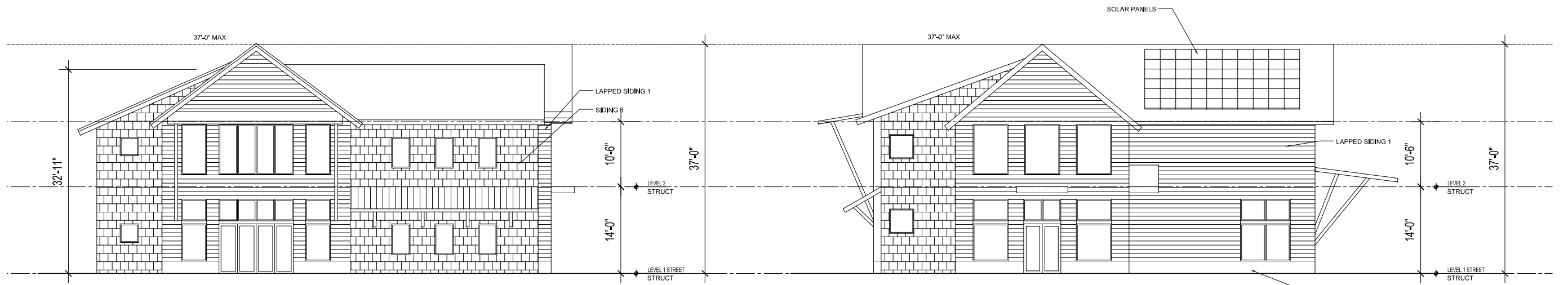


CR-4 LEVEL 1 COMMERCIAL

CR-4 COMMERCIAL
L1 3,572 sf
L2 3,572 sf
Total 7,144 sf

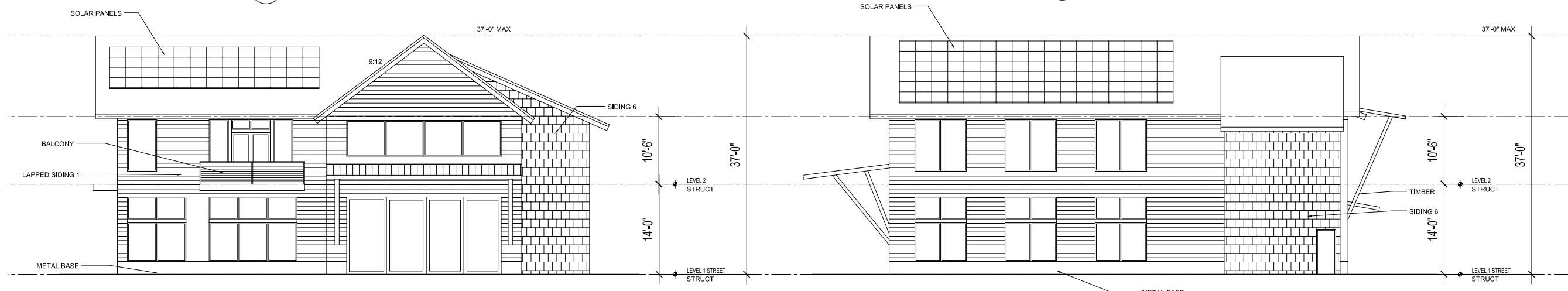
1 STREET LEVEL FLOOR PLAN
CR-4 1/16" = 1'-0" 

Print Date: MARCH 18, 2022		Issue & Revisions				  	Sheet Name: CR-4 FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:		Sheet Number: CR-4	Client: The Romero Group
Horiz. Scale:								Suite 304
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.								Basalt, CO 81621






4 EXTERIOR ELEVATION - NORTH
A4.1 1/8" = 1'-0"

3 EXTERIOR ELEVATION - WEST
A4.1 1/8" = 1'-0"



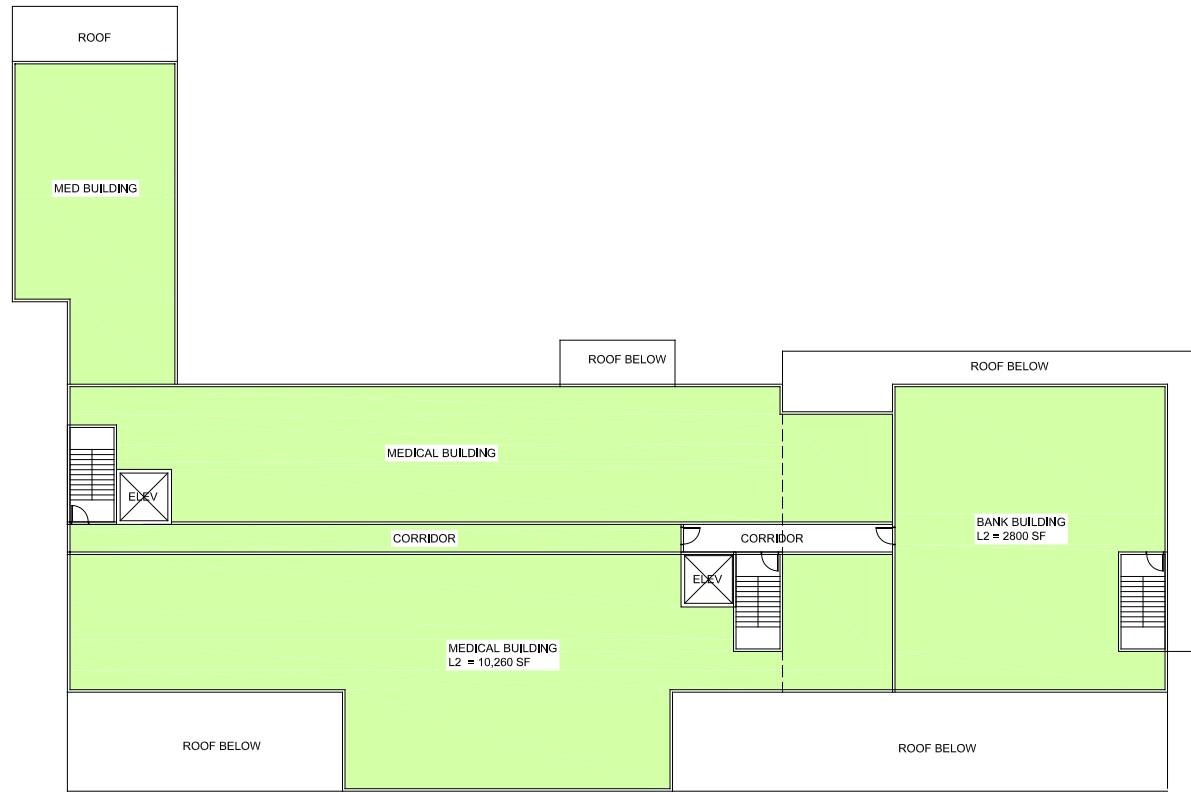
2 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

1 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"

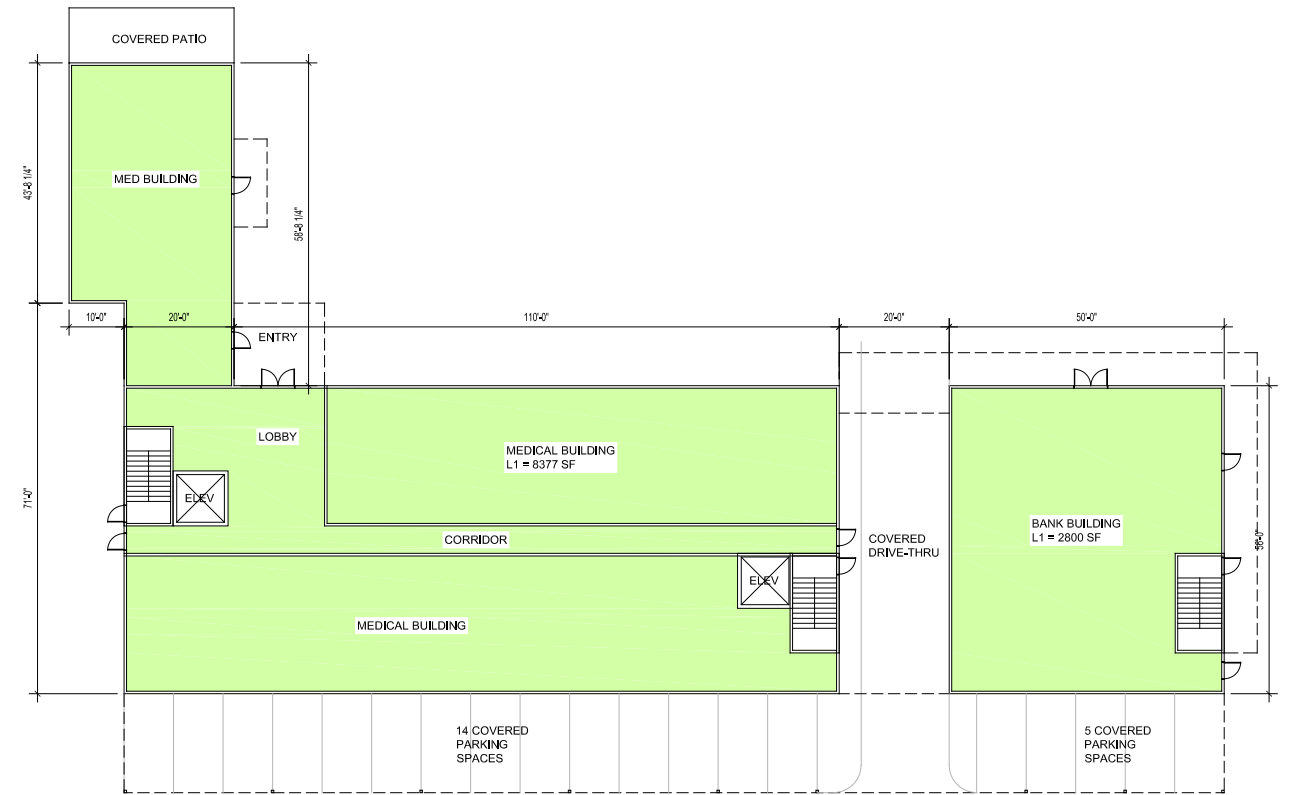
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File Name: THE LANDING AT LAKOTA CANYON RANCH						Date:	Comments:
Horiz. Scale:							
<p>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</p>							



3 THIRD LEVEL FLOOR PLAN
CR-5 1/16" = 1'-0"



2 SECOND LEVEL FLOOR PLAN
CR-5 1/16" = 1'-0"



CR-5
COMMERCIAL 18,637 sf
BANK 5,600 sf
RESID L3 7,286 sf
Total = 31,523 sf
(circulation not incl)

1 STREET LEVEL FLOOR PLAN
CR-5 1/16" = 1'-0"

Print Date: MARCH 18, 2022

File Name: THE LANDING AT LAKOTA CANYON RANCH

Horiz. Scale:

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

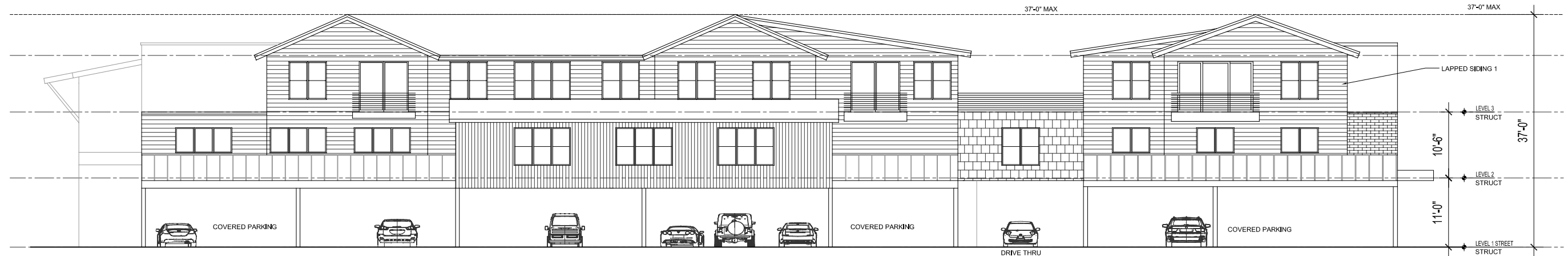


Sheet Name: CR-5 FLOOR PLANS

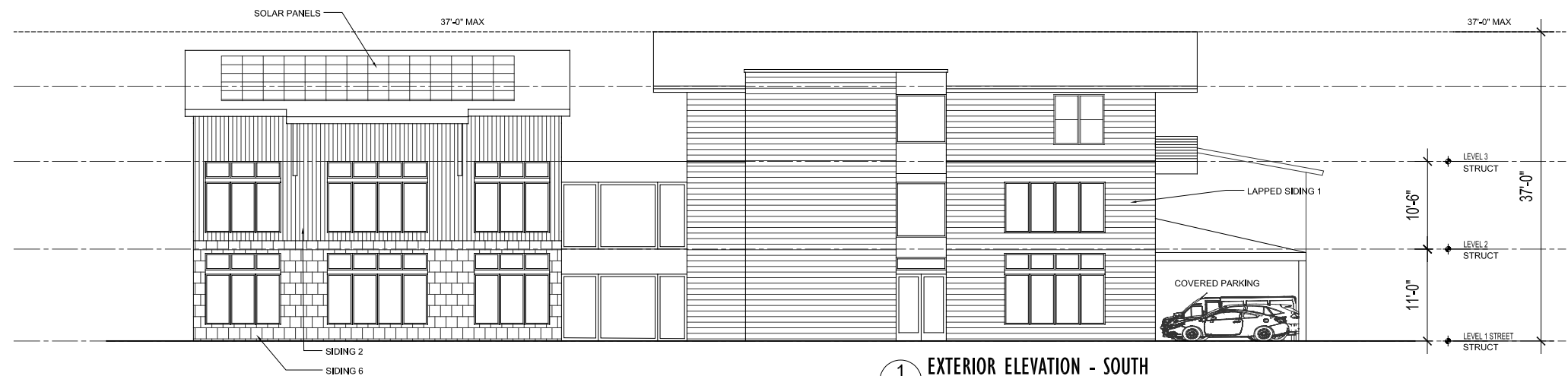
Sheet Number: **CR-5**

THE LONGVIEW AT LAKOTA CANYON RANCH

Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



2 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"



1 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.	

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name:

CR-5 EXTERIOR ELEVATIONS

Sheet Number:

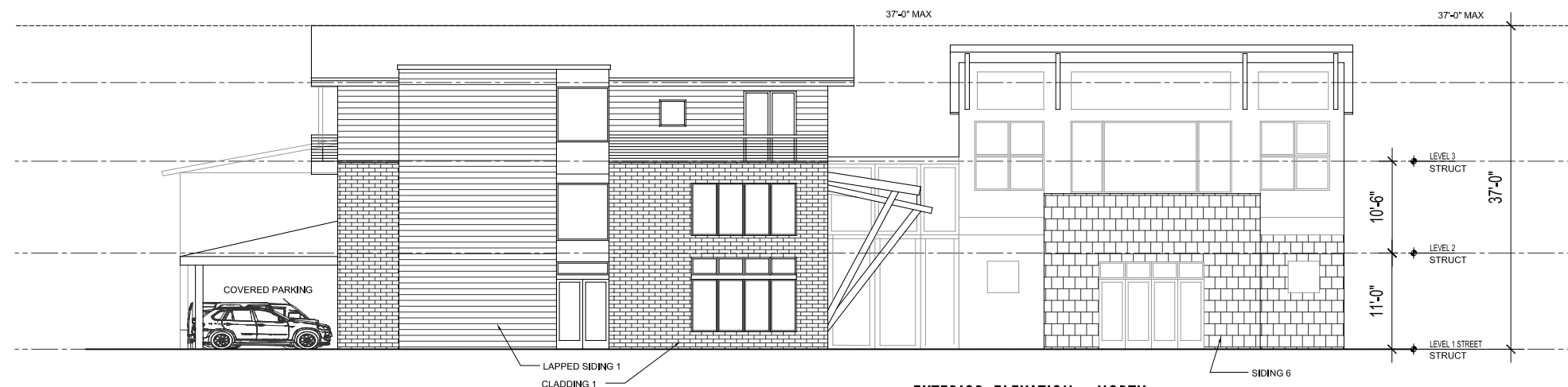
C5-4.1

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621






4 EXTERIOR ELEVATION - WEST
A4.2 1/8" = 1'-0"



3 EXTERIOR ELEVATION - NORTH
A4.2 1/8" = 1'-0"

CR-5 EXTERIOR ELEVATIONS

Print Date: MARCH 18, 2022	Issue & Revisions				  	Sheet Name:	THE LONGVIEW AT LAKOTA CANYON RANCH Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
File Name: THE LANDING AT LAKOTA CANYON RANCH						Date:	
Horiz. Scale:							
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.							



APARTMENTS






SINGLE FAMILY HOMES



COMMERCIAL MIXED USE BUILDINGS



TOWNHOMES AND MIXED USE BUILDINGS

Print Date: MARCH 18, 2022	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Issue & Revisions							Sheet Name: PRECEDENT IMAGES	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:				Sheet Number:	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:										
<small>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</small>										

COMPREHENSIVE PLAN COMPLIANCE

The Town of New Castle’s Comprehensive Plan is a guiding document that charts the course for growth and development in and around the town. It sets forth the vision and goals for the town. The Future Land Use Plan is self-described as focusing on areas outside the existing municipal boundary, primarily because most of New Castle falls within existing large and small PUDs. The Longview at Lakota falls within this category, having been master planned with an approved density and zoning during the approval of the larger Lakota Canyon PUD.

While the Future Land Use Plan’s specific use categories may not be applicable it is important to understand how Longview will contribute to the vision and goals of New Castle.

Vision – Page 8

“New residential-focused subdivisions incorporate traditional neighborhood design concepts with front porches, openness to the street, alleyways and separated sidewalks. Narrow streets contribute to neighborhood character with slower traffic speeds and high levels of social interaction. The range in size of dwelling units and unit types within all neighborhoods offers a variety of housing styles and prices. This housing diversity, in conjunction with designated affordable housing units, allows New Castle residents to work and live in their community.

Residential neighborhoods include live/work units with low-impact home occupations to allow residents to work where they live. The mix of uses lessens reliance on automobiles, decreases traffic, reduces noise/air pollution and enhances quality of life.”

The Longview focused from the outset of design on creating a sense of place and a sense of neighborhood. This is accomplished through complete and walkable streets, mixed uses of office/commercial/residential/retail/medical, and broad housing diversity. While there is not yet a robust infrastructure for alternative transportation within the town limits (such as bike share or bus circulator), Longview is about one-half mile from the RFTA park and ride so integration of a bus stop and bike infrastructure into the project was paramount. This will ensure bike and walking mobility in the near term and bus connections in the future. This and mixed uses will decrease the reliance on single and low occupancy vehicles. Traditional neighborhood design includes separated sidewalks throughout, and streets narrow enough to be approved by the Town and include ample on-street parking. The diversity of housing includes diversity of type and size. Apartments range from 1 to 3 bedrooms and are conducive to rental while modest townhouses and small lot single family homes may allow for affordable home ownership. The mixed uses within the community will be anchored by a medical hub, a much-needed resource in New Castle.

Goals – Page 33

It is the goal of the Future Land Use Plan to:

- Ensure a variety and mix of uses that complement the existing New Castle land-use patterns.
- Offer excellent non-motorized access and non-motorized traffic and interconnection between use areas for both motorized and non-motorized traffic
- Guarantee a balanced mix of housing types that support a broad range of pricing within the market.
- Make certain there are adequate open spaces, trails and connected parks.
- Offer protection of sensitive natural areas, preservation of older trees stands and conservation of resources.

- Support development of activity centers that include a sense of place where the public can interact, find services, and secure employment, and that are sustainable in the long term.
- Allow for a feathered-edge community that transitions to rural areas where open lands and agricultural uses predominate.
- Concentrate development in areas where there is good access, efficiently provided services and cost-effective utility extensions.
- Promote service delivery efficiency and energy conservation in future development areas.

The Longview at Lakota intends to:

- Ensure a variety of residential and commercial uses that provide needed health and wellness resources, opportunities for low cost office space, food and beverage that complements other uses in the community, and affordable residential opportunities.
- Provide well positioned infrastructure to ensure motorized and non-motorized interconnectivity now and in the future.
- Provide a broad mix of residential unit types, sizes, and ownership potential. This will include secure affordable housing in perpetuity.
- Include adequate trails and park spaces that are open to the public and usable by all of New Castle, not just Longview residents.
- Protect the resources of the property by ensuring that buildings and roads work WITH the landform creating terraces and steps that ensure a balance cut-fill and limited import or export of material.
- Create a sustainable development with the mixed uses, employment opportunities, and the ability to live and work within the same neighborhood.
- Ensure appropriate infill where development and growth were planned for, thus ensuring appropriate utilities are already in place.
- Promote energy efficiency and conservation in the built environment through appropriate building materials and design.

**DECLARATION
OF
COVENANTS, CONDITIONS AND RESTRICTIONS
FOR
LONGVIEW AT LAKOTA**

TABLE OF CONTENTS

**LONGVIEW AT LAKOTA
DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS**

KNOW ALL MEN BY THESE PRESENTS that RG Lakota II, LLC, a Colorado limited liability company (“Declarant”) does hereby declare and adopt the following Declaration of Covenants, Conditions and Restrictions (the “Declaration”) which shall run with the real property hereafter described, and which shall be binding upon all parties acquiring any interest therein or thereto.

RECITALS

A. Declarant is the owner of certain real estate in the Town of New Castle (the “Town”), Garfield County (the “County”), State of Colorado, which is more particularly described as follows:

Parcel C2 on the Second Amended and Restated Subdivision Exclusion/Exemption Map, according to the Plat thereof recorded October 19, 2006 as Reception No. 709280; Future Development Parcel 3 on the Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, according to the Plat thereof recorded October 19, 2004 as Reception No. 661957; and Future Development Parcel on the Lakota Canyon Ranch Filing 3, Phase 1, according to the Plat thereof recorded December 23, 2004 as Reception No. 665843 of the County Real Estate Records (collectively, the “Property”).

B. In accordance with the provisions of the Colorado Common Interest Ownership Act, C.R.S. § 38-33.3-101, *et seq.* (the “Act”), Declarant desires to create a Planned Community (the “Project”) on the Property under the name of "Longview at Lakota" in which portions of the Property will be designated for separate ownership and uses of a mixed-use nature.

C. Declarant has caused the "Longview at Lakota Owners Association, Inc.," a Colorado nonprofit corporation, to be incorporated under the laws of the State of Colorado, as an owners' association, for the purpose of exercising the functions as herein set forth.

D. Under the present P.U.D. Plan, _____ () legally separate Blocks, and _____ () legally separate Lots and _____ () legally separate Units are permitted to be created and developed in the Planned Community. The maximum number of Blocks, Lots and Units that may realistically be created and that Declarant reserves the right to create within the Planned Community is _____ () legally separate Blocks, and _____ () legally separate Lots and _____ () legally separate Units.

E. Declarant desires to establish covenants, conditions and restrictions upon the Planned Community, and certain mutually beneficial restrictions and limitations with respect to the proper use, occupancy, improvement and enjoyment thereof, all for the purposes of enhancing and protecting the value, desirability and attractiveness of the Planned Community and enhancing the quality of life within the Planned Community.

F. Declarant desires and intends that the Owners, Permittees and all other Persons hereafter acquiring any interest in the Planned Community shall at all times enjoy the benefits of, and shall hold their interests subject to, the covenants, conditions, restrictions, assessments, charges, servitudes, liens, reservations and easements contained in this Declaration, as it may be supplemented or amended from time to time.

ARTICLE 1 SUBMISSION/DEFINED TERMS

Section 1.1 Submission of Real Estate. The Declarant hereby submits the Property, together with all easements, rights, and appurtenances thereto and the buildings and improvements erected or to be erected thereon (collectively, the "Real Estate"), to the provisions of the Colorado Common Interest Ownership Act, C.R.S. §§ 38-33.3-101, *et seq.*, as it may be amended from time to time (the "Act") and to the terms and conditions of this Declaration. Declarant hereby declares that all of the Real Estate shall be held or sold, and conveyed subject to the following easements, restrictions, covenants, and conditions. Declarant further declares that, upon the Recording of this Declaration, the Property will be a "planned community" within the meaning of Section 103(22) of the Act and, thus, constitutes the Project. Each Owner, Permittee and Eligible Holder is subject to all provisions of this Declaration and those provisions are covenants running with the land or equitable servitudes, as the case may be, and bind every Person having any interest in the Project and inure to the benefit of every Owner.

Section 1.2 Defined Terms. Each capitalized term in this Declaration shall have the meaning specified or as used or defined in the Act, unless otherwise defined in this Declaration:

- (a) "Act" means the Colorado Common Interest Ownership Act, C.R.S. §§ 38-33.3-101, *et seq.*, as it may be amended from time to time.
- (b) "Assessment" includes all Common Expense Assessments, Special Benefit Assessments, and any other expense levied to a Block, Lot or Unit pursuant to this Declaration or the Act.
- (c) "Association" means Longview at Lakota Owners' Association, Inc., a Colorado nonprofit corporation, and its successors.
- (d) "Association Property" means any real property owned by the Association.
- (e) "Block" means any "Block" as designated on the Plat.
- (f) "Building Envelope" means and "Building Envelope" designated on the Plat.

(g) "Commercial Unit" means any one of the Units designated on the Plat or on any Condominium Map related to any portion of the Property as a Commercial, Retail, Office or Restaurant Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(h) "Common Expense" means any expenditure made a or liability incurred by or on behalf of the Association, together with any allocations to reserves, other than expenditures that relate to a particular Block, Lot or Unit.

(i) "Common Expense Assessment" means an Assessment levied for Common Expenses.

(j) "Community" or "Planned Community" means and refers to the mixed-use community of Longview at Lakota, which is a Planned Community as defined in the Act.

(k) "Declarant" means the Declarant named in this Declaration, and any successor and/or assignee designated by written notice or assignment executed by Declarant and by the transferee and recorded, to the extent any rights or powers reserved to Declarant are transferred or assigned to such transferee.

(l) "Declarant Control" means the period of time commencing on the date of recordation of this Declaration and expiring on the earlier of the occurrence of the events set forth in Section 7.2 hereof.

(m) "Development Rights" means those rights set forth in this Declaration and those rights set forth in the Act.

(n) "Director" means any person serving as a member of the Executive Board.

(o) "Eligible Holder" means a holder, insurer or guarantor of a first lien security interest who has delivered a written notice to the Association containing its name, address, the legal description and the address of the Block, Lot or Unit upon which it holds a security interest.

(p) "Executive Board," or "Board" means the body, regardless of name, designated in this Declaration to act on behalf of the Association.

(q) "Governing Documents" means this Declaration, the plat, any Map, the Articles of Incorporation, the Bylaws, the Rules and Regulations of the Association, and the Act, as all of the foregoing may be amended from time to time.

(r) "Improvement(s)" means structures installed within the Community or within or upon a Block or Lot.

(s) "Lot" means a "Lot" designated on the Plat or on the final plat of any Block.

(t) "Map" means a Condominium Map for any structure or land area within the Planned Community depicting and locating thereon the location of the buildings, the Units, the Common Elements, the Limited Common Elements, floors and elevations, and all of the land and improvements thereon, which Map is incorporated herein and made a part of this Declaration by reference.

(u) "Member" means and refers to those persons entitled to membership in the Association, as provided in the Bylaws and as set forth herein.

(v) "Officer" means any person serving as an officer of the Association in accordance with the Bylaws.

(w) "Owner" means any Person that owns a Block, Lot or Unit designated as such on the Plat or a final plat of a Lot or a Condominium Map within the Planned Community or any Subassociation within the Planned Community.

(x) "Permittee" means a Person, other than an Owner, rightfully present on or in rightful possession of a Block, Lot, Unit or Common Element, or a portion of a Block, Lot, Unit or Common Element, including without limitation, (i) a tenant of an Owner or the Association; or (ii) an agent, employee, customer, contractor, licensee, guest or invitee of an Owner, the Association, or a tenant of either of them.

(y) "Person" means a natural person, corporation, partnership, limited liability company, trust or other entity, or any combination of them.

(z) "Plat" means the Final Plat of Longview at Lakota approved by the Town of New Castle and recorded in the Garfield County Clerk and Recorder's Office on the ____ day of _____, 2022 at Reception No. _____, as the same may be supplemented or amended from time to time. The Plat is incorporated herein by this reference as a part of this Declaration.

(aa) "Property" has the meaning set forth in Recital A of this Declaration.

(bb) "P.U.D. Plan" or "PUD Plan" or "PUD Development Plan" means the Final PUD and Development Plan for Longview at Lakota as approved by the Town of New Castle pursuant to Ordinance No 2022-____, recorded the ____ day of _____, 2022 as Reception No. _____ of the Garfield County Clerk and Recorder's Office.

(cc) "Real Estate" means the Property described in Recital A above, together with all easements, rights, and appurtenances thereto and the buildings and improvements

erected or to be erected thereon. All easements and licenses which the Community is subject to as of the date of this Declaration are recited in Exhibit A.

(dd) "Residential Unit" means any of the Units designated as Residential Units on the Plat or a Map or in this Declaration, and any Garage Unit or Storage Unit appurtenant to any Residential Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(ee) "Restaurant Unit" means any of the Units designated as a Restaurant Unit on the Plat or any Map or in this Declaration, and any Garage Unit or Storage Unit appurtenant to any Restaurant Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(ff) "Retail Unit" means any of the Units designated as Retail Units on the Plat or any Map or in this Declaration, and any Garage Unit or Storage Unit appurtenant to any Retail Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(gg) "Rules and Regulations" means any instrument, however denominated, which is adopted by the Executive Board for the regulation and management of the Community, including any amendment to such instruments.

(hh) "Special Benefit Assessment" has the meaning set forth in Section 3.8 of this Declaration.

(ii) "Subassociation" means any Colorado nonprofit corporation, and its successors and assigns, organized and established by Declarant, or its successors and assigns, pursuant to or in connection with any portion of the Planned Community.

(jj) "Unit" means a physical portion of the Planned Community, designated for separate ownership, shown as a Unit on the recorded Plat or any Map for the Community, the boundaries of which are defined on the Plat or in the Map and in this Declaration or the declaration of any Subassociation.

(kk) "Utility Systems" has the meaning set forth in Section 2.6 of this Declaration.

ARTICLE 2 NAMES/DESCRIPTION OF REAL ESTATE

Section 2.1 Name and Type. The type of Common Interest Community is a mixed-use Planned Community. The name of the Planned Community is "Longview at Lakota." The name of the Association is the "Longview at Lakota Owners' Association."

Section 2.2 Division of Property. Declarant, pursuant to the Act, hereby divides the Property into the Blocks, Lots Units and Association Property designated on the Plat.

Section 2.3 Utility, Map and Plat Easements. Easements for utilities and other purposes over and across the Blocks, Lots, Units and Association Property may be as shown upon any recorded plat of the Community, and as may be established pursuant to the provisions of this Declaration or granted by authority reserved in any recorded document.

Section 2.4 Easements for the Association and Owners. Each Lot, Block and Unit shall be subject to an easement in favor of the Association (including its agents, employees and contractors) and to each Owner to allow for their performance of obligations in this Declaration. On exercising this easement right, the party exercising the right shall be responsible for any resulting damages, and a lien therefor is authorized and established against that party's property, pursuant to this Declaration.

Section 2.5 Emergency Easements. A nonexclusive easement for ingress and egress is hereby granted to all police, sheriff, fire protection, ambulance, and other similar emergency agencies or persons, now or hereafter servicing the Community, to enter upon any part of the Community in the performance of their duties.

Section 2.6 Utility Reservations. Declarant hereby creates and reserves to itself, until Declarant has sold the last Block, Lot or Unit that may be created to an Owner other than Declarant, and, thereafter, reserves to the Association, a blanket easement upon, across, over and under the Real Estate, the Community and the Blocks, Lots and Units for access, utilities, drainage and the installation, replacement, repair and maintenance of utilities, including but not limited to water, sewer, waste water treatment and effluent, irrigation systems, gas, telephone, internet and other telecommunications systems, electricity, heat and cooling systems, master television and satellite antenna or cable systems, roads, sidewalks, landscaping and any other utility systems as may be desired or provided (collectively, "Utility Systems"). By virtue of this blanket easement, it shall be expressly permissible for Declarant or the Association to erect and maintain the necessary facilities, equipment and appurtenances on the Real Estate and to affix, repair, and maintain landscaping, fencing, water, treated waste water, effluent, irrigation and sewer pipes, gas, electric, heat and cooling facilities, telephone and other telecommunications facilities, telephone and television wires, circuits, conduits and meters, roads, sidewalks and any other improvements or facilities appurtenant or relating to the Utility Systems. If any utility or quasi-utility company furnishing a service covered by the general easement created herein requests a specific easement, a separate right and authority to grant such easement upon, across, over or under any part or all of the Real Estate is reserved, provided the easement granted does not conflict with the terms hereof. The easement provided for in this Section shall in no way affect, avoid, extinguish or modify any other recorded easement on the Real Estate. Any damage to any improvement caused by Declarant or the Association in exercising its rights under this Section will be repaired promptly by the entity causing the damage. The foregoing, however, shall not be deemed to render the Association or Declarant liable for any damage caused by any third party, including, without limitation, any utility company.

ARTICLE 3 THE ASSOCIATION

Section 3.1 Membership. Every Person who is a record owner of a fee interest in any Block, Lot or Unit which is subject to this Declaration shall be a Member of the Association. Membership shall be appurtenant to and may not be separated from ownership of any Block, Lot or Unit. Ownership of such Block, Lot or Unit shall be the sole qualification for such membership. There shall be one (1) membership for each Block, Lot or Unit owned within the Planned Community.

Section 3.2 General Purposes and Powers of the Association. The Association, through its Executive Board, shall perform functions and manage the Community as provided in this Declaration to protect the value and desirability of the Community and the Blocks, Lots or Units and to further the collective interests of the Owners. Each purchaser of a Block, Lot or Unit shall be deemed to have assented to, ratified and approved such management. The Association shall have all power necessary or desirable to effectuate such purposes.

Section 3.3 Authority of the Association. The business affairs of the Community shall be managed by the Executive Board of the Association. The Association shall be governed by the Act, this Declaration, the Association's Articles of Incorporation and Bylaws, and any Rules and Regulations adopted by the Executive Board. The Executive Board may, by written resolution, delegate authority to a manager or managing agent for the Association, provided no such delegation shall relieve the Board of final responsibility.

Section 3.4 Specific Powers. The Association shall have the powers, authority and duties as necessary and proper to manage the business and affairs of the Community. The Association shall have all of the powers, authority and duties permitted or set forth in the Act, this Declaration, the Association's Articles of Incorporation and Bylaws, and any Rules and Regulations adopted by the Executive Board.

Section 3.5 Rules and Regulations. The Association may promulgate, supplement and amend from time to time, reasonable rules and regulations governing the use of the lots, which rules and regulations shall be consistent with the rights and duties established in this Declaration.

Section 3.6 Allocated Interests.

(a) The ownership interest, liability for Common Expenses, including for the purpose of paying real property taxes and assessments on the Association Property as provided in the Act, and the votes in the Association allocated to Blocks, Lots or Units are based upon the square footage a Unit or Lot/square footage allowed on a Block, Lot or Unit/number of Units that are (or may be) constructed at any time as set forth in this Declaration or the Map, provided that the Executive Board may determine to allocate liability for Common Expenses between or within Blocks and/or types of Units based on

usage.

(b) If Blocks, Lots or Units are added to or withdrawn from the Community pursuant to the provisions of this Declaration and the Act, the formula set forth above, or then in use, shall be used to reallocate the allocated interests.

Section 3.7 Assessments. The Association shall have the right to levy and make assessments, in accordance with its Bylaws and this Declaration, for the following purposes:

(a) To promote the recreation, health, safety, and welfare of the owners, tenants and occupants of the Property;

(b) To pay taxes and special assessments levied against any property of the Association;

(c) To provide snow removal services within the Development on a cooperative basis;

(d) To provide landscaping and irrigation services within the Development on a cooperative basis;

(e) To provide trash removal services within the Development on a cooperative basis;

(f) To pay expenses associated with the maintenance, repair, upkeep, reconstruction and replacement of roads, parking, sidewalks, and common water, sewer or storm drainage channels;

(g) To enforce and administer the covenants, conditions and restrictions herein contained and to observe and perform the functions contemplated, required or permitted by the Act, Declaration, Association's Articles of Incorporation and Bylaws, and any Rules and Regulations adopted by the Executive Board;

(h) To pay expenses associated with the maintenance of architectural integrity and design control within the Development, including the expense required to maintain and compensate the Architectural Review Committee;

(i) To pay expenses associated with coordinating community events and providing information to the members, businesses and occupants of the Development, through advertising, signage, newsletters and brochures;

(j) To sponsor or advance Community interest programs or events;

(k) To perform or provide other proper functions in the nature of Community

services;

(l) To pay costs associated with Community cleanup and improvement activities or similar projects;

(m) To provide and maintain appropriate signage identifying the Community and businesses therein;

(n) To pay wages for Association employees, Association management expenses, legal and accounting fees;

(o) To pay any deficit remaining from any previous assessment period;

(p) To create a reasonable contingency reserve, surplus and/or sinking fund;

(q) To pay any other expenses and liabilities which may be incurred by the Association for the benefit of the Owners under or by reason of the Act, this Declaration, The Association's Articles of Incorporation or Bylaws, or as otherwise permitted by law.

Section 3.8 Special Benefit Assessments. In addition to the assessments for common expenses, the Association may levy Special Benefit Assessments for other purposes which directly benefit a specific Block, Lot or group of Blocks or Lots, but fewer than all Blocks, Lots or Units. In any such case, the Special Benefit Assessment shall be levied only against the Block(s), Lot(s) or Unit(s) which directly benefit and the levy may be assessed in proportion to the size, frontage or other reasonable measure of the benefit received by each Block, Lot or Unit in comparison to the other Block(s), Lot(s) or Unit(s) within the group which benefit, all as reasonably determined by the Executive Board, or any other purposes, which in the opinion of the Executive Board, are necessary or appropriate.

Section 3.9 Indemnification. To the full extent permitted by law, each Officer and member of the Executive Board of the Association and the LRB shall be and hereby is indemnified by the Owners and the Association against all expenses and liabilities, including attorneys' fees and expenses, reasonably incurred by or imposed upon them in any proceeding to which they may be a party, or in which they may become involved, by reason of being or having been an Officer or member of the Executive Board of the Association or the LRB, or any settlements thereof, whether or not they are an Officer or member of the Executive Board of the Association or the LRB at the time such expenses are incurred; except in such cases wherein such Officer or member of the Executive Board or LRB is adjudged guilty of willful misfeasance in the performance of his or her duties; provided that in the event of a settlement, the indemnification shall apply only when the Executive Board approves such settlement and reimbursement, which approval shall not be unreasonably withheld.

ARTICLE 4 ARCHITECTURAL CONTROL

Section 4.1 Design Review Board. There is hereby established an Architectural Review Committee, known as the Longview Review Board (“LRB”), which shall consist of three (3) members appointed by the Executive Board of the Association.

Section 4.2 LRB Approval Required. No building permit application shall be submitted to the Town of New Castle and no improvements shall be constructed, erected, placed, maintained, changed or altered (including any change of exterior appearance, color or texture), nor any fence, landscaping, utility facilities or other structures be built, extended, installed or any work undertaken on any Block or Lot, until plans and specifications with respect thereto, in a form satisfactory to the LRB have been submitted to and approved by the LRB. The plans and specifications submitted shall show all exterior elevations, construction plans and specifications and include samples of materials and colors and other information as the LRB may reasonably request. In addition to building design, the application shall include a site plan, a landscape plan, and, if applicable, an irrigation plan. Such plans and specifications shall conform to the Uniform Building Code and other applicable state and local codes and be submitted in writing over the signature of the Owner of the Block or Lot or the Owner’s authorized representative. All improvements, landscaping and plans shall conform to the floor area limitations, lot coverage limitations, height restrictions, ground floor restrictions, parking requirements, design controls and development guidelines and all other requirements of the PUD Development Plan. The LRB may refuse approval of the plans upon any reasonable basis but shall not unreasonably withhold its approval of plans and specifications which are consistent with such guidelines and in harmony with the character of the neighborhood. The approval by a two-thirds (2/3) majority vote of the LRB shall constitute the approval of the LRB.

Section 4.3 Alterations. No alternation of the exterior appearance of any improvement (including color or texture), fence, utility facilities, landscaping or structures, shall be made without the approval of the LRB in like manner.

Section 4.4 Landscaping. A landscape plan shall be required as part of the approval process required for the construction of improvements on any Block or Lot. No landscaping plan shall be implemented until approval by the LRB has been obtained. No approval for the construction of a building or other improvement upon any Block or Lot shall be granted, except in conjunction with approval by the LRB of an appropriate landscaping plan. The landscape plan approved for any Block or Lot may not be altered without first submitting a revised plan to the LRB for approval.

Section 4.5 Design Standards. The LRB may revise the design controls and development guidelines imposed by the PUD Development Plan or prescribe additional standards and prescribe, revise and from time to time amend the procedures to be followed and materials to be submitted, review fees to be paid and outlining factors which will be taken into consideration in connection with the approval of any proposed improvement or landscaping.

Section 4.6 Review Fee. The LRB shall provide for the payment of a fee to

accompany each application for approval of any proposed improvement or landscaping to the Property. A uniform fee may be established, or the fee may be determined in any other reasonable manner by the LRB.

Section 4.7 Failure to Act. Any decision of the LRB shall be made within thirty (30) days after receipt of all materials required unless such time-period is extended by mutual agreement. The decision shall be in writing and, if the decision does not approve the application, the reasons shall be stated. The decision shall be promptly transmitted to the applicant at the address furnished by the applicant. Any request for approval shall be deemed approved unless disapproval or a request for additional information is transmitted to the applicant by the LRB within thirty (30) days after the date the application and all information and materials required have been submitted.

Section 4.8 Diligence in Completing the Work. Following approval of any proposed improvement, the Owner shall secure the requisite building permit from the Town of New Castle and the improvement shall be completed by the Owner as promptly and diligently as practicable in substantial conformance with the submittals made, and in accordance with all conditions imposed by the LRB. All such improvements shall be completed within twelve (12) months of the date of approval. The landscaping approved in connection with the construction of the initial improvements shall be completed within six (6) months after a Certificate of Occupancy has been issued. In all other cases, such landscaping shall be completed within six (6) months of the date of the approval. The LRB may grant extensions for excusable delays due to weather.

Section 4.9 Notice of Completion. Upon completion of the improvements and all other installations and work besides landscaping, the applicant shall give written notice to the LRB. Notice will not be deemed given until received by the LRB. Prior to the application for the issuance of any Certificate of Occupancy from the Town of New Castle, the LRB must first issue a Notice of Satisfactory Completion, or Conditional Notice of Satisfactory Completion. Failure to comply with the provisions of this paragraph shall subject the Owner to the imposition of fines, penalties and such other rights and remedies as may be available to the Association. Such failure to comply will also serve as a basis for denying the issuance of any Certificate of Occupancy by the Town of New Castle or the basis for revoking any Certificate of Occupancy obtained without compliance with the provisions of this paragraph.

Section 4.10 Inspection. The LRB or its representative, shall have the right to inspect the Block or Lot and the work prior, during and after completion.

Section 4.11 Non-Compliance. In the event the Owner fails to comply with the terms of the approval in all respects or fails to complete the work within the time specified above, the LRB shall notify the applicant in writing specifying the particulars of the non-compliance. Upon receipt of Notice of Non-Compliance, the applicant shall take such action as may be necessary to remedy and correct the deficiency. In the event of non-compliance, the LRB may, but shall not be required to accept a Performance Bond guaranteeing the satisfactory completion within a specified time. Any Performance Bond shall run to the Association. If accepted, the LRB may

then issue a Conditional Notice of Satisfactory Completion authorizing the applicant to request a Certificate of Occupancy from the Town of New Castle. The Performance Bond may be in the form of a bond issued by a corporate bonding company authorized to do business in the State of Colorado, a letter of credit upon a local bank, or a cash escrow. The amount, form, content and terms of the performance guarantee shall be determined by the LRB, in its sole and absolute discretion. All premiums, costs and expenses related to the bond, including any attorney's fees incurred by the LRB or the Association, shall be the obligation of the applicant.

Section 4.12 Non-Liability. There shall be no liability imposed on the LRB, or the Association or any member of the Executive Board of the Association, or the Declarant for any loss, damage or injury arising out of or in any way connected with the performance of the duties of the LRB, unless due to the willful misconduct of the party to be held liable. No review or approval by the LRB shall be deemed approval of the improvement for the conformance with the building codes or other governmental laws and regulations, nor shall it be deemed approval from the standpoint of safety, whether structural or otherwise. An applicant seeking the approval of the LRB for any matter shall provide the LRB with a written waiver reaffirming the foregoing and releasing the LRB, the Association, member of the Executive Board of the Association and the Declarant from any and all liability arising from or related to the LRB's approval of the improvement.

Section 4.13 No Application to Declarant. The activities of the Declarant are and shall be exempt from the provisions of this Article. Declarant reserves and shall have the right to assign all, or any part, of its rights under the provisions of this Declaration in conjunction with the transfer of the Property or any filing within the Property, by instrument executed by the Declarant and recorded in the records of Garfield County, Colorado, specifying the rights so assigned and the extent to which the assignee shall be exempt from the provisions of this Article. Thereafter, such assignee shall not be subject to the provisions of this Declaration insofar as expressly so authorized by the Declarant. Notwithstanding the foregoing, nothing contained in this Section or elsewhere in this Declaration shall exempt the Declarant from the design controls and development guidelines contained in the PUD Development Plan.

ARTICLE 5 COVENANT FOR COMMON EXPENSE ASSESSMENTS

Section 5.1 Creation of Association Lien and Personal Obligation to Pay Common Expense Assessments. Declarant, for each Block, Lot or Unit, shall be deemed to covenant and agree, and each Block, Lot or Unit Owner, by acceptance of a deed therefor, whether or not it shall be so expressed in any such deed or other conveyance, shall be deemed to covenant and agree to pay to the Association Common Expense Assessments, Special Benefit Assessments, and such other Assessments as are imposed by the Association. Such Assessments, including fees, charges, late charges, attorney fees, fines and interest charged by the Association shall be the personal obligation of the Block, Lot or Unit Owner from and after the time when the Assessment or other items charged by the Association become or fall due. The Association Common Expense Assessments and such other Assessments as are imposed by the Association,

including fees, charges, late charges, attorney fees, fines and interest charged by the Association, shall be a charge on each Block, Lot or Unit and shall be a continuing lien upon the Block, Lot or Unit against which each such Assessment or charge is made. If any Assessment is payable in installments, the full amount of the Assessment is a lien from the time the first installment becomes due. The personal obligation to pay any past due sums due the Association shall not pass to a successor in title unless expressly assumed by them and approved by the Executive Board. No Block, Lot or Unit Owner may become exempt from liability for payment of the Common Expense Assessments or other Association charges by waiver of the use or enjoyment of the Association Property or by abandonment of the Block, Lot or Unit against which the Common Expense Assessments are made. All Assessments and other Association charges shall be payable in the amounts specified in the levy thereof, and no offsets or reduction thereof shall be permitted for any reason including, without limitation, any claim that the Association or the Executive Board is not properly exercising its duties and powers under this Declaration.

Section 5.2 Assessment/Commencement of Common Expense Assessments. The Common Expense Assessment may be made on an annual basis against all Blocks, Lots or Units and shall be based upon the Association's advance budget of the cash requirements needed by it to provide for the administration and performance of its duties during each Assessment year. The budget shall be submitted to the Owners for ratification pursuant to Section 303(4) of the Act and as set forth in the Bylaws, as the Bylaws may be amended from time to time. The budget may be vetoed by votes of Owners representing three-quarters of the total votes in the Association, in which case the previously-existing budget shall continue in effect. Common Expense Assessments shall be due and payable in monthly, quarterly, or annual installments, or in any other manner, as determined by the Executive Board. Common Expense Assessments may begin on the first day of the month in which conveyance of the first Block, Lot or Unit to an Owner other than Declarant occurs. The omission or failure of the Executive Board to levy the Assessment for any period shall not be deemed a waiver, modification or a release of the Owners from their obligation to pay.

Section 5.3 Effect of Non-Payment of Assessments. Any Assessment or other Association charge provided for in this Declaration, or any monthly or other installment thereof, which is not fully paid within ten (10) days after the due date thereof, as established by the Executive Board, shall bear interest at the rate established by the Executive Board, on a per annum basis from the due date, and the Association may assess a reasonable late charge thereon as determined by the Executive Board. Failure to make payment within sixty (60) days of the due date thereof shall cause the total amount of such Owner's Common Expense Assessment for the remainder of that fiscal year to become immediately due and payable at the option of the Executive Board. Further, the Association may bring an action at law or in equity, or both, against any Owner personally obligated to pay such overdue Assessments or other Association charges, or monthly or other installments thereof, and may also proceed to foreclose its lien against such Owner's Block, Lot or Unit. An action at law or in equity by the Association against an Owner to recover a money judgment for unpaid Assessments or other Association charges, or monthly or other installments thereof, may be commenced and pursued by the Association without foreclosing, or in any way waiving, the Association's lien therefor.

Foreclosure or attempted foreclosure by the Association of its lien shall not be deemed to estop or otherwise preclude the Association from thereafter again foreclosing or attempting to foreclose its lien for any subsequent Assessment or other Association charges, or monthly or other installments thereof, which are not fully paid when due. The Association shall have the power and right to bid on or purchase any Block, Lot or Unit at foreclosure or other legal sale, and to acquire and hold, lease, mortgage, vote the Association votes appurtenant to ownership thereof, convey or otherwise deal with the same. If a foreclosure action is filed to foreclose any Assessment lien, and an Owner abandons or leaves vacant such Owner's Block, Lot or Unit, the Executive Board may take possession and rent such Block, Lot or Unit or apply for the appointment of a receiver for the Block, Lot or Unit without prior notice to the Owner. The rights of the Association shall be expressly subordinate to the rights of any holder of a first lien security interest as set forth in its deed of trust or mortgage (including any assignment of rents), to the extent permitted under the Act.

Section 5.4 Lien Priority. The lien of the Association under this Article is prior to all other liens and encumbrances on a Block, Lot or Unit except: (1) liens and encumbrances recorded before the recordation of this Declaration; (2) a first lien security interest on the Block, Lot or Unit (except as allowed by the Act with regard to the limited lien priority allowed to the Association); and (3) liens for real estate taxes and other governmental assessments or charges against the Block, Lot or Unit. This Section does not affect the priority of mechanics' or materialmen's liens. The lien of the Association under this Article is not subject to the provision of any homestead exemption as allowed under state or federal law. Sale or transfer of any Block, Lot or Unit shall not affect the lien for Assessments or other Association charges except that sale or transfer of any Block, Lot or Unit pursuant to foreclosure of any first lien security interest, or any proceeding in lieu thereof, including deed in lieu of foreclosure, or cancellation or forfeiture shall only extinguish the lien for Assessments or other Association charges as provided by applicable state law. No such sale, transfer, foreclosure, or any proceeding in lieu thereof, including deed in lieu of foreclosure, nor cancellation or forfeiture shall relieve any Block, Lot or Unit from continuing liability for any Assessment or other Association charges thereafter becoming due, nor from the lien therefor.

Section 5.5 Owner's Negligence or Misconduct. In the event that the need for maintenance, repair, or replacement of the Association Property, or any portion thereof, is caused through or by the negligent or willful act or omission or misconduct of an Owner, or the Owner's agents, employees, guests, customers, or invitees, then the expenses, costs, and fees incurred by the Association for such maintenance, repair, or replacement shall be a personal obligation of such Owner. If such expenses, costs and fees incurred by the Association are not repaid to the Association within seven (7) days after the Association shall have given notice to the Owner of such expenses, costs, and fees, then the failure to so repay shall be a default by the Owner under the provisions of this Declaration. Such expenses, costs, and fees shall automatically become a default Assessment determined and levied against such Block, Lot or Unit, and the Association may proceed in accordance with the provisions of this Article.

ARTICLE 6

RESTRICTIONS ON USE

Section 6.1 Use, Occupancy and Use Protection. The regulations contained in the PUD Development Plan shall control and govern the use and development of the Property. Uses permitted by right on any Block or Lot in Longview at Lakota are as set forth in the PUD Development Plan. For purposes of this Declaration, the property owner's association established in connection with any condominium developed upon a Lot, shall be considered and treated as the owner of that Lot for purposes of assessments and other purposes deemed convenient by the Association.

Section 6.2 Vehicular Parking, Storage, and Repairs.

(a) Subject to the development rights of Declarant, vehicular parking upon the Association Property shall be regulated by the Executive Board.

(b) No activity such as, but not limited to, maintenance, repair, rebuilding, dismantling, repainting, or servicing of any kind of vehicle, trailer or boat, may be performed or conducted within the Community.

(c) The Rules and Regulations of the Association shall govern the types of vehicles that may be parked or stored within the Community.

Section 6.3 Signs. A plan and description for all signs shall be submitted to the LRB in such detail as it may prescribe. Any such sign must be approved by the LRB before it may be erected upon any part of the Property. Signage within the Community shall comply with the requirements and limitations contained in the PUD Development Plan.

Section 6.4 Nuisances. No nuisance shall be permitted within the Community, nor any use, activity or practice which is reasonably the source of annoyance or embarrassment to, or which reasonably offends or disturbs, any Block, Lot or Unit Owner or which may unreasonably interfere with the peaceful enjoyment or possession or the proper use of a Block, Lot or Unit or Association Property, or any portion of the Community by Owners or Permittees. Further, no immoral, improper, offensive or unlawful use shall be permitted within the Community or any portion thereof. All valid laws, ordinances and regulations of all governmental bodies having jurisdiction over the Community or a portion thereof shall be observed. As used herein, the term "nuisance" shall not include any activities of Declarant or its assignees which are reasonably necessary to the development and construction of improvements within the Community.

Section 6.5 Compliance with Insurance Requirements. Except as may be approved in writing by the Executive Board, nothing shall be done or kept on the Community which may result in a material increase in the rates of insurance or would result in the cancellation of any insurance maintained by the Association.

Section 6.6 Leases. All lease agreements pertaining to any Block, Lot or Unit or

portion thereof shall be in writing. Every lease agreement shall provide that the lease is subject, in all respects, to the provisions of the PUD Development Plan, the Act, this Declaration, the Articles of Incorporation and the Bylaws of the Association, and that any failure by the tenant to comply with the terms of such documents shall be a default under the lease.

Section 6.7 Food-Related Operations. In addition to the restrictions and obligations set forth elsewhere in this Declaration and in the Rules and Regulations, owners of food-related businesses in the Community shall have special obligations, at their sole cost and expense, to assure that their trash is properly stored and removed, that grease generated by their operations is properly disposed of, that interceptors or traps relating to the disposal of such grease are properly maintained, that cooking odors emanating from their premises are properly vented, that they observe proper pest control practices, and that noise within or appurtenant to their establishments is controlled and does not become a nuisance, within the intent of Section 6.4 of this Declaration, to others in the Community. In the event any owner of a food-related business in the Community fails to comply with the requirements of this Section, the Association may make arrangements for the necessary services, the cost of such services shall be charged to the Owner of the Unit or Units in which such food-related business is conducted.

Section 6.9 Rules and Regulations. In furtherance of the provisions of this Declaration, Rules and Regulations concerning and governing the Community or any portion thereof may be adopted, amended, or repealed, from time to time, by the Executive Board, or its successors and assigns. The Executive Board may establish and enforce penalties or fines for the infraction thereof and take any other remedial action the Executive Board may deem necessary and proper for such purpose.

Section 6.10 Declarant's Use. Notwithstanding anything to the contrary contained in this Declaration, it shall be expressly permissible for Declarant, its assigns, employees and agents, to perform such reasonable activities, and to maintain upon portions of the Community such facilities as are reasonably necessary or incidental to the construction and sale of Blocks, Lots or Units in the development of the Community, specifically including, without limiting the generality of the foregoing, the maintenance of temporary business offices, construction trailers, storage areas, trash bins, construction yards and equipment, signs, model units, temporary sales offices, parking areas and lighting facilities.

ARTICLE 7 DECLARANT RESERVED RIGHTS

Section 7.1 This Article Controls. The provisions of this Article shall supersede and control all inconsistent and conflicting provisions of this Declaration.

Section 7.2 Period of Declarant Control. Notwithstanding any other provisions hereof, Declarant shall have and hereby reserves the power to appoint and remove, in its sole discretion, the members of the Executive Board and the officers of the Association during the period commencing upon the Recording of this Association and terminating no later than the

earlier of (a) sixty (60) days after conveyance of seventy-five percent (75%) of the Blocks, Lots and other portions of the Property that may be created to Owners other than Declarant; or (b) two (2) years after the last conveyance of a Lot, Block or Unit by the Declarant in the ordinary course of business; or (c) two (2) years after any right to add new Blocks, Lots or Units was last exercised by Declarant.

During said Period of Declarant Control of the Association:

(a) Not later than sixty (60) days after conveyance of twenty-five percent (25%) of the Blocks, Lots and Units that may be created to Owners other than Declarant, at least one (1) member and not less than twenty-five percent (25%) of the members of the Executive Board must be elected by Block, Lot and Unit Owners other than Declarant.

(b) Not later than sixty (60) days after conveyance of fifty percent (50%) of the Blocks, Lots or Units that may be created to Owners other than Declarant, not less than thirty-three and one-third percent (33-1/3%) of the members of the Executive Board must be elected by Block, Lot and Unit Owners other than Declarant.

At any time prior to the termination of the Period of Declarant Control of the Association, the Declarant may voluntarily surrender and relinquish the right to appoint and remove officers and members of the Executive Board, but in such event Declarant may require, for the duration of the Period of Declarant Control of the Association, that specified actions of the Association or the Executive Board, as described in a Recorded instrument executed by Declarant, be approved by Declarant before they become effective. As to such actions, Declarant may give its approval or disapproval in its sole discretion and option, and its disapproval shall invalidate any such action by the Executive Board or the Association. Not later than the termination of the Period of Declarant Control of the Association, the Owners (including Declarant) shall elect an Executive Board of at least three (3) members, at least a majority of whom must be Owners other than Declarant or designated representatives of Owners other than Declarant, and the Executive Board shall elect the officers, with such Executive Board members and officers to take office upon election. Pursuant to Section 38-33.3-303(9) of the Act, within sixty (60) days after Owners other than Declarant elect a majority of the members of the Executive Board, Declarant shall deliver to the Association all property of the Owners and of the Association held or controlled by Declarant, including without limitation the following items:

(a) The original or a certified copy of the recorded Association as amended, the Association's Articles of Incorporation, Bylaws, minute books, other books and records, and any rules and regulations which may have been promulgated;

(b) An accounting for Association funds and financial statements from the date the Association received funds and ending on the date the Period of Declarant Control ends. The financial statements shall be audited by an independent certified public accountant and shall be accompanied by the accountant's letter, expressing either the opinion that the financial statements present fairly the financial position of the

Association in conformity with generally accepted accounting principles or a disclaimer of the accountant's ability to attest to the fairness of the presentation of the financial information in conformity with generally accepted accounting principles and the reasons therefor. The expense of the audit shall not be paid for or charged to the Association.

- (c) The Association funds or control thereof;
- (d) All of the Declarant's tangible personal property that has been represented by the Declarant to be the property of the Association or all of the Declarant's tangible personal property that is necessary for, and has been used exclusively in, the operation and enjoyment of Association property, and inventories of these properties;
- (e) A copy, for the nonexclusive use by the Association, of any plans and specifications used in the construction of the improvements in the Planned Community;
- (f) All insurance policies then in force, in which the Owners, the Association, or its directors and officers are named as insured persons;
- (g) Copies of any certificates of occupancy that may have been issued with respect to any improvements comprising the Planned Community;
- (h) Any other permits issued by governmental bodies applicable to the Planned Community and which are currently in force or which were issued within one year prior to the date on which Block, Lot and Unit Owners other than the Declarant took control of the Association;
- (i) Written warranties of contractors, subcontractors, suppliers, and manufacturers that are still effective;
- (j) A roster of Owners and Occupants and Mortgagees and their addresses and telephone numbers, if known, as shown on the Declarant's records;
- (k) Employment contracts in which the Association is a contracting party; and
- (l) Any service contract in which the Association is a contracting party or in which the Association or the Owners have any obligation to pay a fee to the persons performing the services.

Section 7.3 Reserved Rights. Declarant hereby expressly reserves to itself and its successors and assigns the following described rights, which include Development Rights and Special Declarant Rights, any one or more of which rights may be exercised, in the sole and absolute discretion of Declarant, at any time and from time to time during the period commencing upon the Recording of this Declaration in the County and ending on the date of termination of such rights established under Section ____ below. It is expressly understood that Declarant shall not be obligated to exercise any of these reserved rights, and that no consent shall

be required from any Owner, Mortgagee, Special District or the Association for the effective exercise of any of these reserved rights.

Except as limited by this Article 7, such reserved rights may be exercised upon or in connection with all or any portion of the Planned Community. Such rights may be exercised with respect to different parcels of said real estate at different times, and in connection therewith Declarant hereby states that (i) no assurances are made regarding the boundaries of said different parcels or with respect to the order in which such parcels may be subjected to the exercise of these reserved rights, even if a reference to a phase or phasing appears in a legal description, Plat, P.U.D. Plan or other agreement relating to the property, and (ii) if a particular reserved right is exercised in any portion of the Property subject to that reserved right, that reserved right is not required to be exercised in all or any portion of the remainder of the Property.

The reserved rights hereinafter set forth shall be prior and superior to any other provisions of this Declaration or of any Supplemental Declaration, and may not be amended, modified, terminated or otherwise altered in any way without the express prior written consent of Declarant. All conveyances of Blocks, Lots and Units and other portions of the Planned Community hereafter made, whether by Declarant or otherwise, shall be deemed and construed to reserve to Declarant and/or to grant to Declarant all of the rights reserved by and to Declarant in this Article 7 and elsewhere in this Declaration or in any Supplemental Declaration, even though no specific reference to such rights appears in the conveyancing instruments. Nothing in this Article 7 shall limit or impair any other rights granted or reserved to Declarant by other provisions of this Declaration or of any Supplemental Declaration.

The following rights are hereby reserved to Declarant and its successors and assigns:

(a) The right, but not the obligation, to construct additional Improvements on the Property at any time and from time to time for the improvement and enhancement thereof. Furthermore, the right throughout the Planned Community to complete Improvements indicated on the Plat filed with this Declaration, and on any Supplemental Plats filed with any Supplemental Declarations, as such Plats and Declarations may be amended from time to time. Furthermore, the right to construct and complete Improvements required by the terms of any Subdivision Improvements Agreement(s) that may hereafter be executed by Declarant in connection with the Planned Community, as such Agreements may be amended from time to time. Furthermore, the right to create, grant and/or use and enjoy additional non-exclusive easements, and to relocate existing platted or other easements, upon or across any portion of the Planned Community (including Blocks and Lots), as may be reasonably required for the construction by Declarant of the above-described improvements or the effective exercise by Declarant of any of the other reserved rights described in this Article 7.

(b) The right to construct, locate or operate, and to maintain upon, and to remove from, any part of the Planned Community including Blocks and Lots owned by Declarant and Association property, in the discretion of Declarant, and in such number,

size and location as may be reasonably required by Declarant in connection with the completion of Improvements, the management of the development, and/or the promotion, marketing, sale or rental of Blocks, Lots or Units, the following: (1) sales offices, management offices, and/or construction offices, and structures containing or relating to the same. Such offices, to the extent they are not situated on a Lot, are hereby declared to be personal property of the Declarant and shall in any case be removable by Declarant or its successors or assigns promptly upon the Declarant or its successors or assigns ceasing to be a Block, Lot or Unit Owner; (2) signs identifying and advertising the Planned Community and the Blocks, Lots and/or Units therein, or relating to development or construction thereon; (3) model residences constructed or to be constructed on Lots; (4) parking areas and facilities, and lighting, necessary or desirable in the marketing of the Planned Community; (5) maintain employees in offices; equipment; vehicles; and marketing and construction materials; and (6) the right to attract, invite or bring prospective purchasers of Blocks, Lots and/or Units into the Planned Community at all times, and to permit them to use and enjoy the Planned Community.

(c) The right to make the Planned Community subject to the Lakota Canyon Ranch Master Association.

(d) The right to create Subassociations within the Planned Community subject to the Association.

(e) The right to record amendments to the Declaration and Plat, whether in the form of Supplemental Declarations and Supplemental Plats or otherwise, which reallocate the Allocated Interests in the Planned Community, shall automatically vest in each existing Owner the reallocated Allocated Interests appurtenant to the Owner's Block, Lot or Unit; and vest in each existing Mortgagee a perfected security interest in the reallocated Allocated Interests appurtenant to the encumbered Block, Lot or Unit.

(f) The right to subdivide any Declarant-owned Block, Lot or parcel located within the Planned Community to create additional Lots, Association Property, and/or streets, subject to the maximum number of Lots and Units set forth in this Declaration; provided, however, that such subdivision is consistent with the P.U.D. Plan as approved by the Town of New Castle or that said P.U.D. Plan is amended if necessary, and that the subdivision is accomplished in compliance with New Castle subdivision requirements. Upon the subdivision of any Block, Lot or parcel in accordance with the terms and conditions contained herein, the Allocated Interests of all Owners shall be reallocated in accordance with the definition of Allocated Interests contained in this Declaration.

(g) The right, but not the obligation, to transfer additional real and personal property, and Improvements thereon, to the Association from time to time in furtherance of this Declaration.

(h) Subject to compliance with any applicable Town of New Castle requirements, the right with respect to all or any Declarant-owned portion of the Planned

Community (including the Blocks or Lots) to (a) create Association property (including Limited Common Areas); (b) create additional Lots, subject to the maximum number set forth in this Declaration; (c) create Units; (d) subdivide Blocks or Lots; (e) combine Blocks and/or Lots; (f) reconfigure Blocks and/or Lots and/or Association Property and/or Association property, or otherwise modify or amend recorded Plats; (g) amend the P.U.D. Plan; (h) convert Lots into Association property and/or streets; and (i) convert Association Property into Lots and/or streets. Additionally, in order to effectively exercise the rights reserved to Declarant under this Article 7, the right to amend this Declaration (without the consent of Owners, Mortgagees or the Association being required) for purposes of (i) complying with or qualifying for federal or state registration of the project (ii) satisfying title insurance requirements, or (iii) bringing any provision or provisions of the Declaration into compliance with the Act.

Section 7.4 Owner Waiver. Each Owner, by its acceptance of a deed or other conveyance vesting in the Owner an interest in a Block, Lot or Unit in the Planned Community, acknowledges that the Owner has carefully reviewed and understands the P.U.D. Plan (as it may be amended from time to time) and the Declarant's reserved rights as set forth in this Article 7 or elsewhere in this Declaration or in any Supplemental Declaration, that the Owner accepts and approves such matters and appreciates any potential impacts that the implementation of the Planned Community and/or the exercise of such reserved rights may have on the Owner's Block, Lot or Unit, and expressly waives any rights the Owner may have to object to or to interfere in any way with the implementation of or the exercise of such rights.

Section 7.5 Owner's Attorney in Fact. Each Owner, by its acceptance of a deed or other conveyance vesting in the Owner an interest in a Block, Lot or Unit in the Planned Community, does hereby irrevocably constitute and appoint Declarant (with full power of substitution) as said Owner's attorney-in-fact, in said Owner's name, place and stead, to take any and all actions and to execute and deliver any and all instruments as may be necessary or appropriate to Declarant's exercise of the various rights reserved to Declarant under this Article 7 or elsewhere in this Declaration or in any Supplemental Declaration, specifically including without limitation Declarant's reserved right to use all existing easements within the Planned Community, or to create, grant, use and/or replat and relocate additional or existing easements across any portion of the Planned Community excepting platted Building Envelopes.

Section 7.6 Transfer of Declarant's Reserved Rights. Any one or more rights created or reserved for the benefit of Declarant under this Article 7 or elsewhere in this Declaration or in any Supplemental Declaration may be transferred to any Person by an instrument describing the right or rights transferred and recorded in Garfield County. Such instrument shall be executed by the transferor Declarant and the transferee. The provisions of Section 38-33.3-304 of the Act shall apply to any transfer of special declarant rights.

Section 7.7 Termination of Declarant's Reserved Rights. With the exception of Declarant's right to appoint or remove Executive Board members and officers of the Association, the rights reserved to Declarant in this Article 7 shall automatically terminate and expire upon the first to occur of (i) the date which is fifty (50) years after the Recording of this Declaration,

or (ii) Declarant's relinquishment and surrender of such rights by Recorded instrument. Declarant may from time to time relinquish and surrender one or more but less than all of the reserved rights, in which event the unrelinquished reserved rights shall remain fully valid and effective for the remainder of the term thereof. The Association may extend the time period for exercise of a development right, or reinstate a lapsed development right, subject to whatever terms, conditions and limitations the Association may impose on the subsequent exercise of the development right. The extension or renewal of a development right and any terms, conditions and limitations shall be included in an amendment executed by Declarant or the owner of the real estate subject to the development right and the Association.

ARTICLE 8 INSURANCE/CONDEMNATION

Section 8.1 Insurance Requirements. Commencing not later than the time of the first conveyance of a Block, Lot or Unit to a person other than Declarant, the Association shall maintain the following types of insurance to the extent that such insurance is reasonably available, considering the availability, cost and risk coverage provided by such insurance, and the cost of such coverage shall be paid by the Association as a Common Expense, unless assessed to the Owners based on risk. Notwithstanding any of the specific insurance requirements contained in this Article, the Association may also consider, in determining the types and amounts of insurance it needs to obtain, the then-existing requirements of the Agencies with respect to their insurance, guaranty, or purchase of mortgages:

(a) Property Insurance. A policy of property insurance covering all insurable improvements located within the Community, except for land, foundation, excavation and other matters normally excluded from coverage, in an amount not less than the full insurable replacement cost of the insured property less applicable deductibles at the time the insurance is purchased and at each renewal date. Such policy shall also include coverage for or contain a "Replacement Cost Endorsement" providing that any claim will be settled on a full replacement cost basis without deduction for depreciation, an "Inflation Guard Endorsement," and a "Steam Boiler and Machinery Coverage Endorsement" with minimum coverage per accident equal to the insurable value of the building in which the machinery is located. The Association will also purchase endorsements and/or coverage on personal property owned by the Association, including fixtures and building service equipment. Such insurance shall afford protection against at least loss or damage by fire and other perils normally covered by the standard extended coverage endorsement, and such other risks as shall customarily be covered with respect to projects similar in construction, location and use, including all perils normally covered by the standard "all risk" endorsement, where such is available.

(b) Liability Insurance. A comprehensive policy of general liability insurance against claims and liabilities arising in connection with the ownership, existence, use or management of the Association Property and covering public liability or claims of liability for injury to persons and/or property, and death of any person or persons. Such

liability insurance shall, to the extent reasonably obtainable, (i) have limits of not less than Two Million Dollars (\$2,000,000) in the aggregate and One Million Dollars (\$1,000,000) per occurrence; (ii) insure the Executive Board, the Association and its officers, and their respective employees, agents and all persons acting as agents; (iii) include the Owners as additional insureds, but only for claims and liabilities arising in connection with the ownership, existence, use or management of the Association Property; (iv) cover claims of one or more insured parties against other insured parties; and (v) be written on an occurrence basis.

(c) Fidelity Insurance. A policy providing comprehensive fidelity coverage or fidelity bonds to protect against dishonest acts on the part of Officers, Directors, trustees and employees of the Association and all others who handle or are responsible for handling funds of the Association, in an amount at least equal to the estimated maximum amount of funds, including reserves, in the custody of the Association, its Officers, Directors, trustees and employees at any given time. Such coverage shall name the Association as an obligee. In the event the Association has delegated some or all of its responsibility for the handling of funds to a managing agent, the Association may require the managing agent to purchase, at its own expense, a policy of fidelity insurance or bonds which fully complies with the provisions of this subparagraph (c). In addition, the managing agent may be required to maintain such other insurance for the benefit of the Association as the Association shall deem necessary.

(d) Directors and Officers Liability Insurance. A policy to protect Directors and Officers of the Association from personal liability in relation to their duties and responsibilities in acting as directors and officers on behalf of the Association.

(e) Worker's Compensation and Employer's Liability Insurance. Worker's compensation and employer's liability insurance and all other similar insurance with respect to the employees, if any, of the Association, in the amounts and forms as may be required by law.

(f) Other Insurance. The Association may obtain insurance against such other risks, of similar or dissimilar nature, including flood insurance, as the Executive Board shall deem appropriate, to the extent that such coverage is reasonably available.

Section 8.2 Insurance Trustee. The Executive Board shall have authority to authorize an insurance trustee to assist and consult with it and/or act as its agent and attorney-in-fact for one or more of the following purposes: to purchase and maintain the insurance required under this Declaration, to negotiate and compromise settlement of losses under any insurance, and to collect the proceeds from any insurance, hold such proceeds in trust for the Owners and Eligible Holders as their interests may appear and dispose of such proceeds as provided in this Declaration and in the Act.

Section 8.3 Notice of Cancellation. If any insurance required by this Article to be

obtained by the Association is not reasonably available or is canceled or not renewed without a replacement policy having been obtained, the Association shall promptly cause notice of that fact to be hand delivered or sent by prepaid first-class mail to all Owners.

Section 8.4 Nonliability of Association and Directors. Notwithstanding the duty of the Association to obtain insurance coverage, as stated herein, neither the Association nor any Director shall be liable to any Owner, mortgagee or other person if any risks or hazards are not covered by insurance, or if the appropriate insurance is not obtained because such insurance coverage is not reasonably obtainable on the Association's behalf, or if the amount of insurance is not adequate, and it shall be the responsibility of each Owner or other person to ascertain the coverage and protection afforded by the Association's insurance and to procure and pay for such additional insurance coverage and protection as the Owner or such other person may desire, provided that Owners (or their tenants) shall, in any event, be required to obtain the insurance specified in this Declaration.

Section 8.5 Distribution of Condemnation and Property Insurance Proceeds. In the event proceeds of condemnation or property insurance become available for distribution to Owners, the Association shall make such distribution in accordance with the respective interests of the Owners and mortgagees as they appear of record and pursuant to the Act.

ARTICLE 9 GENERAL PROVISIONS

Section 9.1 Compliance with and Enforcement of Governing Documents. In addition to the provisions this Declaration:

- (a) Every Owner and Permittee shall comply with the Governing Documents.
- (b) The Association, acting through the Executive Board, may enforce all applicable provisions of the Governing Documents and may impose sanctions for violation thereof. Such sanctions may include, without limitation:
 - (i) imposition of reasonable monetary fines, after notice and opportunity for a hearing, which fine shall constitute a lien upon the violator's Block, Lot or Block, Lot or Unit (in the event that any occupant, guest, or invitee of an Owner violates the Governing Documents and a fine is imposed, the fine shall first be assessed against the violator; provided, however, if the fine is not paid by the violator within the time period set by the Executive Board, the Owner shall pay the fine upon notice from the Executive Board);
 - (ii) suspension of the right to vote;
 - (iii) suspension of any services provided by the Association to an Owner or the Owner's Block, Lot or Unit if the Owner is more than thirty (30)

days delinquent in paying any Assessment or other charge owed to the Association;

(iv) exercise of self-help or action to abate any violation of the Governing Documents in a non-emergency situation;

(v) requiring an Owner, at the Owner's expense, to remove any structure or improvement on such Owner's Lot or Block in violation of the Governing Documents and to restore the Block or Lot to its previous condition and, upon failure of the Owner to do so, the Executive Board or its designee shall have the right to enter the property, remove the violation and restore the property to substantially the same condition as previously existed and any such action shall not be deemed a trespass; and

(vi) levy of specific Assessments to cover costs incurred by the Association to bring a Block, Lot or Unit into compliance with the Governing Documents.

(c) In addition, the Association, acting through the Executive Board, may take the following enforcement procedures to ensure compliance with the Governing Documents:

(i) exercise of self-help in any emergency situation (specifically including, but not limited to, the towing of vehicles that are in violation of any parking rules and regulations); and/or

(ii) institution of suit at law or in equity to enjoin any violation or to recover monetary damages or both.

(d) All remedies set forth in the Governing Documents shall be cumulative of any remedies available at law or in equity. In any action to enforce the Governing Documents, the prevailing party shall be entitled to recover all costs, including, without limitation, attorneys' fees and court costs reasonably incurred in such action.

(e) The decision to pursue enforcement action in any particular case shall be left to the Executive Board's discretion, except that the Executive Board shall not be arbitrary or capricious in taking enforcement action.

(f) Any Person attempting to enforce a provision of the Act, this Declaration, the Articles or the Bylaws, including, without limitation, attempting to collect delinquent Assessments, regardless of whether a suit is initiated, may recover reasonable attorneys' fees and other legal costs incurred in successfully enforcing the provision to the extent provided in Section 123 of the Act. Any Owner who is successful in defending such a claim raised against it is also entitled to reasonable attorneys' fees and other legal costs it

incurs in successfully defending such a claim to the extent provided in Section 123 of the Act.

(g) In accordance with and furtherance of Section 124 of the Act, before an aggrieved Owner may prosecute any proceeding at law or in equity enforcing the provisions of this Declaration or seeking other relief relating to a violation or attempted violation of the provisions of this Declaration, the Owner will first give written notice to the Board specifying the violation or attempted violation of the provisions of this Declaration, the facts and circumstances surrounding the violation, and the name of the Person alleged to have violated or attempted to violate the provisions of this Declaration. The Association may initiate a proceeding at law or in equity to enforce the provisions of this Declaration, to prevent a violation or to obtain damages for damage to the Association Property resulting from the violation or may otherwise enforce the provisions of this Declaration. The aggrieved Owner may exercise any of its rights if (i) the violation or attempted violation results or would result in direct and immediate physical damage to the Owner's Block, Lot or Unit; or (ii) the Association fails to enforce or cause enforcement of the violated provisions of this Declaration within 60 days after the Board receives the Owner's notice.

Section 9.2 Severability. Each of the provisions of this Declaration shall be deemed independent and severable. If any provision of this Declaration or the application thereof to any person or circumstances is held invalid, the invalidity shall not affect other provisions or applications of this Declaration which can be given effect without the invalid provisions or applications.

Section 9.3 Term of Declaration. The covenants and restrictions of this Declaration shall run with and bind the land in perpetuity.

Section 9.4 Amendment of Declaration by Declarant. If Declarant shall determine that any amendments to this Declaration shall be necessary in order to make non-material changes, such as for the correction of a technical, clerical or typographical error or clarification of a statement or for any changes to property not yet part of the Community, then, subject to the following sentence of this Section, Declarant shall have the right and power to make and execute any such amendments without obtaining the approval of any Owners. In furtherance of the foregoing, a power coupled with an interest is hereby reserved and granted to Declarant to make or consent to an amendment under this section on behalf of each Owner. Each deed, security interest, other evidence of obligation or other instrument affecting a Block, Lot or Unit and the acceptance thereof shall be deemed to be a grant and acknowledgment of, and a consent to the reservation of, the power of Declarant to make, execute and record an amendment under this Section.

Section 9.5 Amendment of Declaration by Owners. Except as otherwise provided in this Declaration and subject to provisions elsewhere contained in this Declaration requiring the consent of Declarant or others, any provision, covenant, condition, restriction or equitable

servitude contained in this Declaration may be amended or repealed at any time and from time to time upon approval of at least a majority of the total number of votes of the Members of the Association entitled to be cast, including after Declarant Control at least twenty-five percent (25%) of the votes entitled to be cast by the Members of the Association who own Residential Lots or Units and at least twenty-five (25%) of the votes entitled to be cast by the Members of the Association who own Commercial Lots or Units. The amendment or repeal shall be effective upon the recordation in the office of the Clerk and Recorder of Garfield County, State of Colorado of a certificate setting forth the amendment in full and certifying that the amendment has been approved as set forth above. Anything in the foregoing to the contrary notwithstanding, Sections of this Declaration concerning obtaining the approval of the Town of New Castle may not be amended without the written consent of the Town of New Castle.

Section 9.6 Exemption. The Declarant and the Declarant's activities shall, in all respects, comply with the provisions of the PUD Development Plan approved by the Town of New Castle. However, neither the Declarant, nor any of the Declarant's activities shall be subject to any of the other provisions in this Declaration or subject to the control or the jurisdiction of the LRB. The Declarant shall have the right, power, and authority to grant a lot or lots temporary or perpetual relief or exemption so granted shall be reduced to writing, executed by the Declarant, acknowledged in the manner of a deed and recorded in the office of the Clerk and Recorder of Garfield County, Colorado, before the same shall become effective. The Declarant may assign, in whole or in part, any of its privileges, exemptions, rights, and duties under this declaration to any other party.

Section 9.7 Captions. All captions and titles used in this Declaration are intended solely for convenience of reference and shall not enlarge, limit or otherwise affect that which is set forth in any paragraph, section or article hereof.

Section 9.8 Interpretation. The provisions of this Declaration shall be liberally construed to effectuate their purposes of creating a uniform plan for the development of the Community and of promoting and effectuating the fundamental concepts as set forth in the recitals of this Declaration. This Declaration shall be construed and governed under the laws of the State of Colorado.

Section 9.9 Singular Includes the Plural. Unless the context otherwise requires, the singular shall include the plural, and the plural shall include the singular, and each gender referral shall be deemed to include the masculine, feminine and neuter.

Section 9.10 Validity of Amendments. As provided by the Act, any action to challenge the validity of an amendment of this Declaration must be brought within one year after the amendment is recorded in the real property records of Garfield County, Colorado.

Section 9.11 No Waiver. In no event will the Association's failure to enforce any covenant, restriction or rule provided for in the Act, this Declaration, the Articles, the Bylaws or the Rules constitute a waiver of the Association's right to later enforce such provision or any

other covenant, restriction or rule.

Section 9.12 Recitals. The Recitals set forth above are incorporated into and are a material part of this Declaration.

ARTICLE 10 ALTERNATIVE DISPUTE RESOLUTION

IMPORTANT NOTICE: Agreement to Encourage Resolution of Disputes; Exclusive Procedures; Statutes of Limitation. Declarant, the Association, and their respective officers and directors, all Owners, and any person not otherwise subject to the Declaration but who agrees to submit to the procedures set forth in this Article (these “Procedures”), including all construction professionals as that term is defined in C.R.S. §13-20-802.5(4) (each of the foregoing being referred to as a “Party”), hereby agree to encourage the amicable resolution of disputes involving the Property and all of its improvements without the costs of litigation. Accordingly, each Party covenants and agrees to submit all Claims (as defined below) to the Procedures set forth herein and not to a court of law. **All Parties hereby agree to the mandatory mediation and arbitration of all Claims as set forth in this Article and irrevocably waive any right to trial of any Claim by jury or otherwise in a court of law.**

Section 10.01 Procedures Sole Remedy. Each Party agrees that these Procedures shall be the sole and exclusive remedy that each Party shall have for any Claim. Should any Party commence litigation or any other action against any other Party in violation of the terms of this Article, such Party shall reimburse all costs and expenses, including reasonable attorneys' fees, incurred by the other Party(ies) in such litigation or action within ten (10) days after written demand. The Parties understand and agree that no Claim may be initiated after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitation or statute of repose.

Section 10.02 Purpose. Without modifying or restricting the scope of these Procedures and as a statement of clarification only, the purpose and intent of these Procedures is to foster constructive dialogue between the Parties, to permit corrective measures to be implemented without the necessity of final settlement documentation, to inform Parties of implications related to certain Claims that may not otherwise be readily apparent to such Parties, and to assist the Parties in resolving Claims, if possible, *before* incurring significant legal and other expenses, particularly through the informal Procedures set forth in Section 10.05 below.

Section 10.03 Definitions.

- (a) Claim. As used in this article, the term “Claim” shall mean all claims, disputes and other controversies between one Party and another Party, regardless of how the same may have arisen or on what it might be based, excepting only those matters identified as exclusions in this Section below. Without limiting the generality of the foregoing, “Claim” shall include all claims, disputes or

controversies relating to or arising out of, in whole or in part, any of the following: (a) any purchase and sale agreement (“Agreement”) between Declarant and any Owner; (b) the Property or any Block, Lot or Unit (as defined in any such Agreement); (c) the purchase of the Property or the Unit; (d) the interpretation, application or enforcement of any of the Association Documents; (e) the soils of any property that lie within the Property or the presence of radon and/or mold within any Unit or other areas within the Property; (f) land development, design, construction and/or alteration of any of the improvements within the Property and/or any alleged defect therein; (g) any rights, obligations or duties of any Party under any of the Association Documents or any warranty, whether express, implied or limited, owed by a Party; (h) any limited warranty agreement between Declarant and any Owner and/or the Association; or (i) any breach of any of the foregoing referenced documents.

Notwithstanding the foregoing, the following will not be considered “Claims” unless all parties to the matter otherwise agree to submit the matter to the Procedures set forth in this Article: (i) any suit by the Association to collect assessments or other amounts due from any Owner, (ii) any suit or other action by the Association or Declarant to act under or enforce any provisions of this Declaration relating to additions or alteration of improvements by Owners and/or any restrictive covenants or obligations of this Declaration, including any suit to obtain a temporary restraining order or injunction (or equivalent emergency equitable relief) or such other ancillary relief as the court may deem necessary, and (iii) any suit between Parties, which does not include Declarant or the Association as a party.

- (b) Defect Claim. Any Claim involving the development, design, construction and/or alteration of the Property or any improvement within the Property and/or any alleged defect therein, however arising, is referred to herein as a “Defect Claim” and the alleged defect, the “Alleged Defect.” The Association, its officers, directors and members, and Owners generally acknowledge, understand and agree that not every necessary repair or replacement of an improvement within the Property is due to a design or construction defect and, similarly, Declarant and other construction professionals that are Parties hereunder generally acknowledge, understand and agree that not every necessary repair or replacement of an improvement is due to faulty required maintenance of or damage to such improvement. Often, such repair and replacement issues arise from a combination of issues that may or may not include the original design and construction, the level of inspection and maintenance programs (or lack thereof) and the existence of other factors such as unusual weather events or conditions, improper use and/or unforeseen wear and tear. This Article supports a proper evaluation of all factors and encourages a collaborative and comparative approach to responsibility.

Section 10.04 Association and Owner Responsibilities. The Association and its Executive Board and each Owner understand and acknowledge the importance of a regular inspection and maintenance program for the Property. The Association and each Owner shall perform such recommended inspection and maintenance and shall make all necessary repairs and maintenance called for to reasonably address the results of these inspections and to maintain the Property and its Units to a level consistent with its original quality, ordinary wear and tear excepted. Further, the Executive Board and each Owner shall cooperate, at no cost or expense to them, with all inspections that may be undertaken by or at the request of the Declarant on or with respect to the Property or its Units and any improvement thereon or therein. The Association and each Owner understand, assume the risk and agree that, if the Association or such Owner fails to follow the inspection, maintenance and repair requirements and standards contained in such manuals or materials delivered to them and such failure causes, whether in whole or in part, damage to the Property or its Units, to any improvement within the Property or to other property, the resulting damage shall not be deemed to be the result of a design or construction defect.

Section 10.05 Informal Procedures.

- (a) Association Meetings. From the date of recording this Declaration until eight (8) years following the last sale of a Unit by Declarant, notices of Association and director meetings (including notice of agenda items relating to potential Defect Claims) shall be provided to Declarant, and Declarant and/or its representative(s) shall be entitled to attend and participate in at least one (1) meeting of the Association's members to discuss any potential Claim against Declarant. The Declarant and the Executive Board agree to use their respective good faith efforts to engage in constructive dialogue toward the goal of resolving any design or construction defects.
- (b) Initial Notice. Any Party asserting a Claim ("Claimant") against another Party ("Respondent") shall give written notice to each Respondent and to the Executive Board stating Claimant's good faith description of: (i) the nature of the Claim, including the persons involved and the Respondent's role in the Claim, and (ii) the Claimants' desire to meet with the Respondent to discuss in good faith, ways to resolve the Claim. In that legal and professional fees are discouraged at this stage of these Procedures, no statement as to the legal basis of the Claim or of any proposed remedy is necessary.
- (c) Right to be Heard; Negotiation. Any Respondent shall have the right to be heard by the Claimant and, if any Claimant is the Association, the Claimant shall make itself reasonably available upon the request of Respondent to meet in person and to confer for the purpose of resolving the Claim. The Parties shall confer and negotiate in good faith toward such resolution for a minimum period of forty-five (45) days after the date that the Claimant has provided notice to each Respondent pursuant to Section 10.05(b) above. Notwithstanding such minimum negotiations period, the Parties are encouraged throughout these Procedures to attempt to

resolve any differences between them through ongoing communications and informal dialogue. Any settlement of the Claim through discussion and negotiation shall be documented in writing and signed by the Parties in the manner described below.

- (d) Right to Inspect, Cure and Correct. Any Respondent shall have the right (without obligation), before the institution by the Claimant of binding arbitration below, to inspect, cure and correct any improvement or condition within the Property with respect to a Defect Claim, as follows:
- i. In addition to other rights and obligations set forth in this Article, a Respondent may elect to inspect the Alleged Defect, in which event the Respondent shall complete the initial inspection and testing within thirty (30) days after the date that the Claimant has provided notice to each Respondent pursuant to Section 10.05(b) above, and at a mutually agreeable date and time. The Respondent shall bear all costs of inspection and testing, including to repair any damage caused by the inspection and testing. Before entering onto the Property for the inspection, the Respondent shall supply the Claimant with proof of liability insurance coverage. The Respondent shall, upon request, allow the inspection to be observed and recorded or photographed. Nothing that occurs during a Respondent's inspection may be used or introduced as evidence to support a defense of spoliation of evidence by the Claimant or any potential party in subsequent litigation.
 - ii. Within sixty (60) days of completion of the initial inspection or testing, the Respondent may elect to repair some or all of the Alleged Defects by sending a written notice of election to repair to the Claimant. Notwithstanding any tolling provided by law, the applicable statutes of limitation and repose on any and all Claims relating to the Alleged Defects shall be tolled (i) from the completion of the initial inspection and/or testing until (a) Respondent's written notice of election to repair, or (b) the expiration of sixty (60) days, whichever is sooner; and (ii) from the date of any written notice of election to repair by Respondent until sixty (60) days after substantial completion of the repairs. This tolling applies to any and all Claims relating to Alleged Defects for which Claimant has given written notice pursuant to subparagraph 10.05(b) (regardless of whether Respondent has elected to repair none, some or all of the Alleged Defects). If the Respondent elects to repair some or all of the Alleged Defects, then (i) Respondent has the right to do so and the Claimant may not, directly or indirectly, impair, impede or prohibit the Respondent from making repairs; and (ii) until after the substantial completion of the repairs (a) the Claimant shall not file or pursue final binding arbitration (but may pursue mediation), and (b) if the Claimant is the Association, the Claimant shall not undertake the procedures for a consensus vote for Association action set forth in

subparagraph 10.06(d). With any notice of election to repair, Respondent shall provide to Claimant a list of the Alleged Defects that Respondent has elected to repair, a detailed explanation of the repair work to be performed and the reasonably expected completion date for the repairs. The notice shall also include the name of any contractors the Respondent intends to employ for the repairs. Claimant shall promptly cooperate with the Respondent to schedule the repairs and provide reasonable access to the Property (including Common Areas and Units) for the repairs.

- iii. For the purpose of exercising the rights to inspect, cure, correct and repair set forth above, Declarant reserves for itself, its designees, the Association and its designees, a perpetual nonexclusive easement of access throughout the Property (including Common Area and Units) to the extent reasonably necessary to exercise such rights.
- iv. Within ten (10) days after receipt of the Respondent's notice of election to repair, a Claimant may deliver to the Respondent a written objection to the proposed repair if the Claimant believes in good faith that the proposed repairs will not remedy the Alleged Defect. The Respondent may elect to modify the proposal in accordance with the Claimant's objection or may proceed with the scope of work set forth in the original proposal.
- v. If the Respondent fails to send a notice of election to repair or otherwise strictly comply with this Section within the specified time frames, or if the Respondent does not complete the repairs within the time set forth in the notice of election to repair, the Claimant shall be released from the requirements of this Section and may proceed with the formal procedures set forth below. Notwithstanding the foregoing, if the Respondent notifies the Claimant in writing before the stated completion date that the repair work will not be completed by the completion date, the Respondent shall be entitled to one reasonable extension of the completion date.
- vi. The Respondent shall notify the Claimant when repairs have been completed. The Claimant shall have ten (10) days following the completion date to have the work inspected to verify that the repairs are complete and satisfactorily resolved the Alleged Defect. A Claimant who believes in good faith that the repairs made do not resolve the Alleged Defect may proceed with the formal procedures set forth below.
- vii. The specific materials and workmanship related to the repair work performed by the Respondent shall be warranted against material defects for a period of one (1) year, which warranty shall be in addition to any express warranties on the original work and shall be subject to the same terms and

conditions of the original express warranty, but which repair work shall not be construed to be an “improvement” to real property for purposes of C.R.S. § 13-80-104.

- viii. Any Alleged Defect discovered after repairs have been completed shall be subject to the same requirements of this Article if the Respondent did not have notice or an opportunity to repair the new Alleged Defect.
- ix. No Requirement for Final Settlement to Begin Repairs; Settlement Proposal. The informal Procedures set forth in this Section are for the purpose of encouraging early resolution of Claims and no formal written settlement or other agreement shall be required for inspection and corrective work to occur pursuant to this Section. No Party shall be deemed to have waived any rights or Claims by reason of such corrective work, and the Claimant shall be entitled to monitor the effectiveness of the corrective measures instituted.
- x. Alternatively, if the Respondent desires a formal settlement agreement before commencing corrective measures or other action to resolve the subject matter of the Claim, the following Procedures may be employed:
 - (a) Within thirty (30) days following completion of the inspection process, the Respondent may give Claimant written notification of its settlement proposal, including, in the case of a proposal to remedy a Defect Claim, a report of the scope, findings and results of the inspection, the damage caused by the Alleged Defect and a description of and a timetable for the work necessary to remedy the Alleged Defect.
 - (b) Within fifteen (15) days after its receipt of Respondent's settlement proposal, Claimant shall notify Respondent of its acceptance or rejection thereof. Failure to give such notice shall be deemed to be a rejection of the proposal.
 - (c) If the settlement proposal for remedial work is accepted, Claimant and Respondent shall endeavor to document the settlement proposal in writing within thirty (30) days after acceptance, which settlement shall be signed by the Parties in the manner described below.
- xi. Effect of Corrective Work. It is acknowledged and agreed by all Parties and by any guarantors, insurers and/or indemnitors of the Parties that any work conducted pursuant to this Section 10.05(d): (a) is in the nature of corrective or repair work and does not constitute nor shall be asserted or construed to be an “improvement” to real property for purposes of C.R.S. § 13-80-104, and (b) unless part of a written settlement agreement signed by the Claimant and each Respondent, does not constitute nor shall be asserted or

construed to be a voluntary payment or assumption of a voluntary obligation without insurer consent under any applicable commercial general liability insurance policy.

- (e) Broad Construction. The Informal Procedures set forth in this Section 10.05 are designed to encourage the good faith resolution of a Claim or appropriate correction of improvements and the right of the Respondent to be heard and to inspect and correct shall be ongoing and construed liberally throughout all of the Procedures set forth in this Article so as to permit the same, for example but not limitation, as there arise new issues, legal theories, engineering opinions, developments with insurers, and other developments and information, even if after the formal dispute resolution procedures commence as described below. Accordingly, the informal and formal dispute resolution procedures are anticipated to run concurrently from time to time and the Parties agree to reasonably, timely and in good faith cooperate with each other to respond to requests, to permit the rights set forth in these Procedures and to facilitate the processes of these Procedures toward the goal of a successful and voluntary resolution of Claims.

Section 10.06 Formal Notice and Association Consensus.

- (a) At any time following the forty-five (45) day negotiation period described in the Informal Procedures above (or following such longer period as the Parties may agree), the Claimant may provide written formal notice to each Respondent stating (i) the nature of the Claim, including if applicable a list of any alleged construction defects and a description, in reasonable detail, of the type and location of such defects, the damages claimed to have been caused thereby, and Respondent's responsibility for the Claim, (ii) the legal or contractual basis of the Claim (*i.e.*, the specific authority out of which the Claim arises), (iii) the date on which the Claim first arose, and (iv) the specific relief and/or proposed remedy sought. Notwithstanding the foregoing or any contrary provision herein, the Claimant shall, in addition to complying with these Procedures, follow the alternative dispute resolution procedures set out in the Construction Defect Action Reform Act, §§ 13-20-801, *et seq.*, C.R.S., as it may be amended from time to time ("CDARA") and the procedures set forth in §§ 38-33.3-303.5, *et seq.*, C.R.S. ("CCIOA Construction Defect Procedures") with respect to any Defect Claim, and the initial formal notice required under CDARA and required pursuant to § 38-33.3-303.5(l)(e), C.R.S., may be combined with the formal notice of Claim required by this Section. Formal written notice as provided in this Section, following the satisfaction of the Association Consensus Vote (defined below), if applicable, is required as an express condition to commence the resolution Procedures set forth in this Section and the following sections.
- (b) Association Defect Claims. Notwithstanding any contrary provision herein, no

formal notice of Claim under Section 10.06 (including, without limitation, a Notice of Claim under CDARA) may be made by a Claimant (a) if the Claim is a Defect Claim which relates, in whole or in part, to the Common Area (including the Limited Common Area) of the Property or to any portion of the Units that is the responsibility of the Association to maintain, repair, and replace or to any Defect Claim that the Association intends to assert on its own behalf or on behalf of Owners (referred to herein as an "Association Defect Claim"), and (b) unless and until the Procedures set forth in this Section below are satisfied. The Parties understand and agree that the Procedures of this Section 10.06 are essential to the protection of individual Owners who may not understand the implications and effects of the assertion of an Association Defect Claim by the Association, including, without limitation, the possible impact of such Claim on sales of Units within the Property and/or the ability of Owners to borrow funds when an Owner's Unit is being pledged as collateral for a loan.

- (c) Power of Attorney to Association. The Association is hereby designated to act as the exclusive representative of all Owners in asserting any Association Defect Claim, and each Owner does hereby appoint the Association to exclusively act under its power of attorney (which power shall be irrevocable) with respect to any Association Defect Claims, including the right to compromise and settle the same. No Owner shall assert an Association Defect Claim except through the Association.
- (d) Consensus Vote for Association Action. Notwithstanding anything contained in these Procedures to the contrary and in addition to any requirements prescribed by law, before asserting a Claim the Association shall do the following:
 - i. The Executive Board of the Association, following the approval of an Association Defect Claim by a majority of all Directors, shall mail or deliver written notice to each Owner at the Owner's last-known address described in the Association's records and to each Respondent containing all of the information and disclosures required by § 38-33.3-303.5(1)(c), C.R.S., and, to the extent not required by such Statute, the following: (a) the manner in which the Association proposes to fund the cost of the Association Defect Claim, including any proposed special assessments or use of reserves, (b) the anticipated duration of the Association Defect Claim, the likelihood of its success, and the risks to which the Association is exposed (*e.g.*, an assertion of counter-claims and/or other potential liability to the Association), (c) a reasonable assessment and explanation of the anticipated impact of the Association Defect Claim on the marketability of Units for sale within the Property and the impact on the ability of Owners to refinance and buyers of Units to secure financing, explained for both during the pendency of the Association Defect Claim and after its resolution, together with a prominent statement advising

Owners if it is concluded that any such impact does exist, (d) a prominent statement advising Owners that the existence of the Association Defect Claim may represent a material matter requiring legal disclosure to lenders, purchasers, auditors and/or other appropriate parties, and (e) providing proper notice for a meeting of Owners to be held not sooner than ten (10) days or longer than fifteen (15) days after such mailing, at which Owners shall discuss (but not yet vote) on whether to approve the Association Defect Claim as described below. A failure to hold the meeting within this time period voids the subsequent vote. A quorum is not required at the meeting. Respondents will be invited to attend and will have an opportunity to address the Owners concerning the Association Defect Claim as required by § 38-33.3-303.5(1)(c), C.R.S.

- ii. The Association Defect Claim must be approved and authorized by the affirmative written vote during the voting period, which voting period commences upon the conclusion of the Owner meeting described in the preceding subparagraph and extends to the date falling ninety (90) days after the date of the notice described in the preceding subparagraph (or, if earlier, the date when the Association determines that the Association Defect Claim is either approved or disapproved) (the "Voting Period"), by delivery of a written ballot or other written form approved by the Executive Board directing the specific vote of the Owner (but not by proxy granting discretion to the proxy holder as to how to vote), of Owners holding at least a majority of the total voting rights in the Association (the "Association Consensus Vote").
- iii. The Association Consensus Vote must be obtained before the expiration of the Voting Period; otherwise the Owners shall be deemed to have declined to provide their approval of Association Defect Claim.
- iv. Notwithstanding any contrary provision or lack of provision herein, the Association shall fully and timely comply with all requirements of §§ 38-33.3-303.5, *et seq.*, C.R.S., as supplemented by this Section 10.06. Further, notwithstanding this Section 10.06(d), the notice to Owners, meeting and vote set forth in this Section 10.06(d) is not required for an Association to proceed when the Association is the contracting party for the performance of labor or purchase of services or materials.

Section 10.07 Limit on Director and Officer Liability. No director or officer of the Association shall be liable to any person or entity for failure to institute or maintain or bring to conclusion a cause of action, mediation or arbitration for an Association Defect Claim if the following criteria are satisfied: (i) the director or officer was acting within the scope of their or her duties; (ii) the director or officer was not acting in bad faith; and (iii) the act or omission was not willful, wanton, grossly negligent or fraudulent.

Section 10.08 Tolling. All statutes of limitation and repose applicable to an Association Defect Claim shall be deemed tolled as provided in §§ 38-33.3-303.5, *et seq.*, C.R.S.

Section 10.09 Mandatory Mediation. Following the formal written notice discussed above and, if applicable, the approval of the Association Consensus Vote within the Voting Period, the Claimant shall have thirty (30) days to submit the Claim to mediation with an entity designated by the Association (if the Association is not a party to the Claim) or to an independent agency providing dispute resolution services in the County in which the Property is located, unless otherwise agreed by the Parties. A mediator shall be selected no later than forty-five (45) days after the Claimant has given notice to the Respondent of its submittal to mediation and, if the Association is a Party and the Parties are unable to agree on a mediator, one shall be chosen by the American Arbitration Association. Each Party shall bear its own costs of the mediation, including attorneys' fees, and each Party shall share equally all charges rendered by the mediator.

- (a) If the Claimant does not submit the Claim to mediation within such time, or does not appear for the mediation when scheduled, the Claimant shall be deemed to have waived the Claim, and the Respondent shall be released and discharged from any and all liability to Claimant on account of such Claim; provided, nothing herein shall release or discharge Respondent from any liability to any person other than the Claimant.
- (b) If the parties do not settle the Claim within thirty (30) days after submission of the matter to mediation, or within such time as determined reasonable by the mediator, the mediator shall issue a notice of termination of the mediation proceedings indicating that the parties are at an impasse and the date that mediation was terminated. The Claimant shall thereafter be entitled to submit the Claim to binding arbitration as provided below.
- (c) Any settlement of the Claim through mediation or through negotiation shall be documented in writing and signed by the Parties. If any Party thereafter fails to abide by the terms of such agreement, then any other Party may file suit or initiate administrative proceedings to enforce such agreement without the need to again comply with the Procedures set forth in this Article. In such event, the Party taking action to enforce the agreement or award shall, upon prevailing, be entitled to recover from the non-complying Party (or if more than one non-complying Party, from all such Parties in equal proportions) all costs incurred in enforcing such agreement or award, including, without limitation, reasonable attorney's fees and court costs.

Section 10.10 Final Binding Arbitration. Upon termination of mediation as provided above, if Claimant desires to pursue the Claim, Claimant shall have forty-five (45) days to deliver an arbitration notice to Respondent(s) and to initiate final, binding arbitration of the

Claim under the auspices of the American Arbitration Association (“AAA”) in accordance with the AAA's Commercial or Construction Industry Arbitration Rules, as appropriate. If any Claim is not timely submitted to arbitration, or if Claimant fails to appear for the arbitration proceeding, then the Claim shall be deemed waived and abandoned, and Respondent(s) shall be released and discharged from any and all liability to Claimant arising out of any such Claim. The following arbitration procedures shall be applicable to each Claim that is arbitrated:

- (a) The arbitrator must be a person qualified, with applicable industry experience and/or legal experience, to consider and resolve the applicable Claim.
- (b) No person shall serve as the arbitrator where that person has any financial or personal interest in the result of the arbitration. Any person designated as an arbitrator shall immediately disclose in writing to all Parties any circumstance likely to affect the appearance of impartiality, including any bias or financial or personal interest in the outcome of the arbitration (“Arbitrator Disclosure”). If any Party objects to the service of any arbitrator within fourteen (14) days after receipt of the Arbitrator's Disclosure, such arbitrator shall be replaced in the same manner in which that arbitrator was selected.
- (c) The arbitration shall be presided over by a single arbitrator. Notwithstanding any other provision of this Article 10, if the Parties are unable to agree upon an arbitrator to resolve a Claim, they shall request from the AAA a list of qualified arbitrators. Promptly following their receipt of the list, the Parties shall meet in person or by telephone and shall follow the AAA procedures of ranking and striking names so as to determine the person who shall serve as the arbitrator. The cost of the list shall be split equally by the Parties.
- (d) The arbitrator shall hold at least one hearing in which the Parties, their attorneys and expert consultants may participate. The arbitrator shall fix the date, time and place for the hearing. The arbitration proceedings shall be conducted in the County in which the Property is located unless otherwise agreed by the Parties.
- (e) Discovery shall be limited to document disclosures as provided by the AAA, and no other discovery shall be conducted in the absence of an order of the arbitrator or express written agreement among all the Parties. The manner, timing and extent of any discovery shall be committed to the arbitrator's sound discretion, provided that under no circumstances shall the arbitrator allow more depositions or interrogatories than permitted by the presumptive limitations set forth in the Colorado Rules of Civil Procedure 30(a)(2)(A) and 33(a). The arbitrator shall levy appropriate sanctions, including an award of reasonable attorneys' fees, against any Party that fails to cooperate in good faith in discovery agreed to by the Parties or ordered by the arbitrator pursuant to this Section.
- (f) The arbitrator may, in their reasonable discretion, permit the Parties to submit pre-

hearing briefs, post-hearings briefs and/or proposed findings of fact and conclusions of law. The arbitrator shall also have authority to establish reasonable terms regarding inspections, destructive testing and retention of independent consultants, if applicable.

- (g) The Parties agree that where any Claim, dispute or other controversy existing between them is submitted to arbitration, and any other Party may have liability with respect thereto, all Parties agree that the third parties may be joined as additional Parties in the arbitration, or if a separate arbitration exists or is separately initiated, to the consolidation of all such arbitrations. By way of example only and not by limitation, in the event of an Alleged Defect, Declarant would have the right to join in the arbitration any construction professional or other third party whose acts or omissions allegedly caused or contributed to the damages.
- (h) The arbitration award shall address each specific Claim to be resolved in the arbitration, provide a summary of the reasons therefore and the relief granted, and be rendered promptly after the close of the hearing and no later than thirty (30) days from the close of the hearing, unless otherwise agreed by the Parties or required by the arbitration. The arbitration award shall be in writing and shall be signed by the arbitrator.
- (i) The arbitrator shall apply the substantive law of Colorado and may award injunctive relief or any other remedy available in Colorado.
- (j) The award rendered by the arbitrator shall be final and binding, may be filed with any court of competent jurisdiction in the County in which the Property is located in accordance with applicable law and judgment obtained thereon, and execution may issue. If any Party objects to entry of judgment upon any arbitration award entered pursuant to this Section, the Party that substantially prevails in any ensuing dispute concerning the entry of judgment upon such award shall be entitled to all reasonable attorneys' fees and costs incurred in the enforcement of the award.
- (k) The fees and costs of the arbitration, including without limitation the arbitrator and its consultants, shall be borne equally by the Parties.
- (l) Except as may be required by law or for confirmation of an arbitration award, neither a Party nor an arbitrator may disclose the existence or contents of any arbitration or arbitration award without the prior written consent of all Parties to the Claim.

Section 10.11 Amendments to this Article; Standing to Enforce. Notwithstanding anything to the contrary contained in this Declaration or any of the Association Documents, the

terms and provisions of this Article 10 inure to the benefit of Declarant, are enforceable by Declarant, and shall not ever be amended or nullified without the written consent of Declarant and without regard to whether Declarant owns any portion of the Property at the time of such amendment. BY TAKING TITLE TO A UNIT, EACH OWNER ACKNOWLEDGES AND AGREES THAT THE TERMS OF THIS ARTICLE 10 ARE A SIGNIFICANT INDUCEMENT TO THE DECLARANT'S WILLINGNESS TO DEVELOP AND SELL THE UNITS AND THAT IN THE ABSENCE OF THE PROVISIONS CONTAINED IN THIS ARTICLE, DECLARANT WOULD HAVE BEEN UNABLE AND UNWILLING TO DEVELOP AND SELL THE UNITS FOR THE PRICES PAID BY THE ORIGINAL PURCHASERS. Any amendment made without the requisite written consent of Declarant shall be null and void and shall have no effect. Further, all employees and agents of Declarant and all contractors, subcontractors, architects, engineers and other development professionals associated with the design or construction of any portion of the Property (each a "Third Party Beneficiary") are third-party beneficiaries of this Article and of the terms and conditions contained herein, including without limitation the requirement for binding arbitration, and any Third Party Beneficiary has standing to enforce the terms and conditions of this Article, including without limitation to compel binding arbitration.

Section 10.12 Reformation. The Parties agree that reliance upon courts of law and equity can add significant costs and delays to the process of resolving Claims. Accordingly, they recognize that an essential part of the Declaration is this Article and its agreement between and among the Parties to provide for the submission of all Claims to informal negotiation and correction efforts, mediation and final and binding arbitration. Therefore, if any court or arbitrator concludes that any provision of these Procedures is void, voidable or otherwise unenforceable, the Parties understand and agree that the court or arbitrator shall reform each such provision to render it enforceable, but only to the extent absolutely necessary to render the provision enforceable and only in view of the Parties' express desire that the merits of all Claims be resolved only by arbitration and, to the greatest extent permitted by law, in accordance with the principles, limitations and procedures set forth in these Procedures.

Section 10.13 Notices; Computation of Time. All notices given or required by these Procedures shall be in writing and shall be deemed given and received (a) when hand delivered to the intended recipient by whatever means; (b) three business days after the same is deposited in the United States mail, with adequate postage prepaid and sent by certified mail, return receipt requested, or (c) one business day after the same is deposited with an overnight courier service of national reputation, with the delivery charges prepaid. In the event any date called for herein falls on a Saturday, Sunday or legal holiday for which U.S. mail service is not provided, such date shall be extended to the next business day following such Saturday, Sunday or holiday.

IN WITNESS THEREOF, Declarant has caused this Declaration of Longview at the Lakota to be executed by its duly authorized agents this ___ day of _____ 2022.

RG Lakota II, LLC,
a Colorado limited liability company

By: _____
Manager and Authorized Agent

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing Declaration was acknowledged before me on this ____ day of _____, 2022, by _____ as Manager and Authorized Agent of RG Lakota II, LLC, a Colorado limited liability company.

Witness my hand and official seal.

Notary Public

My Commission Expires: _____

EXHIBIT A
Easements and Other Encumbrances Affecting Title to the Property
(to be attached)

Lakota Canyon¹¹⁹ Ranch

Traffic Impact Study



Date: March 21, 2022

Submitted To:

The Romero Group, LLC
350 Market Street, Suite 304
PO Box 4100
Basalt, CO 81621-4100

Submitted By:

Fox Tuttle Transportation Group, LLC
1624 Market Street, Suite 202
Denver, CO 80202





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LAKOTA CANYON RANCH DEVELOPMENT

TRAFFIC IMPACT STUDY

1.0 Introduction

The Fox Tuttle Transportation Group has prepared this traffic impact study for the proposed Lakota Canyon Ranch Mixed-Use Development in New Castle, Colorado. The property includes 16± acres that is located north of Castle Valley Boulevard and on both sides of Faas Ranch Road. The property is currently vacant and surrounded by residential homes, Lakota Links golf course, and the fire station. The Lakota Canyon Ranch project includes a mix of residential homes and commercial/office uses next to the south end of the golf course. The property will be developed over time and anticipated to be completed by 2030. **Figure 1** provides a vicinity map for the proposed project.

The purpose of this study is to assist in identifying potential traffic impacts within the study area as a result of the Lakota Canyon Ranch Development. The traffic study addresses existing, short-term, and long-term peak hour intersection conditions in the study area with and without the project-generated traffic. The information contained in this study is anticipated to be used by Town of New Castle staff in identifying any intersection or roadway deficiencies and potential improvements for the build-out condition and long-term future scenarios. This study focused on the weekday AM and PM peak hours which represents the periods of highest volumes on the adjacent streets.

2.0 Project Description

The Lakota Canyon Ranch development plans to develop vacant land into a variety of residential and commercial uses to support the existing and future residents and visitors of New Castle. The land use plan for the property proposes a variety of residential unit types, including single-family homes, townhomes, and apartments. The commercial spaces are proposed to consist of retail space, small office space, a restaurant, and medical offices. There are several buildings that will include residential units above the commercial space to support a mixed-use community.

For the purpose of this traffic study, the following land uses were assumed:

- 29 single-family detached homes
- 20 townhomes
- 136 multi-family apartments
- 12,730± square feet of medical office/clinic space
- 36,000± square feet of retail/office/restaurant space

For conservative purposes, it was assumed that Lakota Canyon Ranch Mixed-Use Development will be completed by Year 2030. The analysis also includes the scenario that the project is constructed by Year 2025 to understand the potential roadway and intersection needs if the project were completed earlier. Note that these land uses represent one scenario that could adjust slightly based on market dynamics. It is anticipated that this report evaluates the highest density and mix of uses that would be built within the Lakota Canyon Ranch property.

The project proposes to provide three (3) accesses into the development; two along Faas Ranch Road and the extension of Lakota Drive. The first access on Faas Ranch Road will be a T-intersection with the addition of an access road into the southeast area of the project. This access is proposed to be located approximately 125 feet north of Castle Valley Boulevard, with full movement and side-street stop-control. The second access on Faas Ranch Road is proposed to provide entry into both sides of the development. This access is proposed to be located approximately 180 feet north of Access 1, with full movement and side-street stop control.

The Lakota Canyon Ranch project will extend Lakota Drive (existing local roadway) through the site to provide additional access, connecting to Faas Ranch Road. Lakota Drive connects to White Horse Drive and is approximately 195 feet in length currently to serve a few existing homes. With the proposed project, Lakota Drive will be extended to connect to Faas Ranch Road to serve the existing and future community. The Lakota Canyon Ranch project proposes to construct the extended roadway to include one travel lane per direction and on-street parking. It is proposed that three (3) access intersections be built on the new Lakota Drive to serve the mixed-uses and provide safe crossing locations for pedestrians. The conceptual site plan and accesses are provided on **Figure 2**.

3.0 Study Considerations

3.1 Data Collection

Intersection turning movement volumes were collected in November 2021 at four (4) existing intersections during the weekday AM and PM peak hours, including pedestrians and bicyclists. Daily traffic volumes were also collected at two locations on Castle Valley Boulevard, one location on Blackhawk Drive, and one location on Faas Ranch Road. The existing traffic volumes are illustrated on **Figure 3**. The existing intersection geometry and traffic control are also shown on this figure. Count data sheets are provided in the **Appendix**.

After analyzing nearby CDOT collected count data, it was determined that no adjustments due to COVID were needed since data indicated daily volumes are similar or greater than volumes collected in Year 2019. The CDOT continuous traffic count station on I-70 near the Town of Silt (#103011) counted approximately 19,350 vehicles per day (vpd) during the week of November 2019. In November 2021, the same count station counted 22,670 vpd.

3.2 Evaluation Methodology

The traffic operations analysis addressed the roundabout intersection operations using the procedures and methodologies set forth by the *Highway Capacity Manual (HCM)*¹. Existing peak hour factor were applied to the intersections for the existing, short-term, and long-term scenarios. Study intersections were evaluated using Synchro software (v10).

3.3 Level of Service Capacity Analysis

A Level of Service analysis was conducted to determine the existing and future performance of the study area intersections and accesses to determine the most appropriate intersection traffic controls and auxiliary lanes for future conditions.

To measure and describe the operational status of the study intersections, transportation engineers and planners commonly use a grading system referred to as “Level of Service” (LOS) that is defined by the *HCM*. LOS characterizes the operational conditions of an intersections traffic flow, ranging from LOS A

¹ *Highway Capacity Manual*, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 6th Edition (2016).

(indicating very good, free flow operations) and LOS F (indicating congested and sometimes oversaturated conditions). These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with traveling through the intersections. The intersection LOS is represented as a delay in seconds per vehicle for the intersection as a whole and for each turning movement.

Typically, LOS A through C is considered to be acceptable for the overall intersection operations and LOS D overall during peak hours is acceptable. Individual movements may be allowed to fall to LOS E at intersections if the queuing is reasonable and mitigation is not warranted. Minor movements at unsignalized intersections, such as left turns onto a major arterial, may be allowed to fall below LOS D if mitigation is not feasible or necessary. Criteria contained in the *HCM* is applied for these analyses in order to determine peak hour LOS for each scenario. A more detailed discussion of LOS methodology is contained in the **Appendix** for reference.

4.0 Existing Conditions

4.1 Roadways

The study area boundaries are based on the amount of traffic to be generated by the project and potential impact to the existing roadway network. The primary public roadways that serve the project site are discussed in the following text and illustrated on **Figure 1**.

Castle Valley Boulevard is a two-lane, minor arterial roadway that extends from Midland Avenue/Buford Road (west) to US Highway 6 (south), approximately 2.1 miles in length. This roadway becomes County Road 240 south of US Highway 6, which travels over I-70 and provides a full movement interchange. Castle Valley Boulevard provides access to several residential neighborhoods, the Lakota Links golf course, the New Castle Plaza Shopping Center, the Lakota Canyon Ranch Fire Station, Kathryn Senor Elementary School, and Riverside Middle School. Castle Valley Boulevard has a paved section between 35 feet and 58 feet adjacent to the project site, with one through lane per direction and right-turn auxiliary lanes at Faas Ranch Road, Blackhawk Drive, and Clubhouse Drive. The posted speed limit is 30 miles per hour (mph) with an average upslope towards the northwest of approximately 4% adjacent to the project site. West of Clubhouse Drive, Castle Valley Boulevard currently serves approximately 5,150 vpd during the week and approximately 6,100 vpd south of Faas Ranch Road. Castle Valley Boulevard is the western boundary of the project property.

Faas Ranch Road is a two-lane, local roadway that leads to several single-family homes located along the side of the ridge. Faas Ranch Road has a paved section between 26 feet and 42 feet adjacent to the project site, with one through lane per direction and an average upslope of 4.5% from Castle Valley Boulevard towards the ridge. This roadway has a posted speed limit of 20 mph. Faas Ranch Road services roughly 305 vpd north of Castle Valley Boulevard. Note that there have been historic discussions to extend Faas Ranch Road to the east to connect to Bruce Road; however, there are several limitations to implementing this potential connection and this was not included in the traffic analysis.

Blackhawk Drive, White Horse Drive, and Lakota Drive are two-lane, local roadways that provide access to existing residents and the Lakota Links golf course. These roadways include one lane per direction and on-street parking on one or both sides of the street. Blackhawk Drive currently serves roughly 315 vpd. The paved cross-section on these local streets ranges from 30 feet to 36 feet and the posted speed limit is 20 mph.

4.2 Intersections

The study area includes four (4) existing intersections that are listed below with the current traffic control and were analyzed for existing and future year traffic operations:

1. Castle Valley Boulevard at Blackhawk Drive [side-street stop-control]
2. Castle Valley Boulevard at Faas Ranch Road/Lakota Fire Station [side-street stop-control]
3. Blackhawk Drive at White Horse Drive [side-street stop-control]
4. White Horse Drive at Lakota Drive [side-street stop-control]

The existing lane configuration at each of the study locations are illustrated on **Figure 3**.

4.3 Pedestrian and Bicycle

Along the north side of Castle Valley Boulevard, there is an 8-foot detached multi-use path that extends from the elementary school to US Highway 6. There is a similar 8-foot detached multi-use path on the south side of Castle Valley Boulevard which extends from US Highway 6 to nearly Blackhawk Drive. It is anticipated that the southern path will be completed as development occurs. Both multi-use paths transition to sidewalks as they approach the New Castle Plaza and US Highway 6. Faas Ranch Road has a sidewalk on the east side for the entire length. Blackhawk Drive, White Horse Drive, and Lakota Drive have sidewalks along both sides of the roads. There are no bike lanes on the study roadways, but bicyclists are permitted to ride on the roads and on the multi-use paths.

4.4 Transit

The Town of New Castle does not currently have a local transit service; however, it is serviced by the Roaring Fork Transportation Authority (RFTA) for regional transit. The Hogback route travels between Glenwood Springs and Rifle with stops along the way, including within New Castle. This route travels through Town via US Highway 6 with one park-n-ride west of Castle Valley Boulevard and another bus stop near 6th Street. Patrons that utilize RFTA buses can transfer to other routes that connect to communities, employment businesses, civic centers, shopping areas, and recreational spaces along State Highway 82 between Glenwood Springs and Aspen or Silt and Rifle to the west on I-70. Based on data collected by RFTA, 9% of workers that live in New Castle utilize transit service (*Efficiency Review for the Roaring Fork Transportation Authority, October 2016*).

4.5 Existing Intersection Capacity Analysis

The existing volumes, lane configuration, and traffic control are illustrated on **Figure 3**. The results of the LOS calculations for the intersections are summarized in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

All of the study intersections currently operate overall at LOS A in both peak periods with all movements operating at LOS C or better. The 95th percentile queues were estimated to be one vehicle or less at all of the study intersections.

5.0 Future Conditions

5.1 Annual Growth Factor and Future Volume Methodology

CDOT maintains a database of 20-year projected growth factors for all roadway segments that make up the state highway system in Colorado. In theory, these growth factors should include the additional traffic for developments, such as Lakota Canyon Ranch, that may develop within the next 20 years. For this project, CDOT's traffic growth factors for US Highway 6 within New Castle were reviewed. The resulting 20-year traffic growth factors used for this study are:

US 6 west of Castle Valley Boulevard: 1.23 = 1.0% annual growth rate
 US 6 east of Castle Valley Boulevard: 1.45 = 1.9% annual growth rate
Average: 1.34 = 1.5% annual growth rate

For conservative purposes, the estimated trips for Eagle Ridge's multi-family development project and Lakota Ridge Senior Housing project were added to the background volumes in addition to the growth rate. Using these assumptions, the Year 2025 background traffic is summarized on **Figure 4** and the Year 2030 background traffic is summarized on **Figure 5**. Note that the 20-year horizon was not evaluated since this was included in the Lakota Canyon Ranch and Castle Valley Ranch master plans and engineering reports.

5.2 Year 2025 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the Year 2025 background scenario and to identify any capacity constraints associated with background traffic. The background volumes, lane configuration, and traffic control are illustrated on **Figure 4**.

The Level of Service criteria discussed previously was applied to the study area intersections to determine the impacts with the short-term background volumes. The details of LOS for each movement are provided in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

In summary, the study intersections operate similarly to the existing conditions. Overall, the study intersections were calculated to operate at LOS A in both peak hours with all movements operating at LOS C or better. The 95th percentile queues were estimated to be one vehicle or less at all of the study intersections.

5.3 Year 2030 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the Year 2030 background scenario and to identify any capacity constraints associated with background traffic in the long-term scenario. The long-term background volumes, lane configuration, and traffic control are illustrated on **Figure 5**.

The Level of Service criteria discussed previously was applied to the study area intersections to determine the impacts with the long-term background volumes. The results of capacity analysis are shown in **Table 1** with the overall LOS and for each movement. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

In summary, the study intersections are anticipated to continue to operate overall at LOS A during both peak hours with all of the movements operating at LOS D or better. The 95th percentile queues were estimated to be one vehicle or less at all of the study intersections.

6.0 Future Conditions with the Lakota Canyon Ranch Project

6.1 Future Roadway Infrastructure

With the development of Lakota Canyon Ranch, it is anticipated that the intersection of Castle Valley Boulevard at Faas Ranch Road will need an eastbound left-turn lane and a southbound left-turn lane. If an eastbound left-turn lane is added to Castle Valley Boulevard, then a westbound left-turn lane should also be added to align the lanes across the intersection and provide easy access to the Fire Station. It appears that both roadways are currently wide enough to accommodate the additional lanes with restriping of pavement markings, which would need to be verified with survey and design. For the purpose of this study, it was assumed that the existing eastbound and westbound right-turns would remain.

Currently, Lakota Drive dead-ends at the Lakota Canyon Ranch property line. With the project, this roadway will be extended to Faas Ranch Road and provide internal access to the parcels within Lakota Canyon Ranch. Internal circulation on the southeast side of the project property will occur with internal access streets that wind around the site and connect to both proposed accesses on Faas Ranch Road. On the northwest side of the project property, the internal circulation will be centered around the extended Lakota Drive. Service and delivery vehicles will access Lakota Canyon Ranch via Faas Ranch Road and not Blackhawk Drive.

Parking will be provided on-site to serve the residents, employees, and visitors to Lakota Canyon Ranch. Refer to the separate parking study for details on parking demand and potential for shared parking. In summary, the proposed number of parking spaces is anticipated to adequately serve the calculated parking demand of the project.

6.2 Future Pedestrian, Bicyclist, and Transit Infrastructure

Lakota Canyon Ranch will construct sidewalks along Lakota Drive and throughout the site. A multi-use path will be provided along the west side of the property, connecting the existing multi-use path on Castle Valley Boulevard to Whitehorse Drive and to Lakota Drive. This multi-use path will meander between the existing homes located on Blackhawk Drive and future single-family homes in Lakota Canyon Ranch.

At this time, there is no transit infrastructure proposed on or near the project site since a local transit service does not exist and RFTA will most likely not travel up Castle Valley Boulevard as a local connection. If local transit service were to be provided in the future, Lakota Canyon Ranch would be an optimal location to provide a bus stop which is anticipated to reduce single-occupancy vehicle trips into and out of the site and potentially reduce the parking demand.

6.3 Trip Generation

A trip generation estimate was performed to determine the traffic characteristics of the proposed density and land uses of the Lakota Canyon Ranch development. The trip rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation Handbook and Manual*² were applied to estimate the traffic for the proposed land uses:

- #210 “Single-family Detached Housing”
- #215 “Single-family Attached Housing”
- #220 “Multi-family Housing (Low-Rise)”
- #221 “Multi-family Housing (Mid-Rise)”
- #720 “Medical-Dental Office Building”
- #820 “Shopping Center”
- #822 “Retail Plaza (<40k)”
- #912 “Drive-In Bank”
- #971 “Brewery Tap Room”

Table 3 provides the detailed trip generation estimates for the project (refer to the **Appendix**). The proposed project is expected to experience mostly new trips, also known as ‘primary trips’, as well as pass-by, internal, and non-auto trips which are discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered “new” trips. Primary trips would not have been made if the proposed project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis.

Pass-By Trips. A pass-by trip is an intermediate stop on route from an origin to the ultimate trip destination without route diversion. These are drivers that already utilize the adjacent roadways and choose to make a stop within the site and then continue to their destination. Pass-by trips do not create any increase in the traffic volumes within the primary impact area. In fact, the only impact of the pass-by trips is at the site driveways and adjacent intersections where through movements become turning movements into and out of the site. Therefore, pass-by trips have no additional impact on the road system beyond the site’s driveways or immediately adjacent intersections. With or without pass-by trips, the total trips to/from a project will remain the same. Pass-by was only applied to the commercial portions of the Lakota Canyon Ranch site. Per ITE data, the pass-by percentage for “Shopping Center” is 34% in the PM peak hour; 29% for “Drive-

² *Trip Generation Handbook and Manual, 10th Edition*, Institute of Transportation Engineers, 2017.

In Bank” in the AM peak hour; and 35% for “Drive-In Bank” in the PM peak hour. For pass-by trips, the methodology set forth in the ITE’s *Trip Generation Manual* (Chapter 10) was utilized.

Multi-Use (Internal) Trips. These internal trips occur from one land use or building to another within the site boundaries. Multi-use or multi-purpose trips typically do not affect the exterior site access points, nor add any additional traffic volumes to the adjacent street network. It was estimated that 5% of trips will be internal to the site.

Non-Auto Trips. These trips are those that are completed by walking, biking, or transit. The existing and future pedestrian and bicycle amenities will encourage employees, residents, and visitors to make non-auto trips to/from the Lakota Canyon Ranch project. The non-auto trips are assumed to be a 5%.

The Lakota Canyon Ranch project was estimated to generate approximately 3,494 daily trips with 215 trips in the AM peak hour and 439 trips in the PM peak hour, with roughly 20% as pass-by trips.

6.4 Trip Distribution and Assignment

The estimated trip volumes were distributed onto the study area street network based on existing traffic characteristics, land uses, and traffic patterns in the area, as well as regional growth and future roadway infrastructure. The assumed distributions are listed in **Table 4**.

Table 4: Trip Distribution Summary

To/From	Residential (Southeast)	Residential (Northwest)	Commercial (Southeast)	Commercial (Northwest)
North Castle Valley Boulevard to Faas Ranch Road	20%	0%	0%	0%
North Castle Valley Boulevard to Lakota Drive	0%	20%	35%	35%
South Castle Valley Boulevard to Faas Ranch Road	80%	50%	60%	60%
South Castle Valley Boulevard to Lakota Drive	0%	30%	0%	0%
West Blackhawk Drive / North Clubhouse Drive	0%	0%	3%	3%
East Faas Ranch Road	0%	0%	2%	2%

Figure 6A, Figure 6B, Figure 6C and Figure 6D illustrate the trip distribution for the residential trips on the southeast side of the project property, the residential trips on the northwest side of the project property, the commercial trips on the southeast side, and the commercial trips on the northwest side, respectively.

Using these distribution assumptions, the projected site traffic was assigned to the study area roadway network and proposed access for the weekday AM and PM peak hour periods. The site-generated volumes are shown on **Figure 7**.

6.5 Year 2025 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the development of the Lakota Canyon Ranch property in the short-term scenario. The site-generated volumes were added to the Year 2025 background volumes and are illustrated on **Figure 8**. The details of the LOS for each movement are listed in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

At the majority of the study intersections, the project trips minimally increase the delay with all of the intersections continuing to operate acceptably overall (LOS C or better). The capacity analysis indicated that most movements are operating acceptably in the AM and PM peak hours, with the following exceptions:

- **#4 – Castle Valley Boulevard at Faas Ranch Road:** This side-street stop-controlled intersection was calculated to operate overall at LOS A in the AM peak hour and LOS B in the PM peak hour. The southbound left-turn on Faas Ranch Road was estimated to operate at LOS E in the AM peak hour and LOS F in the PM peak hour resultant of the increased traffic turning onto Castle Valley Boulevard from the Lakota Canyon Ranch project. The 95th percentile queue was calculated to be up to 145 feet (about six vehicles), which would extend to the first proposed access intersection.

Recommendations: Consider signaling this intersection since the volumes meet the peak hour and four-hour signal warrant thresholds set forth by the *MUTCD*. Refer to the **Appendix** for signal warrant worksheets. The signal was estimated to improve all movements to LOS B or better in both peak hours. The 95th percentile queue on the southbound left-turn would be reduced to 87 feet (about four vehicles) and not impact the first access on Faas Ranch Road. The level of service and queuing results with this improvement is summarized in **Table 1** and **Table 2**, respectively.

The proposed access intersections on Faas Ranch Road were estimated to operate overall at LOS A in both peak hours with all approaches operating at LOS B or better. The 95th percentile queues on the side-street approaches were calculated to be no more than one vehicle.

The scenario that Lakota Canyon Ranch is fully built by Year 2025 is a very conservative assumption and it is likely that the full buildout will be phased over 10± years.

6.6 Year 2030 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the Lakota Canyon Ranch project in the long-term scenario. The site-generated volumes were added to the Year 2030 background volumes and are illustrated on **Figure 9**. The recommended signalization and additional auxiliary lanes presented in Year 2025 background + project were assumed to be implemented. The details of the LOS for each movement are listed in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

The project trips are anticipated to have little impact on the operations at the existing study intersections with the recommended improvements at Castle Valley Boulevard and Faas Ranch Road. The warranted signal at Castle Valley Boulevard and Faas Ranch Road would reduce the potential side-street delay from over two minutes to less than 20 seconds. If a signal were not installed, then the 95th percentile queue for the southbound left-turn would extend beyond the first access.

The proposed access intersections on Faas Ranch Road were estimated to operate overall at LOS A in both peak hours with all approaches operating at LOS B or better. The 95th percentile queues on the side-street approaches were calculated to be no more than one vehicle. No additional mitigation measures are recommended.

7.0 Queuing Analysis

A queuing analysis was performed to determine if the 95th percentile queues would be accommodated by the existing storage length, to determine the storage lengths for future auxiliary lanes, and if any of the queues would impact an upstream intersection/access. **Table 2** provides the existing or proposed storage lengths, as well as the 95th percentile queues for each existing and future scenario as calculated by Synchro (assuming each vehicle utilizes 25 feet of space). It should be noted that the 95th percentile queue length is a theoretical queue that is 1.65 standard deviations above the average queue length. In theory, the 95th

percentile queue would be exceeded 5% of the time based on the average queue length, but it is also possible that a queue this long may not occur.

The queues on Faas Ranch Road between Castle Valley Boulevard and the accesses were evaluated to ensure they would not block an upstream intersection. Without a signal at the intersection of Castle Valley Boulevard and Faas Ranch Road, the southbound left-turn queue was estimated to reach the first access intersection. With a signal, the queue is anticipated to not extend to the first access. Queues between the access intersections were estimated to be one vehicle or less and not impact one another.

8.0 Roundabout vs. Signal

At the intersection of Castle Valley Boulevard and Faas Ranch Road, a change in traffic control will be warranted in the future with additional traffic from background growth and the development of Lakota Canyon Ranch. Based on the analysis, this intersection will warrant a signal with the completion of Lakota Canyon Ranch. It is understood that there is a desire from Town staff that this currently side-street stop-controlled intersection to be redesigned as a roundabout, instead of a signal. It is recommended that this intersection become signalized instead of a roundabout for the following reasons:

- **Need to narrow fire station access.** The fire station access would need to be narrowed to one access and align with Faas Ranch Road. A roundabout cannot accommodate the existing double access design.
- **Limited land:** There is not enough distance from the intersection to the firehouse to provide the appropriate entry design for the fire station approach.
 - A roundabout in the available property and distance to the firehouse is anticipated to not be able to accommodate the large fire vehicles that need to turn left onto Castle Valley Boulevard.
 - There may not be enough width on the west side of Castle Valley Boulevard to accommodate the necessary roundabout design features (deflection, median, entry angles) for the south-eastbound approach to slow the approaching vehicles to a safe entering speed.

- **Cannot be designed as multi-lane roundabout.** To accommodate the future widening of Castle Valley Boulevard, the footprint of a multi-lane roundabout would encroach into the fire station property and potentially remove the internal circulation at the front of the building.
- **Difficult topography.** The roadway profile topography along Castle Valley Boulevard exceeds 4% at the intersection with Faas Ranch Road and exceeds 5% slope for the approaches to the intersection. It is generally not desirable to place roundabouts in locations where grades through the intersection are greater than 4%. The land east of Castle Valley Boulevard has immediate change in grades to head uphill on Faas Ranch Road which makes it difficult to design a roundabout.
- **Signalization provides emergency preemption:** A signal can easily be controlled by the fire department during an emergency by having a remote to turn the signal to all-red and stopping all traffic for quick response. This cannot be accomplished with a roundabout.

It is recommended that the intersection of Castle Valley Ranch at Faas Ranch Road be signalized when warranted since a roundabout will not be able to be designed to safely accommodate the fire station and due to the constraints with the topography and available property.

9.0 Conclusions

The Lakota Canyon Ranch project proposes to develop up to 29 single-family homes, 156 multi-family homes, 12,730 sq. ft. of medical office space, and 36,000 sq. ft. of commercial space. The project property is located on the east side of Castle Valley Boulevard and along both sides of Faas Ranch Road. The Lakota Canyon Ranch project proposes to extend Lakota Drive through the development to Faas Ranch Road for one full-movement access and then provide a second access on Faas Ranch Road north of Castle Valley Boulevard.

The full build-out of the project is estimated to generate approximately 3,494 daily trips with 215 trips in the AM peak hour and 439 trips in the PM peak hour, with roughly 20% as pass-by trips. The following mitigations measures should be considered to improve the project related traffic impacts:

- **Castle Valley Boulevard at Faas Ranch Road:**
 - Signalize (warrants met in both peak hours and four-hour with full buildout)
 - Restripe to provide one eastbound left-turn (minimum 100 feet of storage), one westbound left-turn lane (minimum 50 feet of storage), one southbound through/right-

turn lane, and one southbound left-turn lane (minimum 90 feet of storage). Maintain the eastbound and westbound right-turn lanes.

- **Access intersections on Faas Ranch Road:**

- Construct one inbound and one outbound lane.
- Provide full-movement and side-street stop-control.

Tables and Figures:

Table 1 – Peak Hour Intersection Level of Service Summary

Table 2 – Peak Hour 95th Percentile Queue Summary

Table 3 – Trip Generation Summary

Table 4 – Trip Distribution Summary [IN REPORT]

Figure 1 – Vicinity Map

Figure 2 – Conceptual Site Plan and Access

Figure 3 – Existing Traffic Volumes

Figure 4 – Year 2025 Background Traffic Volumes

Figure 5 – Year 2030 Background Traffic Volumes

Figure 6A – Trip Distribution – Southeast Residential

Figure 6B – Trip Distribution – Northwest Residential

Figure 6C – Trip Distribution – Southeast Commercial

Figure 6D – Trip Distribution – Northwest Commercial

Figure 7 – Site-Generated Traffic Volumes

Figure 8 – Year 2025 Background + Site-Generated Traffic Volumes

Figure 9 – Year 2030 Background + Site-Generated Traffic Volumes

Table 1 - Peak Hour Intersection Level of Service Summary

Intersection and Lanes Groups	2021 Existing		2025 Background		2025 Bkgrd + Project		2025 Bkgrd + Project (w/ Improvements)		2030 Background		2030 Bkgrd + Project					
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak				
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS				
STOP SIGN CONTROL																
1. White Horse Dr at Lakota Dr	1	A	1	A	1	A	5	A	5	A	1	A	4	A	4	A
Westbound Left+Right	9	A	9	A	9	A	9	A	9	A	9	A	9	A	9	A
Northbound Through+Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Southbound Left+Through	0	A	0	A	0	A	7	A	7	A	0	A	7	A	7	A
2. Blackhawk Dr at White Horse Dr	4	A	3	A	4	A	1	A	5	A	3	A	4	A	1	A
Eastbound Left+Through	7	A	7	A	7	A	0	A	7	A	7	A	0	A	7	A
Westbound Through+Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Southbound Left+Right	9	A	9	A	9	A	9	A	9	A	9	A	9	A	9	A
3. Castle Valley Blvd at Blackhawk Dr	1	A	1	A	1	A	1	A	1	A	1	A	2	A	1	A
Eastbound Left+Through	8	A	0	A	8	A	0	A	8	A	9	A	8	A	9	A
Westbound Through	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Westbound Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Southbound Left+Right	16	C	14	B	18	C	15	B	20	C	17	C	19	C	16	C
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway	2	A	1	A	2	A	1	A	5	A	11	B				
Eastbound Left+Through	8	A	8	A	8	A	9	A	Analyzed with Signal		8	A	9	A	Analyzed with Signal	
Eastbound Left							8	A	9	A						
Eastbound Through							0	A	0	A						
Eastbound Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Westbound Left+Through	9	A	0	A	9	A	0	A			9	A	0	A		
Westbound Left							9	A	0	A						
Westbound Through							0	A	0	A						
Westbound Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Northbound Left+Through+Right	16	C	0	A	17	C	0	A	17	C	0	A	18	C	0	A
Southbound Left+Through+Right	20	C	15	B	23	C	16	C			25	D	18	C		
Southbound Left							46	E	63	F						
Southbound Through+Right							10	A	13	B						
5. Access 1 on Faas Ranch Rd							1	A	3	A					1	A
Westbound Left+Right							10	A	12	B					10	A
Northbound Through+Right							0	A	8	A					0	A
Southbound Left+Through							8	A	0	A					8	A
6. Access 2 on Faas Ranch Rd							5	A	6	A					5	A
Eastbound Left+Through+Right							9	A	9	A					9	A
Westbound Left+Through+Right							10	A	12	B					10	A
Northbound Left+Through+Right							7	A	7	A					7	A
Southbound Left+Through+Right							7	A	7	A					7	A
SIGNAL CONTROL																
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway									10	A	12	B			12	B
Eastbound Left									8	A	9	A			8	A
Eastbound Through									9	A	5	A			11	B
Eastbound Right									5	A	0	A			5	A
Westbound Left									12	B	0	A			15	B
Westbound Through									12	B	15	B			13	B
Westbound Right									10	B	11	B			11	B
Northbound Left+Through+Right									14	B	0	A			14	B
Southbound Left									14	B	17	B			16	B
Southbound Through+Right									13	B	17	B			14	B

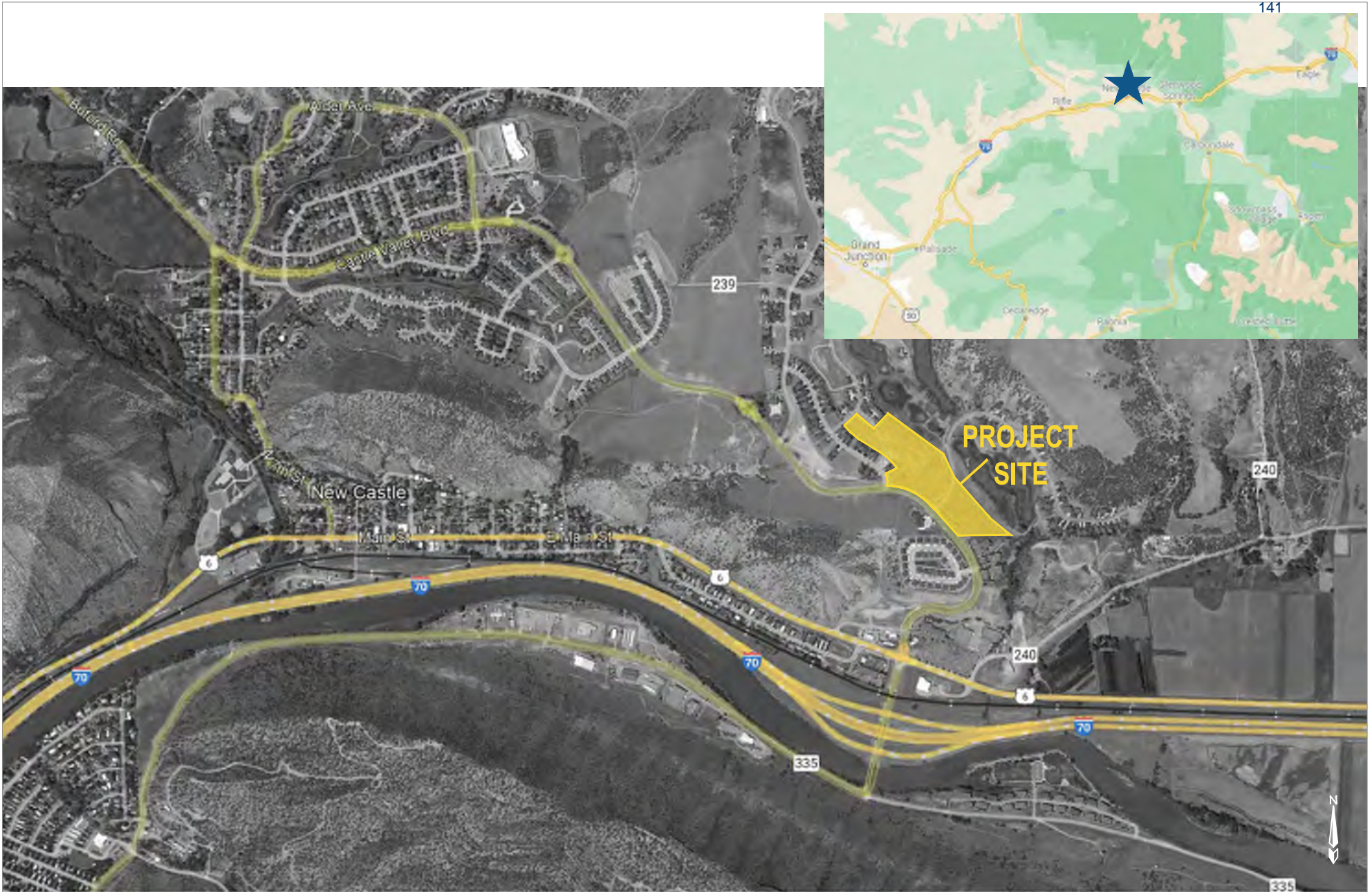
Note: Delay represented in average seconds per vehicle.

Table 2 - Peak Hour 95th Percentile Queue Summary

Intersection and Lanes Groups	Storage or Distance to Adj. Int.	2021 Existing		2025 Background		2025 Bkgrd + Project		2025 Bkgrd + Project (w/ Improvements)		2030 Background		2030 Bkgrd + Project		
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
STOP SIGN CONTROL														
1. White Horse Dr at Lakota Dr														
Westbound Left+Right	-	0'	0'	0'	0'	3'	5'			0'	0'	3'	5'	
Northbound Through+Right	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'	
Southbound Left+Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'	
2. Blackhawk Dr at White Horse Dr														
Eastbound Left+Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'	
Westbound Through+Right	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'	
Southbound Left+Right	-	3'	0'	3'	0'	5'	3'			3'	0'	5'	3'	
3. Castle Valley Blvd at Blackhawk Dr														
Eastbound Left+Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'	
Westbound Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'	
Westbound Right	205'	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'	
Southbound Left+Right	-	10'	5'	13'	5'	23'	13'			15'	8'	28'	15'	
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway														
Eastbound Left+Through	-	0'	0'	0'	0'			Analyzed as Signal	8'	0'	Analyzed as Signal			
Eastbound Left	200'					3'	8'							
Eastbound Through	-					0'	0'							
Eastbound Right	75'	0'	0'	0'	0'	0'	0'			0'		0'		
Westbound Left+Through	-	0'	0'	0'	0'					9'		0'		
Westbound Left	50'					0'	0'							
Westbound Through	-					0'	0'							
Westbound Right	60' (200')	0'	0'	0'	0'	0'	0'			0'		0'		
Northbound Left+Through+Right	-	3'	0'	3'	0'	3'	0'			18'		0'		
Southbound Left+Through+Right	-	23'	5'	28'	5'					25'		8'		
Southbound Left	100'					78'	145'							
Southbound Through+Right	-					3'	15'							
5. Access 1 on Faas Ranch Rd														
Westbound Left+Right	-					3'	15'					3'	15'	
Northbound Through+Right	-					0'	0'					0'	0'	
Southbound Left+Through	-					0'	0'					0'	0'	
6. Access 2 on Faas Ranch Rd														
Eastbound Left+Through+Right	-					3'	8'					3'	8'	
Westbound Left+Through+Right	-					5'	5'					5'	8'	
Northbound Left+Through+Right	-					3'	5'					3'	5'	
Southbound Left+Through+Right	-					0'	0'					0'	0'	
SIGNAL CONTROL														
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway														
Eastbound Left	200'							17'	39'			22'	38'	
Eastbound Through	-							234'	97'			334'	98'	
Eastbound Right	75'							0'	0'			0'	0'	
Westbound Left	50'							4'	0'			5'	0'	
Westbound Through	-							105'	289'			131'	323'	
Westbound Right	200'							10'	35'			11'	37'	
Northbound Left+Through+Right	-							0'	0'			0'	0'	
Southbound Left	100'							67'	87'			55'	86'	
Southbound Through+Right	-							0'	0'			0'	0'	

Table 3. Trip Generation Summary

Land Use	Size	Unit	Internal Capture & Non-Auto Factor	Average Daily Trips				AM Peak Hour Trips				PM Peak Hour Trips			
				Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Parcel 1															
ITE 221 - Multi-Family (Mid Rise) Housing	69	DU	10%	4.54	282	141	141	0.4	23	5	18	0.39	24	15	9
Parcel 2															
ITE 221 - Multi-Family (Mid Rise) Housing	9	DU	10%	4.54	37	19	18	0.4	3	1	2	0.39	3	2	1
ITE 822 - Retail Plaza (<40k)	10.38	KSF	10%	54.45	509	255	254	2.36	22	13	9	6.59	62	31	31
ITE 912 - Drive-In Bank	5.6	KSF	10%	100.35	506	253	253	9.95	50	29	21	21.01	106	53	53
ITE 720 - Medical-Dental Office Building	12.732	KSF	10%	36.0	413	207	206	3.10	36	28	8	3.93	45	14	31
<i>Subtotal of Trips</i>					1,465	734	731		111	71	40		216	100	116
<i>Pass-by Trips: Shopping Center 34%</i>					-173	-87	-86		0	0	0		-21	-11	-10
<i>Pass-by Trips: Bank (AM) 29%</i>					0	0	0		-15	-8	-7		0	0	0
<i>Pass-by Trips: Bank (PM) 35%</i>					-177	-89	-88		0	0	0		-37	-19	-18
<i>Subtotal of New Trips</i>					1,115	558	557		96	63	33		158	70	88
Parcel 3															
ITE 215 - Single-Family Attached Housing	8	DU	10%	7.2	52	26	26	0.48	3	1	2	0.57	4	2	2
Parcel 4															
ITE 220 - Multi-Family (Low Rise) Housing	6	DU	10%	6.74	36	18	18	0.40	2	0	2	0.51	3	2	1
ITE 822 - Retail Plaza (<40k)	7.38	KSF	10%	54.45	362	181	181	2.36	16	10	6	6.59	44	22	22
<i>Pass-by Trips: Shopping Center 34%</i>					-123	-62	-61		0	0	0		-15	-7	-8
<i>Subtotal of New Trips</i>					275	137	138		18	10	8		32	17	15
Parcel 5															
ITE 220 - Multi-Family (Low Rise) Housing	10	DU	10%	6.74	61	31	30	0.40	4	1	3	0.51	5	3	2
ITE 822 - Retail Plaza (<40k)	6.81	KSF	10%	54.45	334	167	167	2.36	14	8	6	6.59	40	20	20
ITE 971 - Brewery Tap Room	5.836	KSF	10%	61.69	324	162	162	0.68	4	4	0	9.83	52	31	21
<i>Pass-by Trips: Shopping Center 34%</i>					-224	-112	-112		0	0	0		-31	-17	-14
<i>Subtotal of New Trips</i>					495	248	247		22	13	9		66	37	29
Parcel 6															
ITE 220 - Multi-Family (Low Rise) Housing	42	DU	10%	6.74	255	128	127	0.40	15	4	11	0.51	19	12	7
Parcel 7															
ITE 215 - Single-Family Attached Housing	0	DU	10%	7.2	0	0	0	0.48	0	0	0	0.57	0	0	0
Parcel 8															
ITE 215 - Single-Family Attached Housing	3	DU	10%	7.2	19	10	9	0.48	1	0	1	0.57	2	1	1
Parcel 9															
ITE 215 - Single-Family Attached Housing	9	DU	10%	7.2	58	29	29	0.48	4	1	3	0.57	5	3	2
Parcel 10 - 39															
ITE 210 - Single-Family Detached Housing	29	DU	10%	9.43	246	123	123	0.70	18	5	13	0.94	25	16	9
Total New Trips					2,797	1,400	1,397		200	102	98		335	173	162
Total Pass-By Trips					697	350	347		15	8	7		104	54	50
Total Trips					3,494	1,750	1,744		215	110	105		439	227	212

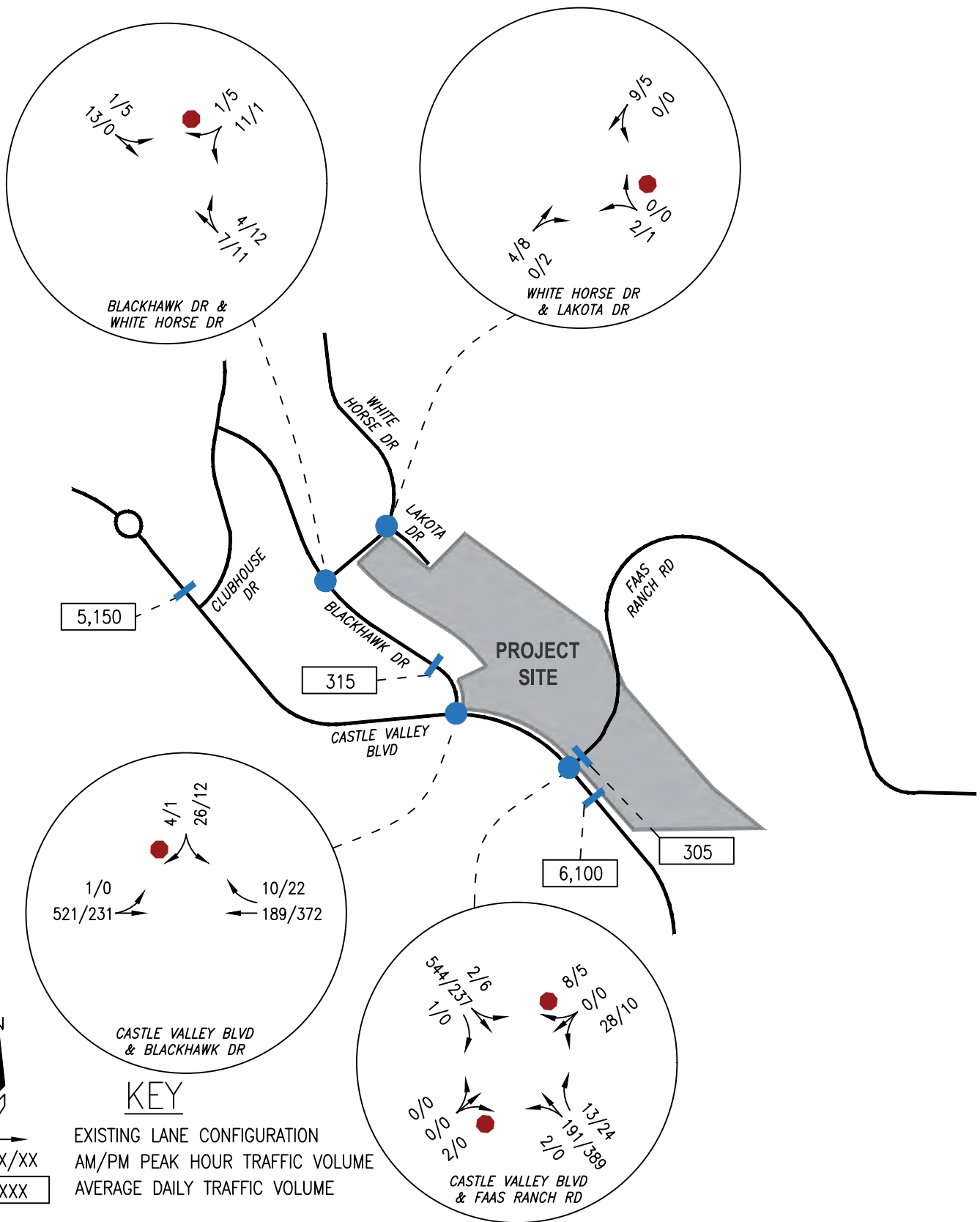


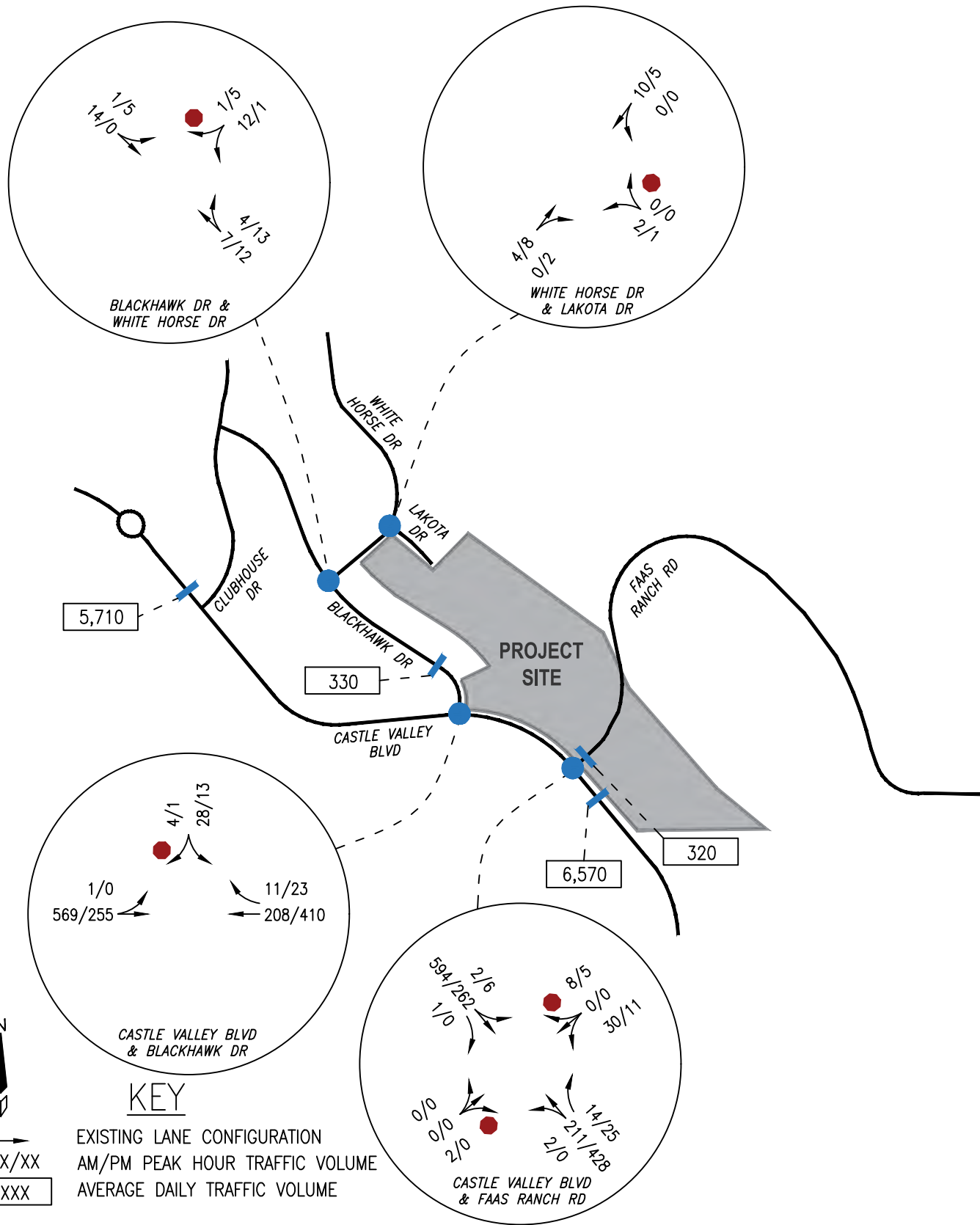
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LAKOTA CANYON RANCH DEVELOPMENT TRAFFIC IMPACT STUDY
 CONCEPTUAL SITE AND ACCESS PLAN

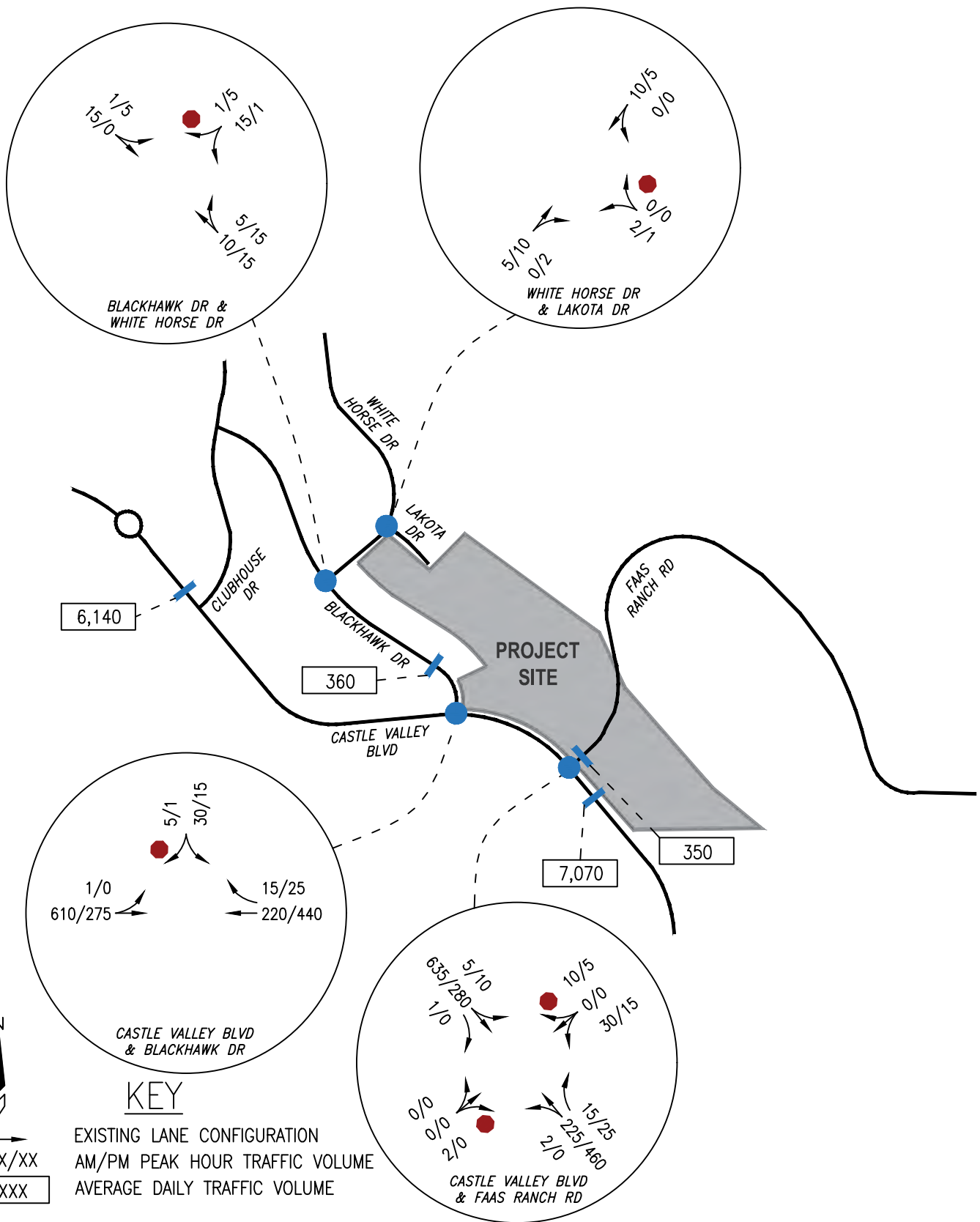
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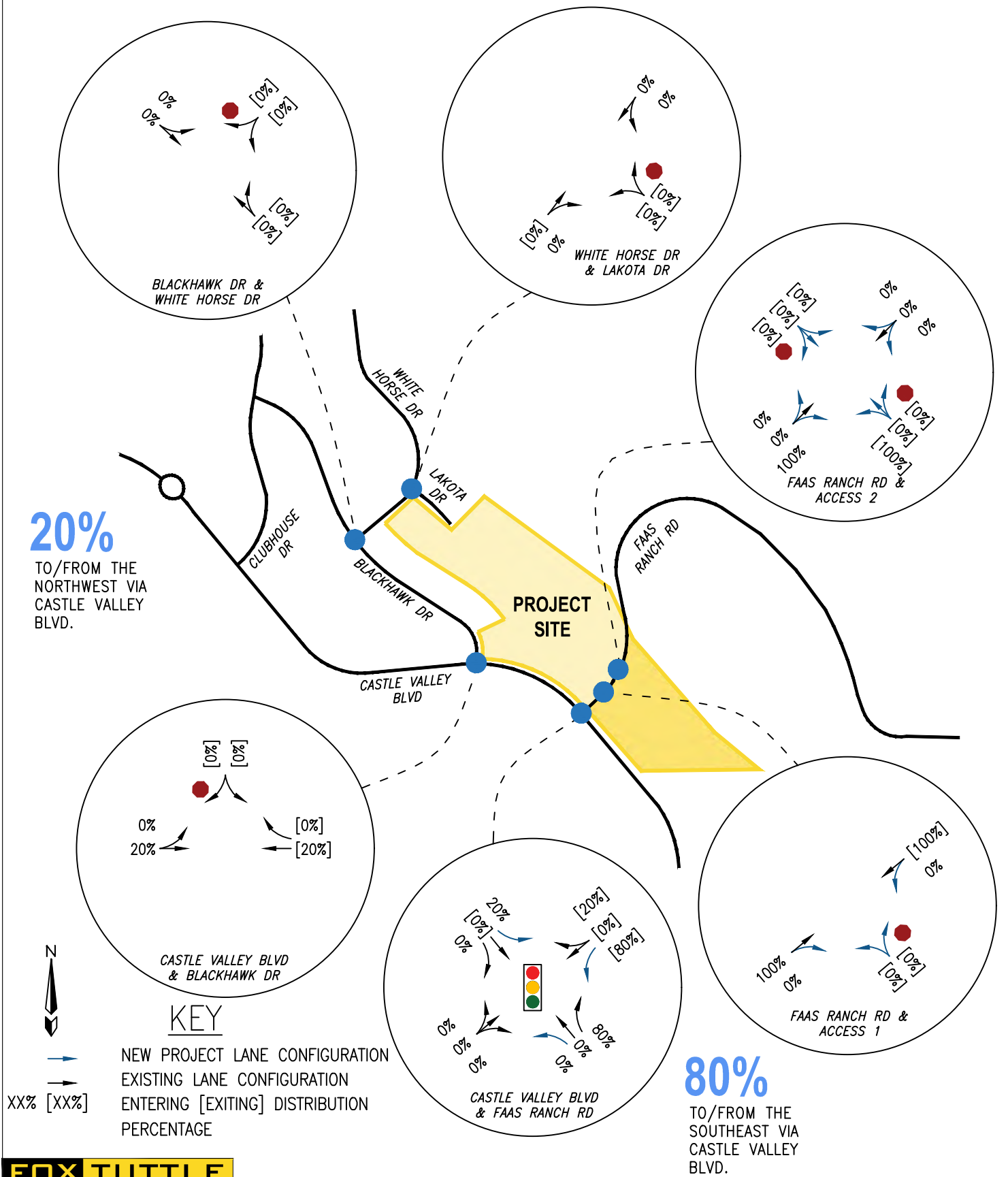




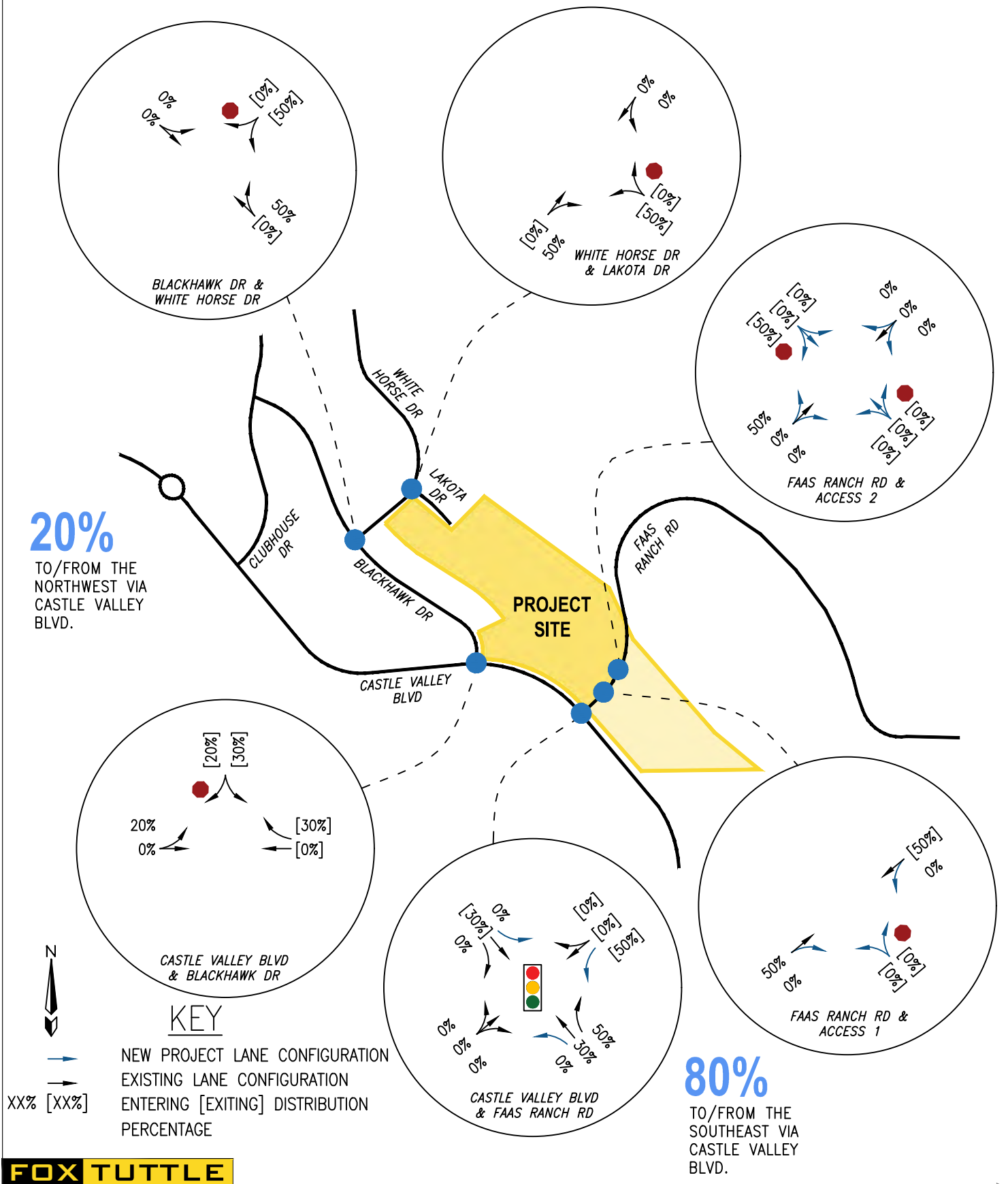
LAKOTA CANYON RANCH DEVELOPMENT TRAFFIC IMPACT STUDY
YEAR 2025 BACKGROUND TRAFFIC VOLUMES

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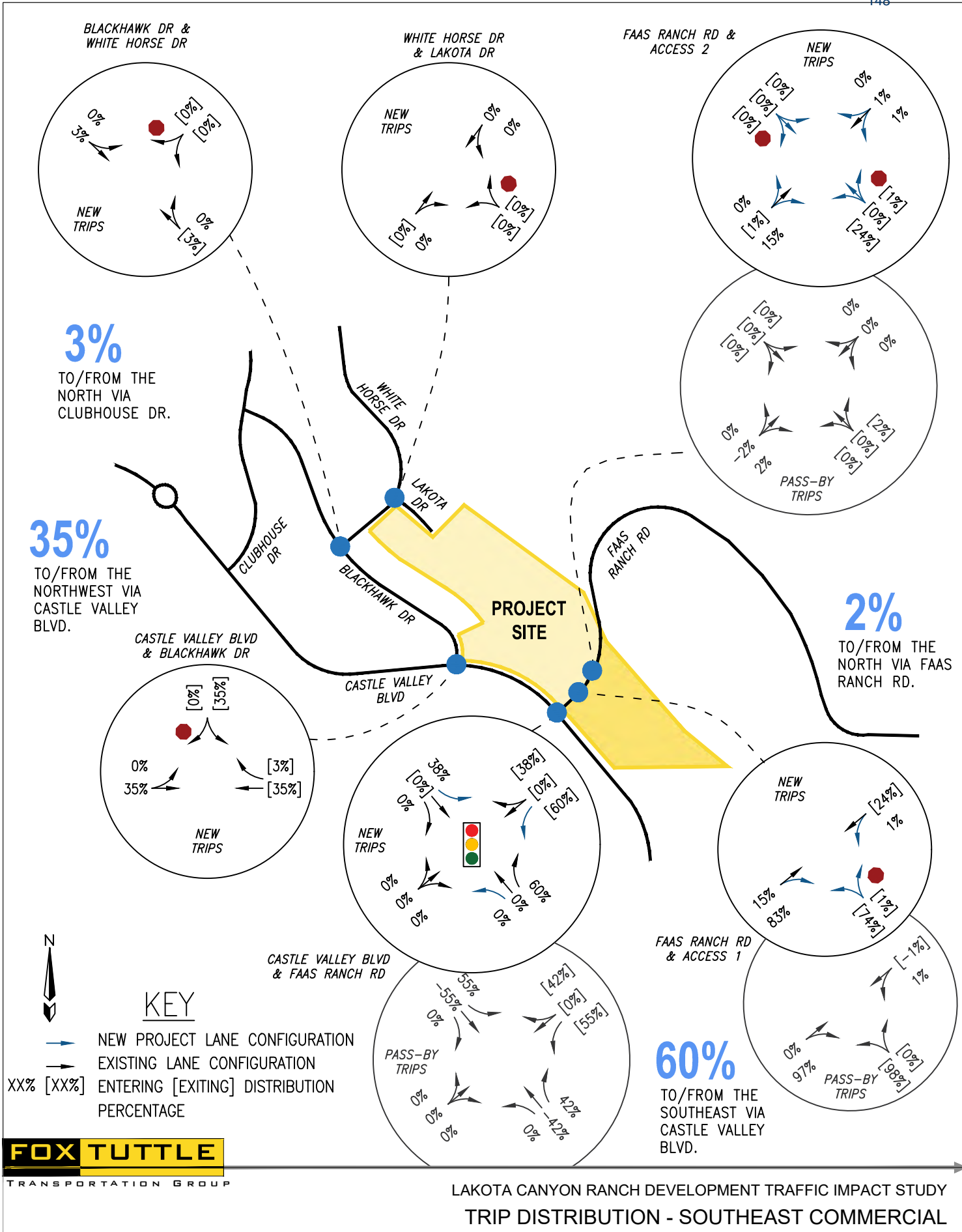


FT #	21070	Original Scale	NTS	Date	3/18/2022	Drawn by	MAR	Figure #	6A
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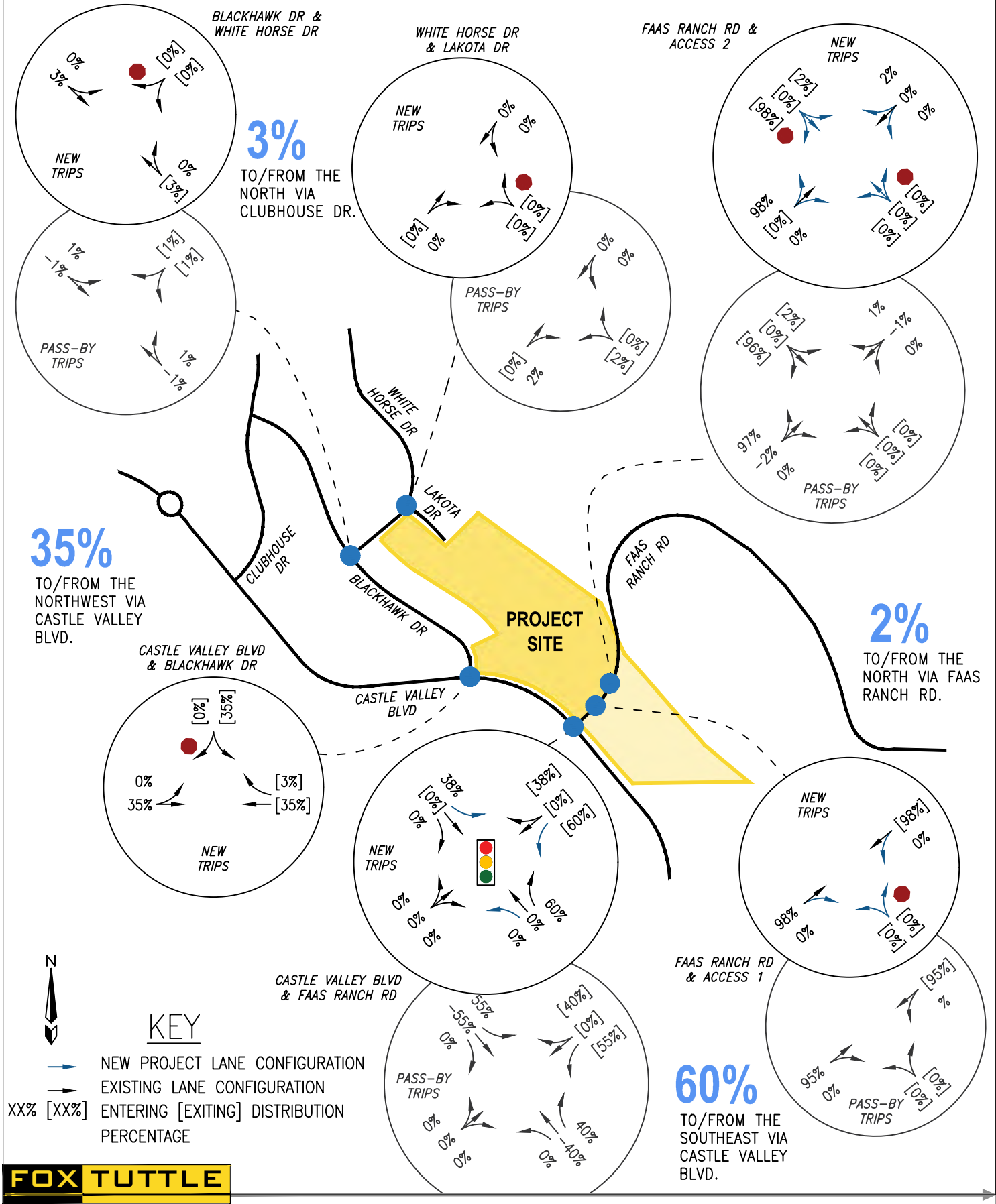


LAKOTA CANYON RANCH DEVELOPMENT TRAFFIC IMPACT STUDY
TRIP DISTRIBUTION - NORTHWEST RESIDENTIAL

FT #	21070	Original Scale	NTS	Date	3/18/2022	Drawn by	MAR	Figure #	6B
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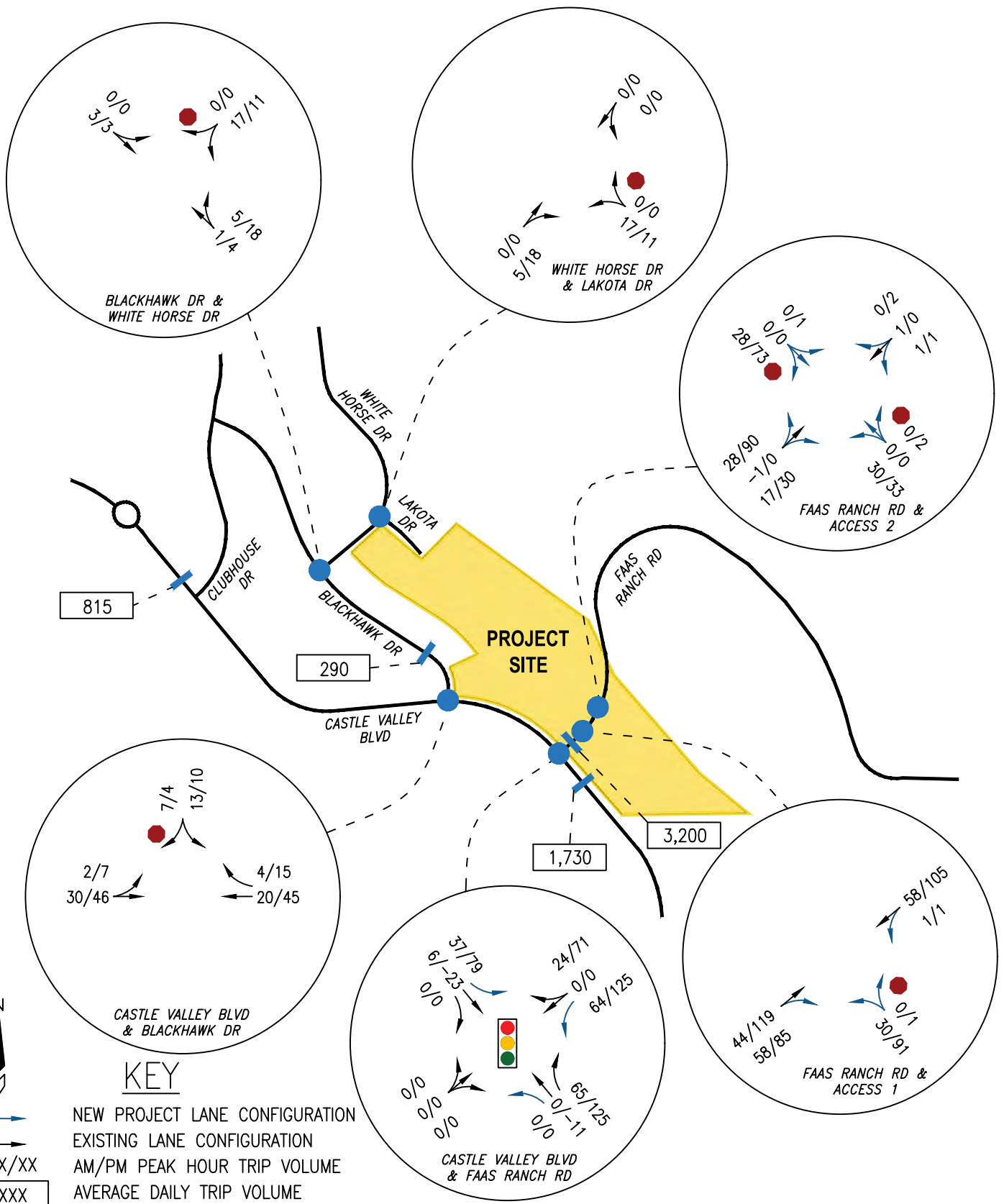


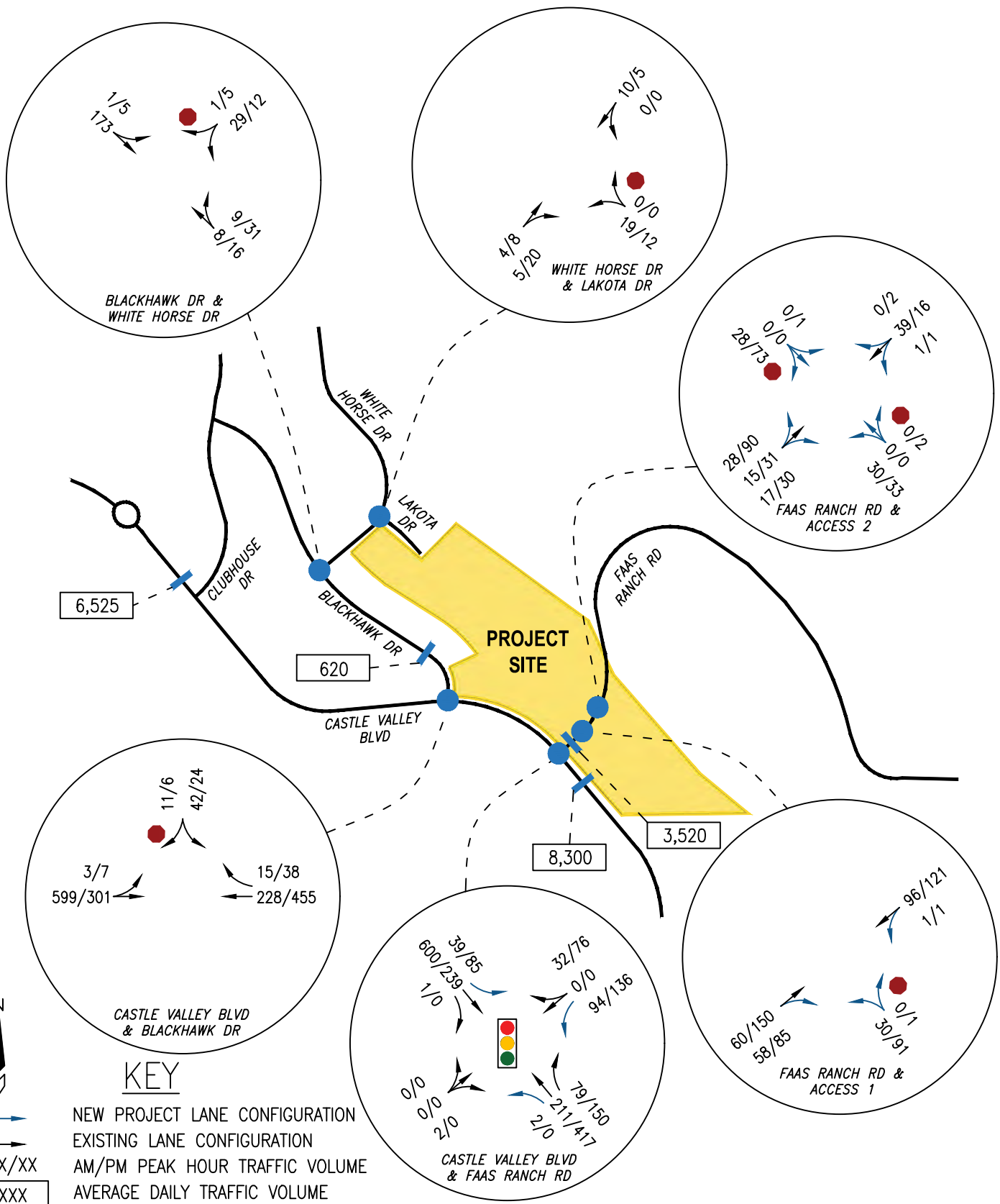
FT #	21070	Original Scale	NTS	Date	3/18/2022	Drawn by	MAR	Figure #	6C
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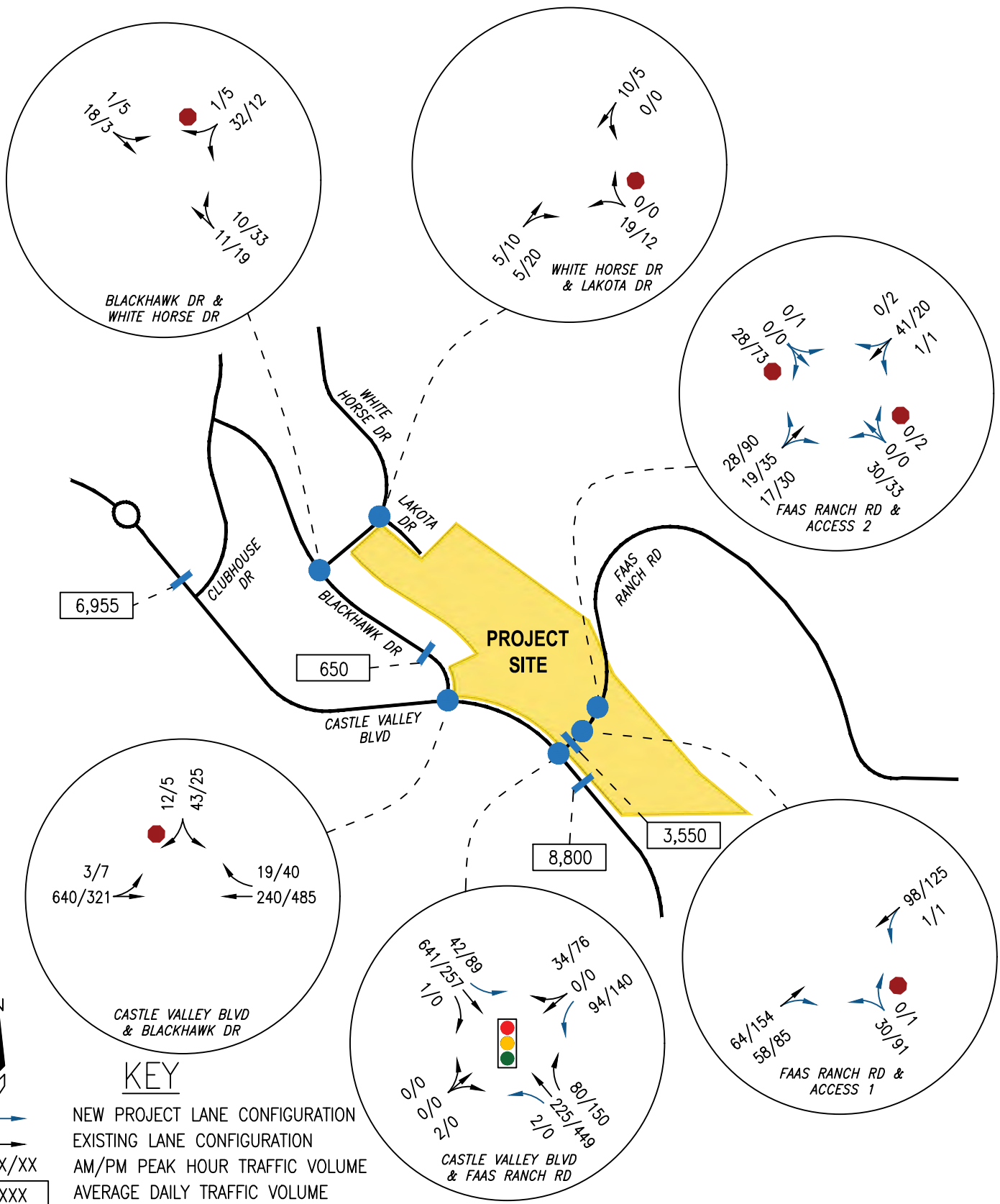


LAKOTA CANYON RANCH DEVELOPMENT TRAFFIC IMPACT STUDY
TRIP DISTRIBUTION - NORTHWEST COMMERCIAL

FT #	21070	Original Scale	NTS	Date	3/18/2022	Drawn by	MAR	Figure #	6C
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Appendix:

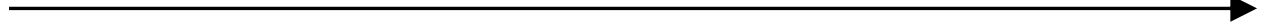
Level of Service Definitions

Existing Traffic Data

Intersection Capacity Worksheets

Signal Warrant Evaluation





Level of Service Definitions

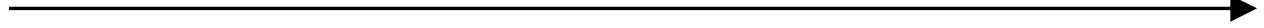


LEVEL OF SERVICE DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, “Levels of Service” (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

Level of Service Rating	Delay in seconds per vehicle (a)		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers are able to maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially, and stoppages may occur for short or long periods of time because of downstream congestion.

(a) Delay ranges based on Highway Capacity Manual (6th Edition, 2016) criteria.



Existing Traffic Data

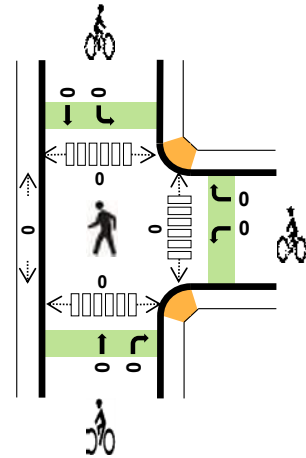
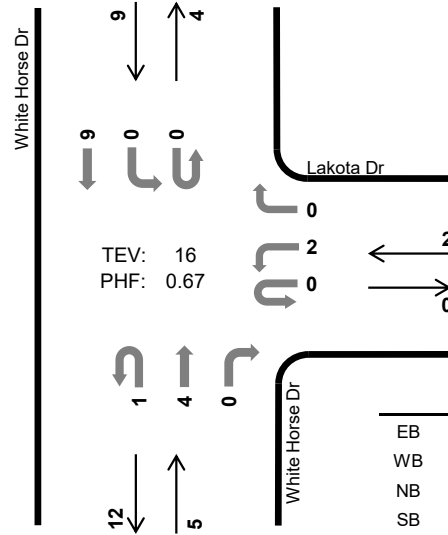


White Horse Dr Lakota Dr



Peak Hour

Date: 11/09/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	0.0%	0.50
NB	0.0%	0.42
SB	0.0%	0.56
TOTAL	0.0%	0.67

Two-Hour Count Summaries

Interval Start	0			Lakota Dr			White Horse Dr				White Horse Dr			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound				Southbound								
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	0	
7:45 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4	0	6	11	
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4	14	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	15	
8:30 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	5	16	
8:45 AM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	3	0	6	16	
Count Total	0	0	0	0	0	3	0	0	1	0	7	0	0	0	16	0	27	0	
Peak Hour	All	0	0	0	0	0	2	0	0	1	0	4	0	0	0	9	0	16	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HV%	-	-	-	-	-	0%	-	-	0%	-	0%	-	-	-	0%	-	0%	0

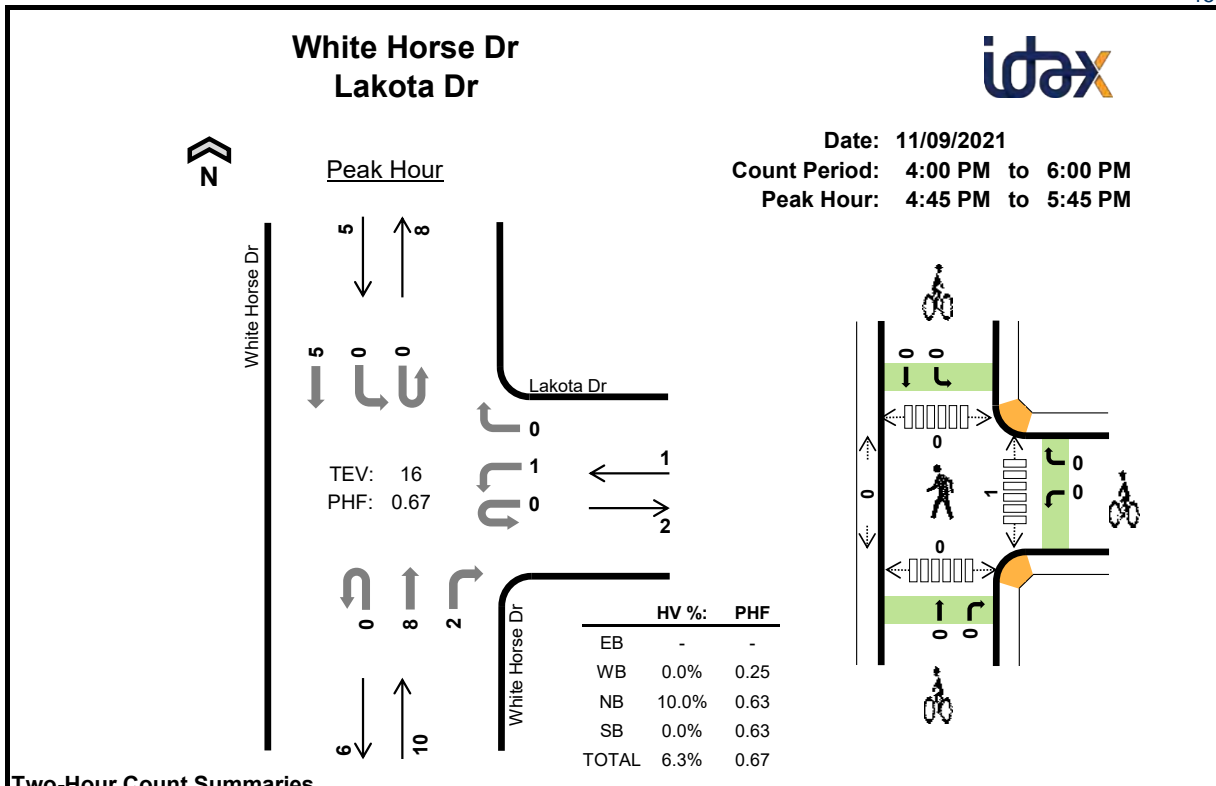
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Peak Hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	0				Lakota Dr				White Horse Dr				White Horse Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	0			Lakota Dr			White Horse Dr			White Horse Dr					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start	0			Lakota Dr			White Horse Dr				White Horse Dr				15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound				Southbound								
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	4	0	
4:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	3	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	13	
5:00 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	4	13	
5:15 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	6	15	
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	4	16	
5:45 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	16	
Count Total	0	0	0	0	0	2	0	1	0	0	16	3	0	0	7	0	29	0	
Peak Hour	All	0	0	0	0	0	1	0	0	0	0	8	2	0	0	5	0	16	0
	HV	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
	HV%	-	-	-	-	-	0%	-	-	-	-	0%	50%	-	-	0%	-	6%	0

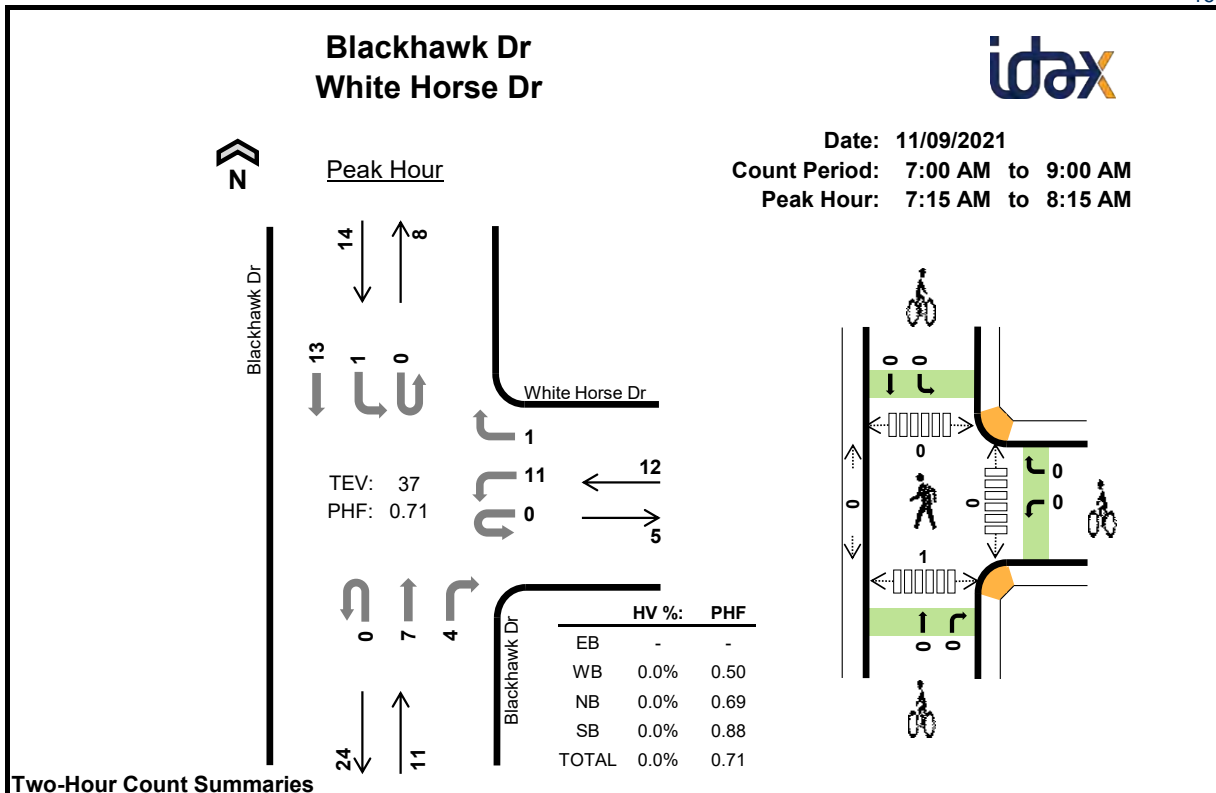
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	1	0	0	0	0	0	3	0	0	0	3
Peak Hr	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	0				Lakota Dr				White Horse Dr				White Horse Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	0			Lakota Dr			White Horse Dr			White Horse Dr					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start	0				White Horse Dr				Blackhawk Dr				Blackhawk Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	4	0	
7:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	4	0	7	0	
7:30 AM	0	0	0	0	0	4	0	0	0	0	1	1	0	0	4	0	10	0	
7:45 AM	0	0	0	0	0	6	0	0	0	0	3	1	0	0	3	0	13	34	
8:00 AM	0	0	0	0	0	1	0	0	0	0	1	2	0	1	2	0	7	37	
8:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	3	33	
8:30 AM	0	0	0	0	0	3	0	1	0	0	0	1	0	0	3	0	8	31	
8:45 AM	0	0	0	0	0	3	0	0	0	0	0	1	0	2	3	0	9	27	
Count Total	0	0	0	0	0	21	0	2	0	0	7	6	0	3	22	0	61	0	
Peak Hour	All	0	0	0	0	0	11	0	1	0	0	7	4	0	1	13	0	37	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HV%	-	-	-	-	-	0%	-	0%	-	-	0%	0%	-	0%	0%	-	0%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	0	2	3
Peak Hr	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	0				White Horse Dr				Blackhawk Dr				Blackhawk Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

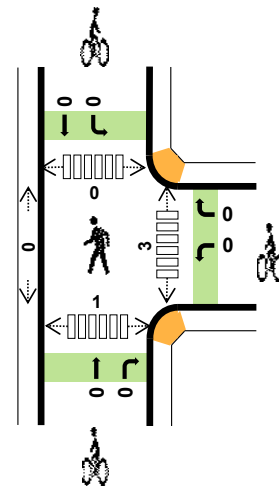
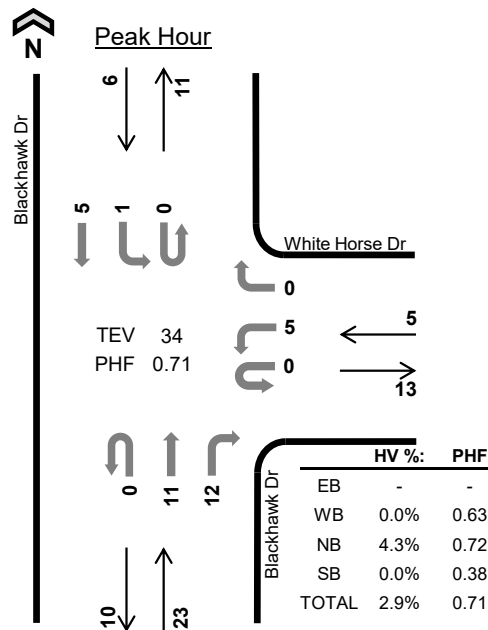
Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	0			White Horse Dr			Blackhawk Dr			Blackhawk Dr					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Blackhawk Dr White Horse Dr



Date: 11/09/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



Two-Hour Count Summaries

Interval Start	0			White Horse Dr			Blackhawk Dr				Blackhawk Dr				15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound				Southbound								
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT			TH	RT	
4:00 PM	0	0	0	0	0	0	0	1	0	0	2	1	0	2	2	0	8	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	3	0	2	0	0	7	0	
4:30 PM	0	0	0	0	0	3	0	0	0	0	5	1	0	1	1	0	11	0	
4:45 PM	0	0	0	0	0	1	0	0	0	0	3	2	0	0	0	0	6	32	
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	3	0	0	1	0	5	29	
5:15 PM	0	0	0	0	0	2	0	0	0	0	4	4	0	0	1	0	11	33	
5:30 PM	0	0	0	0	0	1	0	0	0	0	4	3	0	1	3	0	12	34	
5:45 PM	0	0	0	0	0	1	0	0	0	0	2	1	0	0	1	0	5	33	
Count Total	0	0	0	0	0	9	0	1	0	0	22	18	0	6	9	0	65	0	
Peak Hour	All	0	0	0	0	0	5	0	0	0	0	11	12	0	1	5	0	34	0
	HV	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
	HV%	-	-	-	-	-	0%	-	-	-	-	0%	8%	-	0%	0%	-	3%	0

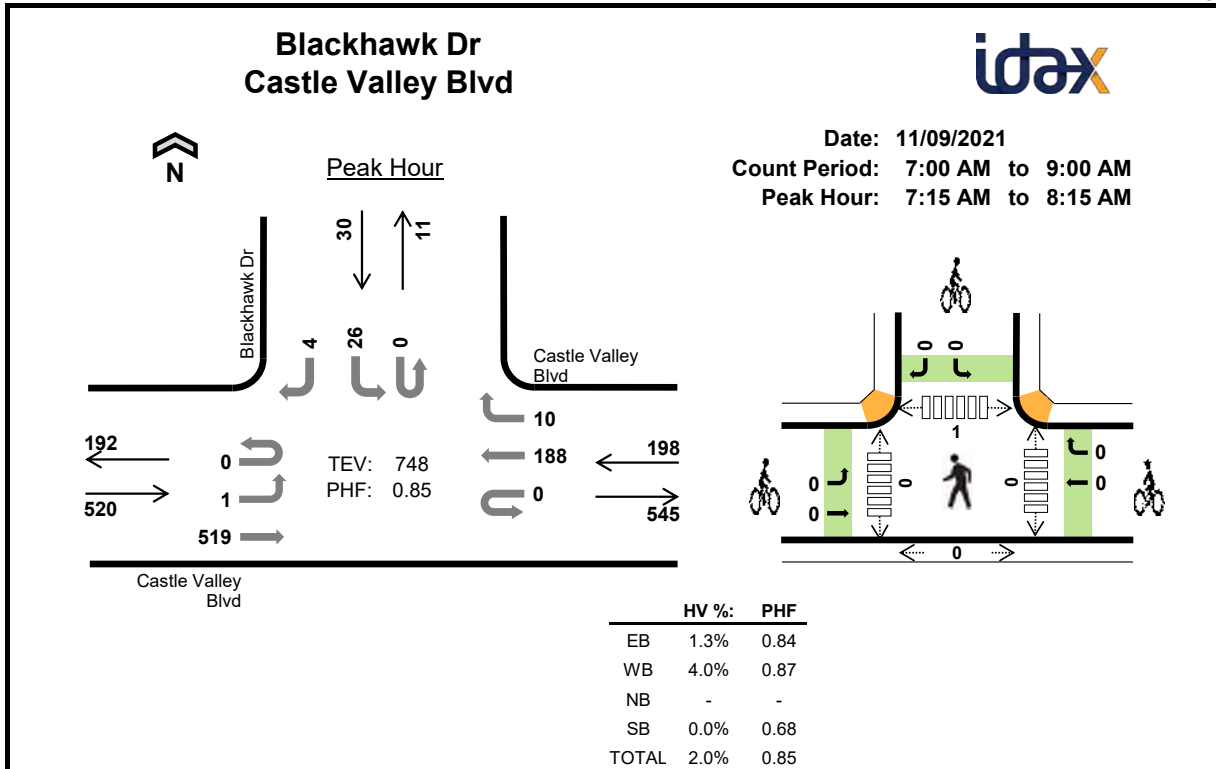
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	1	0	0	0	0	0	3	0	1	1	5
Peak Hr	0	0	1	0	1	0	0	0	0	0	3	0	0	1	4

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	0				White Horse Dr				Blackhawk Dr				Blackhawk Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	0			White Horse Dr			Blackhawk Dr			Blackhawk Dr					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start	Castle Valley Blvd				Castle Valley Blvd				0				Blackhawk Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	83	0	0	0	39	0	0	0	0	0	0	5	0	0	128	0
7:15 AM	0	1	103	0	0	0	46	1	0	0	0	0	0	5	0	1	157	0
7:30 AM	0	0	147	0	0	0	56	1	0	0	0	0	0	9	0	2	215	0
7:45 AM	0	0	154	0	0	0	53	4	0	0	0	0	0	8	0	1	220	720
8:00 AM	0	0	115	0	0	0	33	4	0	0	0	0	0	4	0	0	156	748
8:15 AM	0	0	74	0	0	0	23	3	0	0	0	0	0	3	0	0	103	694
8:30 AM	0	0	68	0	0	0	26	2	0	0	0	0	0	3	0	1	100	579
8:45 AM	0	0	43	0	0	0	23	2	0	0	0	0	0	6	0	1	75	434
Count Total	0	2	787	0	0	0	299	17	0	0	0	0	0	43	0	6	1,154	0
Peak Hour	All	0	1	519	0	0	188	10	0	0	0	0	0	26	0	4	748	0
	HV	0	0	7	0	0	8	0	0	0	0	0	0	0	0	0	15	0
	HV%	-	0%	1%	-	-	4%	0%	-	-	-	-	-	0%	-	0%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

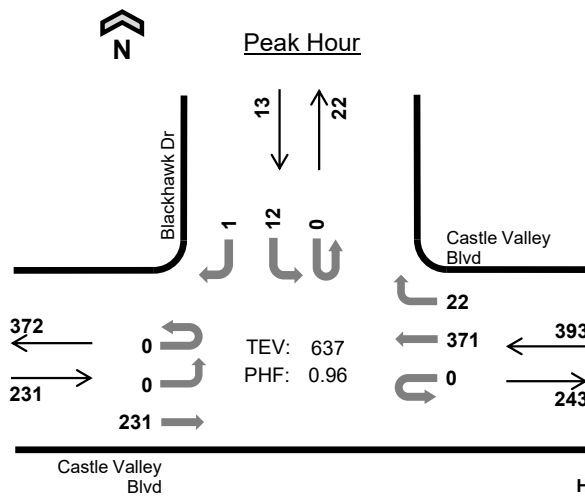
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	4	0	0	6	0	0	0	0	0	0	0	1	0	1
7:30 AM	2	3	0	0	5	0	0	0	0	0	0	0	0	0	0
7:45 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	1	0	0	2	0	0	0	0	0	1	0	1	0	2
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	12	12	0	0	24	0	0	0	0	0	1	0	2	0	3
Peak Hr	7	8	0	0	15	0	0	0	0	0	0	0	1	0	1

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd				Castle Valley Blvd				0				Blackhawk Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:15 AM	0	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	6	0
7:30 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
7:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	17
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	15
8:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	11
8:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	7
Count Total	0	0	12	0	0	0	12	0	0	0	0	0	0	0	0	0	24	0
Peak Hour	0	0	7	0	0	0	8	0	0	0	0	0	0	0	0	0	15	0

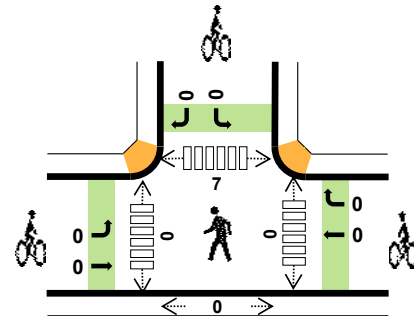
Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd			Castle Valley Blvd			0			Blackhawk Dr								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Blackhawk Dr Castle Valley Blvd



Date: 11/09/2021
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	4.3%	0.88
WB	1.8%	0.94
NB	-	-
SB	0.0%	0.54
TOTAL	2.7%	0.96

Two-Hour Count Summaries

Interval Start	Castle Valley Blvd Eastbound				Castle Valley Blvd Westbound				Blackhawk Dr Northbound				Blackhawk Dr Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	66	0	0	0	87	5	0	0	0	0	0	3	0	0	161	0	
4:15 PM	0	0	54	0	0	0	99	6	0	0	0	0	0	2	0	0	161	0	
4:30 PM	0	0	58	0	0	0	96	6	0	0	0	0	0	5	0	1	166	0	
4:45 PM	0	0	53	0	0	0	89	5	0	0	0	0	0	2	0	0	149	637	
5:00 PM	0	0	47	0	0	0	93	3	0	0	0	0	0	2	0	0	145	621	
5:15 PM	0	1	42	0	0	0	105	7	0	0	0	0	0	3	0	0	158	618	
5:30 PM	0	0	50	0	0	0	117	7	0	0	0	0	0	3	0	0	177	629	
5:45 PM	0	0	43	0	0	0	78	5	0	0	0	0	0	3	0	1	130	610	
Count Total	0	1	413	0	0	0	764	44	0	0	0	0	0	23	0	2	1,247	0	
Peak Hour	All	0	0	231	0	0	0	371	22	0	0	0	0	0	12	0	1	637	0
	HV	0	0	10	0	0	0	6	1	0	0	0	0	0	0	0	0	17	0
	HV%	-	-	4%	-	-	-	2%	5%	-	-	-	-	-	0%	-	0%	3%	0

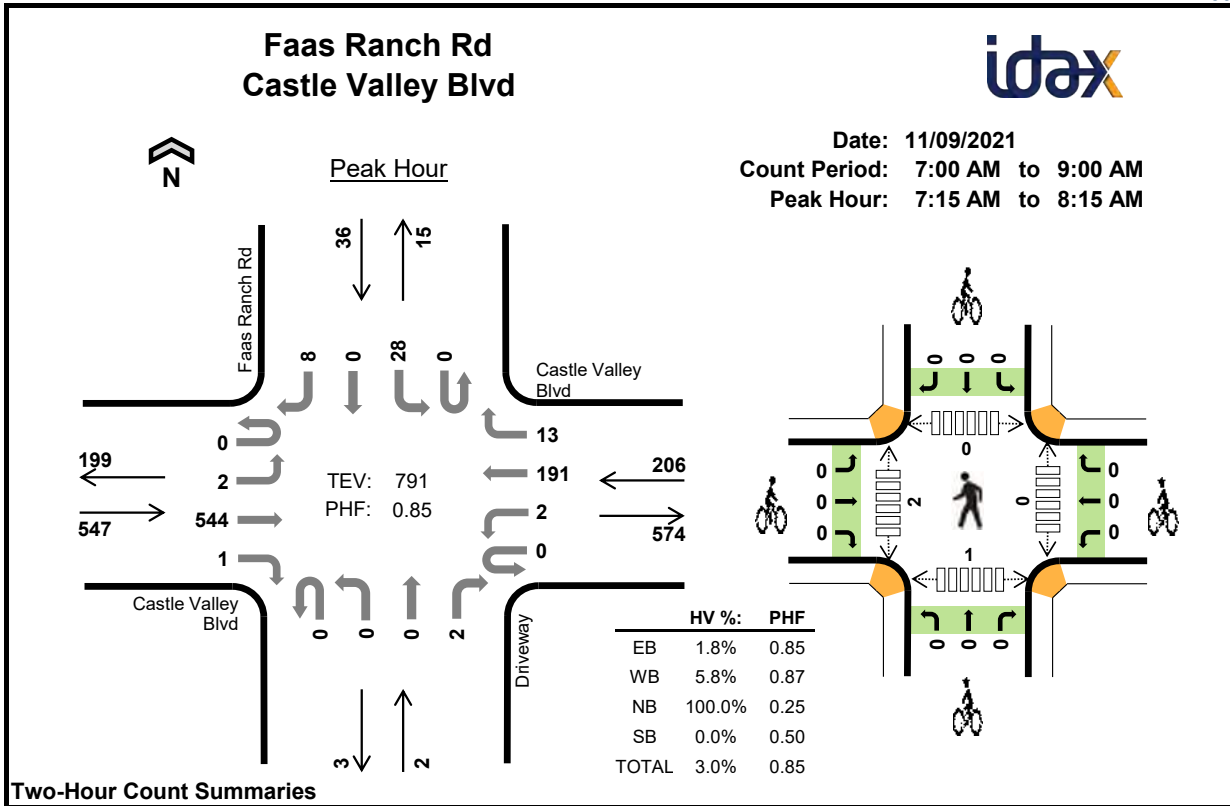
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	1	0	0	6	0	0	0	0	0	0	0	3	0	3
4:15 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
4:30 PM	3	2	0	0	5	0	0	0	0	0	0	0	2	0	2
4:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	2	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
5:15 PM	0	1	0	0	1	0	0	0	0	0	1	0	2	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Count Total	10	8	0	0	18	0	0	0	0	0	1	1	11	0	13
Peak Hr	10	7	0	0	17	0	0	0	0	0	0	0	7	0	7

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd				Castle Valley Blvd				0				Blackhawk Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	6	0
4:15 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0
4:30 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5	0
4:45 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	17
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	8
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	10	0	0	0	7	1	0	0	0	0	0	0	0	0	18	0
Peak Hour	0	0	10	0	0	0	6	1	0	0	0	0	0	0	0	0	17	0

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd			Castle Valley Blvd			0			Blackhawk Dr								
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start	Castle Valley Blvd Eastbound				Castle Valley Blvd Westbound				Driveway Northbound				Faas Ranch Rd Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	87	0	0	0	39	3	0	0	0	0	0	2	0	0	131	0	
7:15 AM	0	0	106	0	0	0	48	1	0	0	0	2	0	4	0	1	162	0	
7:30 AM	0	0	161	0	0	1	51	1	0	0	0	0	0	12	0	6	232	0	
7:45 AM	0	1	158	1	0	0	58	1	0	0	0	0	0	7	0	0	226	751	
8:00 AM	0	1	119	0	0	1	34	10	0	0	0	0	0	5	0	1	171	791	
8:15 AM	0	1	76	0	0	0	26	4	0	0	0	1	0	2	0	0	110	739	
8:30 AM	0	0	71	0	0	0	28	1	0	0	0	0	0	2	0	0	102	609	
8:45 AM	0	0	50	0	0	0	24	2	0	0	0	0	0	3	0	1	80	463	
Count Total	0	3	828	1	0	2	308	23	0	0	0	3	0	37	0	9	1,214	0	
Peak Hour	All	0	2	544	1	0	2	191	13	0	0	0	2	0	28	0	8	791	0
	HV	0	0	9	1	0	1	11	0	0	0	0	2	0	0	0	0	24	0
	HV%	-	0%	2%	100%	-	50%	6%	0%	-	-	-	100%	-	0%	-	0%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	4	2	0	8	0	0	0	0	0	0	0	1	0	1
7:30 AM	3	5	0	0	8	0	0	0	0	0	0	0	0	0	0
7:45 AM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
8:00 AM	3	2	0	0	5	0	0	0	0	0	0	1	0	1	2
8:15 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	1	1
8:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	1	2	5
8:45 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	15	17	2	0	34	0	0	0	0	0	0	4	1	4	9
Peak Hour	10	12	2	0	24	0	0	0	0	0	0	2	0	1	3

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Castle Valley Blvd				Castle Valley Blvd				Driveway				Faas Ranch Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	4	0	
7:15 AM	0	0	2	0	0	0	4	0	0	0	0	2	0	0	0	8	0	
7:30 AM	0	0	3	0	0	1	4	0	0	0	0	0	0	0	0	8	0	
7:45 AM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	3	23	
8:00 AM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	5	24	
8:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	18	
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	12	
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	11	
Count Total	0	0	14	1	0	1	16	0	0	0	0	2	0	0	0	34	0	
Peak Hour	0	0	9	1	0	1	11	0	0	0	0	2	0	0	0	24	0	

Two-Hour Count Summaries - Bikes																
Interval Start	Castle Valley Blvd			Castle Valley Blvd			Driveway			Faas Ranch Rd			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

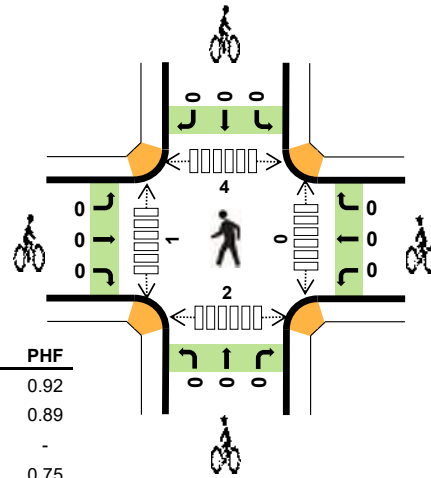
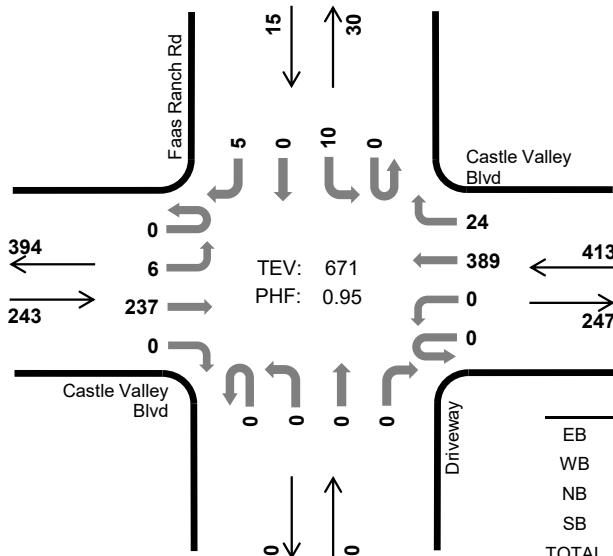
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Faas Ranch Rd Castle Valley Blvd



Peak Hour

Date: 11/09/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	4.5%	0.92
WB	1.7%	0.89
NB	-	-
SB	6.7%	0.75
TOTAL	2.8%	0.95

Two-Hour Count Summaries

Interval Start	Castle Valley Blvd Eastbound				Castle Valley Blvd Westbound				Driveway Northbound				Faas Ranch Rd Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	2	64	0	0	0	89	7	0	0	0	0	0	3	0	2	167	0	
4:15 PM	0	2	56	0	0	0	107	9	0	0	0	0	0	3	0	0	177	0	
4:30 PM	0	1	64	0	0	0	99	4	0	0	0	0	0	4	0	1	173	0	
4:45 PM	0	1	53	0	0	0	94	4	0	0	0	0	0	0	0	2	154	671	
5:00 PM	0	2	48	0	0	2	97	3	0	0	0	0	0	1	0	0	153	657	
5:15 PM	0	0	44	0	0	1	110	4	0	0	0	1	0	3	0	1	164	644	
5:30 PM	0	0	54	0	0	4	118	5	0	0	0	1	0	1	0	1	184	655	
5:45 PM	0	0	46	0	0	5	85	4	0	0	0	1	0	0	0	1	142	643	
Count Total	0	8	429	0	0	12	799	40	0	0	0	3	0	15	0	8	1,314	0	
Peak Hour	All	0	6	237	0	0	0	389	24	0	0	0	0	0	10	0	5	671	0
	HV	0	1	10	0	0	0	7	0	0	0	0	0	0	1	0	0	19	0
	HV%	-	17%	4%	-	-	-	2%	0%	-	-	-	-	-	10%	-	0%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	3	0	1	6	0	0	0	0	0	0	0	1	0	1
4:30 PM	3	2	0	0	5	0	0	0	0	0	0	0	2	1	3
4:45 PM	2	1	0	0	3	0	0	0	0	0	0	1	1	1	3
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1
5:15 PM	0	1	1	0	2	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Count Total	12	8	1	1	22	0	0	0	0	0	0	2	8	3	13
Peak Hour	11	7	0	1	19	0	0	0	0	0	0	1	4	2	7

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd				Castle Valley Blvd				Driveway				Faas Ranch Rd					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	3	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0
4:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	1	0	0	6	0
4:30 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5	0
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	19
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	15
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	11
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	1	11	0	0	0	8	0	0	0	0	1	0	1	0	0	22	0
Peak Hour	0	1	10	0	0	0	7	0	0	0	0	0	0	1	0	0	19	0

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd			Castle Valley Blvd			Driveway			Faas Ranch Rd								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Vehicle Classification Report Summary

Location: CASTLE VALLEY BLVD W-O CLUBHOUSE DR
Count Direction: Eastbound / Westbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 01

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Eastbound	2	1,519	493	1	462	5	0	0	1	0	0	0	0	2,483
Percent	0.1%	61.2%	19.9%	0.0%	18.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	6	1,817	642	1	162	29	0	0	0	0	0	0	1	2,658
Percent	0.2%	68.4%	24.2%	0.0%	6.1%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	8	3,336	1,135	2	624	34	0	0	1	0	0	0	1	5,141
Percent	0.2%	64.9%	22.1%	0.0%	12.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: CASTLE VALLEY BLVD W-O CLUBHOUSE DR
Count Direction: Eastbound / Westbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 01

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Eastbound	4	16	35	141	855	1,231	186	14	1	0	0	0	0	0	0	0	0	2,483
Percent	0.2%	0.6%	1.4%	5.7%	34.4%	49.6%	7.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	0	2	55	298	1,435	778	77	9	1	0	0	0	0	3	0	0	0	2,658
Percent	0.0%	0.1%	2.1%	11.2%	54.0%	29.3%	2.9%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	100%
Total	4	18	90	439	2,290	2,009	263	23	2	0	0	0	0	3	0	0	0	5,141
Percent	0.1%	0.4%	1.8%	8.5%	44.5%	39.1%	5.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Eastbound			Eastbound		
50th Percentile (Median)	30.5	mph	Mean (Average) Speed	30.2	mph
85th Percentile	33.8	mph	10 mph Pace	25.5 - 35.5	mph
95th Percentile	36.0	mph	Percent in Pace	84.5	%
Westbound			Westbound		
50th Percentile (Median)	28.6	mph	Mean (Average) Speed	28.6	mph
85th Percentile	31.9	mph	10 mph Pace	23.5 - 33.5	mph
95th Percentile	34.1	mph	Percent in Pace	85.3	%



Location: CASTLE VALLEY BLVD W-O CLUBHOUSE DR
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 01

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average					
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021			Mid-Week Average					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	0	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	4
1:00 AM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
2:00 AM	1	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	6	7
3:00 AM	7	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	1	8
4:00 AM	28	2	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	2	30
5:00 AM	113	7	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	113	7	120
6:00 AM	195	58	253	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	58	253
7:00 AM	467	247	714	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	467	247	714
8:00 AM	269	106	375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	269	106	375
9:00 AM	157	89	246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	157	89	246
10:00 AM	125	90	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125	90	215
11:00 AM	121	99	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	121	99	220
12:00 PM	107	133	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	133	240
1:00 PM	104	138	242	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	138	242
2:00 PM	103	128	231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103	128	231
3:00 PM	124	236	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	124	236	360
4:00 PM	211	368	579	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	211	368	579
5:00 PM	151	381	532	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	151	381	532
6:00 PM	95	281	376	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	281	376
7:00 PM	55	136	191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	136	191
8:00 PM	28	67	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	67	95
9:00 PM	12	57	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	57	69
10:00 PM	6	9	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	9	15
11:00 PM	3	14	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	14	17
Total	2,483	2,658	5,141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,483	2,658	5,141
Percent	48%	52%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48%	52%	-

1. Mid-week average includes data between Tuesday and Thursday.

Vehicle Classification Report Summary

Location: BLACKHAWK DR N-O CASTLE VALLEY BLVD
Count Direction: Northbound / Southbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 02

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Northbound	1	99	19	0	40	0	0	0	0	0	0	0	0	159
Percent	0.6%	62.3%	11.9%	0.0%	25.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	1	112	35	0	7	1	0	0	0	0	0	0	0	156
Percent	0.6%	71.8%	22.4%	0.0%	4.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	2	211	54	0	47	1	0	0	0	0	0	0	0	315
Percent	0.6%	67.0%	17.1%	0.0%	14.9%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: BLACKHAWK DR N-O CASTLE VALLEY BLVD
Count Direction: Northbound / Southbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 02

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Northbound	1	14	52	72	19	1	0	0	0	0	0	0	0	0	0	0	0	159
Percent	0.6%	8.8%	32.7%	45.3%	11.9%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	5	14	55	65	14	1	2	0	0	0	0	0	0	0	0	0	0	156
Percent	3.2%	9.0%	35.3%	41.7%	9.0%	0.6%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	6	28	107	137	33	2	2	0	0	0	0	0	0	0	0	0	0	315
Percent	1.9%	8.9%	34.0%	43.5%	10.5%	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Northbound			Northbound		
50th Percentile (Median)	20.8	mph	Mean (Average) Speed	20.6	mph
85th Percentile	24.6	mph	10 mph Pace	15.0 - 25.0	mph
95th Percentile	26.7	mph	Percent in Pace	78.6	%
Southbound			Southbound		
50th Percentile (Median)	20.2	mph	Mean (Average) Speed	20.0	mph
85th Percentile	23.9	mph	10 mph Pace	15.8 - 25.8	mph
95th Percentile	26.5	mph	Percent in Pace	78.2	%



Location: BLACKHAWK DR N-O CASTLE VALLEY BLVD
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 02

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
1:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
2:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
3:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
4:00 AM	0	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	2
5:00 AM	2	8	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	8	10
6:00 AM	1	14	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14	15
7:00 AM	9	27	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	27	36
8:00 AM	5	18	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	23
9:00 AM	11	12	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	12	23
10:00 AM	9	5	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	5	14
11:00 AM	9	9	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	9	18
12:00 PM	8	9	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	9	17
1:00 PM	7	11	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	11	18
2:00 PM	7	4	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	4	11
3:00 PM	10	10	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10	20
4:00 PM	22	7	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	7	29
5:00 PM	22	11	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	11	33
6:00 PM	16	2	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	2	18
7:00 PM	13	4	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	4	17
8:00 PM	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	4
9:00 PM	5	0	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0	5
10:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
11:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Total	159	156	315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	159	156	315
Percent	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50%	50%	-

1. Mid-week average includes data between Tuesday and Thursday.



Vehicle Classification Report Summary

Location: CASTLE VALLEY BLVD E-O FAAS RANCH RD
Count Direction: Eastbound / Westbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 03

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Eastbound	1	1,759	666	2	608	7	0	0	1	0	0	0	0	3,044
Percent	0.0%	57.8%	21.9%	0.1%	20.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	0	2,109	704	2	238	3	0	0	2	0	0	0	0	3,058
Percent	0.0%	69.0%	23.0%	0.1%	7.8%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	100%
Total	1	3,868	1,370	4	846	10	0	0	3	0	0	0	0	6,102
Percent	0.0%	63.4%	22.5%	0.1%	13.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: CASTLE VALLEY BLVD E-O FAAS RANCH RD

Count Direction: Eastbound / Westbound

Date Range: 11/9/2021 to 11/9/2021

Site Code: 03

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Eastbound	1	7	44	189	773	1,409	555	63	3	0	0	0	0	0	0	0	0	3,044
Percent	0.0%	0.2%	1.4%	6.2%	25.4%	46.3%	18.2%	2.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	0	2	25	104	843	1,706	349	29	0	0	0	0	0	0	0	0	0	3,058
Percent	0.0%	0.1%	0.8%	3.4%	27.6%	55.8%	11.4%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	1	9	69	293	1,616	3,115	904	92	3	0	0	0	0	0	0	0	0	6,102
Percent	0.0%	0.1%	1.1%	4.8%	26.5%	51.0%	14.8%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Eastbound			Eastbound		
50th Percentile (Median)	31.8	mph	Mean (Average) Speed	31.5	mph
85th Percentile	35.9	mph	10 mph Pace	27.3 - 37.3	mph
95th Percentile	38.0	mph	Percent in Pace	77.5	%
Westbound			Westbound		
50th Percentile (Median)	31.4	mph	Mean (Average) Speed	31.3	mph
85th Percentile	34.6	mph	10 mph Pace	26.8 - 36.8	mph
95th Percentile	36.7	mph	Percent in Pace	87.4	%



Location: CASTLE VALLEY BLVD E-O FAAS RANCH RD
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 03

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021			Mid-Week Average		
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	0	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	3
1:00 AM	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4
2:00 AM	2	5	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	7
3:00 AM	8	1	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	1	9
4:00 AM	32	2	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	2	34
5:00 AM	133	8	141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	133	8	141
6:00 AM	239	45	284	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	239	45	284
7:00 AM	535	201	736	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	535	201	736
8:00 AM	339	116	455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	339	116	455
9:00 AM	188	121	309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	121	309
10:00 AM	162	118	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	162	118	280
11:00 AM	141	127	268	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	141	127	268
12:00 PM	138	186	324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	186	324
1:00 PM	134	160	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	134	160	294
2:00 PM	146	148	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	148	294
3:00 PM	159	283	442	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	159	283	442
4:00 PM	250	415	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	415	665
5:00 PM	193	446	639	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	193	446	639
6:00 PM	107	340	447	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	340	447
7:00 PM	72	161	233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	161	233
8:00 PM	38	77	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	77	115
9:00 PM	14	67	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	67	81
10:00 PM	7	11	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	11	18
11:00 PM	5	15	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	15	20
Total	3,044	3,058	6,102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,044	3,058	6,102
Percent	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50%	50%	-

1. Mid-week average includes data between Tuesday and Thursday.

Vehicle Classification Report Summary

Location: FAAS RANCH RD N-O CASTLE VALLEY BLVD
Count Direction: Northbound / Southbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 04

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Northbound	0	77	40	0	34	1	0	0	0	0	0	0	0	152
Percent	0.0%	50.7%	26.3%	0.0%	22.4%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	0	103	40	0	10	0	0	0	0	0	0	0	0	153
Percent	0.0%	67.3%	26.1%	0.0%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	0	180	80	0	44	1	0	0	0	0	0	0	0	305
Percent	0.0%	59.0%	26.2%	0.0%	14.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification

Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: FAAS RANCH RD N-O CASTLE VALLEY BLVD
Count Direction: Northbound / Southbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 04

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Northbound	2	11	16	57	60	6	0	0	0	0	0	0	0	0	0	0	0	152
Percent	1.3%	7.2%	10.5%	37.5%	39.5%	3.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	0	1	15	67	68	2	0	0	0	0	0	0	0	0	0	0	0	153
Percent	0.0%	0.7%	9.8%	43.8%	44.4%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	2	12	31	124	128	8	0	0	0	0	0	0	0	0	0	0	0	305
Percent	0.7%	3.9%	10.2%	40.7%	42.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Northbound			Northbound		
50th Percentile (Median)	24.2	mph	Mean (Average) Speed	23.3	mph
85th Percentile	28.0	mph	10 mph Pace	19.1 - 29.1	mph
95th Percentile	30.0	mph	Percent in Pace	77.6	%
Southbound			Southbound		
50th Percentile (Median)	24.5	mph	Mean (Average) Speed	24.4	mph
85th Percentile	27.5	mph	10 mph Pace	19.8 - 29.8	mph
95th Percentile	29.4	mph	Percent in Pace	88.9	%



Location: FAAS RANCH RD N-O CASTLE VALLEY BLVD
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 04

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
1:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
2:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
3:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
4:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
5:00 AM	0	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	3
6:00 AM	1	10	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	11
7:00 AM	5	32	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	32	37
8:00 AM	10	14	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	14	24
9:00 AM	5	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	8
10:00 AM	6	7	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	7	13
11:00 AM	9	7	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	7	16
12:00 PM	10	13	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	13	23
1:00 PM	10	11	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	11	21
2:00 PM	10	7	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	7	17
3:00 PM	9	9	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	9	18
4:00 PM	30	15	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	15	45
5:00 PM	18	7	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	7	25
6:00 PM	16	9	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	9	25
7:00 PM	8	4	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	4	12
8:00 PM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
9:00 PM	4	0	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	4
10:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
11:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Total	152	153	305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	152	153	305
Percent	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50%	50%	-

1. Mid-week average includes data between Tuesday and Thursday.



***Intersection Capacity Worksheets:
Existing***



Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	2	0	4	0	0	9
Future Vol, veh/h	2	0	4	0	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	4	0	10	0	0	16

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	26	10	0	0	10	0
Stage 1	10	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	992	1074	-	-	1616	-
Stage 1	1016	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	992	1074	-	-	1616	-
Mov Cap-2 Maneuver	992	-	-	-	-	-
Stage 1	1016	-	-	-	-	-
Stage 2	1009	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	992	1616
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	13	7	4	11	1
Future Vol, veh/h	1	13	7	4	11	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	15	10	6	22	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	16	0	-	0	31
Stage 1	-	-	-	-	13
Stage 2	-	-	-	-	18
Critical Hdwy	4.11	-	-	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	2.209	-	-	-	3.509
Pot Cap-1 Maneuver	1608	-	-	-	986
Stage 1	-	-	-	-	1012
Stage 2	-	-	-	-	1007
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1608	-	-	-	985
Mov Cap-2 Maneuver	-	-	-	-	985
Stage 1	-	-	-	-	1011
Stage 2	-	-	-	-	1007

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1608	-	-	-	992
HCM Lane V/C Ratio	0.001	-	-	-	0.024
HCM Control Delay (s)	7.2	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	1	521	189	10	26	4
Future Vol, veh/h	1	521	189	10	26	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	1	620	217	11	38	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	228	0	-	0	839 217
Stage 1	-	-	-	-	217 -
Stage 2	-	-	-	-	622 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1346	-	-	-	337 825
Stage 1	-	-	-	-	822 -
Stage 2	-	-	-	-	537 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1346	-	-	-	337 825
Mov Cap-2 Maneuver	-	-	-	-	337 -
Stage 1	-	-	-	-	821 -
Stage 2	-	-	-	-	537 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1346	-	-	-	366
HCM Lane V/C Ratio	0.001	-	-	-	0.121
HCM Control Delay (s)	7.7	0	-	-	16.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

HCM 6th TWSC
01/05/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2021 Existing - AM Peak Hour

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	2	544	1	2	191	13	0	0	2	28	0	8
Future Vol, veh/h	2	544	1	2	191	13	0	0	2	28	0	8
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	50	50	50
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	2	640	1	2	220	15	0	0	8	56	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	235	0	0	642	0	0	885	884	643	875	870	220
Stage 1	-	-	-	-	-	-	645	645	-	224	224	-
Stage 2	-	-	-	-	-	-	240	239	-	651	646	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1338	-	-	947	-	-	183	200	337	271	291	822
Stage 1	-	-	-	-	-	-	331	344	-	781	720	-
Stage 2	-	-	-	-	-	-	588	559	-	459	469	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1338	-	-	946	-	-	179	199	336	263	290	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	179	199	-	263	290	-
Stage 1	-	-	-	-	-	-	330	343	-	779	719	-
Stage 2	-	-	-	-	-	-	575	558	-	446	468	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			16			20.1		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	336	1338	-	-	946	-	-	310
HCM Lane V/C Ratio	0.024	0.002	-	-	0.002	-	-	0.232
HCM Control Delay (s)	16	7.7	0	-	8.8	0	-	20.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.9

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	1	0	8	2	0	5
Future Vol, veh/h	1	0	8	2	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	4	0	13	3	0	8

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	23	15	0	0	16
Stage 1	15	-	-	-	-
Stage 2	8	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	996	1067	-	-	1608
Stage 1	1010	-	-	-	-
Stage 2	1018	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	996	1067	-	-	1608
Mov Cap-2 Maneuver	996	-	-	-	-
Stage 1	1010	-	-	-	-
Stage 2	1018	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	996	1608
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	0	11	12	1	5
Future Vol, veh/h	5	0	11	12	1	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	0	15	17	2	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	35	0	-	0	54 27
Stage 1	-	-	-	-	27 -
Stage 2	-	-	-	-	27 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1583	-	-	-	957 1051
Stage 1	-	-	-	-	998 -
Stage 2	-	-	-	-	998 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1578	-	-	-	944 1048
Mov Cap-2 Maneuver	-	-	-	-	944 -
Stage 1	-	-	-	-	987 -
Stage 2	-	-	-	-	995 -

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1578	-	-	-	1029
HCM Lane V/C Ratio	0.008	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↑	↕	
Traffic Vol, veh/h	0	231	372	22	12	1
Future Vol, veh/h	0	231	372	22	12	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	0	263	396	23	22	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	426	0	-	0	666 403
Stage 1	-	-	-	-	403 -
Stage 2	-	-	-	-	263 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1123	-	-	-	426 650
Stage 1	-	-	-	-	677 -
Stage 2	-	-	-	-	783 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1116	-	-	-	420 646
Mov Cap-2 Maneuver	-	-	-	-	420 -
Stage 1	-	-	-	-	672 -
Stage 2	-	-	-	-	778 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1116	-	-	-	432
HCM Lane V/C Ratio	-	-	-	-	0.056
HCM Control Delay (s)	0	-	-	-	13.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC
01/05/2022

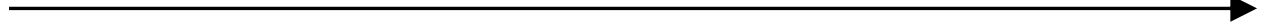
4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2021 Existing - PM Peak Hour

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	6	237	0	0	389	24	0	0	0	10	0	5
Future Vol, veh/h	6	237	0	0	389	24	0	0	0	10	0	5
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	7	258	0	0	437	27	0	0	0	13	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	468	0	0	260	0	0	729	742	260	713	715	442
Stage 1	-	-	-	-	-	-	274	274	-	441	441	-
Stage 2	-	-	-	-	-	-	455	468	-	272	274	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	1083	-	-	1304	-	-	340	345	781	340	357	605
Stage 1	-	-	-	-	-	-	734	685	-	586	579	-
Stage 2	-	-	-	-	-	-	587	563	-	723	685	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1079	-	-	1302	-	-	333	340	780	337	352	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	333	340	-	337	352	-
Stage 1	-	-	-	-	-	-	727	678	-	579	577	-
Stage 2	-	-	-	-	-	-	580	561	-	717	678	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	14.6
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1079	-	-	1302	-	-	395
HCM Lane V/C Ratio	-	0.006	-	-	-	-	-	0.051
HCM Control Delay (s)	0	8.4	0	-	0	-	-	14.6
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2



***Intersection Capacity Worksheets:
2025 Background***



Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	2	0	4	0	0	10
Future Vol, veh/h	2	0	4	0	0	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	4	0	10	0	0	18

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	33	15	0	0	15
Stage 1	15	-	-	-	-
Stage 2	18	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	983	1067	-	-	1609
Stage 1	1010	-	-	-	-
Stage 2	1007	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	978	1062	-	-	1601
Mov Cap-2 Maneuver	978	-	-	-	-
Stage 1	1005	-	-	-	-
Stage 2	1007	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	978	1601
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.7	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	15	10	4	15	1
Future Vol, veh/h	1	15	10	4	15	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	17	14	6	30	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	20	0	-	0	37
Stage 1	-	-	-	-	17
Stage 2	-	-	-	-	20
Critical Hdwy	4.11	-	-	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	2.209	-	-	-	3.509
Pot Cap-1 Maneuver	1603	-	-	-	978
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	1005
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1603	-	-	-	977
Mov Cap-2 Maneuver	-	-	-	-	977
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	1005

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1603	-	-	-	982
HCM Lane V/C Ratio	0.001	-	-	-	0.033
HCM Control Delay (s)	7.2	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	1	569	208	11	28	4
Future Vol, veh/h	1	569	208	11	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	1	677	239	13	41	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	252	0	-	0	918 239
Stage 1	-	-	-	-	239 -
Stage 2	-	-	-	-	679 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1319	-	-	-	303 802
Stage 1	-	-	-	-	803 -
Stage 2	-	-	-	-	506 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1319	-	-	-	303 802
Mov Cap-2 Maneuver	-	-	-	-	303 -
Stage 1	-	-	-	-	802 -
Stage 2	-	-	-	-	506 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1319	-	-	-	329
HCM Lane V/C Ratio	0.001	-	-	-	0.143
HCM Control Delay (s)	7.7	0	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	2	594	1	2	211	14	0	0	2	30	0	8
Future Vol, veh/h	2	594	1	2	211	14	0	0	2	30	0	8
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	50	50	50
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	2	699	1	2	243	16	0	0	8	60	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	701	0	0	967	967	702	957	952	243
Stage 1	-	-	-	-	-	-	704	704	-	247	247	-
Stage 2	-	-	-	-	-	-	263	263	-	710	705	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1311	-	-	901	-	-	158	176	308	238	260	798
Stage 1	-	-	-	-	-	-	304	320	-	759	704	-
Stage 2	-	-	-	-	-	-	570	544	-	426	441	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1311	-	-	900	-	-	154	175	307	230	258	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	175	-	230	258	-
Stage 1	-	-	-	-	-	-	303	319	-	757	702	-
Stage 2	-	-	-	-	-	-	557	542	-	413	440	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			17			23.4		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	307	1311	-	-	900	-	-	271
HCM Lane V/C Ratio	0.026	0.002	-	-	0.003	-	-	0.28
HCM Control Delay (s)	17	7.8	0	-	9	0	-	23.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	1.1

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	1	0	8	2	0	5
Future Vol, veh/h	1	0	8	2	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	4	0	13	3	0	8

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	23	15	0
Stage 1	15	-	-
Stage 2	8	-	-
Critical Hdwy	6.41	6.21	-
Critical Hdwy Stg 1	5.41	-	-
Critical Hdwy Stg 2	5.41	-	-
Follow-up Hdwy	3.509	3.309	-
Pot Cap-1 Maneuver	996	1067	-
Stage 1	1010	-	-
Stage 2	1018	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	996	1067	-
Mov Cap-2 Maneuver	996	-	-
Stage 1	1010	-	-
Stage 2	1018	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	996	1608
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	5	12	13	1	5
Future Vol, veh/h	0	5	12	13	1	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	13	17	18	2	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	38	0	-	0	43 29
Stage 1	-	-	-	-	29 -
Stage 2	-	-	-	-	14 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1579	-	-	-	970 1049
Stage 1	-	-	-	-	996 -
Stage 2	-	-	-	-	1011 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1574	-	-	-	964 1046
Mov Cap-2 Maneuver	-	-	-	-	964 -
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	1008 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1574	-	-	-	1031
HCM Lane V/C Ratio	-	-	-	-	0.009
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	0	255	410	23	13	1
Future Vol, veh/h	0	255	410	23	13	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	0	290	436	24	24	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	467	0	-	0	733 443
Stage 1	-	-	-	-	443 -
Stage 2	-	-	-	-	290 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1084	-	-	-	389 617
Stage 1	-	-	-	-	649 -
Stage 2	-	-	-	-	762 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1077	-	-	-	384 613
Mov Cap-2 Maneuver	-	-	-	-	384 -
Stage 1	-	-	-	-	644 -
Stage 2	-	-	-	-	757 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1077	-	-	-	395
HCM Lane V/C Ratio	-	-	-	-	0.066
HCM Control Delay (s)	0	-	-	-	14.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC
01/05/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Background - PM Peak Hour

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	6	262	0	0	428	25	0	0	0	11	0	5
Future Vol, veh/h	6	262	0	0	428	25	0	0	0	11	0	5
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	7	285	0	0	481	28	0	0	0	15	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	287	0	0	801	814	287	784	786	486
Stage 1	-	-	-	-	-	-	301	301	-	485	485	-
Stage 2	-	-	-	-	-	-	500	513	-	299	301	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	1042	-	-	1275	-	-	304	313	754	305	325	571
Stage 1	-	-	-	-	-	-	710	667	-	554	553	-
Stage 2	-	-	-	-	-	-	555	538	-	699	667	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1038	-	-	1273	-	-	298	309	753	302	320	568
Mov Cap-2 Maneuver	-	-	-	-	-	-	298	309	-	302	320	-
Stage 1	-	-	-	-	-	-	703	660	-	547	551	-
Stage 2	-	-	-	-	-	-	548	536	-	693	660	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	15.8
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1038	-	-	1273	-	-	354
HCM Lane V/C Ratio	-	0.006	-	-	-	-	-	0.06
HCM Control Delay (s)	0	8.5	0	-	0	-	-	15.8
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2



***Intersection Capacity Worksheets:
2030 Background***



Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	2	0	5	0	0	10
Future Vol, veh/h	2	0	5	0	0	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	4	0	12	0	0	18

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	35	17	0	0	17	0
Stage 1	17	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	980	1065	-	-	1607	-
Stage 1	1008	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	975	1060	-	-	1599	-
Mov Cap-2 Maneuver	975	-	-	-	-	-
Stage 1	1003	-	-	-	-	-
Stage 2	1007	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1599
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.7	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	15	10	5	15	1
Future Vol, veh/h	1	15	10	5	15	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	17	14	7	30	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	21	0	-	0	38 18
Stage 1	-	-	-	-	18 -
Stage 2	-	-	-	-	20 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1601	-	-	-	977 1063
Stage 1	-	-	-	-	1007 -
Stage 2	-	-	-	-	1005 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1601	-	-	-	976 1063
Mov Cap-2 Maneuver	-	-	-	-	976 -
Stage 1	-	-	-	-	1006 -
Stage 2	-	-	-	-	1005 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1601	-	-	-	981
HCM Lane V/C Ratio	0.001	-	-	-	0.033
HCM Control Delay (s)	7.2	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	1	610	220	15	30	5
Future Vol, veh/h	1	610	220	15	30	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	1	726	253	17	44	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	270	0	-	0	981 253
Stage 1	-	-	-	-	253 -
Stage 2	-	-	-	-	728 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1299	-	-	-	278 788
Stage 1	-	-	-	-	791 -
Stage 2	-	-	-	-	480 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1299	-	-	-	278 788
Mov Cap-2 Maneuver	-	-	-	-	278 -
Stage 1	-	-	-	-	790 -
Stage 2	-	-	-	-	480 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1299	-	-	-	306
HCM Lane V/C Ratio	0.001	-	-	-	0.168
HCM Control Delay (s)	7.8	0	-	-	19.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

HCM 6th TWSC
01/05/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2030 Background - AM Peak Hour

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	2	635	1	2	225	15	0	0	2	30	0	10
Future Vol, veh/h	2	635	1	2	225	15	0	0	2	30	0	10
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	50	50	50
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	2	747	1	2	259	17	0	0	8	60	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	276	0	0	749	0	0	1034	1032	750	1021	1016	259
Stage 1	-	-	-	-	-	-	752	752	-	263	263	-
Stage 2	-	-	-	-	-	-	282	280	-	758	753	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1293	-	-	864	-	-	141	159	287	216	239	782
Stage 1	-	-	-	-	-	-	284	302	-	744	693	-
Stage 2	-	-	-	-	-	-	555	533	-	401	419	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1293	-	-	863	-	-	137	158	286	209	237	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	158	-	209	237	-
Stage 1	-	-	-	-	-	-	283	301	-	742	691	-
Stage 2	-	-	-	-	-	-	539	531	-	388	417	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			17.9			25.3		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	286	1293	-	-	863	-	-	256
HCM Lane V/C Ratio	0.028	0.002	-	-	0.003	-	-	0.313
HCM Control Delay (s)	17.9	7.8	0	-	9.2	0	-	25.3
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	1.3

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	1	0	10	2	0	5
Future Vol, veh/h	1	0	10	2	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	4	0	16	3	0	8

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	26	18	0	0	19
Stage 1	18	-	-	-	-
Stage 2	8	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	992	1063	-	-	1604
Stage 1	1007	-	-	-	-
Stage 2	1018	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	992	1063	-	-	1604
Mov Cap-2 Maneuver	992	-	-	-	-
Stage 1	1007	-	-	-	-
Stage 2	1018	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	992	1604
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	5	15	15	1	5
Future Vol, veh/h	0	5	15	15	1	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	13	21	21	2	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	45	0	-	0	49 35
Stage 1	-	-	-	-	35 -
Stage 2	-	-	-	-	14 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1570	-	-	-	963 1041
Stage 1	-	-	-	-	990 -
Stage 2	-	-	-	-	1011 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1566	-	-	-	957 1038
Mov Cap-2 Maneuver	-	-	-	-	957 -
Stage 1	-	-	-	-	987 -
Stage 2	-	-	-	-	1008 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1566	-	-	-	1024
HCM Lane V/C Ratio	-	-	-	-	0.009
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	0	275	440	25	15	1
Future Vol, veh/h	0	275	440	25	15	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	0	313	468	27	28	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	502	0	-	0	788 475
Stage 1	-	-	-	-	475 -
Stage 2	-	-	-	-	313 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1052	-	-	-	361 592
Stage 1	-	-	-	-	628 -
Stage 2	-	-	-	-	744 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1045	-	-	-	356 588
Mov Cap-2 Maneuver	-	-	-	-	356 -
Stage 1	-	-	-	-	624 -
Stage 2	-	-	-	-	739 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1045	-	-	-	365
HCM Lane V/C Ratio	-	-	-	-	0.081
HCM Control Delay (s)	0	-	-	-	15.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
01/05/2022

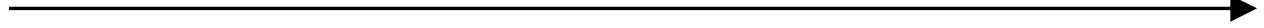
4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2030 Background - PM Peak Hour

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	10	280	0	0	460	25	0	0	0	15	0	5
Future Vol, veh/h	10	280	0	0	460	25	0	0	0	15	0	5
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	11	304	0	0	517	28	0	0	0	20	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	549	0	0	306	0	0	864	877	306	847	849	522
Stage 1	-	-	-	-	-	-	328	328	-	521	521	-
Stage 2	-	-	-	-	-	-	536	549	-	326	328	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	1011	-	-	1255	-	-	276	288	736	276	299	545
Stage 1	-	-	-	-	-	-	687	649	-	529	533	-
Stage 2	-	-	-	-	-	-	530	518	-	676	649	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1007	-	-	1253	-	-	269	283	735	272	293	542
Mov Cap-2 Maneuver	-	-	-	-	-	-	269	283	-	272	293	-
Stage 1	-	-	-	-	-	-	677	639	-	520	531	-
Stage 2	-	-	-	-	-	-	523	516	-	667	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	17.7
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1007	-	-	1253	-	-	311
HCM Lane V/C Ratio	-	0.011	-	-	-	-	-	0.086
HCM Control Delay (s)		0	8.6	0	0	-	-	17.7
HCM Lane LOS		A	A	A	-	A	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.3



***Intersection Capacity Worksheets:
2025 Background +
Project***



Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	19	1	4	5	1	10
Future Vol, veh/h	19	1	4	5	1	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	38	2	10	12	2	18

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	43	21	0	0	27
Stage 1	21	-	-	-	-
Stage 2	22	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	970	1059	-	-	1593
Stage 1	1004	-	-	-	-
Stage 2	1003	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	964	1054	-	-	1585
Mov Cap-2 Maneuver	964	-	-	-	-
Stage 1	999	-	-	-	-
Stage 2	1002	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	968	1585
HCM Lane V/C Ratio	-	-	0.041	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	17	9	9	29	1
Future Vol, veh/h	1	17	9	9	29	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	19	13	13	58	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	26	0	-	0	42 20
Stage 1	-	-	-	-	20 -
Stage 2	-	-	-	-	22 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1595	-	-	-	972 1061
Stage 1	-	-	-	-	1005 -
Stage 2	-	-	-	-	1003 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1595	-	-	-	971 1061
Mov Cap-2 Maneuver	-	-	-	-	971 -
Stage 1	-	-	-	-	1004 -
Stage 2	-	-	-	-	1003 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1595	-	-	-	974
HCM Lane V/C Ratio	0.001	-	-	-	0.062
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	3	599	228	15	41	11
Future Vol, veh/h	3	599	228	15	41	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	4	713	262	17	60	16

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	279	0	-	0	983
Stage 1	-	-	-	-	262
Stage 2	-	-	-	-	721
Critical Hdwy	4.11	-	-	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	2.209	-	-	-	3.509
Pot Cap-1 Maneuver	1289	-	-	-	277
Stage 1	-	-	-	-	784
Stage 2	-	-	-	-	483
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1289	-	-	-	276
Mov Cap-2 Maneuver	-	-	-	-	276
Stage 1	-	-	-	-	780
Stage 2	-	-	-	-	483

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1289	-	-	-	320
HCM Lane V/C Ratio	0.003	-	-	-	0.239
HCM Control Delay (s)	7.8	0	-	-	19.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.9

HCM 6th TWSC
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project - AM Peak Hour

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗		↔		↙	↗	
Traffic Vol, veh/h	39	600	1	2	211	79	0	0	2	94	0	32
Future Vol, veh/h	39	600	1	2	211	79	0	0	2	94	0	32
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	73	50	-	150	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	85	85	85
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	46	706	1	2	243	91	0	0	8	111	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	334	0	0	708	0	0	1111	1137	709	1052	1047	243
Stage 1	-	-	-	-	-	-	799	799	-	247	247	-
Stage 2	-	-	-	-	-	-	312	338	-	805	800	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1231	-	-	895	-	-	123	135	305	205	229	798
Stage 1	-	-	-	-	-	-	265	285	-	759	704	-
Stage 2	-	-	-	-	-	-	532	498	-	378	399	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1231	-	-	894	-	-	114	130	304	193	220	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	130	-	193	220	-
Stage 1	-	-	-	-	-	-	255	274	-	731	703	-
Stage 2	-	-	-	-	-	-	506	497	-	354	384	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			17.2			36.9		
HCM LOS							C			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	304	1231	-	-	894	-	-	193	798
HCM Lane V/C Ratio	0.026	0.037	-	-	0.003	-	-	0.573	0.047
HCM Control Delay (s)	17.2	8	-	-	9	-	-	46.1	9.7
HCM Lane LOS		C	A	-	-	A	-	E	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	3.1	0.1

HCM 6th TWSC
03/18/2022

5: Faas Ranch Road & Access 1
2025 Bkgrd + Project - AM Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	30	1	60	58	1	96
Future Vol, veh/h	30	1	60	58	1	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	1	71	68	1	113

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	220	105	0	0	139
Stage 1	105	-	-	-	-
Stage 2	115	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	768	949	-	-	1445
Stage 1	919	-	-	-	-
Stage 2	910	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	767	949	-	-	1445
Mov Cap-2 Maneuver	767	-	-	-	-
Stage 1	919	-	-	-	-
Stage 2	909	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	772	1445
HCM Lane V/C Ratio	-	-	0.047	0.001
HCM Control Delay (s)	-	-	9.9	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC
03/18/2022

6: Faas Ranch Road & Access 2
2025 Bkgrd + Project - AM Peak Hour

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	1	28	30	1	1	28	15	17	1	39	1
Future Vol, veh/h	1	1	28	30	1	1	28	15	17	1	39	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	33	35	1	1	33	18	20	1	46	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	144	153	47	160	143	28	47	0	0	38	0	0
Stage 1	49	49	-	94	94	-	-	-	-	-	-	-
Stage 2	95	104	-	66	49	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	825	739	1022	806	748	1047	1560	-	-	1572	-	-
Stage 1	964	854	-	913	817	-	-	-	-	-	-	-
Stage 2	912	809	-	945	854	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	809	722	1022	766	731	1047	1560	-	-	1572	-	-
Mov Cap-2 Maneuver	809	722	-	766	731	-	-	-	-	-	-	-
Stage 1	943	853	-	893	799	-	-	-	-	-	-	-
Stage 2	890	791	-	912	853	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.7		9.9		3.4		0.2	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1560	-	-	999	771	1572	-	-
HCM Lane V/C Ratio	0.021	-	-	0.035	0.049	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.7	9.9	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0	-	-

HCM 6th TWSC
03/18/2022

1: White Horse Drive & Lakota Drive
2025 Bkgrd + Project - PM Peak Hour

Intersection						
Int Delay, s/veh	4.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	12	1	8	20	1	5
Future Vol, veh/h	12	1	8	20	1	5
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	48	4	13	32	2	8

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	42	29	0	0	45
Stage 1	29	-	-	-	-
Stage 2	13	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	972	1049	-	-	1570
Stage 1	996	-	-	-	-
Stage 2	1012	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	970	1049	-	-	1570
Mov Cap-2 Maneuver	970	-	-	-	-
Stage 1	996	-	-	-	-
Stage 2	1010	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	976	1570
HCM Lane V/C Ratio	-	-	0.053	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	3	16	31	12	5
Future Vol, veh/h	5	3	16	31	12	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	8	22	43	19	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	68	0	-	0	82 47
Stage 1	-	-	-	-	47 -
Stage 2	-	-	-	-	35 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1540	-	-	-	922 1025
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	990 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1536	-	-	-	908 1022
Mov Cap-2 Maneuver	-	-	-	-	908 -
Stage 1	-	-	-	-	966 -
Stage 2	-	-	-	-	987 -

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1536	-	-	-	939
HCM Lane V/C Ratio	0.009	-	-	-	0.029
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↑	↕	
Traffic Vol, veh/h	7	301	455	38	23	5
Future Vol, veh/h	7	301	455	38	23	5
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	8	342	484	40	43	9

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	531	0	-	0	849 491
Stage 1	-	-	-	-	491 -
Stage 2	-	-	-	-	358 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1026	-	-	-	333 580
Stage 1	-	-	-	-	617 -
Stage 2	-	-	-	-	710 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1019	-	-	-	325 576
Mov Cap-2 Maneuver	-	-	-	-	325 -
Stage 1	-	-	-	-	607 -
Stage 2	-	-	-	-	705 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	17
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1019	-	-	-	352
HCM Lane V/C Ratio	0.008	-	-	-	0.147
HCM Control Delay (s)	8.6	0	-	-	17
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection												
Int Delay, s/veh	10.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗		↔		↙	↗	
Traffic Vol, veh/h	85	239	0	0	417	150	0	0	0	136	0	76
Future Vol, veh/h	85	239	0	0	417	150	0	0	0	136	0	76
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	73	50	-	150	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	92	260	0	0	469	169	0	0	0	181	0	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	642	0	0	262	0	0	1051	1088	262	917	919	474
Stage 1	-	-	-	-	-	-	446	446	-	473	473	-
Stage 2	-	-	-	-	-	-	605	642	-	444	446	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	933	-	-	1302	-	-	206	217	779	248	272	580
Stage 1	-	-	-	-	-	-	593	576	-	562	560	-
Stage 2	-	-	-	-	-	-	486	470	-	583	576	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	929	-	-	1300	-	-	157	194	778	228	244	577
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	194	-	228	244	-
Stage 1	-	-	-	-	-	-	533	518	-	505	558	-
Stage 2	-	-	-	-	-	-	400	468	-	525	518	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0	0	44.9
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	929	-	-	1300	-	-	228	577
HCM Lane V/C Ratio	-	0.099	-	-	-	-	-	0.795	0.176
HCM Control Delay (s)	0	9.3	-	-	0	-	-	62.9	12.6
HCM Lane LOS	A	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	5.8	0.6

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	91	1	150	85	1	121
Future Vol, veh/h	91	1	150	85	1	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	1	176	100	1	142

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	370	226	0	0	276
Stage 1	226	-	-	-	-
Stage 2	144	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	630	813	-	-	1287
Stage 1	812	-	-	-	-
Stage 2	883	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	629	813	-	-	1287
Mov Cap-2 Maneuver	629	-	-	-	-
Stage 1	812	-	-	-	-
Stage 2	882	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	631	1287
HCM Lane V/C Ratio	-	-	0.172	0.001
HCM Control Delay (s)	-	-	11.9	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0

HCM 6th TWSC
03/18/2022

6: Faas Ranch Road & Access 2
2025 Bkgrd + Project - PM Peak Hour

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	1	73	33	1	2	90	31	30	1	16	2
Future Vol, veh/h	1	1	73	33	1	2	90	31	30	1	16	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	86	39	1	2	106	36	35	1	19	2

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	289	305	20	332	289	54	21	0	0	71	0	0
Stage 1	22	22	-	266	266	-	-	-	-	-	-	-
Stage 2	267	283	-	66	23	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	663	608	1058	621	621	1013	1595	-	-	1529	-	-
Stage 1	996	877	-	739	689	-	-	-	-	-	-	-
Stage 2	738	677	-	945	876	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	625	565	1058	539	577	1013	1595	-	-	1529	-	-
Mov Cap-2 Maneuver	625	565	-	539	577	-	-	-	-	-	-	-
Stage 1	926	876	-	687	641	-	-	-	-	-	-	-
Stage 2	683	630	-	866	875	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		12		4.4		0.4	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1595	-	-	1036	554	1529	-	-
HCM Lane V/C Ratio	0.066	-	-	0.085	0.076	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.8	12	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	0.2	0	-	-



***Intersection Capacity Worksheets:
2025 Background +
Project
With Improvements***



Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	39	600	1	2	211	79	0	94	0
Future Volume (vph)	39	600	1	2	211	79	0	94	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4			8		2		6
Permitted Phases	4		4	8		8		6	
Detector Phase	7	4	4	8	8	8	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	39.0	39.0	28.0	28.0	28.0	31.0	31.0	31.0
Total Split (%)	15.7%	55.7%	55.7%	40.0%	40.0%	40.0%	44.3%	44.3%	44.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag			
Lead-Lag Optimize?	Yes			Yes	Yes	Yes			
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	22.7	22.7	22.7	19.1	19.1	19.1	9.4	9.4	9.4
Actuated g/C Ratio	0.51	0.51	0.51	0.43	0.43	0.43	0.21	0.21	0.21
v/c Ratio	0.08	0.75	0.00	0.01	0.32	0.12	0.03	0.38	0.05

Intersection Summary

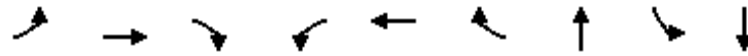
Cycle Length: 70
 Actuated Cycle Length: 44.7
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 12.8
 Intersection Capacity Utilization 54.3%
 Analysis Period (min) 15

Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

Ø2	Ø4
31 s	39 s
Ø6	Ø7
31 s	11 s
	Ø8
	28 s

Queues
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	46	706	1	2	243	91	8	111	38
v/c Ratio	0.08	0.75	0.00	0.01	0.32	0.12	0.03	0.38	0.05
Control Delay	5.9	14.5	0.0	11.0	12.0	1.5	0.0	21.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	14.5	0.0	11.0	12.0	1.5	0.0	21.3	0.1
Queue Length 50th (ft)	5	123	0	0	30	0	0	25	0
Queue Length 95th (ft)	17	234	0	4	105	10	0	67	0
Internal Link Dist (ft)		514			395		67		159
Turn Bay Length (ft)	150		73	50		150		100	
Base Capacity (vph)	549	1421	1204	385	937	902	534	829	1158
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.50	0.00	0.01	0.26	0.10	0.01	0.13	0.03

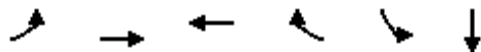
Intersection Summary

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.
 03/18/2022 2025 Bkgrd + Project (with Improvements) - AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	600	1	2	211	79	0	0	2	94	0	32
Future Volume (veh/h)	39	600	1	2	211	79	0	0	2	94	0	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1885	1811	1885	418	418	418	1885	1885	1885
Adj Flow Rate, veh/h	46	706	1	2	243	91	0	0	8	111	0	38
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.25	0.25	0.25	0.85	0.85	0.85
Percent Heavy Veh, %	1	2	1	1	6	1	100	100	100	1	1	1
Cap, veh/h	468	929	793	343	506	445	0	0	60	413	0	271
Arrive On Green	0.05	0.50	0.50	0.28	0.28	0.28	0.00	0.00	0.17	0.17	0.00	0.17
Sat Flow, veh/h	1795	1870	1596	747	1811	1595	0	0	352	1411	0	1588
Grp Volume(v), veh/h	46	706	1	2	243	91	0	0	8	111	0	38
Grp Sat Flow(s),veh/h/ln	1795	1870	1596	747	1811	1595	0	0	352	1411	0	1588
Q Serve(g_s), s	0.6	11.0	0.0	0.1	4.0	1.6	0.0	0.0	0.7	2.6	0.0	0.7
Cycle Q Clear(g_c), s	0.6	11.0	0.0	3.2	4.0	1.6	0.0	0.0	0.7	3.3	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	468	929	793	343	506	445	0	0	60	413	0	271
V/C Ratio(X)	0.10	0.76	0.00	0.01	0.48	0.20	0.00	0.00	0.13	0.27	0.00	0.14
Avail Cap(c_a), veh/h	625	1710	1459	589	1104	972	0	0	244	1150	0	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.5	7.3	4.6	11.8	10.8	9.9	0.0	0.0	12.7	14.1	0.0	12.7
Incr Delay (d2), s/veh	0.1	1.3	0.0	0.0	0.7	0.2	0.0	0.0	1.0	0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.5	0.0	0.0	1.3	0.4	0.0	0.0	0.1	0.7	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	8.6	4.6	11.8	11.5	10.2	0.0	0.0	13.7	14.4	0.0	12.9
LnGrp LOS	A	A	A	B	B	B	A	A	B	B	A	B
Approach Vol, veh/h		753			336			8				149
Approach Delay, s/veh		8.6			11.2			13.7				14.1
Approach LOS		A			B			B				B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		12.2		23.9		12.2	7.8	16.1				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		25.0		33.0		25.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		2.7		13.0		5.3	2.6	6.0				
Green Ext Time (p_c), s		0.0		4.8		0.5	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay				10.0								
HCM 6th LOS				A								

Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBT	Ø2
Lane Configurations	↶	↷	↷	↷	↶	↷	
Traffic Volume (vph)	85	239	417	150	136	0	
Future Volume (vph)	85	239	417	150	136	0	
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	
Protected Phases	7	4	8			6	2
Permitted Phases	4			8	6		
Detector Phase	7	4	8	8	6	6	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	39.0	28.0	28.0	31.0	31.0	31.0
Total Split (%)	15.7%	55.7%	40.0%	40.0%	44.3%	44.3%	44%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	None	None	None	Min	Min	Min
Act Effct Green (s)	26.2	26.2	18.3	18.3	12.9	12.9	
Actuated g/C Ratio	0.50	0.50	0.35	0.35	0.25	0.25	
v/c Ratio	0.26	0.28	0.72	0.26	0.55	0.17	

Intersection Summary

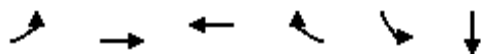
Cycle Length: 70
 Actuated Cycle Length: 52.2
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 15.6
 Intersection Capacity Utilization 49.6%
 Analysis Period (min) 15

Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

↶ Ø2 31 s	↷ Ø4 39 s
↷ Ø6 31 s	↷ Ø7 11 s
	↶ Ø8 28 s

Queues
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBT
Lane Group Flow (vph)	92	260	469	169	181	101
v/c Ratio	0.26	0.28	0.72	0.26	0.55	0.17
Control Delay	9.0	8.6	24.3	4.2	25.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	8.6	24.3	4.2	25.7	0.6
Queue Length 50th (ft)	13	40	130	0	54	0
Queue Length 95th (ft)	39	97	#289	35	87	0
Internal Link Dist (ft)		514	395			159
Turn Bay Length (ft)	150			150	100	
Base Capacity (vph)	360	1203	853	797	699	923
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.22	0.55	0.21	0.26	0.11






















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.

03/18/2022

2025 Bkgrd + Project (with Improvements) - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	239	0	0	417	150	0	0	0	136	0	76
Future Volume (veh/h)	85	239	0	0	417	150	0	0	0	136	0	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1870	1870	1870	1885	1885	1885	1796	1885	1796
Adj Flow Rate, veh/h	92	260	0	0	469	169	0	0	0	181	0	101
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.88	0.88	0.88	0.75	0.75	0.75
Percent Heavy Veh, %	4	4	4	2	2	2	1	1	1	7	1	7
Cap, veh/h	387	1010	856	167	622	524	0	328	0	463	0	277
Arrive On Green	0.08	0.55	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.17	0.00	0.17
Sat Flow, veh/h	1753	1841	1560	1119	1870	1576	0	1885	0	1706	0	1593
Grp Volume(v), veh/h	92	260	0	0	469	169	0	0	0	181	0	101
Grp Sat Flow(s),veh/h/ln	1753	1841	1560	1119	1870	1576	0	1885	0	1706	0	1593
Q Serve(g_s), s	1.3	3.2	0.0	0.0	9.7	3.5	0.0	0.0	0.0	4.2	0.0	2.4
Cycle Q Clear(g_c), s	1.3	3.2	0.0	0.0	9.7	3.5	0.0	0.0	0.0	4.2	0.0	2.4
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	1010	856	167	622	524	0	328	0	463	0	277
V/C Ratio(X)	0.24	0.26	0.00	0.00	0.75	0.32	0.00	0.00	0.00	0.39	0.00	0.36
Avail Cap(c_a), veh/h	454	1405	1190	364	952	802	0	1090	0	1153	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	5.1	0.0	0.0	12.9	10.8	0.0	0.0	0.0	16.5	0.0	15.8
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.0	1.9	0.4	0.0	0.0	0.0	0.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.7	0.0	0.0	3.4	1.0	0.0	0.0	0.0	1.5	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.8	5.3	0.0	0.0	14.7	11.1	0.0	0.0	0.0	17.1	0.0	16.6
LnGrp LOS	A	A	A	A	B	B	A	A	A	B	A	B
Approach Vol, veh/h		352			638			0				282
Approach Delay, s/veh		6.2			13.8			0.0				16.9
Approach LOS		A			B							B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		13.5		29.7		13.5	9.3	20.4				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		25.0		33.0		25.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		0.0		5.2		6.2	3.3	11.7				
Green Ext Time (p_c), s		0.0		1.5		1.1	0.0	2.5				
Intersection Summary												
HCM 6th Ctrl Delay				12.4								
HCM 6th LOS				B								



***Intersection Capacity Worksheets:
2030 Background +
Project***



Intersection						
Int Delay, s/veh	4.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	19	1	5	5	1	10
Future Vol, veh/h	19	1	5	5	1	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	38	2	12	12	2	18

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	45	23	0	0	29
Stage 1	23	-	-	-	-
Stage 2	22	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	968	1057	-	-	1591
Stage 1	1002	-	-	-	-
Stage 2	1003	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	962	1052	-	-	1583
Mov Cap-2 Maneuver	962	-	-	-	-
Stage 1	997	-	-	-	-
Stage 2	1002	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	966	1583
HCM Lane V/C Ratio	-	-	0.041	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	18	11	10	32	1
Future Vol, veh/h	1	18	11	10	32	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	20	16	14	64	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	30	0	-	0	46 23
Stage 1	-	-	-	-	23 -
Stage 2	-	-	-	-	23 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1589	-	-	-	967 1057
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	1002 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1589	-	-	-	966 1057
Mov Cap-2 Maneuver	-	-	-	-	966 -
Stage 1	-	-	-	-	1001 -
Stage 2	-	-	-	-	1002 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1589	-	-	-	969
HCM Lane V/C Ratio	0.001	-	-	-	0.068
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	3	640	240	19	43	12
Future Vol, veh/h	3	640	240	19	43	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	4	762	276	22	63	18

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	298	0	-	0	1046 276
Stage 1	-	-	-	-	276 -
Stage 2	-	-	-	-	770 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1269	-	-	-	254 765
Stage 1	-	-	-	-	773 -
Stage 2	-	-	-	-	459 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1269	-	-	-	253 765
Mov Cap-2 Maneuver	-	-	-	-	253 -
Stage 1	-	-	-	-	769 -
Stage 2	-	-	-	-	459 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1269	-	-	-	296
HCM Lane V/C Ratio	0.003	-	-	-	0.273
HCM Control Delay (s)	7.8	0	-	-	21.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.1

Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2030 Bkgrd + Project - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	42	641	1	2	225	80	0	94	0
Future Volume (vph)	42	641	1	2	225	80	0	94	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4			8		2		6
Permitted Phases	4		4	8		8		6	
Detector Phase	7	4	4	8	8	8	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	39.0	39.0	28.0	28.0	28.0	31.0	31.0	31.0
Total Split (%)	15.7%	55.7%	55.7%	40.0%	40.0%	40.0%	44.3%	44.3%	44.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag			
Lead-Lag Optimize?	Yes			Yes	Yes	Yes			
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	26.0	26.0	26.0	20.3	20.3	20.3	12.7	12.7	12.7
Actuated g/C Ratio	0.51	0.51	0.51	0.39	0.39	0.39	0.25	0.25	0.25
v/c Ratio	0.09	0.80	0.00	0.01	0.37	0.13	0.03	0.54	0.09

Intersection Summary

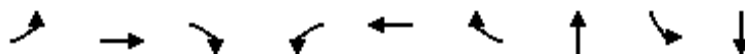
Cycle Length: 70
 Actuated Cycle Length: 51.4
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 16.7
 Intersection Capacity Utilization 56.8%
 Analysis Period (min) 15

Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

Ø2	Ø4
31 s	39 s
Ø6	Ø7
31 s	11 s
	Ø8
	28 s

Queues
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2030 Bkgrd + Project - AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	49	754	1	2	259	92	8	188	68
v/c Ratio	0.09	0.80	0.00	0.01	0.37	0.13	0.03	0.54	0.09
Control Delay	7.5	19.2	0.0	13.5	15.6	1.8	0.0	24.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	19.2	0.0	13.5	15.6	1.8	0.0	24.5	0.2
Queue Length 50th (ft)	7	166	0	0	63	0	0	52	0
Queue Length 95th (ft)	22	334	0	5	131	11	0	55	0
Internal Link Dist (ft)		514			395		67		159
Turn Bay Length (ft)	150		73	50		150		100	
Base Capacity (vph)	533	1260	1073	270	807	797	479	722	1067
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.60	0.00	0.01	0.32	0.12	0.02	0.26	0.06

Intersection Summary

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.
03/18/2022 2030 Bkgrd + Project - AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	641	1	2	225	80	0	0	2	94	0	34
Future Volume (veh/h)	42	641	1	2	225	80	0	0	2	94	0	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1885	1811	1885	418	418	418	1885	1885	1885
Adj Flow Rate, veh/h	49	754	1	2	259	92	0	0	8	188	0	68
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.25	0.25	0.25	0.50	0.50	0.50
Percent Heavy Veh, %	1	2	1	1	6	1	100	100	100	1	1	1
Cap, veh/h	460	934	797	285	555	489	0	0	77	451	0	346
Arrive On Green	0.05	0.50	0.50	0.31	0.31	0.31	0.00	0.00	0.22	0.22	0.00	0.22
Sat Flow, veh/h	1795	1870	1596	714	1811	1595	0	0	353	1412	0	1590
Grp Volume(v), veh/h	49	754	1	2	259	92	0	0	8	188	0	68
Grp Sat Flow(s),veh/h/ln	1795	1870	1596	714	1811	1595	0	0	353	1412	0	1590
Q Serve(g_s), s	0.7	14.3	0.0	0.1	4.9	1.8	0.0	0.0	0.8	5.2	0.0	1.5
Cycle Q Clear(g_c), s	0.7	14.3	0.0	6.2	4.9	1.8	0.0	0.0	0.8	6.0	0.0	1.5
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	934	797	285	555	489	0	0	77	451	0	346
V/C Ratio(X)	0.11	0.81	0.00	0.01	0.47	0.19	0.00	0.00	0.10	0.42	0.00	0.20
Avail Cap(c_a), veh/h	579	1456	1242	437	940	828	0	0	208	977	0	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	8.9	5.3	14.9	11.9	10.8	0.0	0.0	13.3	15.7	0.0	13.6
Incr Delay (d2), s/veh	0.1	1.9	0.0	0.0	0.6	0.2	0.0	0.0	0.6	0.6	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.0	0.0	0.0	1.6	0.5	0.0	0.0	0.1	1.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.4	10.8	5.3	15.0	12.5	11.0	0.0	0.0	13.9	16.3	0.0	13.8
LnGrp LOS	A	B	A	B	B	B	A	A	B	B	A	B
Approach Vol, veh/h		804			353			8				256
Approach Delay, s/veh		10.7			12.1			13.9				15.6
Approach LOS		B			B			B				B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		15.2		27.2		15.2	8.2	19.0				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		25.0		33.0		25.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		2.8		16.3		8.0	2.7	8.2				
Green Ext Time (p_c), s		0.0		4.9		0.8	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay				11.9								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	30	1	64	58	1	98
Future Vol, veh/h	30	1	64	58	1	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	1	75	68	1	115

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	226	109	0	0	143
Stage 1	109	-	-	-	-
Stage 2	117	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	762	945	-	-	1440
Stage 1	916	-	-	-	-
Stage 2	908	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	761	945	-	-	1440
Mov Cap-2 Maneuver	761	-	-	-	-
Stage 1	916	-	-	-	-
Stage 2	907	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	766	1440
HCM Lane V/C Ratio	-	-	0.048	0.001
HCM Control Delay (s)	-	-	9.9	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	1	28	30	1	1	28	19	17	1	41	1
Future Vol, veh/h	1	1	28	30	1	1	28	19	17	1	41	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	33	35	1	1	33	22	20	1	48	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	150	159	49	166	149	32	49	0	0	42	0	0
Stage 1	51	51	-	98	98	-	-	-	-	-	-	-
Stage 2	99	108	-	68	51	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	818	733	1020	798	743	1042	1558	-	-	1567	-	-
Stage 1	962	852	-	908	814	-	-	-	-	-	-	-
Stage 2	907	806	-	942	852	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	802	716	1020	758	726	1042	1558	-	-	1567	-	-
Mov Cap-2 Maneuver	802	716	-	758	726	-	-	-	-	-	-	-
Stage 1	941	851	-	888	796	-	-	-	-	-	-	-
Stage 2	885	788	-	909	851	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.7		10		3.2		0.2	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	997	763	1567	-	-
HCM Lane V/C Ratio	0.021	-	-	0.035	0.049	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.7	10	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0	-	-

Intersection						
Int Delay, s/veh	4.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	12	1	10	20	1	5
Future Vol, veh/h	12	1	10	20	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	48	4	16	32	2	8

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	44	32	0	0	48	0
Stage 1	32	-	-	-	-	-
Stage 2	12	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	969	1045	-	-	1566	-
Stage 1	993	-	-	-	-	-
Stage 2	1014	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	968	1045	-	-	1566	-
Mov Cap-2 Maneuver	968	-	-	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	1013	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	974	1566
HCM Lane V/C Ratio	-	-	0.053	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	3	19	33	12	5
Future Vol, veh/h	5	3	19	33	12	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	8	26	46	19	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	75	0	-	0	87 52
Stage 1	-	-	-	-	52 -
Stage 2	-	-	-	-	35 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1531	-	-	-	916 1019
Stage 1	-	-	-	-	973 -
Stage 2	-	-	-	-	990 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1527	-	-	-	902 1016
Mov Cap-2 Maneuver	-	-	-	-	902 -
Stage 1	-	-	-	-	961 -
Stage 2	-	-	-	-	987 -

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1527	-	-	-	933
HCM Lane V/C Ratio	0.009	-	-	-	0.029
HCM Control Delay (s)	7.4	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	7	321	485	40	25	5
Future Vol, veh/h	7	321	485	40	25	5
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	8	365	516	43	46	9

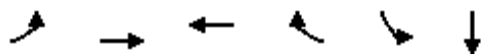
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	566	0	-	0	904 523
Stage 1	-	-	-	-	523 -
Stage 2	-	-	-	-	381 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	996	-	-	-	309 556
Stage 1	-	-	-	-	597 -
Stage 2	-	-	-	-	693 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	989	-	-	-	302 552
Mov Cap-2 Maneuver	-	-	-	-	302 -
Stage 1	-	-	-	-	587 -
Stage 2	-	-	-	-	688 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	989	-	-	-	327
HCM Lane V/C Ratio	0.008	-	-	-	0.17
HCM Control Delay (s)	8.7	0	-	-	18.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2030 Bkgrd + Project - PM Peak Hour

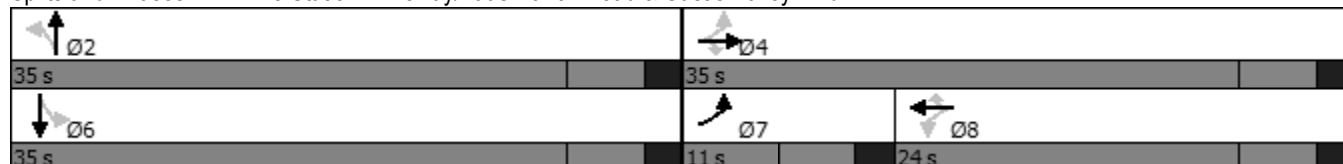


Lane Group	EBL	EBT	WBT	WBR	SBL	SBT	Ø2
Lane Configurations	↶	↷	↷	↷	↶	↷	
Traffic Volume (vph)	89	257	449	150	140	0	
Future Volume (vph)	89	257	449	150	140	0	
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	
Protected Phases	7	4	8			6	2
Permitted Phases	4			8	6		
Detector Phase	7	4	8	8	6	6	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	35.0	24.0	24.0	35.0	35.0	35.0
Total Split (%)	15.7%	50.0%	34.3%	34.3%	50.0%	50.0%	50%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	None	None	None	Min	Min	Min
Act Effct Green (s)	26.8	26.8	18.5	18.5	11.6	11.6	
Actuated g/C Ratio	0.53	0.53	0.36	0.36	0.23	0.23	
v/c Ratio	0.28	0.29	0.74	0.25	0.54	0.16	

Intersection Summary

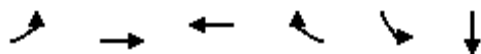
Cycle Length: 70
 Actuated Cycle Length: 50.7
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 16.3
 Intersection Capacity Utilization 51.7%
 Analysis Period (min) 15

Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.



Queues
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2030 Bkgrd + Project - PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBT
Lane Group Flow (vph)	97	279	504	169	165	89
v/c Ratio	0.28	0.29	0.74	0.25	0.54	0.16
Control Delay	8.9	8.3	26.1	4.7	24.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	8.3	26.1	4.7	24.8	0.6
Queue Length 50th (ft)	13	40	137	1	46	0
Queue Length 95th (ft)	38	98	#323	37	86	0
Internal Link Dist (ft)		514	395			159
Turn Bay Length (ft)	150			150	100	
Base Capacity (vph)	351	1074	679	664	790	990
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.26	0.74	0.25	0.21	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.
03/18/2022 2030 Bkgrd + Project - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗		↕		↙	↗	
Traffic Volume (veh/h)	89	257	0	0	449	150	0	0	0	140	0	76
Future Volume (veh/h)	89	257	0	0	449	150	0	0	0	140	0	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1870	1870	1870	1885	1885	1885	1796	1885	1796
Adj Flow Rate, veh/h	97	279	0	0	504	169	0	0	0	165	0	89
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.88	0.88	0.88	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	2	2	2	1	1	1	7	1	7
Cap, veh/h	377	1024	868	168	631	531	0	310	0	448	0	261
Arrive On Green	0.08	0.56	0.00	0.00	0.34	0.34	0.00	0.00	0.00	0.16	0.00	0.16
Sat Flow, veh/h	1753	1841	1560	1100	1870	1576	0	1885	0	1706	0	1593
Grp Volume(v), veh/h	97	279	0	0	504	169	0	0	0	165	0	89
Grp Sat Flow(s),veh/h/ln	1753	1841	1560	1100	1870	1576	0	1885	0	1706	0	1593
Q Serve(g_s), s	1.4	3.4	0.0	0.0	10.5	3.4	0.0	0.0	0.0	3.8	0.0	2.1
Cycle Q Clear(g_c), s	1.4	3.4	0.0	0.0	10.5	3.4	0.0	0.0	0.0	3.8	0.0	2.1
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	377	1024	868	168	631	531	0	310	0	448	0	261
V/C Ratio(X)	0.26	0.27	0.00	0.00	0.80	0.32	0.00	0.00	0.00	0.37	0.00	0.34
Avail Cap(c_a), veh/h	441	1242	1053	258	784	660	0	1272	0	1319	0	1075
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.6	5.0	0.0	0.0	12.9	10.6	0.0	0.0	0.0	16.6	0.0	15.9
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	4.8	0.3	0.0	0.0	0.0	0.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.8	0.0	0.0	4.1	1.0	0.0	0.0	0.0	1.4	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	5.1	0.0	0.0	17.7	10.9	0.0	0.0	0.0	17.1	0.0	16.7
LnGrp LOS	A	A	A	A	B	B	A	A	A	B	A	B
Approach Vol, veh/h		376			673			0				254
Approach Delay, s/veh		6.1			16.0			0.0				17.0
Approach LOS		A			B							B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		13.1		29.9		13.1	9.4	20.5				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		29.0		29.0		29.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		0.0		5.4		5.8	3.4	12.5				
Green Ext Time (p_c), s		0.0		1.5		1.0	0.0	1.8				

Intersection Summary		
HCM 6th Ctrl Delay		13.3
HCM 6th LOS		B

Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	91	1	154	85	1	125
Future Vol, veh/h	91	1	154	85	1	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	1	181	100	1	147

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	380	231	0	0	281
Stage 1	231	-	-	-	-
Stage 2	149	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	622	808	-	-	1282
Stage 1	807	-	-	-	-
Stage 2	879	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	621	808	-	-	1282
Mov Cap-2 Maneuver	621	-	-	-	-
Stage 1	807	-	-	-	-
Stage 2	878	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	1282
HCM Lane V/C Ratio	-	-	0.174	0.001
HCM Control Delay (s)	-	-	12	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0

HCM 6th TWSC
03/18/2022

6: Faas Ranch Road & Access 2
2030 Bkgrd + Project - PM Peak Hour

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	1	73	33	1	2	90	35	30	1	20	2
Future Vol, veh/h	1	1	73	33	1	2	90	35	30	1	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	86	39	1	2	106	41	35	1	24	2

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	299	315	25	342	299	59	26	0	0	76	0	0
Stage 1	27	27	-	271	271	-	-	-	-	-	-	-
Stage 2	272	288	-	71	28	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	653	601	1051	612	613	1007	1588	-	-	1523	-	-
Stage 1	990	873	-	735	685	-	-	-	-	-	-	-
Stage 2	734	674	-	939	872	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	615	558	1051	531	569	1007	1588	-	-	1523	-	-
Mov Cap-2 Maneuver	615	558	-	531	569	-	-	-	-	-	-	-
Stage 1	921	872	-	684	637	-	-	-	-	-	-	-
Stage 2	680	627	-	860	871	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		12.1		4.3		0.3	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1588	-	-	1029	546	1523	-	-
HCM Lane V/C Ratio	0.067	-	-	0.086	0.078	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.8	12.1	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	0.3	0	-	-



Signal Warrant Evaluation



Table A1: MUTCD Signal Warrant Evaluation Summary
 Lakota Ranch (New Castle, CO)

Intersection	Scenario	Warrant 2: 4 Hour Met?	Warrant 3: Peak Hour ¹	
			AM	PM
Castle Valley Blvd. at Faas Ranch Rd.	2021 Existing	No	No	No
	2025 Background	No	No	No
	2030 Background	No	No	No
	2025 Background + Project	Yes	No	Yes
	2030 Background + Project	Yes	Yes	Yes

¹ Does not meet the "unusal cases" condition as specified in the MUTCD for the Peak Hour Warrant. Evaluated in this report for planning purposes only.

Intersection: Castle Valley Blvd. at Faas Ranch Rd.
Warrant 2: 4 Hour Analysis - 2025 Background + Project Volumes

Time of Day	Major	Minor*	Warrant 2 (Figure 4C-1)
	Castle Valley Blvd.	Faas Ranch Rd.	
	Number of Lanes		
	2	1	
0:00			no
1:00			no
2:00			no
3:00			no
4:00	47	4	no
5:00	177	10	no
6:00	363	38	no
7:00	932	126	Yes
8:00	578	82	no
9:00	391	28	no
10:00			no
11:00			no
12:00			no
13:00			no
14:00	392	81	no
15:00	588	85	no
16:00	891	212	Yes
17:00	855	119	Yes
18:00	597	119	Yes
19:00	312	57	no
20:00			no
21:00			no
22:00			no
23:00			no
Total	6,123	961	4 Met

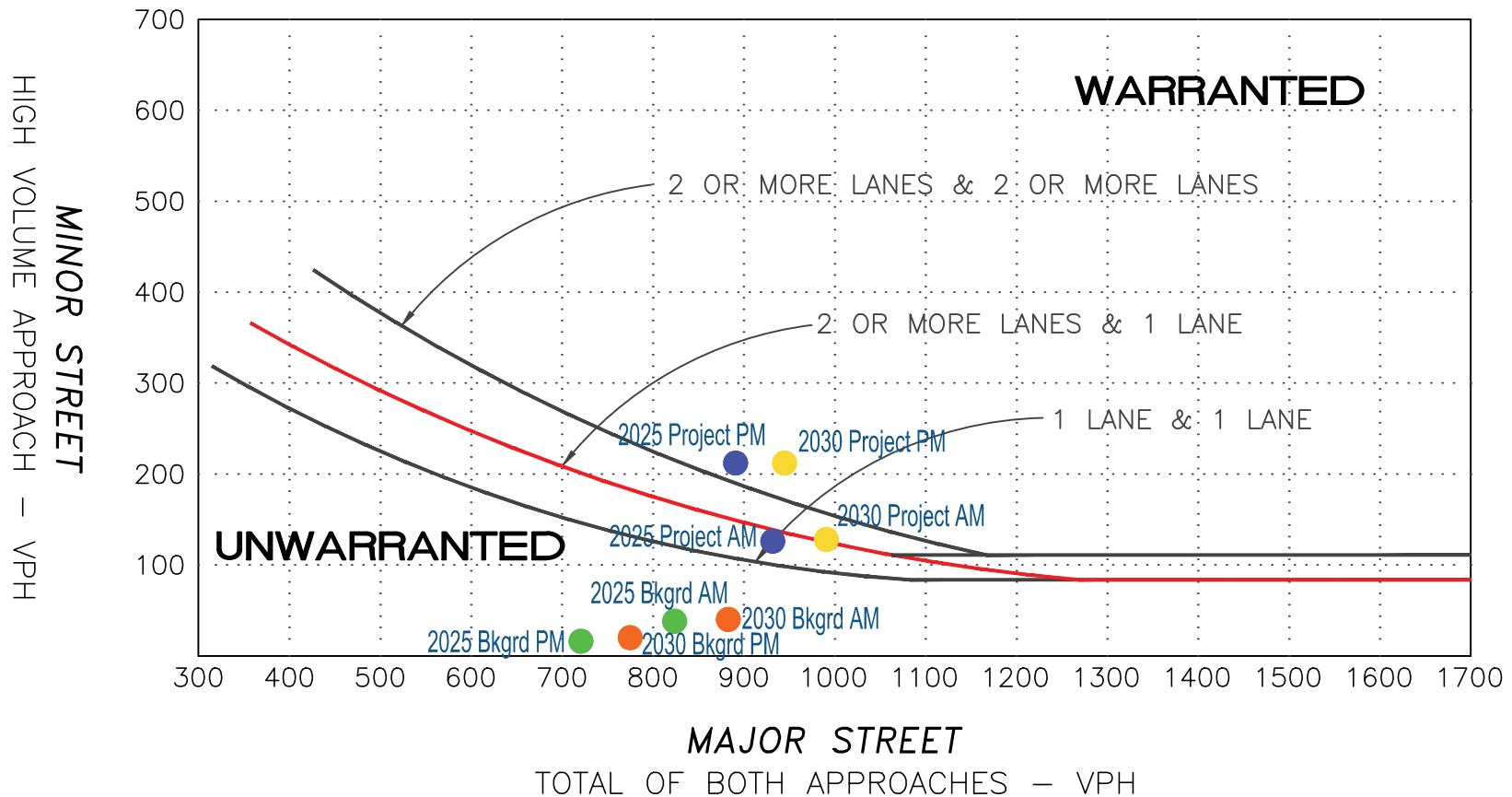
*The minor volume for each hour represents the higher of either minor approach.

Intersection: Castle Valley Blvd. at Faas Ranch Rd.
Warrant 2: 4 Hour Analysis - 2025 Background + Project Volumes

Time of Day	Major	Minor*		Warrant 2 (Figure 4C-1)
	Castle Valley Blvd.	Faas Ranch Rd.		
	Number of Lanes			
	2	1		
0:00				no
1:00				no
2:00				no
3:00				no
4:00	50	4		no
5:00	188	10		no
6:00	386	38		no
7:00	991	128		Yes
8:00	614	83		no
9:00	416	28		no
10:00			Warrant is Met (yes/no)	no
11:00				no
12:00				no
13:00				no
14:00	416	82		no
15:00	624	86		no
16:00	945	216		Yes
17:00	907	121		Yes
18:00	633	121		Yes
19:00	331	58		no
20:00			no	
21:00			no	
22:00			no	
23:00			no	
Total	6,501	975	4	Met

*The minor volume for each hour represents the higher of either minor approach.

PEAK HOUR VOLUME WARRANT (70%) Castle Valley Blvd. at Faas Ranch Rd.



NOTE: 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.



FT Project #	21070	Original Scale	NTS	Date	3/15/2022	Drawn by	MAR	Figure #	A1
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MEMORANDUM

To: The Romero Group, LLC
From: Cassie Slade, PE, PTOE
Date: August 16, 2022
Project: Lakota Canyon Ranch
Subject: Parking Analysis - Updated

The Fox Tuttle Transportation Group has completed a review of the proposed Lakota Canyon Ranch project with respect to peak parking demand and feasibility of sharing parking spaces with the proposed mix of land uses. Lakota Canyon Ranch is located in New Castle, CO on the east side of Castle Valley Boulevard and on both sides of Faas Ranch Road, as shown to the right. The most current land plan includes 31,853± square feet of commercial space, 19,554± square feet of office space, 29 single-family dwelling units, 20 townhomes, and 136 multi-family units. This memorandum summarizes our analysis and findings related to parking.



Town of New Castle Requirements

Parking supply for projects within New Castle are based on the guidelines set for in the *Municipal Code (Section 17.76.020)*. **Table 1** summarizes the anticipated land use types, sizes and required off-street parking supply rate.

Table 1. New Castle Off-Street Parking Supply Requirements

Land Use Type	Size	New Castle Code	
		Requirement	Spaces
Office Space	19,554 sq. ft.	1 per 300 sq. ft.	65
Commercial Space	31,853 sq. ft.	2 per 300 sq. ft.	212
Townhomes	49 units	2 per unit	98
Multi-Family	136 units	2 per unit	272
Total			647

Applying the Town parking rates to the anticipated land use types and sizes equates to a parking supply requirement of 647 spaces. The proposed site plan provides 435 off-street parking spaces (33% reduction) within surface lots, covered facilities, and parallel parking spaces along the internal roadways.

ITE Recommendations for Parking Demand

One of leading industry parking resources was reviewed within the context of this project and discussed in this memorandum: Institute of Transportation Engineers' (ITE) *Parking Generation, 5th Edition (2019)*. ITE publishes parking generation data for various land uses based on numerous studies and empirical data calculating average peak parking demand. For majority of land uses, ITE provides both urban and suburban parking formulas, near and not near rail transit, to predict peak parking demand. Lakota Canyon Ranch is within an urban/suburban environment that does not have rail transit. The appropriate ITE weekday parking demand rates for each land use type was applied. The ITE rates were multiplied by the square footage or dwelling units to calculate the peak parking demand as shown in **Table 2** (weekday) and **Table 3** (weekend) to estimate the accumulative parking demand. Note that the single-family homes and townhomes were not included in the calculations since parking will be provided via a garage and/or driveway for each home that will not be shared with adjacent land uses.

Table 2. ITE Parking Demand - Weekday

Land Use Type	Size		ITE Parking Rates			Parking Demand	
			Code	Average	85th %	Average	85th %
Office Space	19,554	sq. ft.	710	2.39	3.30	47	65
Commercial Space	31,853	sq. ft.	820	1.95	3.68	63	118
Townhomes	49	units	220	1.21	1.52	72	90
Multi-Family	136	units	221	1.31	1.47	103	116
Total Parking Weekday Demand						285	389

Table 3. ITE Parking Demand - Weekend

Land Use Type	Size		ITE Parking Rates			Parking Demand	
			Code	Average	85th %	Average	85th %
Office Space	19,554	sq. ft.	710	0.28	0.73	6	15
Commercial Space	31,853	sq. ft.	820	2.91	3.74	93	120
Townhomes	49	units	220	1.31	1.61	78	95
Multi-Family	136	units	221	1.22	1.33	96	104
Total Parking Weekend Demand						273	334

The national data is an accumulative parking demand and does not consider the ability for parking spaces to be shared between land uses throughout the day based on the fluctuation in parking needs. Based on the national parking demand rates, the average parking demand for Lakota Canyon Ranch was calculated to be 285 spaces and occurring on the weekday. The highest demand (85th percentile) was calculated to occur during the weekday with 389 spaces.

Shared Parking

The complementary land uses found in mixed-use developments allow for the required number of parking spaces to be reduced. This is because mixed-use development encourages visits to multiple land uses during the same visit, allowing a visitor, employee, or resident to “park once.” The mix of commercial uses also allows for some shared parking to occur on the site. Shared parking is the use of the same parking space by more than one user. This is possible because most parking spaces are only used part time by an individual user, and the highest parking demand for some land uses occurs at different times of the day or different days of the week. Most land uses have parking demand that accumulates at specific, predictable times of the day and week. The development proposes to have a variety of residential and commercial land uses that can benefit from shared parking.

The Urban Land Institute (ULI) is a nonprofit education and research company that provides resources to estimate the shared parking of these developments. To determine the most appropriate adjustment to the parking requirement, the data provided in ULI’s *Shared Parking Manual* was utilized. The data provides percentage of parking by land use classification, time of day, and weekday versus weekend. Applying the shared parking percentages to the estimated average and 85th percentile parking demand, the parking demand in Lakota Canyon Ranch is estimated to be 307 parking spaces. Refer to **Table 4** on the for the shared parking calculations.

Table 4. Shared Parking Calculation

Land Use Classification	ITE Parking Demand (85 th %)	Weekday					
		1:00 a.m. - 7:00 a.m.		7:00 a.m. - 6:00 p.m.		6:00 p.m. - 1:00 a.m.	
		Percent	Parking Spaces	Percent	Parking Spaces	Percent	Parking Spaces
Office	65	5%	4	100%	65	5%	4
Commercial	118	0%	0	100%	118	80%	95
Multi-family residential	116	100%	116	60%	70	100%	116
Total Parking with Shared Model			120		253		215

Table 4 (continued). Shared Parking Calculation

Land Use Classification	ITE Parking Demand (85 th %)	Weekend					
		1:00 a.m. - 7:00 a.m.		7:00 a.m. - 6:00 p.m.		6:00 p.m. - 1:00 a.m.	
		Percent	Parking Spaces	Percent	Parking Spaces	Percent	Parking Spaces
Office	15	0%	0	15%	3	0%	0
Commercial	120	0%	0	100%	120	60%	72
Multi-family residential	104	100%	104	75%	78	95%	99
Total Parking with Shared Model			104		201		171

Based on the shared parking guidelines, the highest parking demand for the assumed commercial and multi-family land uses in Lakota Canyon Ranch is anticipated to be 253 parking spaces.

If the shared parking demand estimate is added to the parking spaces for the townhomes (not being shared), then **the site is anticipated to need 351 spaces [253 shared + 98 townhomes]**. The current site plan proposes to provide 435 on-site parking spaces which will adequately accommodate the parking needs of Lakota Canyon Ranch.

Summary and Recommendations

The Lakota Canyon Ranch project is proposing to construct a mix of residential and commercial land uses along the east side of Castle Valley Boulevard along both sides of Faas Ranch Road. New Castle's Municipal Code requires 647 parking spaces for this project; however, the parking demand was calculated to be up to 389 spaces without shared parking and up to 351 with shared parking. The project proposes to provide 435 parking spaces on-site (0% reduction on townhomes and 39% reduction on commercial/multi-family). Based on the ITE parking demand calculations and the ULI shared parking reductions, the **provided parking supply of 435 spaces will adequately accommodate the estimated peak parking demand (between 351 and 389 spaces) and have excess parking spaces during several periods of the weekday or weekend.**

/CRS



Fiscal Impact Study of the Lakota Canyon Ranch Mixed-Use Development, 3/7/22

Introduction

The Romero Group hired Triple Point Strategic Consulting to conduct a Fiscal Impact Study of the Lakota Canyon Ranch Mixed-Use Development sketch plan. The project is located in the Town of New Castle, Colorado. Both revenues to be received and costs to be incurred as a result of the proposed development have been projected out to 2045 on the basis of available data and various assumptions. The projection period through 2045 is intended to capture ongoing impacts for the first 15 years following full built-out.

According to David Reynolds cover to the Town's 2022 Adopted Budget:

Current indications are that New Castle will experience significant growth in residential housing over the next several years. Development along Castle Valley Boulevard in Lakota and Castle Valley Ranch are likely to become a reality in the near future as land owners now have active development applications before the Town. Small pockets of commercial development along Castle Valley Boulevard are also anticipated as land parcels that are zoned Mixed Use now pique the interest of area developers.

On the basis of various assumptions, such building cost per square foot, annual local spending per household and others, we will estimate the economic impact arising from the construction of the residential and commercial space and from the increased economic activity over time.

Methodology

To study the fiscal impacts of the proposed development, Triple Point constructed a hybrid buildout-proforma model. The number of units and commercial space planned, phasing, and building costs were used to create a buildout model of the development occurring over seven years from 2023 to 2029.

The financial impacts of construction were estimated using an additional economic input-output model developed by IMPLAN and using national average data. Four different industry sectors were incorporated in the model representing infrastructure, commercial, multifamily, and single-family residential construction. Total construction cost is estimated to be \$95 million, which was reduced to 60 percent or \$57 million to conservatively capture only local impact. IMPLAN modeling also estimates multiplier effects known as indirect and induced impacts as construction investment ripples through New Castle's economy. IMPLAN also provides estimates of the number of jobs resulting from a given level and type of investment.

Financial impacts were extrapolated from the incremental growth in population and units arising from the development. IMPLAN was used to estimate indirect and induced impacts arising from incremental retail sales activity.

Property tax impacts are inferred for each time of proposed property based on comparable property assessments and using New Castle's 8.551 mill levy. The current property tax paid on the three parcels is netted out.

Revenue and expense categories explicitly modeled:

- Construction sales tax
- Construction use tax
- Incremental General Fund revenue (residents)
- Incremental Utility Fund revenue (housing units)
- Incremental retail direct sales tax
- Incremental retail multiplier sales tax
- Property tax - residential
- Property tax - commercial
- Property tax - current
- Incremental General Fund expense (residents)
- Incremental Utility Fund expense (housing units)

Total property tax impacts are also estimated which include revenue for hospital, school, water, fire, library and other jurisdictions in addition to the Town of New Castle.

Results

The population of New Castle has grown at an annual average growth rate of 2.5 percent from 2017 to 2020. To be conservative, we estimate the population growing at an annual average growth rate of 1.25 percent from 2021 to 2045. At this rate, New Castle's population will grow from 4,916 to 6,706 in 2045, an increase of 1,790. Using an average of 2.71 people per housing unit (from Colorado State Demographer), the proposed development will house a total of 501 people by 2029.

The \$57 million construction investment modeled generates an indirect impact of \$29 million and induced impact of \$64 million, for a total of \$150 million. Forty-one percent of this construction impact is estimated to be intermediate expenditures, or \$61 million and largely subject to sales tax. We assume New Castle sales tax (3.5%) will be paid on 55 percent of intermediate expenditures. To be conservative, we assume the two percent use tax will be paid on 45 percent of the 60 percent of actual estimated cost. Total use tax to be paid over the seven years from 2023 through 2029 is estimated to be \$515,278.

Incremental general fund revenue is extrapolated from the estimate number of new residents in the development. This is revenue that results from everything from tobacco taxes to soccer registration. Taking an average of 2019 actual through 2022 budget, we find an average of \$895 per person. Following buildout, revenues are assumed to grow at an annual average rate of two percent annually.

Incremental utility fund revenue is extrapolated in a similar manner as general fund revenue from the estimated number of new housing units in the development. Only the three primary operating accounts are included: water, wastewater, and trash.

A total of 52,400 commercial square feet is proposed, of which 30,300 is anticipated to generate sales tax. Conservative assumptions for sales per square foot per type of space, ranging from \$50/sq ft to \$325/sq ft were adopted from online search. New Castle's sales tax rate (3.5%) was applied to direct sales as well as indirect and induced sales, using purchaser prices for the latter to be conservative.

Property tax revenue remitted to New Castle begins with initial construction in 2023 and gradually increased as the development is built out. The full amount of current property tax, a little over \$800, is netted out beginning in 2023. Property values are assumed to increase at three percent annually through 2045.

The incremental increased costs incurred by the Town are estimated by taking the average general fund expenditure per person for the years 2017 to 2021 estimated or \$711 per person. We deliberately did not include 2022 budget to be conservative, since budgeted expenses exceeded actuals for the past two years by wide margin. Utility fund expenses are extrapolated in the same manner as utility fund revenues, from incremental housing units and per unit expenses.

Employment

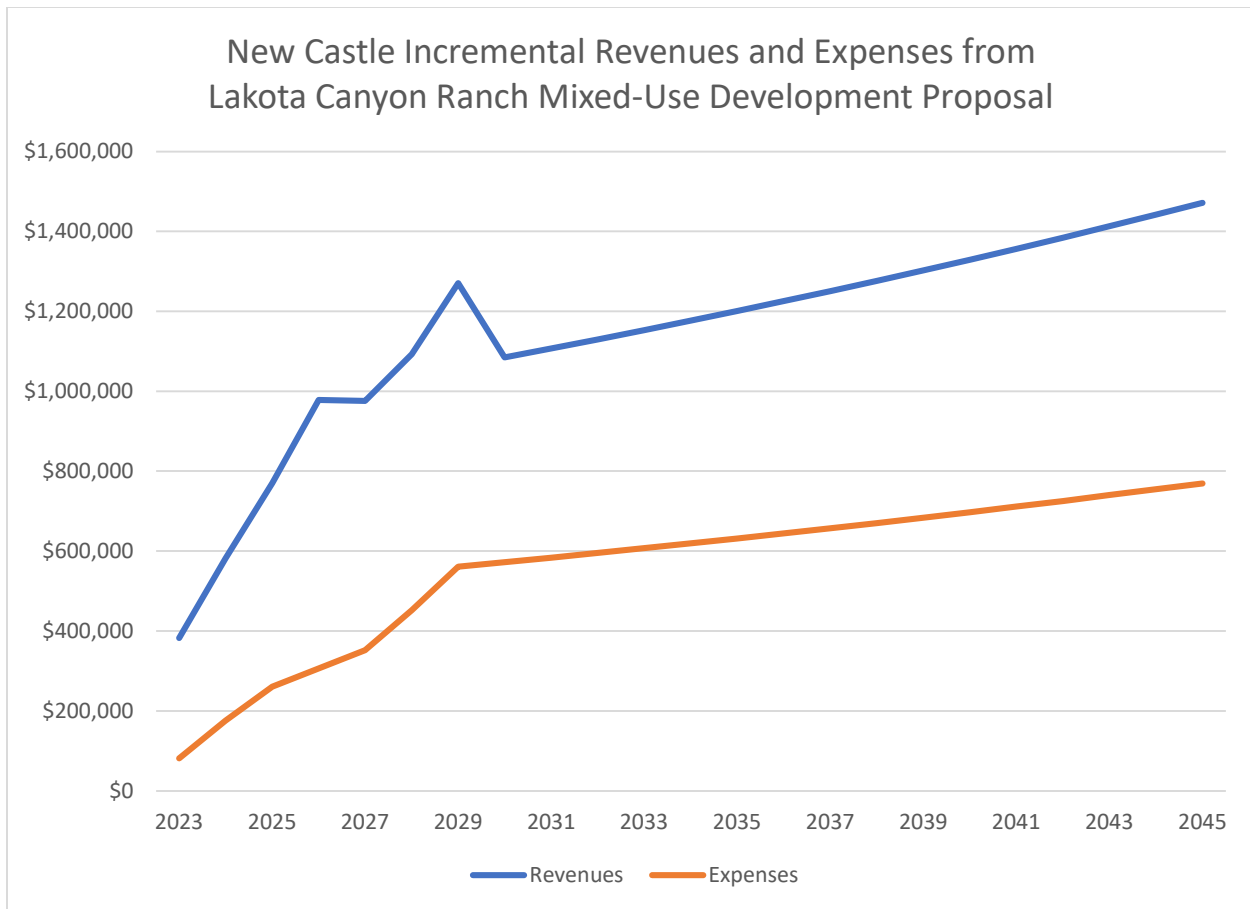
The table below shows the jobs directly resulting from construction as well as the total jobs including multiplier impacts. The direct jobs are included in the total job count.

	2023	2024	2025	2026	2027	2028	2029
Direct Jobs	80	72	65	81	60	60	62
Total Jobs	152	135	122	167	123	111	114

Fiscal Impacts

The economic benefit averages \$1.15 million over the 23 years from 2023 to 2045. After a boost from the use tax collected in 2023, the revenue grows from \$510,000 in 2023 to \$1.5 million by 2045 as shown in the chart below. Incremental expenses range from \$82,000 in 2023 to \$760,000 by 2045, averaging \$560,000.

Following buildout, the total amount of property tax collected for all jurisdictions is \$468,000.



Properties w/in 250' of Lakota Canyon Ranch Mixed Use Parcels

Owner	Mailing Address
BURNING MTN FIRE PROTECTION DISTRICT	PO BOX 2 SILT, CO 81652
TURTLEPOOP LLC	109 FOX PROWL CARBONDALE, CO 81623
NEW CASTLE, TOWN OF	PO BOX 90 NEW CASTLE, CO 81647-016E
RRENTAL SHIBUI LLC	820 CASTLE VALLEY BLVD STE 107 NEW CASTLE, CO 81647
DE LEON, AGUEDA	792 CASTLE VALLEY BLVD #B NEW CASTLE, CO 81647
NUTILE, MAUREEN	792 CASTLE VALLEY BLVD UNIT C NEW CASTLE, CO 81647
BRENDLINGER, ERIC S & PATRICIA P	2023 GRACELAND DRIVE CARBONDALE, CO 81623-283E
GUTIERREZ, LOURDES	792 CASTLE VALLEY BLVD UNIT G NEW CASTLE, CO 81647
LAZO, PAUL E	417 N 8TH STREET CARBONDALE, CO 81623
BENNETT, KATHRYN S	792 CASTLE VALLEY BLVD UNIT 1 NEW CASTLE, CO 81647
MCCOLLUM, MICHAEL D & JOHNSON, SHAEL	PO BOX 3549 ASPEN, CO 81612
RAMSEY, BRYAN J & CARLA	792 CASTLE VALLEY BLVD, UNIT K NEW CASTLE, CO 81647
LOPEZ, MARIA DOLORES & GAMEZ, VICTOR RAUL	77 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
NUTTER, PHILLIP E & JANEAN E	PO BOX 300 SILT, CO 81652
J & S CASTLE RIDGE, LLC	PO BOX 1323 CARBONDALE, CO 81623
DOHERTY, MICHAEL & DIANE	1084 HERITAGE DRIVE CARBONDALE, CO 81623
DAVIS, ROBERT E	1432 SUMMerville ALLEY GLENWOOD SPRINGS, CO 81601
ESPINOZA, ANAYELI SARAHI	66 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
GARCIA, JUAN	72 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
OUTZEN, ASHLEY & BARTON III	80 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
WAREN, JENNIFER	2034 DIAMOND STREET SAN DIEGO, CA 9210E
SNOW, CHRISTOPHER M	7440 S BLACKHAWK STREET UNIT 14306 ENGLEWOOD, CO 8011E
DENVER TRUST	PO BOX 862 NEW CASTLE, CO 81647
MURRIETA TRUST	PO BOX 862 NEW CASTLE, CO 81647
SMITH, SANDRA L & STEFAN N	114 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
CAMUNEZ, DANIELA	122 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
HUMERICKHOUSE, SUMMER	790 CASTLE VALLEY BOULEVARD #A NEW CASTLE, CO 81647
PRICE, TIMOTHY S	790 CASTLE VALLEY BLVD, UNIT B NEW CASTLE, CO 81647
FLAMAND, KAREN	790 CASTLE VALLEY BOULEVARD, UNIT C NEW CASTLE, CO 81647
GALLUCCIO, VINCENT	325 OAK LANE ASPEN, CO 81611
HAUSKINS, CHRISTINE W	670 RIVER BEND WAY GLENWOOD SPRINGS, CO 81601-866E
BALLARD ENTERPRISES LLC	1605 WINTERS LANE GLENWOOD SPRINGS, CO 81601
TEHRANI, REZA	231 5TH STREET SILT, CO 81652
LUJAN NEVAREZ, FABIAN	790 CASTLE VALLEY BLVD UNIT I NEW CASTLE, CO 81647
GREENE, ANTHONY FRANK TRUST	64 EASTWOOD DRIVE ASPEN, CO 81611
LOVEKAMP, JORDAN MICHAEL & MERAZ LOVEKAMP, MARIELA	790 CASTLE VALLEY BLVD #K NEW CASTLE, CO 81647
PRICE, RONALD TODD	54 SUMMIT LOOP B8 CARBONDALE, CO 81623
CLASSEN, R SETH & GLORIA	10 BUCKSKIN CIR NEW CASTLE, CO 81647
788 SHIBUI B LLC	0832 CANYON CREEK GLENWOOD SPRINGS, CO 81601
DUNN, SCOTT	788 CASTLE VALLEY BLVD NEW CASTLE, CO 81647
CHENOWETH, JOHN JAMES & KIMBERLIE	6411 COUNTY ROAD 214 NEW CASTLE, CO 81647
PERRIN, KIMBERLEY	303 W PARK STREET MARBLE, CO 81623
MEYER, KAREN N	PO BOX 1507 BASALT, CO 81621-1507
AJARIAN, ANTRANIK	788 CASTLE VALLEY BLVD UNIT G NEW CASTLE, CO 81647
PEREA, LUCIO	788 CASTLE VALLEY BLVD UNIT H NEW CASTLE, CO 81647
ALARIE, ELIZABETH R & FRANCIS E III	6564 HAWALL KAI DRIVE HONOLULU, HI 96825-111E
PARLETT, MARK DAVID & SON HWA	788 CASTLE VALLEY BLVD #J NEW CASTLE, CO 81647
NEGRETE, ROSALYN	788 CASTLE VALLEY BLVD #K NEW CASTLE, CO 81647
HOTTENDORF, HILDE	788 CASTLE VALLEY BLVD UNIT L NEW CASTLE, CO 81647
BEHRENDT FAMILY , LLC, RICHMOND, RONALD A TRUSTEE ETAL	334 W HYMAN ASPEN, CO 81611
KOCHEVAR, JANET M & BULLOCK, DORIS M	PO BOX 3109 GLENWOOD SPRINGS, CO 81602
LAMOREAUX, TIMOTHY L & JOAN C	3648 COUNTY ROAD 117 GLENWOOD SPRINGS, CO 81601
KRANTZ, MAYNARD L & LISA J	4900 BOARDWALK DRIVE APT # I 302 FORT COLLINS, CO 8052E
PENSCO TRUST COMPANY FBO RICH WAGAR IRA	6718 W HARBOR DRIVE ELK RAPIDS, MI 49629-977E
SHEFFIELD, ROGER D TRUSTEE, OF THE SHEFFIELD REVOCABLE LI	P. O. BOX 2013 GLENWOOD SPRINGS, CO 81602-201E
BRUCKER, MISSEN LYNETTE	195 BLACKHAWK DRIVE NEW CASTLE, CO 81647
NEWMAN, ROBERT L & CAROL L TRUST	187 BLACKHAWK DRIVE NEW CASTLE, CO 81647
HLADKY, THOMAS L & VIKI M	249 WHITE HORSE DRIVE NEW CASTLE, CO 81647
RIVERS, WALEZKA G	259 WHITEHORSE DRIVE NEW CASTLE, CO 81647
DELGADO, CESAR H HERRERA	269 WHITEHORSE DRIVE NEW CASTLE , CO 81647
PELKY, MEGAN M	279 WHITEHORSE DRIVE NEW CASTLE, CO 81647
GALLEGOS RANGEL, OSCAR I	289 WHITEHORSE DRIVE NEW CASTLE, CO 81647
RODMAN, RICHARD E & MARIA T	299 WHITEHORSE DRIVE NEW CASTLE, CO 81647
LAKOTA CANYON RANCH MASTER ASSOCIATION INC	1512 GRAND AVENUE, SUITE 109 GLENWOOD SPRINGS, CO 81601
FERNANDEZ, JOSUE & GUILLEN, KARINA	300 WHITEHORSE DRIVE NEW CASTLE, CO 81647

BOSKO, STEVEN J & SARALYNN	3340 EL SUYO DRIVE SAN RAMON, CA 94583
VAUGHN FAMILY PROPERTIES, INC	201 ARREZO LANE GEORGETOWN, TX 78628
CHIMOVITZ, DAVID	230 WHITE HORSE DRIVE NEW CASTLE, CO 81647
TAYLOR, MELISSA & WILLIAM T	220 WHITE HORSE DRIVE NEW CASTLE, CO 81647
HUGHES, JOHN & GRETCHEN	210 WHITEHORSE DRIVE NEW CASTLE, CO 81647
SCHERRER, JAMES	1812 OURAY ROAD GLENWOOD SPRINGS, CO 81601
TRACE, DONALD GRANT	4996 CACTUS PLACE PRESCOTT, AZ 86301
BOSSERT, RICHARD A	110 LAKOTA DRIVE NEW CASTLE, CO 81647
OSBORNE, KEVIN SCOTT & CHELSEA JURGENS	120 LAKOTA DRIVE NEW CASTLE, CO 81647
HAYES, TIMOTHY JAMES & JOAN RANKIN	130 LAKOTA DRIVE NEW CASTLE, CO 81647
GERVAIS, MARTIN J & MARY C	140 LAKOTA DRIVE NEW CASTLE, CO 81647
PHEIFFER, BETTY JO	118 JUNIPER TRAIL CARBONDALE, CO 81623
SELBY, STEPHEN G & MICHELLE L	201 BLACKHAWK DRIVE NEW CASTLE, CO 81647
GAIR, RONALD W & CAROL ANN	667 RIVER BEND WAY GLENWOOD SPRINGS, CO 81601
DUBOIS, ROBERT E & ELAINE M	217 BLACKHAWK DRIVE NEW CASLTE, CO 81647-8502
HUYNH, KIM HANG T	5312 KATHRYN DRIVE GRAND PRAIRIE, TX 75052
RATAJCZAK, ZDZISLAW & HALINA	627 N WILDHORSE DRIVE NEW CASTLE, CO 81647
OLSEN, DEANNA K & KELLEY, GEORGE E	1120 SKYLIGHT VIEW COLORADO SPRINGS, CO 80906
PETERS, GREGORY N & BRENDA J	5351 COUNTY ROAD 100 CARBONDALE, CO 81623
SHOCKLEY, MEAGAN & SHOCKLEY, AARON & COLLINS, PATTI & C	261 BLACKHAWK DRIVE NEW CASTLE, CO 81647
HALE, BENJAMIN D & WENDELIN L	271 BLACKHAWK DRIVE NEW CASTLE, CO 81647
DETLEFSEN, GERALD L & SANDRA E	289 BLACKHAWK DRIVE NEW CASTLE, CO 81647
GUZMAN, NEIL DE & CHRISTIANSON, NICOLE	204 BLACKHAWK DRIVE NEW CASTLE, CO 81647
SNODDY, LUKE B & ERIN	212 BLACKHAWK DR NEW CASTLE, CO 81647
COON, BENJAMIN DON & BRUCKER-COON, ERICA LESLIE	222 BLACKHAWK DRIVE NEW CASTLE, CO 81647
COALSON, JONATHAN R	120 MIDLAND AVENUE #170 GLENWOOD SPRINGS, CO 81601
RUBIN, JOSHUA DAVID & CAROLINE MARIE COLBURN	240 BLACKHAWK DRIVE NEW CASTLE, CO 81647
MATTSON, JOSHUA J & MATTSON, GINA E	248 BLACKHAWK DRIVE NEW CASTLE, CO 81647
RAVENSCHLAG, KURT W	258 BLACKHAWK DRIVE NEW CASTLE, CO 81647
REVOIR, CHARLENE D	0266 BLACKHAWK DRIVE NEW CASTLE, CO 81647
LUJAN, CARLOS & MARIA SELENE	98 COUNTY ROAD 132 GLENWOOD SPRINGS, CO 81601
HEFFEL, NATHAN & BURROW, WILLIAM	284 BLACKHAWK DRIVE NEW CASTLE, CO 81647
MAGANA, JOSE J & JANELLE	294 BLACKHAWK DRIVE NEW CASTLE, CO 81647
LAKOTA WINDS, LLC	90 CABALLO STREET CARBONDALE, CO 81623
WHITEHORSE VILLAGE INC	5282 RED PASS WAY CASTLE ROCK, CO 80108
JESSUP, KIP	101 WHITE HORSE DRIVE NEW CASTLE, CO 81647
CRAFT, JACQUELYN & MICHAEL S & CAPUTO, BARBARA	111 WHITEHORSE DRIVE NEW CASTLE, CO 81647
RAYBURN, ANITA R & TUDGE, CHRISTOPHER	460 WOODS ROAD ASPEN, CO 81611
STANNER, JOHN THOMAS & JOANNE MARIE	131 WHITEHORSE DRIVE NEW CASTLE, CO 81647
FOOTE, GREGORY & SHELLY	141 WHITE HORSE DRIVE NEW CASTLE, CO 81647
LAKOTA RIDGE SENIOR APARTMENTS LLLP	7305 LOWELL BLVD SUITE 200 WESTMINSTER, CO 8003C
MALO DEVELOPMENT COMPANY-LAKOTA LLC	300 HORSESHOE DRIVE BASALT, CO 81621

April 5, 2022

Romero Group
Dwayne Romero, President & CEO
Via Email: dromero@romero-group.com;

**RE: Job#1219.2 - Longview at Lakota Canyon Ranch -
Preliminary Plan Engineering Summary**

Dear Mr. Romero,

Colorado River Engineering, Inc. has prepared this letter report to summarize engineering components as part of the Preliminary Plan documents submittal packet for the Longview Multi Use project.

Enclosed for submittal and review by the Town of New Castle are the following documents;

1. Preliminary Plan submittal Sheets A through C (24"x36")
2. Preliminary Plan "Draft" Construction Drawings Sheets Nos. 1 to 29 (24" x36")
3. Appendix A - Drainage Report
4. Appendix B – Water and Sewer EQR analysis (Sketch Plan submittal)
5. Appendix C – Geotechnical Investigations

Existing Parcels

Longview consist of three parcels within the mixed use "M-U" zone district as part of the Lakota Canyon Ranch Planned Unit Development (PUD). The development parcels include 15.58 acres of title lands and 1.19 acres of previously dedicated right-of-way dedicated to Lakota Drive. The Preliminary Plat (Sheet A) shows the existing parcels boundary. The proposed subdivision includes adjusting the alignment of the right-of-way of Lakota Drive and increasing its width from 50-feet to 55-feet. The project proposes to adjust the boundary line along the golf course. Adjustments to the golf course and right-of way are discussed herewith in this letter report.

Development Parcels

This mixed-use development project consists of 37 development parcels and 2 open space parcels (24 & 39) as shown on Sheet A. The development parcels consist of 29 single family residential lots, and 8 multi-family lots consisting of apartment buildings, duplex and tri-plex townhomes. Three commercial lots include 25 second level residential flats. Sheets A through C graphically depict the proposed parcels with a Land Use summary table provided on Sheet A.

Boundary Line Adjustment

The boundary line is proposed to be adjusted between the development parcels and the golf course boundary. This has occurred in numerous past applications at the Lakota Canyon Ranch PUD as it was impractical to complete final design level analysis at the master planning stages of the Golf Course and development. The project proposes to adjust the parcels by 0.58 acres (Sheet A) by changing the golf course boundary. The past adjustments were facilitated through owners who represented both the golf course and land development ownership groups, which we understand is same as the current situation.

A table summarizing historic boundary adjustments was prepared based on review of PUD plats. The drawings show that the Golf Course area has gained 6.11 acres while losing approximately 5.74 acres. The gains consist of areas adjacent to grassed holes and include inland pockets of open space between lots and golf holes. The attached Table totals all known gains and losses;

Lakota Canyon Ranch			
Golf Course Boundary Adjustment Summary			
Development Phase	Added to Golf Course (acres)	Removed from Golf Course (acres)	Net Acres to/from Golf Course Net (acres)
Spur	0.19	-1.72	-1.54
Deer Valley I	0.71	-1.42	-0.71
Deer Valley II	5.01	-1.82	3.19
Whitehorse	0.07	-0.07	0.00
Longview (Mixed Use)	0.12	-0.70	-0.58
Total	6.11	-5.74	0.37

Phasing

Sheet A highlights the phasing plan.

Phase-1 consists of three residential lots along Whitehorse Drive. This road is completed and includes all utility services in the roadway. Development of these lots would require street cuts to connect water and sewer stubs.

Phase-2 consists of the parcel south of Faas Ranch Road. In general, the phasing plan is developed to accommodate the construction of sanitary sewer and storm sewer from the lower elevation portion of the project to the upper elevation areas. The low elevation for both sewers originate in the south east corner of the property.

Phase-3 consists of the commercial and multifamily housing as sanitary sewer would be extended uphill to the north.

Phases-4 & 5 consist of the residential phases that could be developed with the extension of utilities to the north.

Drainage

The subject parcels are not within any floodplain boundaries. These lands historically consisted of both native vegetation and flood irrigated pastures. The parcels are on a topographic drainage divide with flows directed either to the west towards Castle Valley Boulevard or to the east towards the golf course and gully (Lakota Canyon) that ultimately discharges to the Colorado River. There are limited off site basins that contribute flow to the subject parcels. Existing and proposed drainage improvements are shown on the engineering drawings. Attached as Appendix A is a detailed drainage analysis report that documents historic conditions, developed flows, and mitigation of developed runoff peak flows to be maintained at or below historic conditions.

The drainage plan utilizes stormwater piping and inlets along Lakota Drive and through the southern parcel to collect and safely deliver water to Lakota Canyon. Detailed stormwater piping around the commercial facilities and multifamily areas is not included in the preliminary plan as these parcels will develop site specific grading and drainage plans as part of their site plan development requirements. These parcels will have access to the stormwater infrastructure and project mitigation for detention and stormwater quality. Drainage towards Castle Valley Boulevard is mitigated through a regional detention facility (Detention Pond D) constructed as part of the adjacent Black Hawk filing to the west. The detention pond is proposed to be adjusted in location to accommodate the project development plans. An open channel swale will convey flows that originate in Whitehorse Drive to the north. The swale will parallel an open space corridor and trail.

Roads

See Traffic engineering report by Fox Tuttle Transportation Group for detailed traffic study analysis. Details on road profiles, signage, striping plan, and road sections are shown on the engineering construction drawings. All roads and parking lot travel lanes were analyzed for turning movements sufficient to pass fire response Ladder trucks and WB-40 vehicles.

Lakota Drive was originally identified as a local residential road in the master plan. The preliminary road design includes 40-feet of paved width to accommodate 12-foot travel lanes and 8-foot parallel parking on each side of the road. This street size is similar to a collector street dimensions. Larger 5-foot sidewalks are provided each side and undulating landscape islands at intersections which will minimize pedestrian crosswalk lengths and improve aesthetics. The proposed right of way alignment is being slightly altered and increased from 50-feet to 55-feet (Sheet A). The profile is shown on the construction drawings. The grade from the existing Lakota Drive to Faas Ranch Road averages 6%. The preliminary design provides a 4% grade at for distances within 25-feet of intersections as outlined in the design standards for the original PUD application. Flattening the intersection increases the grade above 6% in other sections of the road but stays under 10% design guidelines.

Drive A & Drive B

These roads are designed as a private road with 24-feet of paved driving width. No parking or sidewalks are included and are to be private drives.

Potable Water Supply

The subject development parcels are surrounded by water mains constructed as part of earlier phases. Faas Ranch Road has a 10-inch supply line constructed with Filing 2. This pipeline is tied into the Castle Valley Boulevard water main that is fed by the Castle Valley Ranch water tank and is referred to as the lower pressure zone. A concrete vault was found in Faas ranch Road with the water line running through the vault. It is assumed this vault could've been installed for a possible Pressure Reducing Valve. The upper pressure zone is supplied by the Lakota water tank and feeds water mains in Whitehorse Drive and Blackhawk including a stub to the fire station. The water supply plan is to interconnect an 8" pipeline from Whitehorse Drive to Faas Ranch Road. A pressure reducing valve will be required to allow the interconnect. The final PRV location will be determined at final construction design and will be dictated by input from the Town Engineer using the existing water system model. The interconnect will provide increased storage supplies and redundancy in supply alternatives for this new phase as well as the existing Filing 2. Negligible pressure reductions will occur under normal water use demands due to the large mains, looped delivery systems, and the dual pressure zone supplies.

The Town's water system model can also verify the fire flows are greater than the 2,000 gpm utilized in the master planning design for Lakota Canyon ranch PUD. The Preliminary Plan also includes looped water lines through the private drives to the single family residences. The higher density multi-family and commercial lots include looped lines for fire hydrant supply around the buildings.

EQR Estimates

For purpose of calculating water and sewer loading, an estimate of Equivalent Residential Units (EQR's) was made following Town Municipal Code requirements for determining tap fees (due at building permit application). The analysis was made at sketch plan submittal and is conservatively high because unit counts have decreased. The method used by the Town establishes the water use by a single-family home (EQR) as 3.5 people using 100 gallons per day each and the outside irrigation of 2,500 square feet. Using minor reductions for multi-family structures and engineers estimates of commercial development use, the total EQR's for the project are 220.

Water and Sewer Estimates

Water demands during the non-irrigation season are about 77,000 gallons per day (gpd), or 54 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring are about 165,000 gallons per day (gpd), or 115 gallons per minute (gpm). Sewer loading estimates are 73,300 gpd. The loading shows that the project flows are much lower than the capacity associated with the minimum sizing of pipes used in the Town Code and allotted for in the master planning of the Lakota Canyon Ranch infrastructure. These loading estimates are very conservatively high as the EQR approach

greatly overestimates water use which is appropriate when sizing water and sewer pipeline infrastructure.

For purposes of estimating loading with respect to water and sewer plant capacities, the actual loads will be considerably smaller. The project water use will be considerably less for both inside and outside uses. Population changes and advances in conservation through plumbing codes has greatly reduced indoor water uses. Furthermore, average single family home populations are lower at 2.65 per home versus 3.5 used in the past. Per capita water use is also down to 58.6 gpd versus 100 gpd used currently. Average use per household is now 138 gpd and the typical single family home indoor uses average 155 gpd which is 44% of the 350 gpd currently used in the town EQR method. The outside irrigation component using the EQR method does not equitably estimate higher density and commercial projects that typically have significantly less irrigated area. For example, using the EQR approach the irrigated area of the project is 12.2 acres where the maximum landscaping area of the project (non-impervious) was measured to be ± 7 acres.

Our engineers estimate of water and sewer loading using project specific data and modern water use per capita data shows water demands during the non-irrigation season are about 33,000 gpd, or 23 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring is about 82,000 gpd, or 57 gpm. Sewer loading estimates are 31,200 gpd.

Sanitary Sewer

The Sewer Master Plan shows a trunk line running from the northern project area Roundup Drive (from Whitehorse Village) routed to the south on the future Lakota Drive to the sewer main in Castle Valley Boulevard. The sewer from Whitehorse Village did not construct improvements through the subject parcels (Lakota Drive) and instead was able to extend sewer to Blackhawk Drive. This means the subject parcels are not encumbered by the previous "Sewer E" alignment and the new sewer system was designed to match the land development layout. Note that the "Sewer F" line from the Faas Ranch Road homes does cross the southeastern corner of the project. Surveying was completed during snow cover and the exact location of the sewer could not be determined. Site inspection reveal that the sewer could be constructed different than the engineering design drawings and should be located prior to final design.

Raw Water

The golf course back up supply pipeline (6"-PVC) runs through the subject parcels south of Whitehorse Village and will require relocation to accommodate the new residential lot layout.

Soils

Site specific geotechnical engineering investigations are being pursued and were not available at the time of Preliminary Plan submittal. The developability of these lots with respect to geologic conditions, hazards, and preliminary foundation design been included in past studies as part of the original PUD approvals and the surrounding Filings. Past studies are attached in Appendix C. Site specific geotechnical engineering and foundation design by a structural engineer is the common practice at the

PUD and is recommended to be a plat note on the Final Plat. These past studies and our past experience in this area of Lakota indicates that the soils in the subject parcels are higher quality than other project soils and will likely not need intensive mitigation efforts related to infrastructure and structure foundation construction. The road design sections for the surrounding filings (Faas ranch Rd, Clubhouse Drive, Blackhawk Drive, Whitehorse Drive have utilized on average 3-inches of asphalt on 8-inches of Class 6 aggregate base. These roads have all performed well and the improvements at Longview are anticipated to have similar sections. Final road sections will be based on the geotechnical recommendations and incorporated into the construction drawings.

If you have any questions, please do not hesitate to call 970-625-4933.

Sincerely,



Christopher Manera, P.E.

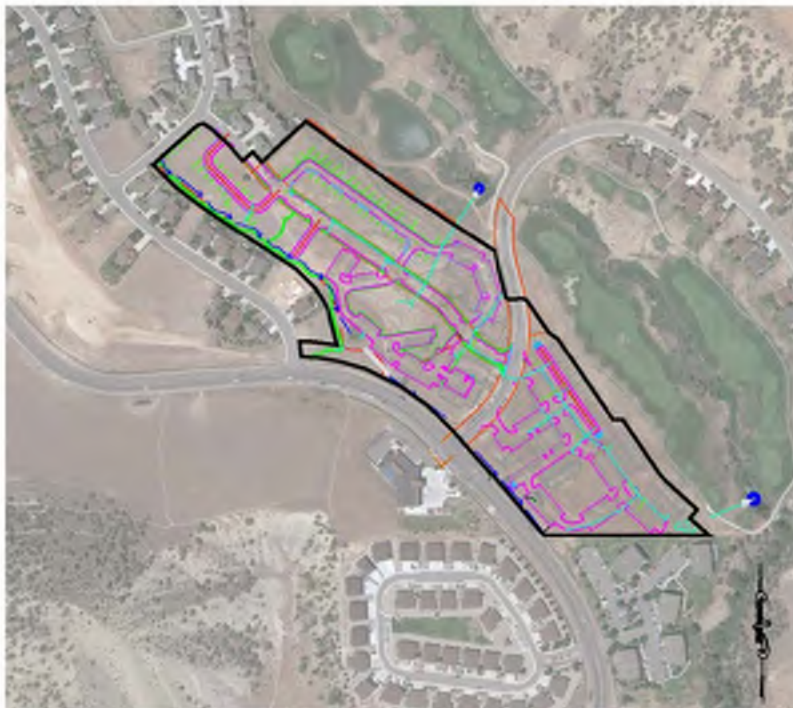
APPENDIX A

The Longview at Lakota Canyon Ranch PUD Drainage Report

April 5, 2022

Prepared for:

The Romero Group, LLC



Prepared By:

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CRE Job#1219.2

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ENGINEERING
INCORPORATED



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List of Attachments

Figure 1 – Drainage Overview

Figure 2 – Drainage Basins

Figure 3 – Proposed Drainage Infrastructure

Appendix A – NRCS Soils Information & NOAA Rainfall Data

Appendix B – Hydrology Calculations

Appendix C – Blackhawk II Drainage Analysis

INTRODUCTION

The Longview at Lakota Canyon Ranch PUD, Mixed Use development is a ±17.9-acre project with commercial and residential uses located in the Town of Newcastle, CO. The project is situated along the east and north sides of Castle Valley Boulevard in the southeast corner of the Lakota Canyon Ranch Planned Unit Development (PUD). This report summarizes the drainage analysis, storm drain design, and mitigation of increased runoff flows from the proposed developed improvements. Past studies include drainage analysis originally performed by Enartech Inc. dated July 2002 as well as subsequent analyses completed Colorado River Engineering, Inc. (CRE) for surrounding filings including Whitehorse Village and Blackhawk Drive upstream and tributary to this project. Drainage basin labeling will remain the same for offsite basins from the previous Blackhawk II Amended Drainage Plan Analysis prepared by CRE consistency. This project is not located in or near any regulated 100-year Floodplain. The golf course is adjacent to the project along the eastern boundary and serves as the primary tributary stream and watershed.

This report was prepared to support a Preliminary Plan application through the Town of New Castle and provides the stormwater design flows to be used for future final design. The analyses include preliminary design of stormwater conveyance structures which will be updated when final design of the phased project is completed.

PROJECT AREA DESCRIPTION

The project drainage basin boundary is a total of ±32.4-acres with offsite basins upstream extending to the intersection of Blackhawk Drive and Clubhouse Drive (See Figure 1). Detention Pond “D” was built on the Longview property as a part of a regional detention pond and coincided with the construction of Filing 3 (Blackhawk Drive). Pond D will be modified to accommodate project specific criteria to mitigate storm runoff to pre development conditions and provide water quality treatment. There are three locations where stormwater will be discharged off-site identified as Points of Concentration A, B & C. Point of Concentration A (PC-A) discharges to a roadside swale along Castle Valley Boulevard in the southeast corner of the project. PC-B & PC-C both discharge to the PUD’s major drainage referred to in this report as “Lakota Canyon”. This drainage runs through the project from north to south ultimately discharging into the Colorado River.

No new detention ponds are proposed to reduce stormwater peak flow rates for PC-B or PC-C due to excess detention credits that exist resulting from construction of the golf course and previous filings at Lakota. The original drainage report for the PUD and Plat for Filing 1, which includes the golf course, was previously prepared by Enartech Engineers, dated July 2002, and will be referred to as the Enartech report. The second drainage report that included Longview basins was prepared by High Country Engineering entitled “Golf Course Drainage Calculations”, dated December 2002. Our references to this report will be called the HCE report. The HCE

analysis included the golf course (Enertech's Basin C). The report states on page 1, "Enartech has determined that the existing conditions 25-year historic flow from the site is 171.77 cfs." "Since the 25-year post development flows will only be 39.27 cfs based on Filing 2 construction and the golf course construction, it can be stated that there will be no adverse effects to the downstream and adjacent property owners during the 25-year storm event." Using the previously approved analyses, the calculated remaining capacity is 132.5 cfs, draining south from the golf course and out of basin C onto downstream property (171.77 historic – 39.27 HCE filing 2 & golf course).

Longview PC-B and PC-C are all part of the original Basin C in the Enartech Report. In this design, water in Basin C will stay in its historic watershed discharging into the golf course and "Lakota Canyon". There will not be any increase in historic runoff to downstream properties. This was recognized in the HCE report with approximately 132.5-cfs reduction of flow in Lakota Canyon from the golf course and PUD improvements. Therefore, there is no need to build additional storm water detention ponds for Longview. All hydrology calculations are based on the 25-year storm frequency in accordance with the Town of New Castle design standards.

Existing Conditions Drainage Basins (Figure 2)

Whitehorse Village Basin: Consists of the lots along the east side of Blackhawk Drive north of Whitehorse Drive along with half of the roadway and one housing "6-pack" of Whitehorse Village. Inlets in Whitehorse Drive and 15-in. culvert discharge to a swale conveying drainage to Detention Pond D.

Blackhawk I Basin: Consists of the portion of the lots along the west side of Blackhawk Drive and half of the roadway. Existing storm inlets near the intersection of Blackhawk Dr. and Castle Valley Blvd. capture flows into an 18-in pipe that discharges to Detention Pond D.

Blackhawk II Basin: Portion of lots along west side of Blackhawk Drive, open space area, and half of Castle Valley Blvd roadway. Existing storm drain pipe conveys flow into to Detention Pond D.

Blackhawk III Basin: The lots along the east side of Blackhawk Drive and half of the adjacent roadway. Existing storm drain inlets and pipe discharge to Detention Pond D.

[Proposed Drainage Basins \(Figure 2\)](#)

W-1 Basin: Basins named “W” flow to the west and end up at Point of Concentration A (PC-A). W-1 consists of the portion of the new development that flows to Detention Pond D. The basin includes residential housing on the north side and commercial buildings with parking areas on the south side. Access roads and driveways are included. A meandering trail system along the western property edge will have an adjacent bio-swale, capturing drainage and serving as a water quality feature. Storm drain inlets and pipe will convey water to Detention Pond D. Whitehorse Village Basin discharges through a culvert crossing Whitehorse Drive and will be conveyed through the bio-swale to Detention Pond D.

W-2 Basin: This basin is primarily open space below Detention Pond D and includes half of Castle Valley Boulevard. This basin is conveyed across Faas Ranch Road with an existing 15-in. diameter pipe.

W-3 Basin: This is directly downstream of W-2 and includes the open space and half of Castle Valley Boulevard.

Detention Pond D: Detention Pond D was built during Blackhawk Filing 3 phase and will continue to serve to mitigate the peak developed runoff down to historic conditions for the 25-year, 24-hour storm event. The Whitehorse Village, Blackhawk, and W-1 basins are all tributary to Detention Pond D. The existing concrete outlet structure has a 6-in. diameter orifice plate and 12-in. diameter outlet pipe. The existing pond will be re-graded, new orifice plate installed, and the inlet and outlet pipes will be re-installed at new grades. A reduction in volume is allowed for this pond because less area is being collected by Pond D due to site grading that will direct flow to Lakota Canyon drainage. Attached for reference, see the Blackhawk II, Amended Drainage Analysis prepared by Colorado River Engineering, Aug. 31st 2004 provided in Appx C.

E-1 Basin: The basins named “E” flow to the east into the Lakota Canyon along the golf course where no detention is required. This basin starts at the intersection of Whitehorse Drive and includes the majority of Lakota Drive through the north portion of the project. Multi-family housing, commercial buildings, looped access road, and driveways are included. Storm inlets along Lakota Drive will be served by an 18-in. diameter pipe discharging to near the bottom of the adjacent Lakota Canyon upstream of Faas Ranch Road.

E-2 Basin: This basin is located downstream of basin E-1 and includes commercial buildings, parking areas, and a portion of Faas Ranch Road. There is an existing inlet and pipe serving Faas Ranch Road that will be removed and replaced when the intersection of Faas Ranch Road and

Lakota Drive is built. Inlets and storm pipe will serve to drain this basin and will be routed through Basin E-3.

E-3 Basin: This basin is located in the southeast corner (furthest downstream) and contains primarily commercial development, apartments, and park areas. A 24-in. diameter pipe will serve as the primary stormwater conductor through the lower part of the basin and reducing to 18-in. upstream. Several branches of smaller pipes and inlets will serve to drain parking areas and buildings. The pipe will discharge into water quality treatment ponds to be located between the project and the existing golf course ponds in Lakota Canyon. The new treatment ponds and discharge structure to dissipate energy will be designed at Final Plat submittal.

RUNOFF CALCULATIONS

METHODOLOGY

The peak runoff flows for this analysis were determined using HydroCAD 10.00 stormwater modeling program which utilizes the methodology given in the Soil Conservation Service’s “Technical Release No. 20, Urban Hydrology”. Input includes precipitation, land use cover and soil characteristics, basin size, and time of concentration.

Precipitation

Design criteria for the project examined discharge rate and volume for the 2-year, 25-year, and 100-year frequency, 24 hour storm event. Design criteria mitigated flows for the 25-year event. NOAA atlas precipitation frequency estimates (**Appendix A**) for the project area were used as summarized in **Table 1**:

*Table 1
Precipitation Frequencies
NOAA Atlas 14*

Storm Frequency (years)	Duration (hours)	Rainfall (inches)
2	24	1.17
25	24	1.98
100	24	2.50

Soils & Curve Numbers

Soil properties were obtained from the Soil Conservation Service, USDA Web Soil Survey. 97% of the soils are Potts-Ildefonso complex with hydraulic rating C. The southeast corner of the project containing Basins W-1 through 3 consists of Ildefonso-Lazear complex with hydraulic rating A.

These hydraulic ratings are used to determine the runoff curve numbers. Soils information can be found in Appendix A attached. The type of ground cover and density also affect the runoff

volume on the site. The ground cover consists of native range, landscaped grass areas, impervious form road and sidewalks, and dirt roads or parking areas. Given this information the following curve numbers (CN) based on soil type and ground cover were used for the analysis for each of the basins:

Table 2 - Curve Numbers

CN	Description
98	Paved Roads, Parking Areas, Buildings, Trail
79	Pasture/grassland/Range Fair Condition "C"
74	>75% Grass cover "C"
61	>75% Grass cover "B"
39	>75% Grass cover "A"
69	Open Space
83	1/4 acre lots "C"
80	1/3 acre lots "C"

Time of concentration was calculated by the flow path of each basin. Model output results can be found in Appendix B and are summarized below in Table 3:

Peak Runoff Flows

*Table 3
Basin Characteristics and Flow Calculations*

Basin	Area (Acres)	Curve Number (weighted)	Time of Concentration (min)	Q25 (CFS)	Tributary to POND-D	Point of Concentration
White Horse Village	4.00	86	8.3	5.40	√	A
Blackhawk I	2.92	85	12	3.20	√	A
Blackhawk II	3.48	75	12	1.54	√	A
Blackhawk III	2.67	83	6	3.15	√	A
W1	3.07	85	18.3	2.73	√	A
W2	1.68	83	14.1	1.47		B
W3	0.71	69	6.5	0.17		C
E1	5.19	88	4	9.27		B
E2	3.01	94	2.8	7.63		C
E3	6.07	89	7.8	10.11		C
E1 Historic	5.19	79	13.1	3.35		B
E2 Historic	3.01	79	9.1	2.27		C
E3 Historic	5.10	79	11.7	3.48		C

The historic peak runoff flows from the original Enartech analysis for PC-A had a flow of 4.14-cfs. Detention Pond D was sized such that its outflow combined with the other contributing basins will be less than the historic amount, as Shown in Table 4.

*Table 4
 Peak Runoff Flows at Point of Concentration*

Point of Concentration	Q25 Historic¹ (CFS)	Q25 Developed (CFS)
A	4.14	3.63
B	3.35	8.68
C	5.75	15.8

1/Note: Q at PC-B & PC-C are only contributing flows from Longview basins and not the totals for the entire basins.

The historic and developed flows in Table 4 for PC-B and PC-C show the runoff amounts contributed from the basins in the Longview project to show the relative increase from the development. The increases are minor when compared to the excess credits available identified in the HCE reports.

Improvements - Point of Concentration A & Detention Pond D

The roadside swale along the north side of Castle Valley Boulevard at the southwest corner of the project is the discharge point for PC-A. Detention Pond D has an inflow of 10.69-cfs and an outflow of 3.38-cfs, allowing developed flows to be mitigated to less than the historic flows of 4.14-cfs. The improvements to Detention Pond D include re-grading, outlet structure relocation, new orifice plate installation, outlet pipe replacement, and inlet pipe replacement. The existing pond will be relocated to accommodate the grading plans of the project. The existing outlet structure intake is a 4-foot rectangular concrete box 4-foot tall. A steel orifice plate at the invert serving as the primary outlet to restrict outflow. A steel grate on top serving as the secondary outlet in the event the orifice plate becomes plugged.

The existing 6-inch diameter orifice plate will be replaced with an 8-inch diameter plate. During the 25-year storm event, the water elevation in Pond D will reach a max height of 5703.88-foot elevation which is below the secondary outlet height of 5704.00-feet, after a 6" riser is installed on the outlet structure. If a storm event larger than the 25-year event occurs, or if the orifice plate becomes plugged with debris, the secondary outlet on top of the structure is a 3' x 3' opening with a steel grate and will serve to convey storm water into the 12-inch diameter outlet pipe. An emergency overflow spillway channel has also been provided in the top of the dam in the possible event that both outlets on the structure become plugged, submerged, and the outlet pipe reaches capacity. The overflow channel will be rip-rap lined for erosion protection of the downstream dam slope, conveying storm water to the outlet pipe discharge location.

Point of Concentration B

Basin E-1 will be captured by storm drain infrastructure in Lakota Drive. The Lakota Drive roadway serves as the main conductor of drainage water with vertical curbs on each side. Inlet structures

will be placed to capture water at a minimum to allow one lane of traffic to be open during 25-year storm events. The inlets will convey water to an 18-inch diameter pipeline that discharges to Lakota Canyon. The 18-inch diameter pipe will be operating at 60% capacity during a 25-year storm event which conservatively allows 40% plugging or larger storm events. PC-B discharge location is upstream of Faas Ranch Road. A new water quality treatment pond is proposed to capture sediment, floatables, and debris from new development. The ponds will be constructed on golf course property between the pipe outfall and the existing Lakota Canyon. A rip-rap channel sized for the storm flow velocity will be installed for erosion protection. No detention is required for this area due to storm water credits on the Lakota Ranch Development upstream of this area.

Point of Concentration C

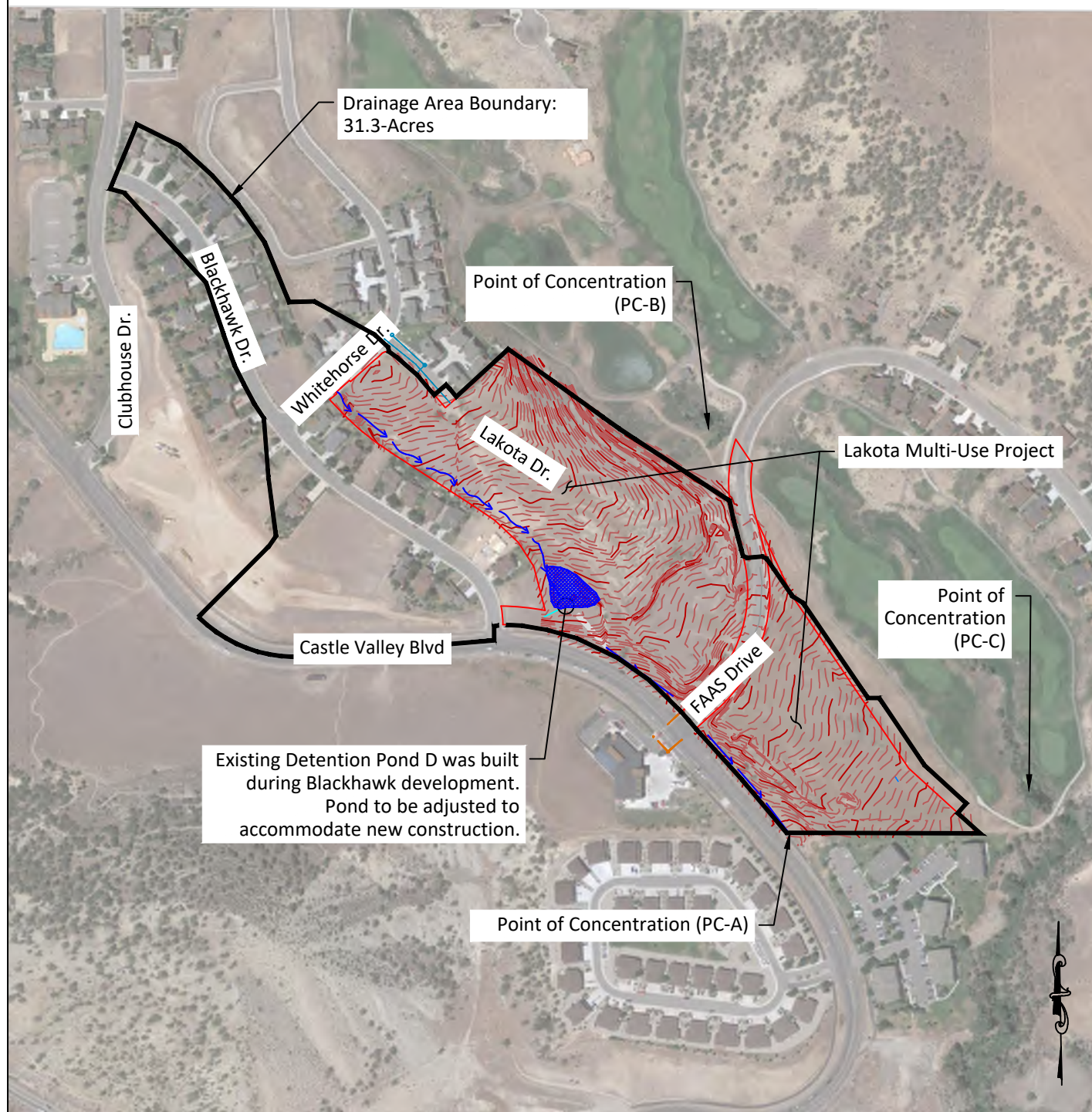
Basin E-2 & E-3 will be discharged at PC-B which is also located in the golf course drainage Lakota Canyon. A 24-inch diameter pipeline will extend from the discharge location upstream and connect to inlet structures as well as pipe stubs to connect to roof gutter services for buildings. The pipe will be reduced to 18-in. prior to crossing Faas Ranch Road and serve Basin E-2 and a portion of Faas Ranch Road. Both the 24-inch and 18-inch pipes will be operating at 60% capacity during a 25-year storm event which conservatively allows 40% plugging or excess capacity for larger storm events. New water quality treatment ponds are proposed to capture sediment, floatables, and debris from new development. The ponds will be constructed on golf course property between the pipe outfall and the existing pond in the golf course along Lakota Canyon will serve as water quality settlement and mitigation. A rip-rap channel sized for the storm flow velocity will be installed for erosion protection. No detention is required for this area due to storm water credits created by existing ponds on the Lakota Ranch Development upstream of this area.

Stormwater Treatment for Water Quality

The inlet structures onsite will have a 12-in sump to help capture solids as an initial treatment. Storm flows reaching PC-B & C will be discharged to new treatment ponds in the golf course drainage which will settle out suspended solids and help capture floatable pollutants. Lakota Canyon is highly vegetated and will slow down flow rates and provide natural water treatment to further mitigate pollutants prior to discharging offsite. For storm flows reaching PC-A, a bio-swale will be constructed along the western boundary of the project upstream of Detention Pond D. The bio-swale will be a heavily vegetated channel winding along the proposed trail and discharges into Detention Pond D. Detention Pond D will serve to slow down flows, settle out dissolved solids, and capture floatable pollutants. Detention Pond D will continue to discharge to the roadside swale along Castle Valley Boulevard, as it has done historically. Downstream of Pond D, the only areas being served by the roadside swale are open space or landscaped areas.

SUMMARY

This report summarizes the drainage analysis of the Longview development at Lakota Canyon Ranch PUD Multi-Use Project. The proposed Detention Pond D improvements described herein will serve to mitigate peak flow rates for the 25-year, 24-hour event down to historic levels and provide stormwater quality structures to remove pollutants prior to discharging to the receiving waterways. Stormwater pipe and inlet structures are proposed to collect runoff internal to the project and convey it to Lakota Canyon. Proposed commercial and multifamily development can connect to the storm system and no additional detention is required for lots developed within the project. Design of hydraulic structures including pipeline and stormwater inlets will be completed as part of final engineering construction documents.



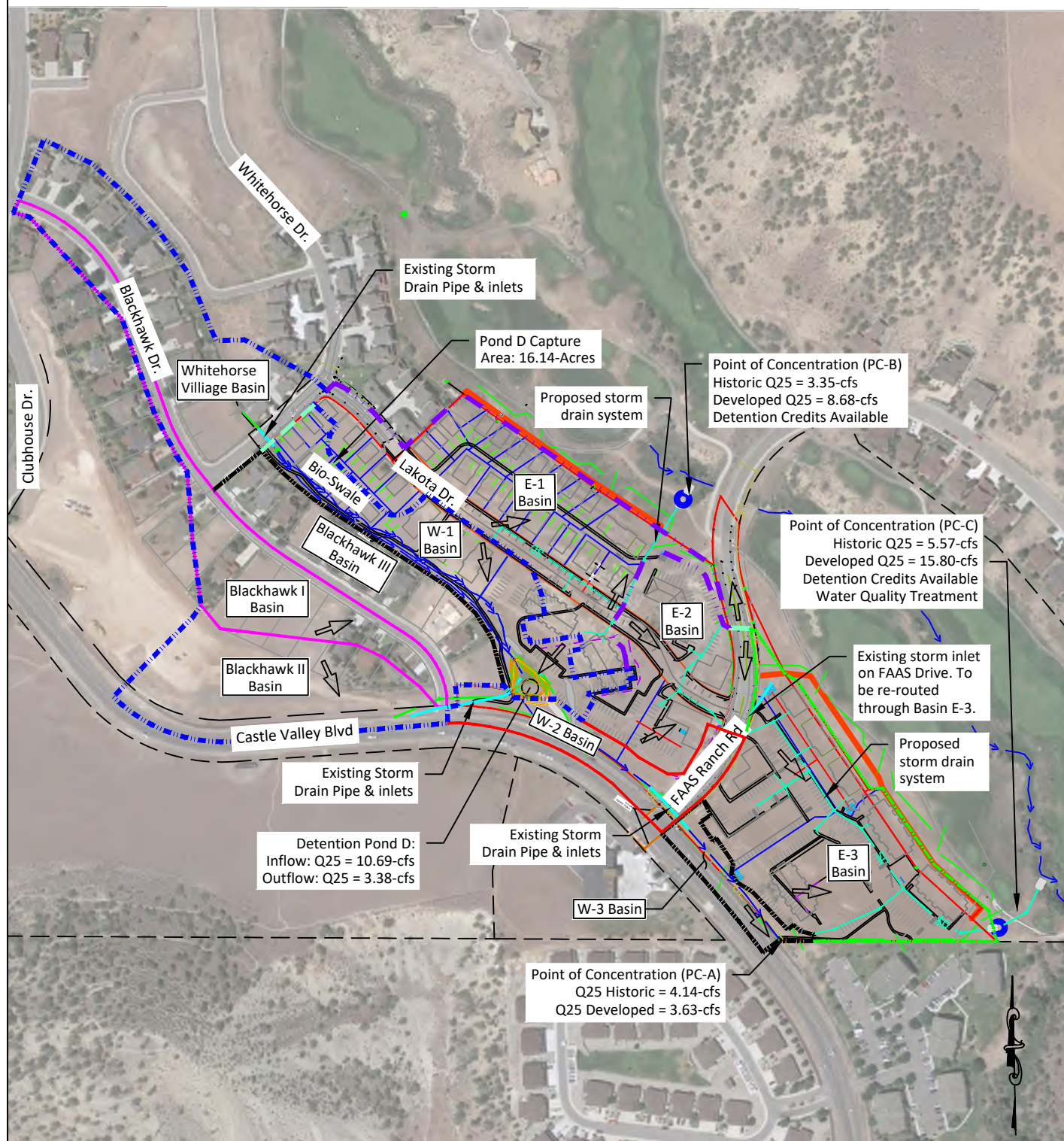
PO Box 1301
 Rifle, CO 81650
 Tel 970-625-4933

Drainage Overview Lakota Canyon Ranch PUD

Figure:

1

File Name: Drainage CRE Design - Lakota Mixed Use	Job No: 1219.02	Client: The Romero Group, LLC
Drawn by: EB	Approved by: CM	

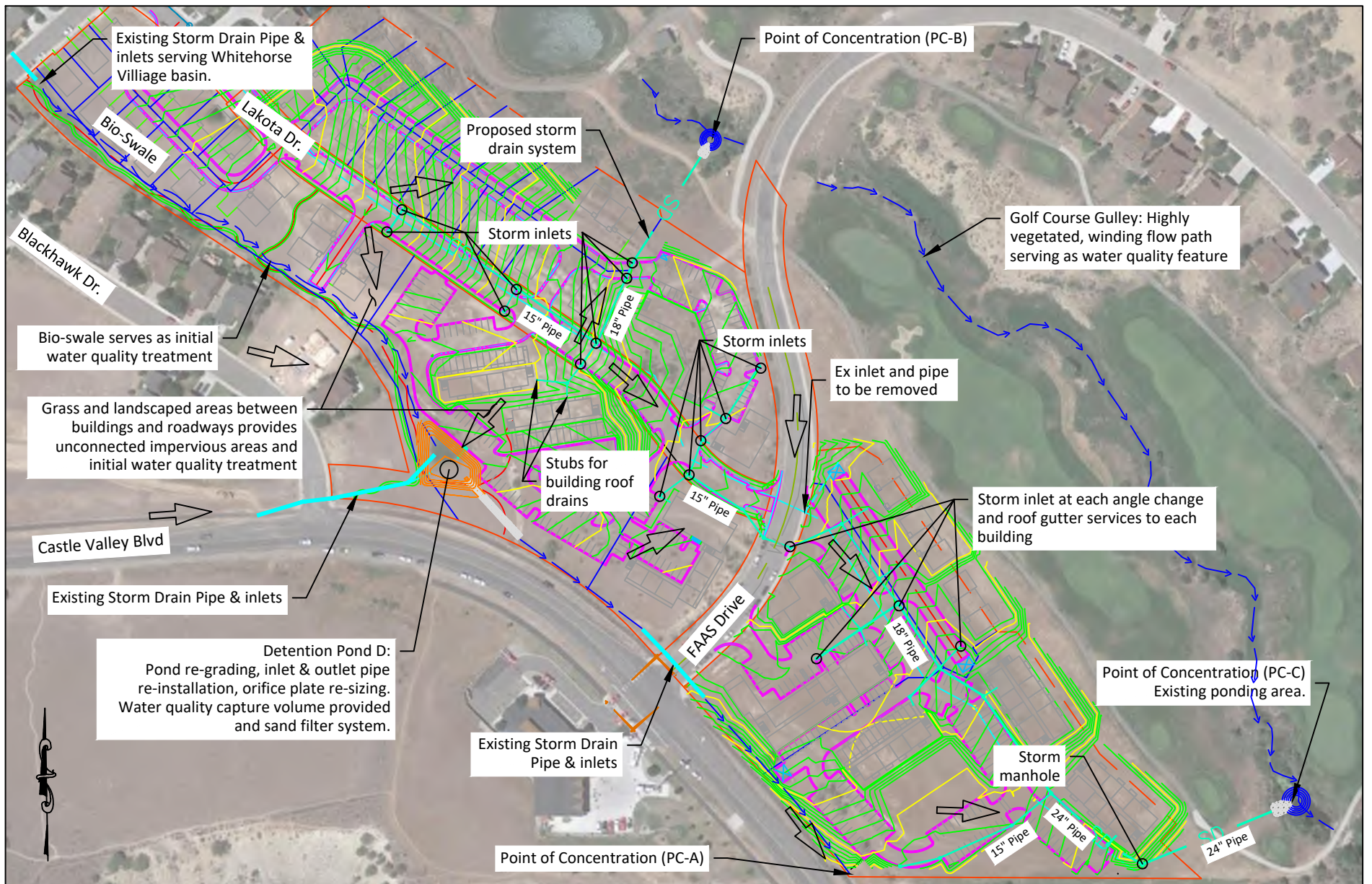


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Drainage Basins Lakota Canyon Ranch PUD

Figure:
2

File Name: Drainage CRE Design - Lakota Mixed Use	Job No: 1219.02	Client: The Romero Group, LLC
Drawn by: EB	Approved by: CM	



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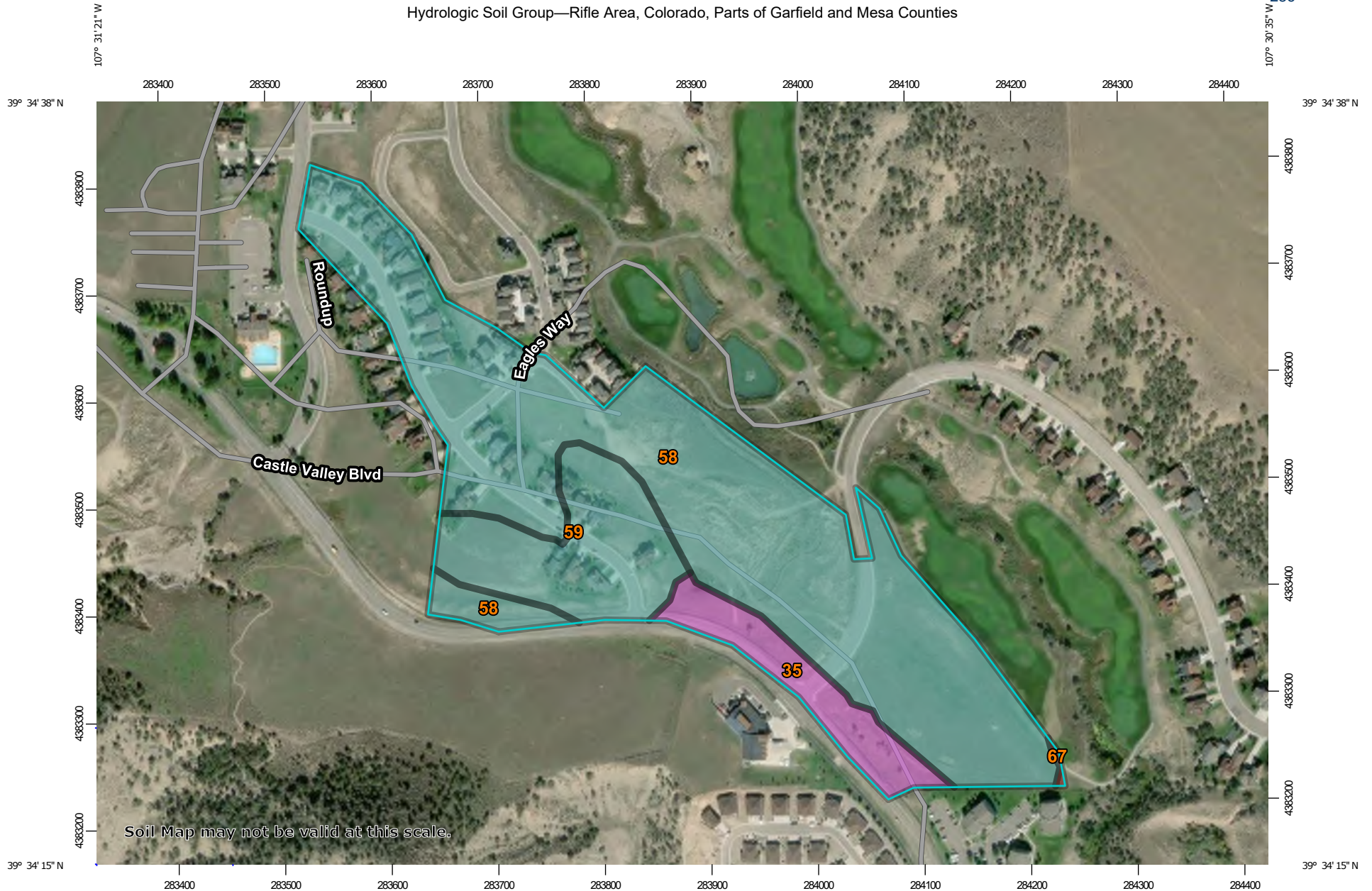
Proposed Drainage Infrastructure Lakota Canyon Ranch PUD

Figure:
3

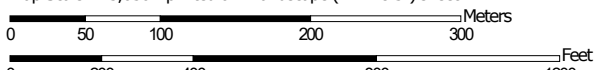
File Name: Drainage CRE Design - Lakota Canyon Ranch PUD 19.2		Client:
Drawn by: EB	Approved by: CM	The Romero Group, LLC
Date: 3/4/22		

APPENDIX A
NRCS Soils Information
&
NOAA Rainfall Data.

Hydrologic Soil Group—Rifle Area, Colorado, Parts of Garfield and Mesa Counties



































Map Scale: 1:5,030 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84



MAP LEGEND

- Area of Interest (AOI)**
 -  Area of Interest (AOI)
- Soils**
 - Soil Rating Polygons**
 -  A
 -  A/D
 -  B
 -  B/D
 -  C
 -  C/D
 -  D
 -  Not rated or not available
 - Soil Rating Lines**
 -  A
 -  A/D
 -  B
 -  B/D
 -  C
 -  C/D
 -  D
 -  Not rated or not available
 - Soil Rating Points**
 -  A
 -  A/D
 -  B
 -  B/D
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads
- Background**
 -  Aerial Photography
- Other**
 -  C
 -  C/D
 -  D
 -  Not rated or not available

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.
 Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
 Survey Area Data: Version 14, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 14, 2010—Nov 1, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35	Ildefonso-Lazear complex, 6 to 65 percent slopes	A	3.0	9.0%
58	Potts-Ildefonso complex, 12 to 25 percent slopes	C	24.5	74.1%
59	Potts-Ildefonso complex, 25 to 45 percent slopes	C	5.6	16.8%
67	Torriorhents-Rock outcrop complex, steep	D	0.0	0.1%
Totals for Area of Interest			33.1	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



General Information

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Precipitation Frequency

- Data Server
- GIS Grids
- Maps
- Time Series
- Temporals
- Documents

Probable Maximum Precipitation

- Documents

Miscellaneous

- Publications
- Storm Analysis
- Record Precipitation

Contact Us

- Inquiries



NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: CO

Data description

Data type: Precipitation depth Units: English Time series type: Partial duration

Select location

1) Manually:

a) By location (decimal degrees, use "-" for S and W): Latitude: Longitude:

b) By station (list of CO stations): Select station

c) By address

2) Use map (if ESRI interactive map is not loading, try adding the host: <https://is.arcois.com/> to the firewall, or contact us at hds.c.questions@noaa.gov):

a) Select location
Move crosshair or double click

b) Click on station icon
 Show stations on map

Location information:
Name: New Castle, Colorado, USA
Latitude: 39.5742°
Longitude: -107.5161°
Elevation: 5771.33 ft **

* Source: ESRI Maps
 ** Source: USGS

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES
 WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
 NOAA Atlas 14, Volume 8, Version 2

[PF tabular](#)

[PF graphical](#)

[Supplementary information](#)

[Print page](#)

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.124 (0.097-0.159)	0.164 (0.128-0.211)	0.232 (0.180-0.299)	0.289 (0.224-0.375)	0.371 (0.277-0.502)	0.435 (0.318-0.599)	0.501 (0.353-0.710)	0.570 (0.385-0.834)	0.663 (0.431-1.00)	0.736 (0.466-1.13)
10-min	0.182 (0.142-0.233)	0.241 (0.188-0.309)	0.339 (0.264-0.437)	0.424 (0.328-0.549)	0.543 (0.406-0.736)	0.637 (0.465-0.877)	0.734 (0.518-1.04)	0.835 (0.564-1.22)	0.971 (0.631-1.47)	1.08 (0.682-1.65)
15-min	0.222 (0.173-0.285)	0.294 (0.229-0.377)	0.414 (0.322-0.534)	0.516 (0.400-0.669)	0.662 (0.495-0.897)	0.777 (0.567-1.07)	0.895 (0.631-1.27)	1.02 (0.688-1.49)	1.18 (0.770-1.79)	1.31 (0.832-2.02)
30-min	0.286 (0.223-0.366)	0.382 (0.298-0.491)	0.541 (0.421-0.697)	0.673 (0.521-0.872)	0.856 (0.638-1.15)	0.998 (0.726-1.37)	1.14 (0.802-1.61)	1.29 (0.867-1.87)	1.48 (0.958-2.23)	1.62 (1.03-2.49)
60-min	0.372 (0.291-0.477)	0.474 (0.370-0.609)	0.642 (0.500-0.828)	0.783 (0.606-1.01)	0.979 (0.730-1.32)	1.13 (0.824-1.55)	1.28 (0.904-1.81)	1.44 (0.972-2.10)	1.65 (1.07-2.48)	1.81 (1.14-2.78)
2-hr	0.458 (0.362-0.582)	0.566 (0.446-0.719)	0.744 (0.585-0.949)	0.893 (0.698-1.15)	1.10 (0.830-1.47)	1.26 (0.931-1.71)	1.43 (1.02-1.99)	1.60 (1.09-2.30)	1.82 (1.19-2.71)	1.99 (1.27-3.02)
3-hr	0.535 (0.424-0.675)	0.632 (0.502-0.799)	0.797 (0.630-1.01)	0.937 (0.736-1.19)	1.14 (0.864-1.51)	1.29 (0.961-1.74)	1.46 (1.05-2.02)	1.63 (1.12-2.33)	1.85 (1.23-2.74)	2.03 (1.31-3.05)
6-hr	0.678 (0.544-0.846)	0.776 (0.622-0.970)	0.942 (0.752-1.18)	1.09 (0.861-1.37)	1.29 (0.993-1.69)	1.46 (1.09-1.94)	1.62 (1.18-2.22)	1.80 (1.25-2.54)	2.05 (1.37-2.98)	2.24 (1.45-3.31)
12-hr	0.839	0.963	1.17	1.35	1.61	1.82	2.03	2.25	2.55	2.78

	(0.680-1.04)	(0.779-1.19)	(0.946-1.45)	(1.09-1.69)	(1.25-2.08)	(1.38-2.38)	(1.48-2.74)	(1.58-3.13)	(1.72-3.62)	91	(1.83-4.06)
24-hr	1.02 (0.836-1.25)	1.17 (0.959-1.43)	1.43 (1.17-1.76)	1.66 (1.34-2.04)	1.98 (1.55-2.53)	2.23 (1.71-2.90)	2.50 (1.85-3.34)	2.78 (1.98-3.82)	3.17 (2.16-4.48)		3.47 (2.30-4.98)
2-day	1.22 (1.01-1.48)	1.39 (1.15-1.69)	1.69 (1.39-2.05)	1.95 (1.59-2.37)	2.32 (1.84-2.94)	2.62 (2.04-3.37)	2.94 (2.20-3.88)	3.28 (2.35-4.45)	3.74 (2.58-5.23)		4.11 (2.76-5.82)
3-day	1.35 (1.12-1.61)	1.55 (1.29-1.86)	1.89 (1.56-2.27)	2.18 (1.79-2.64)	2.60 (2.07-3.26)	2.93 (2.29-3.73)	3.28 (2.47-4.28)	3.64 (2.63-4.89)	4.14 (2.87-5.72)		4.52 (3.06-6.34)
4-day	1.45 (1.21-1.73)	1.67 (1.39-2.00)	2.04 (1.70-2.44)	2.35 (1.95-2.84)	2.80 (2.24-3.49)	3.15 (2.47-3.99)	3.51 (2.66-4.56)	3.89 (2.82-5.19)	4.40 (3.07-6.04)		4.79 (3.25-6.68)
7-day	1.74 (1.46-2.06)	1.97 (1.66-2.33)	2.36 (1.98-2.80)	2.69 (2.24-3.21)	3.16 (2.55-3.89)	3.52 (2.78-4.40)	3.90 (2.97-5.00)	4.29 (3.13-5.65)	4.81 (3.38-6.52)		5.22 (3.57-7.18)
10-day	1.99 (1.68-2.34)	2.23 (1.88-2.62)	2.63 (2.21-3.10)	2.96 (2.49-3.51)	3.44 (2.80-4.21)	3.82 (3.03-4.74)	4.20 (3.22-5.35)	4.60 (3.38-6.01)	5.14 (3.64-6.91)		5.56 (3.83-7.58)
20-day	2.67 (2.29-3.11)	2.96 (2.53-3.45)	3.43 (2.93-4.01)	3.83 (3.25-4.49)	4.38 (3.60-5.28)	4.82 (3.86-5.89)	5.25 (4.07-6.57)	5.70 (4.23-7.32)	6.29 (4.50-8.31)		6.75 (4.70-9.06)
30-day	3.24 (2.79-3.74)	3.59 (3.09-4.15)	4.16 (3.57-4.82)	4.63 (3.95-5.39)	5.27 (4.35-6.29)	5.76 (4.64-6.98)	6.25 (4.87-7.74)	6.74 (5.03-8.57)	7.38 (5.30-9.65)		7.86 (5.51-10.5)
45-day	3.95 (3.43-4.53)	4.41 (3.82-5.06)	5.12 (4.42-5.90)	5.70 (4.90-6.59)	6.48 (5.36-7.65)	7.05 (5.71-8.45)	7.61 (5.96-9.33)	8.16 (6.12-10.3)	8.85 (6.39-11.4)		9.36 (6.60-12.3)
60-day	4.57 (3.98-5.22)	5.12 (4.45-5.85)	5.98 (5.19-6.85)	6.66 (5.75-7.66)	7.55 (6.27-8.86)	8.21 (6.67-9.76)	8.82 (6.93-10.7)	9.42 (7.10-11.8)	10.2 (7.36-13.0)		10.7 (7.56-14.0)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in CSV format: [Precipitation frequency estimates](#)

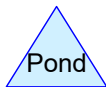
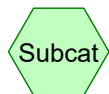
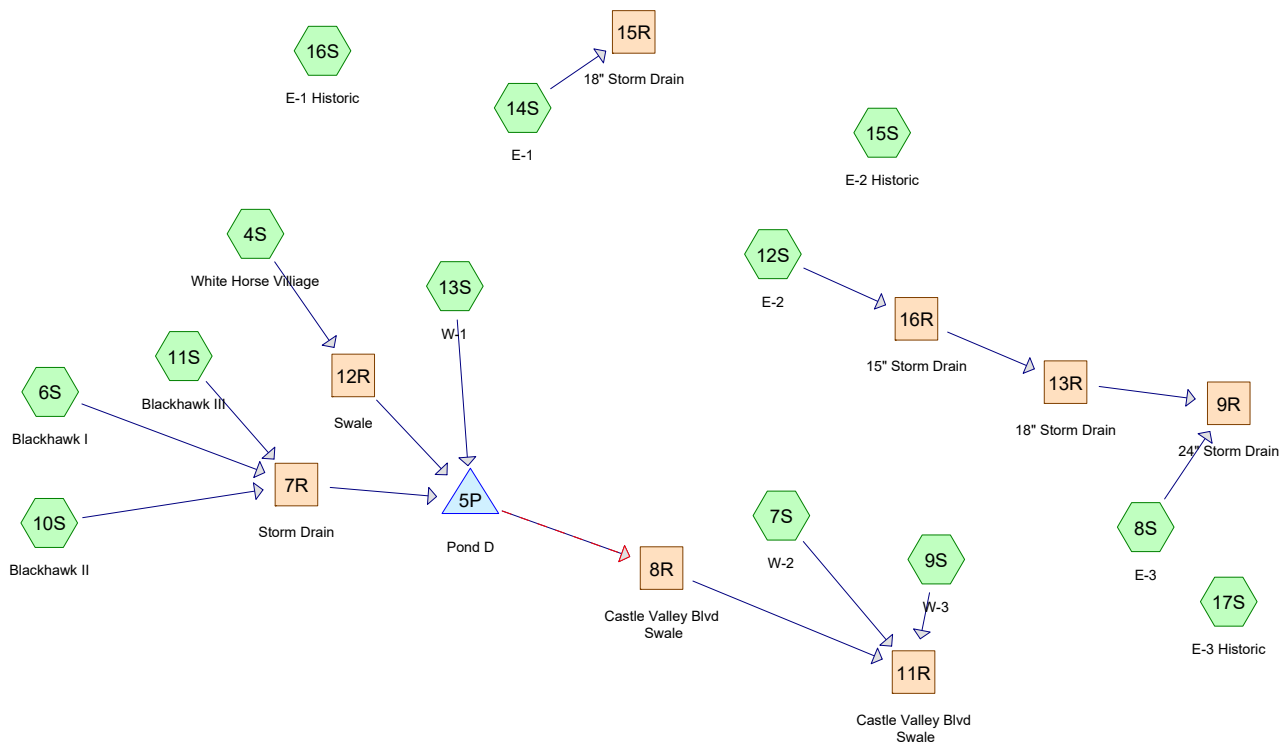
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APPENDIX B
Hydrology Calculations



Routing Diagram for Lakota Multi-use Drainage
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Lakota Multi-use Drainage

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.120	80	1/3 acre lots, 30% imp, HSG C (6S, 10S, 11S)
3.200	83	1/4 acre lots, 38% imp, HSG C (4S)
0.350	39	>75% Grass cover, Good, HSG A (9S)
0.700	61	>75% Grass cover, Good, HSG B (7S)
6.630	74	>75% Grass cover, Good, HSG C (8S, 12S, 13S, 14S)
2.150	98	Buildings (8S, 12S)
1.420	98	Buildings & Driveways (14S)
0.830	98	Castle Valley Blvd (9S, 10S)
2.260	69	Open Space (10S)
13.300	79	Pasture/grassland/range, Fair, HSG C (15S, 16S, 17S)
1.290	98	Roads, Parking, & Buildings (13S)
8.706	98	Roadway (4S, 6S, 7S, 8S, 11S, 12S, 14S)
0.140	98	Trail (13S)
46.096	84	TOTAL AREA

Lakota Multi-use Drainage

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.350	HSG A	9S
0.700	HSG B	7S
28.250	HSG C	4S, 6S, 8S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S
0.000	HSG D	
16.796	Other	4S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S
46.096		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	5.120	0.000	0.000	5.120	1/3 acre lots, 30% imp	6S, 10S, 11S
0.000	0.000	3.200	0.000	0.000	3.200	1/4 acre lots, 38% imp	4S
0.350	0.700	6.630	0.000	0.000	7.680	>75% Grass cover, Good	7S, 8S, 9S, 12S, 13S, 14S
0.000	0.000	0.000	0.000	2.150	2.150	Buildings	8S, 12S
0.000	0.000	0.000	0.000	1.420	1.420	Buildings & Driveways	14S
0.000	0.000	0.000	0.000	0.830	0.830	Castle Valley Blvd	9S, 10S
0.000	0.000	0.000	0.000	2.260	2.260	Open Space	10S
0.000	0.000	13.300	0.000	0.000	13.300	Pasture/grassland/range, Fair	15S, 16S, 17S
0.000	0.000	0.000	0.000	1.290	1.290	Roads, Parking, & Buildings	13S
0.000	0.000	0.000	0.000	8.706	8.706	Roadway	4S, 6S, 7S, 8S, 11S, 12S, 14S
0.000	0.000	0.000	0.000	0.140	0.140	Trail	13S
0.350	0.700	28.250	0.000	16.796	46.096	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	4S	0.00	0.00	40.0	0.0100	0.120	12.0	0.0	0.0
2	7S	0.00	0.00	150.0	0.0300	0.012	12.0	0.0	0.0
3	7R	5,705.00	5,700.00	240.0	0.0208	0.012	18.0	0.0	0.0
4	9R	5,668.00	5,660.00	650.0	0.0123	0.012	24.0	0.0	0.0
5	13R	5,680.00	5,665.00	370.0	0.0405	0.012	18.0	0.0	0.0
6	15R	5,702.00	5,695.00	370.0	0.0189	0.012	18.0	0.0	0.0
7	16R	5,690.00	5,680.00	275.0	0.0364	0.012	15.0	0.0	0.0

Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4S: White Horse Villiage	Runoff Area=4.000 ac 50.40% Impervious Runoff Depth>0.76" Flow Length=1,037' Tc=8.3 min CN=86 Runoff=5.40 cfs 0.254 af
Subcatchment 6S: Blackhawk I	Runoff Area=2.916 ac 49.59% Impervious Runoff Depth>0.71" Tc=12.0 min CN=85 Runoff=3.20 cfs 0.172 af
Subcatchment 7S: W-2	Runoff Area=1.680 ac 58.33% Impervious Runoff Depth>0.61" Flow Length=682' Tc=14.1 min CN=83 Runoff=1.47 cfs 0.086 af
Subcatchment 8S: E-3	Runoff Area=6.070 ac 60.79% Impervious Runoff Depth>0.93" Flow Length=714' Tc=7.8 min CN=89 Runoff=10.11 cfs 0.471 af
Subcatchment 9S: W-3	Runoff Area=0.710 ac 50.70% Impervious Runoff Depth>0.18" Flow Length=371' Slope=0.0300 '/ Tc=6.5 min CN=69 Runoff=0.17 cfs 0.010 af
Subcatchment 10S: Blackhawk II	Runoff Area=3.480 ac 19.97% Impervious Runoff Depth>0.32" Tc=12.0 min CN=75 Runoff=1.54 cfs 0.094 af
Subcatchment 11S: Blackhawk III	Runoff Area=2.670 ac 40.49% Impervious Runoff Depth>0.62" Tc=6.0 min CN=83 Runoff=3.15 cfs 0.137 af
Subcatchment 12S: E-2	Runoff Area=3.010 ac 83.72% Impervious Runoff Depth>1.29" Flow Length=592' Tc=2.8 min CN=94 Runoff=7.63 cfs 0.323 af
Subcatchment 13S: W-1	Runoff Area=3.070 ac 46.58% Impervious Runoff Depth>0.71" Flow Length=889' Tc=18.3 min CN=85 Runoff=2.73 cfs 0.181 af
Subcatchment 14S: E-1	Runoff Area=5.190 ac 59.15% Impervious Runoff Depth>0.87" Flow Length=932' Tc=4.0 min CN=88 Runoff=9.27 cfs 0.377 af
Subcatchment 15S: E-2 Historic	Runoff Area=3.010 ac 0.00% Impervious Runoff Depth>0.45" Flow Length=525' Tc=9.1 min CN=79 Runoff=2.27 cfs 0.114 af
Subcatchment 16S: E-1 Historic	Runoff Area=5.190 ac 0.00% Impervious Runoff Depth>0.45" Flow Length=932' Tc=13.1 min CN=79 Runoff=3.35 cfs 0.196 af
Subcatchment 17S: E-3 Historic	Runoff Area=5.100 ac 0.00% Impervious Runoff Depth>0.45" Flow Length=714' Tc=11.7 min CN=79 Runoff=3.48 cfs 0.193 af
Reach 7R: Storm Drain	Avg. Flow Depth=0.70' Max Vel=8.96 fps Inflow=7.24 cfs 0.403 af 18.0" Round Pipe n=0.012 L=240.0' S=0.0208 '/ Capacity=16.43 cfs Outflow=7.05 cfs 0.403 af
Reach 8R: Castle Valley Blvd Swale	Avg. Flow Depth=0.35' Max Vel=3.13 fps Inflow=3.38 cfs 0.832 af n=0.035 L=967.0' S=0.0336 '/ Capacity=27.70 cfs Outflow=3.37 cfs 0.826 af
Reach 9R: 24" Storm Drain	Avg. Flow Depth=1.12' Max Vel=9.05 fps Inflow=16.53 cfs 0.794 af 24.0" Round Pipe n=0.012 L=650.0' S=0.0123 '/ Capacity=27.19 cfs Outflow=15.80 cfs 0.792 af

Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Reach 11R: Castle Valley Blvd Swale Avg. Flow Depth=0.35' Max Vel=3.40 fps Inflow=3.63 cfs 0.922 af
 n=0.035 L=10.0' S=0.0400 '/ Capacity=30.22 cfs Outflow=3.63 cfs 0.922 af

Reach 12R: Swale Avg. Flow Depth=0.37' Max Vel=1.61 fps Inflow=5.40 cfs 0.254 af
 n=0.080 L=890.0' S=0.0382 '/ Capacity=6.71 cfs Outflow=3.86 cfs 0.248 af

Reach 13R: 18" Storm Drain Avg. Flow Depth=0.58' Max Vel=11.53 fps Inflow=7.42 cfs 0.323 af
 18.0" Round Pipe n=0.012 L=370.0' S=0.0405 '/ Capacity=22.91 cfs Outflow=7.14 cfs 0.323 af

Reach 15R: 18" Storm Drain Avg. Flow Depth=0.82' Max Vel=9.17 fps Inflow=9.27 cfs 0.377 af
 18.0" Round Pipe n=0.012 L=370.0' S=0.0189 '/ Capacity=15.65 cfs Outflow=8.68 cfs 0.377 af

Reach 16R: 15" Storm Drain Avg. Flow Depth=0.68' Max Vel=11.17 fps Inflow=7.63 cfs 0.323 af
 15.0" Round Pipe n=0.012 L=275.0' S=0.0364 '/ Capacity=13.34 cfs Outflow=7.42 cfs 0.323 af

Pond 5P: Pond D Peak Elev=5,703.88' Storage=10,329 cf Inflow=10.69 cfs 0.832 af
 Primary=3.38 cfs 0.832 af Secondary=0.00 cfs 0.000 af Outflow=3.38 cfs 0.832 af

Total Runoff Area = 46.096 ac Runoff Volume = 2.610 af Average Runoff Depth = 0.68"
62.50% Pervious = 28.808 ac 37.50% Impervious = 17.288 ac

Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 4S: White Horse Villiage

Runoff = 5.40 cfs @ 12.00 hrs, Volume= 0.254 af, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.800	98	Roadway
3.200	83	1/4 acre lots, 38% imp, HSG C
4.000	86	Weighted Average
1.984		49.60% Pervious Area
2.016		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	30	0.0350	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
0.6	117	0.0300	3.52		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	850	0.0400	9.83	49.14	Channel Flow, Area= 5.0 sf Perim= 20.0' r= 0.25' n= 0.012 Concrete pipe, finished
1.4	40	0.0100	0.49	0.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.120
8.3	1,037	Total			

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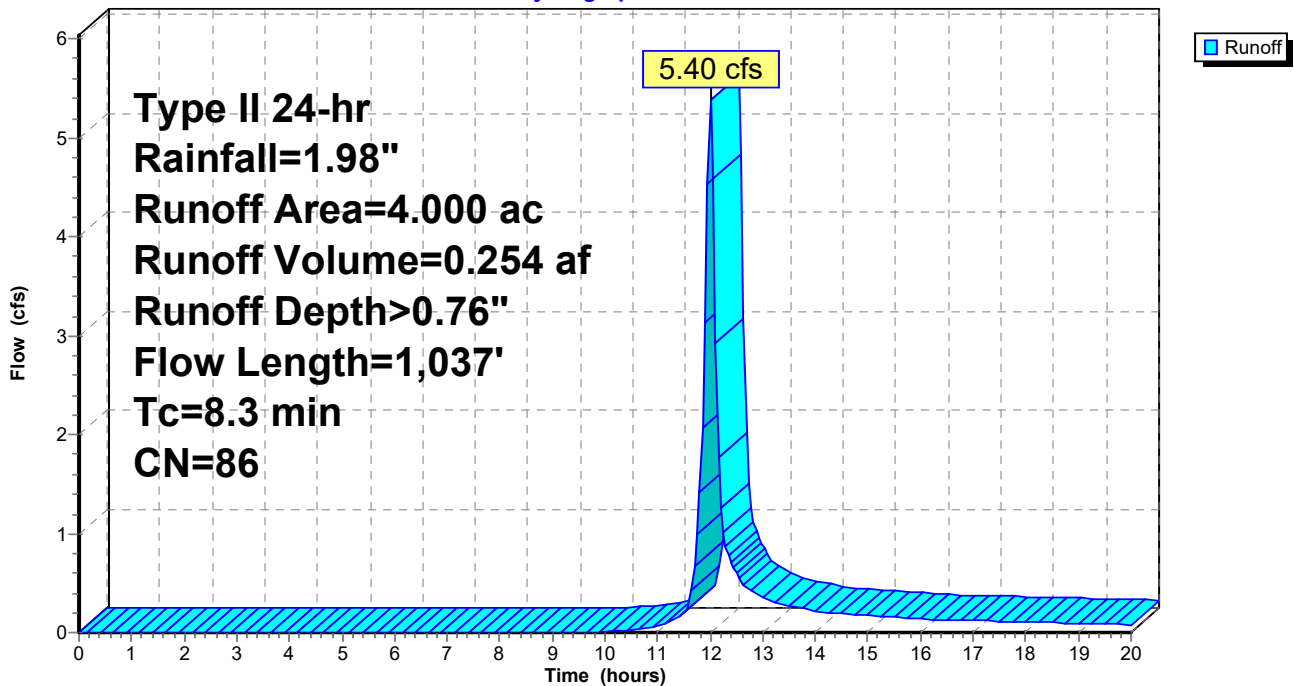
Type II 24-hr Rainfall=1.98"

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Subcatchment 4S: White Horse Villiage

Hydrograph



Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 6S: Blackhawk I

Runoff = 3.20 cfs @ 12.05 hrs, Volume= 0.172 af, Depth> 0.71"

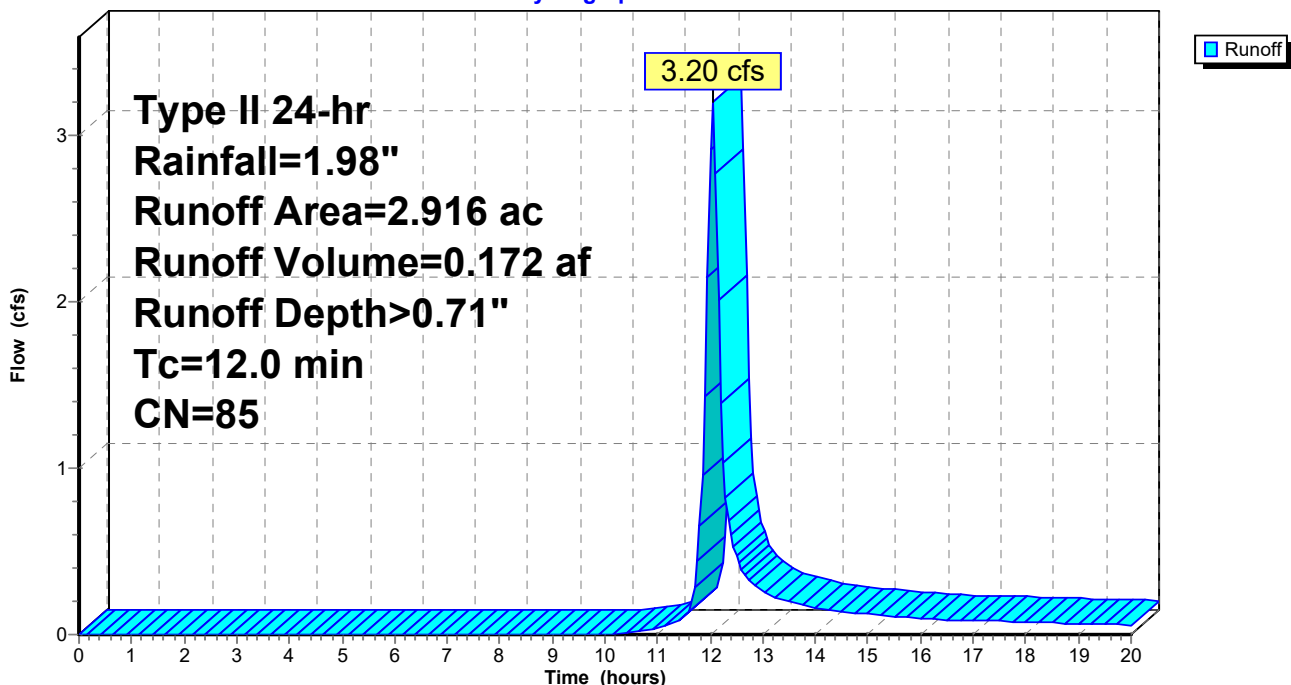
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.816	98	Roadway
* 2.100	80	1/3 acre lots, 30% imp, HSG C
2.916	85	Weighted Average
1.470		50.41% Pervious Area
1.446		49.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Subcatchment 6S: Blackhawk I

Hydrograph



Lakota Multi-use Drainage

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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 7S: W-2

Runoff = 1.47 cfs @ 12.07 hrs, Volume= 0.086 af, Depth> 0.61"

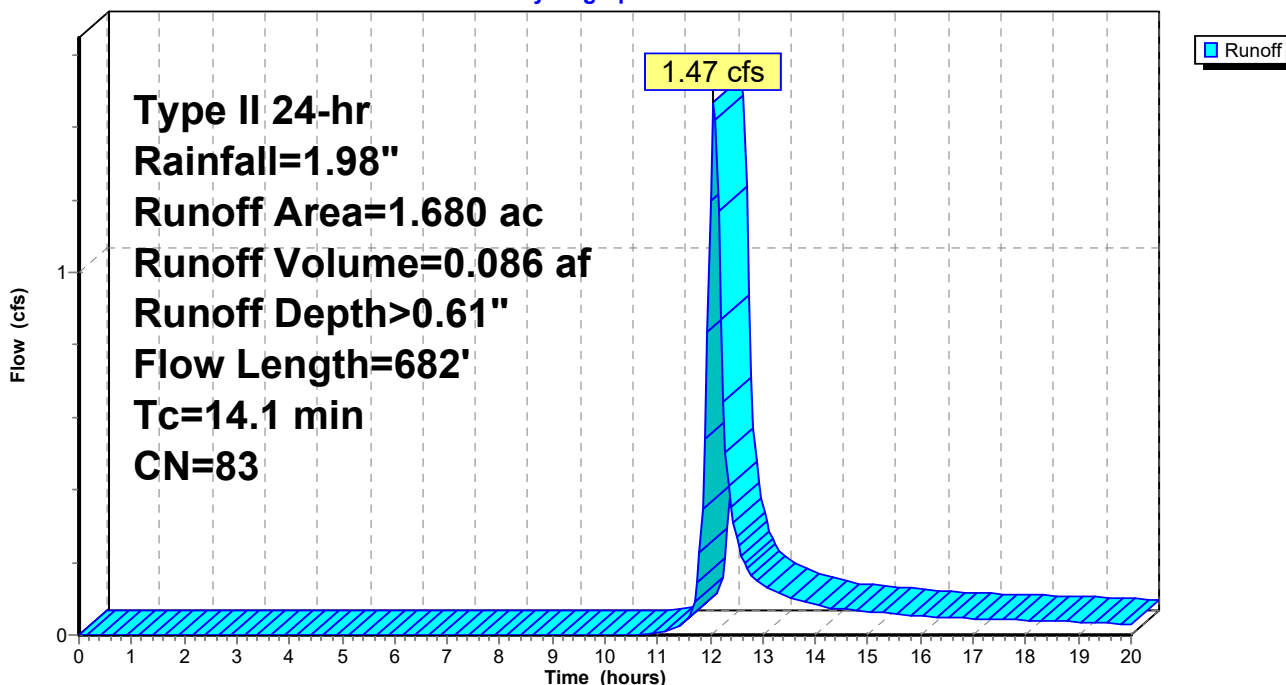
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.980	98	Roadway
0.700	61	>75% Grass cover, Good, HSG B
1.680	83	Weighted Average
0.700		41.67% Pervious Area
0.980		58.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	70	0.0300	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
3.4	462	0.0400	2.27	2.95	Channel Flow, Area= 1.3 sf Perim= 9.4' r= 0.14' n= 0.035 High grass
0.3	150	0.0300	8.51	6.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
14.1	682	Total			

Subcatchment 7S: W-2

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 8S: E-3

Runoff = 10.11 cfs @ 11.99 hrs, Volume= 0.471 af, Depth> 0.93"

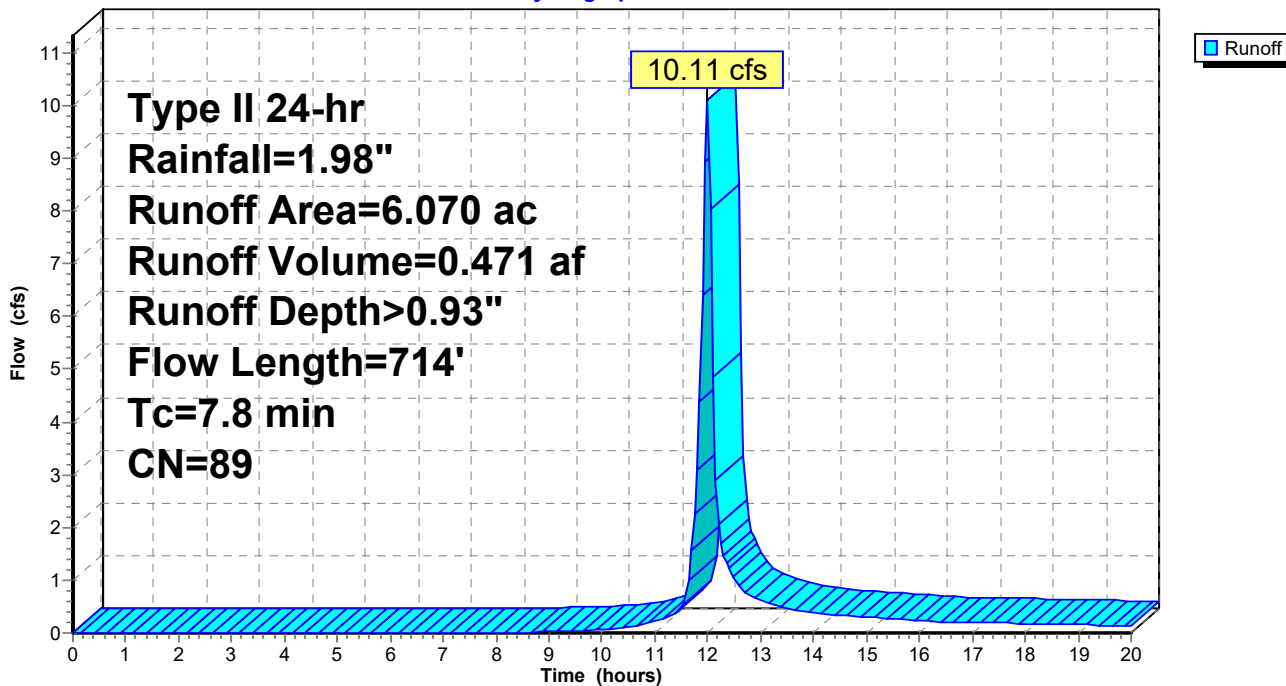
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 2.270	98	Roadway
* 1.420	98	Buildings
2.380	74	>75% Grass cover, Good, HSG C
6.070	89	Weighted Average
2.380		39.21% Pervious Area
3.690		60.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	25	0.0200	0.08		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
2.5	689	0.0400	4.51	18.92	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.013 Concrete, trowel finish
7.8	714	Total			

Subcatchment 8S: E-3

Hydrograph



Lakota Multi-use Drainage

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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 9S: W-3

Runoff = 0.17 cfs @ 12.01 hrs, Volume= 0.010 af, Depth> 0.18"

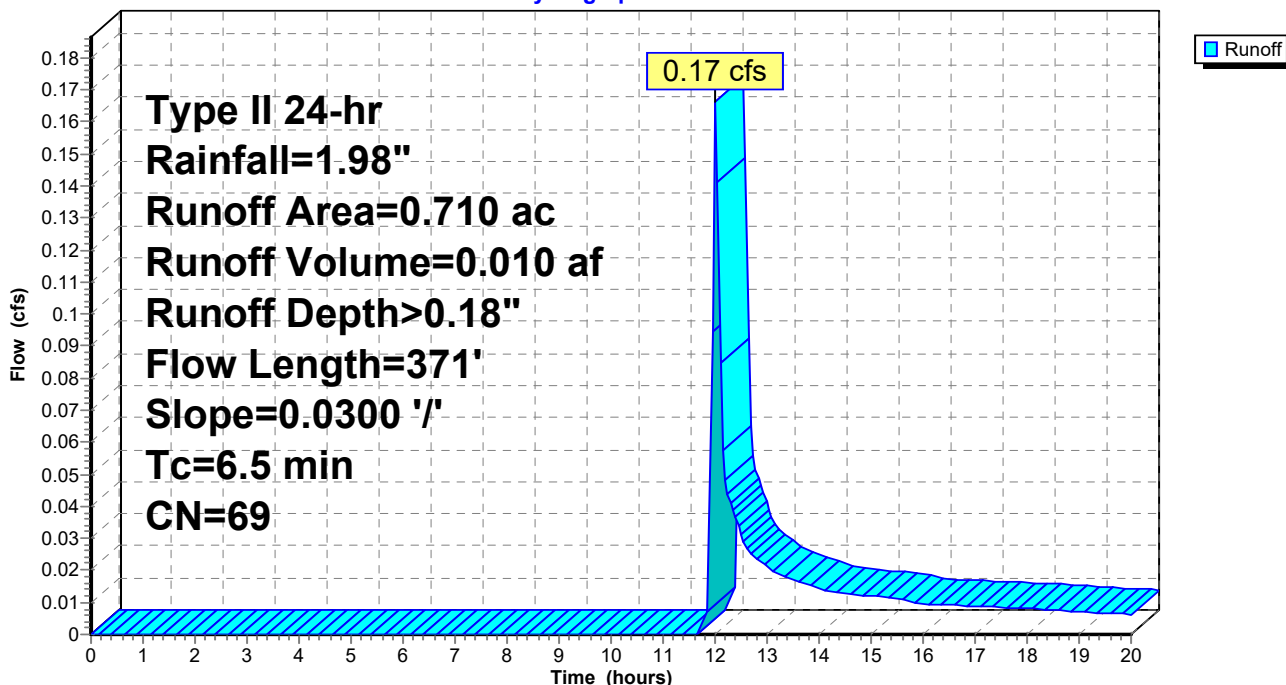
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
0.350	39	>75% Grass cover, Good, HSG A
* 0.360	98	Castle Valley Blvd
0.710	69	Weighted Average
0.350		49.30% Pervious Area
0.360		50.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	25	0.0300	0.09		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
2.0	346	0.0300	2.92	8.76	Channel Flow, Area= 3.0 sf Perim= 12.0' r= 0.25' n= 0.035 Earth, dense weeds
6.5	371	Total			

Subcatchment 9S: W-3

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 10S: Blackhawk II

Runoff = 1.54 cfs @ 12.06 hrs, Volume= 0.094 af, Depth> 0.32"

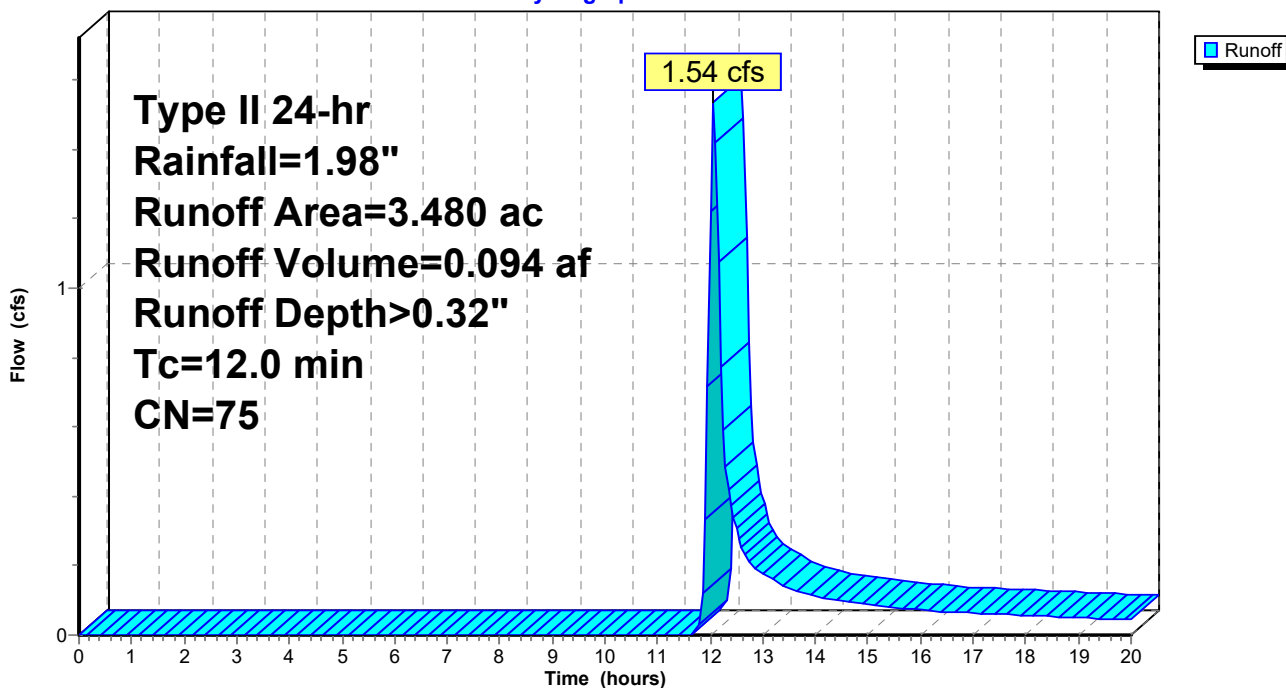
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.750	80	1/3 acre lots, 30% imp, HSG C
* 2.260	69	Open Space
* 0.470	98	Castle Valley Blvd
3.480	75	Weighted Average
2.785		80.03% Pervious Area
0.695		19.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Subcatchment 10S: Blackhawk II

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 11S: Blackhawk III

Runoff = 3.15 cfs @ 11.98 hrs, Volume= 0.137 af, Depth> 0.62"

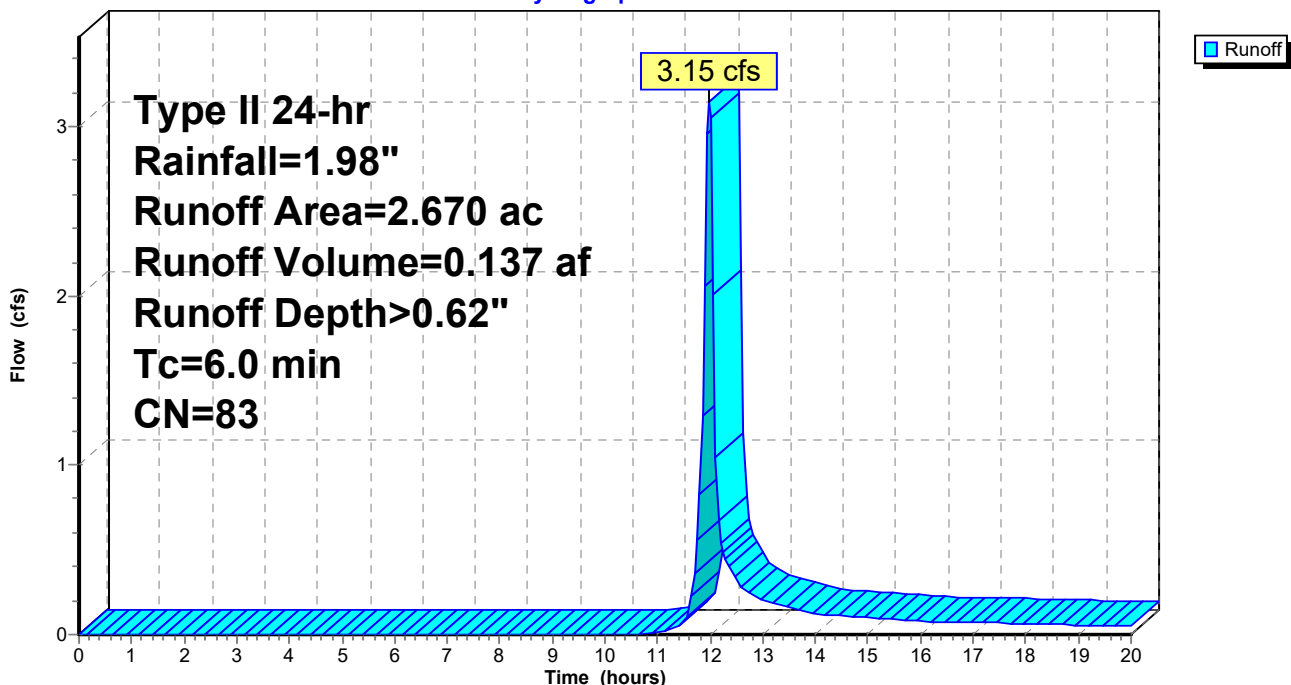
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 2.270	80	1/3 acre lots, 30% imp, HSG C
* 0.400	98	Roadway
2.670	83	Weighted Average
1.589		59.51% Pervious Area
1.081		40.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 11S: Blackhawk III

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 12S: E-2

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 7.63 cfs @ 11.93 hrs, Volume= 0.323 af, Depth> 1.29"

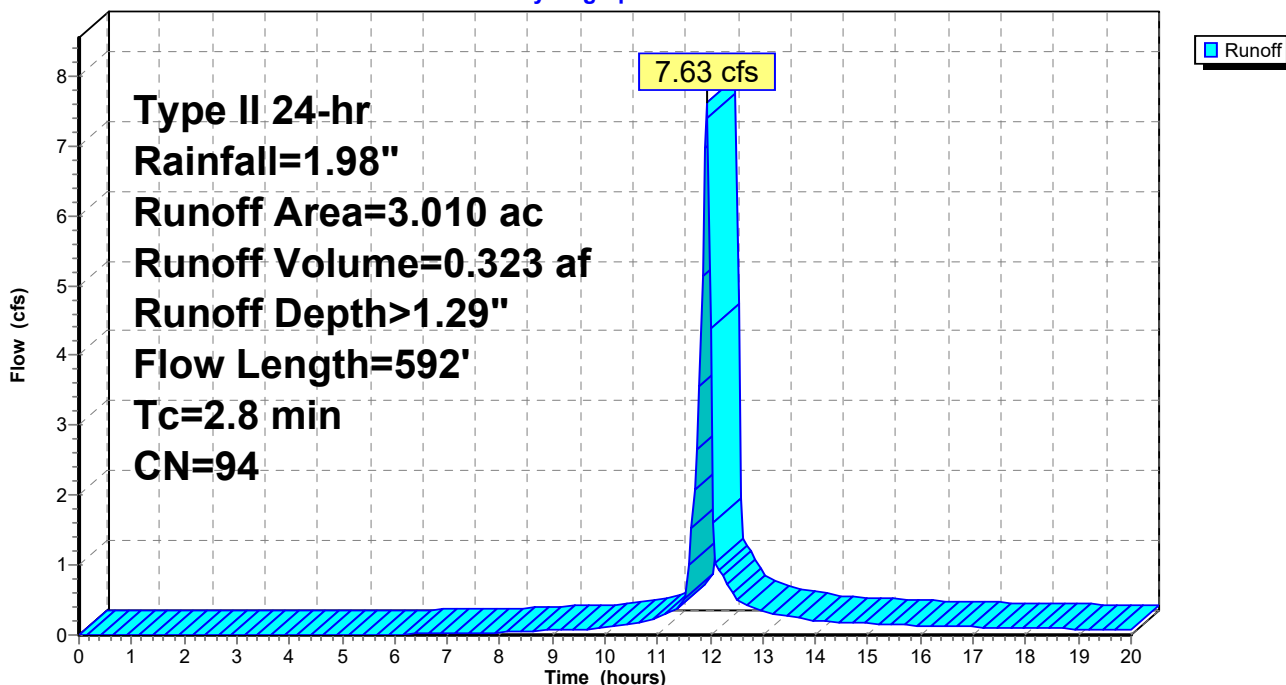
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 1.790	98	Roadway
* 0.730	98	Buildings
0.490	74	>75% Grass cover, Good, HSG C
3.010	94	Weighted Average
0.490		16.28% Pervious Area
2.520		83.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	25	0.0200	0.63		Sheet Flow, Smooth surfaces n= 0.011 P2= 1.17"
2.1	567	0.0400	4.51	18.92	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.013 Concrete, trowel finish
2.8	592	Total			

Subcatchment 12S: E-2

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 13S: W-1

Runoff = 2.73 cfs @ 12.12 hrs, Volume= 0.181 af, Depth> 0.71"

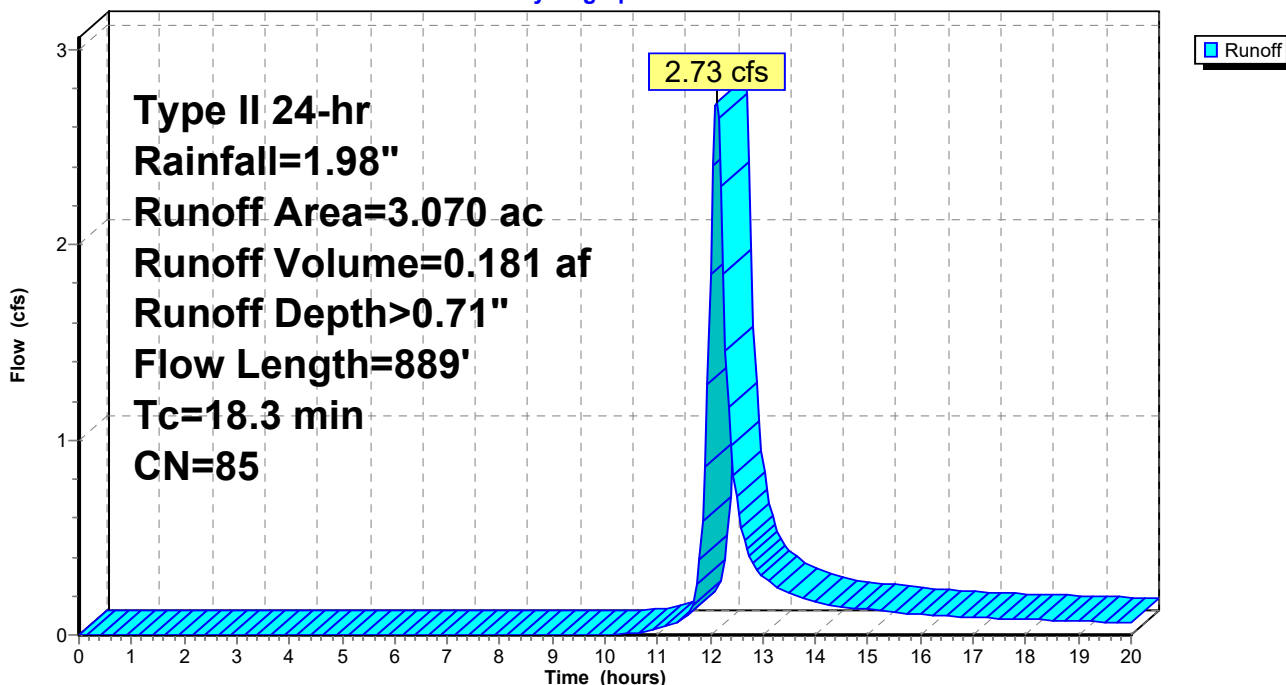
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 1.290	98	Roads, Parking, & Buildings
* 0.140	98	Trail
1.640	74	>75% Grass cover, Good, HSG C
3.070	85	Weighted Average
1.640		53.42% Pervious Area
1.430		46.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	75	0.0200	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
5.4	814	0.0400	2.49	8.73	Channel Flow, Area= 3.5 sf Perim= 18.0' r= 0.19' n= 0.040 Earth, dense weeds
18.3	889	Total			

Subcatchment 13S: W-1

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 14S: E-1

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 9.27 cfs @ 11.95 hrs, Volume= 0.377 af, Depth> 0.87"

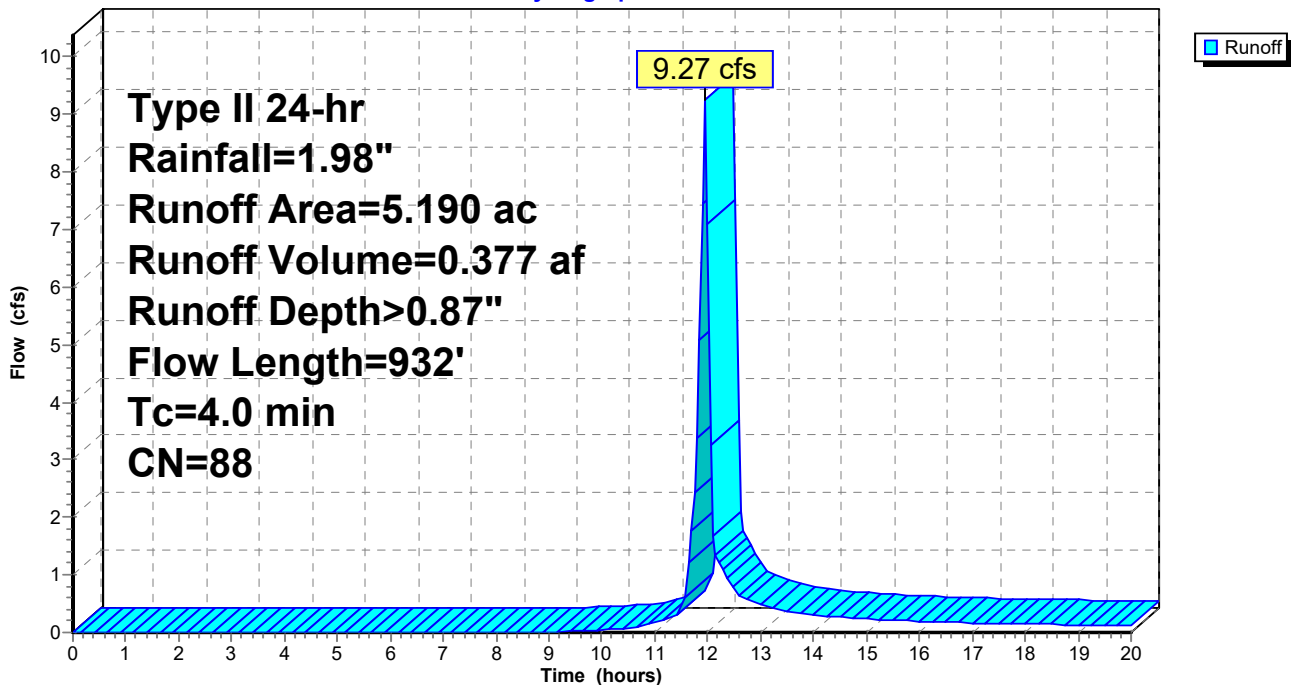
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 1.650	98	Roadway
* 1.420	98	Buildings & Driveways
2.120	74	>75% Grass cover, Good, HSG C
5.190	88	Weighted Average
2.120		40.85% Pervious Area
3.070		59.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	25	0.0300	0.74		Sheet Flow, Smooth surfaces n= 0.011 P2= 1.17"
3.4	907	0.0330	4.43	18.62	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.012
4.0	932	Total			

Subcatchment 14S: E-1

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 15S: E-2 Historic

Runoff = 2.27 cfs @ 12.02 hrs, Volume= 0.114 af, Depth> 0.45"

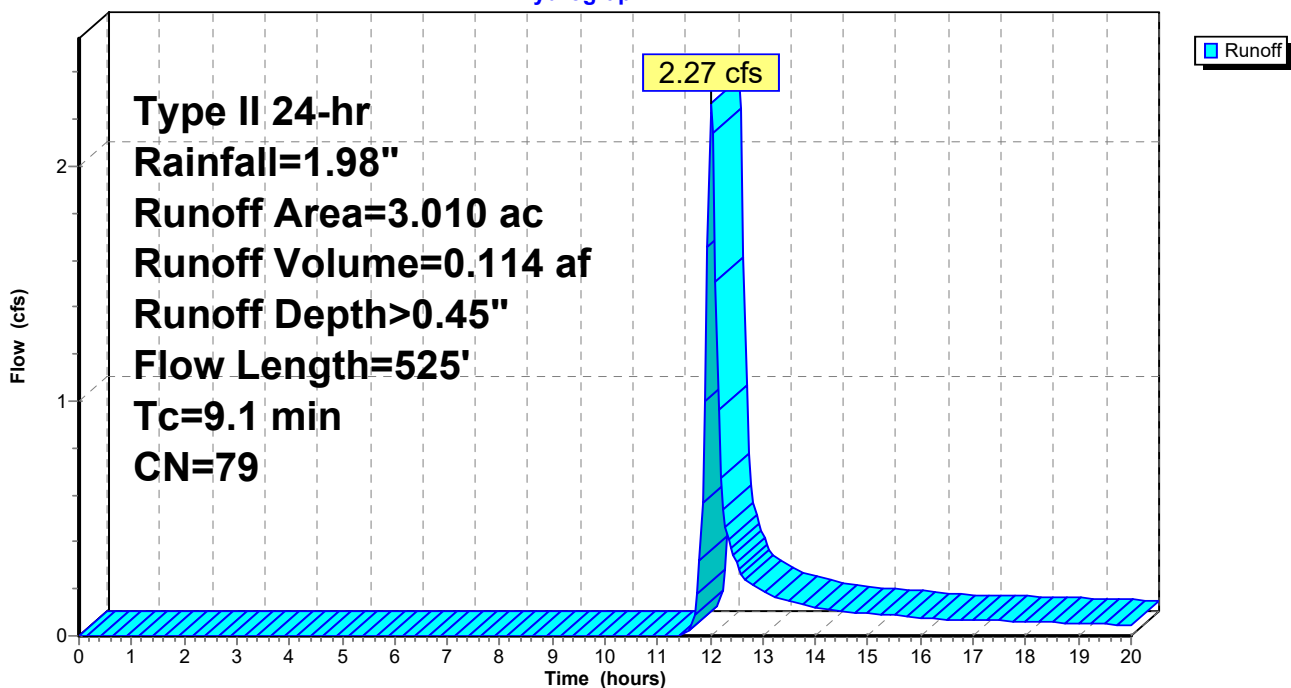
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
3.010	79	Pasture/grassland/range, Fair, HSG C
3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	25	0.0300	0.10		Sheet Flow, Range n= 0.130 P2= 1.17"
5.0	500	0.0400	1.67	7.03	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.035 Earth, dense weeds
9.1	525	Total			

Subcatchment 15S: E-2 Historic

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 16S: E-1 Historic

Runoff = 3.35 cfs @ 12.07 hrs, Volume= 0.196 af, Depth> 0.45"

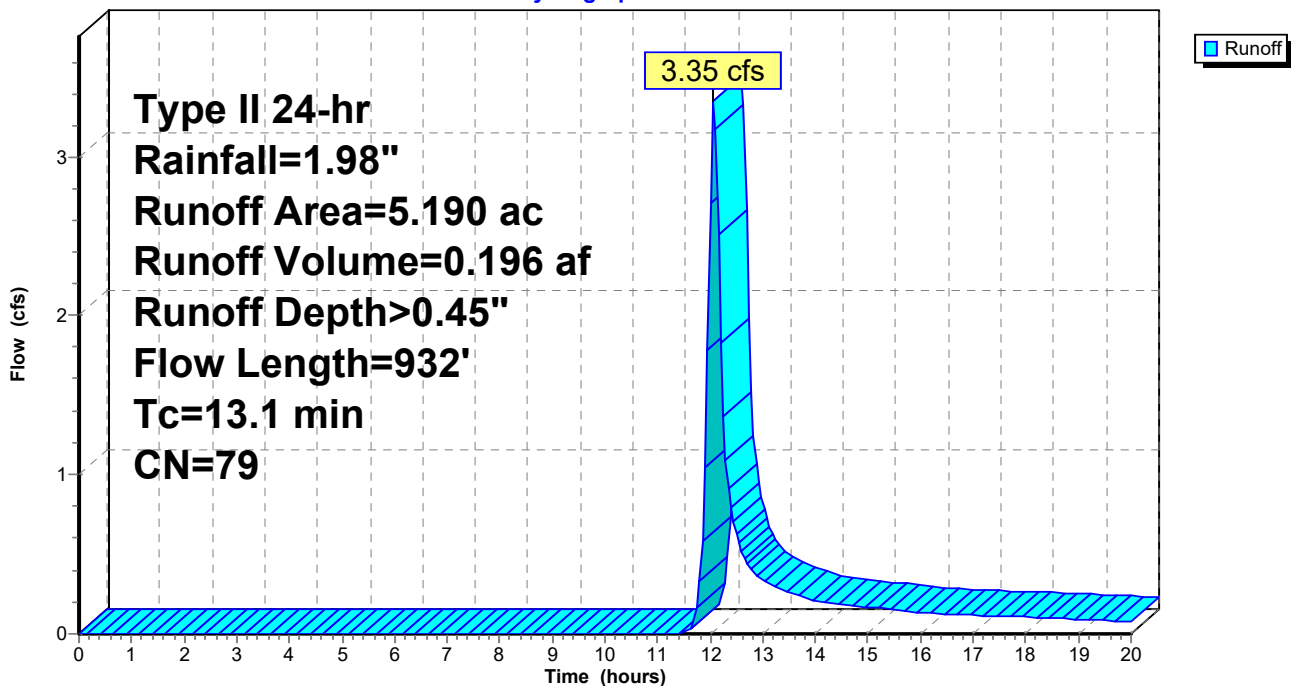
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
5.190	79	Pasture/grassland/range, Fair, HSG C
5.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	25	0.0300	0.10		Sheet Flow, Range n= 0.130 P2= 1.17"
9.0	907	0.0400	1.67	7.03	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.035 Earth, dense weeds
13.1	932	Total			

Subcatchment 16S: E-1 Historic

Hydrograph



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Summary for Subcatchment 17S: E-3 Historic

Runoff = 3.48 cfs @ 12.05 hrs, Volume= 0.193 af, Depth> 0.45"

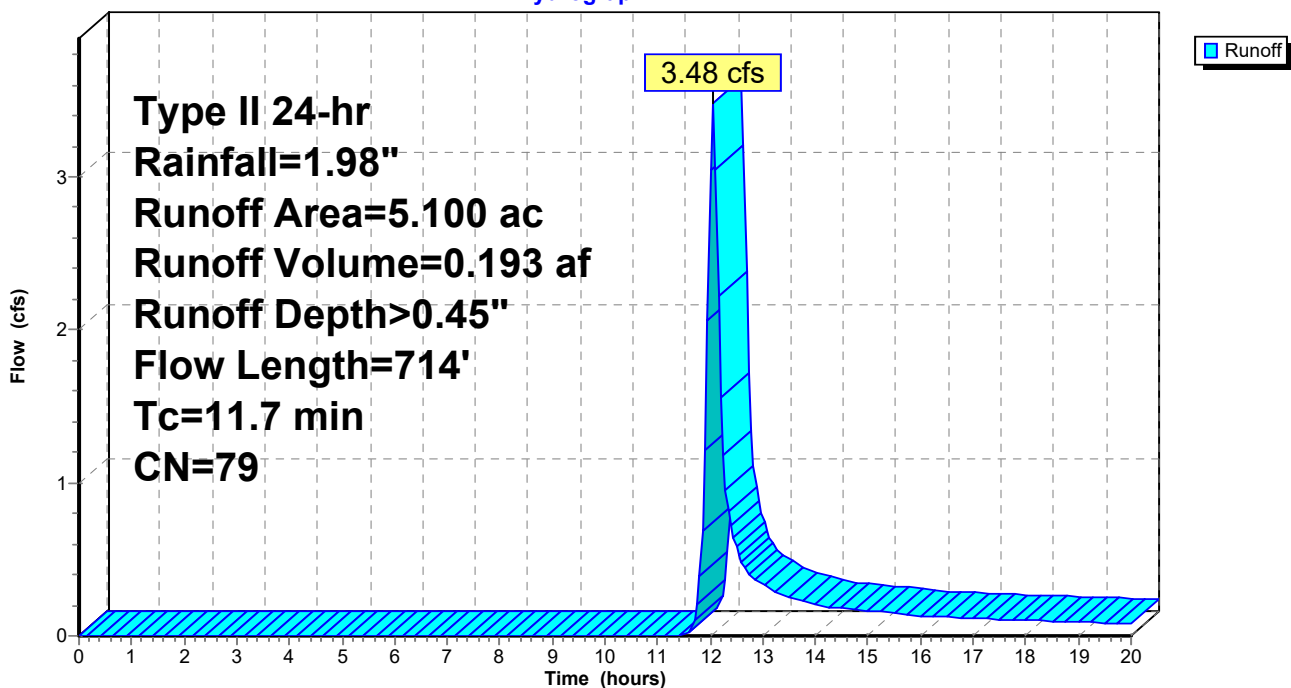
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
5.100	79	Pasture/grassland/range, Fair, HSG C
5.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		Sheet Flow, Range n= 0.130 P2= 1.17"
6.9	689	0.0400	1.67	7.03	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.035 Earth, dense weeds
11.7	714	Total			

Subcatchment 17S: E-3 Historic

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Type II 24-hr Rainfall=1.98"

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Summary for Reach 7R: Storm Drain

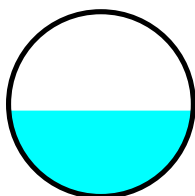
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 9.066 ac, 35.54% Impervious, Inflow Depth > 0.53"
 Inflow = 7.24 cfs @ 12.01 hrs, Volume= 0.403 af
 Outflow = 7.05 cfs @ 12.03 hrs, Volume= 0.403 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 8.96 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 3.52 fps, Avg. Travel Time= 1.1 min

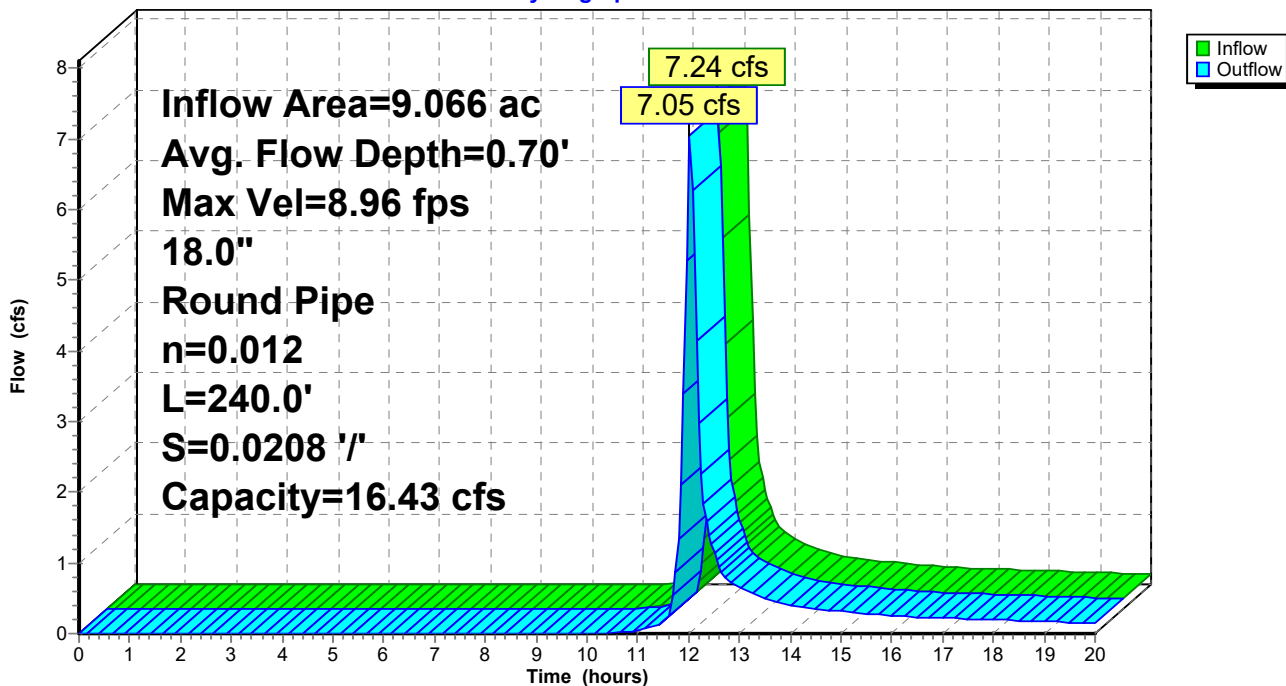
Peak Storage= 193 cf @ 12.02 hrs
 Average Depth at Peak Storage= 0.70'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 16.43 cfs

18.0" Round Pipe
 n= 0.012
 Length= 240.0' Slope= 0.0208 '/'
 Inlet Invert= 5,705.00', Outlet Invert= 5,700.00'



Reach 7R: Storm Drain

Hydrograph



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Type II 24-hr Rainfall=1.98"

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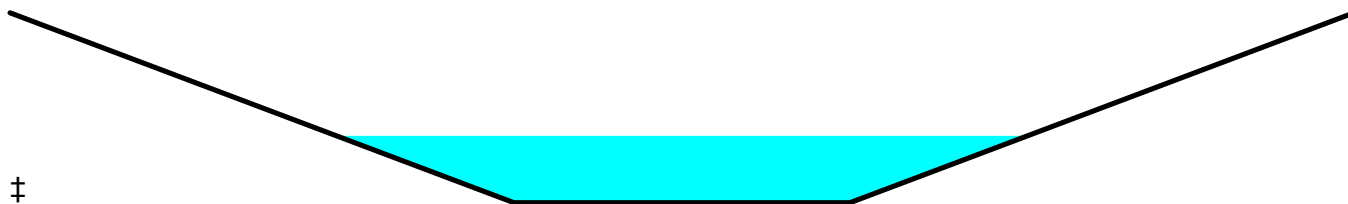
Summary for Reach 8R: Castle Valley Blvd Swale

Inflow Area = 16.136 ac, 41.32% Impervious, Inflow Depth > 0.62"
 Inflow = 3.38 cfs @ 12.50 hrs, Volume= 0.832 af
 Outflow = 3.37 cfs @ 12.66 hrs, Volume= 0.826 af, Atten= 0%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.13 fps, Min. Travel Time= 5.2 min
 Avg. Velocity = 1.86 fps, Avg. Travel Time= 8.7 min

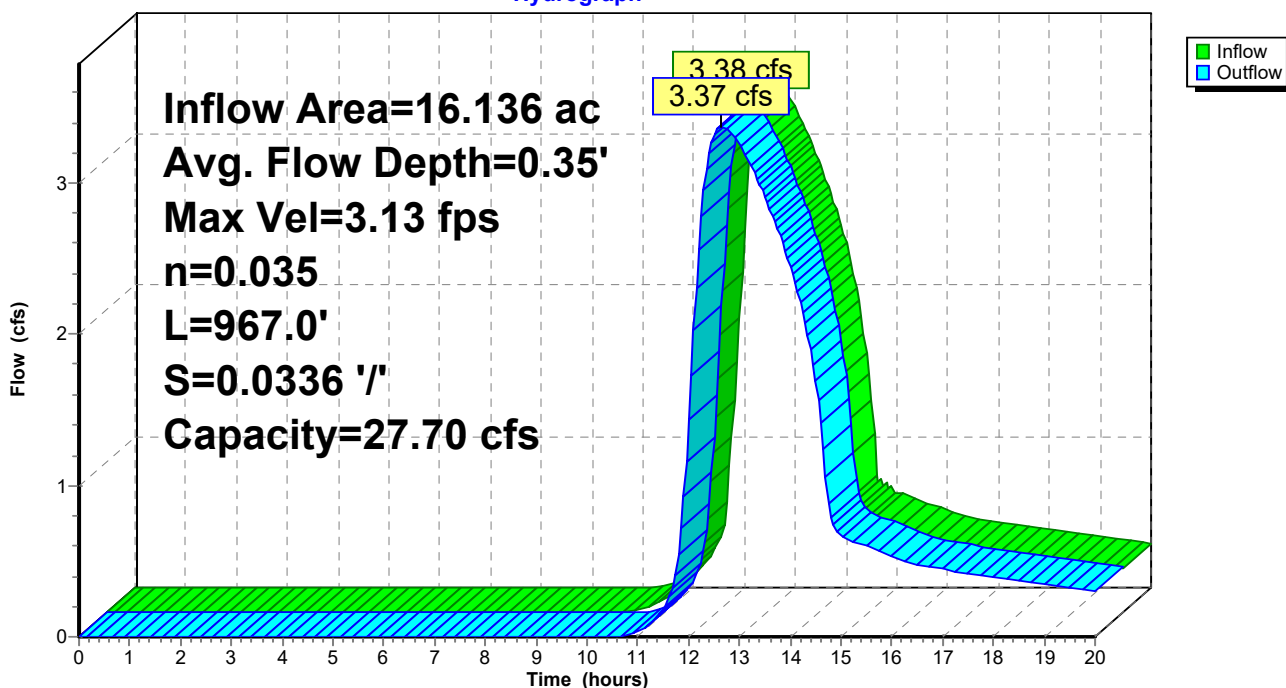
Peak Storage= 1,042 cf @ 12.57 hrs
 Average Depth at Peak Storage= 0.35'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 27.70 cfs

2.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 967.0' Slope= 0.0336 '/'
 Inlet Invert= 5,697.00', Outlet Invert= 5,664.50'



Reach 8R: Castle Valley Blvd Swale

Hydrograph



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Summary for Reach 9R: 24" Storm Drain

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 13R OUTLET depth by 3.63' @ 12.05 hrs

Inflow Area = 9.080 ac, 68.39% Impervious, Inflow Depth > 1.05"
 Inflow = 16.53 cfs @ 11.97 hrs, Volume= 0.794 af
 Outflow = 15.80 cfs @ 12.01 hrs, Volume= 0.792 af, Atten= 4%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 9.05 fps, Min. Travel Time= 1.2 min

Avg. Velocity = 2.81 fps, Avg. Travel Time= 3.8 min

Peak Storage= 1,179 cf @ 11.99 hrs

Average Depth at Peak Storage= 1.12'

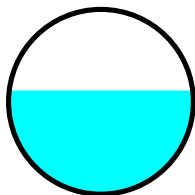
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.19 cfs

24.0" Round Pipe

n= 0.012

Length= 650.0' Slope= 0.0123 '/'

Inlet Invert= 5,668.00', Outlet Invert= 5,660.00'



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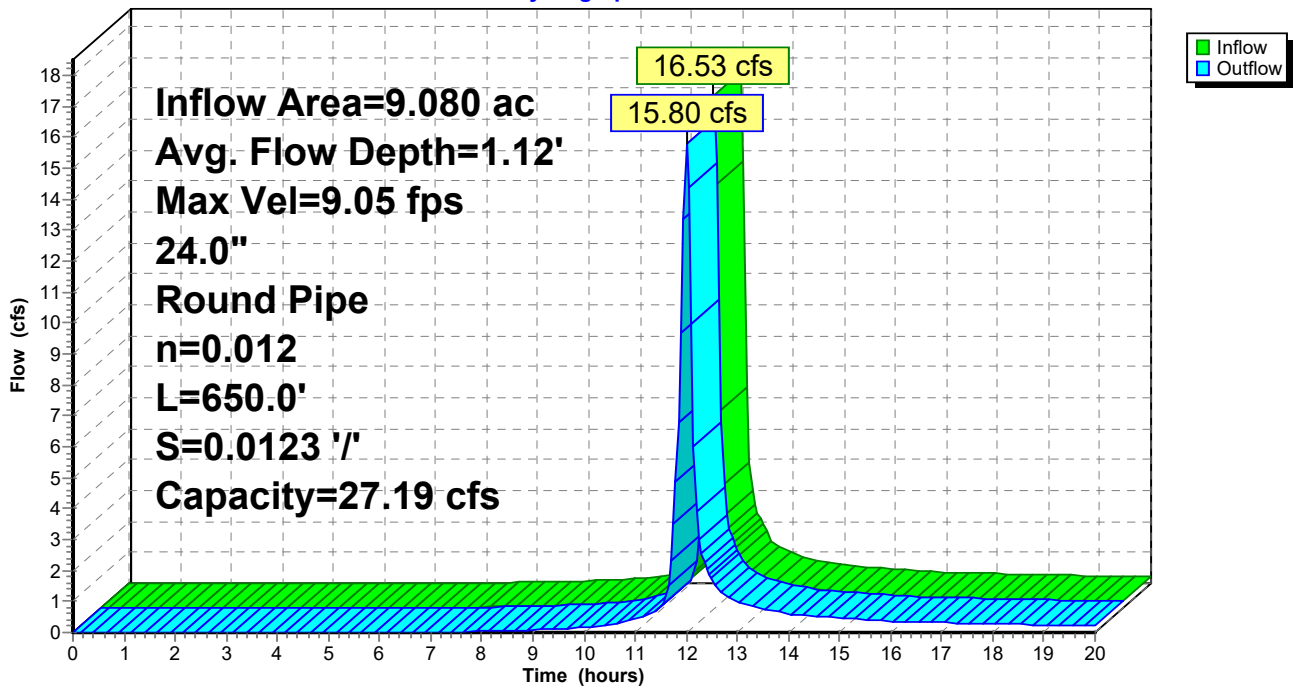
Type II 24-hr Rainfall=1.98"

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Reach 9R: 24" Storm Drain

Hydrograph



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Summary for Reach 11R: Castle Valley Blvd Swale

[62] Hint: Exceeded Reach 8R OUTLET depth by 0.45' @ 12.05 hrs

Inflow Area = 18.526 ac, 43.23% Impervious, Inflow Depth > 0.60"
 Inflow = 3.63 cfs @ 12.52 hrs, Volume= 0.922 af
 Outflow = 3.63 cfs @ 12.52 hrs, Volume= 0.922 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.40 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 2.05 fps, Avg. Travel Time= 0.1 min

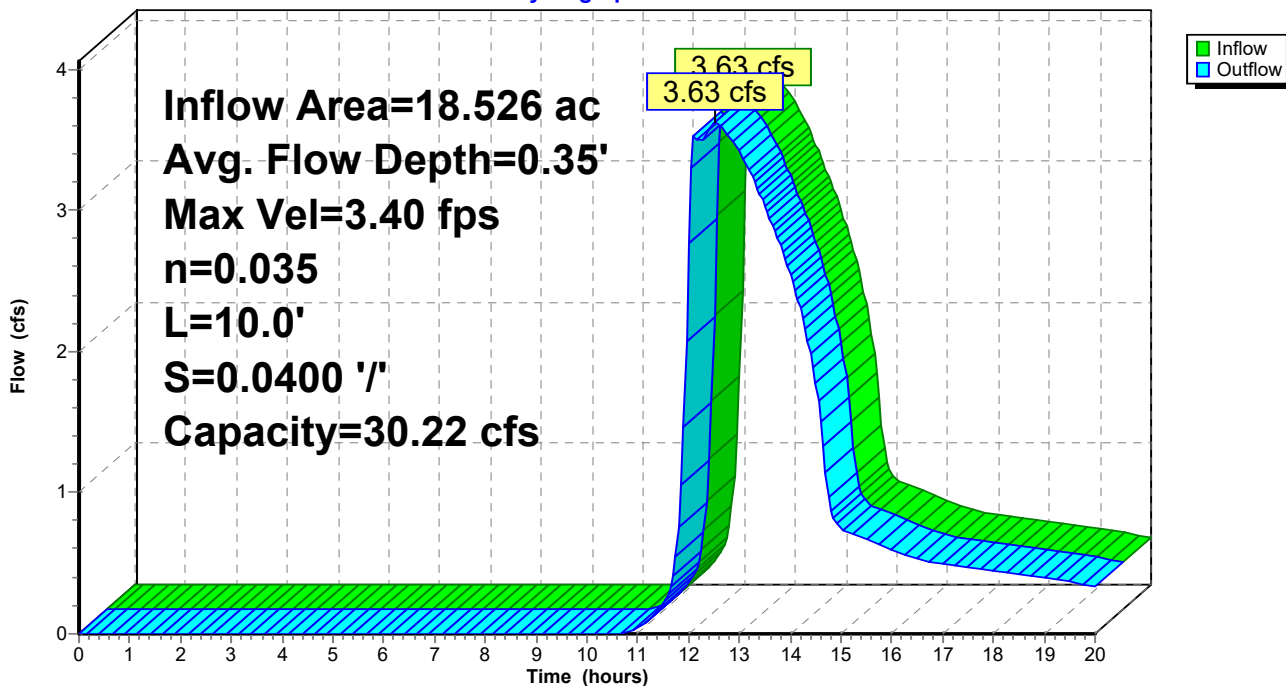
Peak Storage= 11 cf @ 12.52 hrs
 Average Depth at Peak Storage= 0.35'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 30.22 cfs

2.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 10.0' Slope= 0.0400 '/'
 Inlet Invert= 5,664.90', Outlet Invert= 5,664.50'



Reach 11R: Castle Valley Blvd Swale

Hydrograph



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Summary for Reach 12R: Swale

Inflow Area = 4.000 ac, 50.40% Impervious, Inflow Depth > 0.76"
 Inflow = 5.40 cfs @ 12.00 hrs, Volume= 0.254 af
 Outflow = 3.86 cfs @ 12.23 hrs, Volume= 0.248 af, Atten= 28%, Lag= 13.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.61 fps, Min. Travel Time= 9.2 min
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 27.8 min

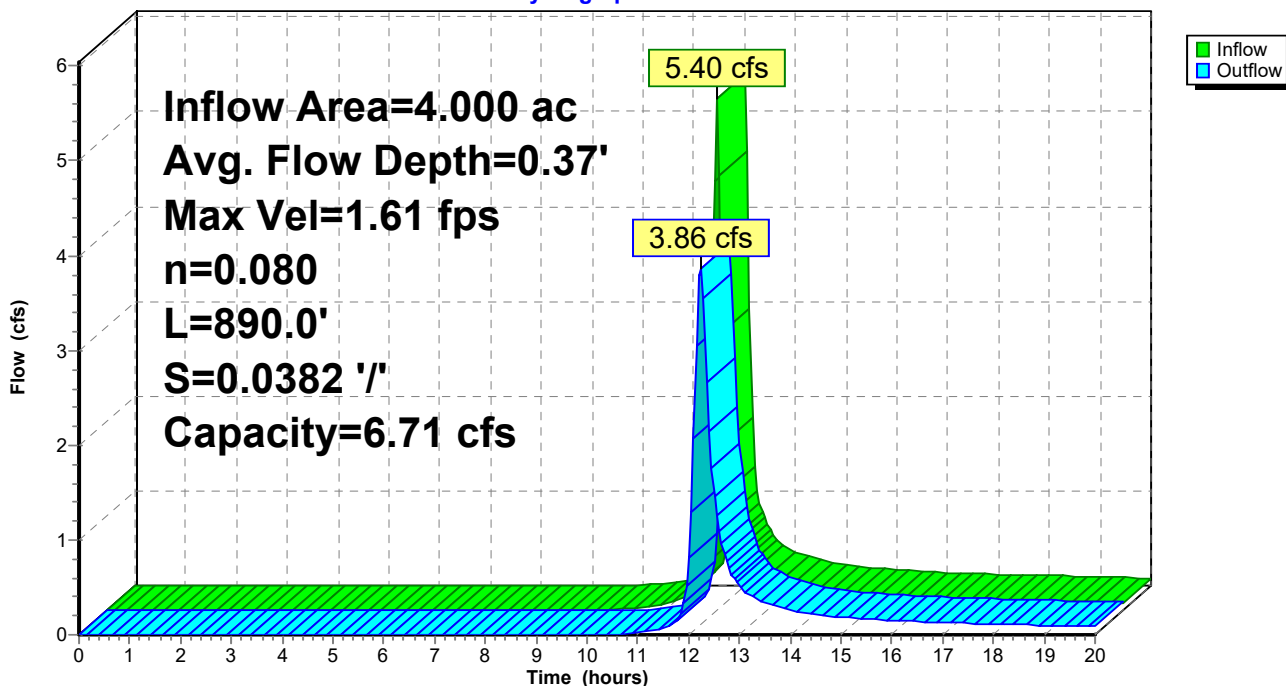
Peak Storage= 2,144 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.37'
 Bank-Full Depth= 0.50' Flow Area= 3.5 sf, Capacity= 6.71 cfs

5.00' x 0.50' deep channel, n= 0.080 Earth, long dense weeds
 Side Slope Z-value= 4.0 '/' Top Width= 9.00'
 Length= 890.0' Slope= 0.0382 '/'
 Inlet Invert= 5,744.00', Outlet Invert= 5,710.00'



Reach 12R: Swale

Hydrograph



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Summary for Reach 13R: 18" Storm Drain

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 16R OUTLET depth by 0.03' @ 12.05 hrs

Inflow Area = 3.010 ac, 83.72% Impervious, Inflow Depth > 1.29"
 Inflow = 7.42 cfs @ 11.94 hrs, Volume= 0.323 af
 Outflow = 7.14 cfs @ 11.95 hrs, Volume= 0.323 af, Atten= 4%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 11.53 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 3.50 fps, Avg. Travel Time= 1.8 min

Peak Storage= 235 cf @ 11.94 hrs

Average Depth at Peak Storage= 0.58'

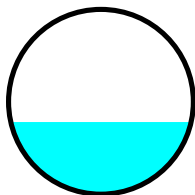
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 22.91 cfs

18.0" Round Pipe

n= 0.012

Length= 370.0' Slope= 0.0405 '/'

Inlet Invert= 5,680.00', Outlet Invert= 5,665.00'



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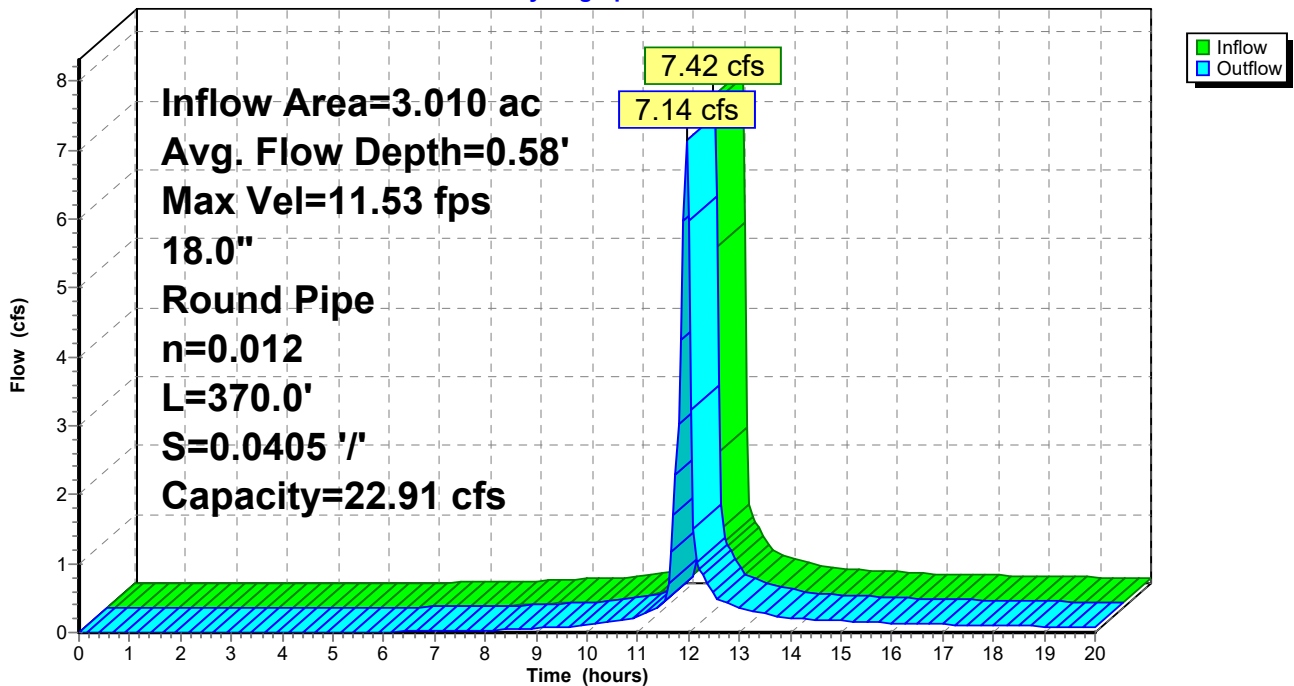
Type II 24-hr Rainfall=1.98"

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Reach 13R: 18" Storm Drain

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Reach 15R: 18" Storm Drain

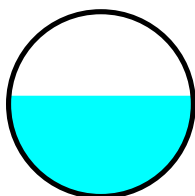
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 5.190 ac, 59.15% Impervious, Inflow Depth > 0.87"
 Inflow = 9.27 cfs @ 11.95 hrs, Volume= 0.377 af
 Outflow = 8.68 cfs @ 11.96 hrs, Volume= 0.377 af, Atten= 6%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 9.17 fps, Min. Travel Time= 0.7 min
 Avg. Velocity = 3.13 fps, Avg. Travel Time= 2.0 min

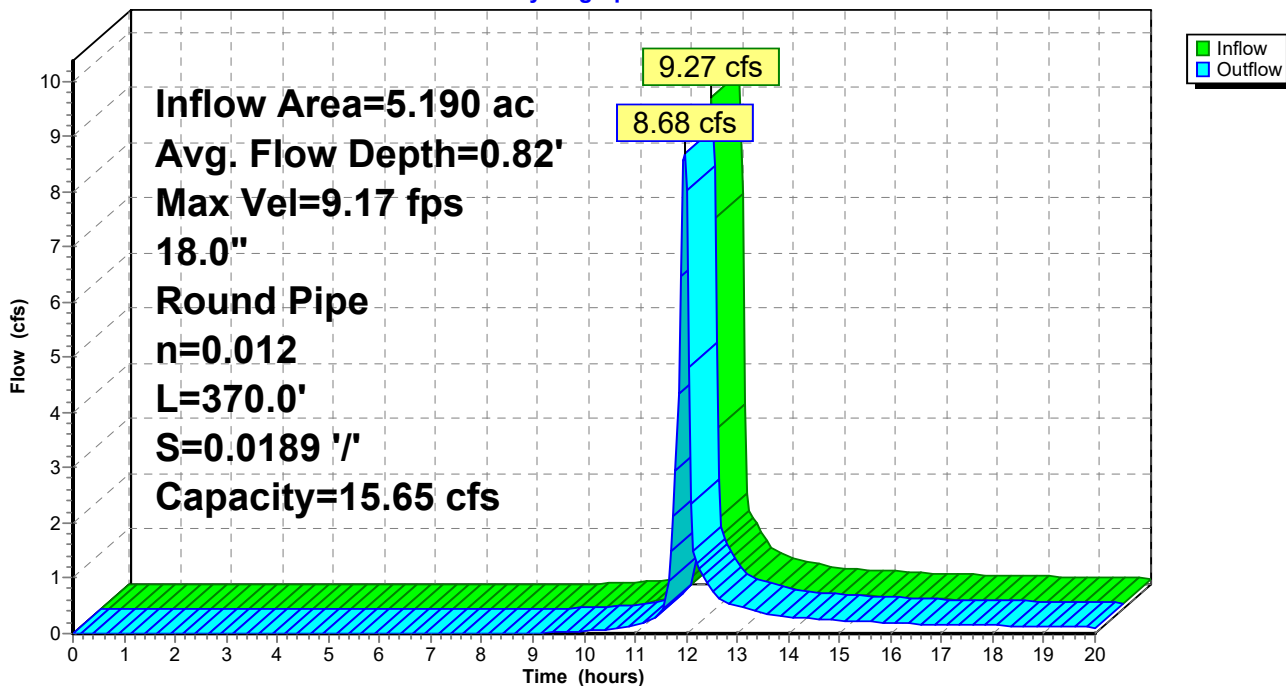
Peak Storage= 365 cf @ 11.96 hrs
 Average Depth at Peak Storage= 0.82'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.65 cfs

18.0" Round Pipe
 n= 0.012
 Length= 370.0' Slope= 0.0189 '/'
 Inlet Invert= 5,702.00', Outlet Invert= 5,695.00'



Reach 15R: 18" Storm Drain

Hydrograph



Lakota Multi-use Drainage

Prepared by Microsoft

HydroCAD® 10.00 s/n 03982 © 2012 HydroCAD Software Solutions LLC

Type II 24-hr Rainfall=1.98"

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Page 31

Summary for Reach 16R: 15" Storm Drain

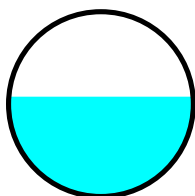
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 3.010 ac, 83.72% Impervious, Inflow Depth > 1.29"
 Inflow = 7.63 cfs @ 11.93 hrs, Volume= 0.323 af
 Outflow = 7.42 cfs @ 11.94 hrs, Volume= 0.323 af, Atten= 3%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 11.17 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 3.44 fps, Avg. Travel Time= 1.3 min

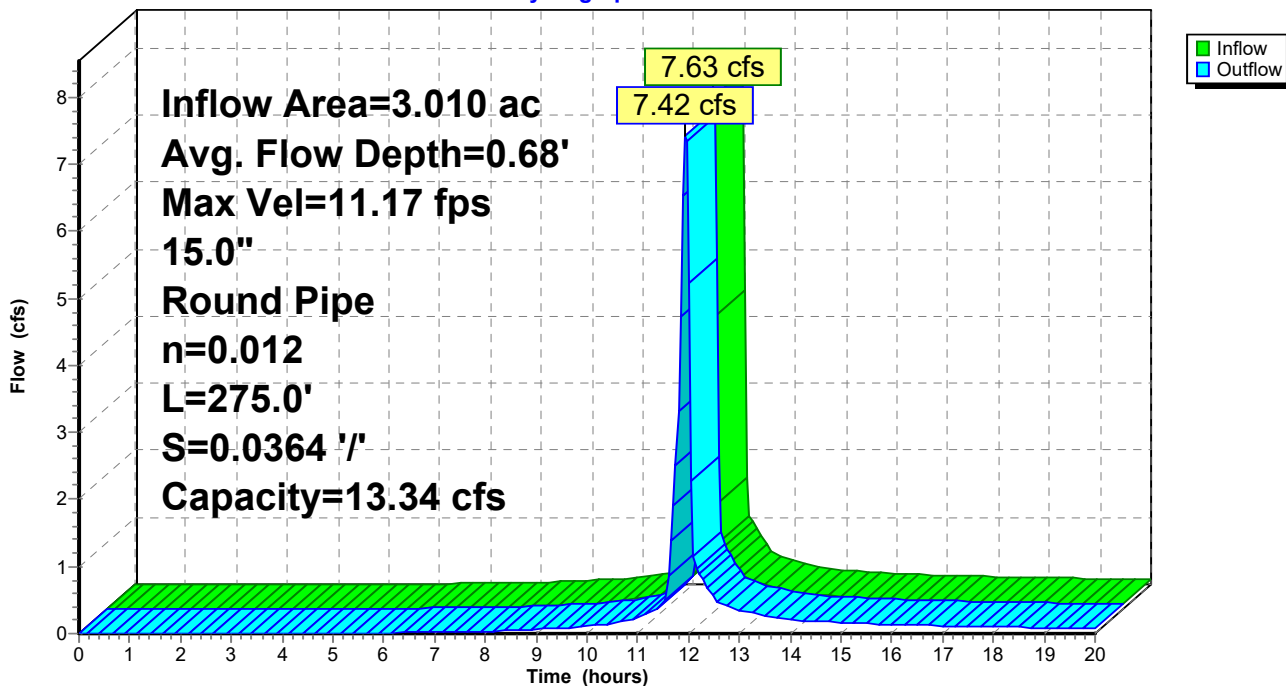
Peak Storage= 186 cf @ 11.93 hrs
 Average Depth at Peak Storage= 0.68'
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 13.34 cfs

15.0" Round Pipe
 n= 0.012
 Length= 275.0' Slope= 0.0364 '/'
 Inlet Invert= 5,690.00', Outlet Invert= 5,680.00'



Reach 16R: 15" Storm Drain

Hydrograph



Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

Prepared by Microsoft

Printed 3/3/2022

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Summary for Pond 5P: Pond D

[85] Warning: Oscillations may require Finer Routing>1

[62] Hint: Exceeded Reach 7R OUTLET depth by 3.62' @ 12.55 hrs

Inflow Area = 16.136 ac, 41.32% Impervious, Inflow Depth > 0.62"
 Inflow = 10.69 cfs @ 12.07 hrs, Volume= 0.832 af
 Outflow = 3.38 cfs @ 12.50 hrs, Volume= 0.832 af, Atten= 68%, Lag= 25.7 min
 Primary = 3.38 cfs @ 12.50 hrs, Volume= 0.832 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 5,703.88' @ 12.50 hrs Surf.Area= 4,662 sf Storage= 10,329 cf

Plug-Flow detention time= 23.8 min calculated for 0.830 af (100% of inflow)
 Center-of-Mass det. time= 23.7 min (837.6 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	5,700.00'	22,281 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5,700.00	50	0	0
5,701.00	1,438	744	744
5,702.00	3,143	2,291	3,035
5,703.00	3,914	3,529	6,563
5,704.00	4,765	4,340	10,903
5,705.00	5,676	5,221	16,123
5,706.00	6,639	6,158	22,281

Device	Routing	Invert	Outlet Devices
#1	Primary	5,699.50'	8.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	5,705.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#3	Secondary	5,704.00'	48.0" x 48.0" Horiz. Orifice/Grate C= 0.600 in 48.0" x 48.0" Grate Limited to weir flow at low heads

Primary OutFlow Max=3.38 cfs @ 12.50 hrs HW=5,703.88' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 3.38 cfs @ 9.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5,700.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
 ↑3=Orifice/Grate (Controls 0.00 cfs)

Lakota Multi-use Drainage

Prepared by Microsoft

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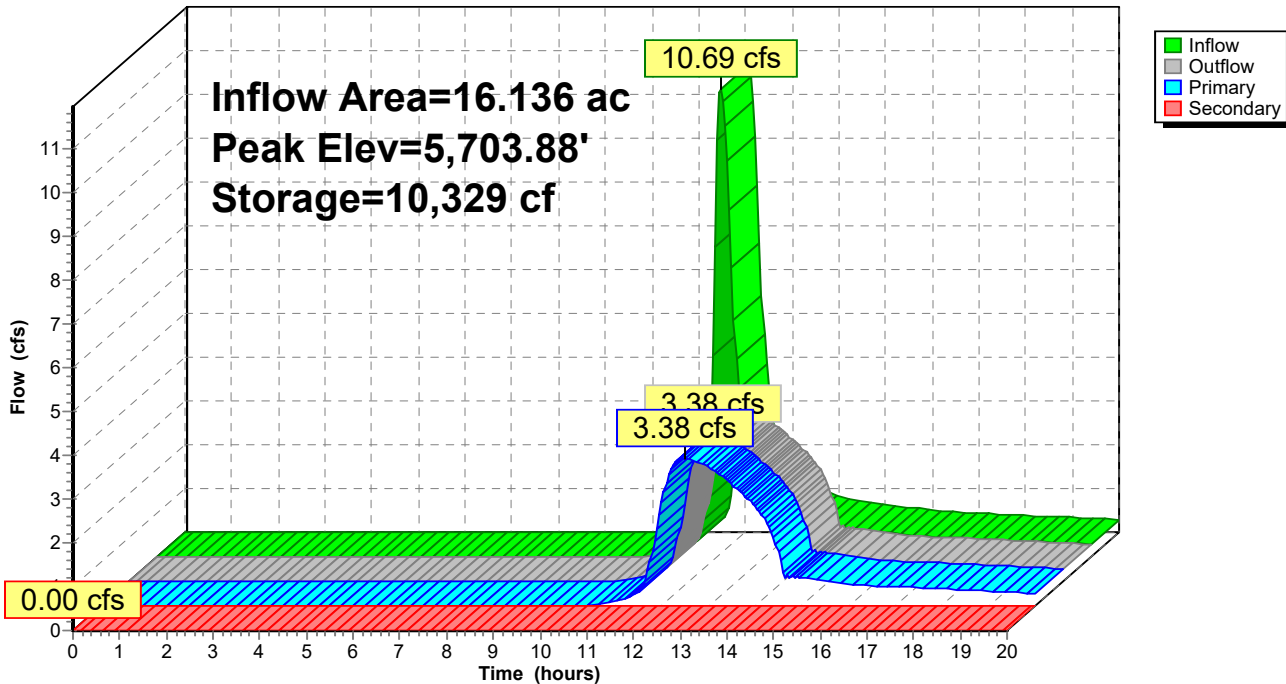
Type II 24-hr Rainfall=1.98"

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Pond 5P: Pond D

Hydrograph



APPENDIX C

Blackhawk II Drainage Plan Analysis



P.O. Box 1301
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

August 31, 2004

Mr. Jim Colombo
 Lakota Canyon Ranch
 300 Horseshoe Dr.
 Basalt, CO 81621

RE: Blackhawk II – Amended Drainage Plan Analysis

Mr. Jim Colombo,

Colorado River Engineering, Inc. has completed a Drainage Plan analysis for Blackhawk II of Lakota Canyon Ranch, PUD. This filing is for the development of 22 single-family lots along the south half of Blackhawk Drive. This analysis has been completed in support of the Preliminary Plan submittal and includes design calculations for the project being submitted simultaneously for Final Plan approval. The purpose of the analysis is to calculate pre-development and post development runoff and provide mitigation, if necessary, to prevent increased runoff to downstream properties. The analysis also presents hydraulic calculations for drainage infrastructure internal to the project

BACKGROUND - PUD DRAINAGE ANALYSES

The original drainage report for the PUD and the Preliminary Subdivision Plat for Phase 1, which includes the golf course, was previously prepared by Enartech Engineers, dated July 2002, and will be referred to as the Enartech report. To avoid confusion, this report will utilize the same naming convention for basins as established in the Enartech report.

The second report that impacts this area was completed by Colorado River Engineering (CRE) on March 18, 2004 for Lakota Filing 1 Blocks A & B1 (Whitehorse Village), and will be referred to as the WHV report.

ENARTECH'S HISTORIC AND DEVELOPED RUNOFF FLOWS

This development impacts two drainage basins as identified by Enartech – basins A & D, see Figure 1 & 2. Historic runoff flows, in cubic feet per second (cfs), have been previously calculated in Enartech's report and have not been recalculated as part of this report. Below, is select pre and post project runoff information contained in Enartech's report for their basins A & D (pg. 3 of section K):

ENARTECH ANALYSIS				
Basin	Area (Ac)	CN	Tc	25-yr Peak (cfs)
A – Historic	9.210	81.9	21.5	5.27
A – Post development	9.210	73.7	21.5	2.38
D – Historic	22.064	71.7	23.3	4.14
D – Post development	22.62	82.2	23.3	13.49

Basin A

Basin A is shown in Figures 1, 2, and 4. Figure 4 shows basin A in relation to Blackhawk II. As shown in the table above, there is a (5.27 – 2.38) 2.89-cfs reduction of flow from historic to developed for the 25-year event for Basin A. This report does not redress the minimal impact of the Blackhawk II lot development on basin A for two reasons. First, the developed acreage for the small portions of the three lots in basin A total 0.28-acres. This acreage contains some portion of the building envelope of two lots and the remainder of the area will become good condition turf grass. This turf grass will essentially offset the increased runoff from the impervious roof area. Second, as discussed above, Enartech calculated there will be a 2.98-cfs reduction in flow from historic to developed insuring the 0.28-acre area will not raise the peak developed flow above the peak historic flow. Any subsequent development in basin A, most likely as park facilities, will need to account for these three Blackhawk II lots that drain into basin A.

Basin D

The main basin, identified by Enartech, impacted by Blackhawk II is basin D. This basin will be discussed in the remainder of this report. As shown in the table above, Enartech calculated an increased flow of (13.49 – 4.14) 9.35-cfs in Basin D. This basin is delineated in the attached Figures 4 & 5.

In Enartech's Phase 1A Construction Drawings there was to be a drainage basin transfer post-development from Basin C to Basin D, see attached and marked Figure 3. This transfer was to travel along Roundup Drive (subsequently renamed Whitehorse Drive) and discharge between Lakota Drive and Blackhawk Drive. See following discussion.

CRE's WHV DRAINAGE REPORT

In Colorado River Engineering's final engineering submittal for Whitehorse Village, approved July 2004, Enartech's basin C water was not transferred to basin D but was discharged to the golf course within basin C. This has reduced the anticipated cross basin flows to basin D. This was accomplished by changing the road grade to create the low point of the road within basin C and discharging the outflow into a new detention pond above the golf course and then onto the golf course.

HYDROLOGY ANALYSIS – BLACKHAWK II

The hydrology analysis quantifies change in runoff. Residential development increases the amount of impervious area and rainfall response time and can result in increased runoff conditions to downstream property owners. The increased runoff typically must be retained or detained to mitigate impacts. Flood flow hydrographs have been calculated to determine the increase from the proposed development. Hydrographs were calculated using the Graphical method developed by the Soil Conservation Service in "Technical Release-55, Urban Hydrology for Small Watersheds". Hydrologic calculations include data input for storm type and rainfall amount, drainage area, runoff curve numbers determined from soil types and vegetation cover and water flow path time of concentration. Supporting engineering calculations for the data input and runoff hydrographs have been included in the attached appendices.

A design storm of 25-year frequency has been used based on design criteria established by the Town of New Castle. The rainfall amount of 2.0-inches for a 24-hour period was determined from the NOAA Atlas II, Volume III. The historic runoff was not calculated due to previous discussion on developed flows being less than historic.

DEVELOPED RUNOFF CONDITIONS

Drainage for Blackhawk II was analyzed in three different ways – overall drainage for basin D (Figure 4), drainage within subbasins of D (Figure 5), and drainage to storm drain inlets (Figure 6). The historic and developed flow conditions of basin D are contained in Appendix A. The table below is a compilation of the mitigated developed flows and shows that developed flows are less than historic flows.

Basin	Historic Flows (Enartech Calc's)	Developed Flows (CRE Calc's)
D	4.14-cfs	3.47-cfs

Basin D is broken into two subbasins, D1 and Pond D as shown in Figure 5 with calculations in Appendix A. The peak flow to the pond (subbasin Pond D) is 7.7-cfs. This flow is detained and reduced to 2-cfs with a 6" diameter orifice opening at the inlet of the outlet box within Pond D, see Appendix B for calculations. This 2.0-cfs flow combined with the contributing flow in the downstream basin D1, 1.47-cfs, creates a total developed flow of 3.47-cfs. This developed runoff will follow the same path as the historic flow as it moves out of basin D – along the north side of Castle Valley Boulevard in existing drainage ditches heading downhill to the northeast.

HYDRAULIC CALCULATIONS

Hydraulic calculations were performed for Pond D detention sizing, drainage ditches, pond inlet discharge, storm drain inlets, and storm drain pipes and are attached in Appendix C. All drainage structures have the capacity to pass the 25-year storm event. Pond D was oversized and designed with a flexible outlet structure that can be modified due to the unknown impacts from future development, particularly in basin A. A new drainage ditch, see design drawings, will run along the northeast side of the north lots on Blackhawk Drive. This ditch was designed with a wide trench width to reduce flow velocity and thereby reduce scouring and incising. The ditch was designed along the north edge of the Blackhawk lots. All street drainage is routed down gutters into Type I storm drain curb inlets. The portion of subbasin Pond D that flows along Castle Valley Boulevard is captured in two inlet basins on either side of the bike path and upstream of the Castle Valley Blvd. and Blackhawk Drive intersection. This storm water is then transferred to Pond D.

SUMMARY

The developed conditions of Blackhawk II will not increase runoff to downstream properties. Incorporating the information from past analyses, the developed flows into basin D, 3.47-cfs, will be 0.67-cfs less than the historic peak flows, 4.14-cfs, from a 25-year storm event.

If you have any questions, please do not hesitate to call 970-625-4933.

Sincerely,


Christopher Manera, P.E.




Brian Brown, Staff Engineer

CM:bb
Drainage.doc
Attachments: Figures 1-6, Appendices A-C

ENARTECH INC.
CONSULTING ENGINEERS AND HYDROLOGISTS
302 BLDG. 311, GLENWOOD SPRINGS, CO. 81001
P.O. BOX 100, GLENWOOD SPRINGS, CO. 81602
(970) 844-2236 FAX (970) 945-2577

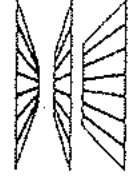
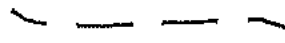
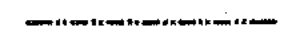

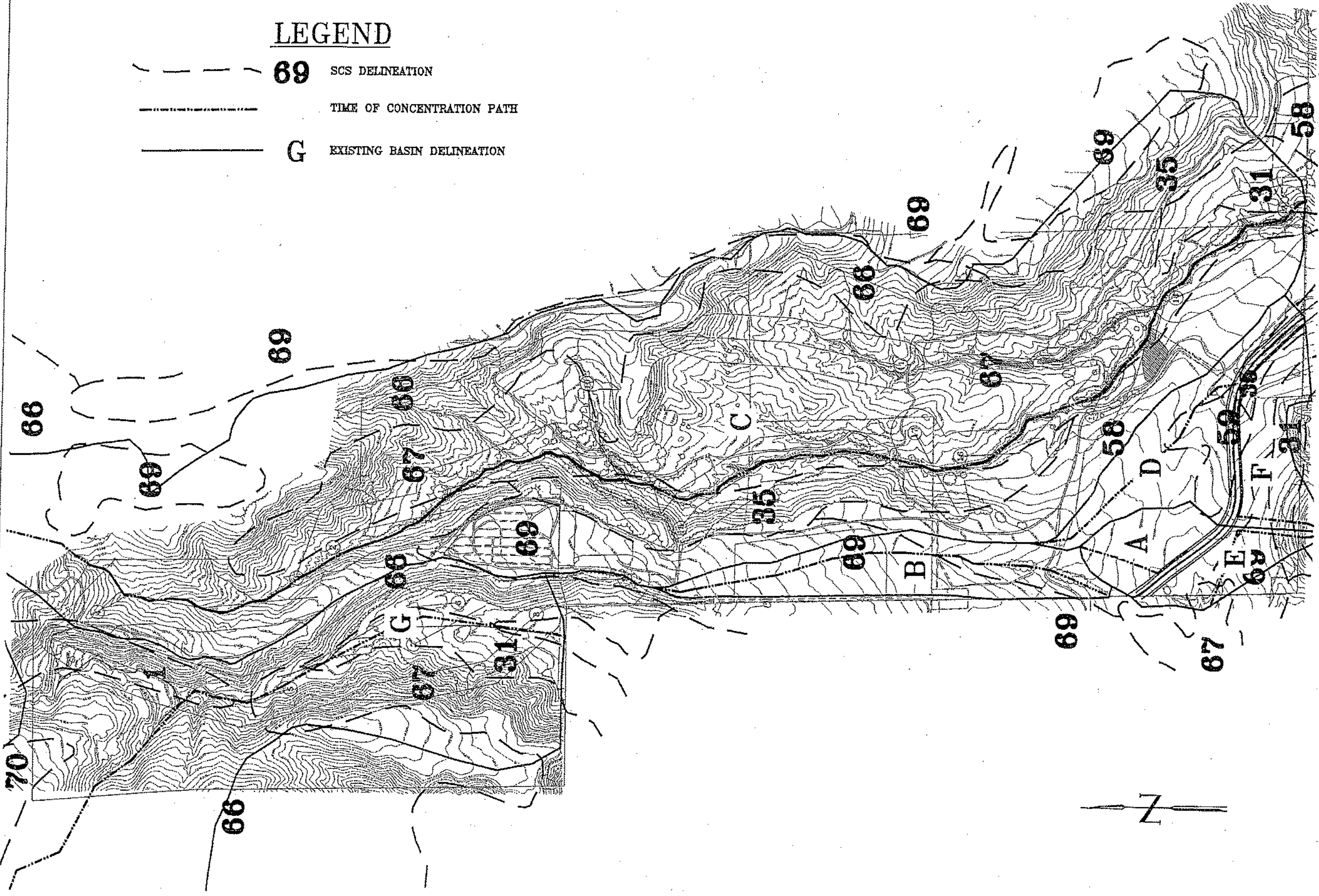


Figure 1

LEGEND

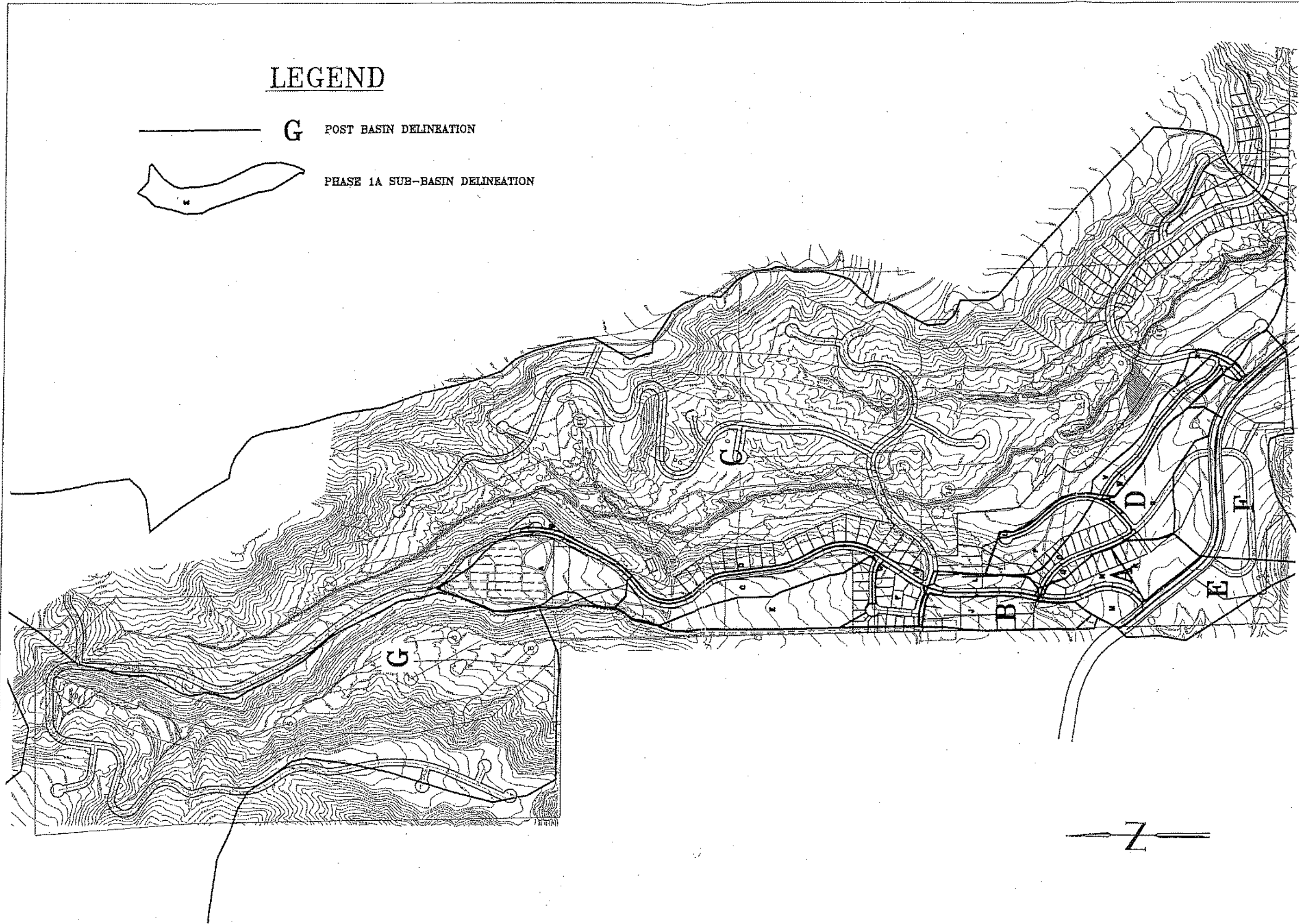
-  **69** SCS DELINEATION
-  TIME OF CONCENTRATION PATH
-  **G** EXISTING BASIN DELINEATION





EAGLES RIDGE RANCH

BASIN CHARACTERISTICS & EXISTING DELINEATION

REVISIONS	DATE	BY	COMMENTS
	08/25/02		
SCALE NOT TO SCALE			
ENGINEER C. HALE			
DRAW FILE 474-drainage			
JOB 474-01			
SHEET 1			



LEGEND

-  **G** POST BASIN DELINEATION
-  PHASE 1A SUB-BASIN DELINEATION

**EAGLES RIDGE RANCH
DEVELOPED DELINEATION**

DATE	08/25/02
SCALE	NOT TO SCALE
ENGINEER	C. HALE
DWG FILE	474-drainage
JOB	474-01
SHEET	2

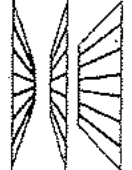
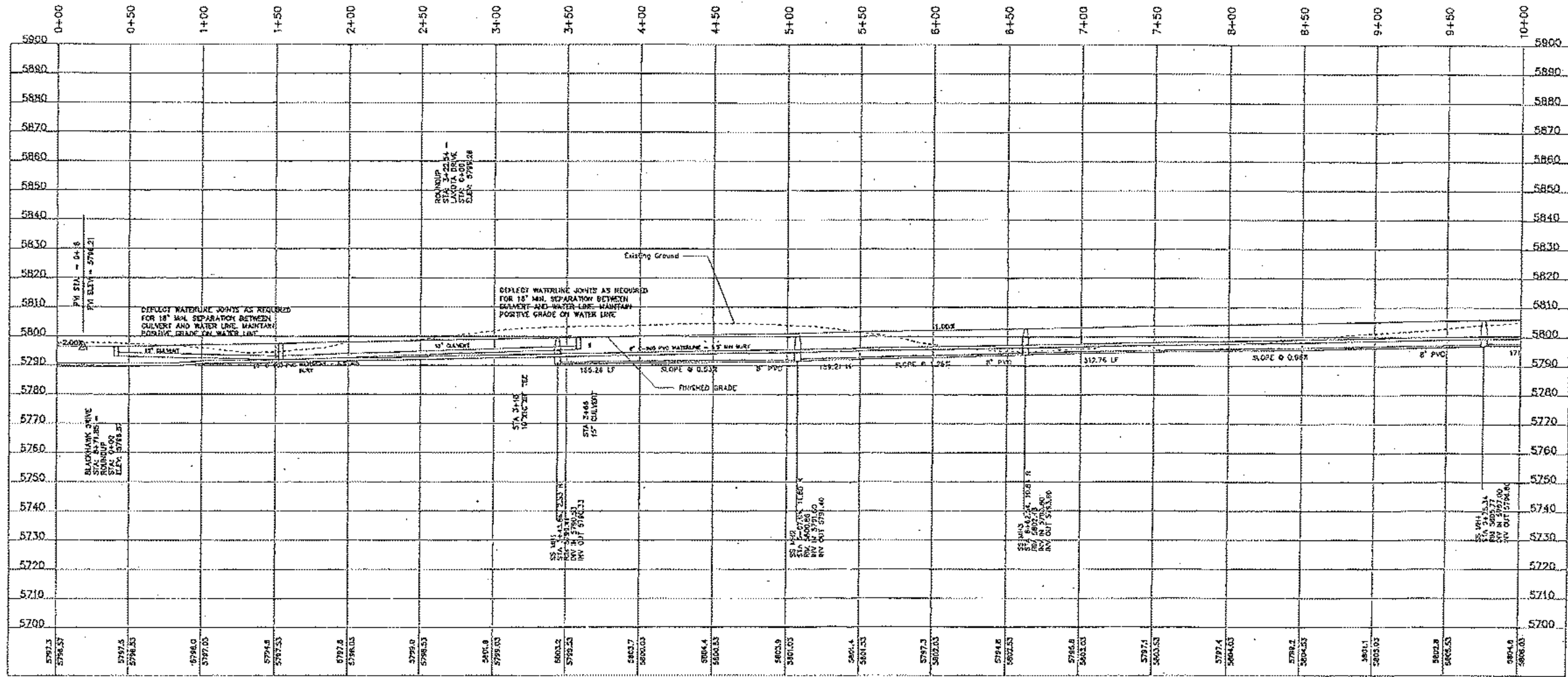
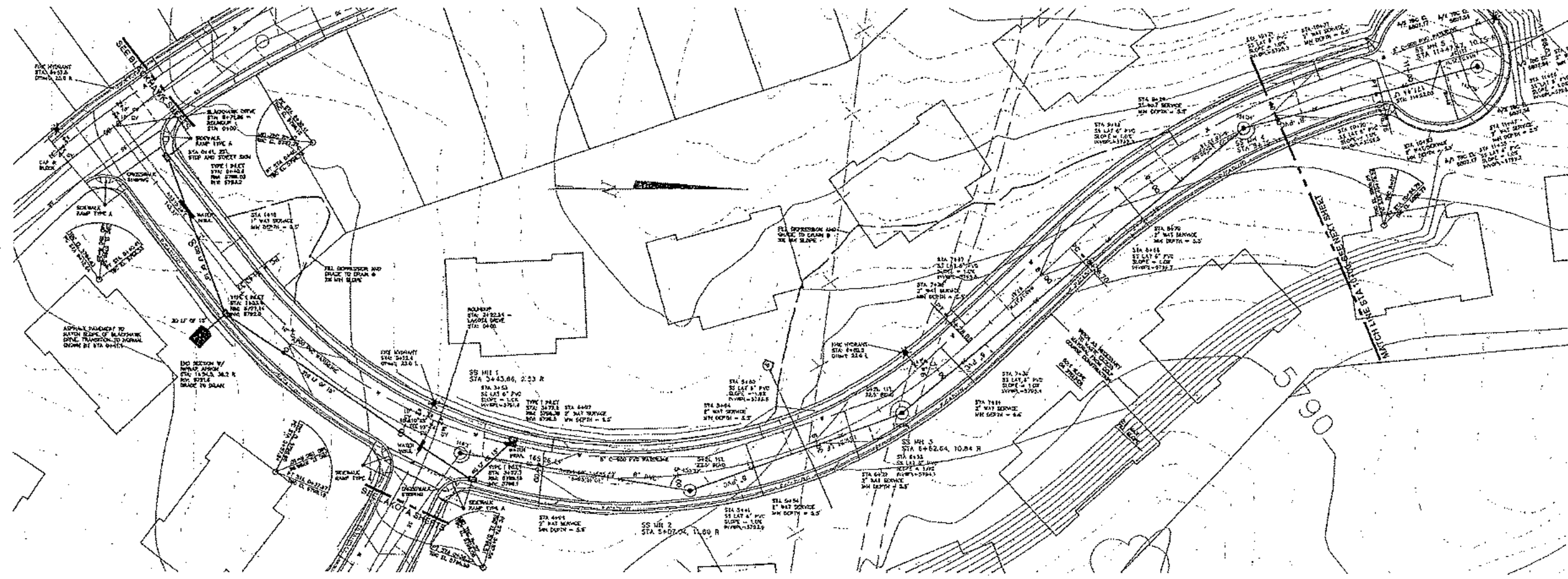
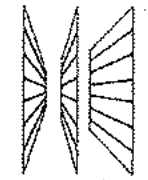

ENARTECH INC.
 CONSULTING ENGINEERS AND HYDROLOGISTS
 305 S.W. ST. CLEVENWOOD SPRINGS, CO 81601
 (970) 961-1601, CLEVENWOOD SPRINGS, CO 81602
 (970) 945-1236 FAX (970) 945-2877

Figure 2



ENARTECH INC.
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 302 8th St., GLENWOOD SPRINGS, CO 81602
 P.O. BOX 160, GLENWOOD SPRINGS, CO 81602
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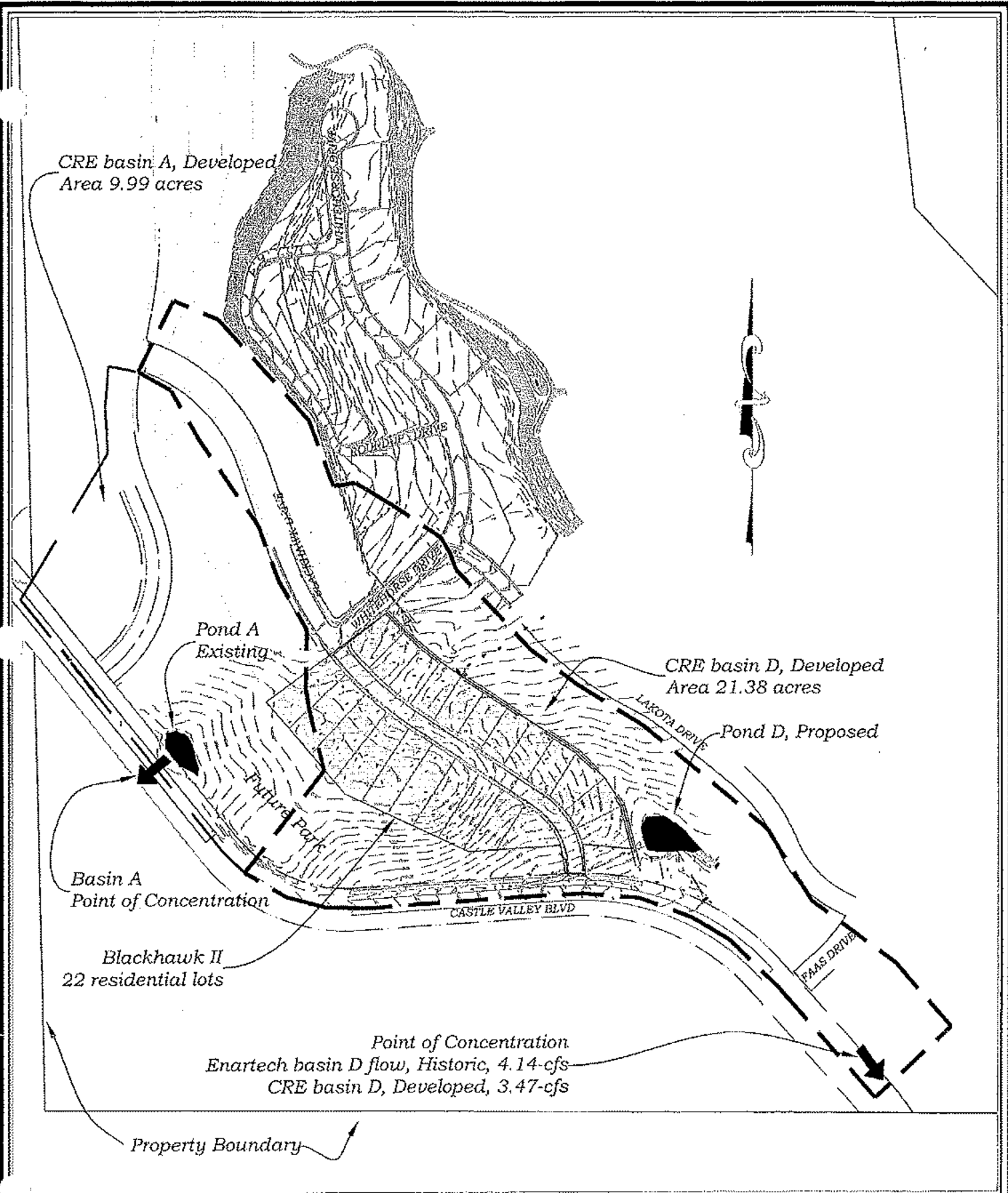


LAKOTA CANYON RANCH
ROUNDUP
PLAN AND PROFILE - STA 0+00 to STA 10+00

REVISIONS	DATE	BY	COMMENTS

DATE: 11/10/02
 SCALE: HORIZ: 1"=40'
 VERT: 1"=20'
 ENGINEER: C. HALE
 PNG FILE: Roundup
 JOB: 474-01
 SHEET: **PP8**

Figure 3



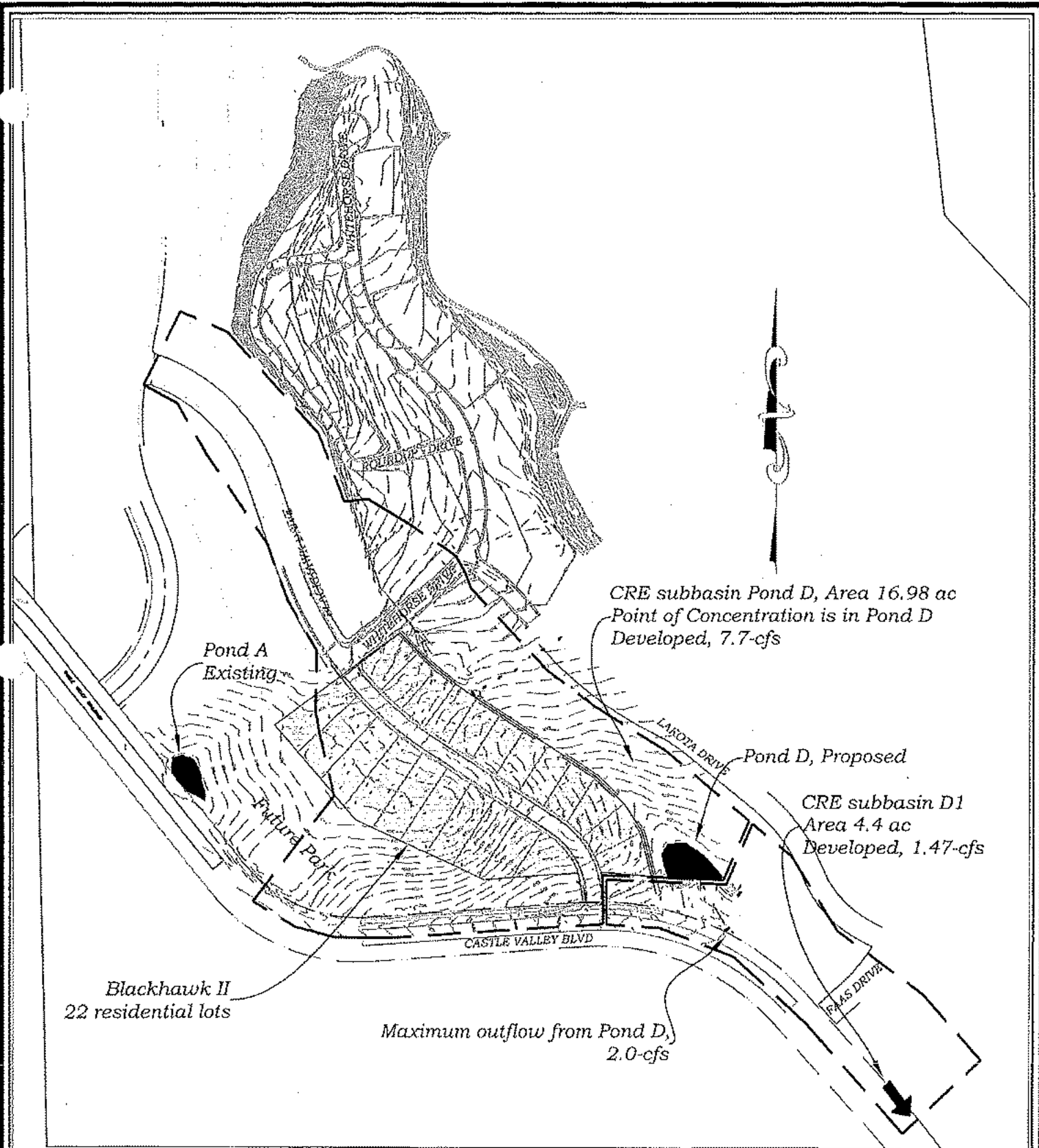
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 Tel 970-625-4933
 Fax 970-625-4564

COLORADO RIVER ENGINEERING
 Civil Engineering

Water Rights, Augmentation Plans
 Hydrology, Flood Plain Analysis

Groundwater, Well Permitting
 Canals, Pipelines, Dams

<p>Basin Drainage</p>		<p>FIGURE NO. 4</p>
File Name: Drainage.dwg	Job No: 560.3	Client: Lakota, Blackhawk II
Drawn by: BB	Aprvd by: CM	Date: Aug 27, 2004



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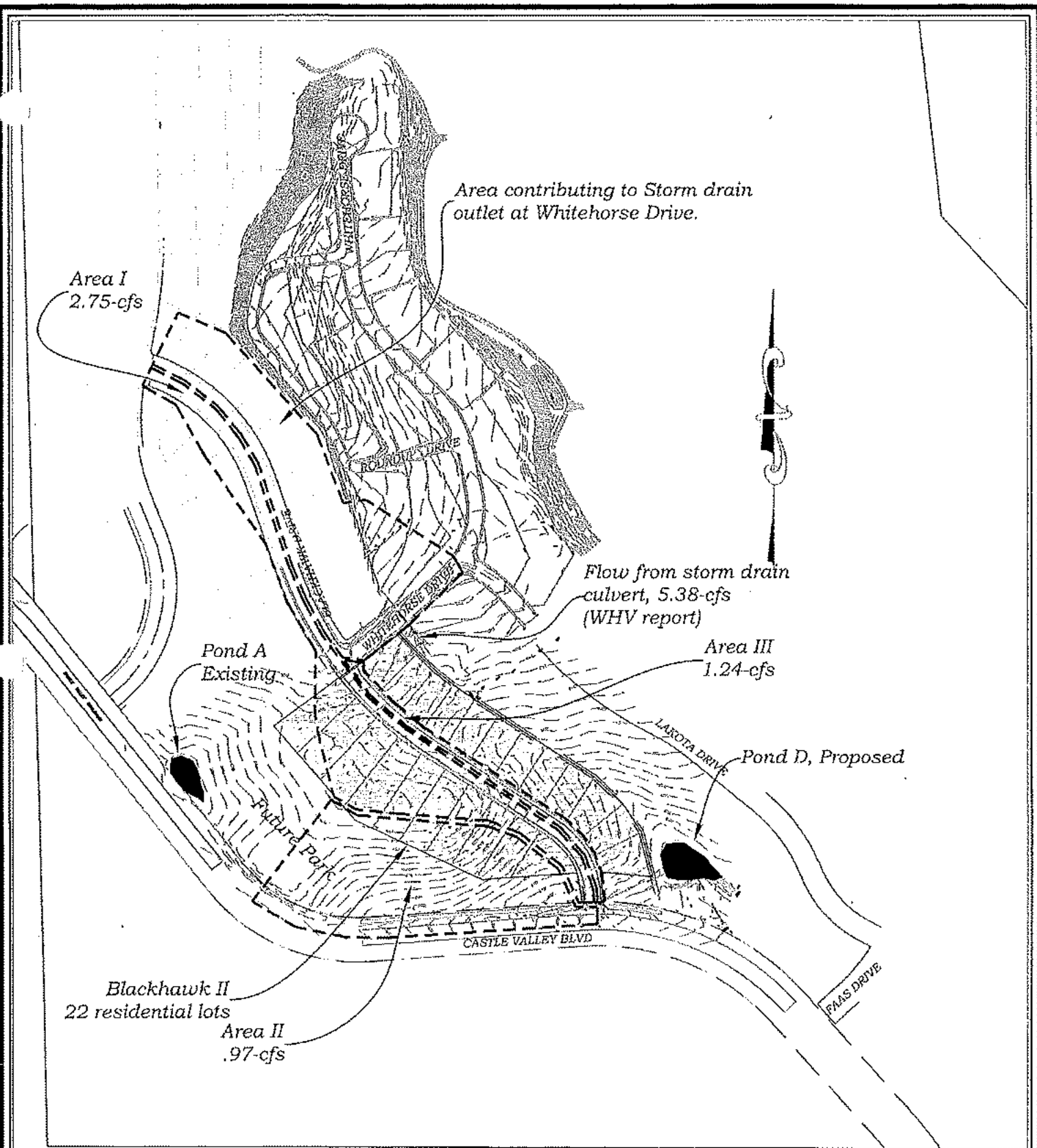


Water Rights, Augmentation Plans Groundwater, Well Permitting
 Hydrology, Flood Plain Analysis Canals, Pipelines, Dams

D Subbasin Drainage

FIGURE NO.
5

File Name: Drainage.dwg	Job No: 560.3	Client: Lakota, Blackhawk II
Drawn by: BB	Aprvd by: CM	Date: Aug 27, 2004



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Stormdrain Flows

FIGURE NO.
6

File Name: Drainage.dwg	Job No: 560.3	Client: Lakota, Blackhawk II
Drawn by: BB	Appvd by: CM	Date: Aug 27, 2004

Appendix A
Historic and Developed Conditions Hydrology Calculations

Copy from: Lakota Canyon Ranch; Drainage Report & Calculations,
Phase IA Construction Drawings, by Enertech, Aug. 2002

tmp#45.txt

Graphical Peak Discharge method

Given Input Data:

Description	Pre D 25
Rainfall distribution	Type II
Frequency	25 years
Rainfall, P (24-hours)	2.0000 in
Drainage area	22.0640 ac
Runoff curve number, CN	72
Time of concentration, TC	23.3000 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.7778 in
Ia/P	0.3889
Unit peak discharge, q_u	410.8909 csm/in
Runoff, Q	0.2923 in
Pond and swamp adjustment, F_p ...	1.0000
Peak discharge, q_p	4.1401 cfs



Date Aug 2004
 Job No. 36003
 Job Name _____
 Description _____

P.O. Box 1301, 136 E. 3rd
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

Page ___ of ___

Dev CRE basin D Entire D basin SCS Curve # 58459
 Hyd soil group B

98 Roads Blackhawk 1650x46, WH Drive 330'x40', Faas Dr 170'x40', English Hill 1620x15'
 = 2.78 acres

* Poss. hard surface courts (tennis, basketball, etc.)
 = .2 acres

Imperv. total = 2.98 = 3.0 acres

80 Homes (on 1/4 acre)
 Designated Lots 7.91 ac Future Lots on Lakota Dr. 3.31 ac = 11.22 ac

69 Open Space = 7.18 ac
 Assume 70% native = 5.03 ac
 30% turf grass (fair cond.) = 2.15 ac

$CN_{comp} = 98 \left(\frac{2.98}{21.38} \right) + 80 \left(\frac{11.22}{21.38} \right) + 69 \left(\frac{7.18}{21.38} \right) = 78.8 = 79$

tmp#6.txt

Sheet Flow

```

Description .....
Manning's n ..... 0.2400
Flow Length ..... 125.0000 ft
Two Yr, 24 hr Rainfall ..... 2.0000 in
Land Slope ..... 0.0480 ft/ft
Computed sheet flow time .....> 15.2032 min

```

Shallow Concentrated Flow

```

Description .....
Surface ..... Paved
Flow Length ..... 145.0000 ft
Watercourse Slope ..... 0.0140 ft/ft
Velocity ..... 2.4053 fps
Computed shallow flow time .....> 1.0047 min

```

Shallow Concentrated Flow

```

Description .....
Surface ..... Unpaved
Flow Length ..... 1428.0000 ft
Watercourse Slope ..... 0.0450 ft/ft
Velocity ..... 3.4226 fps
Computed shallow flow time .....> 6.9537 min

```

```

*****
Total Time of Concentration .....> 23.1616 min
*****

```

tmp#7.txt

Graphical Peak Discharge method

Given Input Data:

Description	CRE basin D, Devel.
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	21.3800 ac
Runoff curve number, CN	79
Time of concentration, Tc	23.1616 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.5316 in
Ia/P	0.2658
Unit peak discharge, qu	521.0359 csm/in
Runoff, Q	0.5225 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	9.0942 cfs



Date Aug 2003
 Job No. 360-3
 Job Name _____
 Description _____

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 Rifle, CO 81650
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 Fax 970-625-4564

Page ___ of ___

Dev	CRE sub basin D1	
78	Roads	Faas Rd, Castle Hill Blvd. 170 x 40 366 x 18 = 5.1 ac
80	Homes Floors	S side Lakota, Facing Faas Dr 1,02 ac .16 = 1.18 ac
69	Open	2.7 acres
$CN_{comp} = 78 \left(\frac{1.51}{4.4} \right) + 80 \left(\frac{1.18}{4.4} \right) + 69 \left(\frac{2.7}{4.4} \right) = 75$		

tmp#9.txt

Sheet Flow

Description
Manning's n 0.2400
Flow Length 100.0000 ft
Two Yr, 24 hr Rainfall 2.0000 in
Land Slope 0.0400 ft/ft
Computed Sheet flow time> 13.6798 min

Shallow Concentrated Flow

Description
Surface Unpaved
Flow Length 600.0000 ft
Watercourse Slope 0.0450 ft/ft
Velocity 3.4226 fps
Computed shallow flow time> 2.9217 min

Total Time of Concentration> 16.6015 min

tmp#10.txt

Graphical Peak Discharge method

Given Input Data:

Description	CRE subbasin D1, Devel
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	4.4000 ac
Runoff curve number, CN	75
Time of concentration, Tc	16.6015 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.6667 in
Ia/P	0.3333
Unit peak discharge, qu	561.5334 csm/in
Runoff, Q	0.3810 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	1.4707 cfs

tmp#11.txt

Sheet Flow

```

-----
Description .....
Manning's n ..... 0.2400
Flow Length ..... 125.0000 ft
Two Yr, 24 hr Rainfall ..... 2.0000 in
Land Slope ..... 0.0450 ft/ft
Computed Sheet flow time .....> 15.6008 min

```

Shallow Concentrated Flow

```

-----
Description .....
Surface ..... Paved
Flow Length ..... 145.0000 ft
Watercourse Slope ..... 0.0140 ft/ft
Velocity ..... 2.4053 fps
Computed Shallow flow time .....> 1.0047 min

```

Shallow Concentrated Flow

```

-----
Description .....
Surface ..... Unpaved
Flow Length ..... 780.0000 ft
Watercourse Slope ..... 0.0450 ft/ft
Velocity ..... 3.4226 fps
Computed Shallow flow time .....> 3.7982 min

```

```

*****
Total Time of Concentration .....> 20.4037 min
*****

```

tmp#12.txt

Graphical Peak Discharge method

Given Input Data:

Description	Pond D Basin, contrib area
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	16.9800 ac
Runoff curve number, CN	79
Time of concentration, Tc	20.4037 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.5316 in
Ia/P	0.2658
Unit peak discharge, q_u	555.8426 csm/in
Runoff, Q	0.5225 in $\times 16.9800 \text{ ac} = 32,205 \text{ ft}^3$
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, q_p	7.7051 cfs

Appendix B
Pond Routing and Outlet Calculations

tmp#20.txt

TR-55 Tabular Hydrograph Method
Input Summary

Description
 Pond D basin, contrib area
 Rainfall Distribution Type II
 Ia/P Interpolation Off
 Total Area 16.9800 ac

Peak Time 12.3000 hrs
 Peak Flow 7.9568 cfs

Given Input Data:

Subarea Description	D/S Subareas	Area (ac)	CN	Tc (hrs)	Tt (hrs)	Rainfall (in)
Pond D		16.9800	79	0.3400	0.0000	2.0000

Support Data:

Messages:

Info: Time of Concentration rounded to 0.3000 hrs in row <1>.

tmp#21.txt

TR-55 Tabular Data

Pond D

11.0000	hrs	0.0000	cfs
11.3000	hrs	0.0000	cfs
11.6000	hrs	0.0000	cfs
11.9000	hrs	0.1525	cfs
12.0000	hrs	0.8872	cfs
12.1000	hrs	3.4794	cfs
12.2000	hrs	7.2776	cfs
12.3000	hrs	7.9568	cfs
12.4000	hrs	6.2934	cfs
12.5000	hrs	4.2002	cfs
12.6000	hrs	3.0635	cfs
12.7000	hrs	2.3981	cfs
12.8000	hrs	1.9407	cfs
13.0000	hrs	1.4417	cfs
13.2000	hrs	1.2199	cfs
13.4000	hrs	1.0674	cfs
13.6000	hrs	0.9703	cfs
13.8000	hrs	0.8872	cfs
14.0000	hrs	0.8040	cfs
14.3000	hrs	0.7070	cfs
14.6000	hrs	0.6515	cfs
15.0000	hrs	0.6099	cfs
15.5000	hrs	0.5545	cfs
16.0000	hrs	0.4990	cfs
16.5000	hrs	0.4436	cfs
17.0000	hrs	0.4297	cfs
17.5000	hrs	0.4020	cfs
18.0000	hrs	0.3881	cfs
19.0000	hrs	0.3327	cfs
20.0000	hrs	0.2911	cfs
22.0000	hrs	0.2634	cfs
26.0000	hrs	0.0000	cfs

} Period needing dampening

Total Flow Values

11.0000	hrs	0.0000	cfs
11.3000	hrs	0.0000	cfs
11.6000	hrs	0.0000	cfs
11.9000	hrs	0.1525	cfs
12.0000	hrs	0.8872	cfs
12.1000	hrs	3.4794	cfs
12.2000	hrs	7.2776	cfs
12.3000	hrs	7.9568	cfs
12.4000	hrs	6.2934	cfs
12.5000	hrs	4.2002	cfs
12.6000	hrs	3.0635	cfs
12.7000	hrs	2.3981	cfs
12.8000	hrs	1.9407	cfs
13.0000	hrs	1.4417	cfs
13.2000	hrs	1.2199	cfs
13.4000	hrs	1.0674	cfs
13.6000	hrs	0.9703	cfs
13.8000	hrs	0.8872	cfs
14.0000	hrs	0.8040	cfs
14.3000	hrs	0.7070	cfs
14.6000	hrs	0.6515	cfs
15.0000	hrs	0.6099	cfs
15.5000	hrs	0.5545	cfs
16.0000	hrs	0.4990	cfs
16.5000	hrs	0.4436	cfs

tmp#21.txt

17.0000 hrs 0.4297 cfs
17.5000 hrs 0.4020 cfs
18.0000 hrs 0.3881 cfs
19.0000 hrs 0.3327 cfs
20.0000 hrs 0.2911 cfs
22.0000 hrs 0.2634 cfs
26.0000 hrs 0.0000 cfs

12.3000 hrs 7.9568 cfs Peak Time and Flow

Untitled
 PIPE CULVERT ANALYSIS
 COMPUTATION OF CULVERT PERFORMANCE CURVE

August 27, 2004

DESCRIPTION	PROGRAM INPUT DATA	VALUE
Culvert Diameter (ft).....		1.0
FHWA Chart Number.....		2
FHWA Scale Number (Type of Culvert Entrance).....		2
Manning's Roughness Coefficient (n-value).....		0.011
Entrance Loss Coefficient of Culvert Opening.....		0.5
Culvert Length (ft).....		147.0
Invert Elevation at Downstream end of Culvert (ft).....		0.0
Invert Elevation at Upstream end of Culvert (ft).....		1.47
Culvert slope (ft/ft).....		0.01
Starting Flow Rate (cfs).....		1.0
Incremental Flow Rate (cfs).....		0.5
Ending Flow Rate (cfs).....		4.0
Starting Tailwater Depth (ft).....		0.0
Incremental Tailwater Depth (ft).....		0.0
Ending Tailwater Depth (ft).....		0.0

↓
 COMPUTATION RESULTS

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater Inlet Control (ft)	Headwater Outlet Control (ft)	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
1.0	0.0	0.61	0.0	0.33	0.42	0.33	4.38
1.5	0.0	0.78	0.0	0.41	0.52	0.41	4.9
2.0	0.0	0.94	0.0	0.48	0.6	0.48	5.3
2.5	0.0	1.09	0.0	0.55	0.68	0.55	5.6
3.0	0.0	1.4	0.0	0.62	0.74	0.62	5.82
3.5	0.0	1.68	0.0	0.7	0.8	0.7	5.99
4.0	0.0	1.96	0.0	0.78	0.85	0.78	6.1

HYDROCALC Hydraulics for windows, Version 1.2 Copyright (c) 1996
 Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069
 Phone:(281)440-3787, Fax:(281)440-4742, Email:software@dodson-hydro.com
 All Rights Reserved.

1/0 creates inlet control, 0% restriction is orifice

tmp#22.txt

orifice calculator

Given Input Data:

solving for	Flowrate
Coefficient	0.6100
Diameter	6.0000 in
Headwater	4.5000 ft
Tailwater	0.0000 ft

Computed Results:

Flowrate	2.0381 cfs
velocity	10.3801 fps

tmp#2.rtc

#Units=Structural Dimensions,in,Flowrate,cfs

#Orifice Rating Curve Data

#Depth - ft Flowrate - cfs

```
#-----  
1.0000000, 0.96078730  
1.0700000, 0.99384611  
1.1400000, 1.02584011  
1.2100000, 1.05686602  
1.2800000, 1.08700674  
1.3500000, 1.11633396  
1.4200000, 1.14491020  
1.4900000, 1.17279036  
1.5600000, 1.20002295  
1.6300000, 1.22665110  
1.7000000, 1.25271337  
1.7700000, 1.27824436  
1.8400000, 1.30327530  
1.9100000, 1.32783446  
1.9800000, 1.35194756  
2.0500000, 1.37563806  
2.1200000, 1.39892742  
2.1900000, 1.42183535  
2.2600000, 1.44438002  
2.3300000, 1.46657816  
2.4000000, 1.48844528  
2.4700000, 1.50999576  
2.5400000, 1.53124298  
2.6100000, 1.55219938  
2.6800000, 1.57287659  
2.7500000, 1.59328548  
2.8200000, 1.61343623  
2.8900000, 1.63333840  
2.9600000, 1.65300097  
3.0300000, 1.67243237  
3.1000000, 1.69164059  
3.1700000, 1.71063315  
3.2400000, 1.72941713  
3.3100000, 1.74799928  
3.3800000, 1.76638595  
3.4500000, 1.78458320  
3.5200000, 1.80259675  
3.5900000, 1.82043206  
3.6600000, 1.83809433  
3.7300000, 1.85558848  
3.8000000, 1.87291924  
3.8700000, 1.89009109  
3.9400000, 1.90710833  
4.0100000, 1.92397506  
4.0800000, 1.94069521  
4.1500000, 1.95727253  
4.2200000, 1.97371062  
4.2900000, 1.99001293  
4.3600000, 2.00618277  
4.4300000, 2.02222332  
4.5000000, 2.03813764  
4.5000000, 2.03813764
```

Lakota Canyon, Blackhawk II, Pond D volume estimates, 12" ADS w/6" orifice inlet								
Time	Time Incre	Flow in	Total Volume	Cumulative	Est Head	Flow out	Volume Out	Cumulative
	(hours)	(cfs)	(cu. ft.)	Volume In (cu. ft.)	(ft.)	6" orifice (cfs)	(cu. ft.)	Volume Out (cu. ft.)
11								
11.3	0.3	0	0			0		
11.6	0.3	0	0			0		
11.9	0.3	0.1525	164.7	164.7		0.1525	164.7	164.7
12	0.1	0.8872	319.392	484.092	0.3	0.8872	319.392	484.092
12.1	0.1	3.4794	1252.584	1736.676	1	1	360	844.092
12.2	0.1	7.2776	2619.936	4356.612	2.2	1.4	504	1348.092
12.3	0.1	7.9568	2864.448	7221.06	3	1.7	612	1960.092
12.4	0.1	6.2934	2265.624	9486.684	3.5	1.8	648	2608.092
12.5	0.1	4.202	1512.72	10999.404	3.8	1.9	684	3292.092
12.6	0.1	3.0635	1102.86	12102.264	4.2	2	720	4012.092
12.7	0.1	2.3981	863.316	12965.58	4.4	2	720	4732.092
12.8	0.1	1.9407	698.652	13664.232	4.5	2	720	5452.092
13	0.2	1.4417	1038.024	14702.256	4.5	2	1440	6892.092
13.2	0.2	1.2199	878.328	15580.584	4.3	2	1440	8332.092
13.4	0.2	1.0674	768.528	16349.112	4.2	2	1440	9772.092
13.6	0.2	0.9703	698.616	17047.728	3.9	1.9	1368	11140.092
13.8	0.2	0.8872	638.784	17686.512	3.3	1.7	1224	12364.092
14	0.2	0.804	578.88	18265.392	3	1.7	1224	13588.092
14.3	0.3	0.707	763.56	19028.952	2.6	1.6	1728	15316.092
14.6	0.3	0.6515	703.62	19732.572	2.1	1.5	1620	16936.092
15	0.4	0.6099	878.256	20610.828	1.6	1.2	1728	18664.092
15.5	0.5	0.5545	998.1	21608.928	1.3	1.1	1980	20644.092
16	0.5	0.499	898.2	22507.128	1	1	1800	22444.092
16.5	0.5	0.4436	798.48	23305.608		0.4436	798.48	23242.572
17	0.5	0.4297	773.46	24079.068		0.4297	773.46	24016.032
17.5	0.5	0.402	723.6	24802.668		0.402	723.6	24739.632
18	0.5	0.3881	698.58	25501.248		0.3881	698.58	25438.212
19	1	0.3327	1197.72	26698.968		0.3327	1197.72	26635.932
20	1	0.2911	1047.96	27746.928		0.2911	1047.96	27683.892
22	2	0.2634	1896.48	29643.408		0.2634	1896.48	29580.372
26	4	0	0	29643.408		0	0	29580.372

Appendix C
Hydraulic Capacity Calculations



Date Aug 2004
 Job No. 560.3
 Job Name Blkwt II
 Description _____

 Page ___ of ___

P.O. Box 1301, 136 E. 3rd
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

Area I			
W 1/2 of Blackhawk	$1580' \times 22.5'$		
	$= .8161 \text{ ac}$	w/CN = 98	
Total Area I	$= 2.91 \text{ ac}$		
	$-.8161 \text{ ac}$		
	<hr/>		
	2.1 ac res	CN = 80	
CN _I	$= \left(\frac{.8161}{2.91} \right) 98 + \left(\frac{2.1}{2.91} \right) 80$		$= 85$
Area II			
Total Area	4.23 ac	CN	CN _{II} = 71
Res. Area	<u>.75 ac</u>	80	
Open Space Area	3.48 ac	69	
Area III			
Total Area	7.2 ac	CN	
Imperv. $780' \times 22.5'$	<u>.4 ac</u>	98	CN _{III} = 90
Res	.32 ac	80	

tmp#238.txt

Graphical Peak Discharge method

Given Input Data:

Description	Blackhawk 2	<i>Area I</i>
Rainfall distribution	Type II	
Frequency	1 year	
Rainfall, P (24-hours)	2.0000 in	
Drainage area	2.9100 ac	
Runoff curve number, CN	85	
Time of concentration, Tc	0.2000 hrs	
Pond and Swamp Areas	0.0000 % of Area	

Computed Results:

Initial abstraction, Ia	0.3529 in	
Ia/P	0.1765	
Unit peak discharge, qu	760.7434 csm/in	
Runoff, Q	0.7951 in	
Pond and swamp adjustment, Fp ...	1.0000	
Peak discharge, qp	2.7504 cfs	<i>< SCS 00 I type I</i>

tmp#239.txt

Graphical Peak Discharge method

Given Input Data:

Description	Blackhawk 2	<i>Area II</i>
Rainfall distribution	Type II	
Frequency	1 year	
Rainfall, P (24-hours)	2.0000 in	
Drainage area	4.2300 ac	
Runoff curve number, CN	71	
Time of concentration, Tc	0.2000 hrs	
Pond and Swamp Areas	0.0000 % of Area	

Computed Results:

Initial abstraction, Ia	0.8169 in
Ia/P	0.4085
Unit peak discharge, qu	553.5566 csm/in
Runoff, Q	0.2657 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	0.9722 cfs

tmp#240.txt

Graphical Peak Discharge method

Given Input Data:

Description	Blackhawk 2	<i>Area III</i>
Rainfall distribution	Type II	
Frequency	1 year	
Rainfall, P (24-hours)	2.0000 in	
Drainage area	0.7200 ac	
Runoff curve number, CN	90	
Time of concentration, Tc	0.1000 hrs	
Pond and Swamp Areas	0.0000 % of Area	

Computed Results:

Initial abstraction, Ia	0.2222 in	
Ia/P	0.1111	
Unit peak discharge, qu	1005.8912 csm/in	
Runoff, Q	1.0940 in	
Pond and swamp adjustment, Fp ...	1.0000	
Peak discharge, qp	1.2380 cfs	<i>< 5 cfs @ 1 type I inlet</i>

tmp#23.txt

Sheet Flow

```

Description .....
Manning's n ..... 0.2400
Flow Length ..... 100.0000 ft
Two Yr, 24 hr Rainfall ..... 2.0000 in
Land Slope ..... 0.0300 ft/ft
Computed Sheet flow time .....> 0.2558 hrs

```

Shallow Concentrated Flow

```

Description .....
Surface ..... Unpaved
Flow Length ..... 720.0000 ft
Watercourse Slope ..... 0.0500 ft/ft
Velocity ..... 3.6078 fps
Computed Shallow flow time .....> 0.0554 hrs

```

```

*****
Total Time of Concentration .....> 0.3112 hrs
*****

```

tmp#24.txt

Graphical Peak Discharge method

Given Input Data:

Description	Swale brwn. Lakota Dr. and Blackhawk Dr.
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	4.7800 ac
Runoff curve number, CN	79
Time of concentration, Tc	0.3112 hrs
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.5316 in
Ia/P	0.2658
Unit peak discharge, qu	580.9605 csm/in
Runoff, Q	0.5225 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	2.2671 cfs

+5.38 cfs flow from Stormdrain in WH Dr.

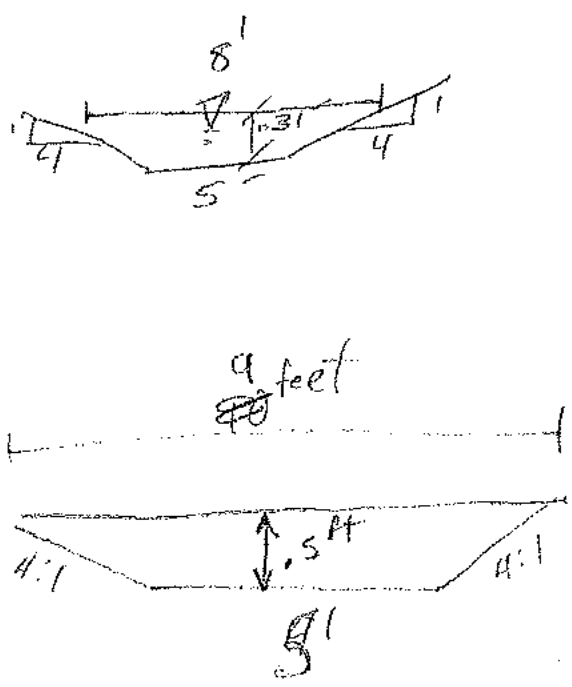
8.65

Worksheet
Worksheet for Trapezoidal Channel

Project Description	
Project File	untitled.fm2
Worksheet	Blackhawk swale
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.030
Channel Slope	0.050000 ft/ft
Left Side Slope	4.000000 H : V
Right Side Slope	4.000000 H : V
Bottom Width	5.00 ft
Discharge	8.65 cfs

Results	
Depth	0.31 ft
Flow Area	1.94 ft ²
Wetted Perimeter	7.56 ft
Top Width	7.48 ft
Critical Depth	0.40 ft
Critical Slope	0.019384 ft/ft
Velocity	4.47 ft/s
Velocity Head	0.31 ft
Specific Energy	0.62 ft
Froude Number	1.55
Flow is supercritical.	



5 ft/s max allowable for easily eroded soils

From Urban Drainage Vol II

APPENDIX B

June 17, 2021

Romero Group
Dwayne Romero, President & CEO
Via Email: dromero@romero-group.com;

RE: Job#1219 - Lakota Canyon Ranch - Sketch Plan Engineering - Water and Sewer Loads

Dear Mr. Romero,

Colorado River Engineering, Inc. has prepared this letter to summarize the water and sewer loads for the Sketch Plan submittal as required in Title 16.16.010.C.4. The Sketch Plan is comprised of both residential and commercial structures as summarized in the attached **Table 1**. The 196 residential units consist of single-family residences, townhomes, and apartment buildings. The commercial space consists of 5 buildings with the 1st floor uses anticipated to be retail, recreation, and entertainment while the 2nd floor uses will consist of office space.

EQR Estimates

For purpose of calculating water and sewer loading, an estimate of Equivalent Residential Units (EQR's) was made following Town Municipal Code requirements for determining tap fees (due at building permit application). The method used by the Town establishes the water use by a single-family home (EQR) as 3.5 people using 100 gallons per day each and the outside irrigation of 2,500 square feet. Using minor reductions for multi-family structures and engineers estimates of commercial development use, the total EQR's for the project are **220.3** as summarized in the attached **Table 2**.

Water and Sewer Estimates

The attached **Table 3** summarizes the water and sewer loading using the EQR approach. Water demands during the non-irrigation season are about 77,000 gallons per day (gpd), or 54 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring are about 165,000 gallons per day (gpd), or 115 gallons per minute (gpm). Sewer loading estimates are 73,300 gpd. The loading shows that the project flows are much lower than the capacity associated with the minimum sizing of pipes used in the Town Code and allotted for in the master planning of the Lakota Canyon Ranch infrastructure. These loading estimates are very conservatively high as the EQR approach greatly overestimates water use which is appropriate when sizing water and sewer pipeline infrastructure.

For purposes of estimating loading with respect to water and sewer plant capacities, the actual loads will be considerably smaller. The project water use will be considerably less for both inside and outside uses. Population changes and advances in conservation through plumbing codes has greatly reduced indoor water uses. Furthermore, average single family home populations are lower at 2.65 per home

versus 3.5 used in the past. Per capita water use is also down to 58.6 gpd versus 100 gpd used currently. Average use per household is now 138 gpd and the typical single family home indoor uses average 155 gpd which is 44% of the 350 gpd currently used in the town EQR method. The outside irrigation component using the EQR method does not equitably estimate higher density and commercial projects that typically have significantly less irrigated area. For example, using the EQR approach the irrigated area of the project is 12.2 acres where the maximum landscaping area of the project (non-impervious) was measured to be ± 7 acres.

Our engineers estimate of water and sewer loading using project specific data and modern water use per capita data is summarized in **Table 4**. Water demands during the non-irrigation season are about 33,000 gpd, or 23 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring is about 82,000 gpd, or 57 gpm. Sewer loading estimates are 31,200 gpd.

Future Engineering Design - Drainage, Water, and Sewer Infrastructure

Although not required at sketch plan submittal, we have prepared a general description of historical information related to engineering design that will be incorporated into the next design level preparation for a Preliminary Plan.

Drainage

Increased runoff from the development of Lakota Canyon Ranch has previously been mitigated with the construction of the golf course and numerous ponds; therefore, large-scale detention pond construction is not anticipated. However, to address water quality issues with stormwater runoff from roads and parking lots, best management practices will be required to mitigate water quality. This project can use sediment tarps, bio swales, and other passive treatment options utilized in the past to treat stormwater.

Sewer

The Sewer Master Plan (attached) shows a trunk line running from the northern project area Roundup Drive (from Whitehorse Village) routed to the south on the future Lakota Drive to the sewer main in Castle Valley Boulevard. The sewer from Whitehorse Village did not construct improvements through the subject parcels (Lakota Drive) and instead was able to extend sewer to Blackhawk Drive. This means the subject parcels are not encumbered by the previous "Sewer E" alignment and the new sewer system can be designed to match the land development layout. Note that the "Sewer F" line from the Faas Ranch Road homes does cross the southeastern corner of the project and will need to be included in the preliminary plan design.

Water

The Water Master Plan (attached) shows a trunk line running from the northern project area (from Whitehorse Village) to the southern parcel and consists of 8" and 10" size pipelines. The size and location of the new water mains will need to be analyzed at Preliminary Plan to ensure design flows (fire suppression) can be maintained to the multi-family and commercial uses.

Raw Water

The golf course back up supply pipeline (6"-PVC) runs through the subject parcels south of Whitehorse Village and should be analyzed and included in the Preliminary Plan Design.

Soils

Site specific geotechnical engineering investigations will be required for the Preliminary Plan. Our past experience in this area of Lakota indicates that the soils in the subject parcels are higher quality than other project soils and will likely not need intensive mitigation efforts related to infrastructure and structure construction.

If you have any questions, please do not hesitate to call 970-625-4933.

Sincerely,



Christopher Manera, P.E.

Table 1 - Development Structures Summary

	RESIDENTIAL			Commercial (sq. ft.)	
	1 bedroom	2 bedroom	3 bedroom		
East of Faas Road					
Residential					
Apartments	36	18	18		
Townhomes			10		
Small Lot Single Family					
Commercial					
1st floor commercial (likely retail sales, recreation, entertainment, restaurant)				13,400	
2nd floor undesignated commercial (likely services and office)				17,000	
Medical space				14,000	
TOTAL - EAST OF FAAS RD	82	36	18	28	44,400
West of Faas Road					
Residential					
Apartments	24	12	12		
Townhomes			38		
Flats			7		
Small Lot Single Family			21		
Commercial					
1st floor commercial (likely retail sales, recreation, entertainment, restaurant)				20,000	
2nd floor undesignated commercial (likely services and office)				11,500	
Medical space					
TOTAL - WEST OF FAAS RD	114	24	12	78	31,500
GRAND TOTALS	196	60	30	106	75,900

Table 2 - EQR Estimates

Structure Summary (From Table 1)		(A)			RESIDENTIAL EQR per Unit Type			(A)x(B)
	Units	1 bedroom	2 bedroom	3 bedroom	1 bedroom	2 bedroom	3 bedroom	Town EQR's
Residential								
Multi family - Apartments	120	60	30	30	0.8	0.8	1	102
Multi family - Townhomes	48	0	0	48	0.8	0.8	1	48
Multi Family - Flats	7	0	0	7	0.8	0.8	1	7
Single Family Lots	21	0	0	21	1	1	1	21
Total Units	196							178
<i>EQR's per # of rooms (tap Fees Table 13.20.60)</i>								
Total Residential EQR's 178								
Commercial		(Sq Ft)		Commercial		Engineer estimate		
1st floor	33,400	assume 50% restaurant or food service		1 per business			10	10
2nd floor	28,500			3 per building			5	15
Medical	14,000			1 per 1500 sq ft			1500	9.3
Total Units	75,900			Restaurants				
<i>EQR's 1.0 per restroom (tap Fees Table 13.20.60)</i>								
Total Commercial EQR's 42.3								
								Total Phase EQR's 220.3

**Table 3 - Water and Sewer Loading (EQR Method)
Lakota Sketch Plan Submittal - Town of New Castle**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
WATER DIVERSIONS													
(1) Indoor Uses	ac-ft	7.3	6.6	7.3	7.1	7.3	7.3	7.3	7.1	7.3	7.1	7.3	86.4
(2) Irrigation	ac-ft			0.0	5.2	6.7	8.4	5.7	4.2	3.7			34.1
Totals	ac-ft	7.3	6.6	7.3	7.1	13.8	15.8	13.1	11.3	11.0	7.1	7.3	120.5
	gallons/day	77,117	77,117	77,117	132,048	150,359	165,716	137,364	122,893	116,100	77,117	77,117	
	gpm	54	54	54	92	104	115	95	85	81	54	54	
WATER CONSUMPTIVE USE													
(3) In-House	ac-ft	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.3
(4) Irrigation	ac-ft			0.000	3.920	5.058	6.323	4.299	3.161	2.782			25.5
Totals	ac-ft	0.367	0.331	0.367	4.287	5.413	6.690	4.666	3.516	3.149	0.355	0.367	29.9
Sewer Loading													
(5) Totals	ac-ft	7.0	6.3	7.0	7.0	6.7	7.0	7.0	6.7	7.0	6.7	7.0	82.1
	gallons/day	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	
	Avg gpm	51	51	51	51	51	51	51	51	51	51	51	

SUMMARY OF INPUT DATA USED IN CALCULATING DEMANDS

In-house uses	
(A) Total EQR's	220.3 EQR's (from Table 2)
(B) Inside use	350 gal/day/EQR (3.5 people @ 100 gal/per)
(C)	
(D) In-house depletion	5%
Outside uses	
(E) Irrigated area	2,500 sq.ft./EQR Mun code
(F) Irrigated Area	12.6 acres = (A) x (E)/43560
(G) Irrigation Efficiency	75%
(H)	
(I)	

- (1) = (A) x (B) x (C) x days in month / 325800
- (2) = (F) x (J) / (G)
- (3) = (1) x (D)
- (4) = (2) x (G)
- (5) = (1)-(3)

Unit Consumptive Use Demands (Irrigation and Water Feature Uses, if any)

Estimated to reach 0.14 af/EQR's

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
(J) Irrigation	feet			0.000	0.310	0.400	0.500	0.340	0.250	0.220			2.020

**Table 4 - Engineers Estimate Water and Sewer Loading
Lakota Sketch Plan Submittal - Town of New Castle**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
WATER DIVERSIONS													
(1) Indoor Uses	ac-ft	3.1	2.8	3.1	3.1	3.0	3.1	3.1	3.0	3.1	3.0	3.1	36.8
(2) Irrigation	ac-ft			0.0	2.9	3.7	4.7	3.2	2.3	2.1			18.9
Totals	ac-ft	3.1	2.8	3.1	6.0	6.8	7.8	6.3	5.4	5.2	3.0	3.1	55.6
	gallons/day	32,844	32,844	32,844	63,252	73,388	81,889	66,195	58,184	54,424	32,844	32,844	
	gpm	23	23	23	44	51	57	46	40	38	23	23	
WATER CONSUMPTIVE USE													
(3) In-House	ac-ft	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.8
(4) Irrigation	ac-ft			0.000	2.170	2.800	3.500	2.380	1.750	1.540			14.1
Totals	ac-ft	0.156	0.141	0.156	2.326	2.951	3.656	2.536	1.901	1.696	0.151	0.156	16.0
Sewer Loading													
(5) Totals	ac-ft	3.0	2.7	3.0	3.0	2.9	3.0	3.0	2.9	3.0	2.9	3.0	35.0
	gallons/day	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	
	Avg gpm	22	22	22	22	22	22	22	22	22	22	22	

SUMMARY OF INPUT DATA USED IN CALCULATING DEMANDS

	UNIT
In-house uses	
(A) Total Residences	196.0
(B) Inside use	138 gal/day/unit (avg water use studies)
(C) Commercial equiv residences	42.0
(D) In-house depletion	5%
Outside uses	
(E) Irrigated area	n/a
(F) Irrigated Area	sq.ft./EQR Mun code
(G) Irrigation Efficiency	7.0 acres = measured
(H)	75%
(I)	

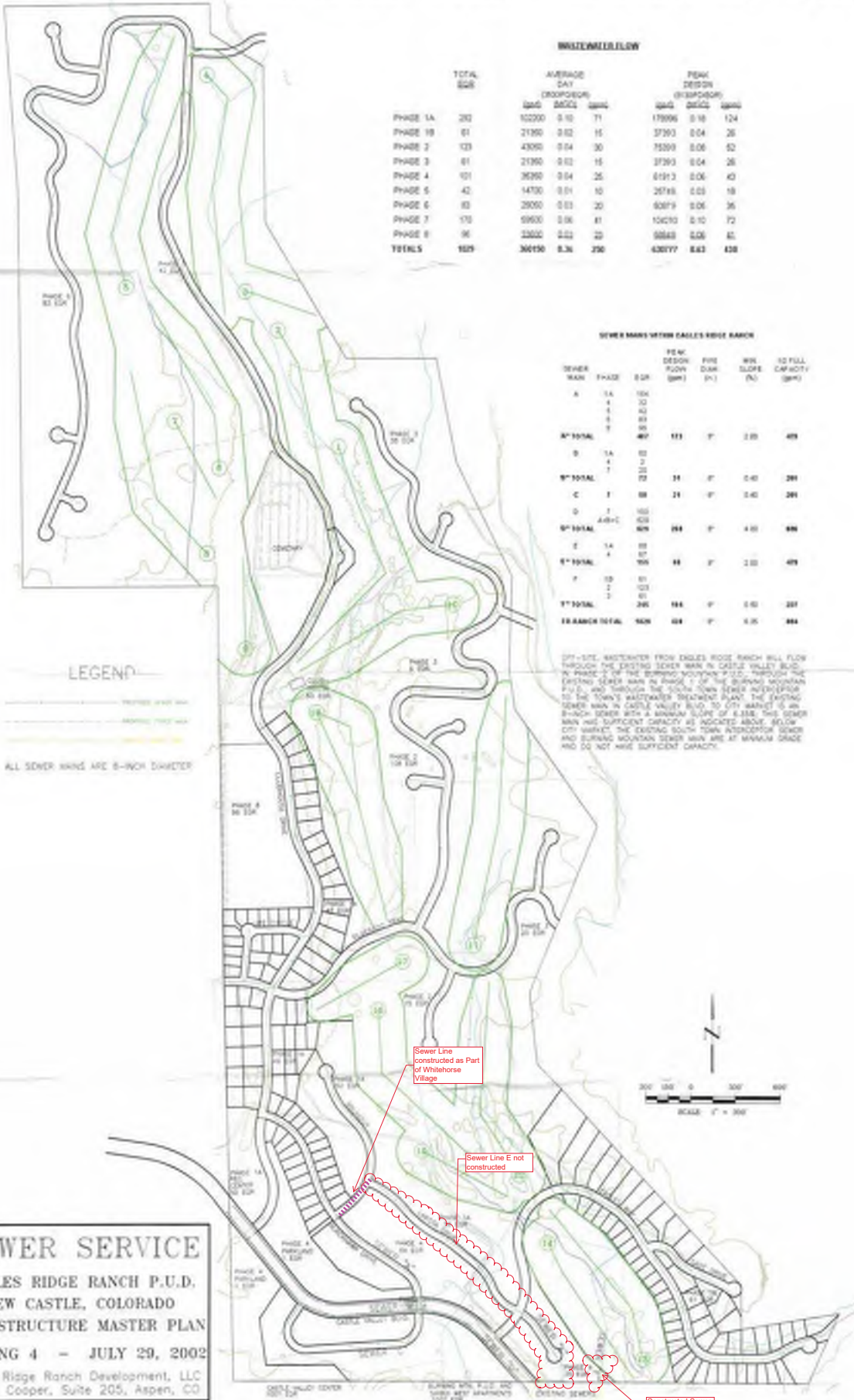
- (1) = ((A)+(C)) x (B) x C) x days in month / 325800
- (2) = (F) x (J) / (G)
- (3) = (1) x (D)
- (4) = (2) x (G)
- (5) = (1)-(3)

Unit Consumptive Use Demands (Irrigation and Water Feature Uses, if any)

Estimated to reach 0.14 af/EQR's

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
(J) Irrigation	feet			0.000	0.310	0.400	0.500	0.340	0.250	0.220	0.22	0.22	2.020

EAGLES RIDGE RANCH P.U.D., NEW CASTLE INFRASTRUCTURE MASTER PLAN – SEWER SERVICE



WASTEWATER FLOW

	TOTAL SQFT	AVERAGE DAY (PROPOSED)		PEAK DESIGN (PROPOSED)	
		MGD	MGD	MGD	MGD
PHASE 1A	282	0.10	0.11	0.18	0.24
PHASE 1B	61	0.02	0.03	0.04	0.06
PHASE 2	123	0.04	0.05	0.08	0.12
PHASE 3	61	0.02	0.03	0.04	0.06
PHASE 4	101	0.04	0.05	0.08	0.12
PHASE 5	42	0.01	0.02	0.03	0.05
PHASE 6	83	0.03	0.04	0.06	0.09
PHASE 7	170	0.06	0.07	0.12	0.18
PHASE 8	96	0.03	0.04	0.06	0.09
TOTALS	1029	0.36	0.43	0.72	1.08

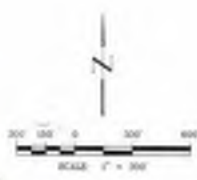
SEWER MAINS WITHIN EAGLES RIDGE RANCH

SEWER MAIN	PHASE	LEN FOOT	PIPE DIA. IN.	WVL SLOPE %	10 FULL CAPACITY GPD
A	1A	104	8	0.20	409
	1B	32	8	0.20	129
	2	83	8	0.20	331
	3	83	8	0.20	331
	7	83	8	0.20	331
A* TOTAL		485	8"	0.20	1530
B	1A	82	8	0.40	321
	7	22	8	0.40	87
B* TOTAL		104	8"	0.40	408
C	1	88	24	0.40	391
	7	100	24	0.40	409
C* TOTAL		188	24"	0.40	800
E	1A	88	8	0.20	409
	4	87	8	0.20	343
E* TOTAL		175	8"	0.20	752
F	1B	81	8	0.40	321
	2	103	8	0.40	391
	7	61	8	0.40	241
F* TOTAL		245	8"	0.40	953
RR RANCH TOTAL		1008	8"	0.20	3984

OFF-SITE, WASTEWATER FROM EAGLES RIDGE RANCH WILL FLOW THROUGH THE EXISTING SEWER MAIN IN CASTLE VALLEY BLVD. IN PHASE 7 OF THE BURNING MOUNTAIN P.U.D., THROUGH THE EXISTING SEWER MAIN IN PHASE 7 OF THE BURNING MOUNTAIN P.U.D. AND THROUGH THE SOUTH TOWN SEWER INTERCEPTOR TO THE TOWN'S WASTEWATER TREATMENT PLANT. THE EXISTING SEWER MAIN IN CASTLE VALLEY BLVD. TO CITY MARKET IS AN 8-INCH SEWER WITH A MINIMUM SLOPE OF 0.15%. THIS SEWER MAIN HAS SUFFICIENT CAPACITY AS INDICATED ABOVE. 80.0% OF CITY MARKET, THE EXISTING SOUTH TOWN INTERCEPTOR SEWER AND BURNING MOUNTAIN SEWER MAIN ARE AT MAXIMUM GRADE AND DO NOT HAVE SUFFICIENT CAPACITY.

LEGEND

- PROPOSED SEWER MAIN
- EXISTING SEWER MAIN
- ALL SEWER MAINS ARE 8-INCH DIAMETER



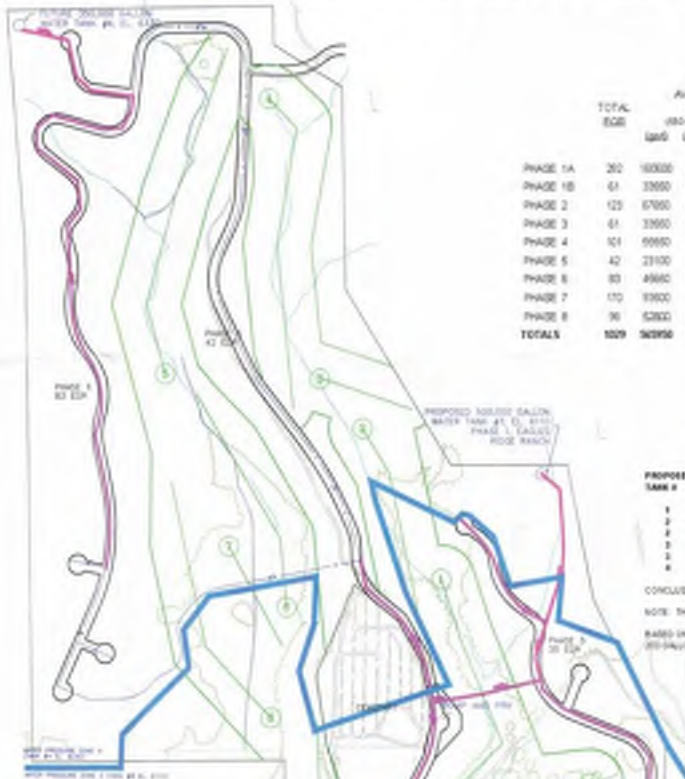
SEWER SERVICE
 EAGLES RIDGE RANCH P.U.D.,
 NEW CASTLE, COLORADO
 INFRASTRUCTURE MASTER PLAN
 DRAWING 4 - JULY 29, 2002
 Eagles Ridge Ranch Development, LLC
 520 E. Cooper, Suite 205, Aspen, CO

Sewer Line constructed as Part of Whitehorse Village

Sewer Line E not constructed

Constructed Sewer Line F

EAGLES RIDGE RANCH P.U.D., NEW CASTLE 371 INFRASTRUCTURE MASTER PLAN – WATER SUPPLY



DOMESTIC WATER REQUIREMENTS

TOTAL AGE	AVERAGE DAY (30-SPEC-DAY)			WINTER DAY (75-SPEC-DAY)			PEAK HOUR (300-SPEC-DAY)			
	gpd	MGD	lpm	gpd	MGD	lpm	gpd	MGD	lpm	
PHASE 1A	262	160320	0.16	112	220220	0.23	159	594000	0.59	406
PHASE 1B	64	32650	0.03	23	47955	0.05	33	120000	0.12	85
PHASE 2	123	67650	0.07	47	96555	0.10	67	246000	0.25	171
PHASE 3	64	32650	0.03	23	47955	0.05	33	120000	0.12	85
PHASE 4	121	59650	0.06	39	79295	0.08	56	202000	0.20	140
PHASE 5	42	23100	0.02	16	32975	0.03	23	84000	0.08	58
PHASE 6	83	43600	0.04	32	65355	0.07	45	162000	0.17	119
PHASE 7	170	83000	0.09	65	131450	0.13	93	340000	0.34	238
PHASE 8	96	52000	0.05	32	65355	0.08	62	220000	0.22	153
TOTALS	1029	542950	0.57	393	827155	0.81	561	208000	2.08	1429

SUMMARY OF WATER STORAGE TANK DESIGN CAPACITIES

PROPOSED TANK #	DESCRIPTION	TANK SIZE	FIRE STORAGE	ANNU. SERVICE STORAGE	REGUL. STORAGE OF UNITS, NO. UNITS	PROPOSED NO. UNITS
1	TOWN TANK	500000	100000	60000	1071	1000
2	CRS LATER TANK	50000	10000	60000	89	791
3	WEST CR. TANK	50000	0	60000	10	10
4	WEST CR. TANK	50000	10000	60000	371	323
5	WEST CR. TANK	50000	10000	60000	657	619
6	WEST CR. TANK	50000	10000	60000	157	151

CONCLUSION: INCREASE TANK NO. 3 VOLUME FROM 50,000 TO 100,000 GALLONS TO DERIVE CYRANCH

NOTE: THIS COMPUTATION BASED UPON FIRE STORAGE OF 200-GPM FOR 2 HOURS.

BASED ON STATE GUIDELINES FOR DRINKING WATER CRITERIA,
20-GALLONS PER PERSON, 55 PERSONS PER CHEDLING-UNIT

CHURCH & BRANCH NO.	NUMBER OF UNITS	WATER TANK NO.	WATER TANK CAPACITY (GAL)	WATER TANK PRESSURE (PSI)	WATER TANK PRESSURE (PSI)
CHURCH NO. 1	100	1	500000	100	100
CHURCH NO. 2	100	2	50000	100	100
CHURCH NO. 3	100	3	50000	100	100
CHURCH NO. 4	100	4	50000	100	100
CHURCH NO. 5	100	5	50000	100	100
CHURCH NO. 6	100	6	50000	100	100
CHURCH NO. 7	100	7	50000	100	100
CHURCH NO. 8	100	8	50000	100	100
CHURCH NO. 9	100	9	50000	100	100
CHURCH NO. 10	100	10	50000	100	100
CHURCH NO. 11	100	11	50000	100	100
CHURCH NO. 12	100	12	50000	100	100
CHURCH NO. 13	100	13	50000	100	100
CHURCH NO. 14	100	14	50000	100	100
CHURCH NO. 15	100	15	50000	100	100
CHURCH NO. 16	100	16	50000	100	100
CHURCH NO. 17	100	17	50000	100	100
CHURCH NO. 18	100	18	50000	100	100
CHURCH NO. 19	100	19	50000	100	100
CHURCH NO. 20	100	20	50000	100	100
CHURCH NO. 21	100	21	50000	100	100
CHURCH NO. 22	100	22	50000	100	100
CHURCH NO. 23	100	23	50000	100	100
CHURCH NO. 24	100	24	50000	100	100
CHURCH NO. 25	100	25	50000	100	100
CHURCH NO. 26	100	26	50000	100	100
CHURCH NO. 27	100	27	50000	100	100
CHURCH NO. 28	100	28	50000	100	100
CHURCH NO. 29	100	29	50000	100	100
CHURCH NO. 30	100	30	50000	100	100
CHURCH NO. 31	100	31	50000	100	100
CHURCH NO. 32	100	32	50000	100	100
CHURCH NO. 33	100	33	50000	100	100
CHURCH NO. 34	100	34	50000	100	100
CHURCH NO. 35	100	35	50000	100	100
CHURCH NO. 36	100	36	50000	100	100
CHURCH NO. 37	100	37	50000	100	100
CHURCH NO. 38	100	38	50000	100	100
CHURCH NO. 39	100	39	50000	100	100
CHURCH NO. 40	100	40	50000	100	100
CHURCH NO. 41	100	41	50000	100	100
CHURCH NO. 42	100	42	50000	100	100
CHURCH NO. 43	100	43	50000	100	100
CHURCH NO. 44	100	44	50000	100	100
CHURCH NO. 45	100	45	50000	100	100
CHURCH NO. 46	100	46	50000	100	100
CHURCH NO. 47	100	47	50000	100	100
CHURCH NO. 48	100	48	50000	100	100
CHURCH NO. 49	100	49	50000	100	100
CHURCH NO. 50	100	50	50000	100	100

LEGEND

- 12" WATER MAIN
- 16" WATER MAIN
- FIRE STORAGE TANK

Water Line alignment to be adjusted per site specific layout and engineering design



WATER SUPPLY
 EAGLES RIDGE RANCH P.U.D.
 NEW CASTLE, COLORADO
 INFRASTRUCTURE MASTER PLAN
 DRAWING 3 - JULY 29, 2002
 Eagles Ridge Ranch Development, LLC
 520 E. Cooper, Suite 205, Aspen, CO

APPENDIX C



High Performance Geotechnical, Inc.
5020 County Road 154
Glenwood Springs, Colorado 81601
Phone: 970-945-7988

Fax: 970-945-8454
hpgeo@hpgeotech.com

**PRELIMINARY GEOTECHNICAL STUDY
EAGLE RIDGE RANCH
EAST OF CASTLE VALLEY BOULEVARD
NEW CASTLE, COLORADO**

JOB NO. 101 441

APRIL 26, 2002

PREPARED FOR:

**ACCESS COLOMBO
ATTN: JIM COLOMBO
520 EAST COOPER STREET, SUITE 205
ASPEN, COLORADO 81611**

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

April 26, 2002

Access Colombo
Attn: Jim Colombo
520 East Cooper Street, Suite 205
Aspen, Colorado 81611

Job No. 101 441

Subject: Report Transmittal, Preliminary Geotechnical Study, Eagles Ridge Ranch, East of Castle Valley Boulevard, New Castle, Colorado.

Dear Mr. Colombo:

As requested, we have conducted a geotechnical study for the proposed residential development at the subject site.

The property is suitable for the proposed development based on geologic and geotechnical conditions. There are several conditions of a geologic nature that should be considered in project planning and design as presented in this report.

Subsurface conditions encountered in the exploratory borings drilled in the general development area consist of up to about 2½ feet of topsoil overlying stiff to hard sandy silty clay. Relatively dense, mainly granular soils were encountered beneath the topsoil in Borings 3, 5 and 19 and beneath the sandy clay in Borings 4, 6 and 9. Weathered and medium hard to very hard claystone bedrock was encountered in most of the borings beneath the topsoil, clay or granular soils. Groundwater was not encountered in the borings at the time of drilling and the soils were slightly moist to moist.

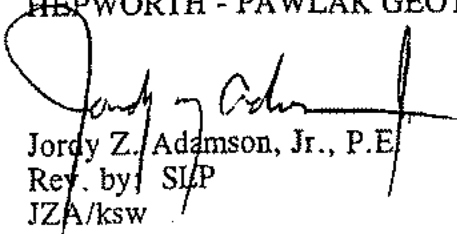
Spread footings placed on the natural clay and granular soils and designed for an allowable bearing pressure of 2,000 psf to 4,000 psf appear suitable for building. The footings may need to be designed for minimum dead load pressure if expansive clays are encountered. The claystone bedrock appears to be expansive in most areas and drilled piers may be needed where the expansion potential is moderate to high.

The report which follows describes our exploration, summarizes our findings, and presents our recommendations suitable for planning and preliminary design. It is important that we provide consultation during design, and field services during construction to review and monitor the implementation of the geotechnical recommendations.

If you have any questions regarding this report, please contact us.

Sincerely,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.



Jordy Z. Adamson, Jr., P.E.
Rev. by SLP
JZA/ksw

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PURPOSE AND SCOPE OF STUDY

This report presents the results of a preliminary geotechnical study for the proposed Eagles Ridge Ranch to be located east of Castle Valley Boulevard, New Castle, Colorado. The project site is shown on Fig. 1. The purpose of the study was to evaluate the geologic and subsurface conditions and their potential impacts on the project. The study was conducted in accordance with our agreement for geotechnical engineering services to Access Columbo, dated June 11, 2001.

A field exploration program consisting of a reconnaissance and exploratory borings was conducted to obtain information on the site and subsurface conditions. Samples of the subsoils obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for project planning and preliminary design. This report summarizes the data obtained during this study and presents our conclusions and recommendations based on the proposed development and the subsurface conditions encountered.

PROPOSED DEVELOPMENT

The Eagle Ridge Ranch Development will consist of an 18 hole golf course and residential development located adjacent to the northeast of New Castle. The preliminary development plan is shown on Figs. 1, 2 and 3. The project area covers about 318 acres. The golf course and residential areas will cover most of the property to the north of Castle Valley Boulevard. A small commercial center and recreational facilities will be located to the south of Castle Valley Boulevard. The residential tracts will be on the more gently sloping ground along the lower valley floors and on the upland benches. At the time of this study, development planning was in the preliminary stages and the extent of development grading had not been determined. It is expected that relatively extensive grading will be needed in some areas to construct the golf course, streets and residential areas. We should review the proposed development and

grading plans when available to determine if they are consistent with the recommendations presented in this report.

SITE CONDITIONS

The project site covers about 318 acres and is located to the north of the Colorado River and Highway I-70 in the northeastern part of New Castle. The site covers parts of Sections 19, 20, 29, 30 and 32 in T. 5 S., R. 90 W. The general topography is shown by the contour lines on Figs. 1, 2 and 3. The terrain on the property is varied and consists of two, north trending valley tributaries to the Colorado River. The tributary valleys have been eroded below moderately sloping pediment benches along the southern side of the Flat Tops plateau. Steep mountain sides that form the southern plateau flank lie just to the north of the property. Three levels of gently sloping pediment benches are present in the project area. The pediment surfaces usually do not exceed 6% and they stand between 30 and 220 feet above the adjacent tributary valley floors. The valley sides between the pediments and adjacent valley floors are steep, typically between about 40% and 60%. The streams in the two tributary valleys are ephemeral and only have surface flow following heavy rainfall. The off-site drainage basin for the eastern tributary valley is small and covers less than 0.1 square miles. The western tributary valley has a relatively large off-site basin that covers several square miles. The property is largely undeveloped. The High Land Cemetery is located in the northern part of the property. The pediment benches to the south and east of the cemetery have historically been irrigated for hay and pasture. Vegetation outside the irrigated areas is mostly sage and other brush with junipers.

GEOLOGIC SETTING

The project site is in a prominent strike valley along the southern side of the White River uplift that general coincides with the Flat Tops plateau. The northern strike valley side is formed by erosion resistant Mesozoic and Paleozoic-age sedimentary rocks on the south flank of the uplift. The southern strike valley side is the

Grand Hogback monocline that lies to the south of the Colorado River. The relatively weak Mancos Shale underlies the interior of the valley and is the predominant formation at the project site. The southern flank of the uplift in the project area is cut by several, northwest-trending, thrust faults with a maximum displacement of about 7,000 feet (Scott and Shroba, 1997). The thrust faults are rotated ramp faults that developed during the Laramide orogeny about 40 to 70 million years ago. They do not have evidence of geologically young movement and are not considered to be potentially active (Widmann and Others, 1998). Surficial soil deposits in the project area consist of colluvium, alluvial fans, loess, pediment deposits, and Colorado River outwash. The principle geologic features at the project site are shown on Fig. 1, 2 and 3.

FORMATION ROCK

Most of the project area is underlain by the upper member of the late Cretaceous-age Mancos Shale (Kmu). Other members of the Mancos are also present to a lesser extent. They include in descending stratigraphic order the Niobrara member (Kmn), the Juana Lopez member (Kmj) and the lower member (Kml). The upper member is a medium gray to dark gray, fissile shale or claystone that contains thin sandstone beds from 1 to 8 feet thick near its top (Scott and Shroba, 1997). The Niobrara member is a light-gray, fissile shale or claystone, calcareous shale or claystone and shaley limestone (Scott and Shroba, 1997). The Juana Lopez member is a dark-gray fissile shale or claystone with gray and yellow, thin bedded, calcareous siltstone and sandstone (Scott and Shroba, 1997). The lower member is a yellowish-brown and gray, fissile shale or claystone (Scott and Shroba, 1997).

Regionally the Mancos bedding strikes nearly east-west and dips from 11° to 48° to the south. Except for some thin sandstone and limestone beds the Mancos is non-cemented but firm to hard. Laboratory testing of shale samples from our exploratory borings show that the shale has a moderate to high swell potential. Rock outcrops are locally present but the Mancos is usually covered by thin colluvium and other, ticker surficial soil deposits.

SURFICIAL SOIL DEPOSITS

Pediment Alluvium and Loess: The gently sloping pediment benches that form the uplands in the project area are underlain by wind deposited loess and pediment alluvium derived from the White River Plateau to the north. Three pediment levels are present in the project area. The lower level (Qp1) lies about 30 to 60 feet above the modern valley floors, the intermediate level (Qp2) lies about 90 to 120 feet above the valley floors and the upper level (Qp3) is about 170 to 220 feet above the valley floors. The loess is a fine sandy, low plasticity clay and at the boring sites it is from 9 to 12 feet thick. Laboratory tests indicate that the loess has a low to moderate swell potential. The underlying pediment alluvium consists of subangular gravel, cobbles and small boulders in a silty to clayey sand matrix. At the boring the pediment alluvium is 1.5 to greater than 16.0 feet thick and it may or may not be covered by loess.

Colluvium: Thin colluvium (Qc) is usually present on the valley sides that separate the pediment benches from the tributary valley floors. At the boring locations the colluvium is from 0.5 to 6.0 feet thick and overlies the Mancos Shale. The colluvium is a low plasticity clay with scattered rock fragments from gravel to small boulder size. Laboratory tests show that the colluvium has a moderate swell potential.

Stream and Fan Alluvium: The valley floors along the two tributary drainages are underlain by stream alluvium (Qal). Two ages of alluvial fans are present in places along the lower tributary valley sides. The younger fans (Qafy) are graded to the modern streams. The older fans (Qafo) were graded to a higher base level when they were deposited. The fan at Boring 8 is 17 feet thick. It consists of a low plasticity clay with scattered rock fragments from gravel to small boulder size.

Colorado River Outwash: Remnants of two, high level Colorado River terraces are present in the southern part of the project area. The higher terrace (Qto2) lies about 170 feet above the modern river channel and the terrace alluvium is glacial outwash tentatively correlated with a middle or early Pleistocene pre-Bull Lake glaciation (Scott

and Shroba, 1997). The lower terrace (Qto1) lies about 150 feet above the river and the terrace alluvium is glacial outwash tentatively correlated with the middle Pleistocene Bull Lake glaciation (Scott and Shroba, 1997). The outwash in Boring 19 is greater than 6 feet thick. It consists of rounded, gravel, cobbles and boulders in a clean to silty sand matrix.

FIELD EXPLORATION

The field exploration for the project was conducted on August 10 and 13, 2001. Nineteen exploratory borings were drilled at the locations shown on Figs. 1, 2 and 3 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight auger powered by a track-mounted CME-45 and a truck-mounted Longyear BK-51HD drill rigs. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1 $\frac{3}{8}$ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils and hardness of the bedrock. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figs. 4 through 7. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface conditions encountered at the site are shown on Figs. 4 through 7. The subsoils generally consist of up to about 2 $\frac{1}{2}$ feet of topsoil overlying stiff to hard sandy silty clay. Relatively dense, slightly clayey silty sand and gravel with cobbles and boulders comprised of siltstone/sandstone fragments was encountered beneath the topsoil in Borings 3 and 5 and beneath the clay in Borings 4, 6 and 9. Dense river gravel alluvium was encountered below the topsoil in Boring 19.

- 0 -

Weathered and medium hard to very hard claystone bedrock of the Mancos Shale Formation was encountered in several of the borings beneath the topsoil, clay or sand and gravel at depths between ½ and 26½ feet. Drilling in the dense gravel with auger equipment was difficult due to the cobbles and boulders and drilling refusal was encountered in the deposit. Cemented layers could also be present in the bedrock.

Laboratory testing performed on samples obtained from the borings included natural moisture content and density, Atterberg limits and finer than sand size gradation analyses. Results of swell-consolidation testing performed on relatively undisturbed drive samples of mainly clay and weathered claystone bedrock, presented on Figs. 9 through 13, generally indicate low compressibility under existing moisture conditions and light loading and a low to high expansion potential when wetted under a constant light surcharge. Swelling pressures were measured typically between about 4,000 to 7,000 psf in the clays and 10,000 to 15,000 in the claystone. The laboratory testing is summarized in Table I.

No free water was encountered in the borings at the time of drilling and the subsoils were slightly moist to moist. The bedrock materials were slightly moist.

GEOLOGIC ASSESSMENT

There are several conditions of a geologic nature that should be considered in project planning and design. These conditions should not require major modifications to the proposed development plan, but engineered mitigation should be considered for some. The geologic conditions and their anticipated influence on the project are described below.

POTENTIALLY EXPANSIVE FOUNDATION CONDITIONS

Our laboratory testing shows that most of the clay soil deposits and the Mancos Shale have low field moisture contents and are expansive if they become wet. The preliminary tests indicate that the colluvium, loess and alluvial fan clays are typically have low to moderate expansion potential. The Mancos claystone is moderately to highly expansive. Preliminary recommendations to mitigate the expansion potential for

building foundations are discussed in the *Preliminary Design Recommendations - Foundations* section of this report.

FLOODING AND STORM WATER MANAGEMENT

The stream alluvium (Qal) along the tributary valley floors is subject to flooding associated with runoff from heavy rainfall. Also, flooding should be expected on the alluvial fans (Qafy and Qafo) and on the lower parts of the colluvial slopes (Qc). In some areas the existing channels on the valley floors, the alluvial fans and valley sides are shallow and poorly defined. A hydrologist should assess the flood potential in these areas so that appropriate flood mitigation is included in the project storm water management plan. The flood analysis should evaluate the potential for high sediment concentration flash floods associated with intense thunderstorms as well as long duration general storms.

CONSTRUCTION RELATED SLOPE INSTABILITY

There is a potential for construction related slope instability in areas of extensive grading on steep slopes. Building sites should not be considered on slopes steeper than about 30% unless site specific geotechnical studies are performed to evaluate the feasibility of the proposed grading. In addition to the general site grading considerations presented in the *Preliminary Design Recommendations - Site Grading* section of this report, there is a potential for bedding plane failures in deep cuts in the Mancos where: (1) the cut slope proposed is within about 20° of the bedding strike, (2) the bedding daylight in the cut slope and (3) the bedding dip is steeper than about 15° from the horizontal. If these conditions are encountered, the slope should be cut at the bedding angle or mechanically reinforced. This condition is likely to be encountered on the north side of deep cuts that trend in an east-west direction.

EARTHQUAKE CONSIDERATIONS

The project area could experience moderately strong earthquake related ground shaking. Modified Mercalli Intensity VI ground shaking should be expected during a reasonable service life for the development, but the probability for stronger ground

shaking is low. Intensity VI ground shaking is felt by most people and causes general alarm, but results in negligible damage to structures of good design and construction. Occupied structures should be designed to withstand moderately strong ground shaking with little or no damage and not to collapse under stronger ground shaking. The region is in the Uniform Building Code, Seismic Risk Zone 1. Based on our current understanding of the earthquake hazard in this part of Colorado, we see no reason to increase the commonly accepted seismic risk zone for the area.

PRELIMINARY DESIGN RECOMMENDATIONS

The conclusions and recommendations presented below are based on the proposed development, subsurface conditions encountered in the exploratory borings, and our experience in the area. The recommendations are suitable for planning and preliminary design but site specific studies should be conducted for individual lot development.

FOUNDATIONS

Bearing conditions will vary depending on the specific location of the building on the property. Based on the nature of the general proposed construction, spread footings bearing on the natural clay and granular soils should be suitable for building support. We expect the footings can be sized for an allowable bearing pressure in the range of 2,000 psf to 4,000 psf. Expansive clays encountered in building areas may need to be removed or the footings designed to impose a minimum dead load pressure to limit potential heave. The claystone bedrock appears to be expansive in most areas and drilled piers may be needed where the expansion potential is moderate to high. Boulders encountered in the excavation could result in irregular bearing conditions. Foundation walls should be designed to span local anomalies and to resist lateral earth loadings when acting as retaining structures. Below grade areas and retaining walls should be protected from wetting and hydrostatic pressure by use of an underdrain system. The footings should have a minimum depth of 36 inches for frost protection.

FLOOR SLABS

Slab-on-grade construction should be feasible for bearing on the natural soils with low to no expansion potential. There could be some post construction slab movement at sites with collapsible matrix or expansive clays and weathered claystone. Crawlspace construction could be needed in moderately to highly expansive soil and claystone areas. To reduce the effects of some differential movement, floor slabs should be separated from all bearing walls and columns with expansion joints. Floor slab control joints should be used to reduce damage due to shrinkage cracking. A minimum 4 inch thick layer of free-draining gravel should underlie basement level slabs to facilitate drainage.

UNDERDRAIN SYSTEM

Although free water was not encountered in the exploratory borings, it has been our experience in the area and where clay soils and shallow bedrock are present that local perched groundwater can develop during times of heavy precipitation or seasonal runoff. An underdrain system should be provided to protect below-grade construction, such as retaining walls, crawlspace and basement areas from wetting and hydrostatic pressure buildup. The drains should consist of drainpipe surrounded above the invert level with free-draining granular material. The drain should be placed at each level of excavation and at least 1 foot below lowest adjacent finish grade and sloped at a minimum 1% to a suitable gravity outlet.

SITE GRADING

The risk of construction-induced slope instability at the site appears low provided the buildings are located in the less steep parts of the property and cut and fill depths are limited. Cut depths for the building pads and driveway access should not exceed about 10 feet. Fills should be limited to about 10 feet deep, especially where they encroach steep downhill sloping areas. Structural fills should be compacted to at least 95% of the maximum standard Proctor density within 2% of optimum moisture content. Prior to fill placement, the subgrade should be carefully prepared by removing all vegetation and topsoil. The fill should be benched into the portions of the hillside

exceeding 20% grade. The on-site soils excluding oversized rock and topsoil should be suitable for use in embankment fills. The claystone material should not be used as structural fill beneath building and pavements.

Permanent unretained cut and fill slopes should be graded at 2 horizontal to 1 vertical or flatter and protected against erosion by revegetation, rock riprap or other means. This office should review site grading plans for the project prior to construction.

SURFACE DRAINAGE

The grading plan for the subdivision should consider runoff from steep uphill slopes through the project and at individual sites. Water should not be allowed to pond which could impact slope stability and foundations. To limit infiltration into the bearing soils next to buildings, exterior backfill should be well compacted and have a positive slope away from the building for a distance of 10 feet. Roof downspouts and drains should discharge well beyond the limits of all backfill and landscape irrigation should be restricted.

LIMITATIONS

This study has been conducted according to generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either expressed or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the field reconnaissance, review of published geologic reports, the exploratory borings located as shown on Figs. 1, 2 and 3, the proposed type of construction and our experience in the area. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions encountered during construction appear different from those described in this report, we should be notified so that re-evaluation of the recommendations may be made.

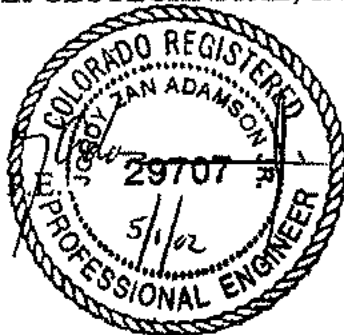
This report has been prepared for the exclusive use by our client for planning and preliminary design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation, conduct additional evaluations and review and monitor the implementation of our recommendations. Significant design changes may require additional analysis or modifications to the recommendations presented herein. We recommend on-site observation of excavations and foundation bearing strata and testing of structural fill by a representative of the geotechnical engineer.

Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

Jordy Z. Adamson, Jr.,

Reviewed by:



Steven L. Pawlak

Steven L. Pawlak, P.E.

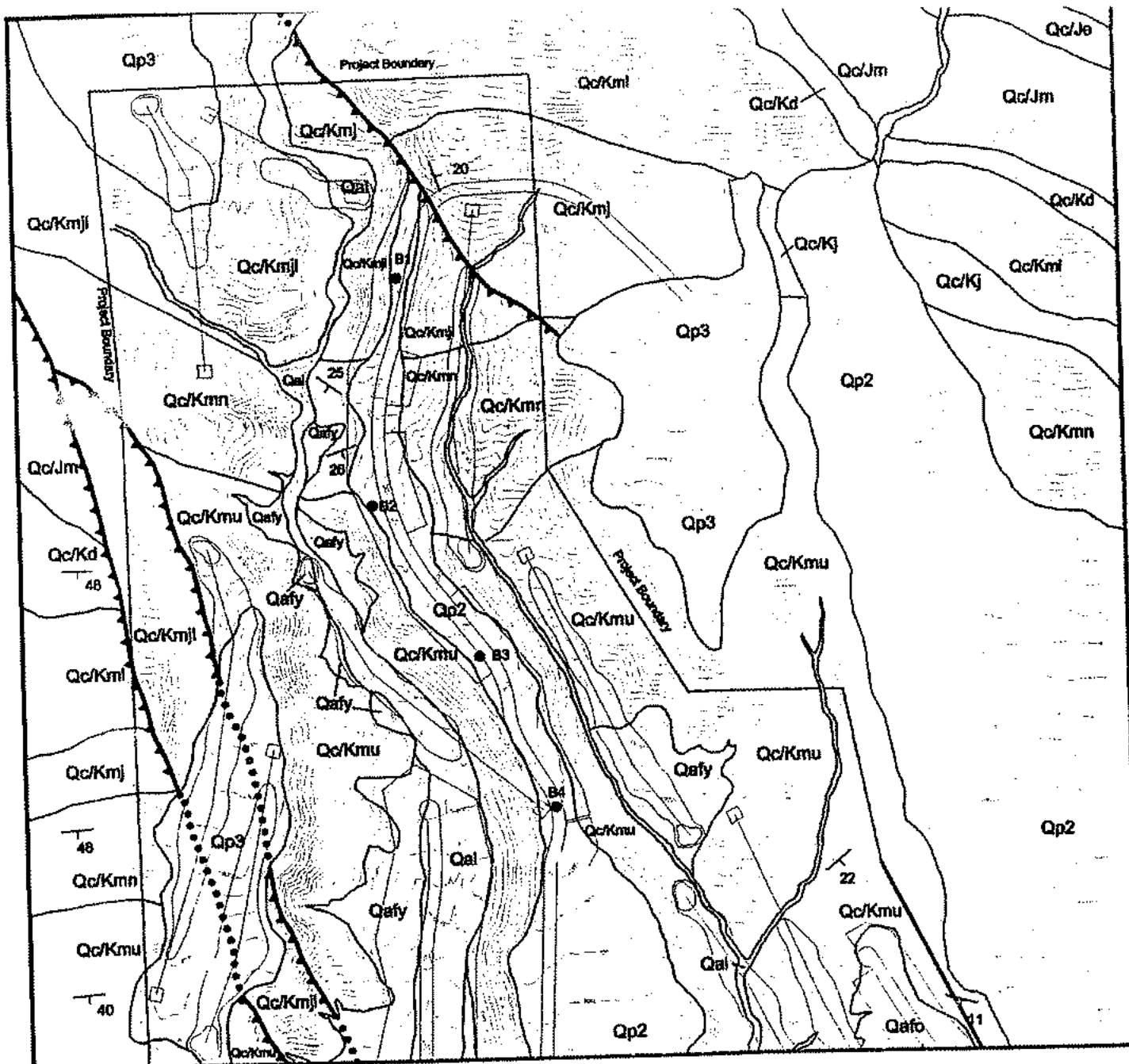
JZA/ksw

cc: Enartech, Inc. - Attn: Chris Hale

REFERENCES

Scott, R. B. and Shroba, R. R., 1997, *Revised Preliminary Geology Map of the New Castle Quadrangle, Garfield County, Colorado*: U.S. Geological Survey Open-File Report 97-737.

Widmann B. L. and Others, 1998, *Preliminary Quaternary Fault and Fold Map and Data Base of Colorado*: Colorado Geological Survey Open File Report 98-8.

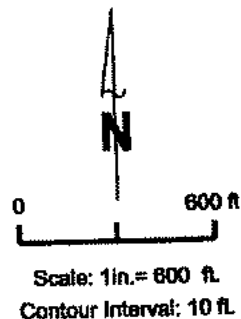


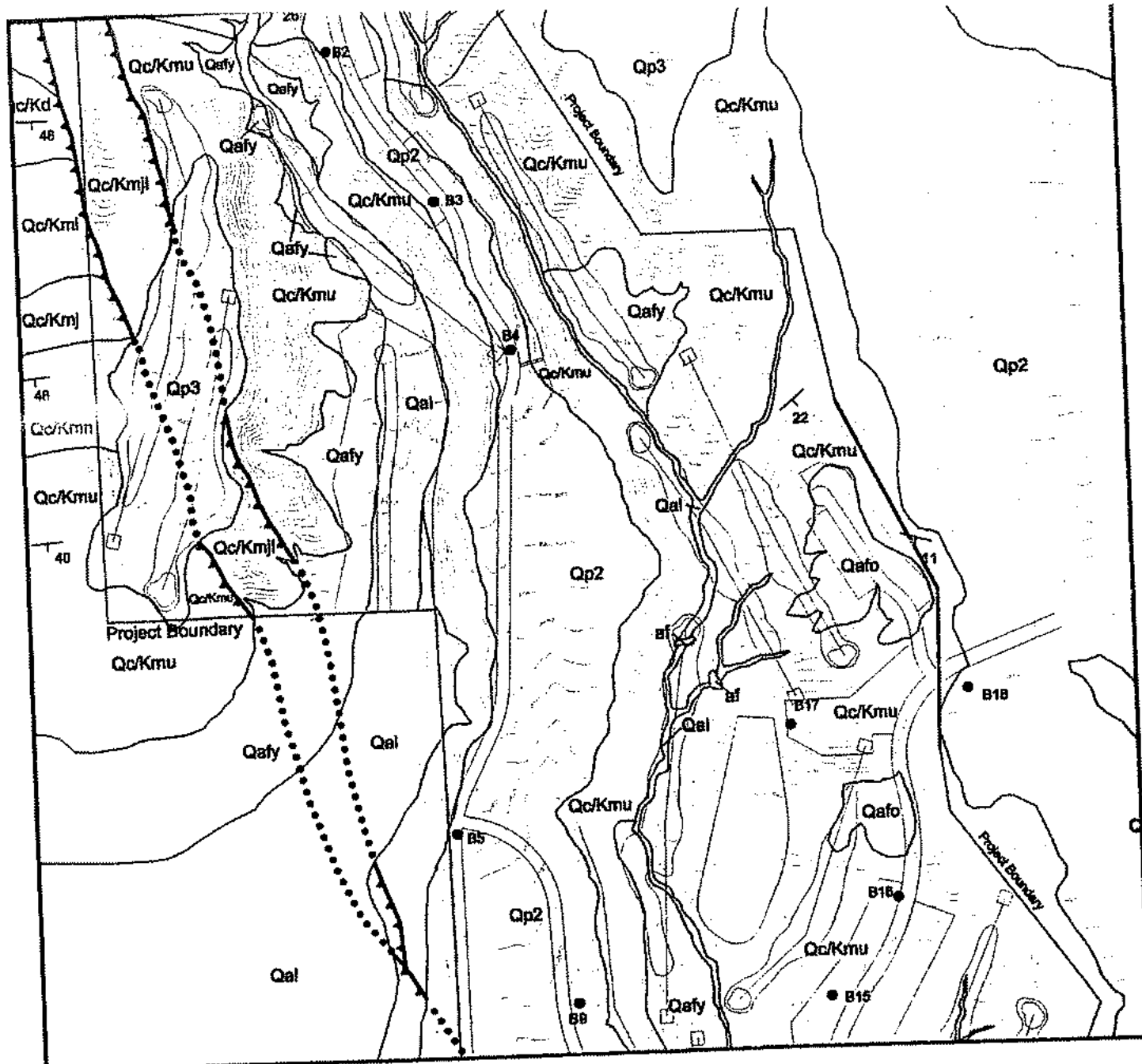
Explanation:

- af Man-Placed Fill
- Qc Colluvium
- Qal Stream Alluvium
- Qafy Younger Alluvial Fan
- Qafo Older Alluvial Fan
- Qp1 Pediment Alluvium and Loess:
1 is lowest level, 2 is middle level and 3 is highest level.
- Qto1 Old River Terrace:
1 is lowest level and 2 is highest level.
- Kmu Upper Member of Mancos Shale
- Kmn Niobrara Member of Mancos Shale
- Kmj Juana Lopez Member of Mancos Shale

- Kml Lower Member of Mancos Shale
- Kd Dakota Sandstone
- Jm Morrison Formation
- Je Entrada Sandstone

- Contact:
Approximate boundary of map units.
- Thrust Fault:
Approximate location, dotted where concealed, sawteeth on upper plate.
- ↘ Strike and Dip:
Strike and dip of bedding in degrees.
- Exploratory Boring:
Approximate location.



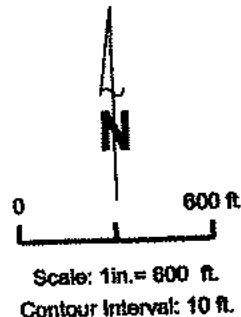


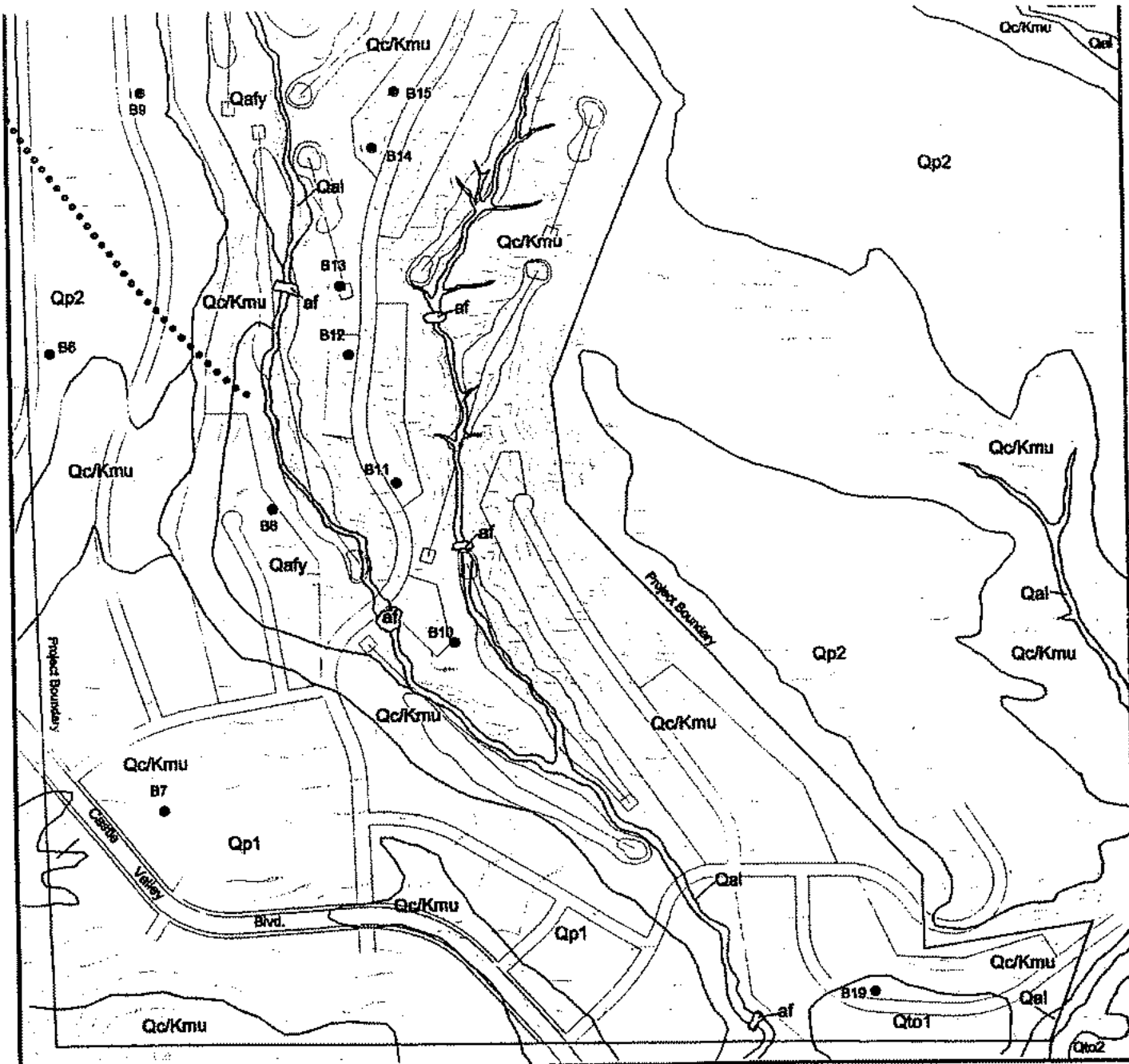
Explanation:

- af Man-Placed Fill
- Qc Colluvium
- Qal Stream Alluvium
- Qafy Younger Alluvial Fan
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- Contact:**
Approximate boundary of map units.
- Thrust Fault:**
Approximate location, dotted where concealed, sawteeth on upper plate.
- Strike and Dip:**
Strike and dip of bedding in degrees.
- Exploratory Boring:**
Approximate location.



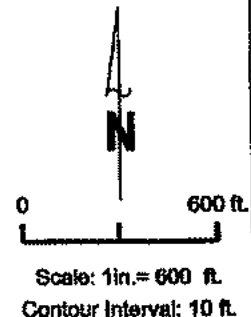


Explanation:

- af Man-Placed Fill
- Qc Colluvium
- Qal Stream Alluvium
- Qfy Younger Alluvial Fan
- Qaf Older Alluvial Fan
- Qp1 Pediment Alluvium and Loess:
1 is lowest level, 2 is middle level and 3 is highest level.
- Qto1 Old River Terrace:
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- Kmu Upper Member of Mancos Shale
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- Kd Dakota Sandstone
- Jm Morrison Formation
- Je Entrada Sandstone

- Contact:**
Approximate boundary of map units.
- Thrust Fault:**
Approximate location, dotted where concealed, sawteeth on upper plate.
- Strike and Dip:**
Strike and dip of bedding in degrees.
- Exploratory Boring:**
Approximate location.



101 441

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GEOTECHNICAL, Inc.**

**Eagle Ridge Ranch Development
Geology Map and Boring Locations - Southern Part**

Fig. 3

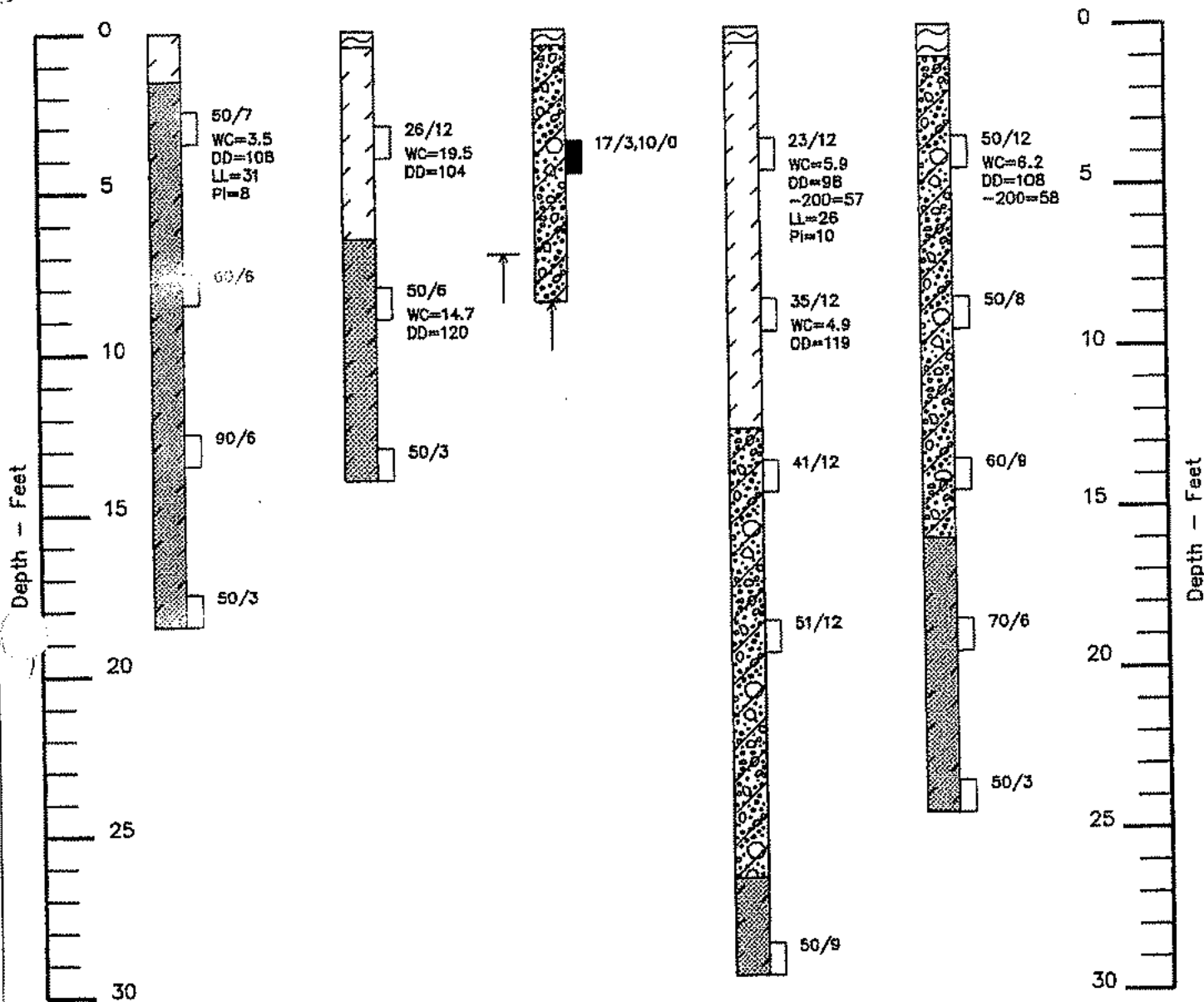
BORING 1
ELEV.= 6273'

BORING 2
ELEV.= 6183'

BORING 3
ELEV.= 6133'

BORING 4
ELEV.= 6089'

BORING 5
ELEV.= 5998'



Note: Explanation of symbols is shown on Fig. 8.

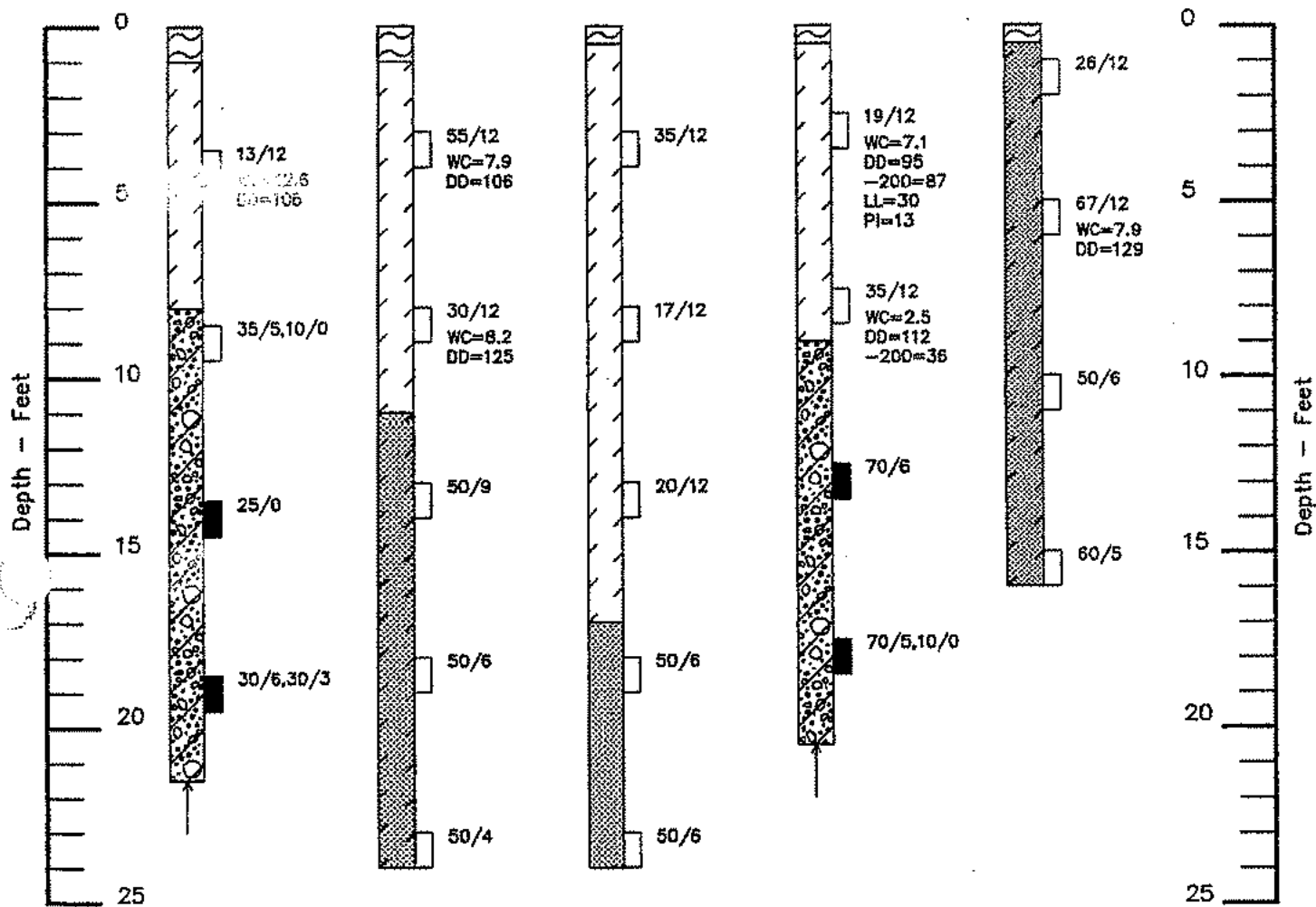
BORING 6
ELEV.= 5888'

BORING 7
ELEV.= 5784'

BORING 8
ELEV.= 5795'

BORING 9
ELEV.= 5935'

BORING 10
ELEV.= 5762'



Note: Explanation of symbols is shown on Fig. 8.

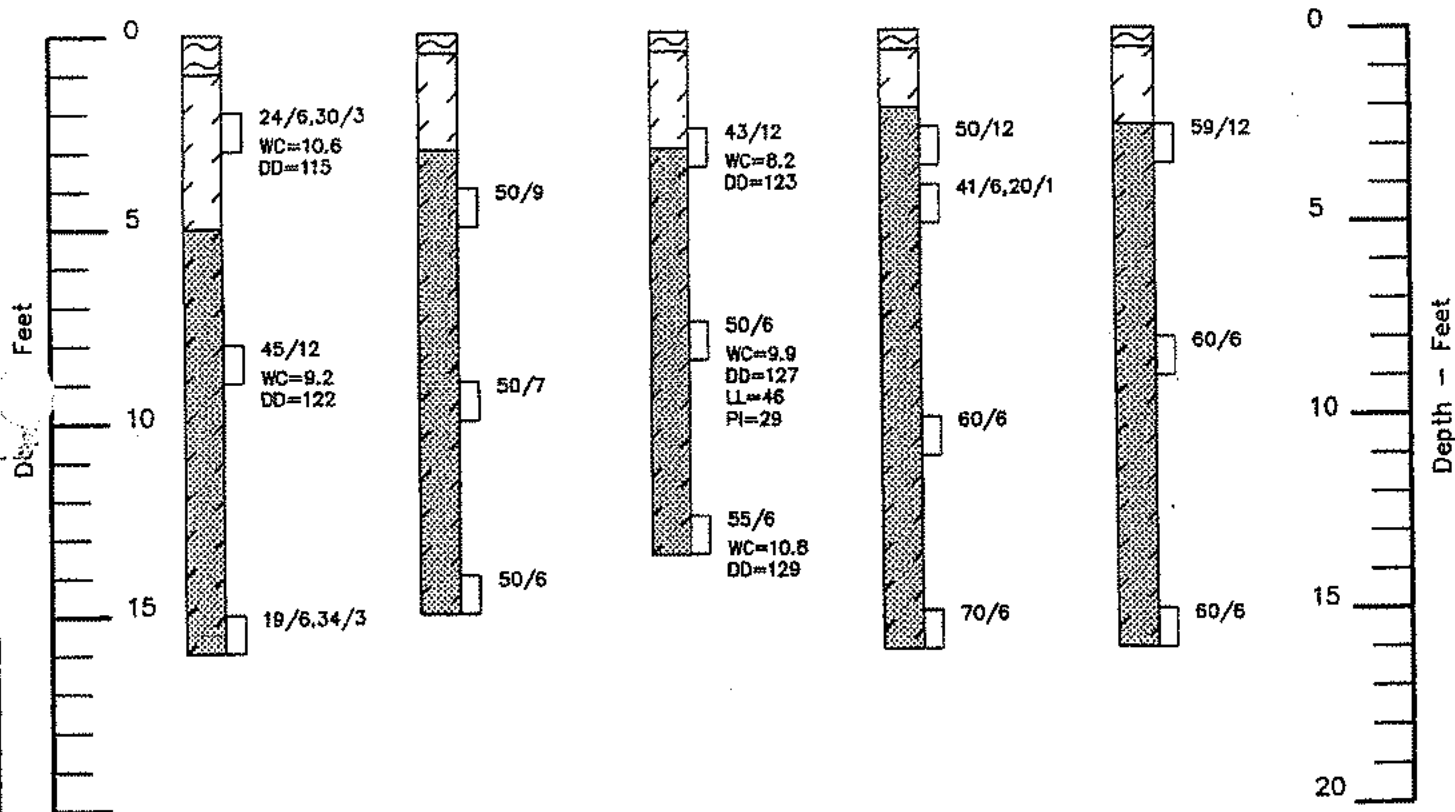
BORING 11
ELEV.= 5811'

BORING 12
ELEV.= 5836'

BORING 13
ELEV.= 5850'

BORING 14
ELEV.= 5890'

BORING 15
ELEV.= 5880'



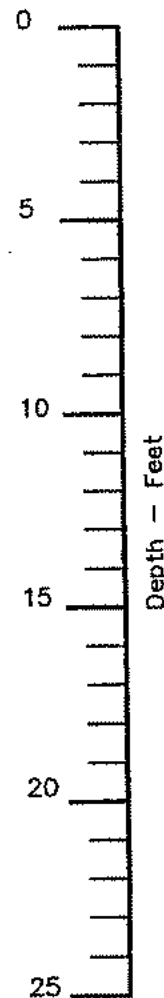
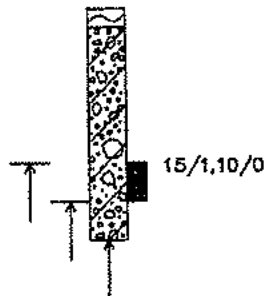
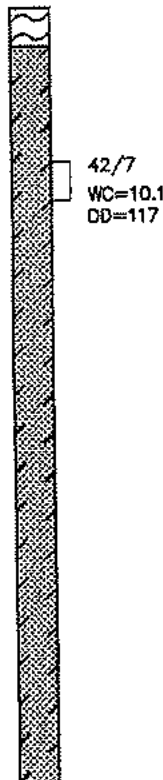
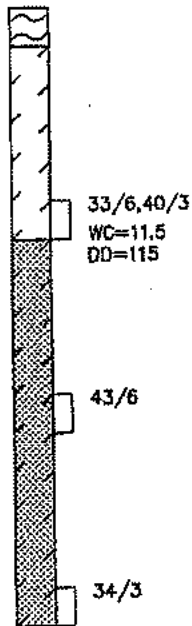
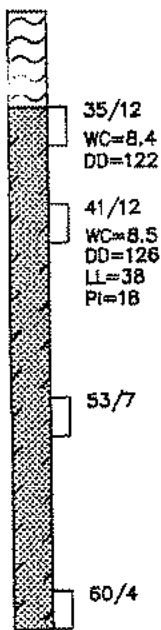
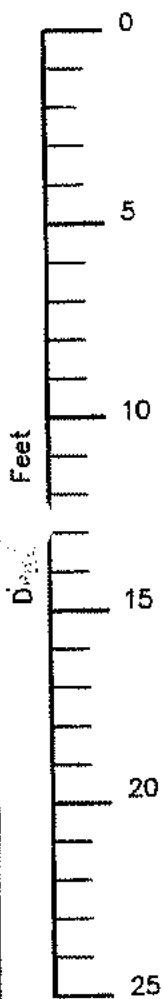
Note: Explanation of symbols is shown on Fig. 8.

BORING 16
ELEV.= 5934'

BORING 17
ELEV.= 6003'

BORING 18
ELEV.= 6045'

BORING 19
ELEV.= 5741'



Note: Explanation of symbols is shown on Fig. 8.

LEGEND:



TOPSOIL; sandy silty clay, organic, loose to firm, slightly moist, brown.



CLAY (CL); silty, sandy to very sandy, stiff to hard, slightly moist to moist, brown, low to medium plasticity.



SAND AND GRAVEL (SM-GM); silty, slightly clayey, with cobbles and boulders, dense, slightly moist, reddish brown, fragments of siltstone/sandstone. Boring 19 is dense river gravel.



CLAYSTONE BEDROCK; weathered and medium hard to very hard, slightly moist, gray, Mancos Shale.



Relatively undisturbed drive sample; 2-inch I.D. California liner sample.



Drive sample; standard penetration test (SPT), 1 3/8 inch I.D. split spoon sample, ASTM D-1586.

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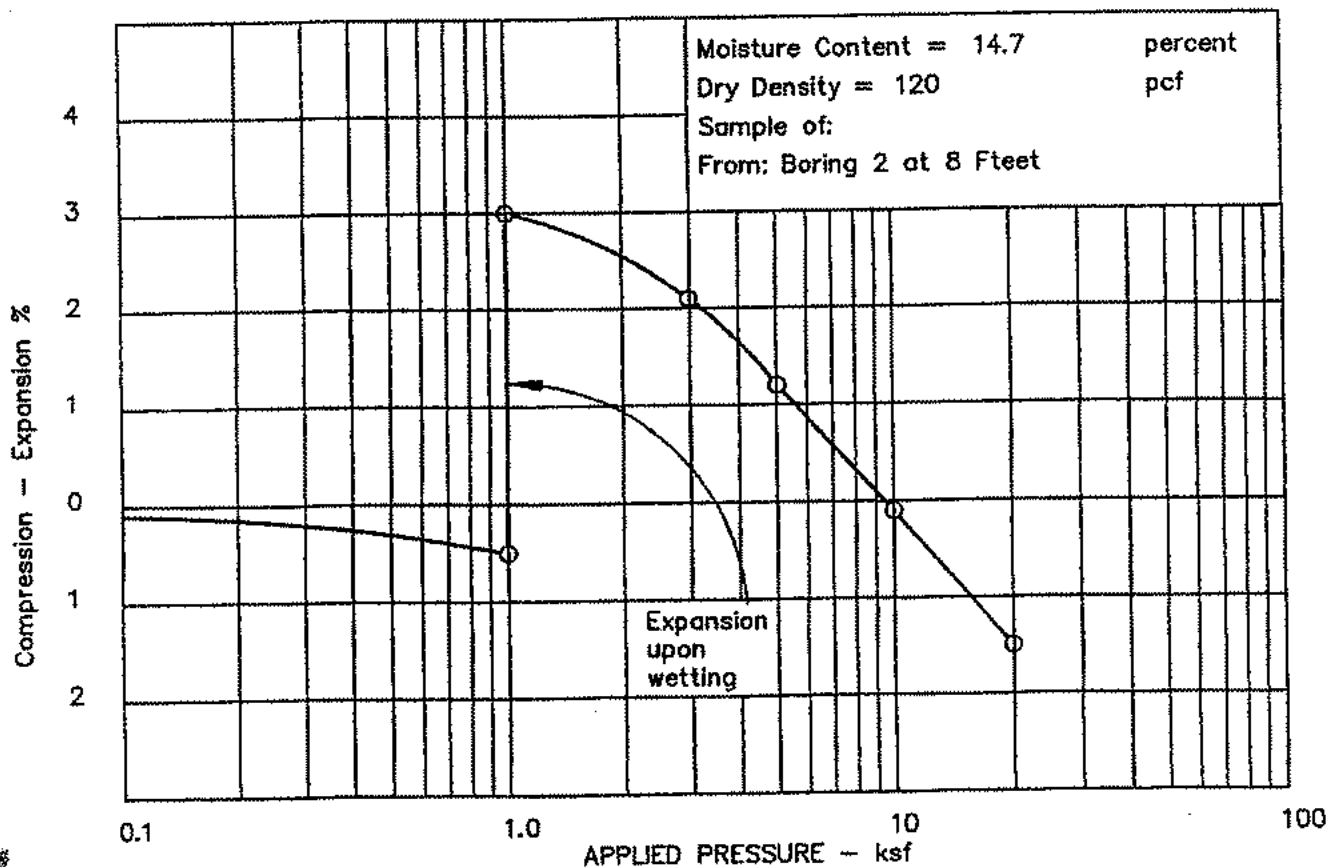
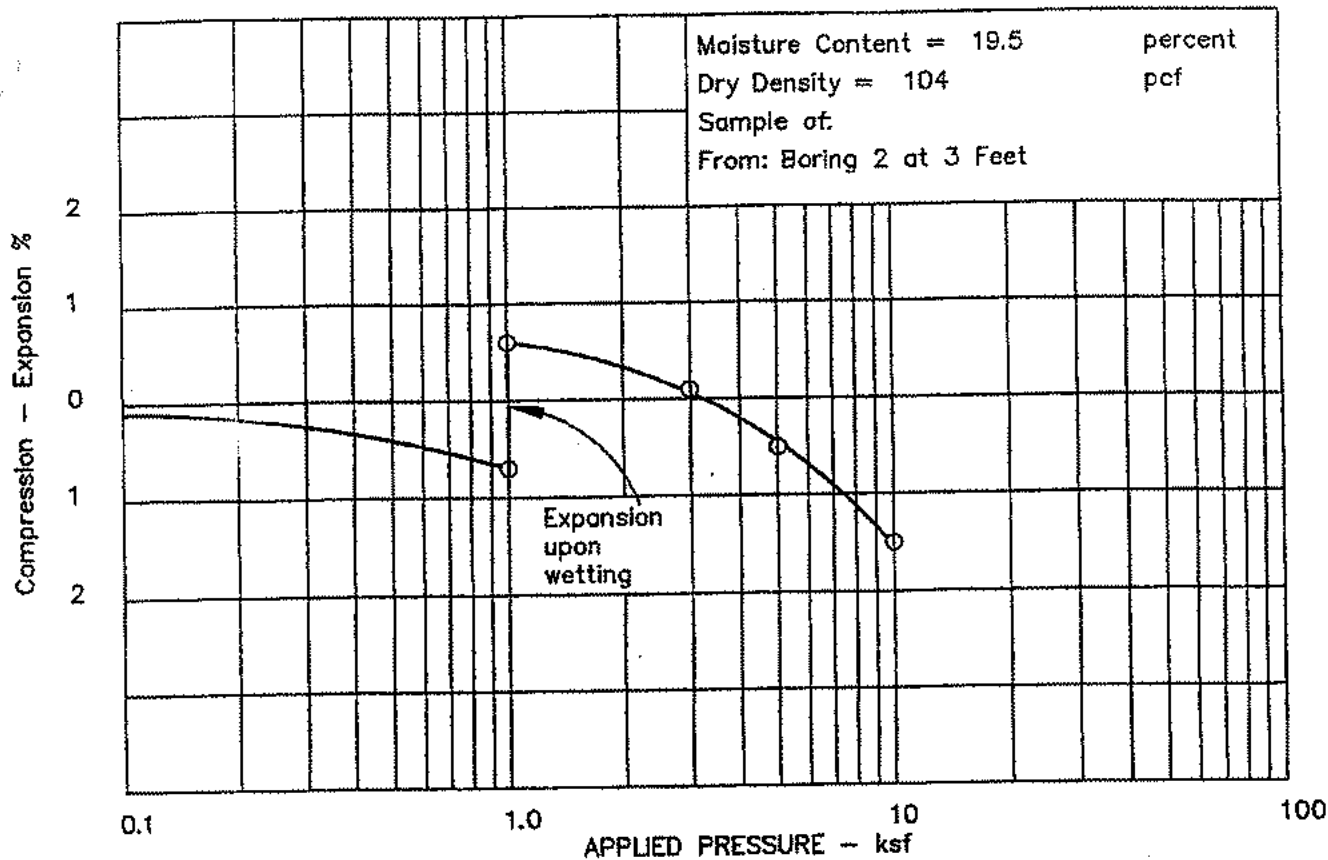
Drive sample blow count; indicates that 50 blows of a 140 pound hammer falling 30 inches were required to drive the California or SPT sampler 7 inches.

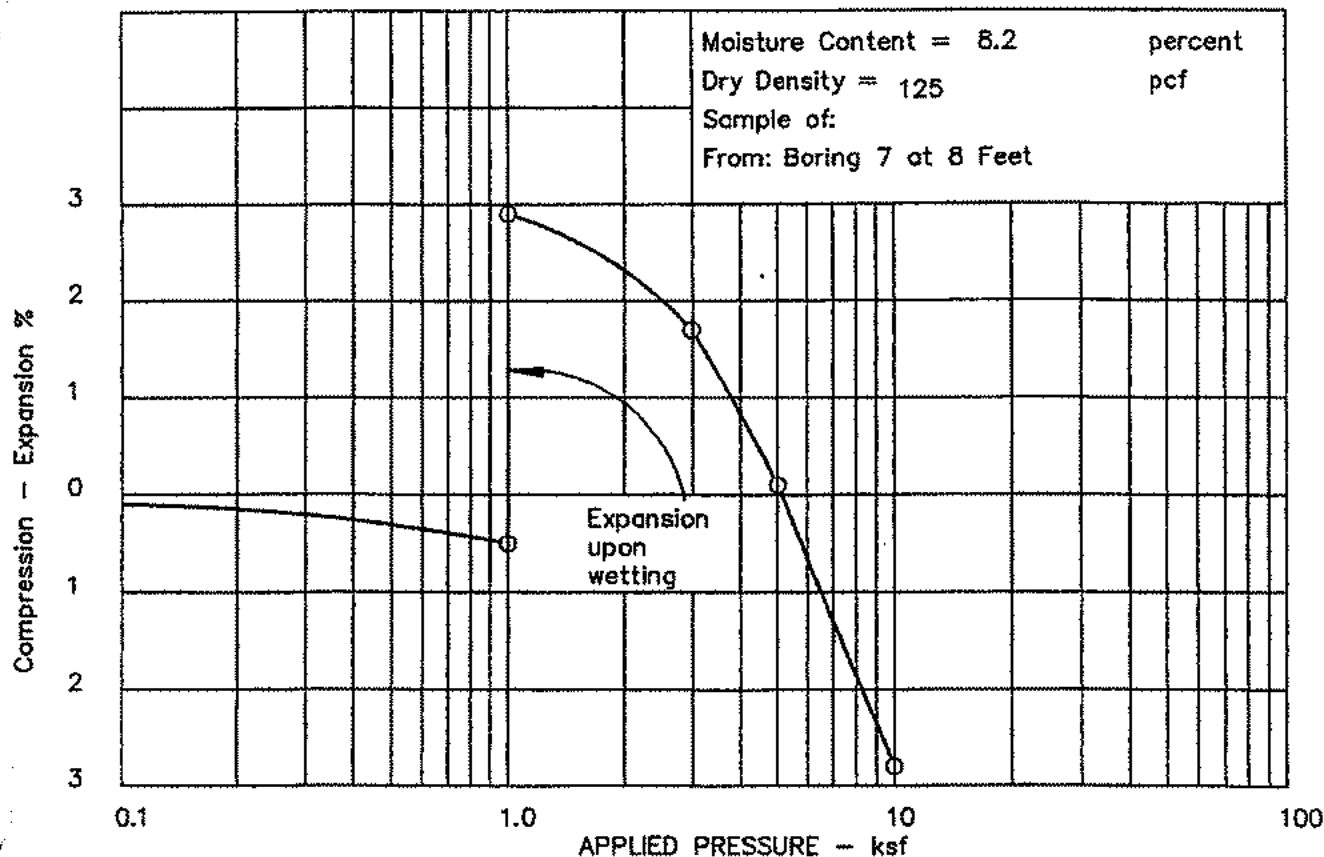
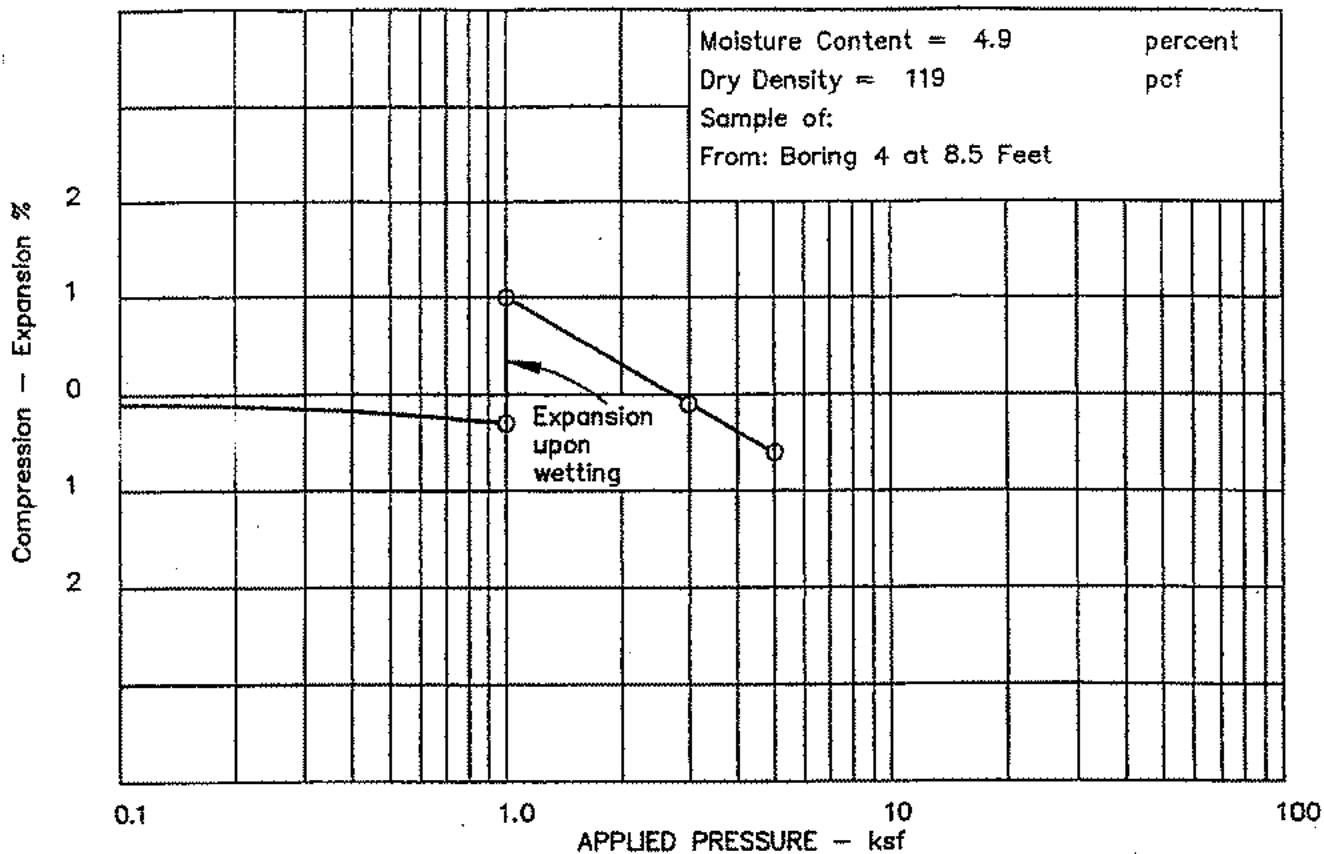


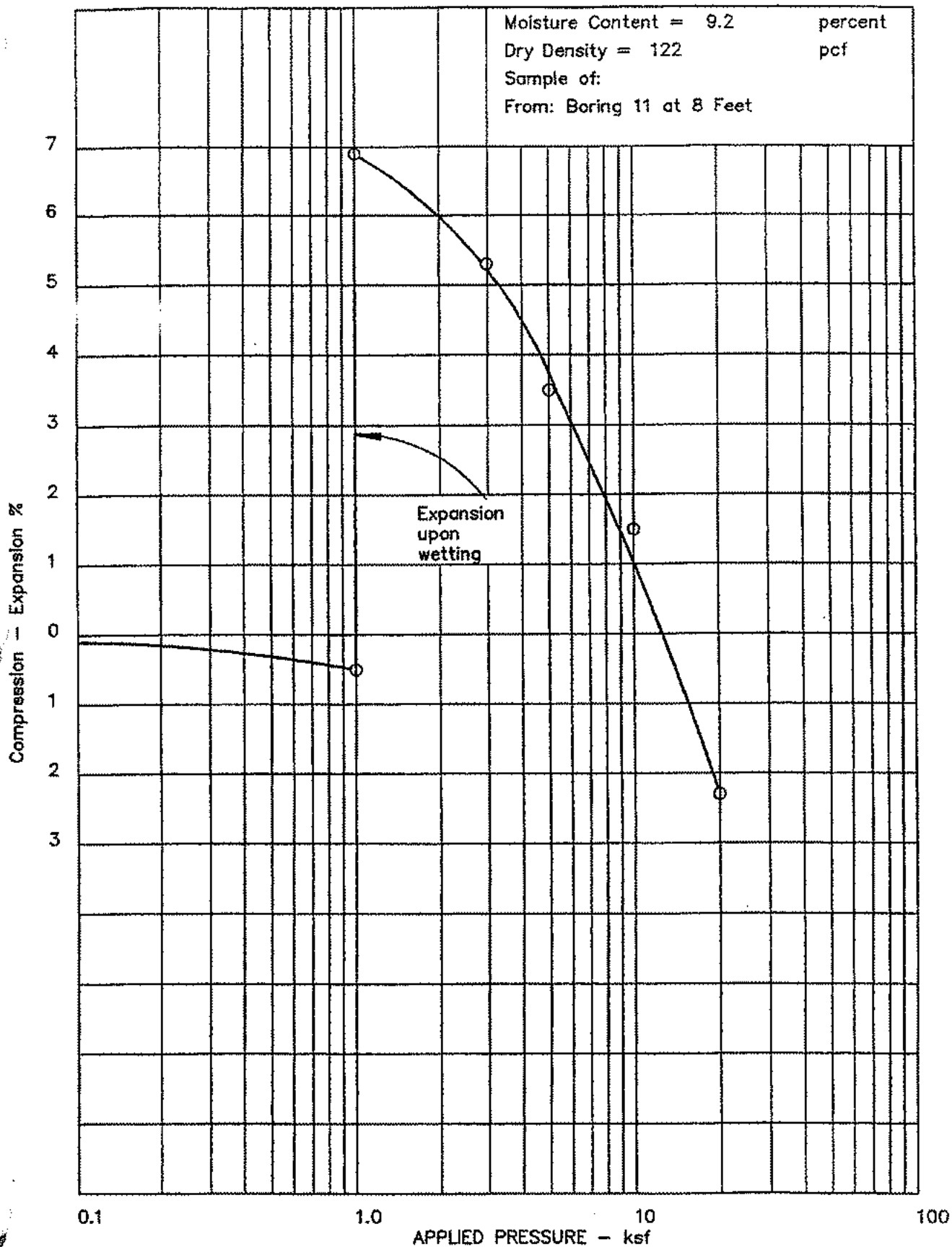
Practical drilling refusal. Where shown above bottom of log, multiple attempts were made to advance the boring.

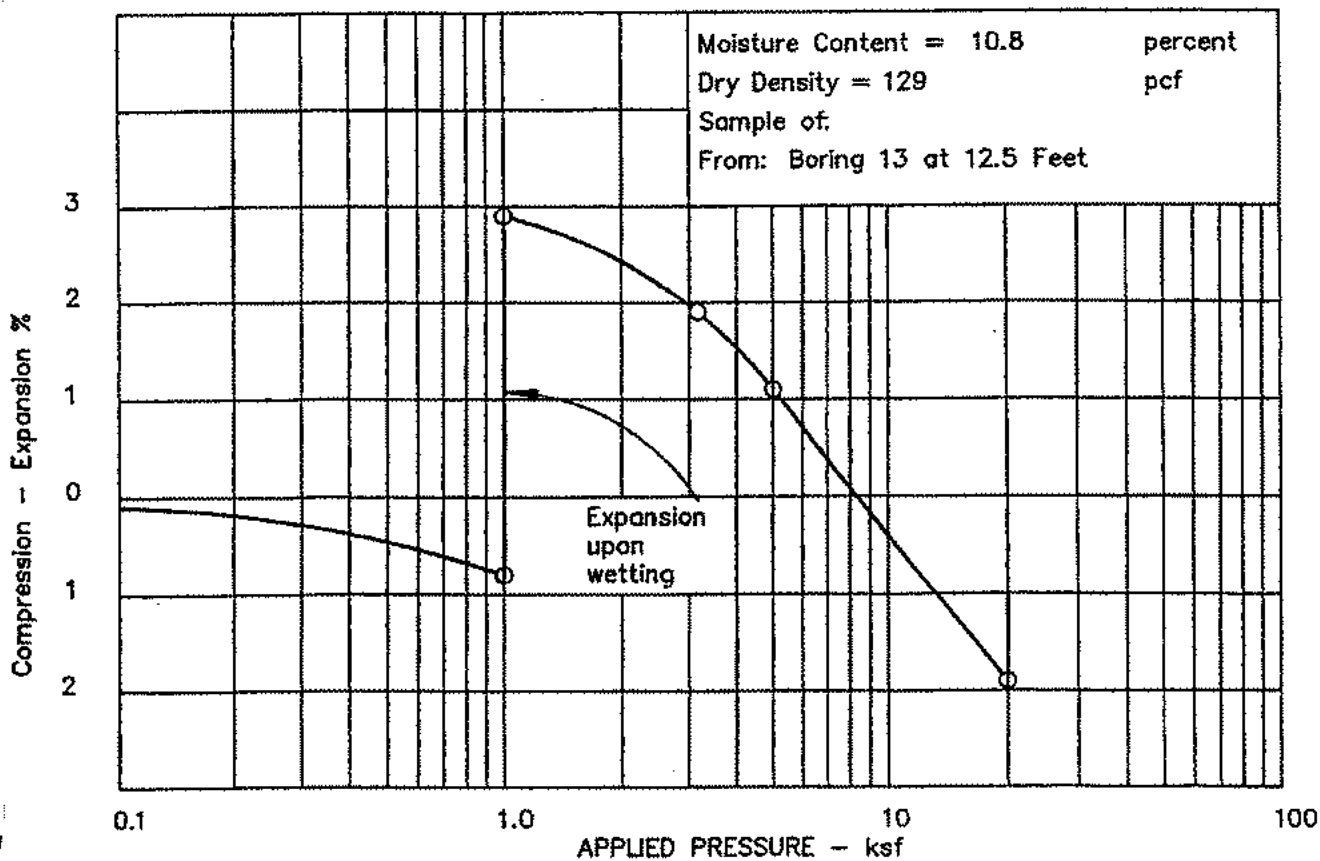
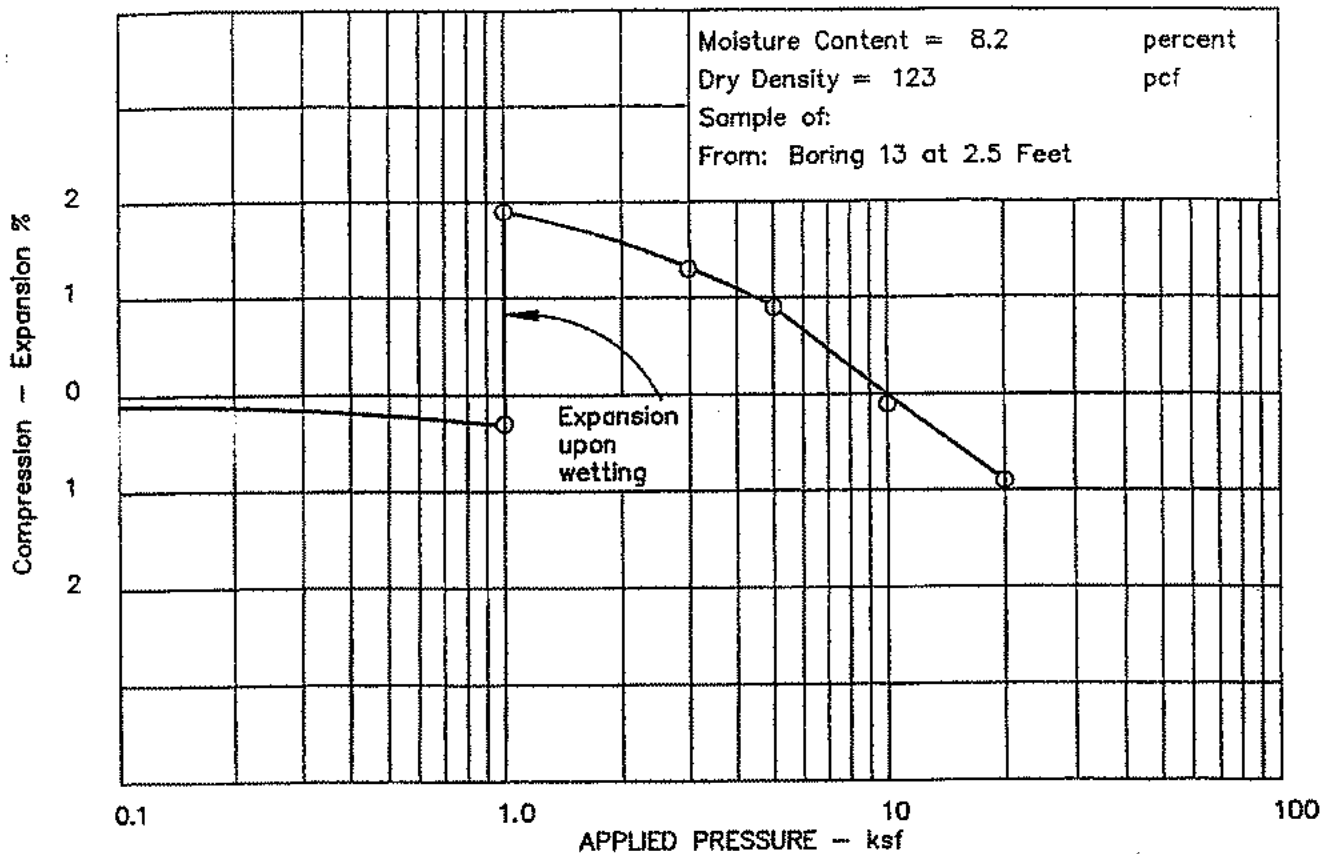
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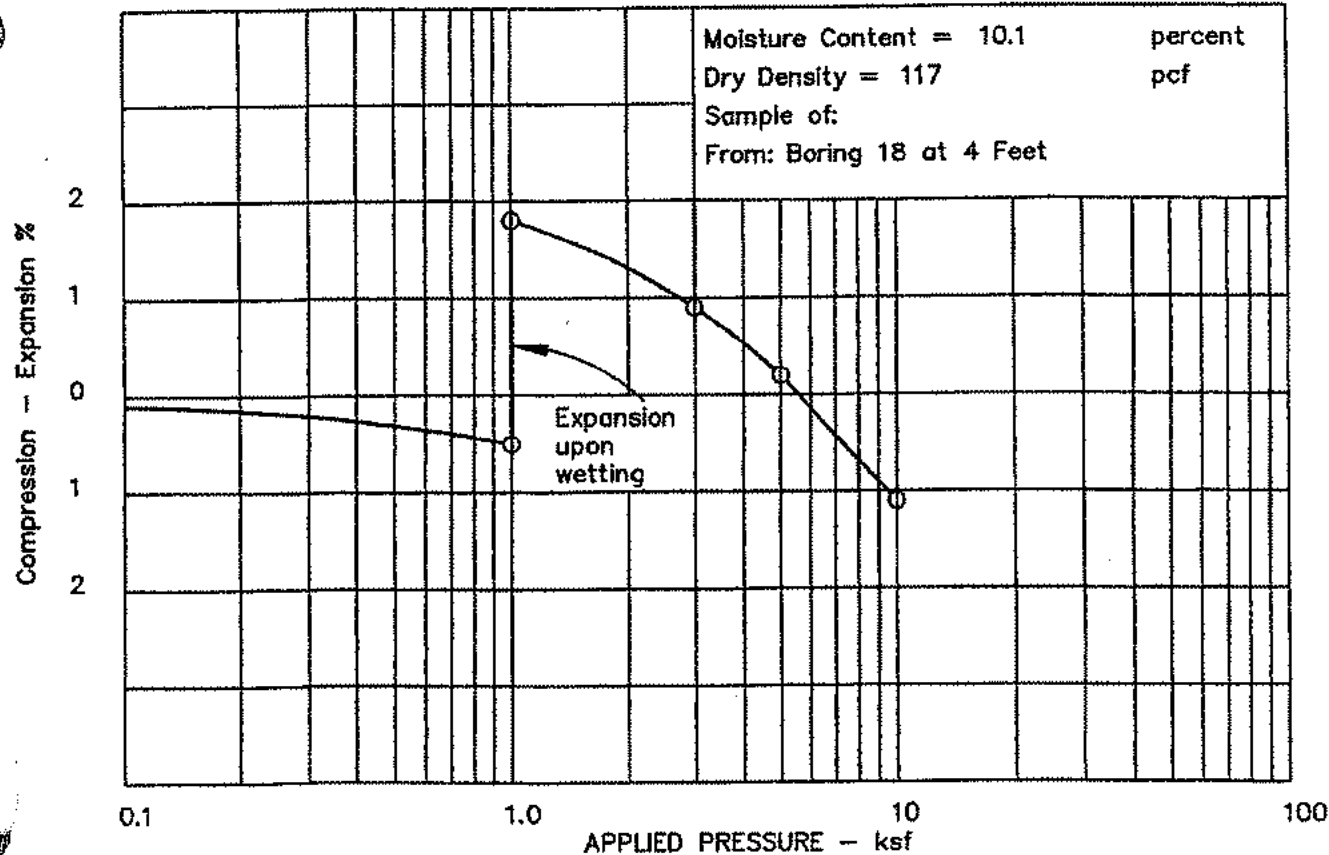
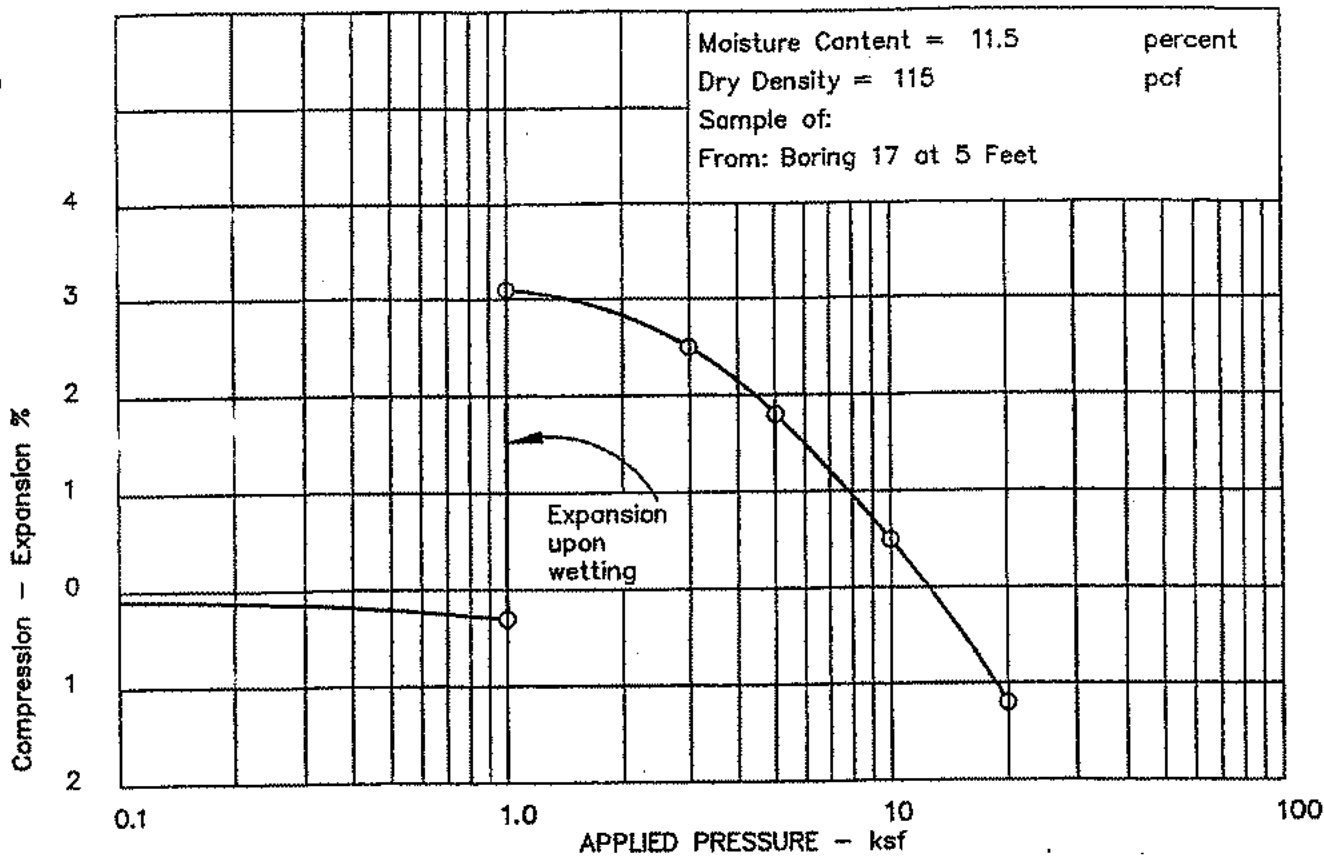
1. Exploratory borings were drilled on August 10 and 13, 2001 with a 4-inch diameter continuous flight power auger.
2. Locations of exploratory borings were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of exploratory borings were obtained by interpolation between contours on the site plan provided. Logs are drawn to depth.
4. The exploratory boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between materials shown on the exploratory boring logs represent the approximate boundaries between material types and transitions may be gradual.
6. No free water was encountered in the borings at the time of drilling. Fluctuation in water level may occur with time.
7. Laboratory Testing Results:
 - WC = Water Content (%)
 - DD = Dry Density (pcf)
 - 200 = Percent passing No. 200 sieve.
 - LL = Liquid Limit (%)
 - PI = Plasticity Index (%)











HEPWORTH-PAWLAK GEOTECHNICAL, INC.

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TABLE I
SUMMARY OF LABORATORY TEST RESULTS

BORING	SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	SOIL OR BEDROCK TYPE
	DEPTH (feet)				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
1	2 1/2		3.5	108				31	8		weathered claystone
2	3		19.5	104							sandy clay
	8		14.7	120							weathered claystone
4	3 1/2		5.9	98			57	26	10		very sandy clay
	8 1/2		4.9	119							sandy clay
5	3 1/2		6.2	108			58				sandy clay with gravel
6	3 1/2		12.6	106							sandy clay
7	3		7.9	106							sandy clay
	8		8.2	125							sandy clay
9	2 1/2		7.1	95			87	30	13		sandy clay
	7 1/2		2.5	112			37				clayey sand
10	5		7.9	129							claystone bedrock

HEPWORTH-PAWLAK GEOTECHNICAL, INC.

JOB NO. 10144
Page 2 of 2

TABLE I
SUMMARY OF LABORATORY TEST RESULTS

BORING	SAMPLE LOCATION DEPTH (feet)	NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCOMBINED COMPRESSIVE STRENGTH (PSF)	SOIL OR SEDIMENT TYPE
				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
11	2	10.6	115							sandy clay
	8	9.2	122							weathered claystone
13	2½	8.2	123							weathered claystone
	7½	9.9	127				46	29		weathered claystone
	12½	10.8	129							weathered claystone
16	2½	8.4	122							weathered claystone
	5	8.5	126				38	18		weathered claystone
17	5	11.5	115							sandy clay
18	4	10.1	117							weathered claystone

Eagles Ridge Ranch
Application for Preliminary Development Approvals

List of Attached Drawings

Attachment F	Sheets	1-2	Preliminary PUD Development Plan - Phase 1
Attachment G	Sheets	1-6	Preliminary Subdivision Plat - Phase 1
Attachment H	Sheets	1-2	Preliminary Subdivision Plan - Phase 1
Attachment I	Sheet	1	Utility Plan - Phase 1
Attachment J	Sheets	1-30	Street Plans, Profiles and Cross-Sections
Attachment K	Sheet	1	Drainage Plan - Phase 1
Attachment L	Sheets	1-2	P.U.D. Master Plan for the Entire Site
Attachment M	Sheet	1	P.U.D. Zone Districts Plan



Hepworth-Pawlak Geotechnical, Inc.
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Glenwood Springs, Colorado 81601
Phone: 970-945-7988

Fax: 970-945-8454
email: hpgeo@hpgeotech.com

**SUPPLEMENTAL SUBSOIL STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
BLACKHAWK 2, LAKOTA CANYON RANCH
NEW CASTLE, COLORADO**

JOB NO. 101 441-8

OCTOBER 21, 2004

PREPARED FOR:

**LAKOTA CANYON RANCH, LLC
ATTN: JIM COLOMBO
P.O. BOX 230
NEW CASTLE, COLORADO 81647**

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SITE CONDITIONS - 2 -

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PRELIMINARY DESIGN RECOMMENDATIONS - 4 -

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 DEEP FOUNDATION ALTERNATIVE – DRILLED PIERS - 5 -

 FLOOR SLABS - 7 -

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LIMITATIONS - 9 -

FIGURE 1 - LOCATION OF EXPLORATORY BORINGS

FIGURES 2 and 3 - LOGS OF EXPLORATORY BORINGS

FIGURE 4 - LEGEND AND NOTES

FIGURES 5 through 13 - SWELL-CONSOLIDATION TEST RESULTS

FIGURE 14 – GRADATION TEST RESULTS

TABLE 1- SUMMARY OF LABORATORY TEST RESULTS

PURPOSE AND SCOPE OF STUDY

This report presents the results of a supplemental subsoil study for Blackhawk 2, a proposed residential development to be located in the southwest portion of Lakota Canyon Ranch, New Castle, Colorado. The project site is shown on Figure 1. The purpose of the study was to develop recommendations for foundation design. The study was conducted in accordance with our agreement for geotechnical engineering services to Lakota Canyon Ranch, LLC, dated August 10, 2004. Hepworth-Pawlak Geotechnical, Inc. previously conducted a preliminary geotechnical study for Lakota Canyon Ranch (formerly Eagle Ridge Ranch) and presented our findings in a report dated April 26, 2002, Job No. 101 441.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils and bedrock obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for preliminary design. This report summarizes the data obtained during this study and presents our conclusions and recommendations based on the proposed development and the subsurface conditions encountered.

PROPOSED CONSTRUCTION

The proposed Blackhawk 2 housing development is located in the southwestern portion of the subdivision just north of Castle Valley Boulevard. This portion of the development will consist of 22 single family residences as shown on Figure 1. An extension of Blackhawk Road to the south will provide access to this portion of the subdivision. We assume the residences will be typical of the area and will consist of one to two stories of wood frame construction over crawlspace or basement levels. The development will be serviced with municipal water and sewer systems. For the purpose of our analysis, foundation loadings for the structures were assumed to be relatively light and typical of the proposed type of construction.

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If development plans change significantly from those described above, we should be notified to re-evaluate the recommendations contained in this report.

SITE CONDITIONS

The site was a previously irrigated pasture that was vacant at the time of our field exploration. Some grading has occurred on the property and piles of fill were observed on the northeast portion of the site. The property is located near the top of southeast trending ridge and the ground surface slopes moderately to strongly down to the southeast at grades up to about 14%. Vegetation consists of scattered grass and weeds. Scattered cobbles and boulders were exposed on the ground surface. Placement of fill was being performed on Lots 16 and 17 at the time of our field exploration.

FIELD EXPLORATION

The field exploration for the project was conducted on August 27 and 30, 2004. Thirteen exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight auger powered by a truck-mounted Longyear BK-51HD drill rig. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1½ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils and hardness of the bedrock. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figures 2 and 3. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface profiles encountered at the site are shown on Figures 2 and 3. The subsoils generally consist of medium stiff to hard, slightly sandy to sandy, silty clay. Weathered and medium hard to very hard claystone bedrock was encountered

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below the clay soils in Borings 3, 5, 7, 11 and 12 at depths between 1 and 12½ feet. Slightly clayey, silty sand and gravel was encountered between the clay and claystone in Borings 4, 8, 9, 10 and 13. About 3 to 5 feet of on-site clay with gravel fill soils were encountered above the clays in Borings 1 and 2. The materials encountered in the borings are similar to the soils encountered at other areas of the subdivision. The clay soils and weathered claystone can possess an expansion potential when wetted.

Laboratory testing performed on samples obtained during the field exploration included natural moisture content, density, Atterberg limits and gradation analyses. Swell-consolidation testing was performed on relatively undisturbed drive samples of the clay subsoils and weathered claystone. The swell-consolidation test results, presented on Figures 5 through 13, indicate low compressibility under relatively light surcharge loading and a low to very high expansion potential when wetted under a constant light surcharge. Swelling pressures between 1,500 and 18,000 psf were indicated for the clay soils and between 8,000 and over 20,000 psf for the weathered claystone bedrock. Atterberg limits testing indicated medium plasticity for the clay soils. The laboratory testing is summarized in Table 1.

No free water was encountered in the borings at time of drilling and the subsoils were slightly moist to moist. The claystone bedrock was slightly moist.

FOUNDATION BEARING CONDITIONS

Bearing conditions are variable but typically are expected to consist of potentially expansive clays and claystone bedrock. The subsurface materials have a variable expansion potential when wetted and mitigation will likely be needed. The granular soils encountered in several of the borings should not be expansive. Surface runoff, landscape irrigation, and utility leakage are possible sources of water which could cause wetting below buildings. The recommendations presented below are suitable for planning and preliminary design, but site specific studies should be conducted at the time of individual lot development.

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PRELIMINARY DESIGN RECOMMENDATIONS

FOUNDATIONS

Possible foundation designs consist of spread footings placed on the natural subsoils or bedrock materials with a minimum dead load pressure in low expansion potential areas (generally east of Blackhawk Road) and footings placed on a minimum 3 foot depth of compacted road base in moderate expansion potential areas. In areas where the clays or claystone bedrock has a high expansion potential (generally west of Blackhawk Road), a deep foundation system, such as drilled or helical piers will be needed to mitigate the expansion potential.

The following design and construction criteria are presented for a spread footing foundation system.

- 1) Footings placed on the undisturbed natural soils or bedrock with low to no expansion potential can be designed for an allowable bearing pressure in the range of 2,000 psf to 3,000 psf. The footings should also be designed for a minimum dead load pressure of 600 to 1,000 psf if the soils have a low expansion potential. In order to satisfy the minimum dead load pressure under lightly loaded areas, it may be necessary to concentrate loads by using a pad and grade beam system. Wall-on-grade construction is not recommended to achieve the minimum dead load.
- 2) In moderate expansion potential soils, spread footings should be placed on a minimum depth of 3 feet of road base and designed for an allowable soil bearing pressure of 2,500 psf. The road base should be compacted to at least 98% of standard Proctor density at near optimum moisture content. The fill should extend to at least 3 feet beyond the edges of the footing. It appears that structural fill to mitigate moderate expansive soils will be needed in most of the development.
- 3) Based on experience, we expect settlement/heave of footings designed and constructed as discussed below will be up to 1 inch. There could be some additional movement on the order of 1 to 1½ inches if the bearing materials were to become wet.

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- 4) The footings should typically have a minimum width of 16 inches for continuous footings and 24 inches for isolated pads.
- 5) Continuous foundation walls should be reinforced top and bottom to span local anomalies and limit the risk of differential movement. One method of analysis is to design the foundation wall to span an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist a lateral earth pressure corresponding to an equivalent fluid unit weight of 65 pcf for the on-site clay soils and 50 pcf for imported granular fill.
- 6) Exterior footings and footings beneath unheated areas should be provided with adequate soil cover above their bearing elevation for frost protection. Placement of foundations at least 36 inches below the exterior grade is typically used in this area.
- 6) Prior to the footing construction, existing fill and any loose or disturbed soils and rock should be removed and the footing bearing level extended down to competent bearing materials.
- 7) A representative of the geotechnical engineer should observe all footing excavations prior to concrete placement to evaluate bearing conditions.

DEEP FOUNDATION ALTERNATIVE - DRILLED PIERS

We recommend straight-shaft piers drilled into the claystone bedrock be used to support foundations in the highly expansive clay and bedrock areas, generally west of Blackhawk Road. The design and construction criteria presented below should be observed for a straight-shaft pier foundation system:

- 1) The piers should be designed for an allowable end bearing pressure of 25,000 psf and an allowable skin friction value of 2,500 psf for that portion of the pier in bedrock.
- 2) Piers should also be designed for a minimum dead load pressure of 15,000 psf based on pier end area only. If the minimum dead load requirement cannot be achieved, the pier length should be extended beyond the minimum penetration to make up the dead load deficit. This can be

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accomplished by assuming one-half the allowable skin friction value given above acts in the direction to resist uplift.

- 3) Uplift on the piers from structural loading can be resisted by utilizing 75% of the allowable skin friction value plus an allowance for the weight of the pier.
- 4) Piers should penetrate at least three pier diameters into the bedrock. A minimum penetration of 5 feet into the bedrock and a minimum pier length of 20 feet are recommended.
- 5) Piers should be designed to resist lateral loads assuming a modulus of horizontal subgrade reaction of 25 tcf in the clay soils and a modulus of horizontal subgrade reaction of 50 tcf in the bedrock. The modulus values given are for a long, 1 foot wide pier and must be corrected for pier size.
- 6) Piers should be reinforced their full length with one #5 reinforcing rod for each 16 inches of pier perimeter to resist tension created by the swelling materials.
- 7) A 4-inch void form should be provided beneath grade beams to prevent the swelling soil and rock from exerting uplift forces on the grade beams and to concentrate pier loadings. A void form should also be provided beneath pier caps.
- 8) Concrete utilized in the piers should be a fluid mix with sufficient slump so that concrete will fill the void between the reinforcing steel and the pier hole. We recommend a slump in the range of 7 to 9 inches.
- 9) Pier holes should be properly cleaned prior to the placement of concrete. Cobbles were encountered in the soil above bedrock in some of the borings which could cause caving and difficult drilling. The drilling contractor should mobilize equipment of sufficient size to effectively drill through possible coarse soils and cemented bedrock zones.
- 10) Although free water was not encountered in the borings drilled at the site, some seepage in the pier holes may be encountered during drilling. Dewatering equipment may be required to reduce water infiltration into the pier holes. If water cannot be removed prior to placement of concrete, the tremie method should be used after the hole has been cleaned of spoil. In no case should concrete be placed in more than 3 inches of water.

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- 11) Care should be taken to prevent the forming of mushroom-shaped tops of the piers which can increase uplift force on the piers from swelling soils.
- 12) A representative of the geotechnical engineer should observe pier drilling operations on a full-time basis.

FLOOR SLABS

The clay soils and weathered claystone typically possess an expansion potential and slab heave could occur if the subgrade materials were to become wet. The expansion potential may be less in areas with gravels. Garage slab-on-grade construction may be used provided precautions are taken to limit potential movement and the risk of distress to the building is accepted by the owner. A positive way to reduce the risk of slab movement, which is commonly used in the area, is to construct structurally supported floors over crawlspace. Subexcavation of the clay soils to at least 3 feet and replacement with compacted road base may also be used to help reduce the heave potential.

To reduce the effects of some differential movement, nonstructural floor slabs should be separated from all bearing walls and columns with expansion joints which allow unrestrained vertical movement. Interior non-bearing partitions resting on floor slabs should be provided with a slip joint at the bottom of the wall so that, if the slab moves, the movement cannot be transmitted to the upper structure. This detail is also important for wallboards, stairways and door frames. Slip joints which will allow at least 1½ inches of vertical movement are recommended. Floor slab control joints should be used to reduce damage due to shrinkage cracking. Slab reinforcement and control joints should be established by the designer based on experience and the intended slab use.

Required fill beneath slabs can consist of the on-site silty sand and gravel soils or a suitable imported granular material (rock as ¾-inch road base), excluding topsoil and oversized rocks. The fill should be spread in thin horizontal lifts, adjusted to at or above optimum moisture content, and compacted to at least 95% of the maximum standard Proctor density. All vegetation, topsoil and loose or disturbed soil should be removed prior to fill placement.

The above recommendations will not prevent slab heave if the expansive soils underlying slabs-on-grade become wet. However, the recommendations will reduce the effects if

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slab heave occurs. All plumbing lines should be pressure tested before backfilling to help reduce the potential for wetting.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the individual residences have been completed:

- 1) Excessive wetting or drying of the foundation excavations and underslab areas should be avoided during construction. Drying could increase the expansion potential of the clay soils.
- 2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement areas and to at least 90% of the maximum standard Proctor density in landscape areas. Free-draining wall backfill should be capped with about 2 to 3 feet of the on-site finer graded soils to reduce surface water infiltration.
- 3) The ground surface surrounding the exterior of the building should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 12 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas.
- 4) Roof downspouts and drains should discharge well beyond the limits of all backfill.
- 5) Irrigation sprinkler heads and landscaping which requires regular heavy irrigation, such as sod, should be located at least 5 feet from foundation walls.

PAVEMENT SECTION

The subsoils encountered at the site consist mainly of medium plasticity sandy silty clay. These soils are considered relatively poor subgrade for support of pavement and will be frost susceptible. Based on the soil conditions encountered in the borings and laboratory test result, a subgrade Hvem 'R' value of 10 was used in the pavement design. Based on traffic volumes previously provided for the subdivision, an 18 kip equivalent daily load application (EDLA) of 10 was used in the design. Based on our experience, a Regional Factor of 1.75 and a serviceability index of 2.0, we recommend the minimum pavement

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section thickness consist of 3 inches of asphalt on 9 inches of base course. As an alternative, with at least 8 inches of subbase, the pavement section can consist of 3 inches of asphalt on 4 inches of base course. The civil engineer should review our traffic loading conditions.

The asphalt should be a batched hot mix, approved by the engineer and placed and compacted to project specifications. The base course should meet CDOT Class 6 specifications and the subbase should meet Class 2 specifications. All base course and required subgrade fill should be compacted to at least 95% of the maximum standard Proctor density at a moisture content at to slightly above optimum.

Required fill to establish design subgrade level can consist of the on-site granular soils or suitable imported granular soils approved by the geotechnical engineer. Prior to fill placement, the subgrade should be scarified to a depth of 8 inches, adjusted to slightly above optimum moisture content and compacted to at least 95% of standard Proctor density. The subgrade should be proofrolled with a heavily loaded rubber tired vehicle prior to construction of the pavement section. Areas that deflect excessively should be corrected as needed to provide a stable subgrade for pavement materials. The subgrade improvements and placement and compaction of base and asphalt should be monitored on a regular basis by a representative of the geotechnical engineer.

LIMITATIONS

This study has been conducted in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on Figure 1, the proposed type of construction and our experience in the area. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions

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encountered during construction appear to be different from those described in this report, we should be notified at once so re-evaluation of the recommendations may be made.

This report has been prepared for the exclusive use by our client for planning and preliminary design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation, conduct additional evaluations and review and monitor the implementation of our recommendations. Significant design changes may require additional analysis or modifications of the recommendations presented herein. We recommend site specific subsoil studies and testing of structural fill be conducted by a geotechnical engineer.

Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

Jordy Z. Adamson, Jr.
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Reviewed by:

D

Daniel E. Hardin, P.E.



JZA/ksw

cc: Colorado River Engineering, Inc. - Attn: Brian Brown

**SUBSOIL STUDY
FOR FOUNDATION DESIGN
PROPOSED RECREATION CENTER
LAKOTA CANYON RANCH
CLUBHOUSE DRIVE
NEW CASTLE, COLORADO**

JOB NO. 101 441-9

SEPTEMBER 16, 2005

PREPARED FOR:

**LAKOTA CANYON RANCH, LLC
ATTN: JIM COLOMBO
151 CLUBHOUSE DRIVE
NEW CASTLE, COLORADO 81647**

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PURPOSE AND SCOPE OF STUDY

This report presents the results of a subsoil study for a proposed recreation center to be located on the west side of Clubhouse Drive near the main entrance to Lakota Canyon Ranch, New Castle, Colorado. The project site is shown on Figure 1. The purpose of the study was to develop recommendations for the foundation design. The study was conducted in accordance with our agreement for geotechnical engineering services to Lakota Canyon Ranch, LLC dated March 23, 2005. Hepworth-Pawlak Geotechnical, Inc. previously conducted a preliminary geotechnical study for development of Lakota Canyon Ranch (formerly Eagles Ridge Ranch) and presented our findings in a report dated April 26, 2002, Job No. 101 441.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for foundation types, depths and allowable pressures for the proposed building foundation. This report summarizes the data obtained during this study and presents our conclusions, design recommendations and other geotechnical engineering considerations based on the proposed construction and the subsurface conditions encountered.

PROPOSED CONSTRUCTION

The proposed recreation building will be a single story log structure with vaulted ceilings. There will be a 1,500 square foot mechanical room beneath the western portion of the building. Ground floor is proposed to be slab-on-grade. A below grade swimming pool will be located to the north of the recreation building. Grading for the structures is assumed to be relatively minor with cut depths between about 3 to 12 feet. An access driveway to the recreation building will be located to the south of the building. There will be parking area further to the south. We assume relatively light foundation loadings, typical of the proposed type of construction.

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If building loadings, location or grading plans change significantly from those described above, we should be notified to re-evaluate the recommendations contained in this report.

SITE CONDITIONS

The site is occupied by existing trailers (Sales Office) on the south side of the site. There is fill on the lot from overlot grading as part of the subdivision development. The ground surface on the site generally slopes strongly down to the south at grades of about 12% to 14%. There is about 8 to 10 feet of elevation difference across the area of the proposed recreation building. Vegetation generally consists of grass and weeds. Scattered cobbles and boulders are exposed on the ground surface.

FIELD EXPLORATION

The field exploration for the project was conducted on March 24 and 25, 2005. Ten exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight augers powered by a truck-mounted CME-45B drill rig. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1½ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figure 2. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface conditions encountered at the site are shown on Figure 2. The subsoils consist of about 2½ to 5½ feet of sandy clayey gravel fill overlying medium

stiff to hard, sandy silty clay with scattered gravel. Relatively dense, slightly clayey silty sand and gravel with cobbles and boulders was encountered beneath the clays at depths between 2½ and 17½ feet. Drilling in the dense granular soils with auger equipment was difficult due to the cobbles and boulders and drilling refusal was encountered in the deposit.

Laboratory testing performed on samples obtained from the borings included natural moisture content and density, Atterberg limits and finer than sand size gradation analyses. Results of swell-consolidation testing performed on relatively undisturbed drive samples, presented on Figures 4 through 6, generally indicate low to moderate compressibility under conditions of loading and wetting. The sample from Boring 2 at 10 feet showed a low expansion potential when wetted under a constant light surcharge. The laboratory testing is summarized in Table 1.

No free water was encountered in the borings at the time of drilling or when checked 1 day later and the subsoils were slightly moist to moist.

FOUNDATION BEARING CONDITIONS

The natural clay soils encountered in the area typically have variable settlement/heave potential when wetted. In general, the heave potential appears to be minor and does not warrant mitigation. Conventional spread footings should be adequate for support of the proposed building. The settlement/heave potential of the subgrade should be further evaluated at the time of construction.

DESIGN RECOMMENDATIONS

FOUNDATIONS

Considering the subsurface conditions encountered in the exploratory borings and the nature of the proposed construction, we recommend the building be founded with spread footings bearing on the natural subsoils.

The design and construction criteria presented below should be observed for a spread footing foundation system.

- 1) Footings placed on the undisturbed natural subsoils should be designed for an allowable bearing pressure of 2,000 psf. Based on experience, we expect settlement of footings designed and constructed as discussed in this section will be about 1 inch or less. There could be some additional movement up to about 1 inch if the bearing soils become wetted. The additional movement would likely be differential between wetted and non-wetted areas.
- 2) The footings should have a minimum width of 16 inches for continuous walls and 2 feet for isolated pads.
- 3) Exterior footings and footings beneath unheated areas should be provided with adequate soil cover above their bearing elevation for frost protection. Placement of foundations at least 36 inches below exterior grade is typically used in this area.
- 4) Continuous foundation walls should be reinforced top and bottom to span local anomalies such as by assuming an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist lateral earth pressures as discussed in the "Foundation and Retaining Walls" section of this report.
- 5) All existing fill, topsoil and any loose or disturbed soils should be removed and the footing bearing level extended down to competent bearing soils.
- 6) A representative of the geotechnical engineer should observe all footing excavations prior to concrete placement to evaluate bearing conditions.

FOUNDATION AND RETAINING WALLS

Foundation walls and retaining structures which are laterally supported and can be expected to undergo only a slight amount of deflection should be designed for a lateral earth pressure computed on the basis of an equivalent fluid unit weight of at least 55 pcf for backfill consisting of the on-site soils. Cantilevered retaining structures which are separate from the building and can be expected to deflect sufficiently to mobilize the full active earth pressure condition should be designed for a lateral earth pressure computed

on the basis of an equivalent fluid unit weight of at least 45 pcf for backfill consisting of the on-site soils. Backfill should not contain vegetation, topsoil or oversized rock.

All foundation and retaining structures should be designed for appropriate hydrostatic and surcharge pressures such as adjacent footings, traffic, construction materials and equipment. The pressures recommended above assume drained conditions behind the walls and a horizontal backfill surface. The buildup of water behind a wall or an upward sloping backfill surface will increase the lateral pressure imposed on a foundation wall or retaining structure. An underdrain should be provided to prevent hydrostatic pressure buildup behind walls.

Backfill should be placed in uniform lifts and compacted to at least 90% of the maximum standard Proctor density at a moisture content near optimum. Backfill in pavement and walkway areas should be compacted to at least 95% of the maximum standard Proctor density. Care should be taken not to overcompact the backfill or use large equipment near the wall, since this could cause excessive lateral pressure on the wall. Some settlement of deep foundation wall backfill should be expected, even if the material is placed correctly, and could result in distress to facilities constructed on the backfill.

The lateral resistance of foundation or retaining wall footings will be a combination of the sliding resistance of the footing on the foundation materials and passive earth pressure against the side of the footing. Resistance to sliding at the bottoms of the footings can be calculated based on a coefficient of friction of 0.40. Passive pressure of compacted backfill against the sides of the footings can be calculated using an equivalent fluid unit weight of 350 pcf. The coefficient of friction and passive pressure values recommended above assume ultimate soil strength. Suitable factors of safety should be included in the design to limit the strain which will occur at the ultimate strength, particularly in the case of passive resistance. Fill placed against the sides of the footings to resist lateral loads should be compacted to at least 95% of the maximum standard Proctor density at a moisture content near optimum.

FLOOR SLABS

The natural on-site soils, exclusive of topsoil, are suitable to support lightly loaded slab-on-grade construction. The clay soils have variable settlement/heave potential which should be further evaluated at the time of construction. To reduce the effects of some differential movement, floor slabs should be separated from all bearing walls and columns with expansion joints which allow unrestrained vertical movement. Floor slab control joints should be used to reduce damage due to shrinkage cracking. The requirements for joint spacing and slab reinforcement should be established by the designer based on experience and the intended slab use. A minimum 4 inch layer of free-draining gravel should be placed beneath basement level slabs to facilitate drainage. This material should consist of minus 2 inch aggregate with at least 50% retained on the No. 4 sieve and less than 2% passing the No. 200 sieve.

All fill materials for support of floor slabs should be compacted to at least 95% of maximum standard Proctor density at a moisture content near optimum. Required fill can consist of the on-site soils or suitable imported granular fill devoid of vegetation, topsoil and oversized rock.

UNDERDRAIN SYSTEM

Although free water was not encountered during our exploration, it has been our experience in the area and where clay soils are present that local perched groundwater can develop during times of heavy precipitation or seasonal runoff. Frozen ground during spring runoff can create a perched condition. We recommend below-grade construction, such as retaining walls, crawlspace and basement areas, be protected from wetting and hydrostatic pressure buildup by an underdrain system.

The drains should consist of drainpipe placed in the bottom of the wall backfill surrounded above the invert level with free-draining granular material. The drain should be placed at each level of excavation and at least 1 foot below lowest adjacent finish grade and sloped at a minimum 1% to a suitable gravity outlet. Free-draining granular material used in the underdrain system should contain less than 2% passing the No. 200

sieve, less than 50% passing the No. 4 sieve and have a maximum size of 2 inches. The drain gravel backfill should be at least 1½ feet deep.

SWIMMING POOL

Proper design and construction of below ground pool structures is critical to their satisfactory performance. All swimming pools have a tendency to leak. A small amount of leakage can cause the subsurface materials to become wet and result in pool or slab movement which widens existing cracks and introduces more water into the subsurface materials, thereby compounding the problem.

Based on these considerations and the subsurface conditions encountered, we suggest the following precautions be taken in the design and construction of the proposed reinforced concrete pool:

- 1) The pool should be designed and constructed to withstand differential movements without cracking.
- 2) The natural material below the pool should be removed to a depth of at least 3 feet and replaced with a nonexpansive, material with limited permeability such as ¾-inch road base (CDOT Class 6) compacted to at least 95% of the maximum standard Proctor density near optimum moisture content.
- 3) An impervious membrane, such as sprayed on rubberized asphalt or PVC, should be provided on the walls of the excavation and on the top of the compacted fill to help prevent moisture from migrating into the subsurface materials.
- 4) A minimum 4-inch free-draining gravel layer should be placed beneath the pool bottom slab. The drainage layer under the pool should slope to a drain line or collection point from which water can be removed by pumping or gravity outlet. The drains should consist of perforated pipe surrounded by a minimum of 12 inches of free-draining granular material. The free-draining granular material should consist of minus 2-inch aggregate with less than 2% passing the No. 200 sieve and less than 50% passing the No. 4 sieve.

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- 5) A tight joint should be provided between the pool and deck so water splashed from the pool will not infiltrate the subsurface materials. Cracks which develop on the deck while the pool is in service should be caulked to prevent water infiltration.
- 6) The pool deck and adjoining area should be sloped to minimize ponding and infiltration of moisture into the subsurface materials. Lawn irrigation should be kept to a minimum adjacent the pool. Landscape not requiring irrigation should be considered as an alternative to lawn in areas surrounding the pool.

These precautions will not eliminate the risk of damage to the pool and deck due to wetting of the subgrade materials, but should reduce the chances of the subsurface materials becoming wetted and subsequent movement due to changes in moisture content.

SITE GRADING

The risk of construction-induced slope instability at the site appears low provided cut and fill depths are limited. We assume the cut depths for the basement level will not exceed one level, about 10 to 12 feet. Fills should be limited to about 8 to 10 feet deep. Embankment fills should be compacted to at least 95% of the maximum standard Proctor density near optimum moisture content. Prior to fill placement, the subgrade should be carefully prepared by removing all vegetation and topsoil and compacting to at least 95% of the maximum standard Proctor density. Permanent unretained cut and fill slopes should be graded at 2 horizontal to 1 vertical or flatter and protected against erosion by revegetation or other means. The risk of slope instability will be increased if seepage is encountered in cuts and flatter slopes may be necessary. If seepage is encountered in permanent cuts, an investigation should be conducted to determine if the seepage will adversely affect the cut stability.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the building has been completed:

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- 1) Inundation of the foundation excavations and underslab areas should be avoided during construction.
- 2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement and slab areas and to at least 90% of the maximum standard Proctor density in landscape areas.
- 3) The ground surface surrounding the exterior of the building should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 6 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas. Free-draining wall backfill should be capped with about 2 feet of the on-site finer graded soils to reduce surface water infiltration.
- 4) Roof downspouts and drains should discharge well beyond the limits of all backfill.
- 5) Irrigation sprinkler heads and landscaping which requires regular heavy irrigation, such as sod, should be located at least 5 feet from foundation walls.

PAVEMENT DESIGN

The subsoils encountered at the site consist mainly of medium plasticity sandy silty clay. These soils are considered relatively poor subgrade for support of pavement and will be frost susceptible. Based on the soil conditions encountered in the borings and laboratory test result, a subgrade Hveem 'R' value of 10 was used in the pavement design. Based on traffic volumes previously provided for the subdivision, an 18 kip equivalent daily load application (EDLA) of 10 was used in the design. Based on our experience, a Regional Factor of 1.75 and a serviceability index of 2.0, we recommend the minimum pavement section thickness consist of 3 inches of asphalt on 9 inches of base course. As an alternative, with at least 8 inches of subbase, the pavement section can consist of 3 inches of asphalt on 4 inches of base course. The civil engineer should review our assumed traffic loading conditions.

The asphalt should be a batched hot mix, approved by the engineer and placed and compacted to project specifications. The base course should meet CDOT Class 6

- 10 -

specifications and the subbase should meet Class 2 specifications. All base course and required subgrade fill should be compacted to at least 95% of the maximum standard Proctor density at a moisture content at to slightly above optimum.

Required fill to establish design subgrade level can consist of the on-site granular soils or suitable imported granular soils approved by the geotechnical engineer. Prior to fill placement, the subgrade should be scarified to a depth of 8 inches, adjusted to slightly above optimum moisture content and compacted to at least 95% of standard Proctor density. The subgrade should be proofrolled with a heavily loaded rubber tired vehicle prior to construction of the pavement section. Areas that deflect excessively should be corrected as needed to provide a stable subgrade for pavement materials. The subgrade improvements and placement and compaction of base and asphalt should be monitored on a regular basis by a representative of the geotechnical engineer.

LIMITATIONS

This study has been conducted in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on Figure 1, the proposed type of construction and our experience in the area. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions encountered during construction appear different from those described in this report, we should be notified so that re-evaluation of the recommendations may be made.

This report has been prepared for the exclusive use by our client for design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation and field services during construction to review and monitor the implementation of our recommendations, and to

- 11 -

verify that the recommendations have been appropriately interpreted. Significant design changes may require additional analysis or modifications to the recommendations presented herein. We recommend on-site observation of excavations and foundation bearing strata and testing of structural fill by a representative of the geotechnical engineer.

Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

Jordy Z. Adamson, Jr., P.E.



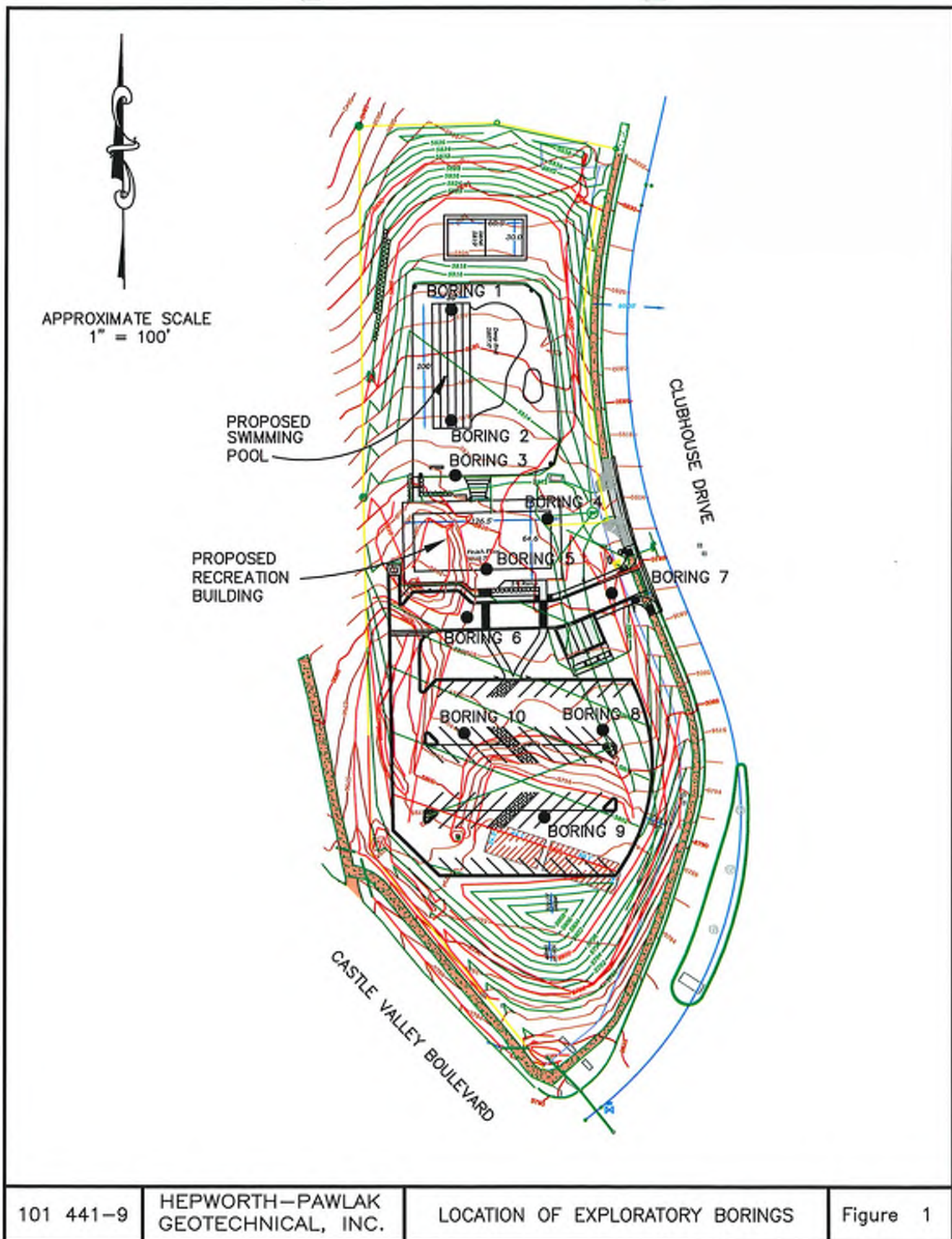
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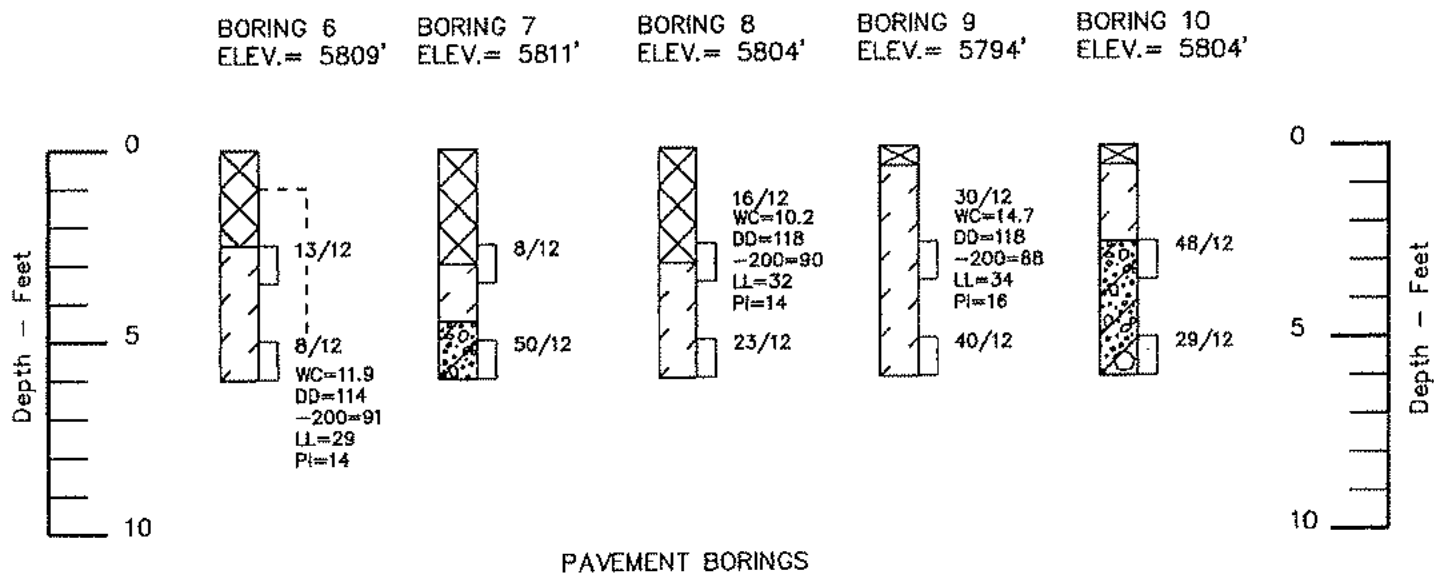
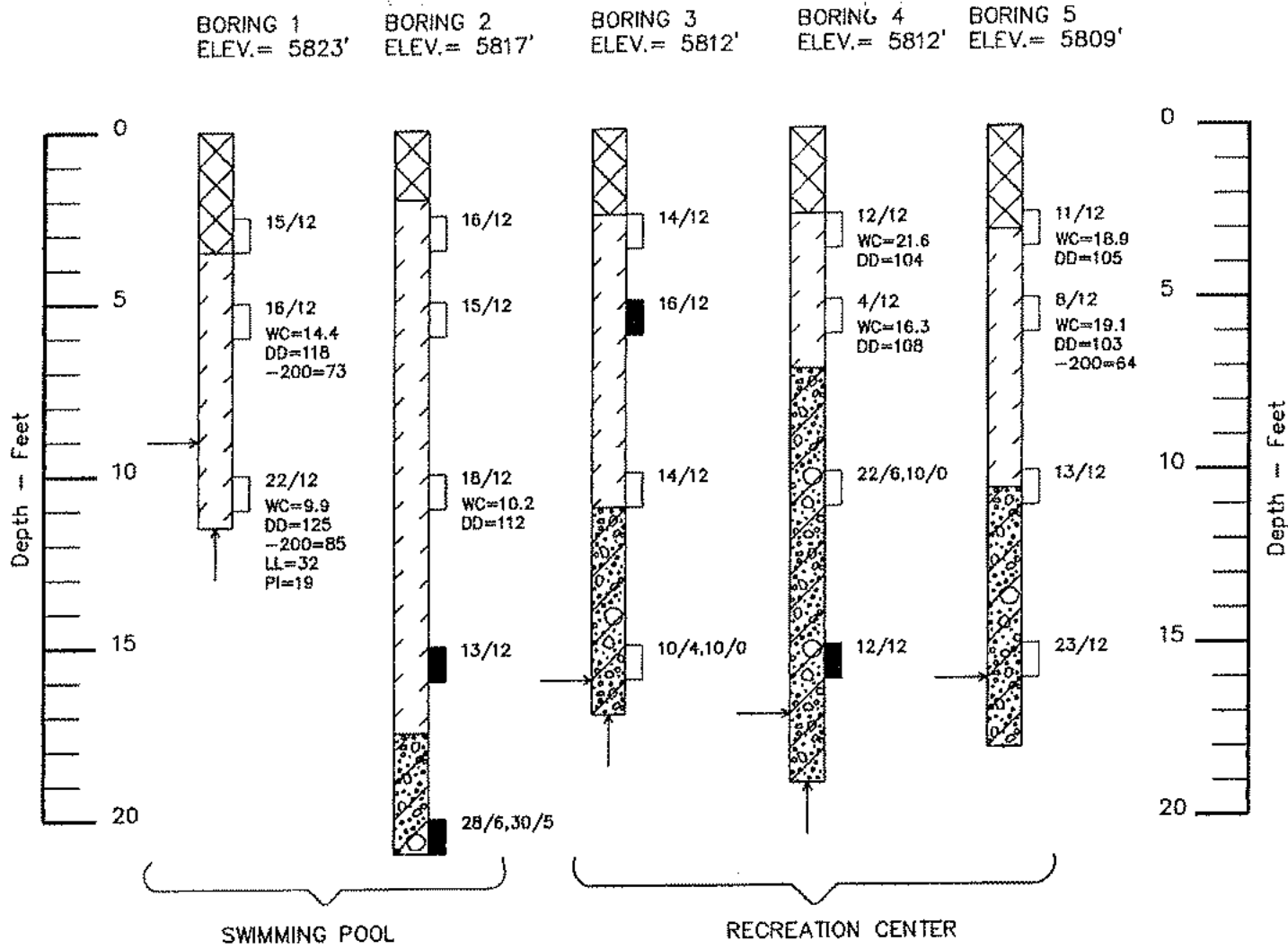
A handwritten signature in blue ink that reads "Daniel E. Hardin".

Daniel E. Hardin, P.E.

JZA/ksw

cc: Colorado River Engineering - Attn: Chris Manera





Note: Explanation of symbols is shown on Figure 3.

LEGEND:



FILL; sandy clayey gravel with scattered cobbles, medium dense, slightly moist to moist, brown, roadway gravel in Borings 9 and 10.



CLAY (CL); silty, sandy to very sandy, scattered gravel, medium stiff to hard, slightly moist to moist, brown, low to medium plasticity.



SAND AND GRAVEL (SM-GM); silty, slightly clayey, with cobbles and boulders, medium dense to dense, slightly moist, reddish brown, fragments of siltstone/sandstone.



Relatively undisturbed drive sample; 2-inch I.D. California liner sample.



Drive sample; standard penetration test (SPT), 1 3/8 inch I.D. split spoon sample, ASTM D-1586.

15/12

Drive sample blow count; indicates that 15 blows of a 140 pound hammer falling 30 inches were required to drive the California or SPT sampler 12 inches.



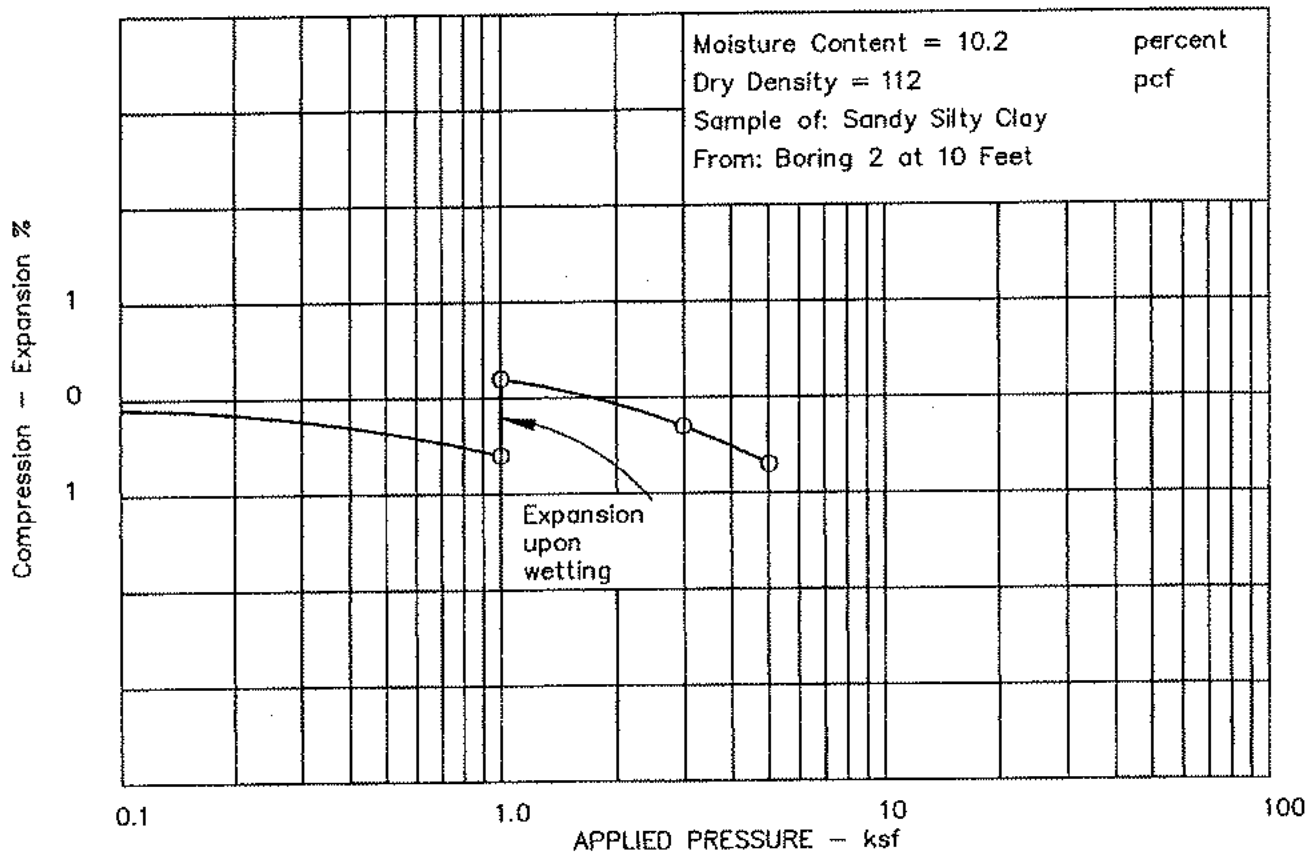
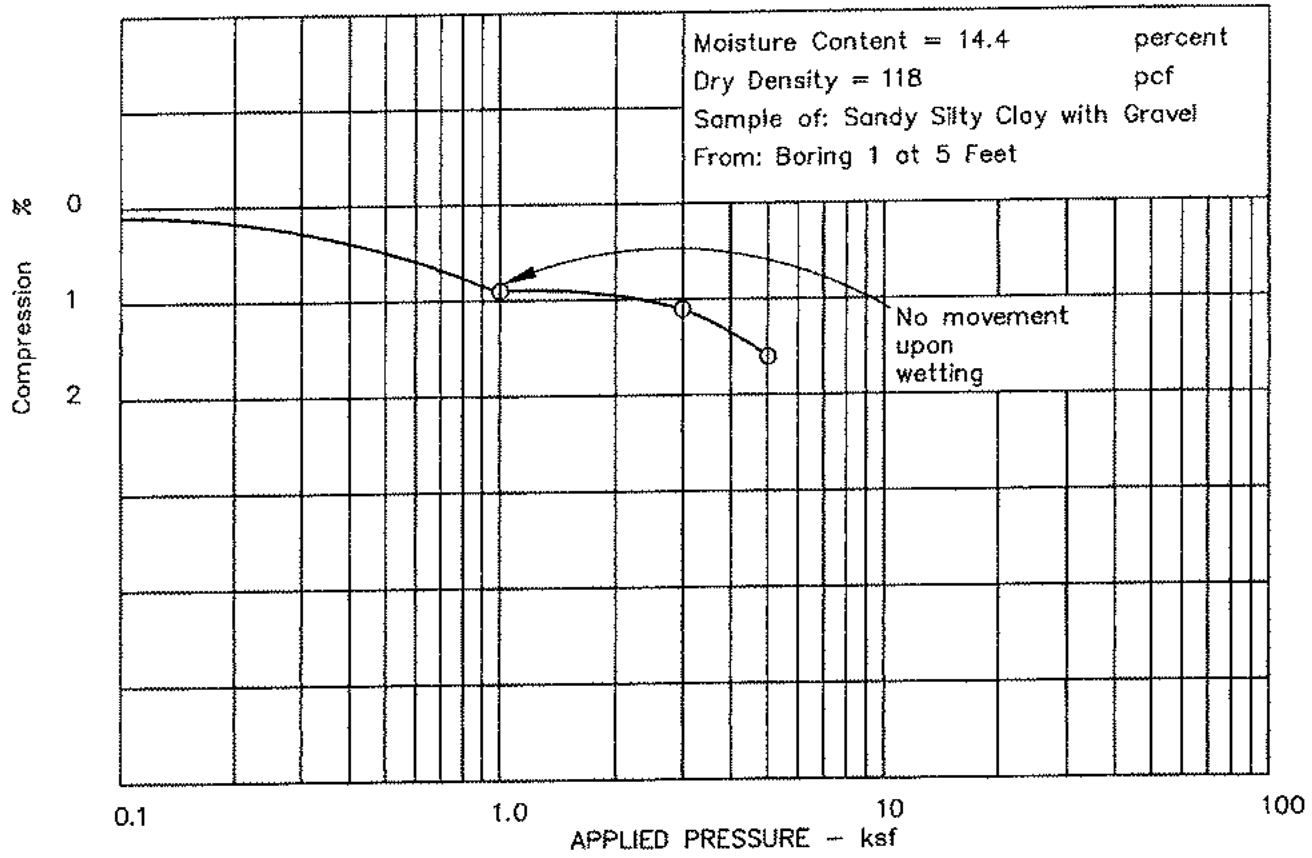
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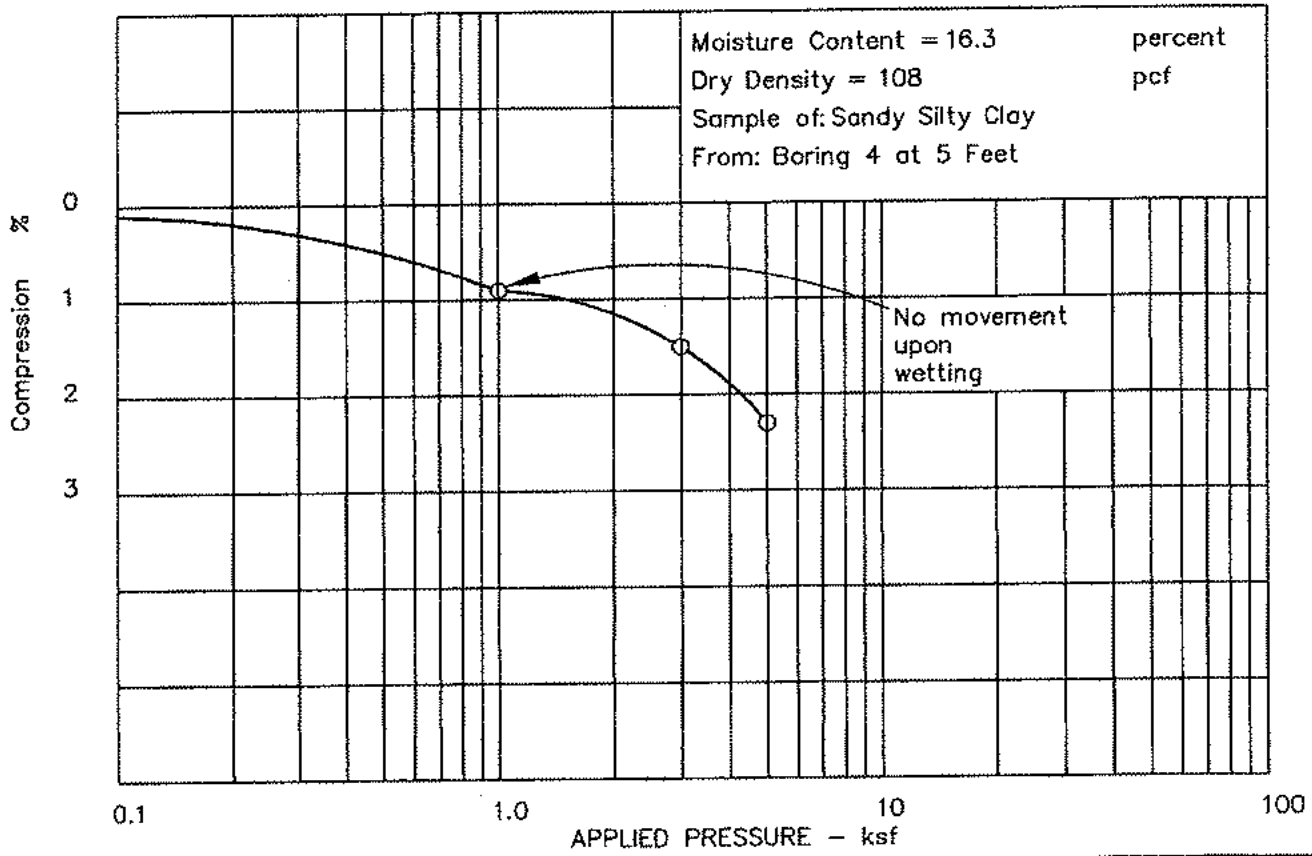
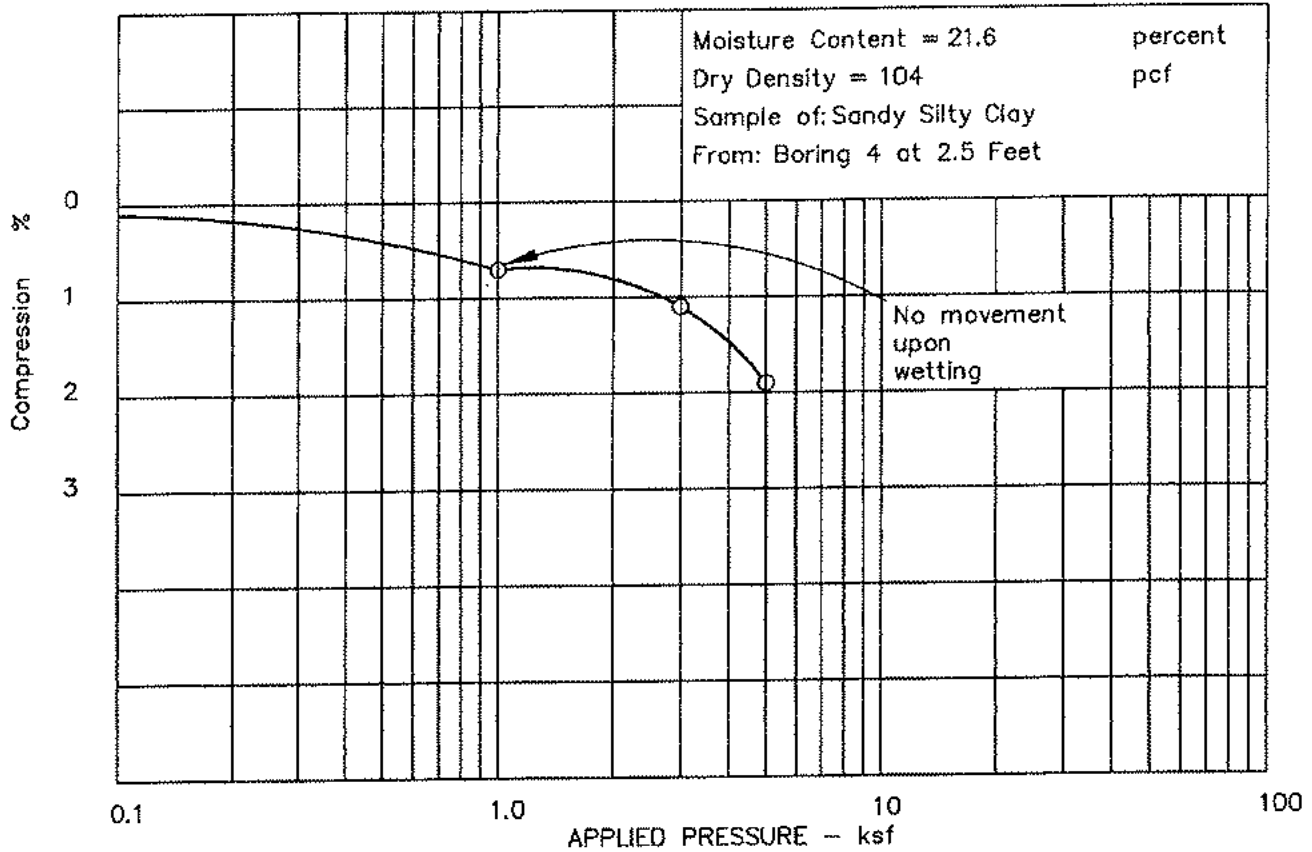


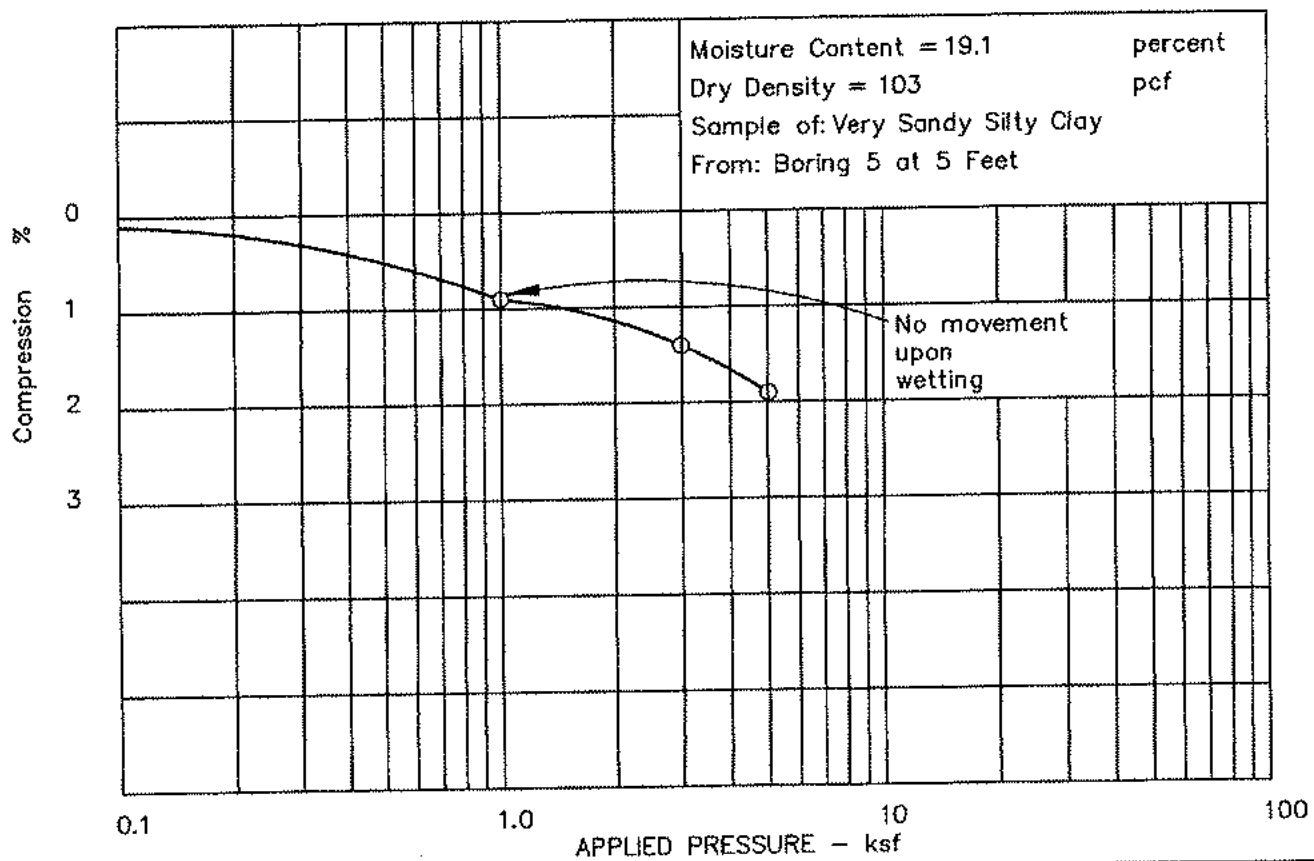
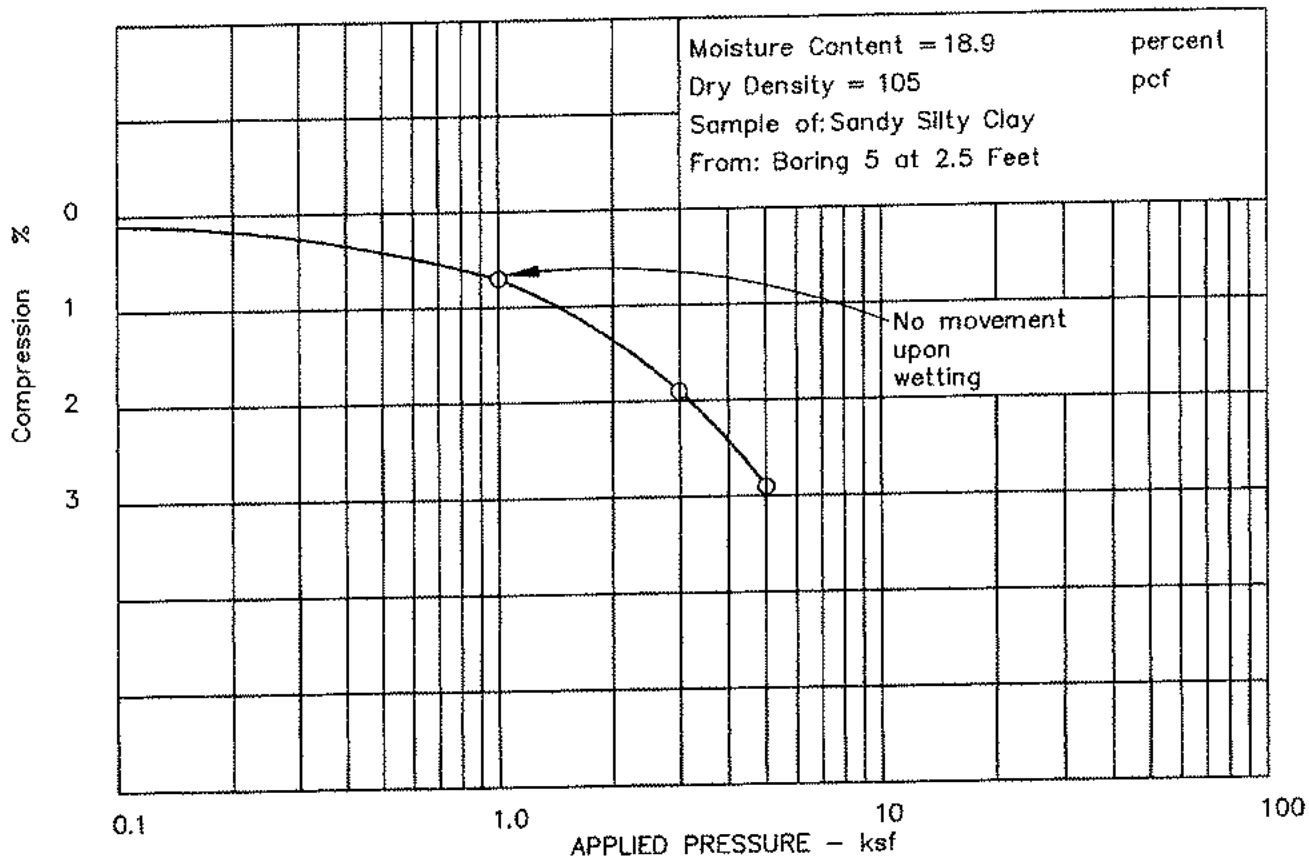
Depth at which boring had caved when measured on March 25, 2005.

NOTES:

1. Exploratory borings were drilled on March 24 and 25, 2005 with 4-inch diameter continuous flight power auger.
2. Locations of exploratory borings were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of exploratory borings were obtained by interpolation between contours shown on the site plan provided. Logs are drawn to depth.
4. The exploratory boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between materials shown on the exploratory boring logs represent the approximate boundaries between material types and transitions may be gradual.
6. No free water was encountered in the borings at the time of drilling or when checked 1 day later. Fluctuation in water level may occur with time.
7. Laboratory Testing Results:
 - WC = Water Content (%)
 - DD = Dry Density (pcf)
 - +4 = Percent retained on the No. 4 sieve
 - 200 = Percent passing No. 200 sieve
 - LL = Liquid Limit (%)
 - PI = Plasticity Index (%)







HEPWORTH-PAWLAK GEOTECHNICAL, INC.
 TABLE 1
 SUMMARY OF LABORATORY TEST RESULTS

Job No. 101 441-9

BORING	SAMPLE LOCATION DEPTH (ft)	NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	SOIL OR BEDROCK TYPE
				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
1	5	14.4	118			73				Sandy Silty Clay with Gravel
	10	9.9	125			85	32	19		Sandy Silty Clay
2	10	10.2	112							Sandy Silty Clay
4	2½	21.6	104							Sandy Silty Clay
	5	16.3	108							Sandy Silty Clay
5	2½	18.9	105							Sandy Silty Clay
	5	19.1	103			64				Very Sandy Silty Clay
6	5	11.9	114			91	29	14		Slightly Sandy Silty Clay
8	2½	10.2	118			90	32	14		Slightly Sandy Silty Clay
9	2½	14.7	118			88	34	16		Sandy Silty Clay



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email: hpgeo@hpgeotech.com

**SUPPLEMENTAL SUBSOIL STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
BLACKHAWK 2, LAKOTA CANYON RANCH
NEW CASTLE, COLORADO**

JOB NO. 101 441-8

OCTOBER 21, 2004

PREPARED FOR:

**LAKOTA CANYON RANCH, LLC
ATTN: JIM COLOMBO
P.O. BOX 230
NEW CASTLE, COLORADO 81647**

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PURPOSE AND SCOPE OF STUDY

This report presents the results of a supplemental subsoil study for Blackhawk 2, a proposed residential development to be located in the southwest portion of Lakota Canyon Ranch, New Castle, Colorado. The project site is shown on Figure 1. The purpose of the study was to develop recommendations for foundation design. The study was conducted in accordance with our agreement for geotechnical engineering services to Lakota Canyon Ranch, LLC, dated August 10, 2004. Hepworth-Pawlak Geotechnical, Inc. previously conducted a preliminary geotechnical study for Lakota Canyon Ranch (formerly Eagle Ridge Ranch) and presented our findings in a report dated April 26, 2002, Job No. 101 441.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils and bedrock obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for preliminary design. This report summarizes the data obtained during this study and presents our conclusions and recommendations based on the proposed development and the subsurface conditions encountered.

PROPOSED CONSTRUCTION

The proposed Blackhawk 2 housing development is located in the southwestern portion of the subdivision just north of Castle Valley Boulevard. This portion of the development will consist of 22 single family residences as shown on Figure 1. An extension of Blackhawk Road to the south will provide access to this portion of the subdivision. We assume the residences will be typical of the area and will consist of one to two stories of wood frame construction over crawlspace or basement levels. The development will be serviced with municipal water and sewer systems. For the purpose of our analysis, foundation loadings for the structures were assumed to be relatively light and typical of the proposed type of construction.

- 2 -

If development plans change significantly from those described above, we should be notified to re-evaluate the recommendations contained in this report.

SITE CONDITIONS

The site was a previously irrigated pasture that was vacant at the time of our field exploration. Some grading has occurred on the property and piles of fill were observed on the northeast portion of the site. The property is located near the top of southeast trending ridge and the ground surface slopes moderately to strongly down to the southeast at grades up to about 14%. Vegetation consists of scattered grass and weeds. Scattered cobbles and boulders were exposed on the ground surface. Placement of fill was being performed on Lots 16 and 17 at the time of our field exploration.

FIELD EXPLORATION

The field exploration for the project was conducted on August 27 and 30, 2004. Thirteen exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight auger powered by a truck-mounted Longyear BK-51HD drill rig. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1½ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils and hardness of the bedrock. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figures 2 and 3. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface profiles encountered at the site are shown on Figures 2 and 3. The subsoils generally consist of medium stiff to hard, slightly sandy to sandy, silty clay. Weathered and medium hard to very hard claystone bedrock was encountered

- 3 -

below the clay soils in Borings 3, 5, 7, 11 and 12 at depths between 1 and 12½ feet. Slightly clayey, silty sand and gravel was encountered between the clay and claystone in Borings 4, 8, 9, 10 and 13. About 3 to 5 feet of on-site clay with gravel fill soils were encountered above the clays in Borings 1 and 2. The materials encountered in the borings are similar to the soils encountered at other areas of the subdivision. The clay soils and weathered claystone can possess an expansion potential when wetted.

Laboratory testing performed on samples obtained during the field exploration included natural moisture content, density, Atterberg limits and gradation analyses. Swell-consolidation testing was performed on relatively undisturbed drive samples of the clay subsoils and weathered claystone. The swell-consolidation test results, presented on Figures 5 through 13, indicate low compressibility under relatively light surcharge loading and a low to very high expansion potential when wetted under a constant light surcharge. Swelling pressures between 1,500 and 18,000 psf were indicated for the clay soils and between 8,000 and over 20,000 psf for the weathered claystone bedrock. Atterberg limits testing indicated medium plasticity for the clay soils. The laboratory testing is summarized in Table 1.

No free water was encountered in the borings at time of drilling and the subsoils were slightly moist to moist. The claystone bedrock was slightly moist.

FOUNDATION BEARING CONDITIONS

Bearing conditions are variable but typically are expected to consist of potentially expansive clays and claystone bedrock. The subsurface materials have a variable expansion potential when wetted and mitigation will likely be needed. The granular soils encountered in several of the borings should not be expansive. Surface runoff, landscape irrigation, and utility leakage are possible sources of water which could cause wetting below buildings. The recommendations presented below are suitable for planning and preliminary design, but site specific studies should be conducted at the time of individual lot development.

PRELIMINARY DESIGN RECOMMENDATIONS

FOUNDATIONS

Possible foundation designs consist of spread footings placed on the natural subsoils or bedrock materials with a minimum dead load pressure in low expansion potential areas (generally east of Blackhawk Road) and footings placed on a minimum 3 foot depth of compacted road base in moderate expansion potential areas. In areas where the clays or claystone bedrock has a high expansion potential (generally west of Blackhawk Road), a deep foundation system, such as drilled or helical piers will be needed to mitigate the expansion potential.

The following design and construction criteria are presented for a spread footing foundation system.

- 1) Footings placed on the undisturbed natural soils or bedrock with low to no expansion potential can be designed for an allowable bearing pressure in the range of 2,000 psf to 3,000 psf. The footings should also be designed for a minimum dead load pressure of 600 to 1,000 psf if the soils have a low expansion potential. In order to satisfy the minimum dead load pressure under lightly loaded areas, it may be necessary to concentrate loads by using a pad and grade beam system. Wall-on-grade construction is not recommended to achieve the minimum dead load.
- 2) In moderate expansion potential soils, spread footings should be placed on a minimum depth of 3 feet of road base and designed for an allowable soil bearing pressure of 2,500 psf. The road base should be compacted to at least 98% of standard Proctor density at near optimum moisture content. The fill should extend to at least 3 feet beyond the edges of the footing. It appears that structural fill to mitigate moderate expansive soils will be needed in most of the development.
- 3) Based on experience, we expect settlement/heave of footings designed and constructed as discussed below will be up to 1 inch. There could be some additional movement on the order of 1 to 1½ inches if the bearing materials were to become wet.

- 5 -

- 4) The footings should typically have a minimum width of 16 inches for continuous footings and 24 inches for isolated pads.
- 5) Continuous foundation walls should be reinforced top and bottom to span local anomalies and limit the risk of differential movement. One method of analysis is to design the foundation wall to span an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist a lateral earth pressure corresponding to an equivalent fluid unit weight of 65 pcf for the on-site clay soils and 50 pcf for imported granular fill.
- 6) Exterior footings and footings beneath unheated areas should be provided with adequate soil cover above their bearing elevation for frost protection. Placement of foundations at least 36 inches below the exterior grade is typically used in this area.
- 6) Prior to the footing construction, existing fill and any loose or disturbed soils and rock should be removed and the footing bearing level extended down to competent bearing materials.
- 7) A representative of the geotechnical engineer should observe all footing excavations prior to concrete placement to evaluate bearing conditions.

DEEP FOUNDATION ALTERNATIVE - DRILLED PIERS

We recommend straight-shaft piers drilled into the claystone bedrock be used to support foundations in the highly expansive clay and bedrock areas, generally west of Blackhawk Road.. The design and construction criteria presented below should be observed for a straight-shaft pier foundation system:

- 1) The piers should be designed for an allowable end bearing pressure of 25,000 psf and an allowable skin friction value of 2,500 psf for that portion of the pier in bedrock.
- 2) Piers should also be designed for a minimum dead load pressure of 15,000 psf based on pier end area only. If the minimum dead load requirement cannot be achieved, the pier length should be extended beyond the minimum penetration to make up the dead load deficit. This can be

- 6 -

- accomplished by assuming one-half the allowable skin friction value given above acts in the direction to resist uplift.
- 3) Uplift on the piers from structural loading can be resisted by utilizing 75% of the allowable skin friction value plus an allowance for the weight of the pier.
 - 4) Piers should penetrate at least three pier diameters into the bedrock. A minimum penetration of 5 feet into the bedrock and a minimum pier length of 20 feet are recommended.
 - 5) Piers should be designed to resist lateral loads assuming a modulus of horizontal subgrade reaction of 25 tcf in the clay soils and a modulus of horizontal subgrade reaction of 50 tcf in the bedrock. The modulus values given are for a long, 1 foot wide pier and must be corrected for pier size.
 - 6) Piers should be reinforced their full length with one #5 reinforcing rod for each 16 inches of pier perimeter to resist tension created by the swelling materials.
 - 7) A 4-inch void form should be provided beneath grade beams to prevent the swelling soil and rock from exerting uplift forces on the grade beams and to concentrate pier loadings. A void form should also be provided beneath pier caps.
 - 8) Concrete utilized in the piers should be a fluid mix with sufficient slump so that concrete will fill the void between the reinforcing steel and the pier hole. We recommend a slump in the range of 7 to 9 inches.
 - 9) Pier holes should be properly cleaned prior to the placement of concrete. Cobbles were encountered in the soil above bedrock in some of the borings which could cause caving and difficult drilling. The drilling contractor should mobilize equipment of sufficient size to effectively drill through possible coarse soils and cemented bedrock zones.
 - 10) Although free water was not encountered in the borings drilled at the site, some seepage in the pier holes may be encountered during drilling. Dewatering equipment may be required to reduce water infiltration into the pier holes. If water cannot be removed prior to placement of concrete, the tremie method should be used after the hole has been cleaned of spoil. In no case should concrete be placed in more than 3 inches of water.

- 7 -

- 11) Care should be taken to prevent the forming of mushroom-shaped tops of the piers which can increase uplift force on the piers from swelling soils.
- 12) A representative of the geotechnical engineer should observe pier drilling operations on a full-time basis.

FLOOR SLABS

The clay soils and weathered claystone typically possess an expansion potential and slab heave could occur if the subgrade materials were to become wet. The expansion potential may be less in areas with gravels. Garage slab-on-grade construction may be used provided precautions are taken to limit potential movement and the risk of distress to the building is accepted by the owner. A positive way to reduce the risk of slab movement, which is commonly used in the area, is to construct structurally supported floors over crawlspace. Subexcavation of the clay soils to at least 3 feet and replacement with compacted road base may also be used to help reduce the heave potential.

To reduce the effects of some differential movement, nonstructural floor slabs should be separated from all bearing walls and columns with expansion joints which allow unrestrained vertical movement. Interior non-bearing partitions resting on floor slabs should be provided with a slip joint at the bottom of the wall so that, if the slab moves, the movement cannot be transmitted to the upper structure. This detail is also important for wallboards, stairways and door frames. Slip joints which will allow at least 1½ inches of vertical movement are recommended. Floor slab control joints should be used to reduce damage due to shrinkage cracking. Slab reinforcement and control joints should be established by the designer based on experience and the intended slab use.

Required fill beneath slabs can consist of the on-site silty sand and gravel soils or a suitable imported granular material (rock as ¾-inch road base), excluding topsoil and oversized rocks. The fill should be spread in thin horizontal lifts, adjusted to at or above optimum moisture content, and compacted to at least 95% of the maximum standard Proctor density. All vegetation, topsoil and loose or disturbed soil should be removed prior to fill placement.

The above recommendations will not prevent slab heave if the expansive soils underlying slabs-on-grade become wet. However, the recommendations will reduce the effects if

- 8 -

slab heave occurs. All plumbing lines should be pressure tested before backfilling to help reduce the potential for wetting.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the individual residences have been completed:

- 1) Excessive wetting or drying of the foundation excavations and underslab areas should be avoided during construction. Drying could increase the expansion potential of the clay soils.
- 2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement areas and to at least 90% of the maximum standard Proctor density in landscape areas. Free-draining wall backfill should be capped with about 2 to 3 feet of the on-site finer graded soils to reduce surface water infiltration.
- 3) The ground surface surrounding the exterior of the building should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 12 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas.
- 4) Roof downspouts and drains should discharge well beyond the limits of all backfill.
- 5) Irrigation sprinkler heads and landscaping which requires regular heavy irrigation, such as sod, should be located at least 5 feet from foundation walls.

PAVEMENT SECTION

The subsoils encountered at the site consist mainly of medium plasticity sandy silty clay. These soils are considered relatively poor subgrade for support of pavement and will be frost susceptible. Based on the soil conditions encountered in the borings and laboratory test result, a subgrade Hveem 'R' value of 10 was used in the pavement design. Based on traffic volumes previously provided for the subdivision, an 18 kip equivalent daily load application (EDLA) of 10 was used in the design. Based on our experience, a Regional Factor of 1.75 and a serviceability index of 2.0, we recommend the minimum pavement

- 9 -

section thickness consist of 3 inches of asphalt on 9 inches of base course. As an alternative, with at least 8 inches of subbase, the pavement section can consist of 3 inches of asphalt on 4 inches of base course. The civil engineer should review our traffic loading conditions.

The asphalt should be a batched hot mix, approved by the engineer and placed and compacted to project specifications. The base course should meet CDOT Class 6 specifications and the subbase should meet Class 2 specifications. All base course and required subgrade fill should be compacted to at least 95% of the maximum standard Proctor density at a moisture content at to slightly above optimum.

Required fill to establish design subgrade level can consist of the on-site granular soils or suitable imported granular soils approved by the geotechnical engineer. Prior to fill placement, the subgrade should be scarified to a depth of 8 inches, adjusted to slightly above optimum moisture content and compacted to at least 95% of standard Proctor density. The subgrade should be proofrolled with a heavily loaded rubber tired vehicle prior to construction of the pavement section. Areas that deflect excessively should be corrected as needed to provide a stable subgrade for pavement materials. The subgrade improvements and placement and compaction of base and asphalt should be monitored on a regular basis by a representative of the geotechnical engineer.

LIMITATIONS

This study has been conducted in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on Figure 1, the proposed type of construction and our experience in the area. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions

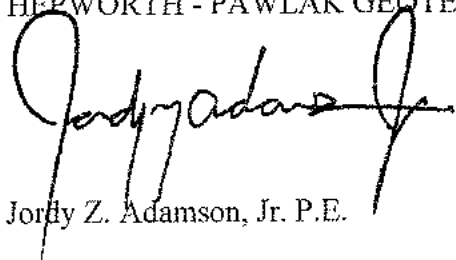
- 10 -

encountered during construction appear to be different from those described in this report, we should be notified at once so re-evaluation of the recommendations may be made.

This report has been prepared for the exclusive use by our client for planning and preliminary design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation, conduct additional evaluations and review and monitor the implementation of our recommendations. Significant design changes may require additional analysis or modifications of the recommendations presented herein. We recommend site specific subsoil studies and testing of structural fill be conducted by a geotechnical engineer.



Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.



Jordy Z. Adamson, Jr. P.E.

Reviewed by:

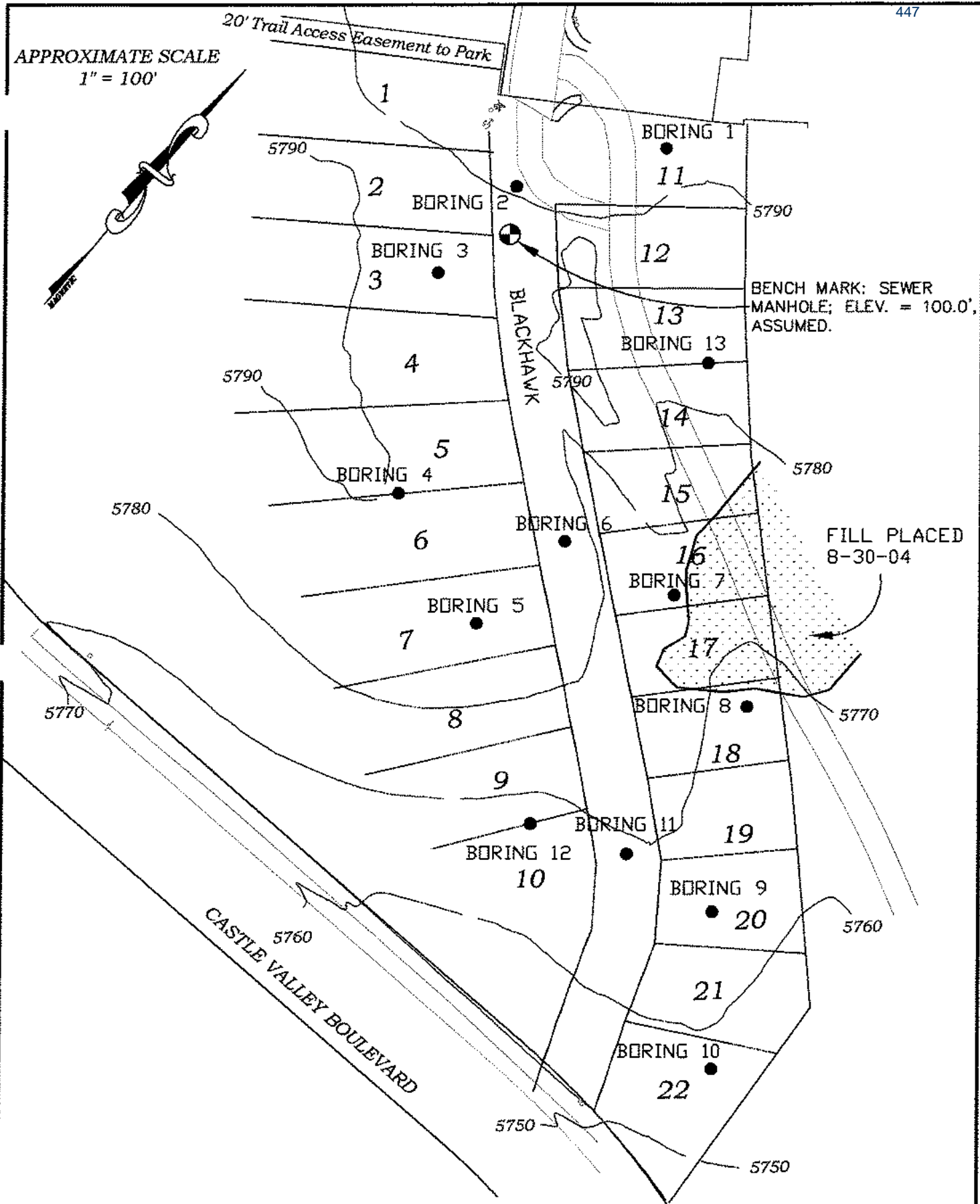
Daniel E. Hardin, P.E.

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cc: Colorado River Engineering, Inc. – Attn: Brian Brown

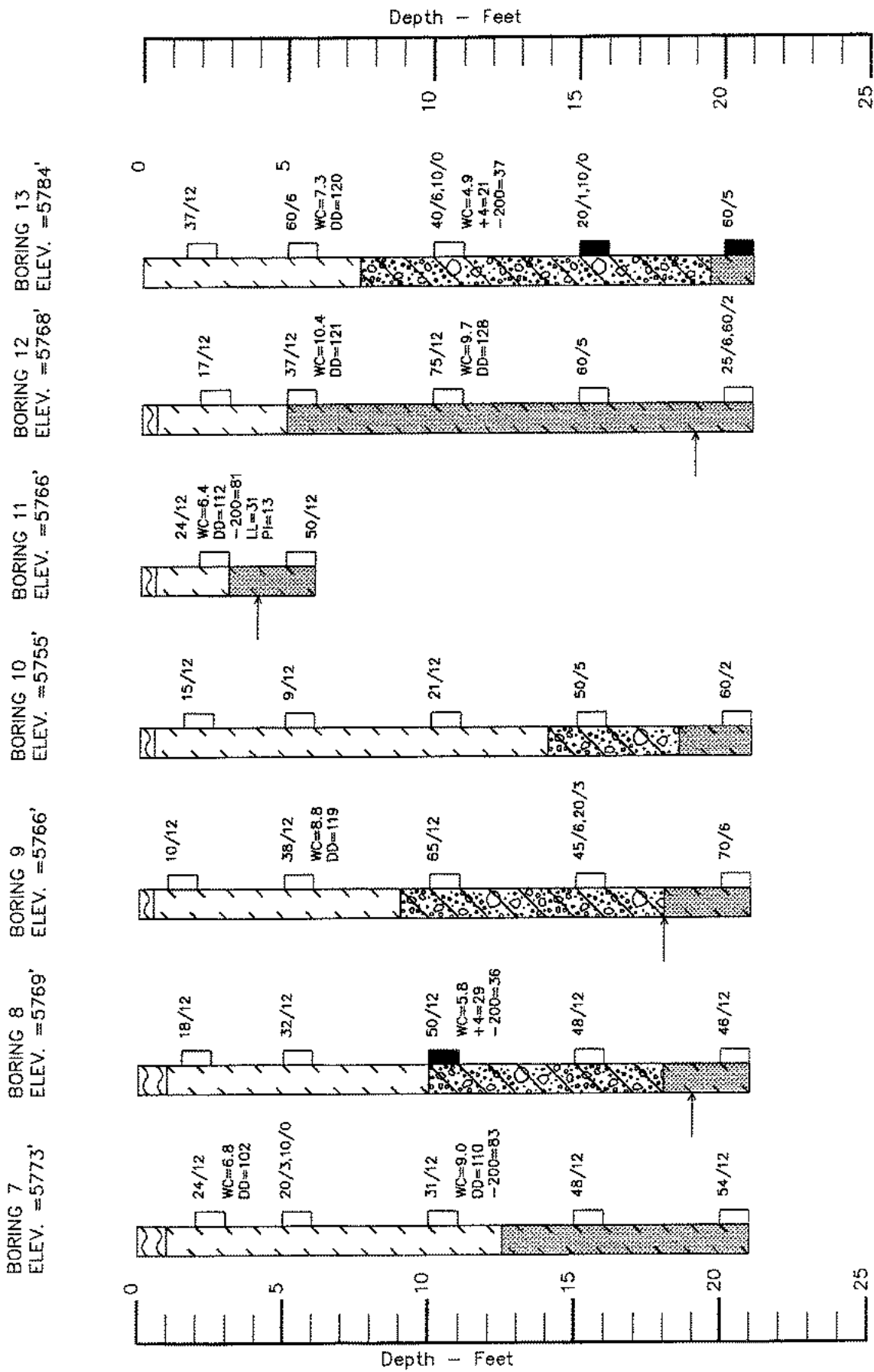
APPROXIMATE SCALE
1" = 100'

20' Trail Access Easement to Park





Note: Explanation of symbols is shown on Figure 4.



Note: Explanation of symbols is shown on Figure 4.

LEGEND:



FILL; sandy silty clay with gravel and scattered cobbles, stiff, moist, brown.



TOPSOIL; sandy silty clay, organics, firm, slightly moist, brown.



CLAY (CL); silty, slightly sandy to sandy, occasional gravel layers, medium stiff to hard, slightly moist to moist, brown, medium plasticity.



SAND AND GRAVEL (SM-GM); silty, slightly clayey, with cobbles and possible boulders, dense, slightly moist, brown.



CLAYSTONE BEDROCK; weathered and medium hard to very hard, slightly moist, gray. Mancos Shale.



Relatively undisturbed drive sample; 2-inch I.D. California liner sample.



Drive sample; standard penetration test (SPT), 1 3/8 inch I.D. split spoon sample, ASTM D-1586.

11/12

Drive sample blow count; indicates that 11 blows of a 140 pound hammer falling 30 inches were required to drive the California or SPT sampler 12 inches.

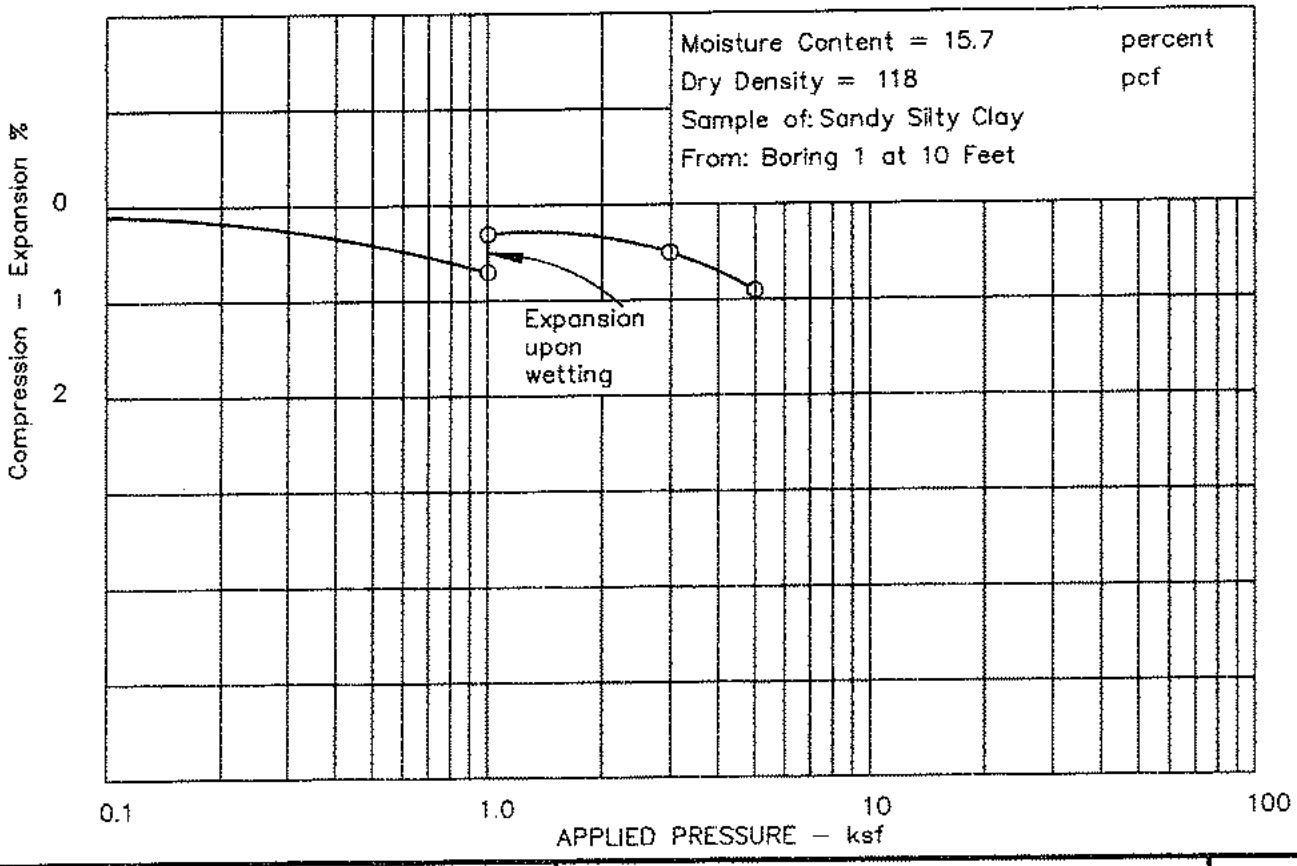
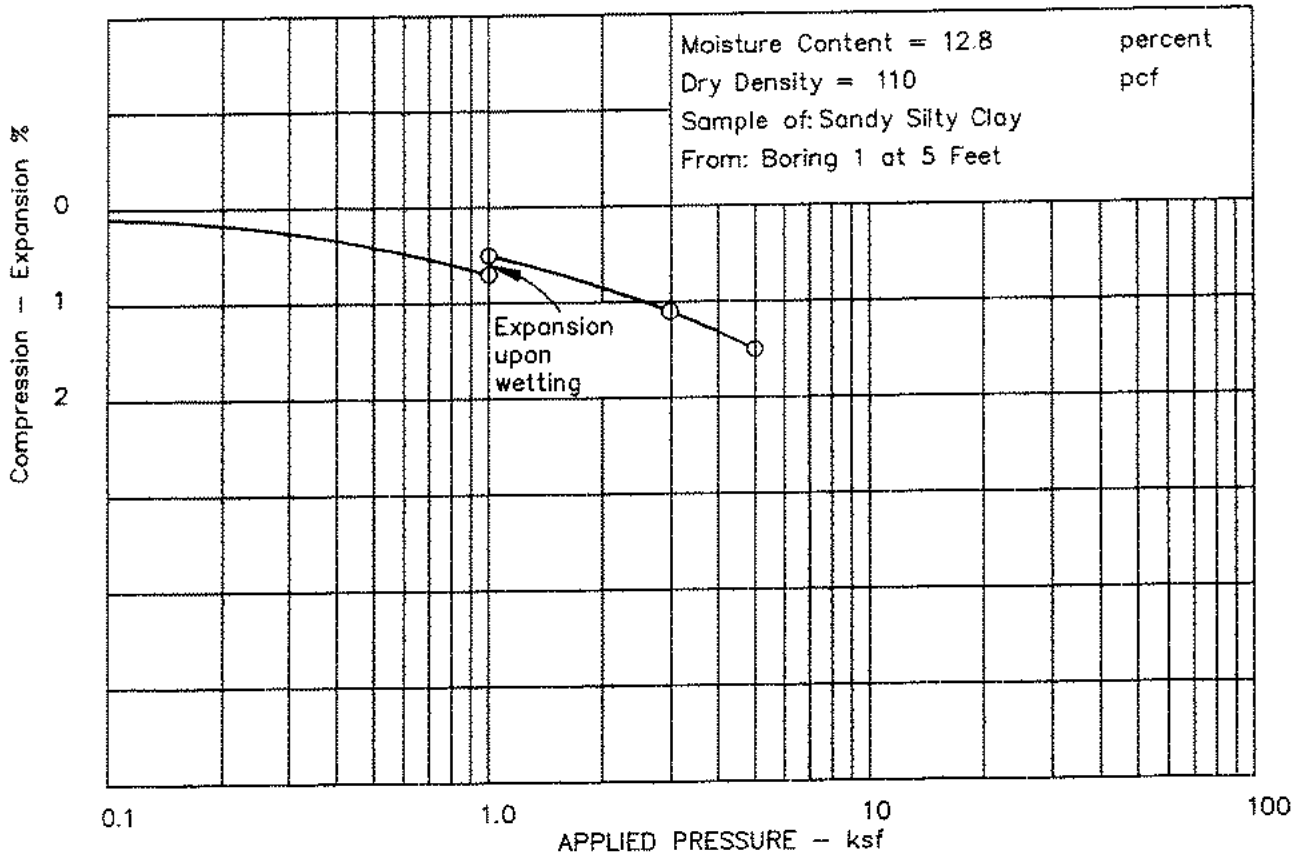


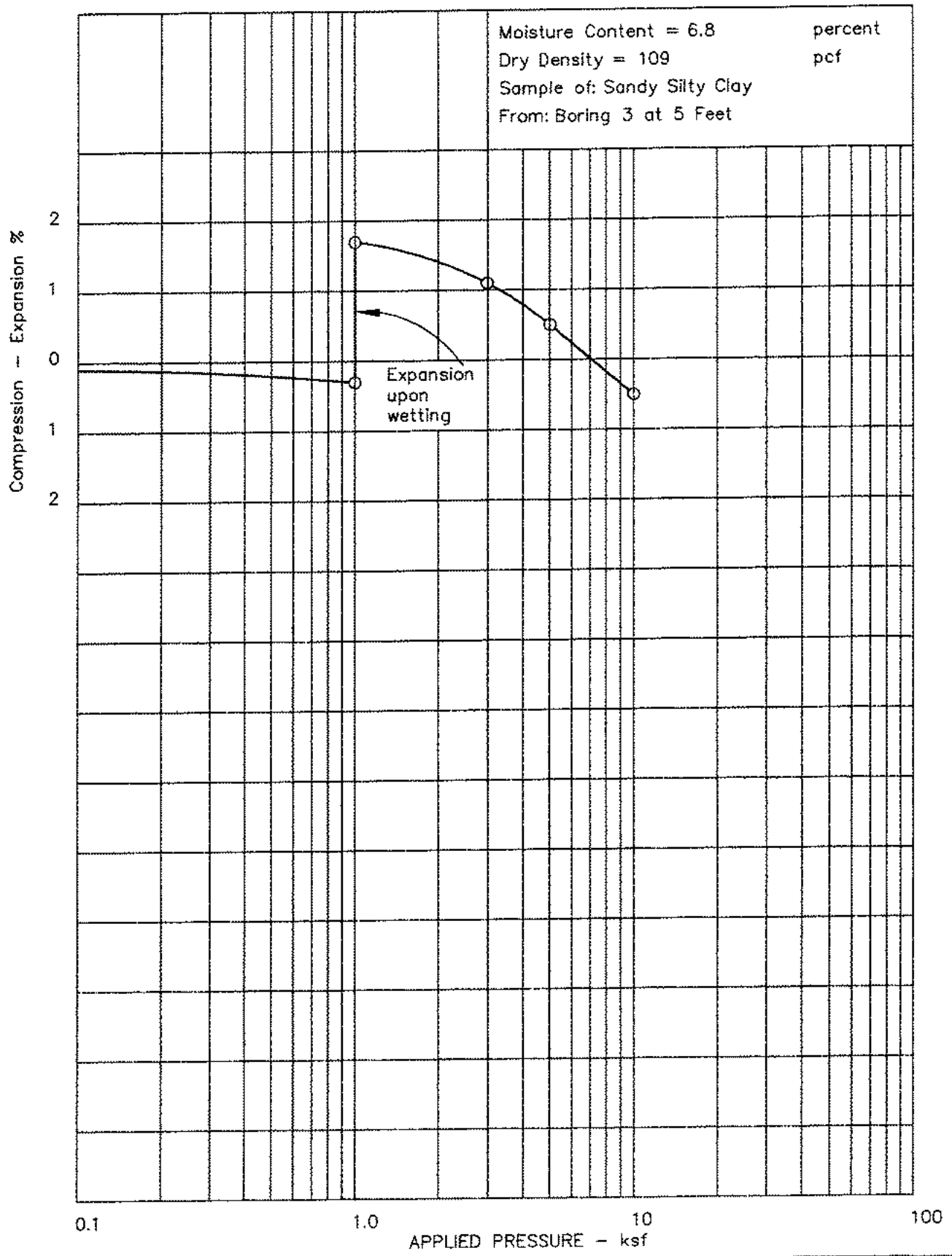
Disturbed bulk sample.

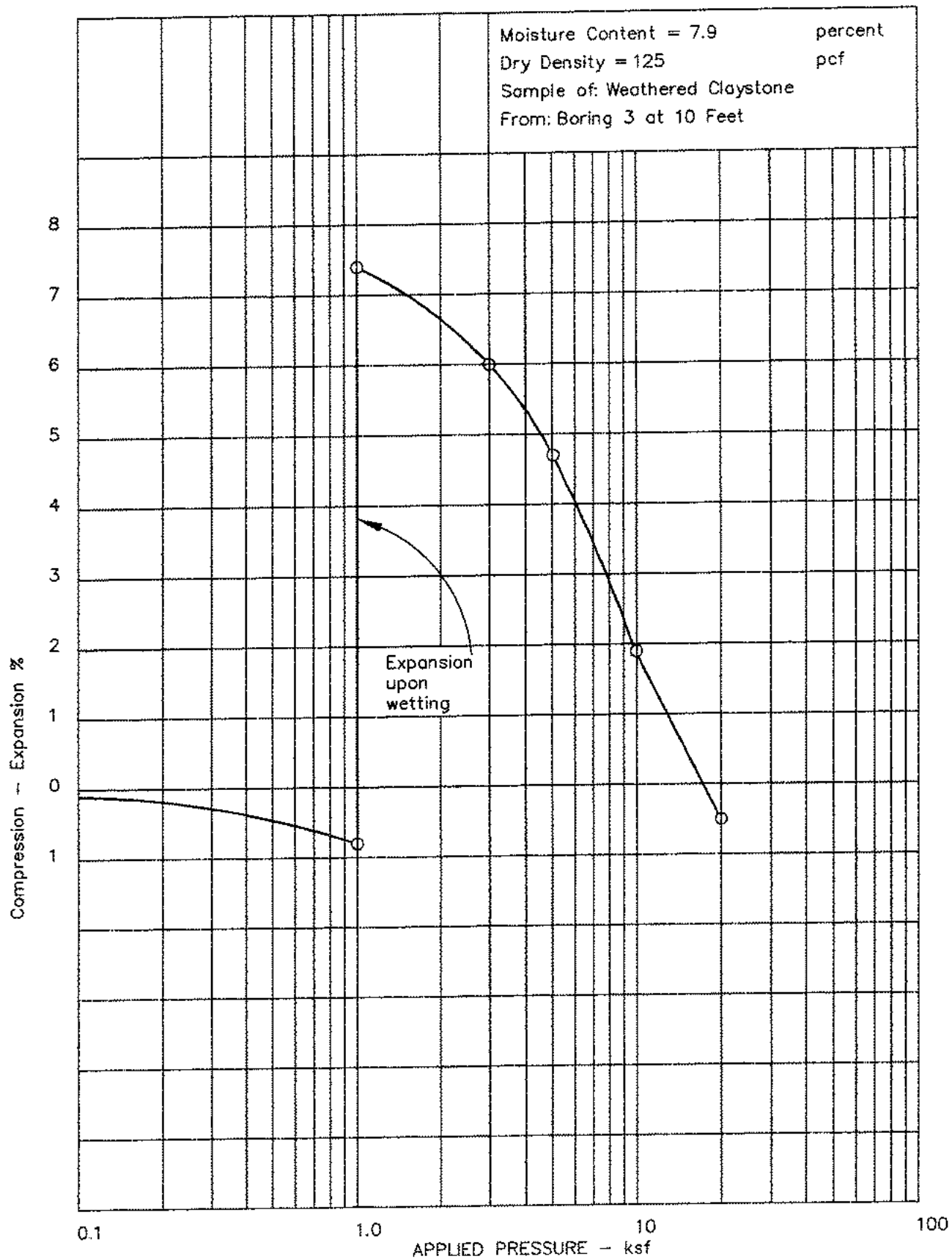
→ Depth at which boring caved following drilling.

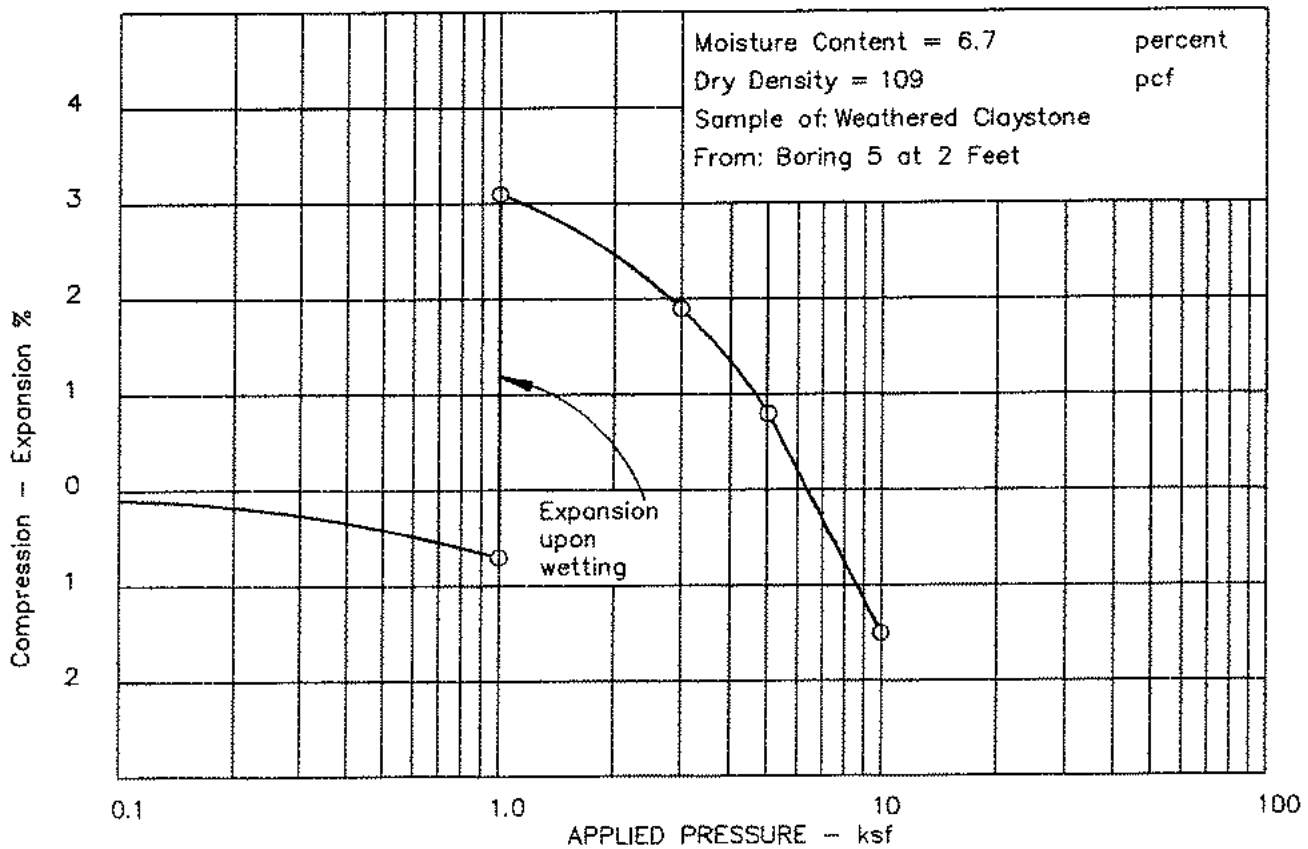
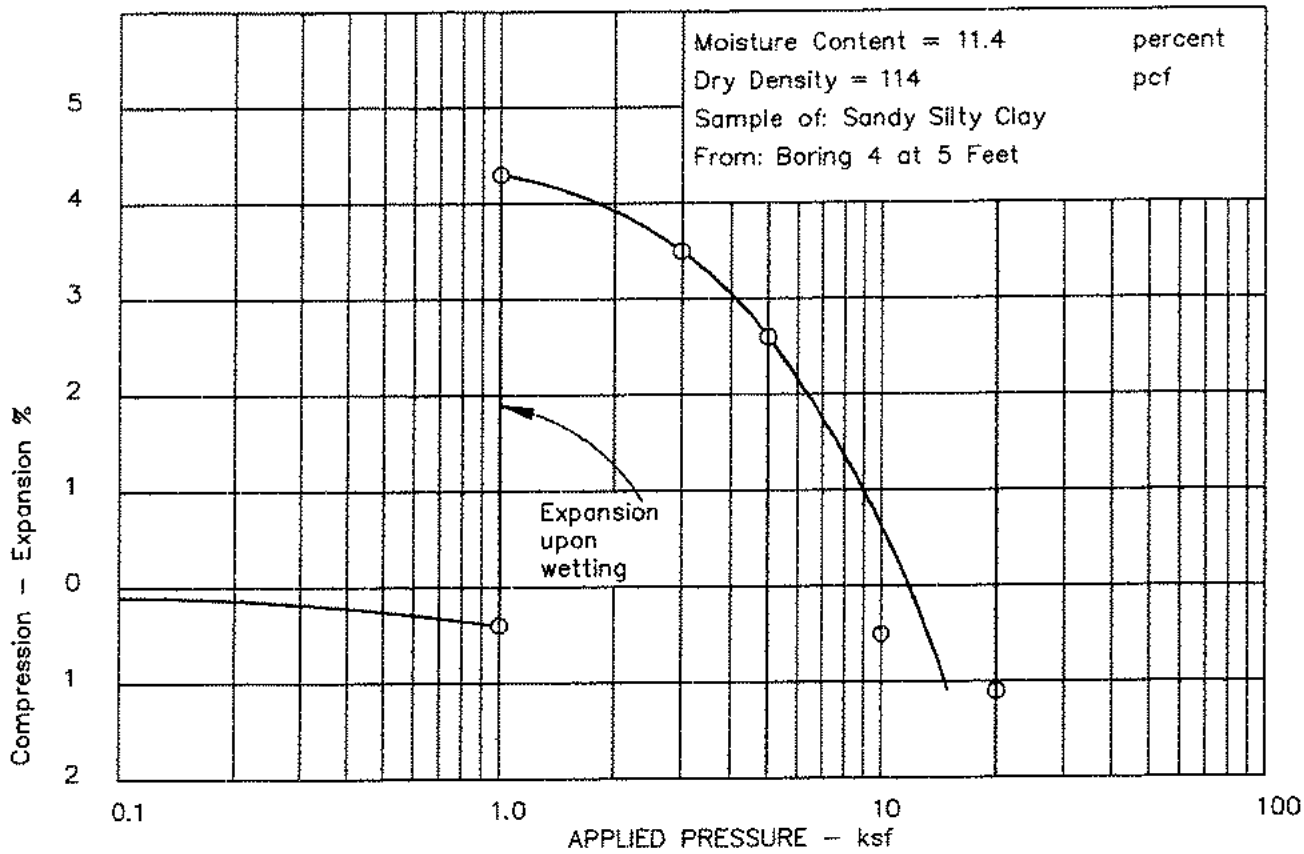
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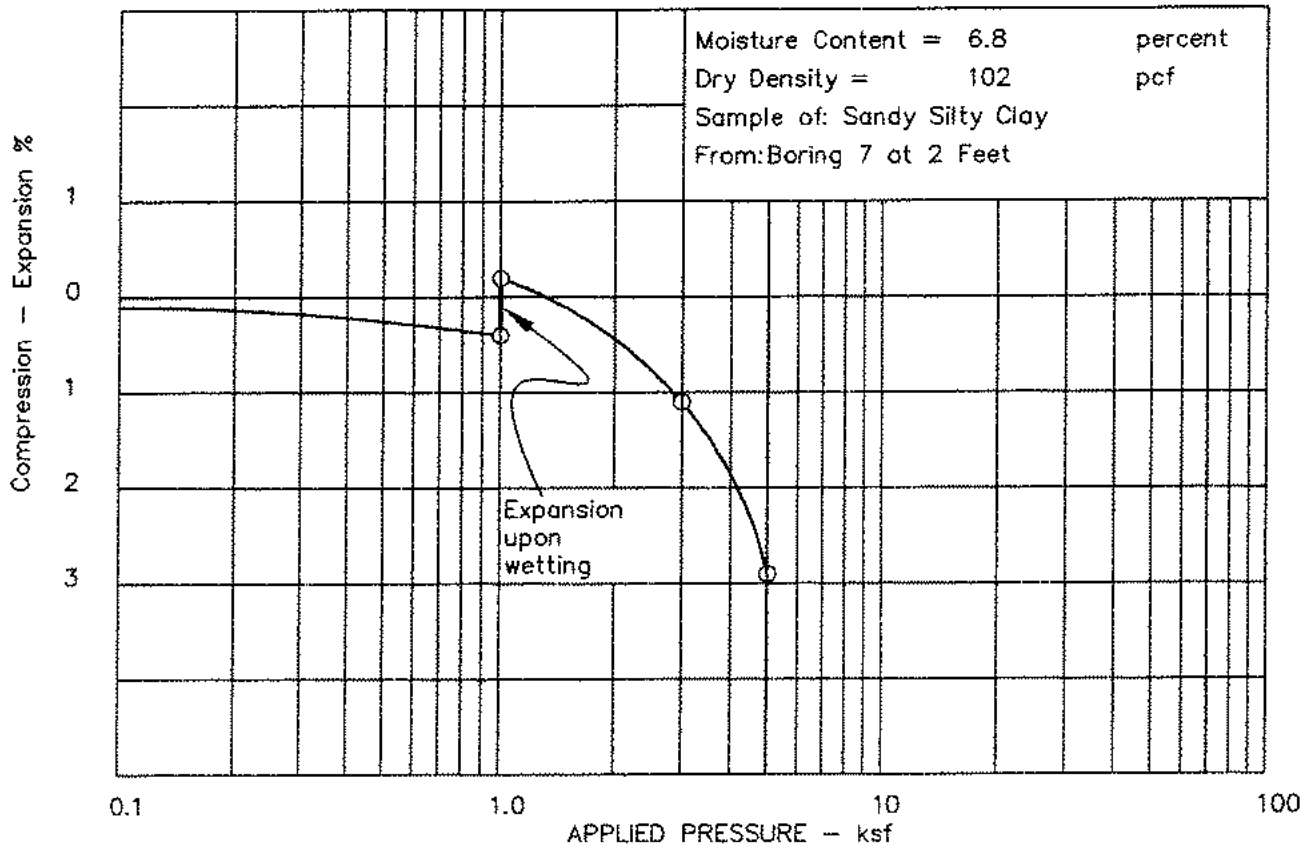
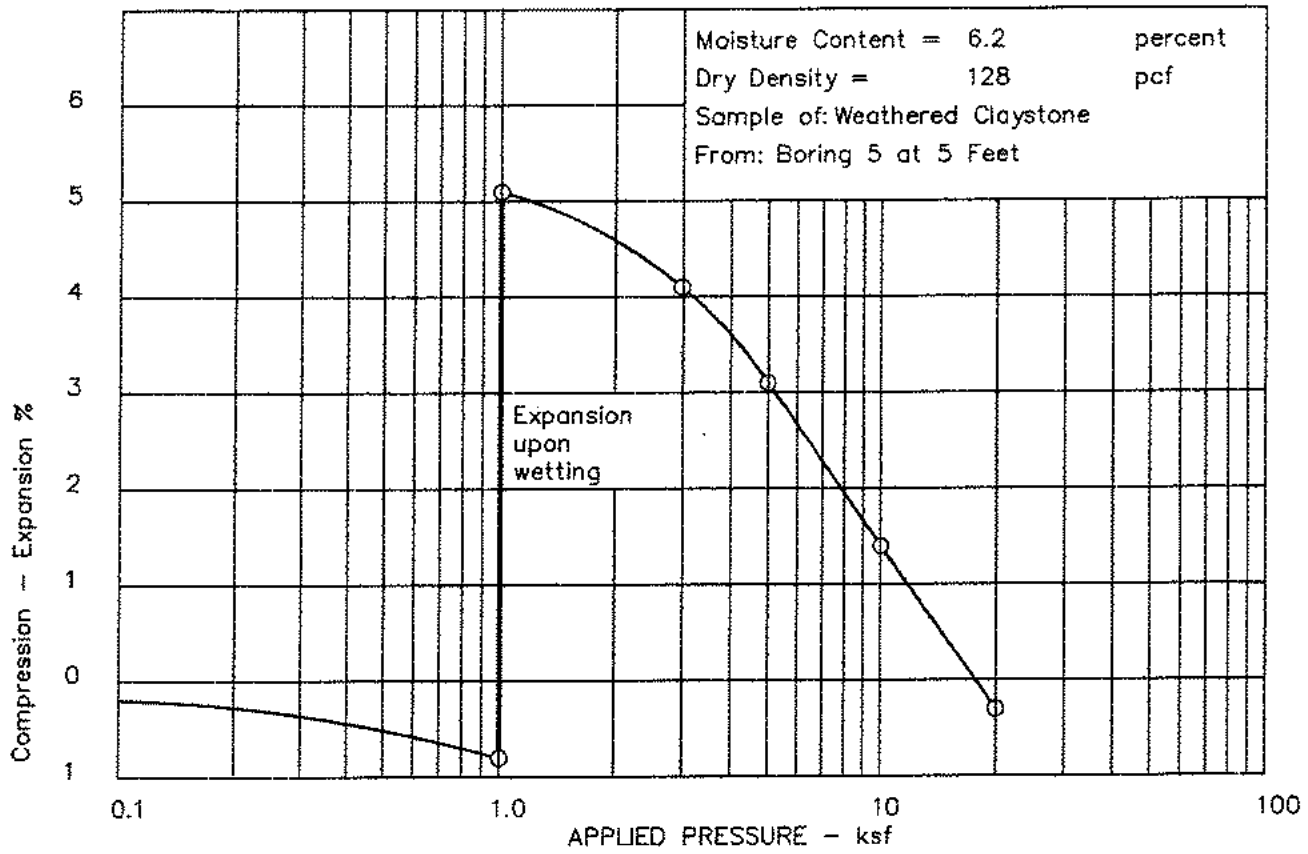
1. Exploratory borings were drilled on August 27 and 30, 2004 with a 4-inch diameter continuous flight power auger.
2. Locations of exploratory borings were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of exploratory borings were obtained by interpolation between contours on the site plan provided and checked by instrument level based on Bench Mark provided. Logs are drawn to depth.
4. The exploratory boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between materials shown on the exploratory boring logs represent the approximate boundaries between material types and transitions may be gradual.
6. No free water was encountered in the borings at the time of drilling. Fluctuation in water level may occur with time.
7. Laboratory Testing Results:
 - WC = Water Content (%)
 - DD = Dry Density (pcf)
 - +4 = Percent retained on the No. 4 sieve
 - 200 = Percent passing No. 200 sieve
 - LL = Liquid Limit (%)
 - PI = Plasticity Index (%)

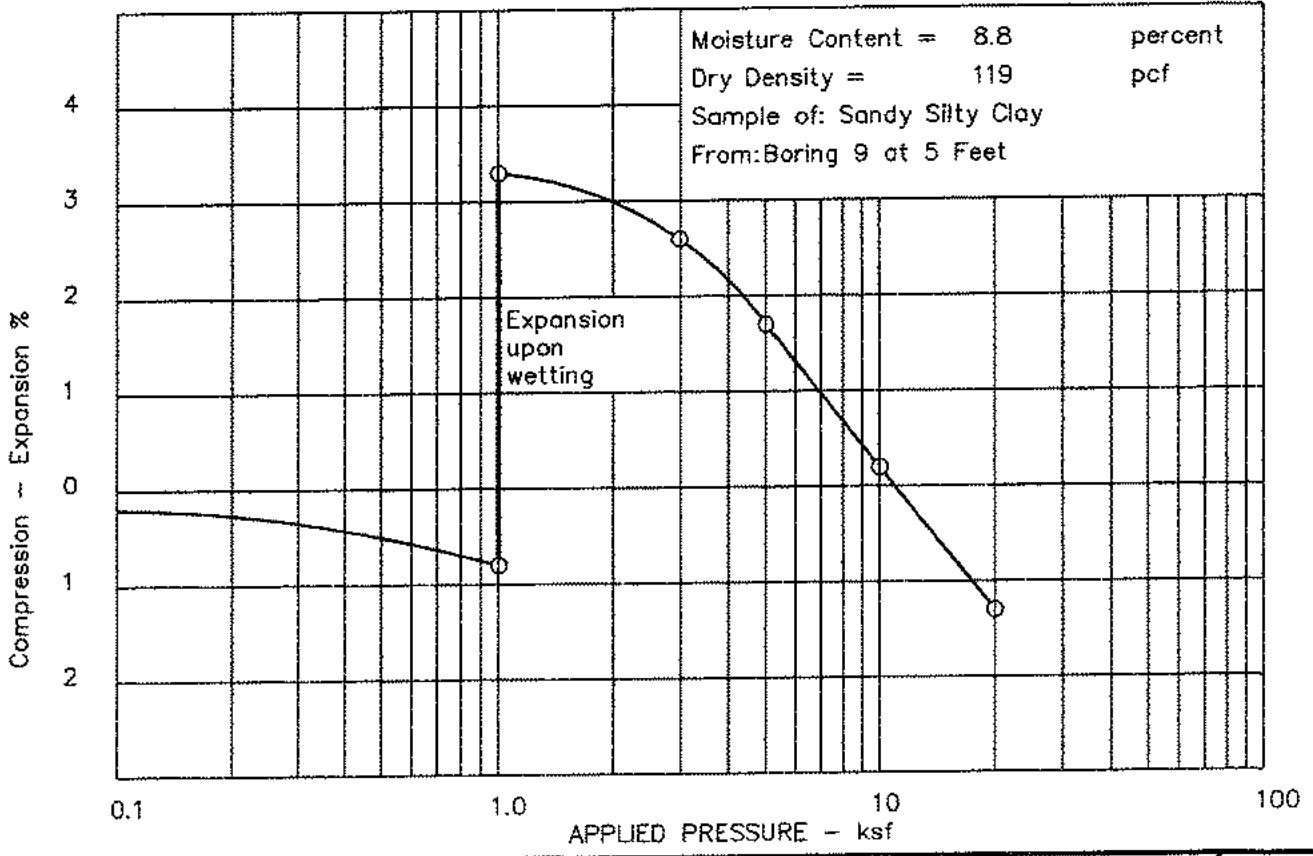
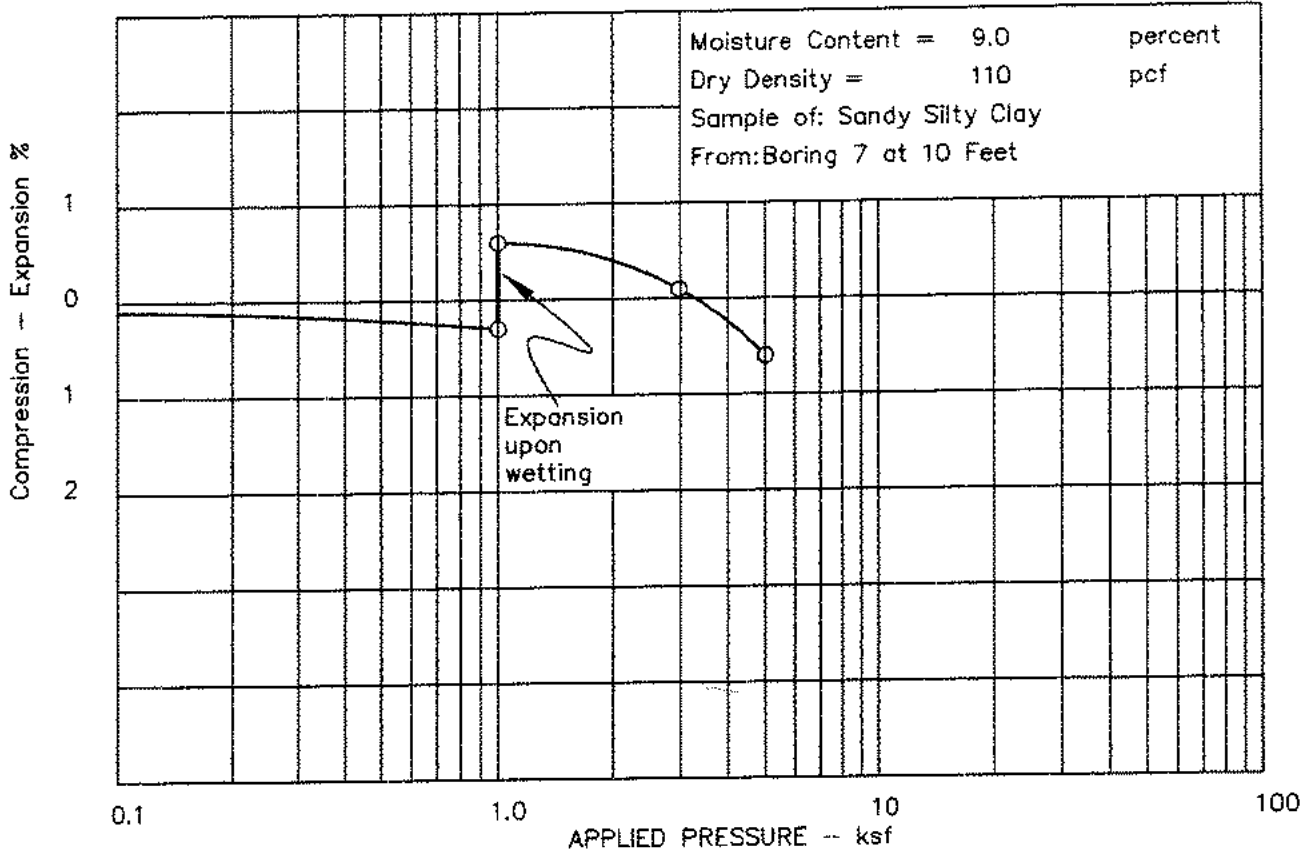


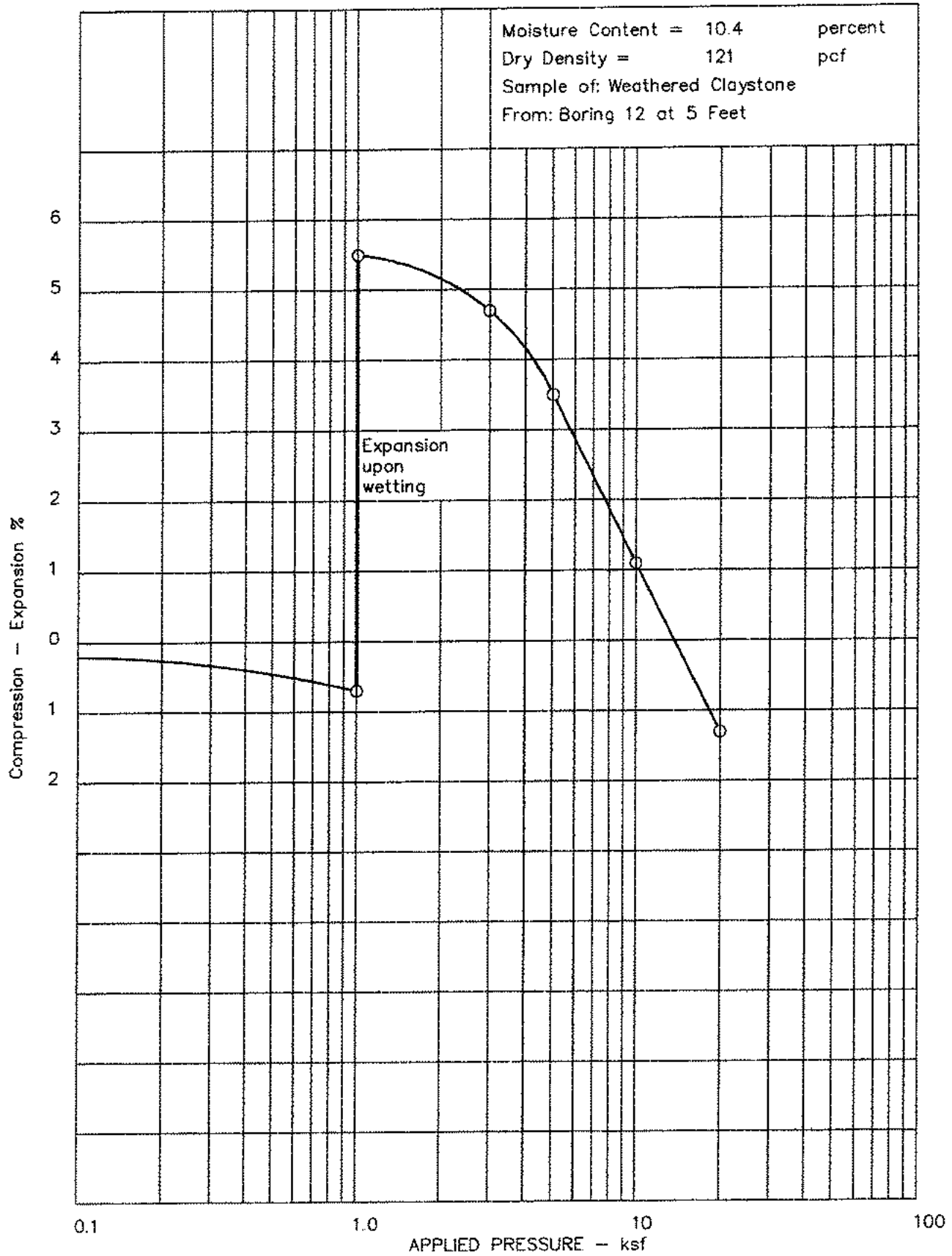


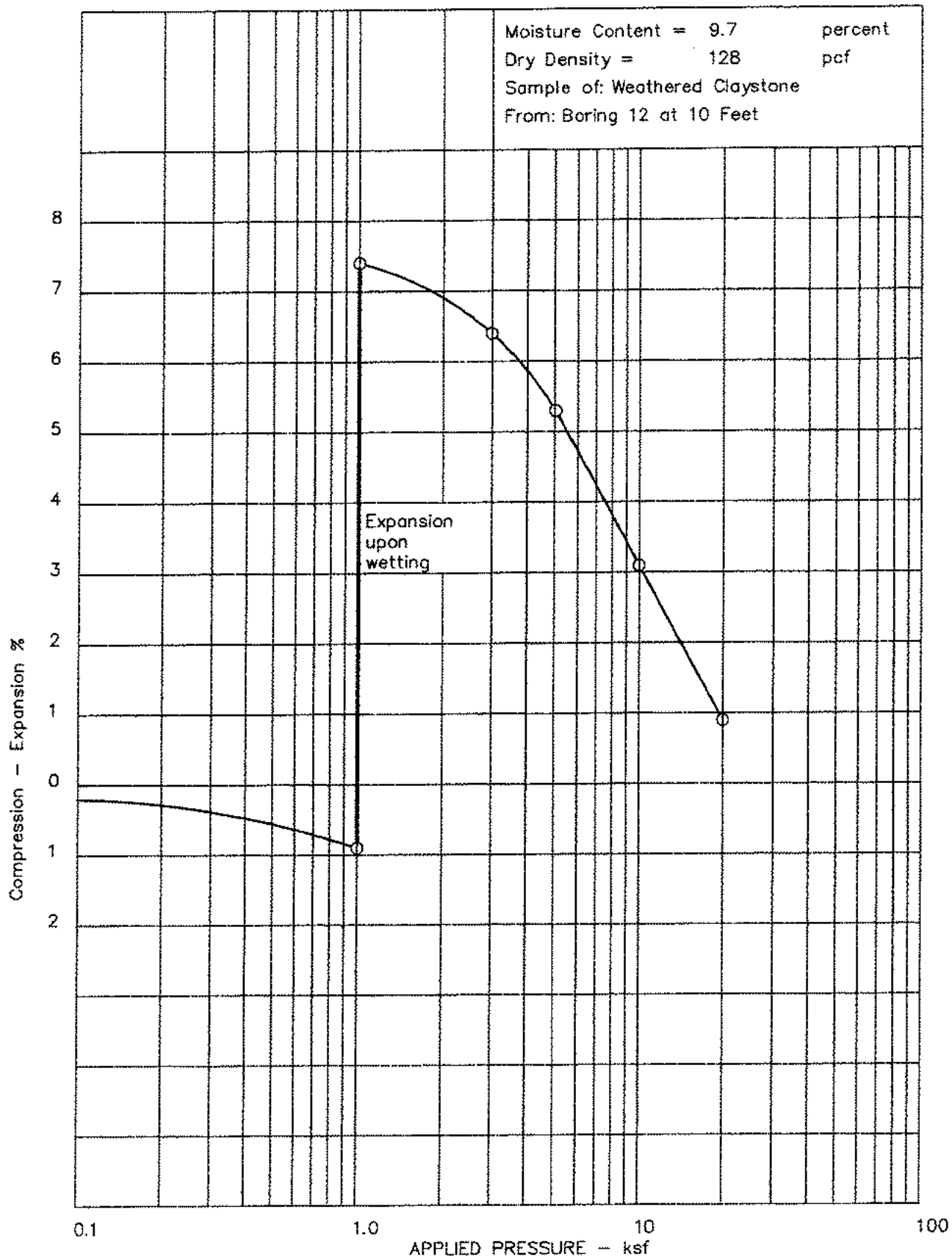


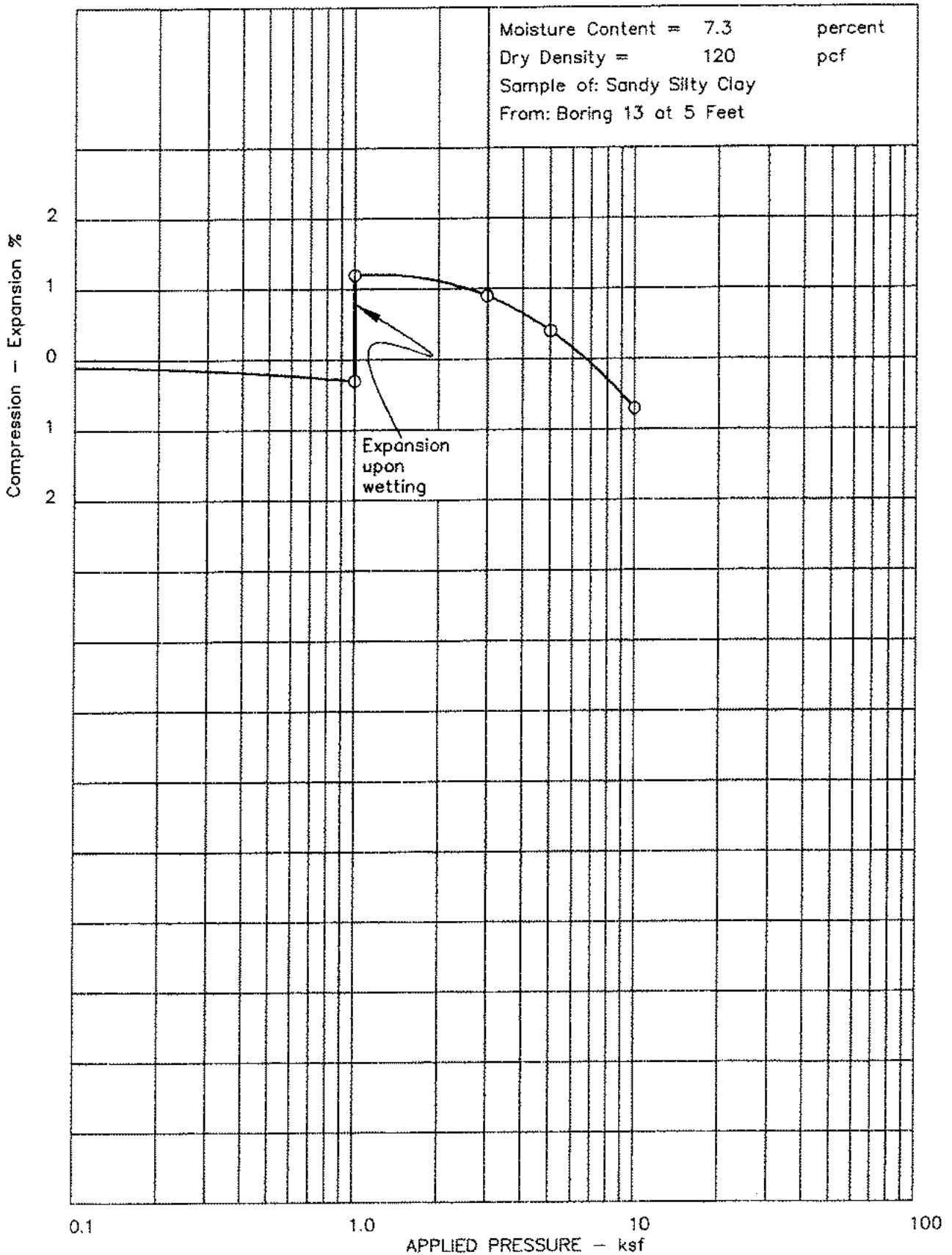


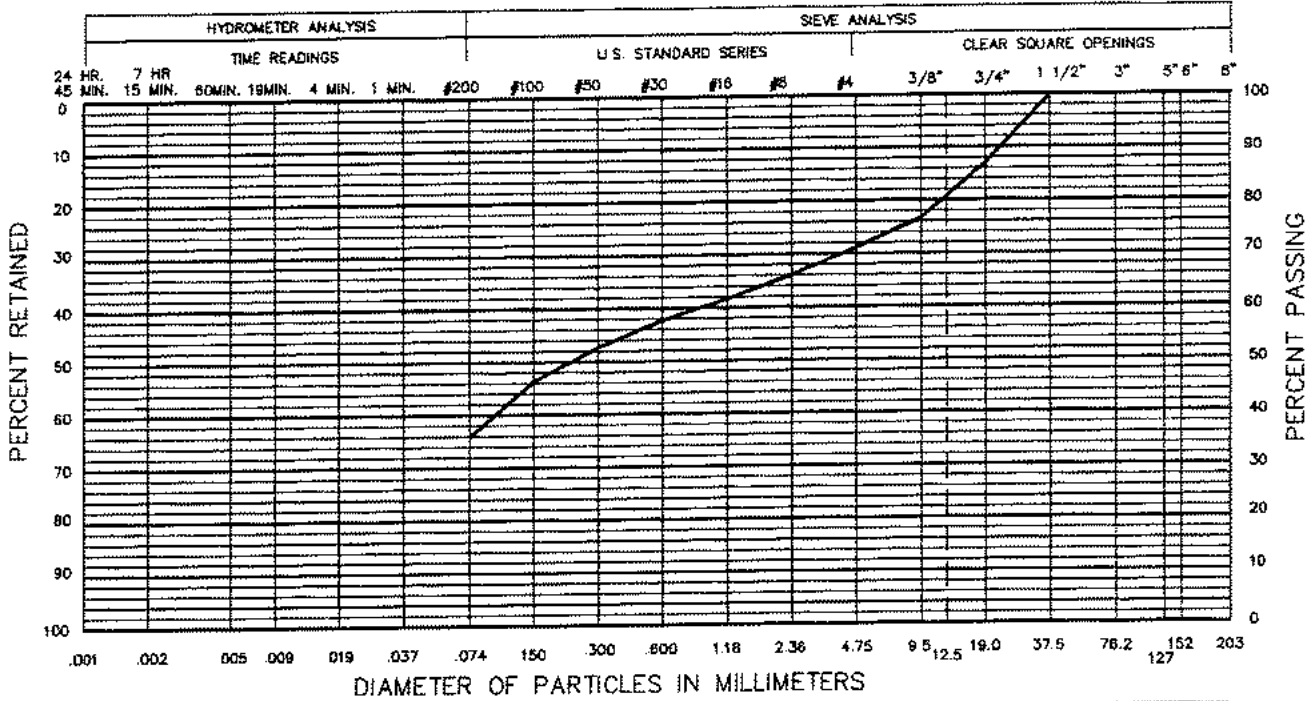




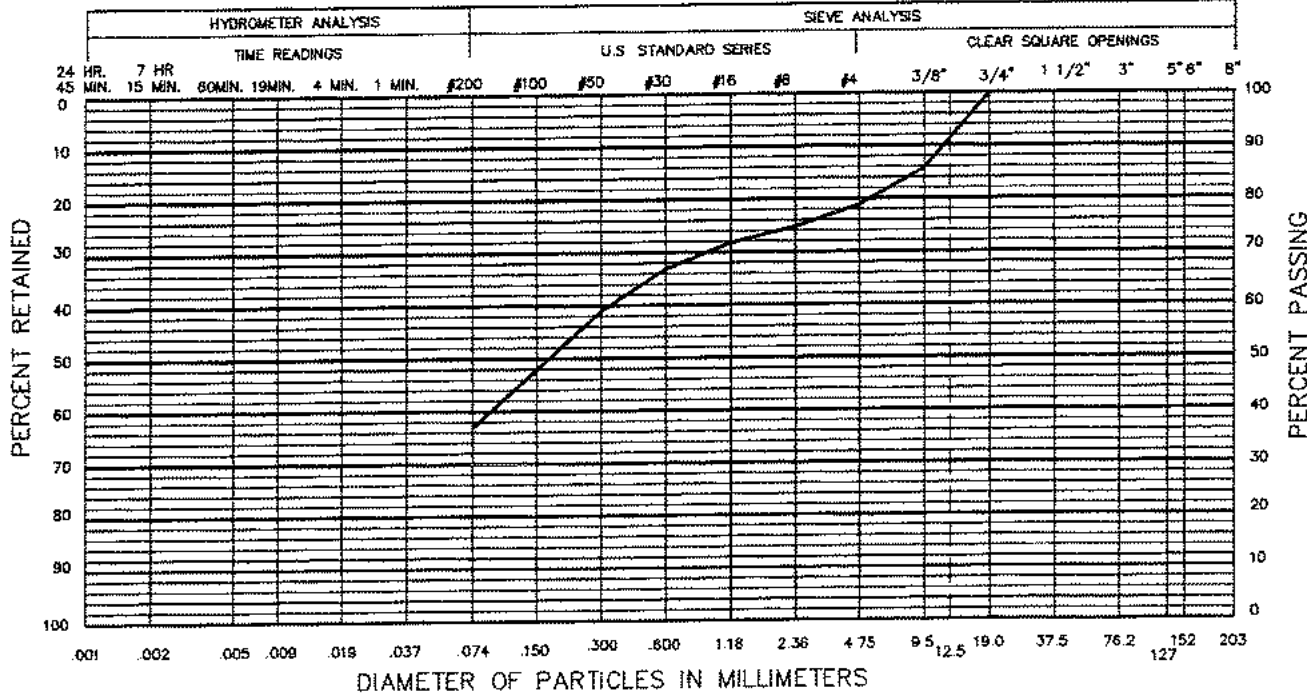








CLAY TO SILT		SAND		GRAVEL		COBBLES	
	%	FINE	MEDIUM	COARSE	FINE	COARSE	
GRAVEL	29	SAND 35		SILT AND CLAY 36			%
LIQUID LIMIT	%	PLASTICITY INDEX					%
SAMPLE OF: Silty Sand with Gravel				FROM: Boring 8 at 10 Feet			



CLAY TO SILT		SAND		GRAVEL		COBBLES	
	%	FINE	MEDIUM	COARSE	FINE	COARSE	
GRAVEL	21	SAND 42		SILT AND CLAY 37			%
LIQUID LIMIT	%	PLASTICITY INDEX					%
SAMPLE OF: Silty Sand with Gravel				FROM: Boring 13 at 10 Feet			

HEPWORTH-PAWLAK GEOTECHNICAL, INC.

Job No. 101 441-8

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

Page 1 of 2

BORINGS	SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	SOIL OR BEDROCK TYPE
	DEPTH (ft)				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
1	5		12.8	110							Sandy silty clay
	10		15.7	118							Sandy silty clay
2	5		17.4	99			90	50	23		Slightly sand clay
	5		6.8	109							Sandy silty clay
3	10		7.9	125							Weathered claystone
	5		11.4	114							Sandy silty clay
5	2		6.7	109							Weathered claystone
	5		6.2	128							Weathered claystone
6	5		7.7	92			92	34	16		Slightly sandy silty clay
	2		6.8	102							Sandy silty clay
7	10		9.0	110			83				Sandy silty clay

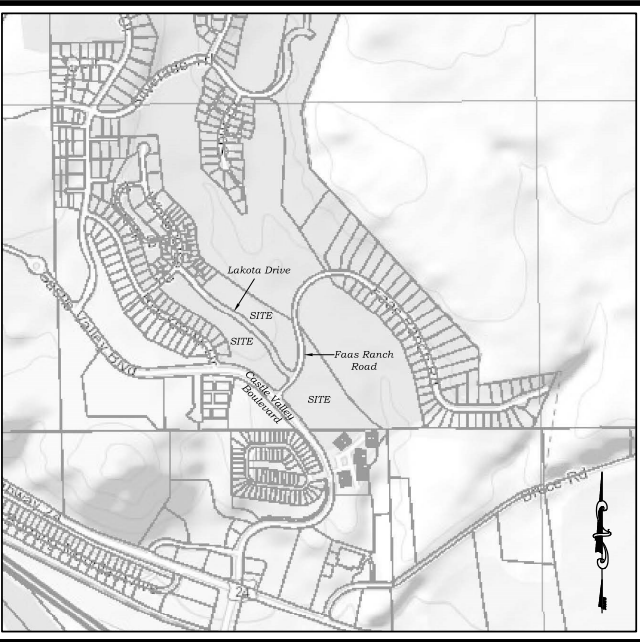
HEPWORTH-PAWLAK GEOTECHNICAL, INC.

Job No. 101 441-8

TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Page 2 of 2

SAMPLE LOCATION BORINGS	DEPTH (ft)	NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	SOIL OR BEDROCK TYPE
				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
8	10	5.8		29	35	36				Silty sand with gravel
9	5	8.8	119							Sandy silty clay
11	2	6.4	112			87	31	13		Sandy clay with gravel
12	5	10.4	121							Weathered claystone
	10	9.7	128							Weathered claystone
13	5	7.3	120							Sandy silty clay
	10	4.9		21	42	37				Silty sand with gravel



Vicinity Map
Scale: 1"= 1000'

LIENHOLDER CONSENT AND SUBORDINATION

THE UNDERSIGNED LIENHOLDER HEREBY CONSENTS TO AND APPROVES THE RECORDING OF THIS FINAL PLAT LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW AND HEREBY SUBORDINATES ITS LIEN RECORDED AS RECEPTION NUMBER _____ IN THE REAL PROPERTY RECORDS FOR GARFIELD COUNTY THERE TO.

BANK

BY: _____
DATED: _____

NOTES

- 1.) DATE OF SURVEY WAS JANUARY-MAY 2022.
- 2.) BASIS OF BEARINGS FOR THIS SURVEY IS AN ASSUMED BEARING OF S 89°40'33" E ALONG THE EAST-WEST CENTERLINE OF SECTION 32, T5S, R90W, 6TH P.M. BETWEEN THE CENTER 1/4 CORNER, A FOUND 3" GARFIELD COUNTY SURVEYOR BRASS CAP ON 2" PIPE STAMPED "C1" 4 S32 1978" AND THE EAST 1/4 CORNER, A FOUND 3" GARFIELD COUNTY SURVEYOR BRASS CAP ON 2" PIPE STAMPED "1" 4S32 533 1978", AS SHOWN HEREON.
- 3.) THIS FINAL PLAT IS BASED ON:
 - a. LAKOTA CANYON RANCH FILING 3, PHASE 1 RECEPTION NO. 665843 FINAL BLOCK PLAT, WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH RECEPTION NO. 661957 SECOND AMENDED AND RESTATED SUBDIVISION EXCLUSION/EXEMPTION MAP RECEPTION NO. 709280 AMENDED FINAL BLOCK PLAT WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH, PHASE 1 RECEPTION NO. 727621 (ALL RECORDED IN THE GARFIELD COUNTY, COLORADO CLERK AND RECORDER'S RECORDS.)
 - b. RESEARCH FOR RIGHTS-OF-WAY AND EASEMENTS OF RECORD ARE BASED ON THE FOLLOWING ASPEN TITLE & ESCROW, LLC TITLE COMMITMENTS:
 - OFFICE FILE NO. PRE-2022-913-TBD, DATED APRIL 22, 2022 (FUTURE DEVELOPMENT PARCEL, LAKOTA CANYON RANCH FILING 3, PHASE 1)
 - OFFICE FILE NO. PRE-2022-914-TBD, DATED APRIL 22, 2022 (FUTURE DEVELOPMENT PARCEL 3, FINAL BLOCK PLAT WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH)
 - OFFICE FILE NO. PRE-2022-912-TBD, DATED APRIL 22, 2022 (PARCEL C-2, SECOND AMENDED AND RESTATED SUBDIVISION EXCLUSION/EXEMPTION MAP)
 - c. MONUMENTS FOUND IN PLACE AS INDICATED HEREON.
- 4.) ALL DIMENSIONS SHOWN HEREON ARE RECORD AND AS-MEASURED UNLESS OTHERWISE INDICATED.
- 5.) ALL FOUND OR SET MONUMENTS ARE FLUSH WITH GROUND EXCEPT AS NOTED HEREON.
- 6.) THE LINEAL UNIT USED IN THE PREPARATION OF THIS PLAT IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.
- 7.) ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

SURVEYOR'S CERTIFICATE

I MICHAEL J. LANGHORNE, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR LICENSED UNDER THE LAWS OF THE STATE OF COLORADO, THAT THIS PLAT IS A TRUE, CORRECT AND COMPLETE FINAL PLAT OF LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW AS LAID OUT, PLATTED, DEDICATED AND SHOWN HEREON, THAT SUCH PLAT WAS MADE FROM AN ACCURATE SURVEY OF SAID PROPERTY BY ME, OR UNDER MY SUPERVISION, IS BASED ON MY KNOWLEDGE, INFORMATION AND BELIEF, AND THAT IT CONFORMS WITH THE CURRENT STANDARDS FOR LAND SURVEYS OF THE COLORADO ASSOCIATION OF SURVEYORS, AS WELL AS WITH RELATED SURVEY REQUIREMENTS OF CURRENT VERSIONS OF THE COLORADO REVISED STATUTES AND THE TOWN OF NEW CASTLE REGULATIONS. THIS CERTIFICATE IS NOT INTENDED TO BE AN EXPRESS OR IMPLIED WARRANTY OR GUARANTEE OF ANY MATTERS EXCEPT THOSE STATED IN THE PRECEDING SENTENCE AND CORRECTLY SHOWS THE LOCATION AND DIMENSIONS OF THE LOTS, EASEMENTS AND STREETS OF THE FINAL PLAT OF LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW, AS THE SAME ARE STAKED UPON THE GROUND IN COMPLIANCE WITH APPLICABLE REGULATIONS GOVERNING THE SUBDIVISION OF LAND.

IN WITNESS WHEREOF I HAVE SET MY HAND AND SEAL AT _____, COLORADO, ON THIS _____ DAY OF _____, 2022.

DATE: _____
MICHAEL J. LANGHORNE, P.L.S. # 6262

PRELIMINARY FOR REVIEW ONLY

TITLE CERTIFICATE

ASPEN TITLE & ESCROW, LLC DOES HEREBY CERTIFY THAT IT HAS EXAMINED THE TITLE TO ALL LANDS DEDICATED AND SHOWN UPON THIS PLAT, AND TITLE TO SUCH LANDS IS IN THE DEDICATOR FREE AND CLEAR OF ALL LIENS, TAXES, AND ENCUMBRANCES EXCEPT AS FOLLOWS:

- A.) PARCEL C-2 ASPEN TITLE & ESCROW, LLC OFFICE FILE NO. PRE-2022-913-TBD
- B.) FUTURE DEVELOPMENT PARCEL, LAKOTA CANYON RANCH FILING 3, PHASE 1 OFFICE FILE NO. PRE-2022-913-TBD
- C.) FUTURE DEVELOPMENT PARCEL 3, FINAL BLOCK PLAT WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH OFFICE FILE NO. PRE-2022-914-TBD

SCHEDULE B, PART II EXCEPTIONS:

1. RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORDS.
2. EASEMENTS, OR CLAIMS OF EASEMENTS, NOT SHOWN BY THE PUBLIC RECORDS.
3. ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.
4. ANY LIEN, OR RIGHT TO A LIEN, FOR SERVICES, LABOR OR MATERIAL HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN IN THE PUBLIC RECORDS.
5. DEFECTS, LIENS, ENCUMBRANCES, ADVERSE CLAIMS OR OTHER MATTERS, IF ANY, CREATED, FIRST APPEARING IN THE PUBLIC RECORDS OR ATTACHED SUBSEQUENT TO THE EFFECTIVE DATE, BUT PRIOR TO THE DATE THAT THE PROPOSED INSTRUMENT ACQUIRES RECORD TITLE, FOR VALUE, OF THE ESTATE OR INTEREST OR MORTGAGE THEREON COVERED BY THIS COMMITMENT.
6. TAXES OR SPECIAL ASSESSMENTS WHICH ARE NOT SHOWN AS EXISTING LIENS BY THE PUBLIC RECORDS.
7. WATER RIGHTS, CLAIMS OF TITLE TO WATER, WHETHER OR NOT THESE MATTERS ARE SHOWN BY THE PUBLIC RECORDS.
8. RIGHTS OF THE PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM, SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES HEREBY GRANTED AND A RIGHT OF WAY FOR DITCHES OR CANALS AS CONSTRUCTED BY THE AUTHORITY OF THE UNITED STATES PATENT RECORDED OCTOBER 24, 1895 IN BOOK 12 AT PAGE 384 AS RECEPTION NO. 18783.
9. RIGHT OF WAY FOR DITCHES OR CANALS CONSTRUCTED BY THE AUTHORITY OF THE UNITED STATES, AS RESERVED IN UNITED STATES PATENT CORNER 24, 1895 IN BOOK 12 AT PAGE 384 AS RECEPTION NO. 18783.
10. ANY AND ALL PLACER AND LODE MINING CLAIMS, AND ANY AND ALL ASSIGNMENTS OR RECORD, OR OTHERWISE, THEREOF, OR INTEREST THEREIN.
11. (A) RIGHT OF WAY RECORDED MARCH 22, 1934 IN BOOK 174 AT PAGE 555 AS RECEPTION NO. 117059.
11. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN EASEMENT AND RIGHT OF WAY FOR THE PRENDERGRASST DITCH BY AND RIGHTS-OF-WAYS FOR DITCH LATERALS AS DISCLOSED BY WARRANTY DEED RECORDED JANUARY 29, 1915 IN BOOK 93 AT PAGE 359 AS RECEPTION NO. 51104.
12. (A) 14. (B) RESERVATIONS OF AN UNDIVIDED ONE-HALF (1/2) PERCENT INTEREST IN ALL OIL, GAS AND OTHER MINERALS IN, ON OR UNDER SAID LANDS, TOGETHER WITH THE RIGHT TO PROSPECT FOR AND REMOVE THE SAME, AS RESERVED BY BROWN LAND AND CATTLE COMPANY INC. 1989 IN BOOK 993 AT PAGE 460 AS RECEPTION NO. 373515, AND ANY AND ALL ASSIGNMENT OF RECORD, OR OTHERWISE, THEREOF, OR INTERESTS THEREIN.
12. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN EASEMENT AND RIGHT OF WAY FOR THE PRENDERGRASST ENLARGEMENT AND RIGHT-OF-WAY DITCHES AS DISCLOSED BY QUIT CLAIM DEED RECORDED MAY 27, 1956 IN BOOK 133 AT PAGE 473 AS RECEPTION NO. 95133.
13. (A) 15. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE RESOLUTION NO. TC 99-7 RECORDED JUNE 15, 1999 IN BOOK 1135 AT PAGE 484 AS RECEPTION NO. 547370.
13. (B) RIGHT OF WAY RECORDED MARCH 22, 1934 IN BOOK 174 AT PAGE 555 AS RECEPTION NO. 117059.
14. (A) 16. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE RESOLUTION NO. TC 99-8 RECORDED JUNE 16, 1999 IN BOOK 1135 AT PAGE 520 AS RECEPTION NO. 547371.
15. (A) 17. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE RESOLUTION NO. TC 99-9 RECORDED JUNE 16, 1999 IN BOOK 1135 AT PAGE 489 AS RECEPTION NO. 547372.
16. (A) 18. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN ANNEXATION AND DEVELOPMENT AGREEMENT RECORDED JUNE 16, 1999 IN BOOK 1135 AT PAGE 320 AS RECEPTION NO. 547373, FIFTH AMENDMENT RECORDED MAY 2, 2005 IN BOOK 1683 AT PAGE 556 AS RECEPTION NO. 673289.
17. (A) 19. (B) EASEMENTS, RIGHTS OF WAY AND ALL OTHER MATTERS SHOWN ON THE PLAT OF FAAS ANNEXATION, RECORDED JUNE 16, 1999 AS RECEPTION NO. 547374.
18. (A) 20. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE ORDINANCE NO. 99-10 RECORDED JUNE 16, 1999 IN BOOK 1135 AT PAGE 548 AS RECEPTION NO. 547375.
19. (A) 21. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE ORDINANCE NO. 2002-8 RECORDED JULY 1, 2002 IN BOOK 1366 AT PAGE 337 AS RECEPTION NO. 606212.
20. (A) 22. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN RESTRICTIVE COVENANTS AND RESERVATIONS OF EASEMENTS AS DISCLOSED IN SPECIAL WARRANTY DEED RECORDED JULY 1, 2002 IN BOOK 1366 AT PAGE 353 AS RECEPTION NO. 606214.
21. (A) 23. (B) EASEMENTS, RIGHTS OF WAY AND ALL OTHER MATTERS SHOWN ON THE PLAT OF EAGLES RIDGE RANCH SUBDIVISION EXCLUSION/EXEMPTION PLAT RECORDED JULY 17, 2002 AS RECEPTION NO. 607173.
22. (A) 24. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN EASEMENT AGREEMENT RECORDED JULY 30, 2002 IN BOOK 1373 AT PAGE 549 AS RECEPTION NO. 607474.
23. (A) 25. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE ORDINANCE NO. 2002-18 RECORDED JANUARY 8, 2003 IN BOOK 1425 AT PAGE 970 AS RECEPTION NO. 618284.
24. (A) 26. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN EASEMENT AGREEMENT (LOWER EAGLE WAY) RECORDED JANUARY 8, 2003 IN BOOK 1425 AT PAGE 150 AS RECEPTION NO. 618289, ASSIGNMENT OF EASEMENT RECORDED JANUARY 8, 2003 IN BOOK 1425 AT PAGE 188 AS RECEPTION NO. 618294.
25. (A) 27. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN BUNKER EASEMENT AGREEMENT RECORDED JANUARY 8, 2003 IN BOOK 1425 AT PAGE 189 AS RECEPTION NO. 618295.
26. (A) 28. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN BUNKER EASEMENT AGREEMENT - UTILITIES AND DRAINAGE RECORDED JANUARY 8, 2003 IN BOOK 1425 AT PAGE 190 AS RECEPTION NO. 618296.
27. (A) 29. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN EMERGENCY ACCESS EASEMENT AGREEMENT RECORDED JANUARY 8, 2003 IN BOOK 1425 AT PAGE 170 AS RECEPTION NO. 618292.
28. (A) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN WATER STORAGE TANK AGREEMENT RECORDED JANUARY 8, 2003 IN BOOK 1425 AT PAGE 238 AS RECEPTION NO. 618293.
29. (A) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE ORDINANCE NO. 2003-2 RECORDED JULY 18, 2003 IN BOOK 1494 AT PAGE 621 AS RECEPTION NO. 632117.
29. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN GOLF COURSE EASEMENT AGREEMENT RECORDED JANUARY 8, 2003 IN BOOK 1715 AT PAGE 183 AS RECEPTION NO. 618283, ADDENDUM NO. 1 RECORDED JULY 23, 2003 IN BOOK 1496 AT PAGE 344 AS RECEPTION NO. 632372.
30. (A) 33. (B) EASEMENTS, RIGHTS OF WAY AND ALL OTHER MATTERS SHOWN ON THE AMENDED AND RESTATED EXCLUSION/EXEMPTION MAP OF LAKOTA CANYON RANCH (FORMERLY EAGLES RIDGE RANCH), RECORDED JULY 18, 2003 AS RECEPTION NO. 632118.
31. (A) 34. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN RESERVATION OF EASEMENTS AS DESCRIBED IN SPECIAL WARRANTY DEED RECORDED JULY 23, 2003 IN BOOK 1496 AT PAGE 350 AS RECEPTION NO. 632375.
31. (B) EASEMENTS, RIGHTS OF WAY AND ALL OTHER MATTERS SHOWN ON THE FIRST AMENDED AND RESTATED FINAL SUBDIVISION PLAT OF LAKOTA CANYON RANCH, FILING NO. 1 RECORDED JULY 18, 2003 AS RECEPTION NO. 632116.
32. (A) 35. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN LAKOTA CANYON RANCH MASTER ASSOCIATION, INC., RECORDED DECEMBER 11, 2003 IN BOOK 1545 AT PAGE 939 AS RECEPTION NO. 642713.
33. (A) 36. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN AMENDMENT TO WATER LEASE RECORDED MAY 6, 2004 IN BOOK 1583 AT PAGE 91 AS RECEPTION NO. 651587, INsofar AS THE SAME MAY AFFECT SUBJECT PROPERTY.
34. (A) 37. (B) FIRST AMENDED AND RESTATED MASTER DECLARATION OF PROTECTIVE COVENANTS, CONDITIONS AND RESTRICTIONS FOR LAKOTA CANYON RANCH RECORDED OCTOBER 19, 2004 IN BOOK 1632 AT PAGE 9 AS RECEPTION NO. 661954, FIRST SUPPLEMENT TO FIRST AMENDED AND RESTATED MASTER DECLARATION RECORDED DECEMBER 23, 2004 IN BOOK 650 AT PAGE 645 AS RECEPTION NO. 665845, SECOND SUPPLEMENT RECORDED AUGUST 10, 2005 IN BOOK 1715 AT PAGE 459 AS RECEPTION NO. 679902, AMENDMENT TO THE FIRST AND SECOND SUPPLEMENTS RECORDED FEBRUARY 8, 2006 IN BOOK 1770 AT PAGE 826 AS RECEPTION NO. 691983, THIRD SUPPLEMENT RECORDED OCTOBER 19, 2006 IN BOOK 1858 AT PAGE 684 AS RECEPTION NO. 709285, AMENDMENT TO THE THIRD SUPPLEMENT RECORDED DECEMBER 28, 2007 AS RECEPTION NO. 740134, FOURTH SUPPLEMENT RECORDED FEBRUARY 4, 2008 AS RECEPTION NO. 742261.
35. (A) 38. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE ORDINANCE NO. 2004-8 RECORDED OCTOBER 19, 2004 IN BOOK 1632 AT PAGE 118 AS RECEPTION NO. 661956.
36. (A) 41. (B) EASEMENTS, RIGHTS OF WAY AND ALL OTHER MATTERS SHOWN ON THE SECOND AMENDED AND RESTATED SUBDIVISION EXCLUSION/EXEMPTION MAP OF LAKOTA CANYON RANCH (FORMERLY EAGLES RIDGE RANCH) RECORDED OCTOBER 19, 2006 AS RECEPTION NO. 709280.
37. (A) 43. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN THIRD AMENDMENT TO SUBDIVISION IMPROVEMENTS AGREEMENT FOR LAKOTA CANYON RANCH, FILINGS 1 AND 2, RECORDED MARCH 26, 2007 IN BOOK 1906 AT PAGE 9 AS RECEPTION NO. 719590.
38. (A) 45. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN RELEASE FROM GOLF COURSE EASEMENT AGREEMENT RECORDED JULY 27, 2007 IN BOOK 1955 AT PAGE 272 AS RECEPTION NO. 729171.
39. (A) 47. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN AGREEMENT RECORDED DECEMBER 16, 2008 AS RECEPTION NO. 760175.
39. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE ORDINANCE NO. 2004-20 RECORDED DECEMBER 23, 2004 IN BOOK 1650 AT PAGE 617 AS RECEPTION NO. 665842.
40. (A) 48. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN 2013 AMENDMENT TO DEVELOPMENT AGREEMENTS FOR LAKOTA CANYON RANCH PUD, RECORDED MARCH 29, 2013 AS RECEPTION NO. 833371.
40. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN TOWN OF NEW CASTLE ORDINANCE NO. 2004-20 RECORDED DECEMBER 23, 2004 IN BOOK 1650 AT PAGE 617 AS RECEPTION NO. 665842.
41. (A) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN NOTICE FOR SPECIAL DECLARANT RIGHTS TRANSFER RECORDED JANUARY 20, 2014 AS RECEPTION NO. 845410.
42. (B) EASEMENTS, RIGHTS OF WAY AND ALL OTHER MATTERS SHOWN ON THE FINAL PLAT OF LAKOTA CANYON RANCH FILING 3 (A RESUBDIVISION OF PARCEL C-1 AS SHOWN ON THE SECOND AMENDED AND RESTATED SUBDIVISION EXCLUSION/EXEMPTION MAP OF LAKOTA CANYON RANCH, FORMERLY EAGLES RIDGE RANCH) RECORDED OCTOBER 19, 2006 AS RECEPTION NO. 709283.
44. (B) EASEMENTS, RIGHTS OF WAY AND ALL OTHER MATTERS SHOWN ON DETAILED FINAL PLAT BLOCK B-8, WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH, PHASE 1, RECORDED JULY 18, 2003 AS RECEPTION NO. 727620, AND THE AMENDED FINAL BLOCK PLAT, BLOCK B-8 AND FUTURE DEVELOPMENT PARCEL 3, WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH, PHASE 1, RECORDED JULY 10, 2007 AS RECEPTION NO. 727621.
45. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN RELEASE FROM GOLF COURSE EASEMENT AGREEMENT RECORDED JULY 27, 2007 IN BOOK 1955 AT PAGE 272 AS RECEPTION NO. 729171.
46. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN FIRST AMENDMENT TO SUBDIVISION IMPROVEMENTS AGREEMENT FOR WHITEHORSE VILLAGE PHASE 1, RECORDED APRIL 9, 2008 AS RECEPTION NO. 746213.
47. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN AGREEMENT RECORDED DECEMBER 16, 2008 AS RECEPTION NO. 760175.
48. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN 2013 AMENDMENT TO DEVELOPMENT AGREEMENTS FOR LAKOTA CANYON RANCH PUD, RECORDED MARCH 29, 2013 AS RECEPTION NO. 833371.
49. (B) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS CONTAINED IN NOTICE FOR SPECIAL DECLARANT RIGHTS TRANSFER RECORDED JANUARY 20, 2014 AS RECEPTION NO. 845410.

DATED THIS _____ DAY OF _____, A.D. 2022.

TITLE COMPANY: ASPEN TITLE AND ESCROW INSURANCE COMPANY

AGENT _____

FINAL PLAT

LAKOTA CANYON RANCH PUD, FILING 8, LONGVIEW

Future Development Parcel 3, Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 Reception No. 661957
Future Development Parcel, Lakota Canyon Ranch Filing 3, Phase 1 Reception No. 665843 and
A Resubdivision of Parcel C2, Second Amended and Restated Subdivision Exclusion/Exemption Map Reception No. 709280,
Situate in Section 32, Township 5 South, Range 90 West of the 6th P.M. Town of New Castle, County of Garfield, State of Colorado

CERTIFICATE OF DEDICATION AND OWNERSHIP

KNOW ALL MEN BY THESE PRESENTS THAT RG LAKOTA I LLC, BEING SOLE OWNER(S) IN FEE SIMPLE OF ALL THAT REAL PROPERTY DESCRIBED AS FOLLOWS:

FUTURE DEVELOPMENT PARCEL, LAKOTA CANYON RANCH FILING 3, PHASE 1 RECEPTION NO. 665843

FUTURE DEVELOPMENT PARCEL 3, AMENDED FINAL BLOCK PLAT WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH, PHASE 1 RECEPTION NO. 727621

PARCEL C-2, SECOND AMENDED AND RESTATED SUBDIVISION EXCLUSION/EXEMPTION MAP RECEPTION NO. 709280

AND CONTAINING 17.601 ACRES MORE OR LESS, HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS AND BLOCKS AS SHOWN HEREON AND DESIGNATE THE SAME AS LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW, IN THE TOWN OF NEW CASTLE, COUNTY OF GARFIELD, STATE OF COLORADO; AND DO HEREBY GRANT TO THE TOWN OF NEW CASTLE, COUNTY OF GARFIELD, COLORADO, FOR PUBLIC USE THE STREETS SHOWN HEREON, INCLUDING AVENUES, DRIVES, COURTS, PLACES AND ALLEYS, THE PUBLIC LANDS SHOWN HEREON FOR THEIR INDICATED PUBLIC USE AND THE UTILITY AND DRAINAGE EASEMENTS SHOWN HEREON FOR UTILITY AND DRAINAGE PURPOSES ONLY; AND SO FURTHER STATE THAT THIS SUBDIVISION SHALL BE SUBJECT TO THE PROTECTIVE COVENANTS FILED AND RECORDED FOR THIS SUBDIVISION IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO AS DOCUMENT NO. _____.

EXECUTED THIS _____ DAY OF _____, A.D. 20____.

OWNER:

RG LAKOTA II, LLC / RG LAKOTA HOLDINGS, LLC
A COLORADO LIMITED LIABILITY COMPANY
350 MARKET STREET, SUITE 304
BASALT, CO 81621

BY: _____ DATE: _____

(STATE OF COLORADO) COUNTY OF GARFIELD, CO. TOWN OF NEW CASTLE)

THE FOREGOING DEDICATION WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, A.D. 20____ BY _____

WITNESS MY HAND AND SEAL

NOTARY PUBLIC _____

CERTIFICATE OF DEDICATIONS AND EASEMENTS

A. DEDICATIONS AND EASEMENTS. OWNER HEREBY MAKES THE FOLLOWING DEDICATIONS AND EASEMENTS:

1. ALL STREETS AND PEDESTRIAN EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN OF NEW CASTLE, COLORADO (THE "TOWN") FOR THE USE OF THE PUBLIC, FOR PAVEMENT, SIDEWALKS AND FOR DRAINAGE AND UNDERGROUND UTILITY PURPOSES. ALL SUCH DEDICATED STREETS, INCLUDING THE DRIVING SURFACE AND SIDEWALKS THAT MAY BE LOCATED WITHIN THEM SHALL BE SUBJECT TO THE RIGHTS OF THE OWNER, THE OWNERS AND OCCUPANTS OF LOTS AND UNITS IN LAKOTA CANYON RANCH, INCLUDING THE GOLF OWNER (AS DEFINED IN THE MASTER DECLARATION), TO USE SAID STREET RIGHTS-OF-WAY FOR ACCESS, INGRESS AND EGRESS, AND FOR THE INSTALLATION, OPERATION AND MAINTENANCE OF UNDERGROUND UTILITIES. ROAD CUT PERMITS MAY BE REQUIRED PURSUANT TO APPLICABLE TOWN REGULATIONS.
2. PERPETUAL, NON-EXCLUSIVE UTILITY EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN, GRANTED TO THE GOLF OWNER AND THE MASTER ASSOCIATION AND RESERVED TO THE OWNER, FOR THE INSTALLATION, OPERATION, MAINTENANCE, REPAIR OR REPLACEMENT OF UNDERGROUND UTILITIES AND APPURTENANCES THERETO INCLUDING, BUT NOT LIMITED TO, ELECTRIC LINES, CABLE LINES, NATURAL GAS PIPELINES, SANITARY SEWER LINES, WATER LINES, TELEPHONE LINES AND IRRIGATION WATER LINES.
3. PERPETUAL, NON-EXCLUSIVE DRAINAGE EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN, GRANTED TO THE GOLF OWNER AND THE MASTER ASSOCIATION AND RESERVED TO THE OWNER, FOR THE INSTALLATION, OPERATION, MAINTENANCE, REPAIR AND REPLACEMENT OF DRAINAGE FACILITIES FOR THE CONVEYANCE OF RUN-OFF WATER WHICH ORIGINATES WITHIN LAKOTA CANYON RANCH OR FROM UPSTREAM AREAS THROUGH NATURAL OR MAN MADE FACILITIES ABOVE OR BELOW GRADE.
4. PERPETUAL, NON-EXCLUSIVE SNOW STORAGE EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN, GRANTED TO THE MASTER ASSOCIATION AND RESERVED TO THE OWNER, FOR THE STORAGE OF PLOWED SNOW.
5. PERPETUAL, NON-EXCLUSIVE EASEMENTS ARE HEREBY GRANTED TO AND FOR THE BENEFIT OF LAW ENFORCEMENT PERSONNEL, FIRE DEPARTMENTS AND OTHER EMERGENCY SERVICES PROVIDERS, FOR INGRESS, EGRESS AND ACCESS PURPOSES, OVER AND ACROSS ALL STREETS WHICH MAY BE CONSTRUCTED, RECONSTRUCTED OR RELOCATED WITHIN THE PROPERTY.
6. PERPETUAL, NON-EXCLUSIVE EASEMENTS ARE HEREBY GRANTED TO UTILITY PROVIDERS, AND RESERVED TO THE OWNER, FOR THE INSTALLATION, MAINTENANCE AND REPAIR OF UTILITIES, OVER, ACROSS AND UNDER (A) ALL STREETS WHICH MAY BE CONSTRUCTED, RECONSTRUCTED OR RELOCATED WITHIN THE PROPERTY, (B) EASEMENT AREAS AS SHOWN ON THIS PLAT AND (C) ANY PORTION OF THE PROPERTY WHICH MAY BE DESIGNATED BY OWNER PURSUANT TO THE RESERVATIONS AND RIGHTS PROVIDED FOR HEREIN OR IN THE MASTER DECLARATION.
- B. RESERVATIONS. OWNER HEREBY RESERVES TO ITSELF AND ITS SUCCESSORS AND ASSIGNS THE FOLLOWING:
 1. THE RIGHT TO ENTER UPON THE PROPERTY FOR THE PURPOSE OF ANY WORK IN CONNECTION WITH ITS DEVELOPMENT OF THE PROPERTY AND THE RIGHT TO GRANT ADDITIONAL EASEMENTS AND, SUBJECT TO TOWN APPROVAL, TO RELOCATE AND/OR SUBSTITUTE EXISTING EASEMENTS WITH RESPECT TO THE PROPERTY IN ORDER TO COMPLETE THE DEVELOPMENT THEREOF.
 2. A NON-EXCLUSIVE EASEMENT OVER AND ACROSS THOSE PORTIONS OF THE PROPERTY AS MAY BE REQUIRED FOR GRADING AND THE INSTALLATION, MAINTENANCE, REPAIR AND REPLACEMENT OF DRAINAGE STRUCTURES, IRRIGATION SYSTEMS, FENCING, RETAINING WALLS AND OTHER SIMILAR STRUCTURES.
 3. A NON-EXCLUSIVE EASEMENT OVER AND ACROSS THOSE PORTIONS OF THE PROPERTY AS MAY BE REQUIRED FOR THE INSTALLATION, CONSTRUCTION AND MAINTENANCE OF ROADS, DRIVEWAYS, TRAILS AND UTILITIES.

WITNESS MY HAND AND OFFICIAL SEAL

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC _____

PLAT NOTES:

1. LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW IS SUBJECT TO THE TERMS AND CONDITIONS OF TOWN OF NEW CASTLE ORDINANCE NO. 2022-____ (THE "APPROVAL ORDINANCE") AND THE SUBDIVISION IMPROVEMENTS AGREEMENT FOR LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW RECORDED _____ 2022, AS RECEPTION NO. _____ IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO, AS SAID AGREEMENT MAY BE AMENDED FROM TIME TO TIME.
3. LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW IS SUBJECT TO THE TERMS AND CONDITIONS OF THE FIRST AMENDED & RESTATED MASTER DECLARATION OF PROTECTIVE COVENANTS, CONDITIONS AND RESTRICTIONS FOR LAKOTA CANYON RANCH (THE "MASTER DECLARATION") RECORDED OCTOBER 19, 2004, AS RECEPTION NO. 661954 IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO. THE MASTER DECLARATION, WHICH MAY BE AMENDED OR SUPPLEMENTED FROM TIME TO TIME, ESTABLISHES AND DEFINES THE EASEMENTS, RESERVATIONS AND TERMS REFERRED TO ON THIS PLAT WHICH AFFECT THE PROPERTY.
4. LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW IS SUBJECT TO THE GOLF COURSE EASEMENT AGREEMENT RECORDED JANUARY 8, 2003, AS RECEPTION NO. 618293, IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO, AS SAID AGREEMENT MAY BE AMENDED OR SUPPLEMENTED FROM TIME TO TIME, WHICH AGREEMENT ESTABLISHES CERTAIN EASEMENTS AND RESTRICTIONS WITHIN AND ON LAKOTA CANYON RANCH FOR THE BENEFIT OF THE GOLF LAND AS DEFINED IN THE MASTER DECLARATION AND CERTAIN EASEMENTS AND RESTRICTIONS ON THE GOLF LAND FOR THE BENEFIT OF LAKOTA CANYON RANCH.
5. TO THE EXTENT THAT THE PROVISIONS OF THE LAKOTA CANYON RANCH MASTER PLAN TEXT (EXHIBIT D TO TOWN OF NEW CASTLE ORDINANCE NO. 2002-18, RECORDED JANUARY 8, 2003, AS RECEPTION NO. 618284, IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO) ARE IN CONFLICT WITH THIS PLAT, THE PLAT SHALL CONTROL.
6. ALL DEVELOPMENT WITHIN LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW SHALL COMPLY WITH THE REQUIREMENTS OF THE WILDFIRE HAZARD MITIGATION AND RESPONSE PLAN ATTACHED TO AND INCORPORATED INTO THE MASTER DECLARATION, COPIES OF WHICH ARE AVAILABLE FOR INSPECTION AT THE OFFICE OF THE NEW CASTLE TOWN CLERK, AS WELL AS THE GEOTECHNICAL REQUIREMENTS PER THE PRELIMINARY SUBSOIL STUDY JOB NO. 1066005 DATED FEBRUARY 13, 2005 PREPARED BY HP GEOTECH.
7. LOTS _____ WILL BE REQUIRED TO PREPARE A GRADING AND DRAINAGE PLAN PREPARED BY A REGISTERED PROFESSIONAL ENGINEER PRIOR TO BUILDING PERMIT APPROVAL. THE PURPOSE OF THE PLAN IS TO ADDRESS EXISTING TOPOGRAPHY AND INSURE THAT ALL RESIDENCES ARE CONSTRUCTED IN A MANNER TO PROTECT THE HOMES FROM STORM WATER RUNOFF WHILE MITIGATING IMPACTS OF DRAINAGE TO ADJACENT OR DOWN GRADIENT LOTS. AN INCREASE OF RUNOFF QUANTITY WILL NOT REQUIRE MITIGATION WHICH HAS BEEN HANDLED BY THE MASTER DECLARATION PLAN.
8. ALL SEWER MAINLINES ARE GRAVITY PIPE. EASEMENT CONSTRUCTION MAY REQUIRE SEWER LIFT PUMPS FOR LOTS WITHIN THE SUBDIVISION DEPENDENT ON LOT ELEVATIONS, SEWER DEPTHS, AND BUILDING LOCATION WITHIN EACH ENVELOPE, INCLUDING BUT NOT LIMITED TO _____ SEWER SERVICE STUB ELEVATIONS ESTIMATED ON SUBDIVISION ENGINEERING DESIGN DRAWINGS ON FILE AT THE TOWN OF NEW CASTLE.
9. SITE SPECIFIC ANALYSES ARE TO BE SUBMITTED TO THE TOWN FOR REVIEW AND APPROVAL PRIOR TO ISSUANCE OF A BUILDING PERMIT FOR ANY AND ALL LOTS CONTAINING SLOPES GREATER THAN 35%. SUCH ANALYSIS SHALL INCLUDE, BUT IS NOT LIMITED TO: BUILDING/FOUNDATION DESIGN, SLOPE-SPECIFIC GEOTECHNICAL EVALUATIONS OF SLOPE STABILITY AND RELATED GEOLOGIC HAZARDS, RETAINING WALLS, TEMPORARY SHORING MEASURES, AND OTHER MEASURES DEEMED NECESSARY TO PROTECT THE PUBLIC HEALTH SAFETY AND WELFARE OF PROJECT RESIDENTS.
10. RG LAKOTA I, LLC, RG LAKOTA HOLDING, LLC AND ALL LOT PURCHASERS SHALL COMPLY WITH THE RECOMMENDATIONS OF HP GEOTECHNICAL IN THEIR PRELIMINARY GEOTECHNICAL EVALUATION OF THE SITE DATED APRIL 26, 2002 AND THE SUPPLEMENTAL LETTER DATED FEBRUARY 13, 2006 AS WELL AS THE RECOMMENDATIONS CONTAINED IN THE LETTER FROM GROUND ENGINEERING CONSULTANTS, INC. DATED AUGUST 1, 2007 ADDRESSED TO LAKOTA CANYON RANCH DEVELOPMENT, LLC.

TOWN COUNCIL CERTIFICATE

THIS PLAT IS APPROVED BY THE (TOWN COUNCIL/PLANNING COMMISSION/TOWN ADMINISTRATOR) OF THE TOWN OF NEW CASTLE, GARFIELD COUNTY, COLORADO THIS _____ DAY OF _____, A.D. 2022, FOR FILING WITH THE CLERK AND RECORDER OF GARFIELD COUNTY, AND FOR CONVEYANCE TO THE TOWN OF THE PUBLIC DEDICATIONS SHOWN AND DESCRIBED HEREON, SUBJECT TO THE PROVISION THAT APPROVAL IN NO WAY OBLIGATES THE TOWN OF NEW CASTLE FOR FINANCING OR CONSTRUCTION OF IMPROVEMENTS ON LAND, STREETS OR EASEMENTS DEDICATED TO THE PUBLIC EXCEPT AS SPECIFICALLY AGREED TO BY THE TOWN COUNCIL.

MAJOR _____

WITNESS MY HAND AND SEAL OF THE TOWN OF NEW CASTLE

ATTSET: _____

TOWN CLERK _____

CLERK AND RECORDER'S CERTIFICATE

THIS PLAT IS ACCEPTED FOR FILING IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO, AT _____ O'CLOCK _____ M., ON THE _____ DAY OF _____, 2022, AS RECEPTION NO. _____.

CLERK AND RECORDER _____

BY: _____ DEPUTY

BOOKCLIFF
Survey Services, Inc.
136 East 9th Street
 Rifle, Colorado 81650
 Ph. (970) 625-1330
 Fax (970) 625-2773

LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW

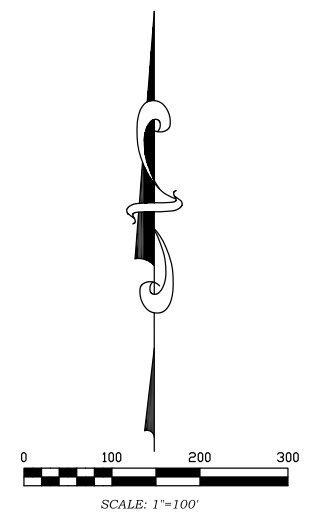
RG LAKOTA HOLDINGS, LLC
151 CLUBHOUSE DRIVE
BASALT, CO 81621

FILE:	F7
DFT:	TL
CK:	MJL
DATE:	5/30/22
PROJECT NO.	20170

FINAL PLAT LAKOTA CANYON RANCH PUD, FILING 8, LONGVIEW

Future Development Parcel 3, Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 Reception No. 661957
 Future Development Parcel, Lakota Canyon Ranch Filing 3, Phase 1 Reception No. 665843 and
 A Resubdivision of Parcel C2, Second Amended and Restated Subdivision Exclusion/Exemption Map Reception No. 709280,
 Situate in Section 32, Township 5 South, Range 90 West of the 6th P.M. Town of New Castle, County of Garfield, State of Colorado

Boundary and Boundary Line Adjustment Detail



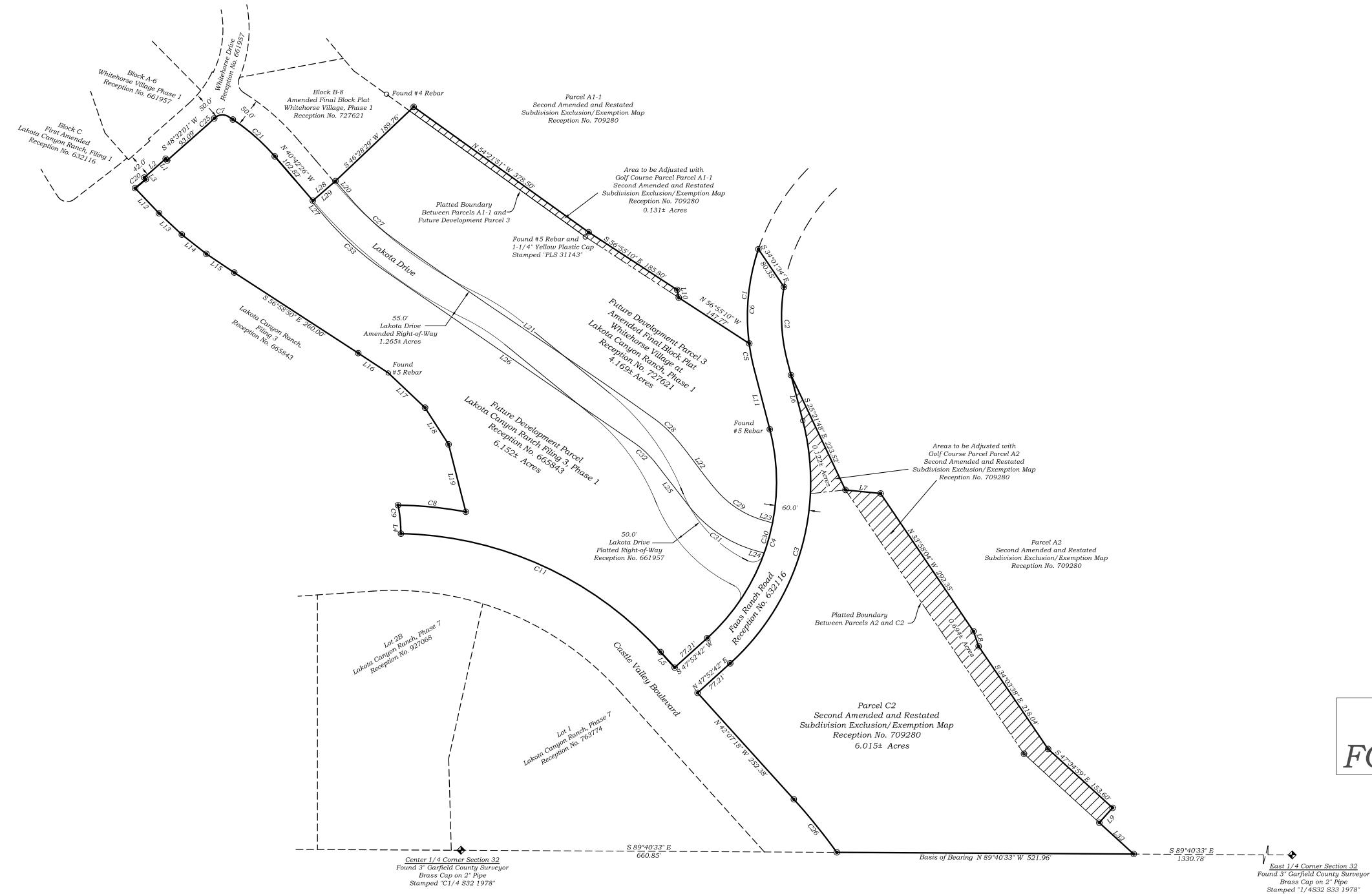
LEGEND

- Found/Set 18" #5 Rebar and 1-1/4" Orange Plastic Cap Stamped "PROP CORNER PLS 36575"
- Monument Found as Noted

LINE	BEARING	DISTANCE
L1	S 41° 27' 59" E	4.00
L2	S 48° 32' 01" W	50.00
L3	S 41° 27' 59" E	4.00
L4	S 01° 58' 49" E	11.55
L5	S 47° 07' 18" E	36.73
L6	N 14° 32' 30" W	82.88
L7	N 84° 18' 06" W	62.10
L8	S 18° 58' 12" E	27.90
L9	S 41° 51' 49" W	35.00
L10	S 11° 35' 29" E	14.06
L11	N 14° 32' 30" W	109.51
L12	S 43° 35' 36" E	60.91
L13	S 46° 55' 51" E	54.94
L14	S 31° 44' 16" E	54.94
L15	S 56° 12' 01" E	59.05
L16	S 56° 32' 45" E	63.26
L17	S 46° 32' 37" E	88.97
L18	S 32° 45' 41" E	76.67
L19	S 14° 16' 23" E	122.61
L20	S 40° 42' 26" E	40.12
L21	S 55° 23' 38" E	534.99
L22	S 37° 43' 48" E	93.07
L23	S 74° 15' 07" E	15.56
L24	S 74° 15' 07" E	15.56
L25	S 37° 43' 48" E	93.07
L26	S 55° 23' 38" E	534.99
L27	S 40° 42' 26" E	39.99
L28	N 49° 09' 31" E	52.50
L29	N 49° 09' 31" E	55.00
L30	N 48° 32' 01" E	175.29
L31	N 84° 03' 14" E	61.98
L32	S 47° 34' 59" E	81.84

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	370.00	168.48	166.83	S 03° 34' 47" W	26° 03' 31"
C2	370.00	130.38	129.42	S 02° 22' 24" E	24° 05' 53"
C3	370.00	468.44	463.61	N 16° 40' 11" E	62° 25' 02"
C4	370.00	403.07	383.44	N 16° 40' 11" E	62° 25' 02"
C5	370.00	43.76	43.76	S 10° 59' 39" E	7° 05' 24"
C6	370.00	214.06	211.05	S 02° 02' 06" W	33° 08' 53"
C7	370.00	27.74	25.57	S 83° 41' 41" W	79° 27' 35"
C8	682.92	119.85	119.70	S 84° 19' 38" W	10° 03' 20"
C9	225.00	38.86	38.82	N 06° 55' 43" W	9° 53' 47"
C11	632.92	516.12	501.94	N 65° 28' 58" W	46° 43' 20"
C12	632.92	191.32	190.59	N 60° 11' 03" W	17° 19' 10"
C13	632.92	217.33	216.46	N 61° 40' 43" W	19° 41' 31"
C14	632.92	107.47	107.14	N 46° 58' 38" W	9° 42' 39"
C15	370.00	191.85	189.02	N 33° 42' 24" E	28° 02' 36"
C16	370.00	55.05	55.00	N 15° 27' 21" E	8° 31' 30"
C17	370.00	166.77	164.78	N 01° 40' 22" E	23° 43' 37"
C18	370.00	77.89	77.62	N 02° 41' 15" W	23° 42' 11"
C19	370.00	290.53	285.05	N 28° 41' 17" E	38° 42' 51"
C20	375.00	24.48	24.47	S 02° 02' 13" E	3° 44' 23"
C21	355.00	98.32	98.01	N 48° 38' 29" W	15° 52' 06"
C22	355.00	47.14	47.11	N 52° 46' 17" W	7° 36' 30"
C23	355.00	36.04	36.02	N 46° 03' 31" W	5° 49' 09"
C24	355.00	16.14	16.14	N 41° 55' 43" W	2° 26' 36"
C25	246.00	18.02	18.02	N 46° 11' 57" E	4° 34' 38"
C26	1092.88	120.25	120.19	N 35° 58' 07" W	6° 18' 22"
C27	472.50	121.12	120.78	S 48° 03' 02" E	14° 41' 12"
C28	222.50	70.14	69.86	S 46° 33' 43" E	17° 39' 50"
C29	172.50	109.96	108.10	S 55° 52' 27" E	36° 31' 19"
C30	370.00	55.05	55.00	N 15° 27' 21" E	8° 31' 30"
C31	222.50	145.01	144.57	S 55° 52' 27" E	36° 31' 19"
C32	172.50	53.18	52.97	S 46° 33' 43" E	17° 39' 50"
C33	527.50	135.21	134.84	S 48° 03' 02" E	14° 41' 12"

**PRELIMINARY
FOR REVIEW ONLY**



REVISION	DESCRIPTION



LAKOTA CANYON RANCH PUD, FILING 7
LONGVIEW

RG LAKOTA HOLDINGS, LLC
151 CLUBHOUSE DRIVE
BASALT, CO 81621

FILE:	F7
DFT:	TL
CK:	MJL
DATE:	5/30/22
PROJECT NO.:	20170
SHEET:	2
OF:	4

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Future Development Parcel 3, Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 Reception No. 661957
 Future Development Parcel, Lakota Canyon Ranch Filing 3, Phase 1 Reception No. 665843 and
 A Resubdivision of Parcel C2, Second Amended and Restated Subdivision Exclusion/Exemption Map Reception No. 709280,
 Situate in Section 32, Township 5 South, Range 90 West of the 6th P.M. Town of New Castle, County of Garfield, State of Colorado

Lot Detail



**PRELIMINARY
FOR REVIEW ONLY**

REVISION	DESCRIPTION

BOOKCLIFF
Survey Services, Inc.

1370 East 1st Street
Boulder, Colorado 80501
Ph: (970) 625-1330
Fax: (970) 625-2773

LAKOTA CANYON RANCH PUD, FILING 7
LONGVIEW

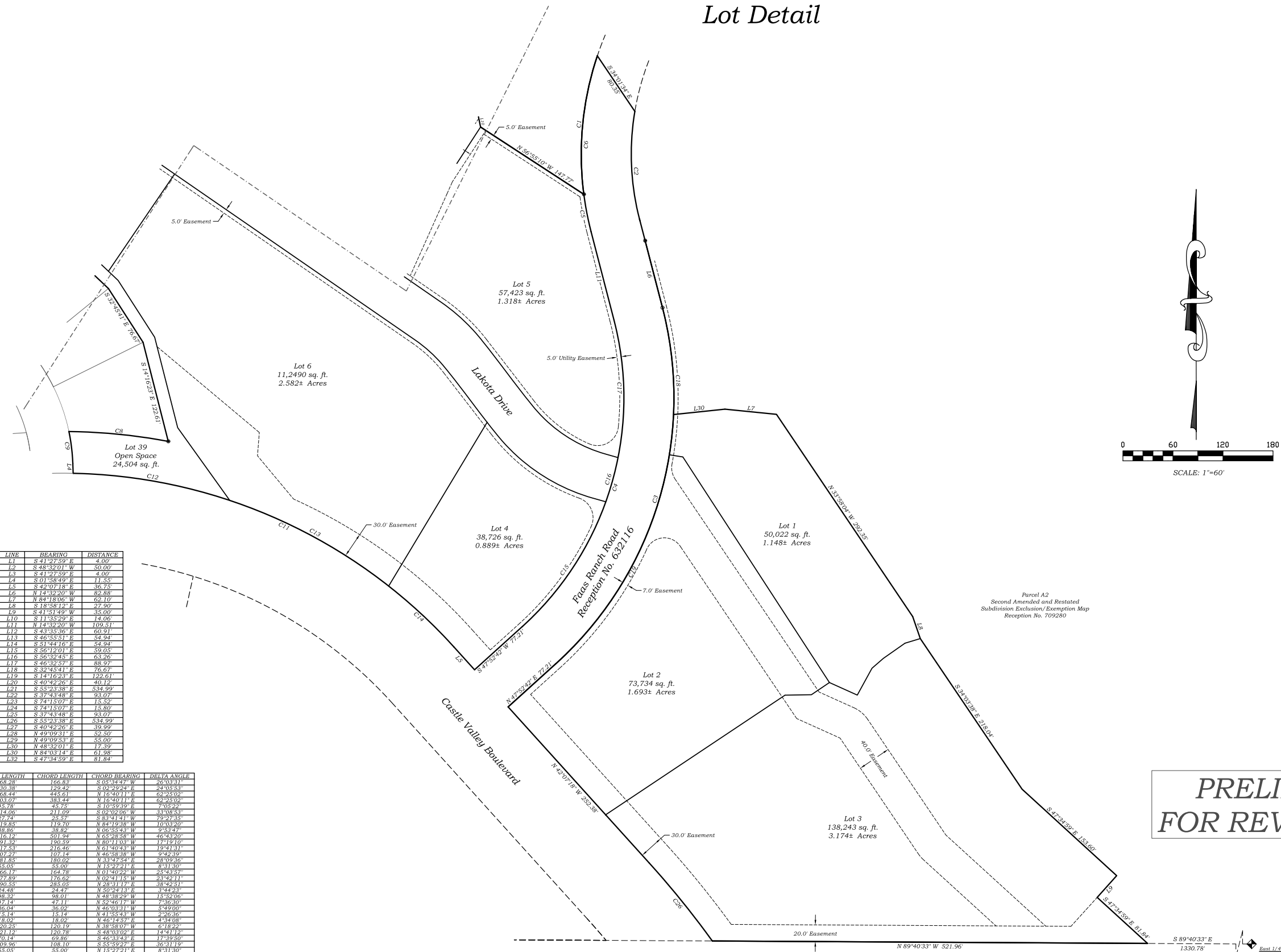
RG LAKOTA HOLDINGS, LLC
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FILE:	F7
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SHEET	3
OF	4

FINAL PLAT LAKOTA CANYON RANCH PUD, FILING 8, LONGVIEW

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Lot Detail



LINE	BEARING	DISTANCE
L1	S 41°27'59" E	4.00
L2	S 48°32'01" W	50.00
L3	S 41°27'59" E	4.00
L4	S 01°58'49" E	11.55
L5	S 49°07'18" E	36.75
L6	N 14°32'20" W	82.88
L7	N 84°18'06" W	62.10
L8	S 18°58'12" E	27.00
L9	S 41°51'49" W	35.00
L10	S 11°35'29" E	14.06
L11	N 14°32'20" W	109.51
L12	S 43°33'36" E	60.91
L13	S 46°55'51" E	54.94
L14	S 31°44'16" E	54.94
L15	S 56°12'01" E	59.05
L16	S 36°32'43" E	63.26
L17	S 46°39'57" E	88.97
L18	S 32°45'41" E	76.67
L19	S 14°16'23" E	122.61
L20	S 40°42'26" E	40.12
L21	S 55°23'38" E	534.99
L22	S 37°43'48" E	93.07
L23	S 74°15'07" E	15.80
L24	S 74°15'07" E	15.80
L25	S 37°43'48" E	93.07
L26	S 55°23'38" E	534.99
L27	S 40°42'26" E	39.99
L28	N 49°09'31" E	52.50
L29	N 49°09'31" E	55.00
L30	N 48°32'01" E	17.39
L31	N 84°03'14" E	61.98
L32	S 47°34'59" E	81.84

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	370.00	168.28	166.83	S 65°34'47" W	30.0331°
C2	370.00	130.88	129.82	S 02°02'24" E	24.0353°
C3	430.00	468.44	445.61	N 16°40'11" E	62°23'02"
C4	370.00	403.07	383.44	N 16°40'11" E	62°23'02"
C5	370.00	48.78	48.72	S 10°59'02" E	7.0522°
C6	370.00	214.06	211.09	S 02°02'06" W	33°08'53"
C7	30.00	27.74	25.51	S 83°11'41" W	72°27'35"
C8	683.92	119.85	119.70	N 84°19'38" W	10.0520°
C9	225.00	38.86	38.82	N 06°53'43" W	0°53'47"
C10	632.92	316.12	315.84	N 65°28'28" W	46°43'20"
C11	632.92	191.32	190.59	N 80°11'03" W	17°19'16"
C12	632.92	217.53	216.46	N 61°40'43" W	19°41'31"
C13	632.92	107.14	107.14	N 46°58'38" W	29°42'39"
C14	632.92	181.85	180.09	N 33°47'54" E	28°09'36"
C15	370.00	55.05	55.00	N 15°47'21" E	6°31'30"
C16	370.00	166.17	164.28	N 01°40'29" W	23°43'36"
C17	430.00	177.89	176.62	N 02°41'15" W	23°42'11"
C18	430.00	280.05	283.05	N 38°11'17" E	38°44'31"
C19	375.00	24.48	24.47	N 50°24'13" E	3°44'23"
C20	355.00	98.32	98.07	N 48°38'29" W	13°52'06"
C21	355.00	47.14	47.11	N 52°01'17" W	7°36'30"
C22	355.00	36.04	36.02	N 46°03'31" W	5°49'00"
C23	355.00	18.14	18.14	N 41°53'43" W	2°26'36"
C24	425.00	18.02	18.02	N 46°14'52" E	4°34'08"
C25	1092.58	120.25	120.19	N 38°58'07" W	6°18'32"
C26	472.50	121.12	120.78	S 48°03'02" E	14°41'11"
C27	227.50	70.14	69.86	S 46°33'43" E	17°39'50"
C28	172.50	109.96	108.10	S 55°59'27" E	36°31'19"
C29	370.00	83.00	83.00	N 13°27'21" E	6°31'30"
C30	227.50	145.01	142.57	S 55°59'27" E	36°31'19"
C31	172.50	83.18	82.97	S 46°33'43" E	17°39'50"
C32	327.50	134.21	134.84	S 48°03'02" E	14°41'12"

**PRELIMINARY
FOR REVIEW ONLY**

 <p style="font-size: 8px;">1350 East 15th Street Boulder, Colorado 80501 Ph: (970) 625-1330 Fax: (970) 625-2773</p>	REVISION DESCRIPTION
LAKOTA CANYON RANCH PUD, FILING 7 LONGVIEW	
RG LAKOTA HOLDINGS, LLC 151 CLUBHOUSE DRIVE BASALT, CO 81621	
FILE: F7 DFT: TL CK: M/L DATE: 5/30/22 PROJECT NO. 20170 SHEET 4 OF 4	

East 1/4 Corner Section 32
 Found 3" Garfield County Surveyor
 Brass Cap on 2" Pipe
 Stamped 1/4832 833 1978"



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

Issued By
Fidelity National Title Insurance Company

Fidelity National Title Insurance Company, a California corporation ("Company"), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the Requirements; all subject to the provisions of Schedules A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company.

All liability and obligation under this Commitment shall cease and terminate 180 days after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue the policy or policies is not the fault of the Company.

The Company will provide a sample of the policy form upon request.

IN WITNESS WHEREOF, Fidelity National Title Insurance Company has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A.

Aspen Title & Escrow
449 East Hopkins Avenue
Aspen, CO 81611
T: (970) 925-1177
F: (888) 885-0805
License #:694340

Countersigned :

Susan Sarver, License #: 271422
Authorized Signatory

Fidelity National Title Insurance Company

By:
Michael J. Nolan
President

ATTEST:
Marjorie Nemzura
Secretary





FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

Issued By
Fidelity National Title Insurance Company

CONDITIONS

1. The term mortgage, when used herein, shall include deed of trust, trust deed, or other security instrument.
2. If the proposed Insured has or acquired actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions.
3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and Conditions and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.
4. This Commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.
5. **ARBITRATION**
The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is \$2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at <http://www.alta.org/arbitration>.



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE A

Name and Address of Title Insurance Company:

Aspen Title & Escrow, LLC

449 E. Hopkins Ave., Aspen, CO 81611

Office File No.: Pre-2022-912-TBD

1. Effective Date: 04/22/2022 at 8:00 AM

2. Policy or Policies to be issued:

a) ALTA Homeowner's Policy

Policy Amount: \$

PROPOSED INSURED: **To Be Determined**

3. The estate or interest in the Land described or referred to in this Commitment and covered herein is: Fee Simple

4. Title to the Fee Simple estate or interest in said Land is at the effective date hereof vested in:

[RG Lakota II, LLC, a Colorado limited liability company](#)

5. The Land referred to in this Commitment is described as follows:

The land is described as set forth in Exhibit A attached hereto and made a part hereof.

PREMIUMS:

TBD Title Commitment Fee:

\$300.00





FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

EXHIBIT A – PROPERTY DESCRIPTION

Office File No.: Pre-2022-912-TBD

Situated in the County of Garfield and State of Colorado described as follows:

(PARCEL 1):

Parcel C-2,
SECOND AMENDED AND RESTATED SUBDIVISION EXCLUSION/EXEMPTION MAP, according to the Plat thereof recorded
October 19, 2006 as [Reception No. 709280](#).



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B - SECTION I REQUIREMENTS FOR COVERAGE

The following Requirements are to be complied with:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.
5. A satisfactory owner's affidavit must be completed, executed and returned to the Company.
6. Payment of any and all assessments now due and payable.
7. Release by the Public Trustee of the Deed of Trust from RG Lakota Holdings, LLC for the use of Timberline Bank to secure \$900,000.00, recorded June 30, 2020 as [Reception No. 937623](#) .
Assignment of Rents, filed in connection with the above Deed of Trust, recorded June 30, 2020 as [Reception No. 937624](#) .
8. Release by the Public Trustee of the Deed of Trust from RG Lakota Holdings, LLC for the use of Timberline Bank to secure \$150,000.00, recorded October 14, 2020 as [Reception No. 943654](#) .
Assignment of Rents, filed in connection with the above Deed of Trust, recorded October 14, 2020 as [Reception No. 943655](#) .
9. The Company requires from RG Lakota II, LLC for its review the following:
 - a) Copy of the Operating Agreement and the regulations of the limited liability company and any amendments thereof
 - b) Execution and recordation of Statement of Authority
10. Duly authorized and executed Deed from , to To Be Determined, to be executed and recorded at closing.

NOTICE: Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, manufacture or sale of marijuana, the Company is not able to close or insure any transaction involving Land that is associated with these activities.

NOTE: A 24 month Chain of title has been completed and we find the following:

Bargain and Sale Deed recorded May 20, 2021 as [Reception No. 956668](#) .

NOTE: Exception No. 1-4 will not appear on the Owners Policy, Exception No. 5 will be removed from the policy provided the company conducts the closing.



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B - SECTION I REQUIREMENTS FOR COVERAGE

NOTE: Exception No. 6 under Schedule B, Section II of this commitment will be amended in the policy or policies to be issued pursuant hereto, to read "Taxes and Assessments for the year 2022 and subsequent years, a lien, not yet due or payable".

NOTE: This TBD Commitment is for INFORMATIONAL PURPOSES ONLY

END OF SCHEDULE B – SECTION I



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B – SECTION II EXCEPTIONS FROM COVERAGE

Schedule B of the Policy or Policies to be issued will contain Exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

1. Rights or claims of parties in possession not shown by the Public Records.
2. Easements, or claims of easements, not shown by the Public Records.
3. Any encroachment, encumbrance, violation, variation or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land.
4. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown in the Public Records.
5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the Effective Date, but prior to the date that the proposed insured acquires record title, for value, of the estate or interest or mortgage thereon covered by this Commitment.
6. Taxes or special assessments which are not shown as existing liens by the public records.
7. Water rights, claims of title to water, whether or not these matters are shown by the Public Records
8. Rights of the proprietor of a vein or lode to extract and remove his ore therefrom, should the same be found to penetrate or intersect the premises hereby granted and a right of way for ditches or canals as constructed by the authority of the United States Patent recorded October 24, 1895 in Book 12 at Page 384 as [Reception No. 18783](#) .
9. Right of way for ditches or canals constructed by the authority of the United States, as reserved in United States Patent October 24, 1895 in Book 12 at Page 384 as [Reception No. 18783](#) .
10. Any and all Placer and Lode Mining Claims, and any and all assignments or record, or otherwise, thereof, or interest therein.
11. Right of way recorded March 22, 1934 in Book 174 at page 555 as [Reception No. 117059](#) .
12. Reservations of an undivided one-half (1/2) percent interest in all oil, gas and other minerals in, on or under said lands, together with the right to prospect for and remove the same, as reserved by Brown Land and Cattle Company, Inc. in Warranty Deed recorded August 15, 1986 in Book 693 at Page 460 as [Reception No. 373515](#) , and any and all assignment of record, or otherwise, thereof, or interests therein.
13. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-7 recorded June 16, 1999 in Book 1135 at page 481 as [Reception No. 547370](#) .
14. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-8 recorded June 16, 1999 in Book 1135 at page 484 as [Reception No. 547371](#) .
15. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-9 recorded June 16, 1999 in Book 1135 at page 489 as [Reception No. 547372](#) .



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

16. Terms, conditions, provisions and obligations contained in Annexation and Development Agreement recorded June 16, 1999 in Book 1135 at Page 520 as [Reception No. 547373](#) , Fifth Amendment recorded May 2, 2005 in Book 1683 at Page 556 as [Reception No. 673289](#) .
17. Easements, rights of way and all other matters shown on the Plat of Faas Annexation, recorded June 16, 1999 as [Reception No. 547374](#) .
18. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 99-10 recorded June 16, 1999 in Book 1135 at Page 548 as [Reception No. 547375](#) .
19. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2002-8 recorded July 1, 2002 in Book 1366 at Page 337 as [Reception No. 606212](#) .
20. Terms, conditions, provisions and obligations contained in Restrictive Covenants and reservations of easements as disclosed in Special Warranty Deed recorded July 1, 2002 in Book 1366 at Page 353 as [Reception No. 606214](#) .
21. Easements, rights of way and all other matters shown on the Plat of Eagles Ridge Ranch Subdivision Exclusion/Exemption Plat recorded July 17, 2002 as [Reception No. 607173](#) .
22. Terms, conditions, provisions and obligations contained in Easement Agreement recorded July 30, 2002 in Book 1373 at Page 679 as [Reception No. 607900](#) .
23. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2002-18 recorded January 8, 2003 in Book 1424 at Page 970 as [Reception No. 618284](#) .
24. Terms, conditions, provisions and obligations contained in Easement Agreement (Lower Eagle Way) recorded January 8, 2003 in Book 1425 at Page 150 as [Reception No. 618289](#) , Assignment of Easement recorded January 8, 2003 in Book 1425 at Page 188 as [Reception No. 618294](#) .
25. Terms, conditions, provisions and obligations contained in Water Tank and Water Line Easement Agreement recorded January 8, 2003 in Book 1425 at Page 155 as [Reception No. 618290](#) , Assignment of Easement recorded January 8, 2003 in Book 1425 at Page 189 as [Reception No. 618295](#) .
26. Terms, conditions, provisions and obligations contained in Blanket Easement Agreement – Utilities and Drainage recorded January 8, 2003 in Book 1425 at page 162 as [Reception No. 618291](#) , Assignment of Easement recorded January 8, 2003 in Book 1425 at Page 190 as [Reception No. 618296](#) .
27. Terms, conditions, provisions and obligations contained in Emergency Access Easement Agreement recorded January 8, 2003 in Book 1425 at Page 170 as [Reception No. 618292](#) .
28. Terms, conditions, provisions and obligations contained in Water Storage Tank Agreement recorded January 8, 2003 in Book 1425 at Page 238 as [Reception No. 618303](#) .
29. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2003-2 recorded July 18, 2003 in Book 1494 at Page 621 as [Reception No. 632117](#) .
30. Easements, rights of way and all other matters shown on the Amended and Restated Exclusion/Exemption Map of Lakota Canyon Ranch (Formerly Eagle Ridge Ranch), recorded July 18, 2003 as [Reception No. 632118](#) .



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

31. Terms, conditions, provisions and obligations contained in Reservation of easements as described in Special Warranty Deed recorded July 23, 2003 in Book 1496 at Page 350 as [Reception No. 632375](#) .
32. Terms, conditions, provisions and obligations contained in Bylaws of Lakota Canyon Ranch Master Association, Inc., recorded December 11, 2003 in Book 1545 at Page 939 as [Reception No. 642713](#) .
33. Terms, conditions, provisions and obligations contained in Amendment to Water Lease recorded May 6, 2004 in Book 1585 at Page 91 as [Reception No. 651587](#) . Insofar as the same may affect subject property.
34. First Amended and Restated Master Declaration of Protective Covenants, Conditions and Restrictions for Lakota Canyon Ranch recorded October 19, 2004 in book 1632 at Page 9 as [Reception No. 661954](#) , First Supplement to First Amended and Restated Mater Declaration, recorded December 23, 2004 in Book 650 at Page 645 as [Reception No. 665845](#) , Second Supplement recorded August 10, 2005 in Book 1715 at Page 459 as [Reception No. 679902](#) , Amendment to the First and Second Supplements recorded February 8, 2006 in book 1770 at Page 826 as [Reception No. 691983](#) , Third Supplement recorded October 19, 2006 in Book 1854 at Page 684 as [Reception No. 709285](#) , Amendment to the Third Supplement recorded December 28, 2007 as [Reception No. 740134](#) , Fourth Supplement recorded February 4, 2008 as [Reception No. 742261](#) .
35. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2004-8 recorded October 19, 2004 in Book 1632 at Page 118 as [Reception No. 661956](#) .
36. Easements, rights of way and all other matters shown on the Second Amended and Restated Subdivision Exclusion/Exemption Map of Lakota Canyon Ranch (formerly Eagles Ridge Ranch) recorded October 19, 2006 as [Reception No. 709280](#) .
37. Terms, conditions, provisions and obligations contained in Third Amendment to Subdivision Improvements Agreement for Lakota Canyon Ranch, Filings 1 and 2, recorded March 26, 2007 in Book 1906 at Page 9 as [Reception No. 719590](#) .
38. Terms, conditions, provisions and obligations contained in Release from Golf Course Easement Agreement recorded July 27, 2007 in Book 1955 at Page 272 as [Reception No. 729171](#) .
39. Terms, conditions, provisions and obligations contained in Agreement recorded December 16, 2008 as [Reception No. 760175](#) .
40. Terms, conditions, provisions and obligations contained in 2013 Amendment to Development Agreements for Lakota Canyon Ranch PUD, recorded March 29, 2013 as [Reception No. 833371](#) .
41. Terms, conditions, provisions and obligations contained in Notice for Special Declarant Rights Transfer recorded January 20, 2014 as [Reception No. 845410](#) .

END OF SCHEDULE B – SECTION II



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

Issued By
Fidelity National Title Insurance Company

Fidelity National Title Insurance Company, a California corporation ("Company"), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the Requirements; all subject to the provisions of Schedules A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company.

All liability and obligation under this Commitment shall cease and terminate 180 days after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue the policy or policies is not the fault of the Company.

The Company will provide a sample of the policy form upon request.

IN WITNESS WHEREOF, Fidelity National Title Insurance Company has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A.

Aspen Title & Escrow
449 East Hopkins Avenue
Aspen, CO 81611
T: (970) 925-1177
F: (888) 885-0805
License #:694340

Countersigned :

Susan Sarver, License #: 271422
Authorized Signatory

Fidelity National Title Insurance Company

By:
Michael J. Nolan
President

ATTEST:
Marjorie Nemzura
Secretary





FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

Issued By
Fidelity National Title Insurance Company

CONDITIONS

1. The term mortgage, when used herein, shall include deed of trust, trust deed, or other security instrument.
2. If the proposed Insured has or acquired actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions.
3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and Conditions and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.
4. This Commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.
5. **ARBITRATION**
The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is \$2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at <http://www.alta.org/arbitration>.



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE A

Name and Address of Title Insurance Company:

Aspen Title & Escrow, LLC,
449 E, Hopkins Ave., Aspen, CO 81611

Office File No.: Pre-2022-913-TBD

Loan No.:

1. Effective Date: 04/22/2022 at 8:00 AM

2. Policy or Policies to be issued:

a) ALTA Homeowner's Policy

Policy Amount: \$ TBD

PROPOSED INSURED: To Be Determined

3. The estate or interest in the Land described or referred to in this Commitment and covered herein is: Fee Simple

4. Title to the Fee Simple estate or interest in said Land is at the effective date hereof vested in:

[RG Lakota II, LLC, a Colorado limited liability company](#)

5. The Land referred to in this Commitment is described as follows:

The land is described as set forth in Exhibit A attached hereto and made a part hereof.

PREMIUMS:

TBD Title Commitment Fee:

\$300.00





FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

EXHIBIT A – PROPERTY DESCRIPTION

Office File No.: Pre-2022-913-TBD

Situated in the County of Garfield and State of Colorado described as follows:

(PARCEL 5:)

Future Development Parcel,
LAKOTA CANYON RANCH FILING 3, PHASE 1, according to the Plat thereof recorded December 23, 2004 as [Reception No. 665843](#).



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B - SECTION I REQUIREMENTS FOR COVERAGE

The following Requirements are to be complied with:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.
5. A satisfactory owner's affidavit must be completed, executed and returned to the Company.
6. Payment of any and all assessments now due and payable.
7. Release by the Public Trustee of the Deed of Trust from RG Lakota Holdings, LLC for the use of Timberline Bank to secure \$900,000.00, recorded June 30, 2020 as [Reception No. 937623](#) .

Assignment of Rents, filed in connection with the above Deed of Trust, recorded June 30, 2020 as [Reception No. 937624](#) .
8. Release by the Public Trustee of the Deed of Trust from RG Lakota Holdings, LLC for the use of Timberline Bank to secure \$150,000.00, recorded October 14, 2020 as [Reception No. 943654](#) .

Assignment of Rents, filed in connection with the above Deed of Trust, recorded October 14, 2020 as [Reception No. 943655](#) .
9. The Company requires from RG Lakota II, LLC for its review the following:
 - a) Copy of the Operating Agreement and the regulations of the limited liability company and any amendments thereof
 - b) Execution and recordation of Statement of Authority
10. Duly authorized and executed Deed from RG Lakota II, LLC, a Colorado limited liability company, to To Be Determined, to be executed and recorded at closing.

NOTICE: Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, manufacture or sale of marijuana, the Company is not able to close or insure any transaction involving Land that is associated with these activities.

NOTE: A 24 month Chain of title has been completed and we find the following: Bargain and Sale Deed recorded May 20, 2021 as [Reception No. 956668](#) .

NOTE: Exception No. 1-4 will not appear on the Owners Policy, Exception No. 5 will be removed from the policy provided the company conducts the closing.



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B - SECTION I REQUIREMENTS FOR COVERAGE

NOTE: Exception No. 6 under Schedule B, Section II of this commitment will be amended in the policy of policies to be issued pursuant hereto, to read "Taxes and Assessments for the year 2022 and subsequent years, a lien, not yet due or payable".

NOTE: This TBD Commitment is for INFORMATIONAL PURPOSES ONLY

END OF SCHEDULE B – SECTION I



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B – SECTION II EXCEPTIONS FROM COVERAGE

Schedule B of the Policy or Policies to be issued will contain Exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

1. Rights or claims of parties in possession not shown by the Public Records.
2. Any encroachment, encumbrance, violation, variation or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land.
3. Easements, or claims of easements, not shown by the Public Records.
4. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown in the Public Records.
5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the Effective Date, but prior to the date that the proposed insured acquires record title, for value, of the estate or interest or mortgage thereon covered by this Commitment.
6. Taxes or special assessments which are not shown as existing liens by the public records.
7. Water rights, claims of title to water, whether or not these matters are shown by the Public Records.
8. Rights of the proprietor of a vein or lode to extract and remove his ore therefrom, should the same be found to penetrate or intersect the premises hereby granted and a right of way for ditches or canals as constructed by the authority of the United States Patent recorded October 24, 1895 in Book 12 at Page 384 as [Reception No. 18783](#) .
9. Right of way for ditches or canals constructed by the authority of the United States, as reserved in United States Patent October 24, 1895 in Book 12 at Page 384 as [Reception No. 18783](#) .
10. Any and all Placer and Lode Mining Claims, and any and all assignments or record, or otherwise, thereof, or interest therein.
11. Terms, conditions, provisions and obligations contained in Easement and right of way for the Prendergrast Ditch by and rights-of-says for ditch laterals as disclosed by Warranty Deed recorded January 29, 1915 in Book 93 at page 559 as [Reception No. 51104](#) .
12. Terms, conditions, provisions and obligations contained in Easement and right of way for the Prendergrast Enlargement and Extension of the Spion-Kop Ditches as disclosed by Quit Claim Deed recorded May 27, 1926 in Book 133 at page 473 as Reception No. 95133.
13. Right of way recorded March 22, 1934 in Book 174 at page 555 as [Reception No. 117059](#) .
14. Reservations of an undivided one-half (1/2) percent interest in all oil, gas and other minerals in, on or under said lands, together with the right to prospect for and remove the same, as reserved by Brown Land and Cattle Company, Inc. in Warranty Deed recorded August 15, 1986 in Book 693 at Page 460 as [Reception No. 373515](#) , and any and all assignment of record, or otherwise, thereof, or interests therein.



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

15. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-7 recorded June 16, 1999 in Book 1135 at page 481 as [Reception No. 547370](#) .
16. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-8 recorded June 16, 1999 in Book 1135 at page 484 as [Reception No. 547371](#) .
17. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-9 recorded June 16, 1999 in Book 1135 at page 489 as [Reception No. 547372](#) .
18. Terms, conditions, provisions and obligations contained in Annexation and Development Agreement recorded June 16, 1999 in Book 1135 at Page 520 as [Reception No. 547373](#) , Fifth Amendment recorded May 2, 2005 in Book 1683 at Page 556 as [Reception No. 673289](#) .
19. Easements, rights of way and all other matters shown on the Plat of Faas Annexation, recorded June 16, 1999 as [Reception No. 547374](#) .
20. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 99-10 recorded June 16, 1999 in Book 1135 at Page 548 as [Reception No. 547375](#) .
21. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2002-8 recorded July 1, 2002 in Book 1366 at Page 337 as [Reception No. 606212](#) .
22. Terms, conditions, provisions and obligations contained in Restrictive Covenants and reservations of easements as disclosed in Special Warranty Deed recorded July 1, 2002 in Book 1366 at Page 353 as [Reception No. 606214](#) .
23. Easements, rights of way and all other matters shown on the Plat of Eagles Ridge Ranch Subdivision Exclusion/Exemption Plat recorded July 17, 2002 as [Reception No. 607173](#) .
24. Terms, conditions, provisions and obligations contained in Easement Agreement recorded July 30, 2002 in Book 1373 at Page 679 as [Reception No. 607900](#) .
25. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2002-18 recorded January 8, 2003 in Book 1424 at Page 970 as [Reception No. 618284](#) .
26. Terms, conditions, provisions and obligations contained in Easement Agreement (Lower Eagle Way) recorded January 8, 2003 in Book 1425 at Page 150 as [Reception No. 618289](#) , Assignment of Easement recorded January 8, 2003 in Book 1425 at Page 188 as [Reception No. 618294](#) .
27. Terms, conditions, provisions and obligations contained in Water Tank and Water Line Easement Agreement recorded January 8, 2003 in Book 1425 at Page 155 as [Reception No. 618290](#) , Assignment of Easement recorded January 8, 2003 in Book 1425 at Page 189 as [Reception No. 618295](#) .
28. Terms, conditions, provisions and obligations contained in Blanket Easement Agreement – Utilities and Drainage recorded January 8, 2003 in Book 1425 at page 162 as [Reception No. 618291](#) , Assignment of Easement recorded January 8, 2003 in Book 1425 at Page 190 as [Reception No. 618296](#) .
29. Terms, conditions, provisions and obligations contained in Golf Course Easement Agreement recorded January 8, 2003 in book 1425 at Page 178 as [Reception No. 618293](#) , Addendum No. 1 recorded July 23, 2003 in Book 1496 at Page 344 as [Reception No. 632372](#) .



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

30. Terms, conditions, provisions and obligations contained in Water Storage Tank Agreement recorded January 8, 2003 in Book 1425 at Page 238 as [Reception No. 618303](#) .
31. Easements, rights of way and all other matters shown on the First Amended and Restated Final Subdivision Plat of Lakota Canyon Ranch, Filing No. 1 recorded July 18, 2003 as [Reception No. 632116](#) .
32. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2003-2 recorded July 18, 2003 in Book 1494 at Page 621 as [Reception No. 632117](#) .
33. Easements, rights of way and all other matters shown on the Amended and Restated Exclusion/Exemption Map of Lakota Canyon Ranch (Formerly Eagle Ridge Ranch), recorded July 18, 2003 as [Reception No. 632118](#) .
34. Terms, conditions, provisions and obligations contained in Reservation of easements as described in Special Warranty Deed recorded July 23, 2003 in Book 1496 at Page 350 as [Reception No. 632375](#) .
35. Terms, conditions, provisions and obligations contained in Bylaws of Lakota Canyon Ranch Master Association, Inc., recorded December 11, 2003 in Book 1545 at Page 939 as [Reception No. 642713](#) .
36. Terms, conditions, provisions and obligations contained in Amendment to Water Lease recorded May 6, 2004 in Book 1585 at Page 91 as [Reception No. 651587](#) .
37. First Amended and Restated Master Declaration of Protective Covenants, Conditions and Restrictions for Lakota Canyon Ranch recorded October 19, 2004 in book 1632 at Page 9 as [Reception No. 661954](#) , First Supplement to First Amended and Restated Mater Declaration, recorded December 23, 2004 in Book 650 at Page 645 as [Reception No. 665845](#) , Second Supplement recorded August 10, 2005 in Book 1715 at Page 459 as [Reception No. 679902](#) , Amendment to the First and Second Supplements recorded February 8, 2006 in book 1770 at Page 826 as [Reception No. 691983](#) , Third Supplement recorded October 19, 2006 in Book 1854 at Page 684 as [Reception No. 709285](#) , Amendment to the Third Supplement recorded December 28, 2007 as [Reception No. 740134](#) , Fourth Supplement recorded February 4, 2008 as [Reception No. 742261](#) .
38. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2004-8 recorded October 19, 2004 in Book 1632 at Page 118 as [Reception No. 661956](#) .
39. Terms, conditions, provisions and obligations contained in Agreement for Temporary Road Easement recorded October 19, 2004 in Book 1632 at Page 156 as [Reception No. 661960](#) .
40. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2004-20 recorded December 23, 2004 in Book 1650 at Page 617 as [Reception No. 665842](#) .
41. Easements, rights of way and all other matters shown on the Second Amended and Restated Subdivision Exclusion/Exemption Map of Lakota Canyon Ranch (formerly Eagles Ridge Ranch) recorded October 19, 2006 as [Reception No. 709280](#) .
42. Easements, rights of way and all other matters shown on the Final Plat of Lakota Canyon Ranch Filing 5 (A resubdivision of Parcel C3-1 as shown on the Second Amended and Restated Subdivision Exclusion/Exemption Map of Lakota Canyon Ranch, formerly Eagles Ridge Ranch) recorded October 19, 2006 as [Reception No. 709283](#) .
43. Terms, conditions, provisions and obligations contained in Third Amendment to Subdivision Improvements Agreement for Lakota Canyon Ranch, Filings 1 and 2, recorded March 26, 2007 in Book 1906 at Page 9 as [Reception No. 719590](#) .



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

44. Easements, rights of way and all other matters shown on Detailed Final Plat Block B-8, Whitehorse Village at Lakota Canyon Ranch, Phase 1, recorded July 10, 2007 as [Reception No. 727620](#) , and the Amended Final Block Plat, Block B-8 and Future Development Parcel 3, Whitehorse Village at Lakota Canyon Ranch, Phase 1, recorded July 10, 2007 as [Reception No. 727621](#) .
45. Terms, conditions, provisions and obligations contained in Release from Golf Course Easement Agreement recorded July 27, 2007 in Book 1955 at Page 272 as [Reception No. 729171](#) .
46. Terms, conditions, provisions and obligations contained in First Amendment to Subdivision Improvements Agreement for Whitehorse Village Phase 1, recorded April 9, 2008 as [Reception No. 746213](#) .
47. Terms, conditions, provisions and obligations contained in Agreement recorded December 16, 2008 as [Reception No. 760175](#) .
48. Terms, conditions, provisions and obligations contained in 2013 Amendment to Development Agreements for Lakota Canyon Ranch PUD, recorded March 29, 2013 as [Reception No. 833371](#) .
49. Terms, conditions, provisions and obligations contained in Notice for Special Declarant Rights Transfer recorded January 20, 2014 as [Reception No. 845410](#) .

END OF SCHEDULE B – SECTION II



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

Issued By
Fidelity National Title Insurance Company

Fidelity National Title Insurance Company, a California corporation ("Company"), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the Requirements; all subject to the provisions of Schedules A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company.

All liability and obligation under this Commitment shall cease and terminate 180 days after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue the policy or policies is not the fault of the Company.

The Company will provide a sample of the policy form upon request.

IN WITNESS WHEREOF, Fidelity National Title Insurance Company has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A.

Aspen Title & Escrow
449 East Hopkins Avenue
Aspen, CO 81611
T: (970) 925-1177
F: (888) 885-0805
License #:694340

Countersigned :

Susan Sarver, License #: 271422
Authorized Signatory

Fidelity National Title Insurance Company

By:
Michael J. Nolan
President

ATTEST:
Marjorie Nemzura
Secretary





FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

Issued By
Fidelity National Title Insurance Company

CONDITIONS

1. The term mortgage, when used herein, shall include deed of trust, trust deed, or other security instrument.
2. If the proposed Insured has or acquired actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions.
3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and Conditions and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.
4. This Commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.
5. **ARBITRATION**
The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is \$2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at <http://www.alta.org/arbitration>.



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE A

Name and Address of Title Insurance Company:

Aspen Title & Escrow, LLC,
449 E. Hopkins Ave., Aspen, CO 81611

Office File No.: Pre-2022-914-TBD

1. Effective Date: 04/22/2022 at 8:00 AM

2. Policy or Policies to be issued:

a) ALTA Homeowner's Policy

Policy Amount: \$ TBD

PROPOSED INSURED: **To Be Determined**

3. The estate or interest in the Land described or referred to in this Commitment and covered herein is: Fee Simple

4. Title to the fee simple estate or interest in said Land is at the effective date hereof vested in:

[RG Lakota II, LLC, a Colorado limited liability company](#)

5. The Land referred to in this Commitment is described as follows:

The land is described as set forth in Exhibit A attached hereto and made a part hereof.

PREMIUMS:

TBD Title Commitment Fee: \$300.00





FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

EXHIBIT A – PROPERTY DESCRIPTION

Office File No.: Pre-2022-914-TBD

Situated in the County of Garfield and State of Colorado described as follows:

(PARCEL 2)

Future Development Parce 3,
FINAL BLOCK PLAT, WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH, according to the Plat thereof recorded
October 19, 2004 as [Reception No. 661957](#).



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B - SECTION I REQUIREMENTS FOR COVERAGE

The following Requirements are to be complied with:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.
5. A satisfactory owner's affidavit must be completed, executed and returned to the Company.
6. Payment of any and all assessments now due and payable.
7. Release by the Public Trustee of the Deed of Trust from RG Lakota Holdings, LLC for the use of Timberline Bank to secure \$900,000.00, recorded June 30, 2020 as [Reception No. 937623](#) .

Assignment of Rents, filed in connection with the above Deed of Trust, recorded June 30, 2020 as [Reception No. 937624](#) .
8. Release by the Public Trustee of the Deed of Trust from RG Lakota Holdings, LLC for the use of Timberline Bank to secure \$150,000.00, recorded October 14, 2020 as [Reception No. 943654](#) .

Assignment of Rents, filed in connection with the above Deed of Trust, recorded October 14, 2020 as [Reception No. 943655](#) .
9. The Company requires from RG Lakota II, LLC for its review the following:
 - a) Copy of the Operating Agreement and the regulations of the limited liability company and any amendments thereof
 - b) Execution and recordation of Statement of Authority
10. Duly authorized and executed Deed from RG Lakota II, LLC, a Colorado limited liability company, to To Be Determined, to be executed and recorded at closing.

NOTICE: Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, manufacture or sale of marijuana, the Company is not able to close or insure any transaction involving Land that is associated with these activities.

NOTE: A 24 month Chain of title has been completed and we find the following:

Bargain and Sale Deed recorded May 20, 2021 as [Reception No. 956668](#) .

NOTE: Exception No. 1-4 will not appear on the Owners Policy, Exception No. 5 will be removed from the policy

ALTA Commitment (6/17/06)
Colorado



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B - SECTION I REQUIREMENTS FOR COVERAGE

provided the company conducts the closing.

NOTE: Exception No. 6 under Schedule B, Section II of this commitment will be amended in the policy or policies to be issued pursuant hereto, to read "Taxes and Assessments for the year 2022 and subsequent years, a lien, not yet due or payable".

NOTE: This TBD Commitment is for INFORMATIONAL PURPOSES ONLY

END OF SCHEDULE B – SECTION I



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

SCHEDULE B – SECTION II EXCEPTIONS FROM COVERAGE

Schedule B of the Policy or Policies to be issued will contain Exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

1. Rights or claims of parties in possession not shown by the Public Records.
2. Any encroachment, encumbrance, violation, variation or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land.
3. Easements, or claims of easements, not shown by the Public Records.
4. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown in the Public Records.
5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the Effective Date, but prior to the date that the proposed insured acquires record title, for value, of the estate or interest or mortgage thereon covered by this Commitment.
6. Taxes or special assessments which are not shown as existing liens by the public records.
7. Water rights, claims of title to water, whether or not these matters are shown by the Public Records.
8. Rights of the proprietor of a vein or lode to extract and remove his ore therefrom, should the same be found to penetrate or intersect the premises hereby granted and a right of way for ditches or canals as constructed by the authority of the United States Patent recorded October 24, 1895 in Book 12 at Page 384 as [Reception No. 18783](#) .
9. Right of way for ditches or canals constructed by the authority of the United States, as reserved in United States Patent October 24, 1895 in Book 12 at Page 384 as [Reception No. 18783](#) .
10. Any and all Placer and Lode Mining Claims, and any and all assignments or record, or otherwise, thereof, or interest therein.
11. Terms, conditions, provisions and obligations contained in Easement and right of way for the Prendergrast Ditch by and rights-of-says for ditch laterals as disclosed by Warranty Deed recorded January 29, 1915 in Book 93 at page 559 as [Reception No. 51104](#) .
12. Terms, conditions, provisions and obligations contained in Easement and right of way for the Prendergrast Enlargement and Extension of the Spion-Kop Ditches as disclosed by Quit Claim Deed recorded May 27, 1926 in Book 133 at page 473 as Reception No. 95133.
13. Right of way recorded March 22, 1934 in Book 174 at page 555 as [Reception No. 117059](#) .
14. Reservations of an undivided one-half (1/2) percent interest in all oil, gas and other minerals in, on or under said lands, together with the right to prospect for and remove the same, as reserved by Brown Land and Cattle Company, Inc. in Warranty Deed recorded August 15, 1986 in Book 693 at Page 460 as [Reception No. 373515](#) , and any and all assignment of record, or otherwise, thereof, or interests therein.



FIDELITY NATIONAL TITLE INSURANCE COMPANY

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15. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-7 recorded June 16, 1999 in Book 1135 at page 481 as [Reception No. 547370](#) .
16. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-8 recorded June 16, 1999 in Book 1135 at page 484 as [Reception No. 547371](#) .
17. Terms, conditions, provisions and obligations contained in Town of New Castle Resolution No. TC 99-9 recorded June 16, 1999 in Book 1135 at page 489 as [Reception No. 547372](#) .
18. Terms, conditions, provisions and obligations contained in Annexation and Development Agreement recorded June 16, 1999 in Book 1135 at Page 520 as [Reception No. 547373](#) , Fifth Amendment recorded May 2, 2005 in Book 1683 at Page 556 as [Reception No. 673289](#) .
19. Easements, rights of way and all other matters shown on the Plat of Faas Annexation, recorded June 16, 1999 as [Reception No. 547374](#) .
20. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 99-10 recorded June 16, 1999 in Book 1135 at Page 548 as [Reception No. 547375](#) .
21. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2002-8 recorded July 1, 2002 in Book 1366 at Page 337 as [Reception No. 606212](#) .
22. Terms, conditions, provisions and obligations contained in Restrictive Covenants and reservations of easements as disclosed in Special Warranty Deed recorded July 1, 2002 in Book 1366 at Page 353 as [Reception No. 606214](#) .
23. Easements, rights of way and all other matters shown on the Plat of Eagles Ridge Ranch Subdivision Exclusion/Exemption Plat recorded July 17, 2002 as [Reception No. 607173](#) .
24. Terms, conditions, provisions and obligations contained in Easement Agreement recorded July 30, 2002 in Book 1373 at Page 679 as [Reception No. 607900](#) .
25. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2002-18 recorded January 8, 2003 in Book 1424 at Page 970 as [Reception No. 618284](#) .
26. Terms, conditions, provisions and obligations contained in Easement Agreement (Lower Eagle Way) recorded January 8, 2003 in Book 1425 at Page 150 as [Reception No. 618289](#) , Assignment of Easement recorded January 8, 2003 in Book 1425 at Page 188 as [Reception No. 618294](#) .
27. Terms, conditions, provisions and obligations contained in Golf Course Easement Agreement recorded January 8, 2003 in book 1425 at Page 178 as [Reception No. 618293](#) , Addendum No. 1 recorded July 23, 2003 in Book 1496 at Page 344 as [Reception No. 632372](#) .
28. Terms, conditions, provisions and obligations contained in Water Storage Tank Agreement recorded January 8, 2003 in Book 1425 at Page 238 as [Reception No. 618303](#) .
29. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2003-2 recorded July 18, 2003 in Book 1494 at Page 621 as [Reception No. 632117](#) .



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

30. Easements, rights of way and all other matters shown on the Amended and Restated Exclusion/Exemption Map of Lakota Canyon Ranch (Formerly Eagle Ridge Ranch), recorded July 18, 2003 as [Reception No. 632118](#) .
31. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2003-3 recorded July 23, 2003 in Book 1496 at Page 290 as [Reception No. 632365](#) .
32. Terms, conditions, provisions and obligations contained in Ditch Easement Relocation Agreement recorded July 23, 2003 in Book 1496 at Page 313 as [Reception No. 632366](#) .
33. Terms, conditions, provisions and obligations contained in Bylaws of Lakota Canyon Ranch Master Association, Inc., recorded December 11, 2003 in Book 1545 at Page 939 as [Reception No. 642713](#) .
34. Terms, conditions, provisions and obligations contained in Amendment to Water Lease recorded May 6, 2004 in Book 1585 at Page 91 as [Reception No. 651587](#) . Insofar as the same may affect subject property.
35. First Amended and Restated Master Declaration of Protective Covenants, Conditions and Restrictions for Lakota Canyon Ranch recorded October 19, 2004 in book 1632 at Page 9 as [Reception No. 661954](#) , First Supplement to First Amended and Restated Mater Declaration, recorded December 23, 2004 in Book 650 at Page 645 as [Reception No. 665845](#) , Second Supplement recorded August 10, 2005 in Book 1715 at Page 459 as [Reception No. 679902](#) , Amendment to the First and Second Supplements recorded February 8, 2006 in book 1770 at Page 826 as [Reception No. 691983](#) , Third Supplement recorded October 19, 2006 in Book 1854 at Page 684 as [Reception No. 709285](#) , Amendment to the Third Supplement recorded December 28, 2007 as [Reception No. 740134](#) , Fourth Supplement recorded February 4, 2008 as [Reception No. 742261](#) .
36. Easements, rights of way and all other matters shown on the Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 (A resubdivision of Blocks A, B-1 and B-2 as shown on the First Amended and Restated Final Subdivision Plat of Lakota Canyon Ranch, Filing 1) recorded October 19, 2004 as [Reception No. 661957](#) .
37. Whitehorse Village Declaration, Lakota Canyon Ranch, recorded October 19, 2004 in Book 1632 at Page 152 as [Reception No. 661959](#) .
38. Terms, conditions, provisions and obligations contained in Agreement for Temporary Road Easement recorded October 19, 2004 in Book 1632 at Page 156 as [Reception No. 661960](#) . Insofar as the same may affect subject property.
39. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2004-20 recorded December 23, 2004 in Book 1650 at Page 617 as [Reception No. 665842](#) .
40. Easements, rights of way and all other matters shown on the Second Amended and Restated Subdivision Exclusion/Exemption Map of Lakota Canyon Ranch (formerly Eagles Ridge Ranch) recorded October 19, 2006 as [Reception No. 709280](#) .
41. Easements, rights of way and all other matters shown on the Final Plat of Lakota Canyon Ranch Filing 5 (A resubdivision of Parcel C3-1 as shown on the Second Amended and Restated Subdivision Exclusion/Exemption Map of Lakota Canyon Ranch, formerly Eagles Ridge Ranch) recorded October 19, 2006 as [Reception No. 709283](#) .
42. Terms, conditions, provisions and obligations contained in Third Amendment to Subdivision Improvements Agreement for Lakota Canyon Ranch, Filings 1 and 2, recorded March 26, 2007 in Book 1906 at Page 9 as [Reception No. 719590](#) .
43. Terms, conditions, provisions and obligations contained in Release from Golf Course Easement Agreement recorded July 27, 2007 in Book 1955 at Page 272 as [Reception No. 729171](#) .



FIDELITY NATIONAL TITLE INSURANCE COMPANY

COMMITMENT FOR TITLE INSURANCE

44. Terms, conditions, provisions and obligations contained in First Amendment to Subdivision Improvements Agreement for Whitehorse Village Phase 1, recorded April 9, 2008 as [Reception No. 746213](#) .
45. Terms, conditions, provisions and obligations contained in Town of New Castle Ordinance No. 2008-13 recorded December 10, 2008 as [Reception No. 759940](#) .
46. Terms, conditions, provisions and obligations contained in Agreement recorded December 16, 2008 as [Reception No. 760175](#) .
47. Terms, conditions, provisions and obligations contained in 2013 Amendment to Development Agreements for Lakota Canyon Ranch PUD, recorded March 29, 2013 as [Reception No. 833371](#) .
48. Terms, conditions, provisions and obligations contained in Notice for Special Declarant Rights Transfer recorded January 20, 2014 as [Reception No. 845410](#) .

END OF SCHEDULE B – SECTION II

Public Works Department
(970) 984-0669 ex200
jwenzel@newcastlecolorado.org



Town of New Castle
801 W Main Street
New Castle, CO 81647

July 22, 2022

Paul,

The Public Works Department has had the opportunity to review the Longview at Lakota Canyon Ranch Preliminary Plan and has the following comments:

Streets and sidewalks:

Streets serving single family residential lots, Drive A and Drive B, should be public and should meet minimum design standards. The street design in these locations should include parking lanes and sidewalk on both sides.

Drive C is shown as a dead-end street. The municipal code does not allow for this design standard. Dead-end streets do not efficiently and safely accommodate all modes of travel, particularly emergency vehicles, maintenance vehicles, and delivery vehicles. Dead-end streets often result in conflict between private property owners and vehicle operators, especially when vehicle operators require the use of private property to safely turn around. Drive C should be constructed as a Cul-de-sac and should include sidewalks on both sides.

Comprehensive Snow Removal Plan:

Snow storage sites should be included in the development design and also in the final plot. Snow storage sites should have a minimum functional area equaling 15 percent (15) of the paved area shall be provided contiguous to the right-of-way. These sites should be free of obstructions including fences, utility boxes, bushes and large landscape boulders. Individual snow storage areas shall not be separated by more than 300 feet.

Utilities:

All single-family lots and each townhome address shall have individual water and sewer service lines.

We request that the developer include an additional potable water service line and curb stop to supply a water sample station. The sample station will be purchased and installed by the Town. Ideally, the additional service line and curb stop should be located near the intersection of Drive F and Drive H.

Isolation valves should be installed before and after all pressure reduction valves, on the outside of the vault. This provides a safer condition for maintenance.

The General Utility Notes specify K-Copper water service lines. Pure Core, placed with a tracer wire, is a suitable alternative. The General Utility Notes also specify C900 schedule 200. Pipe manufacturers have changed the pipe class identification. All Potable water mainlines shall be C900 Class 305 DR14.

Maximum distance between manholes shall not exceed 300 feet. Manholes identified on Drive B have a distance of 800 feet.

The fire Hydrant manufacturer is not listed. Fire hydrants must be Kennedy K-81.

Open Space:

Open Spaces throughout the development should be privately maintained by an HOA.



April 1, 2022

Mr. Dave Reynolds, Town Administrator
 Town of New Castle
 P.O. Box 90
 New Castle, Colorado 81647

**RE: Longview at Lakota (Lakota Filing 7)
 Preliminary Plan Review**

Dear Dave,

The purpose of this letter serves to provide comment, concerns and questions regarding the proposed development of Longview at Lakota Preliminary Plan Application. In order to conduct this review, we are in receipt of a variety of pieces of information noted as follows:

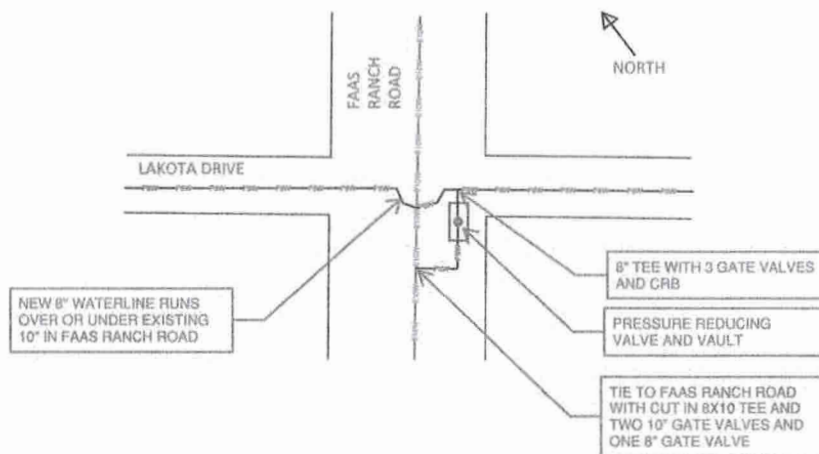
1. A 71-sheet set of drawings prepared by Connect One, Colorado River Engineering and Z Group Architects.
2. Supplemental Information packet dated March 2022 containing the following: (as reproduced from the application table of contents)

Primary Application Materials	
PG-	PG-
3 sheet set cover	73 comprehensive plan compliance narrative
4 site boundary and size	75 covenants and conditions
5 site plan	119 traffic impact study
6 zoning	254 parking study
7 open space plan	259 fiscal impact study
8 service areas and snow storage plan	263 adjacent property list
9 3d representation	265 engineering report summary
12 circulation	272 drainage report
13 landscape plan	362 water and sewer loads
16 acreage use plan	372 geotechnical report
17 preliminary plat w/ phasing	
21 survey of existing conditions	
22 civil site plan	
24 utility overview	
25 grading and drainage overview	
26 roads, traffic and signage overview	
27 road plans and profiles	
42 grading plan	
44 erosion control plan	
46 civil details	
48 unit counts plan	
49 architectural floor plans and elevations	
72 architectural character images	

Following our review of the above stated documents, we have determined that a variety of additional details will need to be provided to bring the drawings to a final plan and construction level and to be definitive on the magnitude of public improvements that will ultimately need to be secured for this project. That being said, please note the following comments:

1. Prior to approval of the final plans and construction plans, additional specificity and discussion needs to occur for the proposed phasing of this project. The purpose of this will be the reality that the water system construction for this filing is somewhat complication when evaluating the allotted tank storage requirements for both the Castle Valley Tank Zone and the Lakota Tank Zone. As proposed, the current plan is proposing to put all of Longview at Lakota into the zone controlled off the Castle Valley tank. Per prior agreements between Castle Valley Ranch, Lakota Canyon Ranch and the Faas Family, the water master plan for Lakota specified that the service and emergency storage for all of Lakota Canyon was to be provided from the 1.2-million-gallon Lakota Tank. To accomplish this, all of the water infrastructure proposed within Lakota Canyon Ranch was planned in such a fashion to be served from the Lakota Tank. As Filing 2 was originally designed, the developer proposed that the infrastructure for Filing 2 could be temporarily tied onto the Town’s 10” loop line in Castle Valley Boulevard as adequate service pressure and fire flow exists for service to that filing. With that proposal came the requirement to install the PRV vault with the Filing 2 water line and then install the PRV when a specific development plan for the multiuse area could be solidified and the connecting water line could be constructed in Lakota Drive. Subsequently, the PRV would function to provide additional fire flow volume and storage to the lower (Castle Valley Tank) zone for the commercial areas of town.

In short, Phase 2, as proposed does need to incorporate the water line construction from the current west end of Lakota Drive down to and across Faas Ranch Road. It does need to keep this area and all areas in Longview at Lakota in the Lakota Tank zone to be consistent with the master plan. Because of past soil problems, we would recommend that once across (or prior to) Faas Ranch Road, a tee be put in place and a PRV be put on line prior to tying in to the water line for Faas Ranch Road. With this, we are recommending that the Faas Ranch Road development remain on the Castle Valley zone. In this manner, the PRV proposed at the upper end of Lakota Drive would no longer be needed. The following sketch is intended to graphically depict the proposed modification to the preliminary plan water layout:



2. Specifically, although phasing lines are noted on the preliminary plat, the subsequent submittals will need to be specific as to the improvements and terminations needed for improvements from one phase to the next. Detail is necessary to assure that the improvements from one phase to the next are properly terminated and can exist in perpetuity if the subsequent phase does not progress. Likewise, drainage and erosion control best management practices (BMP's) specific to each phase of public improvements need to be provided. Finally, the elements relative the phasing construction such as topsoil storage and treatment of roadway subgrade (ie., reclamation and/or revegetation) need to be provided so as to assure that the total visual impact of the construction of the improvements can be evaluated by the Town. Likewise, timing for moving from one phase to the next needs to be provided to determine the level of permanence and costs for reclamation in the latter phases of the development can be determined.
3. The project involves extension of water lines, sewer lines and the raw water lines in public right of way. Also, excavation area in excess of 22" exceeds 1,000 sf. As such, the project is subject to the Subsurface Utility Engineering (SUE) requirements of SB 18-167. Prior to construction plans approval, the project will need to provide SUE locates and engineering in accordance to SB 18-167.
4. Note that because of SB 18-167, all utilities will need to be installed in such a fashion and to be electronically locatable. Details will need to be revised to provide instruction to the contractor that provide tracer wire, magnetic tape, etc... on all subsurface utilities.
5. Provide preliminary locations of transformers, pedestals and gas meter locations relative to providing electric, cable, telephone and gas service to the buildings. Provide this information in the context of assuring ample room remains for snow storage and is consistent with the landscape plan intent. We understand that the final design and location of these facilities are subject to the terms of the will serve letter from the utility companies, but also want to provide them direction as to where their respective facilities need to be considered for installation to avoid conflicts with other public improvements, snow storage and landscaping.
6. Assure that all water/sewer crossings can be provided with a minimum separation of 18". This also holds true for all water/storm drain crossings. Assure that water/storm drain crossings provide adequate freeze protection at each crossing.
7. Provide details identifying how new concrete improvements are to tie to existing.
8. Snow storage continues to be an issue in the Town when curb, gutter and sidewalks are constructed without an open space between the back of curb and edge of sidewalk. We would recommend that there be a 5-foot area from back of curb to sidewalk for a continuous placement of snow when plowing streets. We do not believe that the curb bump outs at intersections will provide enough area in our experience.
9. P and Z and Council will need to discuss the merits of allowing the building heights to be exceeded from the MU zoning text.
10. Given the complications that exist with the recreational "toys" and their need for storage, both P&Z and Council need to evaluate the merits of the proposal to reduce the parking from the municipal code

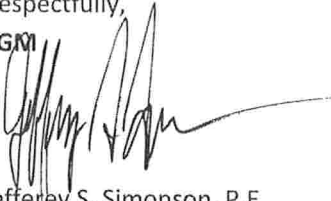
requirements to the requirements as calculated using the Urban Land Institute methods from the "Shared Parking Manual".

11. Access to Lot 25 is problematic. It appears that this lot will need to have an easement through the adjacent lot, and it also will need to provide ample room for access, maintenance and repair of the raw water pipeline being rerouted for service to the golf course. Likewise, access, maintenance, and repair of the raw water pipeline for lots 26 and 27 are problematic with only a 10-foot easement proposed.
12. On the plat, it needs to be clearly noted that, excepting Lakota Drive, all roadways within Longview at Lakota will be privately owned and maintained. Council and P & Z need to discuss the merits of this proposal in the context of future Council's being pressured to take on ownership and maintenance of the private roadways as was the case of Alder Ridge Townhomes. If concerns develop regarding this proposal, the street widths and snow storage elements will need to be re-evaluated.
13. Drainage and utility easements need to be provided along each lot line. Concern exists with the upper lots draining onto the lower lots and having enough room to move water to the streets. Are fences to be allowed? If this is so, again, significant issues exist with side lot drainage.
14. Given that this is a preliminary grading plan, we anticipate that subsequent submittals will be more detailed in assuring that the placement of pedestrian paths, drainage swales (between lots) and sidewalks can be accomplished. Based on a cursory review of the cross slopes of paths with longitudinal slopes, we do anticipate several smaller retaining walls will be necessary to accomplish the overall grading and drainage intent evaluated.
15. The pedestrian path along the south side of the property will need to be carefully detailed as the drainage paralleling that path is a main drainage corridor for this filing as well as existing development along the backside of Blackhawk Drive. Erosion control will be a concern coupled with the assertion that the drainage in this corridor will be able to accommodate the 100-year event without flooding adjacent properties.
16. Clarification will be necessary as to which areas of the roadways are to receive mountable curb, gutter and sidewalk versus vertical curb, gutter and sidewalk. For Lakota Drive, as previously mentioned, the preference is a 5' space between sidewalk and back of curb. Likewise, a vertical curb and gutter is preferred along Lakota Drive.

Although there are a variety of concerns and clarifications noted, we do not see that the issues cannot be technically resolved during final plat/plan preparation along with construction drawing preparation. We would recommend that if a recommendation of approval to approve the project is provided, it contains a condition that requires submittal of construction drawings for staff approval that address the concerns within this letter as well as other concerns from other staff members and that cost estimates are provided for the construction of the public improvements prior to recording any final plat. It should also be noted that due to the voluminous nature of the project, that ample time be planned for in the review and coordination with the developer's consultants in the preparation of the final plan and construction documents. Currently, it is our opinion that the drawings and planning are consistent with progression through preliminary plan only and do anticipate that the subsequent drawings to contain more grading detail and resolutions to those issues noted in this letter.

Upon your receipt and review, if you have any questions, please don't hesitate to call.

Respectfully,
SGM



Jefferey S. Simonson, P.E.
Town Engineer/Principal

Paul Smith

From: Orrin Moon <Orrin.Moon@Crfr.us>
Sent: Wednesday, August 17, 2022 11:17 AM
To: Paul Smith; Heather Henry
Cc: Dwayne Romero; Katie Tabor; Lauren Prentice
Subject: RE: Paul's Longview preliminary list

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Paul,

The remaining items for me on Longview preliminary List are as follows.

1. The Faas Ranch alinement with the Emergency apparatus exit of the fire station. I need to know that the striping and hold bars for the traffic light can be altered for clean and safe entrance to Castle Valley Blvd.
2. Commercial buildings may need to have fire hydrant added once plans are submitted based on construction type of building and required fire flow and hydrant spacing. Commercial Mixed occupancy buildings may need to have fire sprinklers installed based on the occupancy and building type when Plans are submitted.
3. Traffic light Preemption is still unknown for emergency apparatus.

I have not other issues with the plans as drawn that I have reviewed.

Please feel free to contact me with any questions.

Thank You,

Orrin D. Moon
Prevention Division Chief/Fire Marshal
Colorado River Fire Rescue
970-625-1243
orrin.moon@crfr.us

From: Orrin Moon
Sent: Thursday, August 4, 2022 8:38 AM
To: Paul Smith <psmith@newcastlecolorado.org>; Heather Henry <hh@connectonedesign.com>
Cc: Dwayne Romero <dromero@romero-group.com>; Katie Tabor <kt@connectonedesign.com>; Lauren Prentice <lprentice@newcastlecolorado.org>
Subject: RE: Paul's Longview preliminary list

Thanks Paul, but that only addresses part of my question.

Thank You,

Orrin D. Moon

Paul Smith

From: Chris Manera <Chris@coloradorivereng.com>
Sent: Thursday, August 4, 2022 3:27 PM
To: orrin.moon@crfr.us; Paul Smith
Cc: Dwayne Romero; Heather Henry; Katie Tabor; Scott McHale
Subject: Lakota - Longview Fire comments
Attachments: 2108-Lakota SITE PLAN-Unit Counts.pdf; 2022-8-4 Fire hydrant exhibit.pdf

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Hi Orrin,

I prepared this email to respond to the three issues we discussed today;

1- Hydrants - Attached is a drawing that more clearly shows hydrant locations with a 250-ft radius. As always, we are amenable to locating hydrants at the locations requested by CRFR. Please note that on the commercial and multifamily lots we anticipate fire suppression systems so we are providing large diameter water stubs. The parcels when constructed will have site specific site plan designs to show all details on the property including privately constructed fire suppression systems, FDC's, and additional hydrants as needed.

2- Building summary for fire flow requirements - The summary of building units is also attached, let me know if you need more breakdown of square footages of each unit. We will be working with the Town engineer at the Final Design stages of the project to model the water distribution system and ensure pipe diameters are adjusted to match the fire flows you identify. CRFR will have review opportunity again at the Final Plat and construction design drawings stage.

3- Fire station access - We can examine adjusting the entrance to the fire station used by the fire apparatus exiting the fire station and entering Castle Valley Boulevard. As you know, this intersection is proposed to be upgraded but final designs have not been prepared. Based on our discussions it appears some minor adjustments to the stop bar and turn lane would improve access. I am available to meet at your convenience to review and outline alternatives prior to the P&Z review meeting.

Regards,



Chris Manera, P.E.

Phone: 970-625-4933 ext 110

Mobile: 970-618-8135

Email: chris@coloradorivereng.com

136 East 3rd Street
Rifle, CO 81650

Paul Smith

From: Tony Pagni
Sent: Wednesday, July 20, 2022 8:13 AM
To: Paul Smith
Subject: Re: LCR Filing 8 - Preliminary Review Materials

Paul I have nothing

Tony

From: Paul Smith <psmith@newcastlecolorado.org>
Sent: Tuesday, July 19, 2022 2:04 PM
To: Dave Reynolds <dreynolds@newcastlecolorado.org>; jeffs (jeffs@sgm-inc.com) <jeffs@sgm-inc.com>; John Wenzel <jwenzel@newcastlecolorado.org>; Orrin.Moon@Crfr.us <orrin.moon@crfr.us>; Tony Pagni <apagni@newcastlecolorado.org>; David H. McConaughy <dmcconaughy@garfieldhecht.com>; Haley Carmer (hcarmer@garfieldhecht.com) <hcarmer@garfieldhecht.com>
Cc: Lauren Prentice <lprentice@newcastlecolorado.org>
Subject: RE: LCR Filing 8 - Preliminary Review Materials

I haven't heard from anybody on the Romero preliminary application, so I'm resending. The intended deadline is **July 22nd**. Let me know if that is doable.

Thanks,
Paul

From: Paul Smith
Sent: Friday, July 8, 2022 11:24 AM
To: Dave Reynolds <dreynolds@newcastlecolorado.org>; jeffs (jeffs@sgm-inc.com) <jeffs@sgm-inc.com>; John Wenzel <jwenzel@newcastlecolorado.org>; Orrin.Moon@Crfr.us; Tony Pagni <apagni@newcastlecolorado.org>; David H. McConaughy <dmcconaughy@garfieldhecht.com>; Haley Carmer (hcarmer@garfieldhecht.com) <hcarmer@garfieldhecht.com>
Cc: Paul Smith <psmith@newcastlecolorado.org>; Lauren Prentice <lprentice@newcastlecolorado.org>
Subject: LCR Filing 8 - Preliminary Review Materials

Greetings:

The link for the Filing 8 submittal materials is below. I am still waiting for one or two referral items from their team but feel the review should begin. I am asking that review comments be submitted no later than **Friday, July 22nd**. Let me know if that will be a problem. Also, let me know if you want a paper copy.

Thank you,
Paul

<https://www.dropbox.com/sh/lp0e6rmp5sp0287/AACH7wztsww34INZYr3ZcFt6a?dl=0>



COLORADO

Parks and Wildlife

Department of Natural Resources

711 Independent Avenue
Grand Junction, CO 81505

June 7, 2022

Katie Tabor
Connect One Design
Landscape Architecture | Land Planning
435 N 8th Street | Carbondale, CO 81623

RE: The Longview at Lakota Ranch

Dear Katie;

I am familiar with this site and the wildlife habitat that currently exists on the parcels. The proposed development plan for this area will have minimal impacts to wildlife since the habitat at the site has already been degraded, and is now nearly surrounded by other development. The vegetation on this particular parcel is almost exclusively dominated by non-native plants and noxious weeds, such as yellow mustard and cheat grass. Due to the relatively small size of the parcels mentioned in the proposal, I would anticipate some impact to small mammals and ground nesting birds.

The cumulative impacts to wildlife habitat in the Castle Valley / Lakota area have been occurring for many years due to other developments north of the town of New Castle. Some small wildlife movement corridors have been established in the above mentioned development areas and they do experience some wildlife use. In order to make the movement corridors more appealing for wildlife, they must be weed free, fairly undisturbed, and free of manicured lawns. If movement corridors are planned for these parcels, I would suggest making them prohibited from dog use, and to utilize native grasses, forbs and shrubs for revegetation.

Thank you for the opportunity to review and comment on land use issues for the Town of New Castle. If you have any questions, please contact me.

Sincerely,

Brian Gray / District Wildlife Manager

cc: Kirk Oldham / Area Wildlife Manager
Danielle Neumann / Land use specialist



August 9, 2022

Paul Smith, Town Planner
Town of New Castle
450 W Main Street, PO Box 90
New Castle, CO 81647

Re: The Longview Affordable Housing Strategy

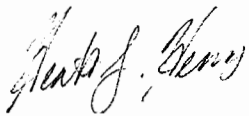
Dear Mr. Smith,

While there is no inclusionary housing requirements currently in place in New Castle, The Longview project is committed to an integrated approach to affordable housing throughout the community. We continue discussions with our anchor tenant who is interested in the Parcel 2 commercial space and employee housing. We will tailor master leases and purchases prices to assist them with their housing demands. We have met with Habitat for Humanity and once we are further along in our approvals and have a good indication that this plan will be approved, we will further the discussion to execute a Habitat project at The Longview. This may result in ~9 residential units as H4H units.

We will also continue to meet with the Town, School District, Fire District, and other employers provided jobs in New Castle to discuss their needs for rental or ownership housing and tailor master leases and ownership opportunities to the immediate need. We anticipate this will result in 12-16 units with a deed restriction in the 80%-100% AMI range. This may be in addition to master lease agreements. This approach provides for greater flexibility for the public entities to attract and retain a stable, local workforce. As we get further along in our approvals, we welcome a continued discussion with the Town on their housing needs.

Thank you.

Sincerely,



Connect One Design
Heather Henry
Owner

cc:

Paul Smith

From: Heather Henry <hh@connectonedesign.com>
Sent: Tuesday, August 9, 2022 4:21 PM
To: Paul Smith
Cc: Dwayne Romero; Katie Tabor; Lauren Prentice; Chris Manera
Subject: RE: Paul's Longview preliminary list
Attachments: 2022-08-09 Affordable Housing Strategy.docx

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Paul –

Here are our responses to your questions/comments and attached an updated PDF version (Dropbox link) with corrections as noted below. It sounds like you are very close to final staff memo which is awesome! You totally rock! Can you circulate to us for review – just thinking that if there are any items/issues that you want us to review or revise prior to posting everything next week we can take a crack at it? Just a thought. Let me know and again, thanks for being on top of things.

<https://www.dropbox.com/s/ro55sckzbmyftvt/2022-08-09%20Revised%20Longview%20at%20Lakota-%20Prelim%20Plan%20Packet%2011x17.pdf?dl=0>

- **Affordable Housing:** What will be the % of AMI targeted for each building type? Are there any caps on AMI for some of these? Are any deed restricted for local employees? SEE MEMO ATTACHED
- **Commercial SF Reduction:** What is motivating the commercial space reduction from the sketch plan presentation?
 - There were three significant influences on the new plan layout that resulted in the current plan. Many changes between sketch and preliminary were influenced by the grading of the entire site. We moved a number of buildings around throughout, which included mixed use and commercial buildings. Coupled with ensuring we were achieving as much parking as possible some of the building footprints got smaller. We were also able to tailor the commercial building on Parcel 2 with a build to suit tenant that will be an immediate anchor for the project. This curated type of commercial may be smaller but we are now confident that we will have the tenants, jobs, and vibrancy in these spaces as opposed to building an unrealistic amount of commercial in challenging market conditions. We are excited about the type and design of the commercial here and believe that our quality over quantity approach will greatly benefit the Town.
- **Commercial Phasing:** Is there any projection of how or when the commercial buildings will be phased-in?
 - Our current thinking has us focusing on the lower lots, specifically lots 2,3, and 1, as the majority of our first phase of work. Lot 2 includes commercial buildings CR-4 (approx. 7,100sf +/- commercial sf) and CR-5 (approx. 24ksf +/- commercial sf), representing more than 50% of the total commercial sf in the Longview Plan. And we have a good set of commercial owner and/or tenant leads for these spaces. Think clinic, bank, and fitness center. And, Lot 3 includes 69 apt units across 3 separate apt buildings.

Lastly, the existing Lakota Dr to the west is 32' FL. For that width to work, Jeff and John want parking only on the north side of the street. OK, we can revise per John's recommendations.

Also, the ROW for Lakota Dr on sheet 8 (pg. 26) indicates 55'. The "Typical Road Sections" shows it as ~51' ROW with curbs. Which will it be? It should be 55'. We will correct it on the Road Section sheets.

- Hydrant layout paper copy for fire marshal review (copied); Has been sent to Orrin on 8/4

- Fire apparatus road from fire house does not align with Faas Ranch Rd. Turn lanes off CVB interfere. Email sent to Orrin on 8/4. We can adjust as necessary.
- Snow storage specified per John's review comments; Show percent of road coverage compared with percent of snow storage required (This is the one I could not remember on the phone). We will calculate the storage required and adjust the storage areas available if needed.
- All units should have separate water curb stops directly from the main (per John's comments); No hubs or shared curb stops. We will adjust as necessary.
- Per John's comments, Drive A, B, and Lakota should be town owned and maintained; John will work with you on ways to maintain the current road designs. He is thinking one-way streets for A & B. We will set up a worksession with John and figure out the best approach.
- Parking count uses incorrect PUD specs (Castle Valley Ranch); Should be Lakota... two per unit. Commercial parking should also be corrected; This was mistakenly changed. The table on Page 6 has been revised to show the correct requirements. Please note the parking study included in the submittal on Page 254. We commissioned this report to support the reduction in parking as opposed to trying to make comparisons that would not have any basis in code.
- Commercial building heights show > 40' in various locations. Submittal shows maximum building height at only 37'. This one will be important to the public. Our request for height increase is 37'. Arch drawings on Pages 70, 71 have been revised.
- Apartment B-3 shows different placement on different sheets. You said it should be adjacent to Shibui. Yes, it should be next to Shibui. We will ensure all sheets are concurrent with each other.
- We need an HOA referral regarding the extent of annexation into HOA; This might affect DRC input on building design; We are currently communicating with the HOA team. And Dwayne has the letter regarding extent of inclusion in the HOA.

Heather Henry, Principal



Landscape Architecture | Land Planning
 Tel: 970-355-5457
 Dir: 970-618-3324
 Mailing: 435 N 8th Street | Carbondale, CO 81623
 Physical: 350 Market Street, Suite 307 | Basalt, CO 81621
 210 N Mill Street, Unit B | Aspen, CO 81611



From: Paul Smith <psmith@newcastlecolorado.org>
Sent: Wednesday, August 3, 2022 3:37 PM
To: Heather Henry <hh@connectonedesign.com>
Cc: Dwayne Romero <dromero@romero-group.com>; Katie Tabor <kt@connectonedesign.com>; Orrin.Moon@Crfr.us; Lauren Prentice <lprentice@newcastlecolorado.org>
Subject: Paul's Longview preliminary list

Hi Heather,

Here is an abridged list of items to address for Longview:

- Hydrant layout paper copy for fire marshal review (copied);

- Fire apparatus road from fire house does not align with Faas Ranch Rd. Turn lanes off CVB interfere.
- Snow storage specified per John's review comments; Show percent of road coverage compared with percent of snow storage required (This is the one I could not remember on the phone)
- All units should have separate water curb stops directly from the main (per John's comments); No hubs or shared curb stops
- Per John's comments, Drive A, B, and Lakota should be town owned and maintained; John will work with you on ways to maintain the current road designs. He is thinking one-way streets for A & B.
- Parking count uses incorrect PUD specs (Castle Valley Ranch); Should be Lakota... two per unit. Commercial parking should also be corrected;
- Commercial building heights show > 40' in various locations. Submittal shows maximum building height at only 37'. This one will be important to the public.
- Apartment B-3 shows different placement on different sheets. You said it should be adjacent to Shibui.
- We need an HOA referral regarding the extent of annexation into HOA; This might affect DRC input on building design;

Another thing discussed at sketch plan was providing a comparison development (somewhere in the valley) that shows how a commercial parking reduction would look. It's going to be difficult for PZ to intuitively understanding, say, a 20% reduction in parking. Is there a way we can help them visualize this? I know it's no easy, maybe not possible, but it might help your cause.

I should have most of this reviewed by this week and will let you know of anything more.

All for now,

Paul

Paul Smith

From: Heather Henry <hh@connectonedesign.com>
Sent: Tuesday, August 16, 2022 4:43 PM
To: Katie Tabor; Paul Smith
Cc: Dwayne Romero
Subject: RE: Longview Parking Revisions Review
Attachments: C1D-LAKOTA MIXED USE-LANDSCAPE SHEETSET-L.2.01.pdf

Importance: High

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Paul –

Attached is the revised parking sheet you will see in the packet that Katie just uploaded for you. As it turns out, even in Sketch Plan we had miscalculated the requirement for commercial at 1/300 sf, not 2/300 sf. None of us caught this at the time of Sketch Plan. The attached spreadsheet shows the requirements per code, how many spaces we need per code per our square footages and units counts (column 2), the number of space we are providing and what % reduction that is from code (column 3), and finally how our parking counts stand up to the parking study and shared parking standards (column 4). As compared to code for New Castle we are looking at 40% reduction in parking. As compared to the shared parking study and ITE standards we are overparked by 172%. This will obviously be food for discussion in our hearing and we can make a clear presentation regarding these numbers, and I wanted to make sure you had a clear picture of this spreadsheet and our approach to parking.

Additionally, here are our proposed strategies to ensure successful shared parking thereby reducing the amount of paving and increasing our capacity for housing and commercial space:

1. Clear lease restrictions on number of cars allowed in the apartment buildings.
2. Active management to field complaints on the 'shared parking' thereby removing the Town from having to resolve these issues. Note: we do NOT support signing any spaces as this defeats the purpose of shared parking – another talking point.
3. Parking easements on all multi-family and commercial lots ensuring shared use in perpetuity.
4. Our parking counts do NOT include parking on Faas. We can put that on the table if it makes sense to have as overflow.

Finally, do you have any background or institutional knowledge on the difference between the Castle Valley code for commercial at 1 car/ 300 sf and the Town code at 2/300? That's a large spread and I'm curious if there is a case to be made here for why CV's is so low. We would almost meet the code if it were at 1/300.

All for now, we'll print and drop off copies as soon as give us the go ahead.

Thanks!

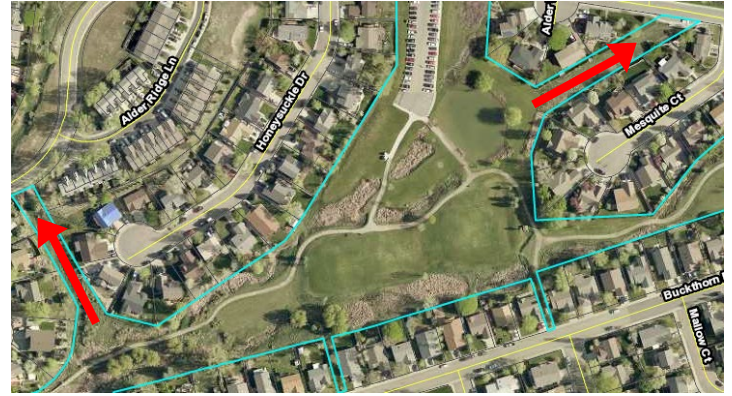
Heather Henry, Principal



Landscape Architecture | Land Planning
 Tel: 970-355-5457

New Castle Wildlife Open Space Examples

- Unmanicured, weed-free, un-disturbed corridors used by wildlife near Alder Park in Castle Valley Ranch 8/13/22
 - Garfield County, CO Assessor website screenshot of Alder Park outlined in blue with red arrows over wildlife corridors:



New Castle Parking Lot Examples

- Riverside Apartments Wednesday, August 17, 2022, at 2:00pm – 45% occupied parking



- Shibui Apartments Wednesday, August 17, 2022, at 2:20pm – 42% occupied parking (56 cars out of 135 spots)





Comcast Business
8000 E Iliff Ave
Denver, CO 80231

Will Serve Letter

RE: 'Will Serve' request for availability of Comcast communication services
Garfield County, Colorado Parcel Number(s) 212332116001, 212332100189,
212332200187

Also known as: Lakota Canyon Ranch PUD

Date of Issue: June 14th, 2022


Attention: RG LAKOTA II LLC & RG LAKOTA HOLDINGS, LLC
c/o Katie Tabor, Connect One Design

In response to your request for service, we have determined, based on our initial investigation, and barring unforeseeable factors, that Comcast Cable Communication is likely able to construct and install the necessary infrastructure to make available Comcast Business fiber and coax delivered services to future tenants of the address referenced above, provided the following conditions are met.

1. The owner/developer provides a 2" minimum diameter, dedicated conduit from the telecommunication demarcation location within each building to our pedestal/vault location along the public roadway utility easement. The exact location of the eventual pedestal(s)/vault(s) and the specific conduit route(s) to be determined with developer's input.
2. The parcel owner or owner's representative signs and returns the required right-of-entry form(s).

A preliminary network delivery plan, if available, may be provided with this "Will Serve," letter. Notwithstanding the determination that Comcast may provide services at the Property, this letter does not represent any binding agreement for service. Additionally, this letter is non-transferrable and expires one hundred and eighty (180) days from issue date.

If you have any questions or need more information, feel free to contact us.

By:  _____
DocuSigned by:
Ken Eder
76CE14FDFB4B472...
 Ken Eder

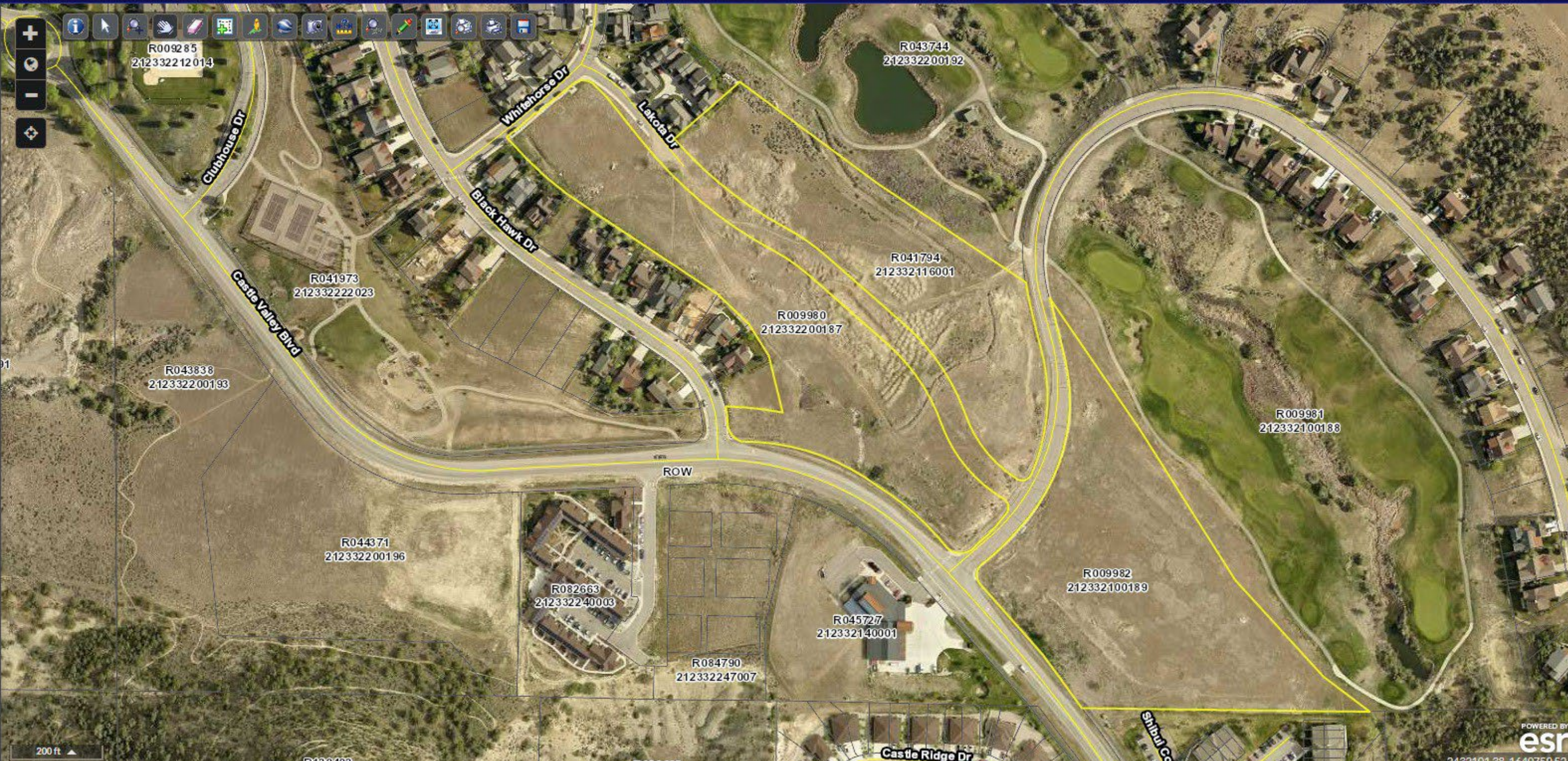
Name: _____
 Manager MWR

Title: _____

Layer List Legend

Quick Links:
Property Search
View Map

Layers:
 Parcels
 Roads
 Parcel/Account Numbers
 Highways
 Owner Name
 County Subdivisions
 Address
 Tax Districts
 County Zoning
 Lakes & Rivers
 Cities
 County Boundary Line
 2019 Aerial Imagery
[Restore Layer Defaults](#)



Results:

Account Number	R041794
Parcel Number	212332116001
Owner	RG LAKOTA HOLDINGS, LLC
Address	0 NEW CASTLE 81647
Acres	- 4.42000007629395
View:	Property Record Card Google Maps opens in a new tab
Account Number	R009982
Parcel Number	212332100189
Owner	RG LAKOTA HOLDINGS, LLC
Address	0 NEW CASTLE 81647
Acres	- 5.32100009918213
View:	Property Record Card Google Maps opens in a new tab
Account Number	R009980
Parcel Number	212332200187
Owner	RG LAKOTA II LLC
Address	0 NEW CASTLE 81647
Acres	- 5.8439998626709
View:	Property Record Card Google Maps opens in a new tab

K|C KLEIN COTÉ EDWARDS CITRON LLC
E|C ATTORNEYS

HERBERT S. KLEIN PC*
 LANCE R. COTÉ, PC**
 JOSEPH E. EDWARDS, III, PC
 KENNETH E. CITRON, P.C.***
 KRISTEN A. BALCOM****
 JOHN H. KENEALLY*****

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 jkeneally@kceclaw.com

101 SOUTH MILL STREET
 SUITE 200
 ASPEN, COLORADO 81611
 TELEPHONE: (970) 925-8700
 www.kceclaw.com

*also admitted in Hawaii

**also admitted in California

***also admitted in New York and Massachusetts

****also admitted in British Columbia, Canada

*****also admitted in New York

July 22, 2022

VIA EMAIL psmith@newcastlecolorado.org

Paul Smith

Town of New Castle

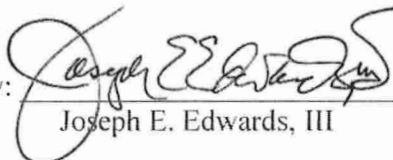
**Re: Lakota Canyon Ranch Longview Parcels (PIN Nos. 212332200187;
 212332116001; and 212332100189)**

Dear Paul:

I represent RG Lakota II, LLC, a Colorado limited liability company, the owner of the property commonly referred to as Lakota Canyon Ranch PUD, Filing 8, Longview (the "Property"). This letter is intended to provide to you notice of mineral estate owners pursuant to §24-65.5-103, C.R.S., on which New Castle Town Code §16.10 is based. That statute requires that notice be sent to the Town (CRS §24-65.5-103(1)(b)) (this letter) and to any mineral estate owner who is identified in the County Assessor's records if such records are searchable by parcel ID Number (they are) or who has filed in the office of the clerk and recorder a request for notification (CRS §24-65.5-103(1)(a)). In this case, there are no holders of a mineral estate who are identified in the Garfield County Assessor's records or who have recorded a request for notification. Consequently, no such notices have been mailed other than this letter to you. I reviewed the Title Insurance Commitments provided by Aspen Title & Escrow, Commitment Nos. PRE-2022-912, PRE-2022-913, and PRE-2022-914 related to the Property in order to determine whether there were any requests for notices of record and I am relying on those Commitments. I reviewed the Garfield Assessor's online records for the Property and am relying on those records.

Very truly yours,

KLEIN COTÉ EDWARDS CITRON LLC

By: 
 Joseph E. Edwards, III

Cc: Haley Carmer
 Heather Henry & Katie Tabor
 Dwayne Romero

August 12, 2022

Jennifer Hawley
120 Deer Valley Drive
New Castle, CO 81647

Planning & Zoning Commission
Town of New Castle
450 West Main Street
PO Box 90
New Castle, Colorado 81647

RE: Preliminary PUD and Subdivision application for 185 residential units in Lakota Canyon Ranch

New Castle Planning & Zoning Commission:

Prior to approving further housing development projects in New Castle, the following infrastructure issues must be addressed:

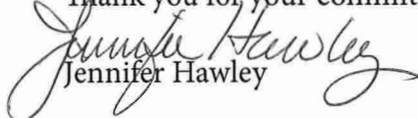
1. Construct the traffic circle at the intersection of Highway 6 and Castle Valley Boulevard
2. Lengthen the east bound merge lane onto Interstate 70
3. Connect C Avenue from downtown to Castle Valley Boulevard. Access from Castle Valley should be one way only headed south (emergency vehicles exempt) and used only for evacuation purposes. This will give us another escape route in case of wildfire and should not negatively impact the C Avenue neighborhood.

Next, water is essential and water scarcity is real and will affect us all. Changing weather patterns and demographic changes are leading to severe water scarcity issues in our region and beyond. Drought and water shortages should limit new development. New regional water studies need to be conducted and bring homeowners, builders, and government authorities together to reduce water demand in residential and commercial buildings.

Also, before developments are approved which will more than double the population of Lakota Ranch, there should be incentives to build up the town core. A downtown revival increasing density and commerce and jobs can help take some pressure off of the roads. Improved sidewalks, bike lanes, more retail shops, a deli, a health food store and office spaces would all be nice to see.

New Castle must promote smart growth. There are so many innovative building materials, construction techniques and improved land planning concepts that are better suited to the climate challenges we face. Help us design water-smart development projects and homes for our area - development is inevitable so let's make it thoughtful and innovative.

Thank you for your commitment to improving New Castle.


Jennifer Hawley

Andrew Hawley
120 Deer Valley Drive
New Castle, CO 81647

08/15/2022

Exhibit O

Preliminary PUD for 185 residential units in Lakota Canyon Ranch

My main concern with this and any other development in New Castle is water. Our streams, aquifers and reservoirs are stressed. With climate change happening and the population growing our Town needs to be extra cautious about development. I feel that water use needs to be addressed. We will run out of water in the future if we don't conserve now. It may not be in my lifetime but it will affect the next generation.

The Post Independent just had an article about Colorado's water plan and how the Federal Government can move Colorado water to recharge reservoirs and aquifers outside of our state.

Colorado is leading in the water conservation movement at this time. Wyoming, New Mexico, Utah and Nebraska need to catch up or our resources will dry up.

Along with climate change comes the wildfire problem. If Lakota Canyon Ranch, Eagles Ridge at Lakota Canyon and other developments get built out we will not be able to move traffic up and down Castle Valley Blvd. in an emergency. The traffic already gets backed up in the morning and afternoon when kids come home from school. Just imagine what it would be like to evacuate all of the homes in Lakota with a raging wildfire. That is not a pretty site.

In the last plan the developer had a bottleneck at Faas Ranch Road and Castle Valley Blvd. Was that addressed?

Not only will this development stress our roads, water and stores in New Castle but with all the development down Valley the I-70 corridor will be more dangerous than it already is.

I feel that we need to make sure any development in New Castle addresses climate, water, wildlife corridors, wildfire evacuation and our infrastructure. Our New Castle Comprehensive and Master Plans need to be updated to address our new normal.

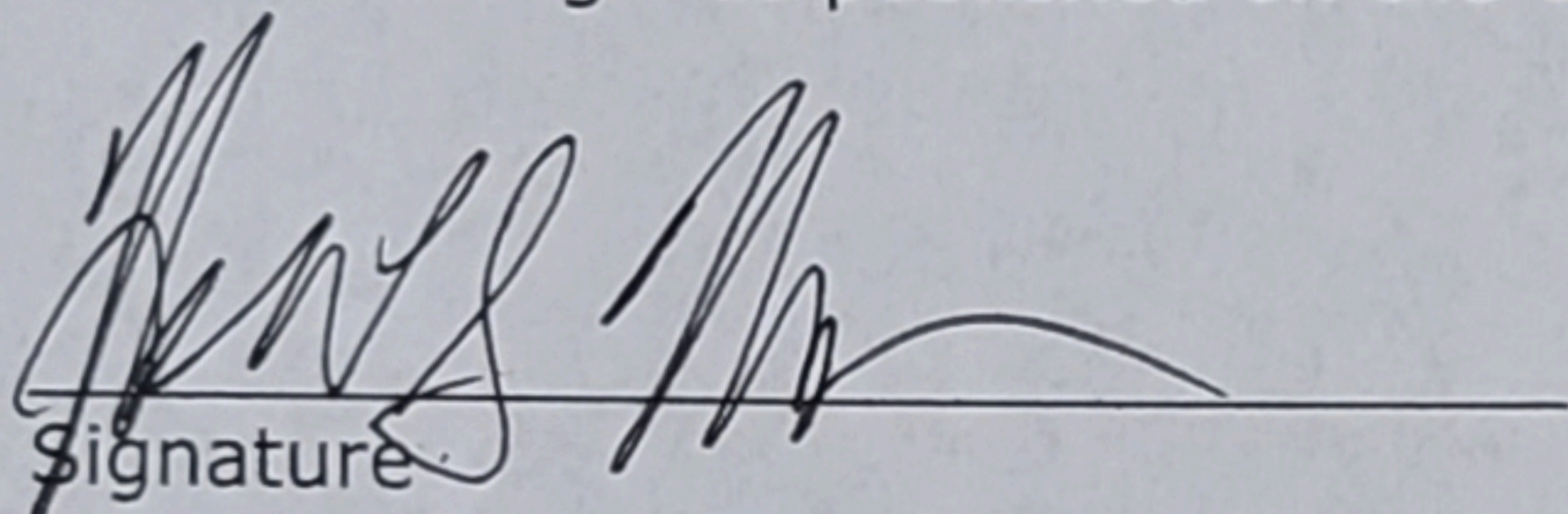
Andrew Hawley
970-404-5718



AFFIDAVIT AS TO NOTICE OF PUBLIC HEARING

I, **Heather Henry**, do hereby certify that pursuant to ordinances of the Town of New Castle, Colorado, I provided notice of a public hearing before the New Castle Planning Commission on **August 24th, 2022** regarding a **combined preliminary PUD & subdivision** application by doing the following:

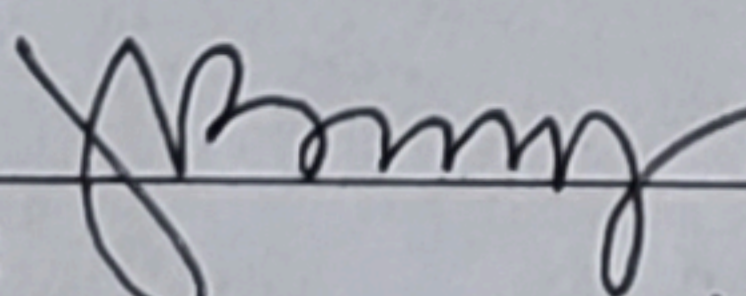
1. At least fifteen **(15) days prior** to such hearing, I sent a copy of the attached Notice of Public Hearing by **certified mail to the owners of all property within two hundred fifty (250) feet** of the subject property and to the Town of New Castle.
2. If required by Chapter 16.10 of the new Castle Municipal Code, at least thirty **(30) days prior** to such hearing, I sent a copy of the attached Notice of Public Hearing by certified mail to the **owners of mineral estates** who have requested notification with respect to the subject property at the Garfield County Clerk and Recorder.
3. At least fifteen (15) days prior to such hearing, **I posted notice of the hearing on the property on a sign** approved by the Town at least twenty-two (22) inches wide, twenty-six (26) inches high, with letters at least one (1) inch in height. The sign was posted so that it was visible from a public street.
4. At least (15) days prior to such hearing, the attached Notice of Public Hearing was published on the **Town's website**.


Signature

STATE OF COLORADO)
) ss.
COUNTY OF Gunnison)

Subscribed and sworn to before me this 18 day of August,
2022, by Heather S. Henry

Witness my hand and official seal.


Notary Public
My commission expires: 4.15.25





AGREEMENT TO PAY CONSULTING AND ADMINISTRATIVE COSTS

Pursuant to municipal code section 16.08.070, for any land use application, the applicant shall pay all costs incurred by the town for the preparation of plats, plans, other required data and documents, recording fees, publication costs, legal and engineering review and advice, planning review and advice, inspections and all other out-of-pocket costs incurred by the town in connection with the land use application. In the case of withdrawal or denial of a land use application, the applicant shall be responsible for all costs actually incurred by the town in connection with such application regardless of the state of the review process at which the application is withdrawn or denied.

To secure payment of costs incurred by the town, the owner of the land proposed for development (and the applicant, if different) shall be required to sign the following agreement:

By signing below, the applicant and property owner hereby agree to reimburse the Town the actual costs to the Town for engineering, planning, surveying, legal services, and all other costs incurred by the Town in connection with the review and approval of the land use application. I also agree to reimburse the Town for the cost of making any correction or additions to the master copy of the official Town map and for any fees for recording any plats and accompanying documents with the County Clerk and Recorder of Garfield County. I agree that interest shall be imposed at the rate of 1.5% per month on all balances not paid within thirty (30) days of a statement. In the event the Town pursues collection of any amounts due and unpaid, the Town shall be entitled to collect attorney's fees and costs. In addition to all other remedies allowable by law, I agree that in the event any amounts remain due and unpaid for sixty (60) days the Town shall have the power and authority to certify such amounts, plus a ten percent penalty, to Garfield County to be imposed as a tax lien against the real property subject to the development application.

SO AGREED this 15 day of June, 2021.

Dwayne Romero
Applicant (Print Name)
970-273-3100
Telephone Number

Email
RG Lakota Holdings, LLC
Property Owner
Same
Relationship of Owner to Applicant

Signature of Applicant
350 Market St. #304 Basalt, CO 81621
Mailing Address of Applicant
dromero@romero-group.com
Email Address of Applicant

Signature of Property Owner
350 Market St. #304 Basalt, CO 81621
Owner Mailing Address

Type of application: PUD Sketch Plan

Property description: Garfield County Parcel #212332200187, #212332116001, #212332100189
Revised 3/2021

RECEIVED
6/21/21 B.E.

Paul Smith

From: Dwayne Romero <dromero@romero-group.com>
Sent: Wednesday, August 10, 2022 5:12 PM
To: Paul Smith; Haley Carmer; David H. McConaughy; jee@kceclaw.com; Heather Henry; mmcdonald8866@gmail.com
Cc: Shawn Gleason; Lisa Price; Katie Tabor; Chris Manera
Subject: Longview @ Lakota Inclusion/Exclusion in Lakota Master Association

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Paul, to follow up on the request to describe what lots/units will be incorporated into the existing Master Association, here is our approach:

Looking at the latest draft Final Plat (**sheets 3 and 4 of 4 of the "Final Plat, LCR PUD Filing 7, Longview, Lot Detail"**) from Bookcliffe Surveying (M Langhorne published to all of us and all of the Town staff back in early June), the following lots will be incorporated into the Master Association -

- Lot 1 (it yields 2 ea townhome triplex structures and 1 ea townhome duplex structure)
- Lot 7 (it yields 3 ea townhome triplex structures)
- Lots 8 – 16 (all SF homesites)
- Lot 17 (it yields 1 ea townhome triplex structure)
- Lots 18 – 38 (all SF homesites)
- Lot 39 (simply an open space parcel that borders between our sf homesites and the backyards of existing Blackhawk Drive homes)

The rest of the Lots on the Final Plat (Lots 2 – 6, that is, the mixed-use and multi-family structures) are to be subject to the new association for Longview, not the existing Lakota Master Association.

This is consistent with what we have represented in our Open House back in Oct 2021 ("we know that our mixed use and multi-family sites will overwhelm the HOA Recreation Center"). It also aligns with what we discussed with town staff in our Zoom call back in mid-June concerning our developer rights to waive entry into the Master Association, such rights being granted in the development approvals that were assigned to and assumed by us at purchase. Further, given the fact that the Master Association documents include architectural guidelines and requirements for residential structures, it is appropriate for the Master Association to ultimately govern these structures in Longview (with their design reviews to occur when these homesites & townhome sites are submitted for development and construction in the future).

As for our proposed mixed-use and multi-family structures, although we waive & decline their entry into the Master Association and any/all architectural control approvals from the Master Association, their designs, forms, and finishes are generally consistent with the overall architectural style and vernacular of Lakota Canyon Ranch PUD, as seen in the current Preliminary Plan Application for Longview at Lakota.

Thanks again Paul. Please let us know if you have any questions or comments on this matter.

Thanks,

Dwayne Romero
 Chief Executive Officer



Vicinity Map Scale: 1"= 1000'

LIENHOLDER CONSENT AND SUBORDINATION

THE UNDERSIGNED LIENHOLDER HEREBY CONSENTS TO AND APPROVES THE RECORDING OF THIS FINAL PLAT...

_____ BANK

BY: _____

DATED: _____

NOTES

- 1.) DATE OF SURVEY WAS JANUARY-MAY 2022.
2.) BASIS OF BEARINGS FOR THIS SURVEY IS AN ASSUMED BEARING OF S 89°40'33" E ALONG THE EAST-WEST CENTERLINE OF SECTION 32...
3.) THIS FINAL PLAT IS BASED ON:
a. LAKOTA CANYON RANCH FILING 3, PHASE 1 RECEPTION NO. 665843
b. RESEARCH FOR RIGHTS-OF-WAY AND EASEMENTS OF RECORD ARE BASED ON THE FOLLOWING ASPEN TITLE & ESCROW, LLC TITLE COMMITMENTS:
c. MONUMENTS FOUND IN PLACE AS INDICATED HEREON.
4.) ALL DIMENSIONS SHOWN HEREON ARE RECORD AND AS-MEASURED UNLESS OTHERWISE INDICATED.
5.) ALL FOUND OR SET MONUMENTS ARE FLUSH WITH GROUND EXCEPT AS NOTED HEREOF.
6.) THE LINEAL UNIT USED IN THE PREPARATION OF THIS PLAT IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.
7.) ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT...

SURVEYOR'S CERTIFICATE

I MICHAEL J. LANGHORNE, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR LICENSED UNDER THE LAWS OF THE STATE OF COLORADO, THAT THIS PLAT IS A TRUE, CORRECT AND COMPLETE FINAL PLAT OF LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW AS LAID OUT, PLATTED, DEDICATED AND SHOWN HEREON...

IN WITNESS WHEREOF I HAVE SET MY HAND AND SEAL...

DATE: _____

MICHAEL J. LANGHORNE, P.L.S.

FINAL PLAT LAKOTA CANYON RANCH PUD, FILING 8, LONGVIEW

Future Development Parcel 3, Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 Reception No. 661957 Future Development Parcel, Lakota Canyon Ranch Filing 3, Phase 1 Reception No. 665843 and A Resubdivision of Parcel C2, Second Amended and Restated Subdivision Exclusion/Exemption Map Reception No. 709280, Situate in Section 32, Township 5 South, Range 90 West of the 6th P.M. Town of New Castle, County of Garfield, State of Colorado

TITLE CERTIFICATE

ASPEN TITLE & ESCROW, LLC DOES HEREBY CERTIFY THAT IT HAS EXAMINED THE TITLE TO ALL LANDS DEDICATED AND SHOWN UPON THIS PLAT, AND TITLE TO SUCH LANDS IS IN THE DEDICATOR FREE AND CLEAR OF ALL LIENS, TAXES, AND ENCUMBRANCES EXCEPT AS FOLLOWS:

- A.) PARCEL C-2 ASPEN TITLE & ESCROW, LLC OFFICE FILE NO. PRE-2022-913-TBD
B.) FUTURE DEVELOPMENT PARCEL, LAKOTA CANYON RANCH FILING 3, PHASE 1 RECEPTION NO. PRE-2022-913-TBD
C.) FUTURE DEVELOPMENT PARCEL 3, FINAL BLOCK PLAT WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH OFFICE FILE NO. PRE-2022-914-TBD
SCHEDULE B, PART II EXCEPTIONS:
1. RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORDS.
2. EASEMENTS, OR CLAIMS OF EASEMENTS, NOT SHOWN BY THE PUBLIC RECORDS.
3. ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT SHOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.
... (rest of the list) ...

CERTIFICATE OF DEDICATION AND OWNERSHIP

KNOW ALL MEN BY THESE PRESENTS THAT RG LAKOTA I LLC, BEING SOLE OWNER(S) IN FEE SIMPLE OF ALL THAT REAL PROPERTY DESCRIBED AS FOLLOWS:
FUTURE DEVELOPMENT PARCEL, LAKOTA CANYON RANCH FILING 3, PHASE 1 RECEPTION NO. 665843
FUTURE DEVELOPMENT PARCEL 3, AMENDED FINAL BLOCK PLAT WHITEHORSE VILLAGE AT LAKOTA CANYON RANCH, PHASE 1 RECEPTION NO. 727621

AND CONTAINING 17.601 ACRES MORE OR LESS; HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS AND BLOCKS AS SHOWN HEREON AND DESIGNATE THE SAME AS LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW, IN THE TOWN OF NEW CASTLE, COUNTY OF GARFIELD, STATE OF COLORADO; AND DO HEREBY GRANT TO THE TOWN OF NEW CASTLE, COUNTY OF GARFIELD, COLORADO, FOR PUBLIC USE THE STREETS SHOWN HEREON, INCLUDING AVENUES, DRIVES, COURTS, PLACES AND ALLEYS, THE PUBLIC LANDS SHOWN HEREON FOR THEIR INDICATED PUBLIC USE AND THE UTILITY AND DRAINAGE EASEMENTS SHOWN HEREON FOR UTILITY AND DRAINAGE PURPOSES ONLY...

EXECUTED THIS ___ DAY OF ___, A.D. 20__.

OWNER:

RG LAKOTA II, LLC / RG LAKOTA HOLDINGS, LLC A COLORADO LIMITED LIABILITY COMPANY 350 MARKET STREET, SUITE 304 BASALT, CO 81621

BY: _____ DATED: _____

STATE OF COLORADO)
COUNTY OF GARFIELD) SS.
TOWN OF NEW CASTLE)

THE FOREGOING DEDICATION WAS ACKNOWLEDGED BEFORE ME THIS ___ DAY OF ___, A.D. 20__ BY _____

WITNESS MY HAND AND SEAL

NOTARY PUBLIC

CERTIFICATE OF DEDICATIONS AND EASEMENTS

A. DEDICATIONS AND EASEMENTS. OWNER HEREBY MAKES THE FOLLOWING DEDICATIONS AND EASEMENTS:

- 1. ALL STREETS AND PEDESTRIAN EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN OF NEW CASTLE, COLORADO (THE "TOWN") FOR THE USE OF THE PUBLIC, FORWAS, AS PUBLIC STREETS, SIDEWALKS AND FOR DRAINAGE AND UNDERGROUND UTILITY PURPOSES...
2. PERPETUAL, NON-EXCLUSIVE UTILITY EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN, GRANTED TO THE GOLF OWNER AND THE MASTER ASSOCIATION AND RESERVED TO THE OWNER, FOR THE INSTALLATION, OPERATION, MAINTENANCE, REPAIR OR REPLACEMENT OF UNDERGROUND UTILITIES AND APPURTENANCES THERE TO INCLUDING, BUT NOT LIMITED TO, ELECTRIC LINES, CABLE LINES, NATURAL GAS PIPELINES, SANITARY SEWER LINES, WATER LINES, TELEPHONE LINES AND IRRIGATION WATER LINES.
3. PERPETUAL, NON-EXCLUSIVE DRAINAGE EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN, GRANTED TO THE GOLF OWNER AND THE MASTER ASSOCIATION AND RESERVED TO THE OWNER, FOR THE INSTALLATION, OPERATION, MAINTENANCE, REPAIR AND REPLACEMENT OF DRAINAGE FACILITIES FOR THE CONVEYANCE OF RUN-OFF WATER WHICH ORIGINATES WITHIN LAKOTA CANYON RANCH OR FROM UPSTREAM AREAS THROUGH NATURAL OR MAN MADE FACILITIES ABOVE OR BELOW GRADE.
4. PERPETUAL, NON-EXCLUSIVE SNOW STORAGE EASEMENTS AS SHOWN HEREON ARE HEREBY DEDICATED TO THE TOWN, GRANTED TO THE MASTER ASSOCIATION AND RESERVED TO THE OWNER, FOR THE STORAGE OF PLOWED SNOW.
5. PERPETUAL, NON-EXCLUSIVE EASEMENTS ARE HEREBY GRANTED TO AND FOR THE BENEFIT OF LAW ENFORCEMENT PERSONNEL, FIRE DEPARTMENTS AND OTHER EMERGENCY SERVICES PROVIDERS, FOR INGRESS, EGRESS AND ACCESS PURPOSES, OVER AND ACROSS ALL STREETS WHICH MAY BE CONSTRUCTED, RECONSTRUCTED OR RELOCATED WITHIN THE PROPERTY.

6. PERPETUAL, NON-EXCLUSIVE EASEMENTS ARE HEREBY GRANTED TO UTILITY PROVIDERS, AND RESERVED TO THE OWNER, FOR THE INSTALLATION, MAINTENANCE AND REPAIR OF UTILITIES, OVER, ACROSS AND UNDER (A) ALL STREETS WHICH MAY BE CONSTRUCTED, RECONSTRUCTED OR RELOCATED WITHIN THE PROPERTY, (B) EASEMENT AREAS AS SHOWN ON THIS PLAN AND (C) ANY PORTION OF THE PROPERTY WHICH MAY BE DESIGNATED BY OWNER PURSUANT TO THE RESERVATIONS AND RIGHTS PROVIDED FOR HEREIN OR IN THE MASTER DECLARATION.

B. RESERVATIONS. OWNER HEREBY RESERVES TO ITSELF AND ITS SUCCESSORS AND ASSIGNS THE FOLLOWING:

- 1. THE RIGHT TO ENTER UPON THE PROPERTY FOR THE PURPOSE OF ANY WORK IN CONNECTION WITH ITS DEVELOPMENT OF THE PROPERTY AND THE RIGHT TO GRANT ADDITIONAL EASEMENTS AND, SUBJECT TO TOWN APPROVAL, TO RELOCATE AND/OR SUBSTITUTE EXISTING EASEMENTS WITH RESPECT TO THE PROPERTY IN ORDER TO COMPLETE THE DEVELOPMENT THEREOF.
2. A NON-EXCLUSIVE EASEMENT OVER AND ACROSS THOSE PORTIONS OF THE PROPERTY AS MAY BE REQUIRED FOR GRADING AND THE INSTALLATION, MAINTENANCE, REPAIR AND REPLACEMENT OF DRAINAGE STRUCTURES, IRRIGATION SYSTEMS, FENCING, RETAINING WALLS AND OTHER SIMILAR STRUCTURES.
3. A NON-EXCLUSIVE EASEMENT OVER AND ACROSS THOSE PORTIONS OF THE PROPERTY AS MAY BE REQUIRED FOR THE INSTALLATION, CONSTRUCTION AND MAINTENANCE OF ROADS, DRIVEWAYS, TRAILS AND UTILITIES.

OWNER:

RG LAKOTA I, LLC / RG LAKOTA HOLDING, LLC A COLORADO LIMITED LIABILITY COMPANY 350 MARKET STREET, SUITE 304 BASALT, CO 81621

BY: _____ DATED: _____

STATE OF COLORADO)
COUNTY OF GARFIELD) SS.

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS ___ DAY OF ___, 2022, BY _____

WITNESS MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC

PLAT NOTES:

- 1. LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW IS SUBJECT TO THE TERMS AND CONDITIONS OF TOWN OF NEW CASTLE ORDINANCE NO. 2022-__ (THE "APPROVAL ORDINANCE") AND THE SUBDIVISION IMPROVEMENTS AGREEMENT FOR LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW RECORDED ____, 2022, AS RECEPTION NO. ____ IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO, AS SAID AGREEMENT MAY BE AMENDED FROM TIME TO TIME.
3. LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW IS SUBJECT TO THE TERMS AND CONDITIONS OF THE FIRST AMENDED & RESTATED MASTER DECLARATION OF PROTECTIVE COVENANTS, CONDITIONS AND RESTRICTIONS FOR LAKOTA CANYON RANCH (THE "MASTER DECLARATION") RECORDED OCTOBER 19, 2004, AS RECEPTION NO. 661954 IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO. THE MASTER DECLARATION, WHICH MAY BE AMENDED OR SUPPLEMENTED FROM TIME TO TIME, ESTABLISHES AND DEFINES THE EASEMENTS, RESERVATIONS AND TERMS REFERRED TO ON THIS PLAT WHICH AFFECT THE PROPERTY.
4. LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW IS SUBJECT TO THE GOLF COURSE EASEMENT AGREEMENT RECORDED JANUARY 8, 2003, AS RECEPTION NO. 618293, IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO, AS SAID AGREEMENT MAY BE AMENDED OR SUPPLEMENTED FROM TIME TO TIME, WHICH AGREEMENT ESTABLISHES CERTAIN EASEMENTS AND RESTRICTIONS WITHIN AND ON LAKOTA CANYON RANCH FOR THE BENEFIT OF THE GOLF LAND AS DEFINED IN THE MASTER DECLARATION AND CERTAIN EASEMENTS AND RESTRICTIONS ON THE GOLF LAND FOR THE BENEFIT OF LAKOTA CANYON RANCH.
5. TO THE EXTENT THAT THE PROVISIONS OF THE LAKOTA CANYON RANCH MASTER PLAN TEXT (EXHIBIT D TO TOWN OF NEW CASTLE ORDINANCE NO. 2002-18, RECORDED JANUARY 8, 2003, AS RECEPTION NO. 618284, IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO) ARE IN CONFLICT WITH THIS PLAT, THE PLAT SHALL CONTROL.
6. ALL DEVELOPMENT WITHIN LAKOTA CANYON RANCH PUD, FILING 7, LONGVIEW SHALL COMPLY WITH THE REQUIREMENTS OF THE WILDFIRE HAZARD MITIGATION AND RESPONSE PLAN ATTACHED TO AND INCORPORATED INTO THE MASTER DECLARATION, COPIES OF WHICH ARE AVAILABLE FOR INSPECTION AT THE OFFICE OF THE NEW CASTLE TOWN CLERK, AS WELL AS THE GEOTECHNICAL REQUIREMENTS PER THE PRELIMINARY SUBSOIL STUDY JOB NO. 1066005 DATED FEBRUARY 13, 2005 PREPARED BY HP GEOTECH.
7. LOTS ____ WILL BE REQUIRED TO PREPARE A GRADING AND DRAINAGE PLAN PREPARED BY A REGISTERED PROFESSIONAL ENGINEER PRIOR TO BUILDING PERMIT APPROVAL. THE PURPOSE OF THE PLAN IS TO ADDRESS EXISTING TOPOGRAPHY AND INSURE THAT ALL RESIDENCES ARE CONSTRUCTED IN A MANNER TO PROTECT THE HOMES FROM STORM WATER RUNOFF WHILE MITIGATING IMPACTS OF DRAINAGE TO ADJACENT OR DOWN GRADIENT LOTS. ANY INCREASE OF RUNOFF QUANTITY WILL NOT REQUIRE MITIGATION WHICH HAS BEEN HANDLED BY THE MASTER DRAINAGE PLAN.
8. ALL SEWER MAINLINES ARE GRAVITY PIPE. EASEMENT CONSTRUCTION MAY REQUIRE SEWER LIFT PUMPS FOR LOTS WITHIN THE SUBDIVISION DEPENDENT ON LOT ELEVATIONS, SEWER DEPTHS, AND BUILDING LOCATION WITHIN EACH ENVELOPE, INCLUDING BUT NOT LIMITED TO ____. SEWER SERVICE STUB ELEVATIONS ESTIMATED ON SUBDIVISION ENGINEERING DESIGN DRAWINGS ON FILE AT THE TOWN OF NEW CASTLE.
9. SITE SPECIFIC ANALYSES ARE TO BE SUBMITTED TO THE TOWN FOR REVIEW AND APPROVAL PRIOR TO ISSUANCE OF A BUILDING PERMIT FOR ANY AND ALL LOTS CONTAINING SLOPES GREATER THAN 35%. SUCH ANALYSIS SHALL INCLUDE, BUT IS NOT LIMITED TO: BUILDING/FOUNDATION DESIGN, SLOPE-SPECIFIC GEOTECHNICAL EVALUATIONS OF SLOPE STABILITY AND RELATED GEOLOGIC HAZARDS, RETAINING WALLS, TEMPORARY SHORING MEASURES, AND OTHER MEASURES DEEMED NECESSARY TO PROTECT THE PUBLIC HEALTH SAFETY AND WELFARE OF PROJECT RESIDENTS.
10. RG LAKOTA I, LLC, RG LAKOTA HOLDING, LLC AND ALL LOT PURCHASERS SHALL COMPLY WITH THE RECOMMENDATIONS OF HP GEOTECHNICAL IN THEIR PRELIMINARY GEOTECHNICAL EVALUATION OF THE SITE DATED APRIL 26, 2002 AND THE SUPPLEMENTAL LETTER DATED FEBRUARY 13, 2006 AS WELL AS THE RECOMMENDATIONS CONTAINED IN THE LETTER FROM GROUND ENGINEERING CONSULTANTS, INC. DATED AUGUST 1, 2007 ADDRESSED TO LAKOTA CANYON RANCH DEVELOPMENT, LLC.

TOWN COUNCIL CERTIFICATE

THIS PLAT IS APPROVED BY THE (TOWN COUNCIL/PLANNING COMMISSION/TOWN ADMINISTRATOR) OF THE TOWN OF NEW CASTLE, GARFIELD COUNTY, COLORADO THIS ___ DAY OF ___, A.D., 2022, FOR FILING WITH THE CLERK AND RECORDER OF GARFIELD COUNTY, AND FOR CONVEYANCE TO THE TOWN OF THE PUBLIC DEDICATIONS SHOWN AND DESCRIBED HEREON, SUBJECT TO THE PROVISION THAT APPROVAL IN NO WAY OBLIGATES THE TOWN OF NEW CASTLE FOR FINANCING OR CONSTRUCTION OF IMPROVEMENTS ON LAND, STREETS OR EASEMENTS DEDICATED TO THE PUBLIC EXCEPT AS SPECIFICALLY AGREED TO BY THE TOWN COUNCIL.

WITNESS MY HAND AND SEAL OF THE TOWN OF NEW CASTLE

ATTEST:

TOWN CLERK

CLERK AND RECORDER'S CERTIFICATE

THIS PLAT IS ACCEPTED FOR FILING IN THE OFFICE OF THE CLERK AND RECORDER OF GARFIELD COUNTY, COLORADO, AT ___ O'CLOCK ___, M., ON THE ___ DAY OF ___, 2022, AS RECEPTION NO. ____

CLERK AND RECORDER

BY: _____ DEPUTY

REVISION DESCRIPTION

BOOKCLIFF Survey Services, Inc.

156 East 6th Street, Rifle, Colorado 81050 Phone: (970) 625-1330 Fax: (970) 625-2773

LAKOTA CANYON RANCH PUD, FILING 7 LONGVIEW

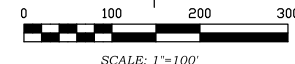
RG LAKOTA HOLDINGS, LLC 151 CLUBHOUSE DRIVE BASALT, CO 81621

FILE: F7 DFT: TL CK: M/L DATE: 5/30/22 PROJECT NO: 20170 SHEET 1 OF 4

FINAL PLAT LAKOTA CANYON RANCH PUD, FILING 8, LONGVIEW

Future Development Parcel 3, Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 Reception No. 661957
Future Development Parcel, Lakota Canyon Ranch Filing 3, Phase 1 Reception No. 665843 and
A Resubdivision of Parcel C2, Second Amended and Restated Subdivision Exclusion/Exemption Map Reception No. 709280,
Situate in Section 32, Township 5 South, Range 90 West of the 6th P.M. Town of New Castle, County of Garfield, State of Colorado

Boundary and Boundary Line Adjustment Detail



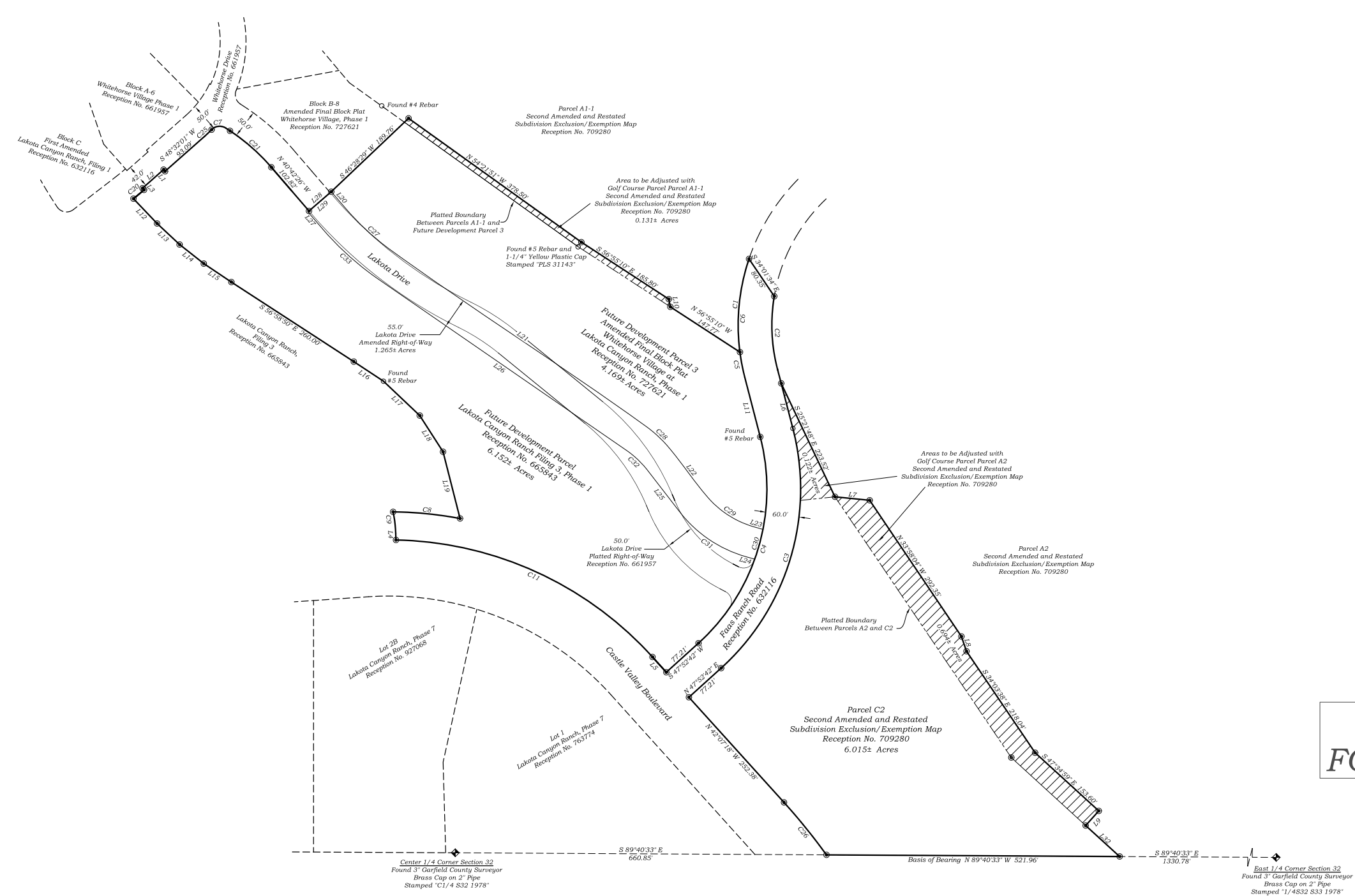
LEGEND

- Found/Set 18" #5 Rebar and 1-1/4" Orange Plastic Cap Stamped "PROP CORNER PLS 36575"
- Monument Found as Noted

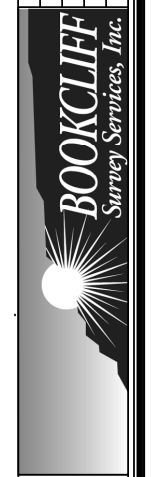
LINE	BEARING	DISTANCE
L1	S 41° 27' 59" E	4.00
L2	S 48° 32' 01" W	50.00
L3	S 41° 27' 59" E	4.00
L4	S 01° 58' 49" E	11.55
L5	S 47° 07' 18" E	36.73
L6	N 14° 32' 30" W	82.88
L7	N 84° 18' 06" W	62.10
L8	S 18° 58' 12" E	27.90
L9	S 41° 51' 49" W	35.00
L10	S 11° 35' 29" E	14.06
L11	N 14° 32' 30" W	109.51
L12	S 43° 35' 36" E	60.91
L13	S 46° 55' 51" E	54.94
L14	S 31° 44' 16" E	54.94
L15	S 56° 12' 01" E	59.05
L16	S 56° 32' 45" E	63.26
L17	S 46° 32' 37" E	88.97
L18	S 32° 45' 41" E	76.67
L19	S 14° 16' 23" E	122.61
L20	S 40° 42' 26" E	40.12
L21	S 55° 23' 38" E	534.99
L22	S 37° 43' 48" E	93.07
L23	S 74° 15' 07" E	15.56
L24	S 74° 15' 07" E	15.56
L25	S 37° 43' 48" E	93.07
L26	S 55° 23' 38" E	534.99
L27	S 40° 42' 26" E	39.99
L28	N 49° 09' 31" E	52.50
L29	N 49° 09' 31" E	55.00
L30	N 48° 33' 01" E	173.29
L31	N 84° 03' 14" E	61.98
L32	S 47° 34' 59" E	81.84

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	370.00	168.48	166.83	S 03° 34' 47" W	26° 03' 31"
C2	370.00	130.38	129.42	S 02° 22' 24" E	24° 05' 53"
C3	370.00	468.44	463.61	N 16° 40' 11" E	62° 25' 02"
C4	370.00	403.07	383.44	N 16° 40' 11" E	62° 25' 02"
C5	370.00	43.76	43.76	S 10° 59' 39" E	7° 05' 24"
C6	370.00	214.06	211.05	S 02° 02' 06" W	33° 08' 53"
C7	370.00	27.74	25.57	S 83° 41' 41" W	79° 27' 35"
C8	682.92	119.85	119.70	S 84° 19' 38" W	10° 03' 20"
C9	225.00	38.86	38.82	N 06° 55' 43" W	9° 53' 47"
C11	632.92	516.12	501.94	N 65° 28' 58" W	46° 43' 20"
C12	632.92	191.32	190.59	N 60° 11' 03" W	17° 19' 10"
C13	632.92	217.33	216.46	N 61° 40' 43" W	19° 41' 31"
C14	632.92	107.47	107.14	N 46° 58' 38" W	9° 42' 39"
C15	370.00	191.85	189.02	N 33° 42' 24" E	28° 02' 36"
C16	370.00	55.05	55.00	N 15° 27' 21" E	8° 31' 30"
C17	370.00	166.77	164.78	N 01° 40' 22" W	23° 43' 37"
C18	370.00	77.89	77.62	N 02° 41' 15" W	23° 42' 11"
C19	370.00	290.53	285.05	N 28° 41' 17" E	38° 42' 51"
C20	375.00	24.48	24.47	S 02° 02' 13" E	3° 44' 23"
C21	355.00	98.32	98.01	N 48° 38' 29" W	15° 52' 06"
C22	355.00	47.14	47.11	N 52° 46' 17" W	7° 36' 30"
C23	355.00	36.04	36.02	N 46° 03' 31" W	5° 49' 09"
C24	355.00	16.14	16.14	N 41° 55' 43" W	2° 26' 36"
C25	240.00	18.02	18.02	N 46° 11' 57" E	4° 34' 38"
C26	1092.85	120.25	120.19	N 35° 58' 07" W	6° 18' 22"
C27	472.50	121.12	120.78	S 48° 03' 02" E	14° 41' 12"
C28	222.50	70.14	69.86	S 46° 33' 43" E	17° 39' 50"
C29	172.50	109.96	108.10	S 55° 52' 27" E	36° 31' 19"
C30	370.00	55.05	55.00	N 15° 27' 21" E	8° 31' 30"
C31	222.50	145.01	144.57	S 55° 52' 27" E	36° 31' 19"
C32	172.50	53.18	52.97	S 46° 33' 43" E	17° 39' 50"
C33	527.50	135.21	134.84	S 48° 03' 02" E	14° 41' 12"

**PRELIMINARY
FOR REVIEW ONLY**



REVISION	DESCRIPTION



LAKOTA CANYON RANCH PUD, FILING 7
LONGVIEW

RG LAKOTA HOLDINGS, LLC
151 CLUBHOUSE DRIVE
BASALT, CO 81621

FILE:	F7
DFT:	TL
CK:	MJL
DATE:	5/30/22
PROJECT NO.:	20170
SHEET	2
OF	4

FINAL PLAT LAKOTA CANYON RANCH PUD, FILING 8, LONGVIEW

Future Development Parcel 3, Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 Reception No. 661957
 Future Development Parcel, Lakota Canyon Ranch Filing 3, Phase 1 Reception No. 665843 and
 A Resubdivision of Parcel C2, Second Amended and Restated Subdivision Exclusion/Exemption Map Reception No. 709280,
 Situate in Section 32, Township 5 South, Range 90 West of the 6th P.M. Town of New Castle, County of Garfield, State of Colorado

Lot Detail



**PRELIMINARY
FOR REVIEW ONLY**



LAKOTA CANYON RANCH PUD, FILING 7
LONGVIEW

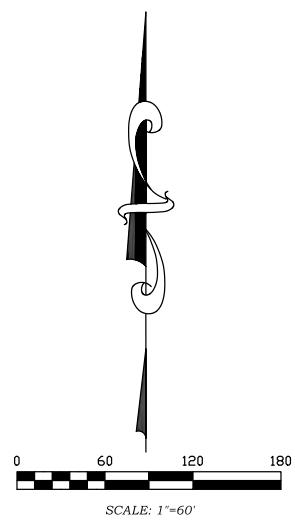
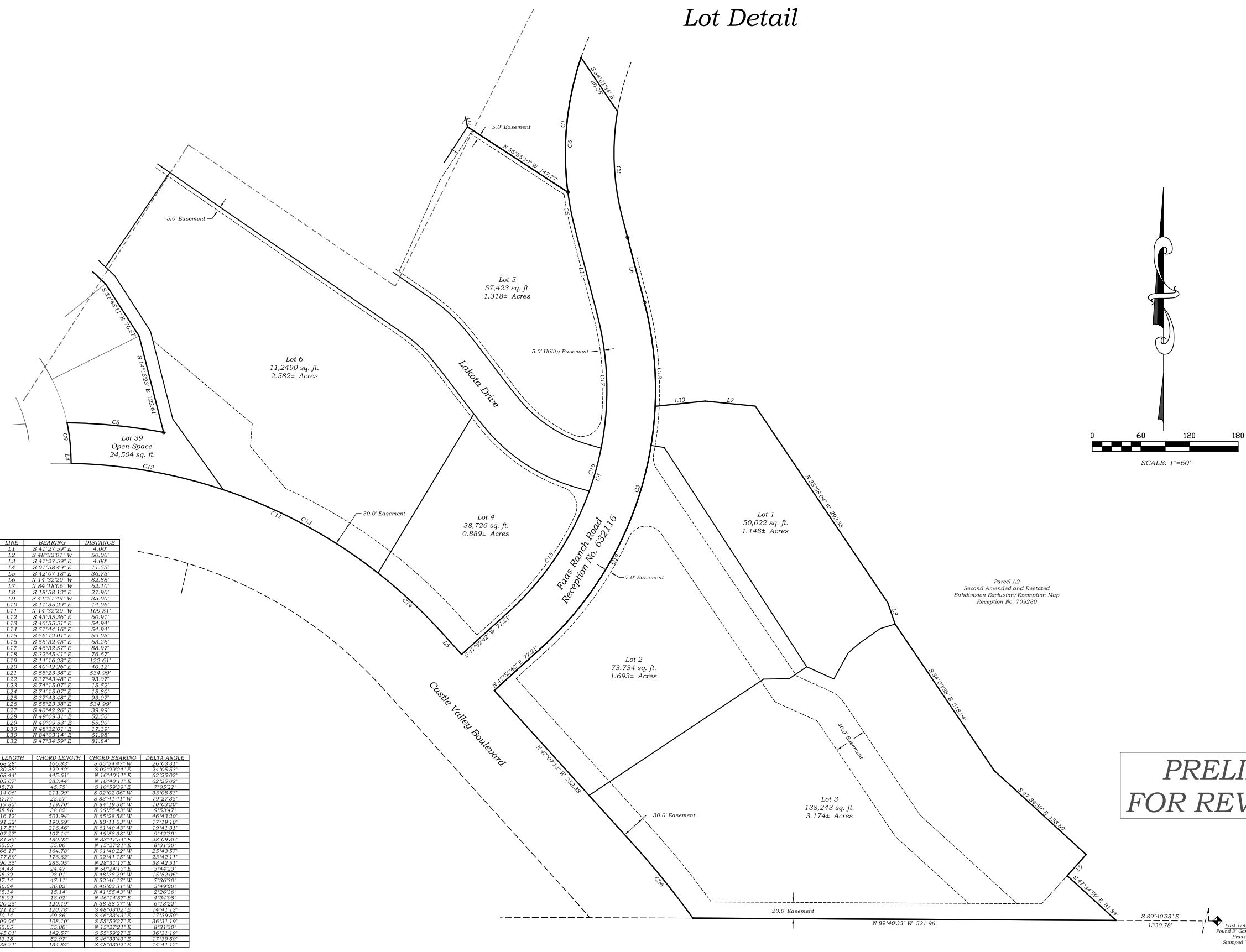
RGLAKOTA HOLDINGS, LLC
151 CLUBHOUSE DRIVE
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FILE:	F7
DFT.	TL
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DATE:	5/30/22
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SHEET	3
OF	4

FINAL PLAT LAKOTA CANYON RANCH PUD, FILING 8, LONGVIEW

Future Development Parcel 3, Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, Phase 1 Reception No. 661957
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Situate in Section 32, Township 5 South, Range 90 West of the 6th P.M. Town of New Castle, County of Garfield, State of Colorado

Lot Detail



LINE	BEARING	DISTANCE
L1	S 41°27'59" E	4.00
L2	S 48°32'01" W	50.00
L3	S 41°27'59" E	4.00
L4	S 01°58'49" E	11.55
L5	S 42°07'18" E	36.75
L6	N 14°32'20" W	82.88
L7	N 84°18'06" W	62.10
L8	S 18°58'12" E	27.00
L9	S 41°51'49" W	35.00
L10	S 11°35'29" E	14.06
L11	N 14°32'20" W	109.51
L12	S 43°33'36" E	60.91
L13	S 46°55'51" E	54.94
L14	S 31°44'16" E	54.94
L15	S 56°12'01" E	59.05
L16	S 36°32'43" E	63.26
L17	S 46°39'57" E	88.97
L18	S 32°45'41" E	76.67
L19	S 14°16'23" E	122.61
L20	S 40°42'26" E	40.12
L21	S 55°23'38" E	534.99
L22	S 37°43'48" E	93.07
L23	S 74°15'07" E	15.80
L24	S 74°15'07" E	15.80
L25	S 37°43'48" E	93.07
L26	S 55°23'38" E	534.99
L27	S 40°42'26" E	39.99
L28	N 49°09'31" E	52.50
L29	N 49°09'31" E	55.00
L30	N 48°32'01" E	17.39
L31	N 84°03'14" E	61.98
L32	S 47°34'59" E	81.84

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	370.00	168.28	166.83	S 65°34'47" W	30.0331°
C2	370.00	130.88	129.82	S 02°29'24" E	24.0353°
C3	430.00	468.44	445.61	N 16°40'11" E	62°25'02°
C4	370.00	403.07	383.44	N 16°40'11" E	62°25'02°
C5	370.00	48.78	48.78	S 10°59'02" E	7.0529°
C6	370.00	214.06	211.09	S 02°02'06" W	33°08'53°
C7	30.00	27.74	25.51	S 83°11'41" W	72°27'33°
C8	683.92	119.55	119.70	N 84°19'38" W	10.0520°
C9	225.00	38.86	38.82	N 06°53'43" W	0°53'47°
C10	632.92	316.12	311.84	N 65°28'28" W	46°43'20°
C11	632.92	191.32	190.59	N 80°11'03" W	17°19'16°
C12	632.92	217.53	216.46	N 61°40'43" W	19°41'31°
C13	632.92	107.14	107.14	N 46°58'38" W	29°42'39°
C14	632.92	181.85	180.02	N 33°47'54" E	28°09'36°
C15	370.00	55.05	55.00	N 15°47'21" E	6°31'30°
C16	370.00	166.17	164.28	N 01°40'24" W	25°43'36°
C17	430.00	177.89	176.62	N 02°41'15" W	23°42'11°
C18	430.00	280.05	283.05	N 38°11'17" E	38°43'31°
C19	375.00	24.48	24.47	N 50°24'13" E	3°44'23°
C20	355.00	98.72	98.07	N 48°38'29" W	13°52'06°
C21	355.00	47.14	47.11	N 52°01'17" W	7°26'30°
C22	355.00	36.04	36.02	N 46°03'31" W	5°49'00°
C23	355.00	13.74	13.74	N 41°53'43" W	2°26'36°
C24	425.00	18.02	18.02	N 46°14'52" E	4°34'08°
C25	1092.38	120.23	120.19	N 38°58'07" W	6°18'32°
C26	472.50	121.12	120.78	S 48°03'02" E	14°41'11°
C27	227.50	70.14	69.86	S 46°33'43" E	17°39'50°
C28	172.50	109.96	108.10	S 55°59'27" E	36°31'19°
C29	370.00	55.00	55.00	N 15°47'21" E	6°31'30°
C30	227.50	145.01	142.57	S 55°59'27" E	36°31'19°
C31	172.50	53.78	52.97	S 46°33'43" E	17°39'50°
C32	327.50	135.21	134.84	S 48°03'02" E	14°41'11°

**PRELIMINARY
FOR REVIEW ONLY**

REVISION	DESCRIPTION

BOOKCLIFF
Survey Services, Inc.

1500 East 15th Street
Boulder, Colorado 80501
Ph: (970) 625-1330
Fax: (970) 625-2773

LAKOTA CANYON RANCH PUD, FILING 7
LONGVIEW

RG LAKOTA HOLDINGS, LLC
151 CLUBHOUSE DRIVE
BASALT, CO 81621

FILE:	F7
DFT.	TL
CK.	MJL
DATE:	5/30/22
PROJECT NO.	20170
SHEET	4
OF	4

East 1/4 Corner Section 32
Found 3" Garfield County Surveyor
Bress Cop on 2" Pipe
Stamped 1/4832 833 1978"



WILL SERVE LETTER

July 11, 2022

Katie Tabor
435 N 8th St
Carbondale Co 81623

Re: LONGVIEW @ LAKOTA CANYON RANCH

Dear Katie,

This letter is to confirm that Xcel Energy is your utility provider for natural gas and electric service. In accordance with our tariffs, on file with and approved by the Colorado Public Utilities Commission, gas and electric facilities can be made available to serve the project at Longview @ Lakota Canyon Ranch. The cost, and whether any reinforcements or extensions are required, for the Company to provide those facilities will be determined by your designer upon receipt of application and project plans.

Your utility service(s) will be provided after the following steps are completed:

- ***Application submitted to Xcel Energy's "Builders Call Line (BCL)"*** – once your application is accepted you will be assigned a design department representative who will be your primary point of contact
- ***Utility design is completed*** – you must provide your design representative with the site plan, the one - line diagrams, and panel schedules for electric and gas loads if applicable
- ***All documents provided by design representative are signed and returned***
- ***Payment is received*** (Residential Service Laterals if applicable)
- ***Required easements are granted*** - you must sign and return applicable easement documents to your Right-of-Way agent
- ***Site is ready for utility construction*** - the site ready information can be found on our website at may be viewed at [Construction and Inspection | Xcel Energy](https://www.xcelenergy.com/ConstructionAndInspection).

An estimated scheduled in-service date will be provided once these requirements have been met. It is important to keep in mind that the terms and conditions of utility service, per our tariffs, require that you provide adequate space and an easement on your property for all gas and electric facilities required to serve your project, including but not limited to gas and electrical lines and meters, transformers, and pedestals. General guidelines for requirements can be found on our website at [xcelenergy.com/InstallAndConnect](https://www.xcelenergy.com/InstallAndConnect).

Xcel Energy looks forward to working with you on your project and if I can be of further assistance, please contact me at the phone number or email listed below.

Sincerely,

Samantha Wakefield
Xcel Energy Planner

Mailing address: Xcel Energy
1995 Howard Ave
Rifle, CO 81650



Colorado River Engineering
P.O. Box 1301
Rifle, CO 81650
(970) 625-4933

August 18, 2022

Town of New Castle
c/o Paul Smith
Via Email: psmith@newcastlecolorado.org
Cc: dromero@romero-group.com

RE: Job#1219 – Lakota Canyon Ranch – Longview – Town Staff Comments

Dear Mr. Smith,

Colorado River Engineering, Inc. has prepared this letter in response to the comments prepared by the Town Engineer, Jeff Simonson P.E. (SGM) and Public Works Director (PWD), John Wenzel. Except for those items paraphrased and noted below, we are in agreement with the numerous technical items identified in the letters with respect to design details, plat requirements, and project specifications. We appreciate the input and look forward to incorporating these comments into the final design documents and final plat for each phase.

Changes/Comments/Discussion

SGM #5 – Provide sidewalks separated 5-feet from back of curb and gutter to improve snow storage areas. The snow storage plan has been updated and shows the storage area is sufficient to meet town design goals. We respectfully object to including a mandatory condition of a separated sidewalk.

SGM #10 – Parking Code Discussion - The parking counts have been updated and summarized in the submittals by Connect One Design.

PWD Streets and Sidewalks

Drives A & B Should be Public Right-of-Way, meet design standards with parking and sidewalks both sides – As an alternative to the private drive design submitted originally that used a street width of 24-feet and no sidewalks, Sheet 8 of the Civil design packet has been updated to show the road as a public Right-of-Way. To keep the character and design goals of the project the road was not widened but instead was altered to a one-way travel lane, parking and sidewalk one side. The sidewalk is 5-feet and exceeds the typical street requirement of 4-feet. This design is effective and safe for residential access.

Drive C - Should be Public Right-of-Way with cul-de-sac turnaround and sidewalks both sides – We appreciate the comments, but desire to preserve these units as they are shown. The owner is working with Habitat for Humanity for the 6 townhome residences on Drive C and 3 townhome residences on Drive A, part of a larger potential plan to create permanent deed restricted housing in New Castle. The density here is aligned and helpful to that plan. Drive C is not intended to be a Public Right-of-Way.



Colorado River Engineering
P.O. Box 1301
Rifle, CO 81650
(970) 625-4933

If you have any questions, please do not hesitate to call 970-625-4933.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Manera". The signature is written in a cursive style and is positioned above a horizontal line.

Christopher Manera, P.E.



the longview at lakota canyon ranch

march 2022 | preliminary PUD



Primary Application Materials

pg.		pg.	
3	sheet set cover	73	comprehensive plan compliance narrative
4	site boundary and size	75	covenants and conditions
5	site plan	119	traffic impact study
6	zoning	254	parking study
7	open space plan	259	fiscal impact study
8	service areas and snow storage plan	263	adjacent property list
9	3d representation	265	engineering report summary
12	circulation	272	drainage report
13	landscape plan	362	water and sewer loads
16	acreage use plan	372	geotechnical report
17	preliminary plat w/ phasing		
21	survey of existing conditions		
22	civil site plan		
24	utility overview		
25	grading and drainage overview		
26	roads, traffic and signage overview		
27	road plans and profiles		
42	grading plan		
44	erosion control plan		
46	civil details		
48	unit counts plan		
49	architectural floor plans and elevations		
72	architectural character images		

CIVIL SHEETS	
A	PRELIMINARY PLAT
B	PRELIMINARY PLAN-NORTH
C	PRELIMINARY PLAN-SOUTH
2	PROJECT NOTES
3	EXISTING CONDITIONS
4	SITE PLAN NORTH
5	SITE PLAN SOUTH
6	UTILITY OVERVIEW
7	GRADING AND DRAINAGE OVERVIEW
8	ROADS, TRAFFIC AND SIGNAGE OVERVIEW
9	NORTH PRELIMINARY PLAN AND PROFILE
10	SOUTH PRELIMINARY PLAN AND PROFILE
11	LAKOTA DRIVE PLAN AND PROFILE
12	LAKOTA DRIVE PLAN AND PROFILE
13	DRIVE A PLAN AND PROFILE
14	DRIVE B PLAN AND PROFILE
15	DRIVE B PLAN AND PROFILE
16	DRIVES B1, C AND D PLAN AND PROFILES
17	DRIVE D PLAN AND PROFILE
18	DRIVE D PLAN AND PROFILE
19	DRIVES D2 AND D3 PLAN AND PROFILES
20	DRIVE F PLAN AND PROFILE
21	DRIVES F AND G PLAN AND PROFILES
22	DRIVE H PLAN AND PROFILE
23	DRIVES I AND J PLAN AND PROFILES
24	NORTH GRADING PLAN
25	SOUTH GRADING PLAN
26	NORTH EROSION CONTROL PLAN
27	SOUTH EROSION CONTROL PLAN
28	DETAILS WATER AND SEWER
29	DETAILS GENERAL

LANDSCAPE ARCHITECTURE SHEETS	
L.0.01	EXISTING CONDITIONS
L.1.00	GENERAL SITE PLAN
L.2.00	ZONING
L.3.00	OPEN SPACE PLAN
L.4.00	SERVICE AREAS + SNOW STORAGE
L.5.00	3D RENDERINGS
L.5.01	3D RENDERINGS
L.5.02	3D RENDERINGS
L.6.00	CIRCULATION DIAGRAM
L.7.00	LANDSCAPE PLAN
L.7.01	LANDSCAPE PLAN ENLARGEMENT
L.7.02	LANDSCAPE PLAN ENLARGEMENT
L.8.00	ACREAGE DIAGRAM

ARCHITECTURE SHEETS	
A0	SITE PLAN UNIT COUNTS
A1-2.1	APARTMENT 1 FLOOR PLANS
A1-2.2	APARTMENT 1 FLOOR PLANS
A1-4.1	APARTMENT 1 EXT ELEVATIONS
A1-4.2	APARTMENT 1 EXT ELEVATIONS
A2-2.1	APARTMENT 2 FLOOR PLANS
A2-2.2	APARTMENT 2 FLOOR PLANS
A2-4.1	APARTMENT 2 EXT ELEVATIONS
A2-4.2	APARTMENT 2 EXT ELEVATIONS
TH-2.1	TOWNHOME FLOOR PLANS
TH-4.1	TRIPLEX TOWNHOME EXT ELEVATIONS
CR-1	CR-1 FLOOR PLANS
C1-4.1	CR-1 EXT ELEVATIONS
C1-4.2	CR-1 EXT ELEVATIONS
CR-2	CR-2 FLOOR PLANS
C2-4.1	CR-2 EXT ELEVATIONS
CR-3	CR-3 FLOOR PLANS
C3-4.1	CR-3 EXT ELEVATIONS
C3-4.2	CR-3 EXT ELEVATIONS
CR-4	CR-4 FLOOR PLANS
C4-4.1	CR-4 EXT ELEVATIONS
CR-5	CR-5 FLOOR PLAN
C5-4.1	CR-5 EXT ELEVATIONS
C5-4.2	CR-5 EXT ELEVATIONS
PREC	PRECEDENT IMAGES

project directory

client
the romero group
350 market street, unit 304
basalt, co, 81621
contact: dwayne romero,
dromero@romero-group.com

landscape architect
connect one design
350 market street, unit 307
basalt, co, 81621
contact: heather henry,
hh@connectonedesign.com

architect
z group architects
208 midland ave
basalt, co, 81621
contact: scott mchale,
scott@zgrouparchitects.com

civil engineer
colorado river engineering
136 e 3rd street, #c
rifle, co, 81650
contact: chris manera
chris@coloradorivereng.com

transportation engineer
fox tuttle transportation group
1624 market street, suite 202
denver, co, 80202
contact: cassie slade
cassie.slade@foxtuttle.com

financial consulting
triple point strategic consulting
po box 985
crested butte, co, 81224
contact: jeff moffett
jmoffett@tpsconsulting.net



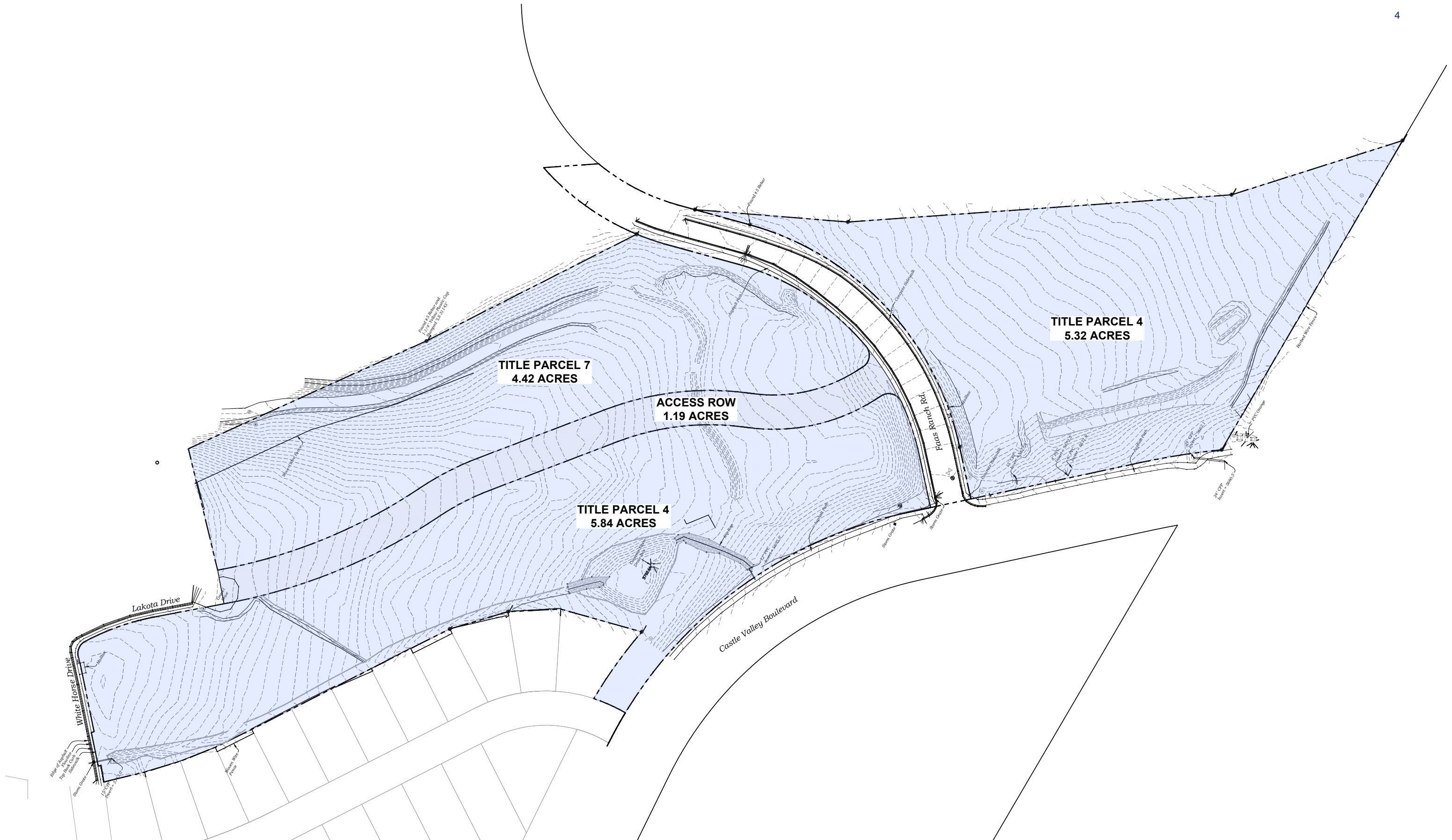
CONTEXT MAP
NOT TO SCALE




Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
Horiz. Scale:	
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.	

Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	



Sheet Name: COVER PAGE	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number: CVR	
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621	



<p>Print Date: FEBRUARY 25, 2022</p> <p>File Name: THE LONGVIEW AT LAKOTA CANYON RANCH</p> <p>Horiz. Scale: 1" = 60'</p> <p>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</p>	<p style="text-align: center;">Issue & Revisions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Date:</th> <th style="width: 35%;">Comments:</th> <th style="width: 15%;">Drawn by:</th> <th style="width: 15%;">Checked by:</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Date:	Comments:	Drawn by:	Checked by:													  	<p>Sheet Name: Existing Conditions- Site Size</p> <p>Sheet Number: L.0.01</p>	<p style="text-align: center;">THE LONGVIEW AT LAKOTA CANYON RANCH</p> <p style="text-align: center;">Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621</p>
Date:	Comments:	Drawn by:	Checked by:																	



Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 60'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

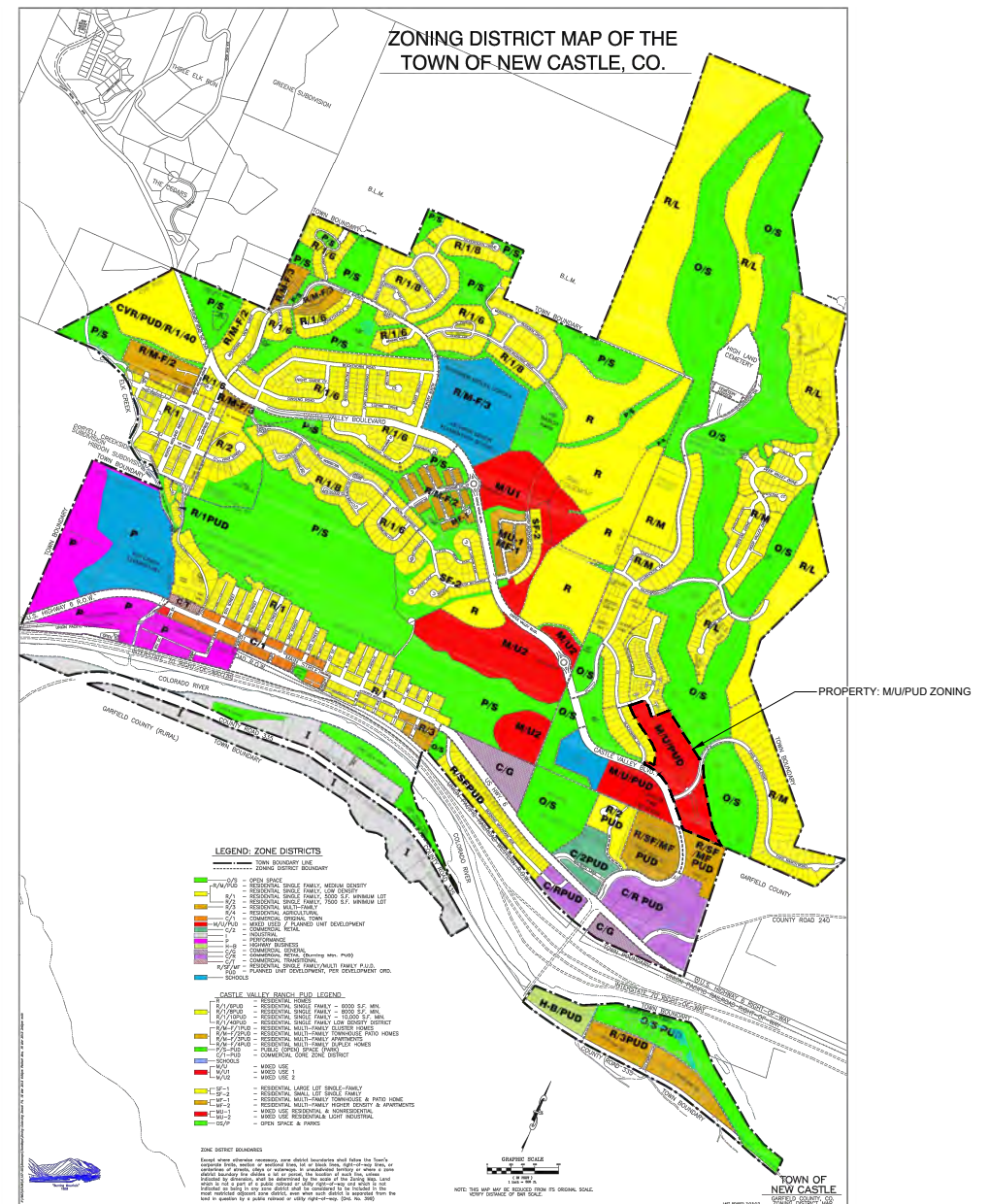
Sheet Name: Site Plan
 Sheet Number: L.1.00

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

MIXED USE ZONING LCR PUD MATRIX

<p>Allowed per Code</p> <p>Multifamily residential dwellings</p> <p>Residential & commercial in same building</p> <p>Retail sales</p> <p>Services</p> <p>Recreation & entertainment</p> <p>Other</p> <p>Single family</p>	<p>Proposed</p> <p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p>
<p>Required per Code</p> <p>15% gross area as open space</p> <p>Max residential density = 12 units/acre & 300 dwelling units total</p> <p>Max residential units = 10 units per building</p> <p>Max commercial space - 100,000 SF of interior space</p> <p>Max building height = 35 feet</p>	<p>Proposed</p> <p>40% gross area as open space</p> <p>11.8 units/acre & 185 units</p> <p>Apartments = 21 & 24 units/building Townhomes = 2 & 3 units/building Mixed-Use = 6, 9 & 10 units /building</p> <p>51,407 SF of interior space</p> <p>37 feet = 2 feet increase</p>



PARKING REQUIREMENT MATRIX

<p>Required per Code</p> <p>Residential Single Family Home = 2 spaces per unit</p> <p>Residential Multi-Family Townhomes = 2 spaces per unit</p> <p>Residential Multi-Family Apartments = 2 spaces per unit</p> <p>Commercial = 2 spaces per 300 SF</p> <p>Commercial Office = 1 space per 300 SF</p>	<p>Required per Application</p> <p>29 units = 58 parking spaces</p> <p>20 units = 40 parking spaces</p> <p>136 units = 272 parking spaces</p> <p>31,853 SF = 212 parking spaces</p> <p>19,554 SF = 65 parking spaces</p> <p>277 parking spaces</p>	<p>Proposed Parking Spaces</p> <p>58 parking spaces</p> <p>40 parking spaces</p> <p>272 parking spaces</p> <p>163 total commercial and office parking spaces (40% reduction per code)</p>	<p>Shared Parking Scenario per the Institute of Transportation Engineer's (ITE) Shared Parking Matrix (see parking study)</p> <p>58 parking spaces</p> <p>40 parking spaces</p> <p>272 parking spaces</p> <p>163 parking spaces</p> <p>435 shared spaces / 253 spaces needed per ITE's highest projected parking demand = 172% parked</p>
--	---	--	--

<p>Print Date: FEBRUARY 25, 2022</p> <p>File Name: THE LONGVIEW AT LAKOTA CANYON RANCH</p> <p>Horiz. Scale: 1" = 60'</p> <p>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</p>	<p>Issue & Revisions</p> <table border="1"> <thead> <tr> <th>Date:</th> <th>Comments:</th> <th>Drawn by:</th> <th>Checked by:</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Date:	Comments:	Drawn by:	Checked by:																		<p>Sheet Name: ZONING DIAGRAM</p> <p>Sheet Number: L.2.00</p>	<p>THE LONGVIEW AT LAKOTA CANYON RANCH</p> <p>Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621</p>
Date:	Comments:	Drawn by:	Checked by:																					




<p>Print Date: FEBRUARY 25, 2022</p> <p>File Name: THE LONGVIEW AT LAKOTA CANYON RANCH</p> <p>Horiz. Scale: 1" = 60'</p> <p>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Issue & Revisions</th> </tr> <tr> <th>Date:</th> <th>Comments:</th> <th>Drawn by:</th> <th>Checked by:</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Issue & Revisions				Date:	Comments:	Drawn by:	Checked by:																<p>Sheet Name: Open Space Plan</p> <p>Sheet Number: L.3.00</p>	<p>THE LONGVIEW AT LAKOTA CANYON RANCH</p> <p>Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621</p>
Issue & Revisions																										
Date:	Comments:	Drawn by:	Checked by:																							



TOTAL PLOWABLE HARDSCAPE = 5.25 ACRES
 15% = .79 ACRES

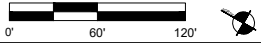
ZONING SCHEDULE

SYMBOL	NOTES	ACRES
	SNOW STORAGE AREA	0.85

Print Date: FEBRUARY 25, 2022

File Name: THE LONGVIEW AT LAKOTA CANYON RANCH

Horiz. Scale: 1" = 60'



These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



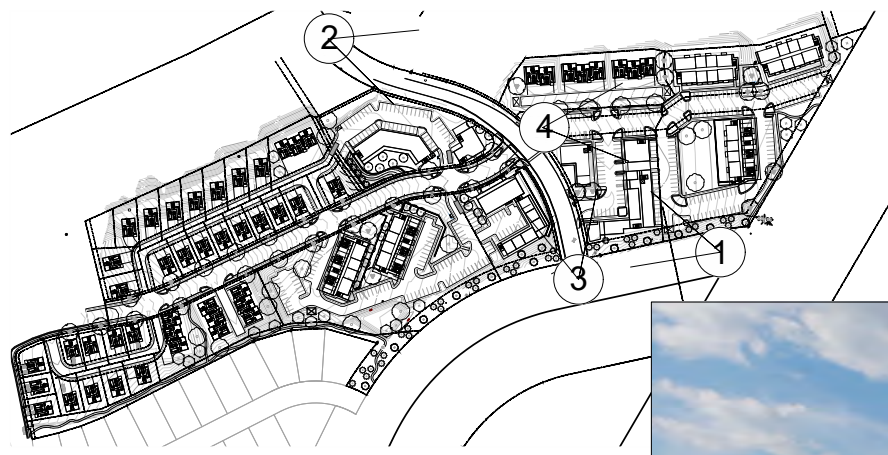


Sheet Name: Service Areas + Snow Storage Plan

Sheet Number: L.4.00

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



3D REPRESENTATION NOTES

- THE IMAGES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE INCLUDED TO CONVEY SCALE, PROPORTION, AND MASS ONLY



4 VIEW TOWARDS SHIBUI
NOT TO SCALE



2 VIEW FROM FAAS RANCH ROAD
NOT TO SCALE



3 VIEW FROM INTERSECTION OF CVB AND FAAS RANCH
NOT TO SCALE



1 VIEW FROM CASTLE VALLEY BOULEVARD
NOT TO SCALE

Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
Horiz. Scale:	
<p>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</p>	

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



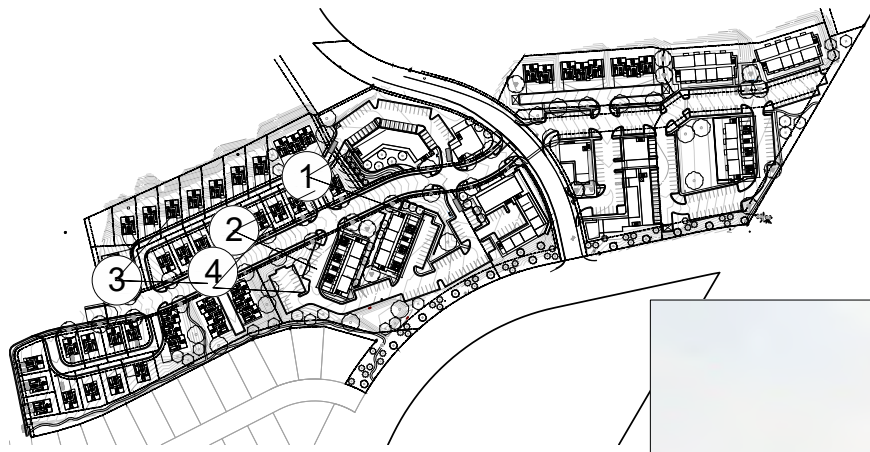




Sheet Name:	3D REPRESENTATION	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number:	L.5.00	
		Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621

3D REPRESENTATION NOTES

- THE IMAGES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE INCLUDED TO CONVEY SCALE, PROPORTION, AND MASS ONLY



4 VIEW OF LAKOTA DRIVE SIDEWALKS
NOT TO SCALE



2 VIEW OF APTS FROM LAKOTA DRIVE
NOT TO SCALE

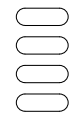


3 VIEWS OF SINGLE FAMILY FROM LAKOTA DRIVE
NOT TO SCALE



1 VIEW OF COMMERCIAL PLAZA
NOT TO SCALE

Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

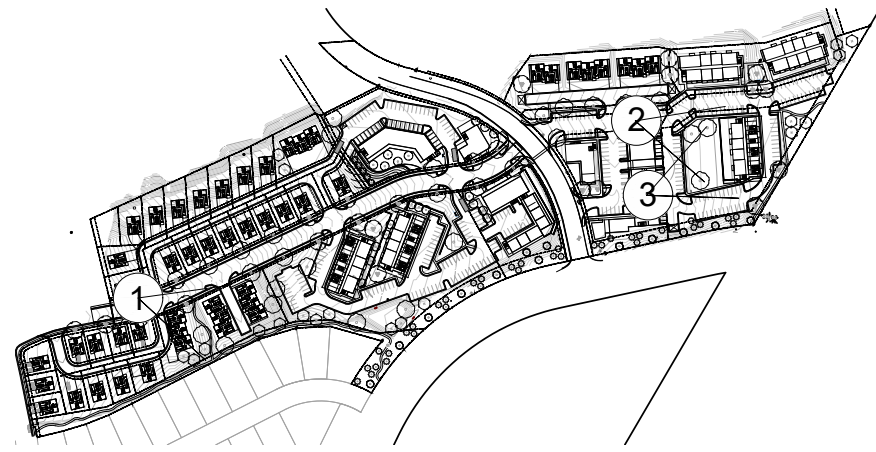


Sheet Name: 3D REPRESENTATION

Sheet Number: L.5.01

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



3D REPRESENTATION NOTES

- THE IMAGES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE INCLUDED TO CONVEY SCALE, PROPORTION, AND MASS ONLY



2 VIEW OF PARK
NOT TO SCALE



3 VIEW OF PARK PLAYGROUND
NOT TO SCALE



1 VIEW OF TRAIL INTO COMPLEX
NOT TO SCALE

Print Date:	FEBRUARY 25, 2022
File Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

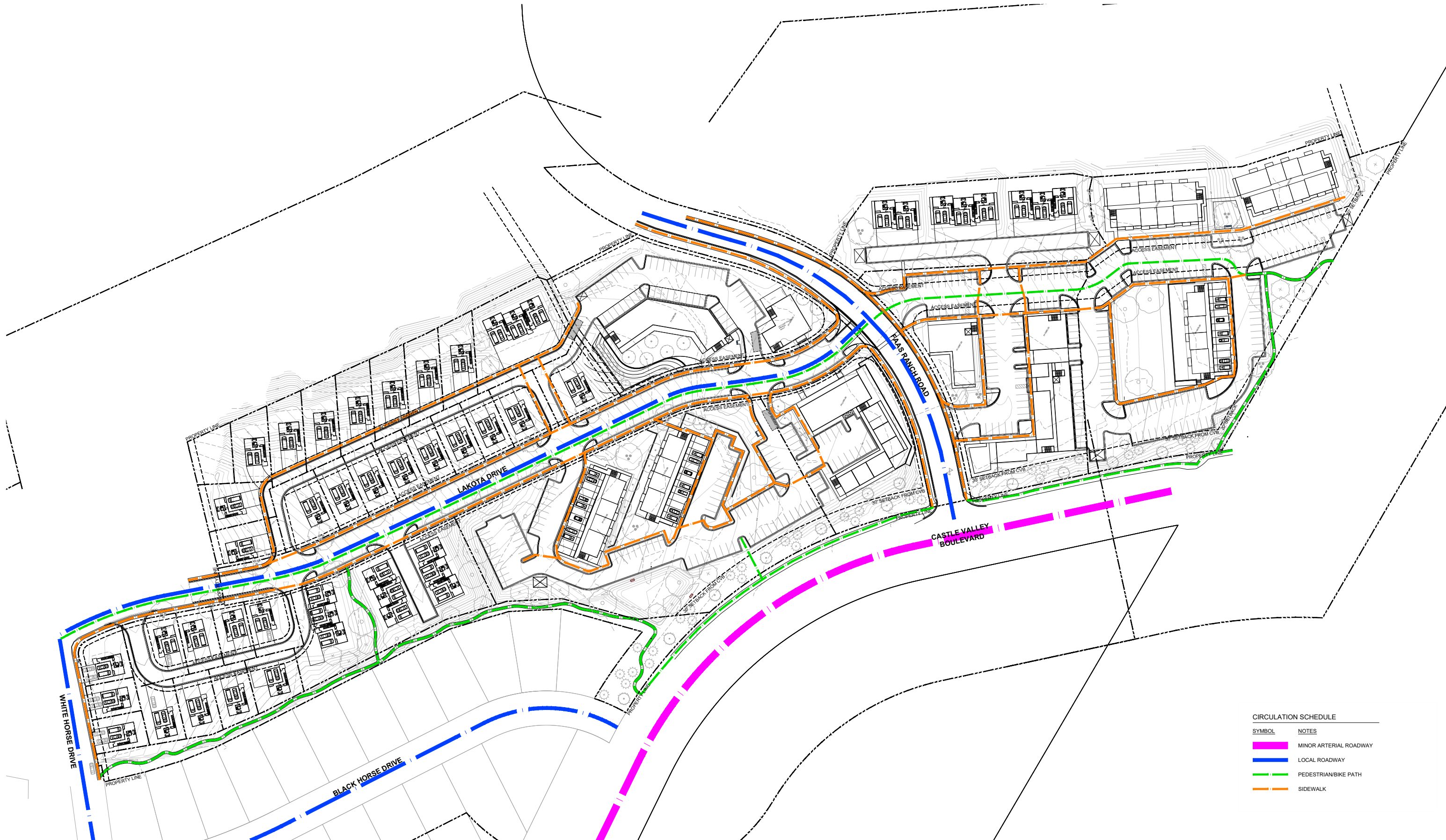






Sheet Name:	3D REPRESENTATION
Sheet Number:	L.5.02

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



CIRCULATION SCHEDULE

SYMBOL	NOTES
	MINOR ARTERIAL ROADWAY
	LOCAL ROADWAY
	PEDESTRIAN/BIKE PATH
	SIDEWALK

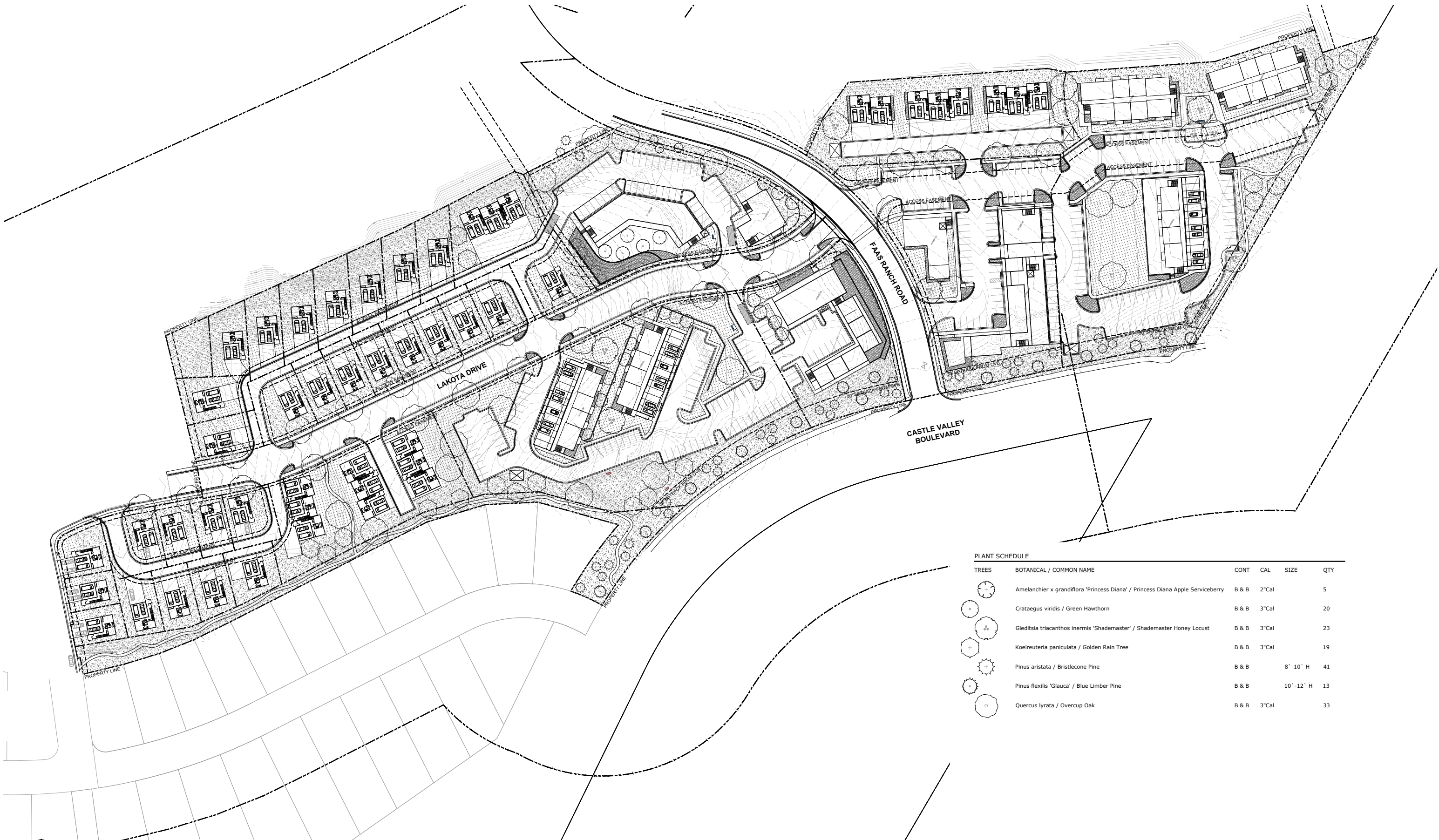
Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 60'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: Circulation Diagram
 Sheet Number: L.6.00

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
	Amelanchier x grandiflora 'Princess Diana' / Princess Diana Apple Serviceberry	B & B	2"	Cal	5
	Crataegus viridis / Green Hawthorn	B & B	3"	Cal	20
	Gleditsia triacanthos inermis 'Shademaster' / Shademaster Honey Locust	B & B	3"	Cal	23
	Koelreuteria paniculata / Golden Rain Tree	B & B	3"	Cal	19
	Pinus aristata / Bristlecone Pine	B & B		8' - 10' H	41
	Pinus flexilis 'Glauca' / Blue Limber Pine	B & B		10' - 12' H	13
	Quercus lyrata / Overcup Oak	B & B	3"	Cal	33

Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 60'

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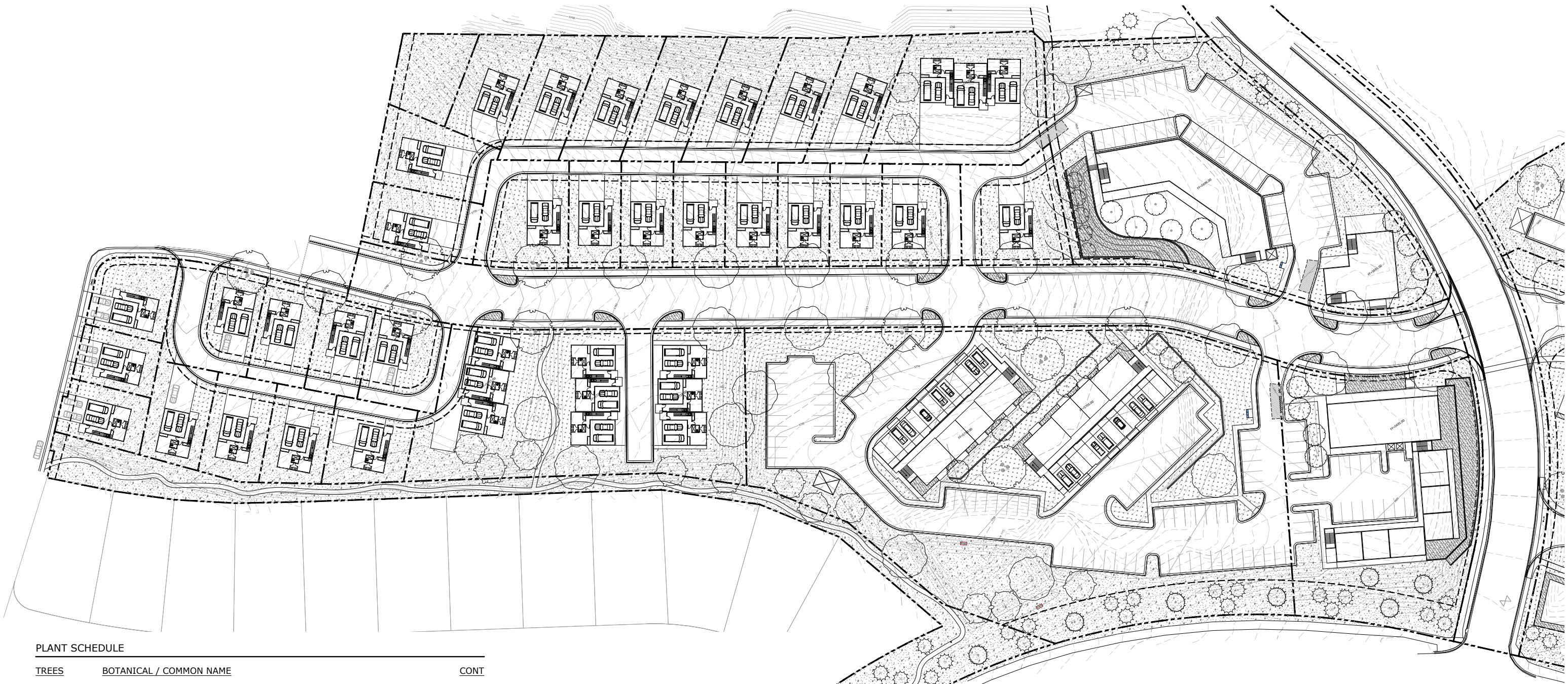
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: Landscape Plan
 Sheet Number: L.7.00

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT
	Amelanchier x grandiflora 'Princess Diana' / Princess Diana Apple Serviceberry	B & B
	Crataegus viridis / Green Hawthorn	B & B
	Gleditsia triacanthos inermis 'Shademaster' / Shademaster Honey Locust	B & B
	Koelreuteria paniculata / Golden Rain Tree	B & B
	Pinus aristata / Bristlecone Pine	B & B
	Pinus flexilis 'Glauca' / Blue Limber Pine	B & B
	Quercus lyrata / Overcup Oak	B & B

Print Date: FEBRUARY 25, 2022

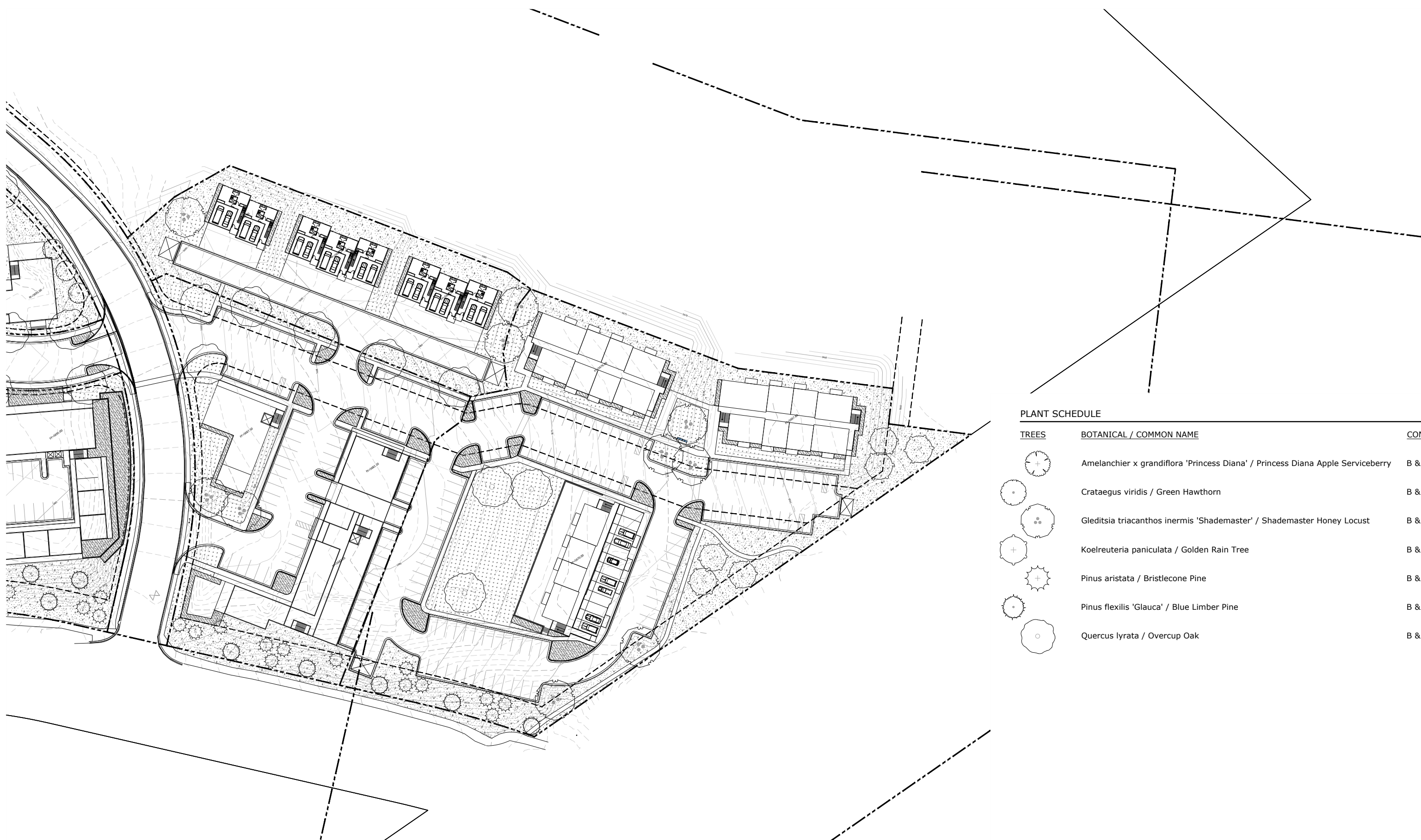
File Name: THE LONGVIEW AT LAKOTA CANYON RANCH

Horiz. Scale: 1" = 40'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: Landscape Plan Enlargement	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number: L.7.01	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



PLANT SCHEDULE

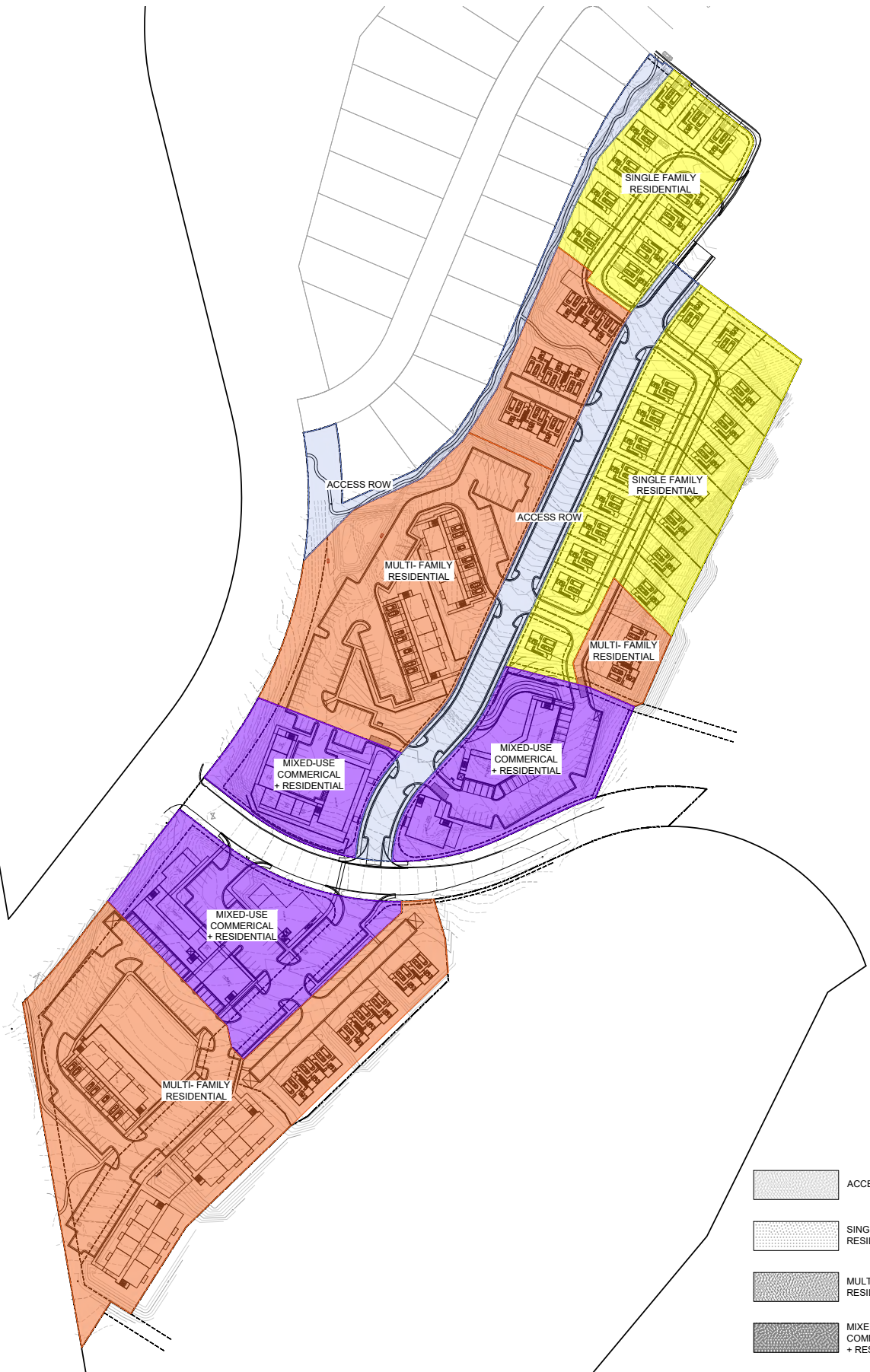
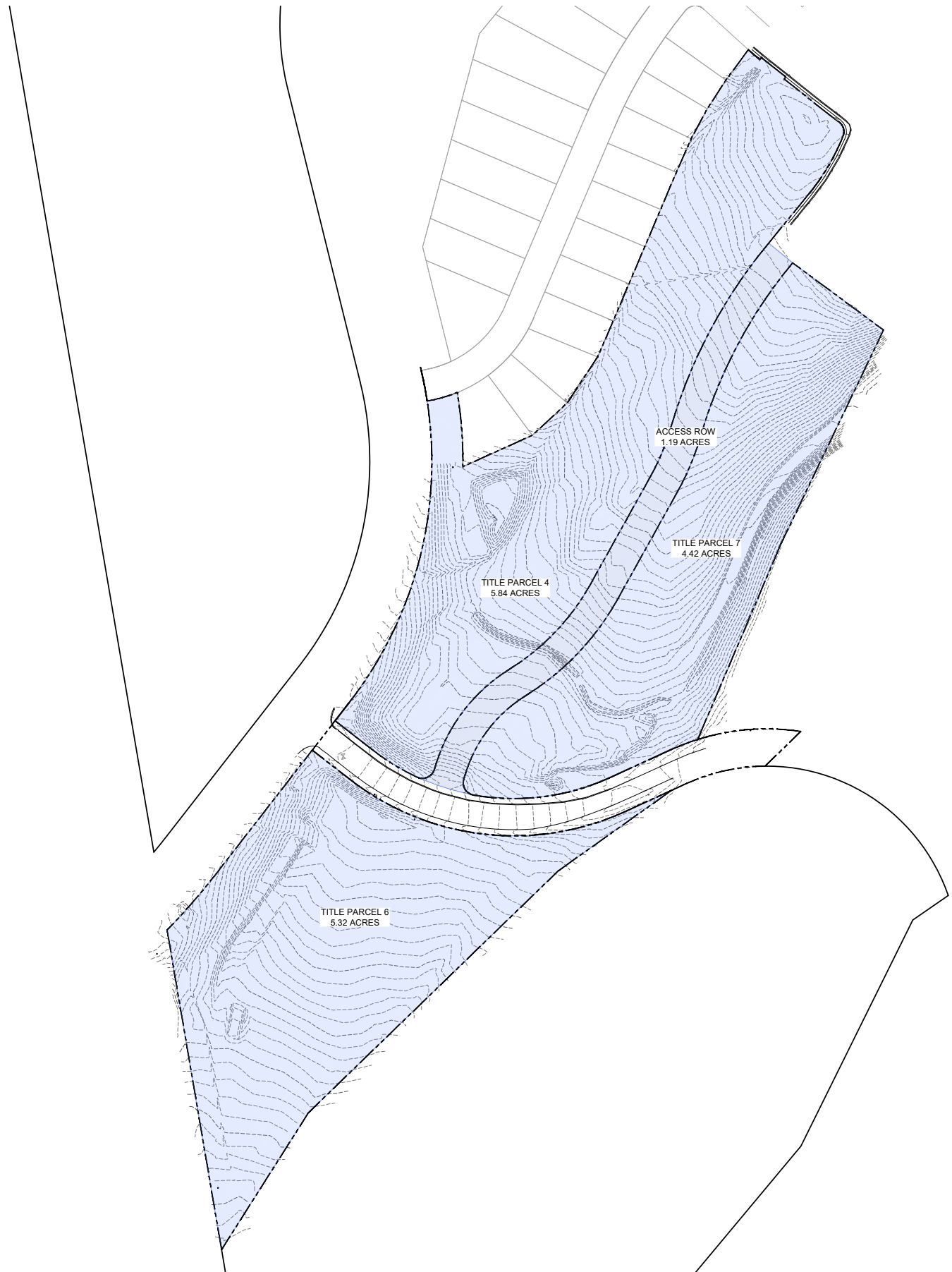
TREES	BOTANICAL / COMMON NAME	CONT
	Amelanchier x grandiflora 'Princess Diana' / Princess Diana Apple Serviceberry	B & B
	Crataegus viridis / Green Hawthorn	B & B
	Gleditsia triacanthos inermis 'Shademaster' / Shademaster Honey Locust	B & B
	Koelreuteria paniculata / Golden Rain Tree	B & B
	Pinus aristata / Bristlecone Pine	B & B
	Pinus flexilis 'Glauca' / Blue Limber Pine	B & B
	Quercus lyrata / Overcup Oak	B & B





Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 40'
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

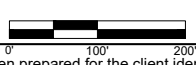
Sheet Name: Landscape Plan Enlargement
 Sheet Number: L.7.02

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



-  ACCESS ROW - 1.83 ACRES
-  SINGLE FAMILY RESIDENTIAL - 3.73 ACRES
-  MULTI-FAMILY RESIDENTIAL - 7.97 ACRES
-  MIXED-USE COMMERCIAL + RESIDENTIAL - 3.90 ACRES

Print Date: FEBRUARY 25, 2022
 File Name: THE LONGVIEW AT LAKOTA CANYON RANCH
 Horiz. Scale: 1" = 100'



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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

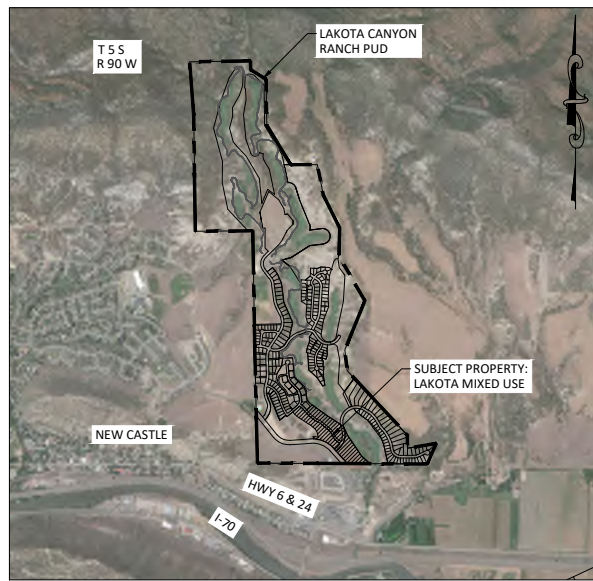




Sheet Name: Acreage Use Diagram
 Sheet Number: L.8.00

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

LAKOTA CANYON RANCH PUD FILING 8, LONGVIEW PRELIMINARY PLAT AND PLAN



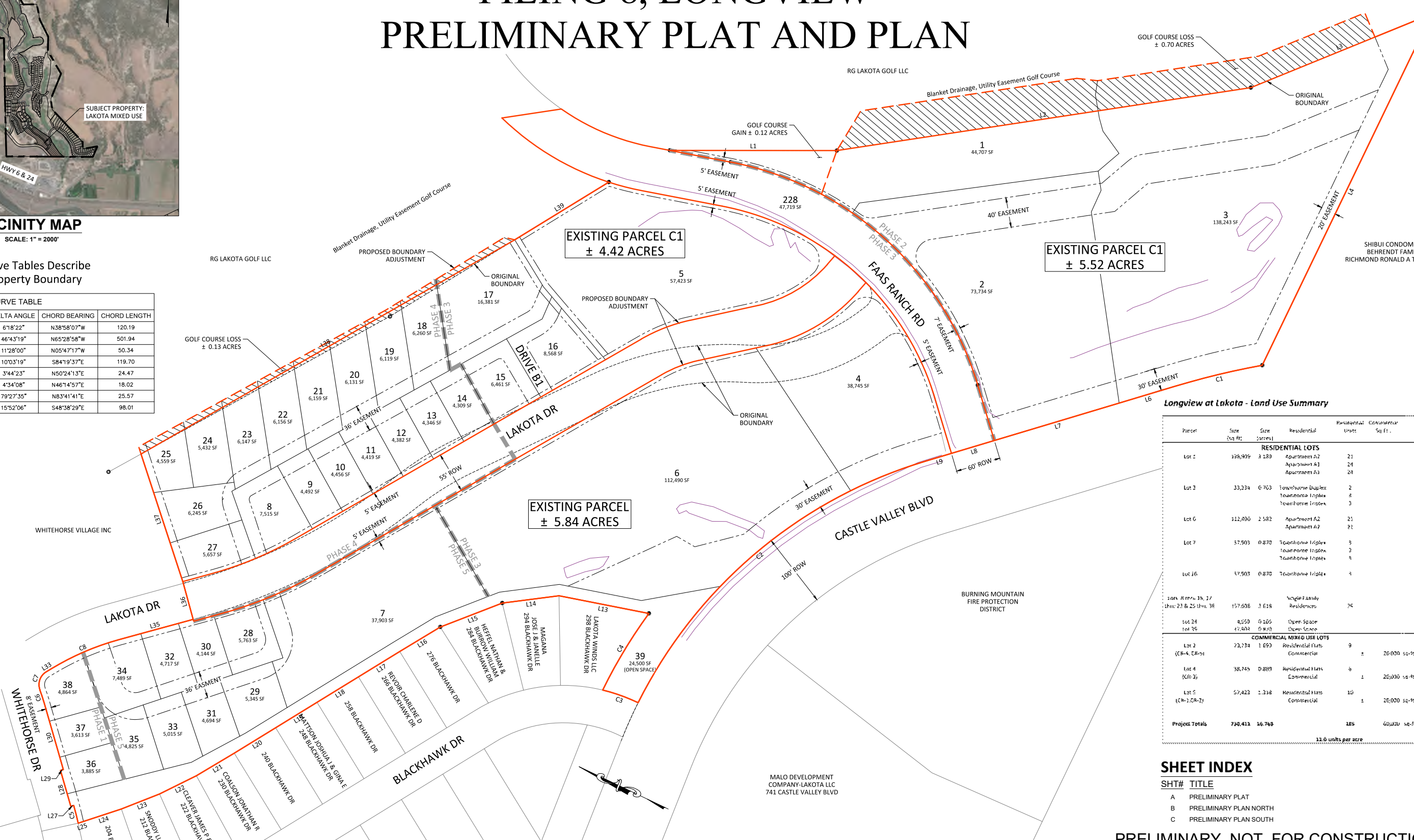
VICINITY MAP

SCALE: 1" = 2000'

Line & Curve Tables Describe Existing Property Boundary

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	120.25	1092.58	6°18'22"	N38°58'07"W	120.19
C2	516.12	632.92	46°43'19"	N65°28'58"W	501.94
C3	50.43	251.97	11°28'00"	N05°47'17"W	50.34
C4	119.85	682.92	10°03'19"	S84°19'37"E	119.70
C5	24.48	375.00	3°44'23"	N50°24'13"E	24.47
C6	18.02	226.00	4°34'08"	N46°14'57"E	18.02
C7	27.74	20.00	79°27'35"	N83°41'41"E	25.57
C8	98.32	355.00	15°52'06"	S48°38'29"E	98.01

LINE TABLE		
LINE #	BEARING	DISTANCE
L1	S25°21'48"E	223.52
L2	S34°03'38"E	560.40
L3	S47°34'59"E	261.31
L4	N89°40'33"W	521.96
L6	N42°07'18"W	77.98
L7	N42°07'18"W	174.40
L8	N42°07'18"W	60.00
L9	N42°07'18"W	36.75
L13	N14°16'23"W	122.61
L14	N32°45'41"W	76.67
L15	N46°32'57"W	88.97
L16	N56°32'45"W	63.26
L17	N56°58'50"W	65.00
L18	N56°58'50"W	65.00
L19	N56°58'50"W	65.00
L20	N56°58'50"W	65.00
L21	N56°12'01"W	59.05
L22	N51°44'16"W	54.94
L23	N46°55'51"W	54.94
L24	N43°35'36"W	53.37
L25	N43°35'36"W	7.54
L27	N41°27'59"W	4.00
L28	N48°32'01"E	50.00
L29	S41°27'59"E	4.00
L30	N48°32'01"E	93.09
L33	S56°34'32"E	8.86
L35	S40°42'26"E	102.82
L36	N49°09'31"E	52.50
L37	N46°28'29"E	179.57
L38	S55°13'57"E	576.42
L39	S56°55'10"E	147.77



Longview at Lakota - Land Use Summary

Parcel	Size (sq ft)	Size (acres)	Residential Units	Commercial Sq Ft
RESIDENTIAL LOTS				
Lot 1	128,996	3.189	23	
			Apartment A1	24
			Apartment A3	28
Lot 2	33,234	0.763	2	
			Townhouse Duplex	8
			Townhouse Triplex	3
Lot 6	112,690	2.582	21	
			Apartment A2	21
Lot 7	57,503	0.870	9	
			Townhouse Triplex	9
			Townhouse Triplex	3
Lot 16	57,503	0.870	4	
			Townhouse Triplex	4
lots 21 thru 24	157,608	3.618	76	
			Single Family Residences	76
lot 24	4,050	0.105		
lot 25	47,602	0.870		
			Open Space	
			Open Space	
COMMERCIAL MIXED USE LOTS				
Lot 3	71,734	1.650	9	± 20,000 sq-ft
			Residential Units	
			Commercial	
Lot 4	38,745	0.888	6	± 20,000 sq-ft
			Residential Units	
			Commercial	
Lot 5	57,422	1.318	10	± 20,000 sq-ft
			Residential Units	
			Commercial	
Project Totals	798,413	18.768	185	60,000 sq-ft

13.6 units per acre

SHEET INDEX

SHT#	TITLE
A	PRELIMINARY PLAT
B	PRELIMINARY PLAN NORTH
C	PRELIMINARY PLAN SOUTH

PRELIMINARY, NOT FOR CONSTRUCTION

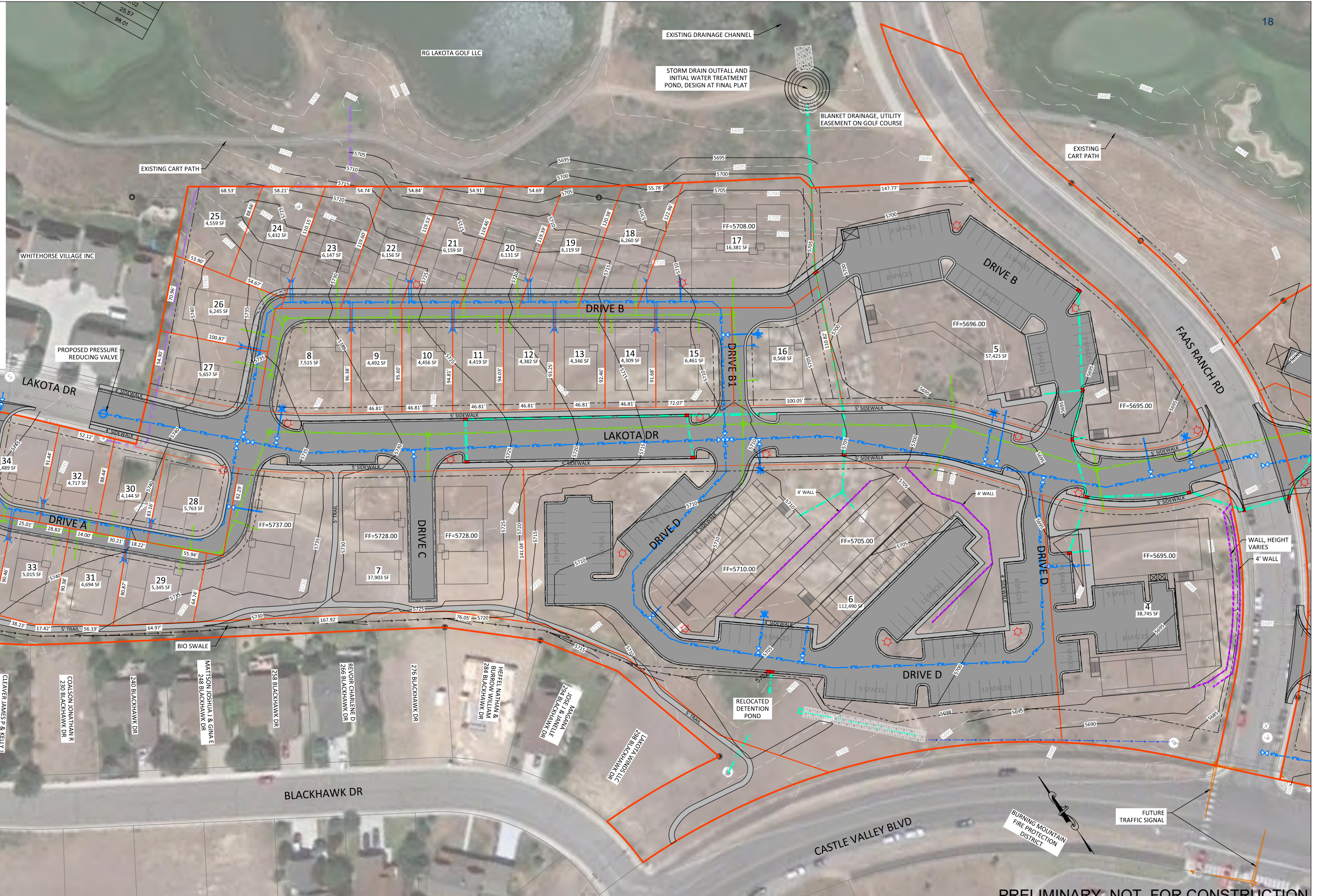
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 60'

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: PRELIMINARY PLAT
 Sheet Number: A

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

- LEGEND**
- PROPERTY BOUNDARY
 - PROPOSED LOT LINE
 - ROAD CENTERLINE
 - FLOWLINE
 - 8" IRR PROPOSED IRRIGATION
 - 8" WL PROPOSED 8" WATER
 - PROPOSED WATER SERVICE
 - 8" SS PROPOSED 8" SEWER
 - S SVC PROPOSED SEWER SERVICE
 - SD PROPOSED STORM SEWER, SIZE AS NOTED
 - PROPOSED MINOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - EXISTING MAJOR CONTOUR
 - 10" WL EXISTING 10" WATER
 - 8" SS EXISTING 8" SEWER
 - EXISTING ELECTRIC PEDESTAL
 - EXISTING TELEPHONE PEDESTAL
 - EXISTING ELECTRIC TRANSFORMER
 - EXISTING UTILITY STUB (T-POST)
 - EXISTING TELEVISION PEDESTAL
 - EXISTING SEWER MANHOLE
 - EXISTING WATER VALVE
 - EXISTING FIRE HYDRANT
 - EXISTING WATER SERVICE
 - EXISTING STREET LIGHT
 - PROPOSED STREET LIGHT
 - PROPOSED SEWER MANHOLE
 - PROPOSED WATER VALVE
 - PROPOSED FIRE HYDRANT
 - PROPOSED STORM TYPE 2 CURB INLET
 - PROPOSED STORM DRAIN MANHOLE



PRELIMINARY, NOT FOR CONSTRUCTION

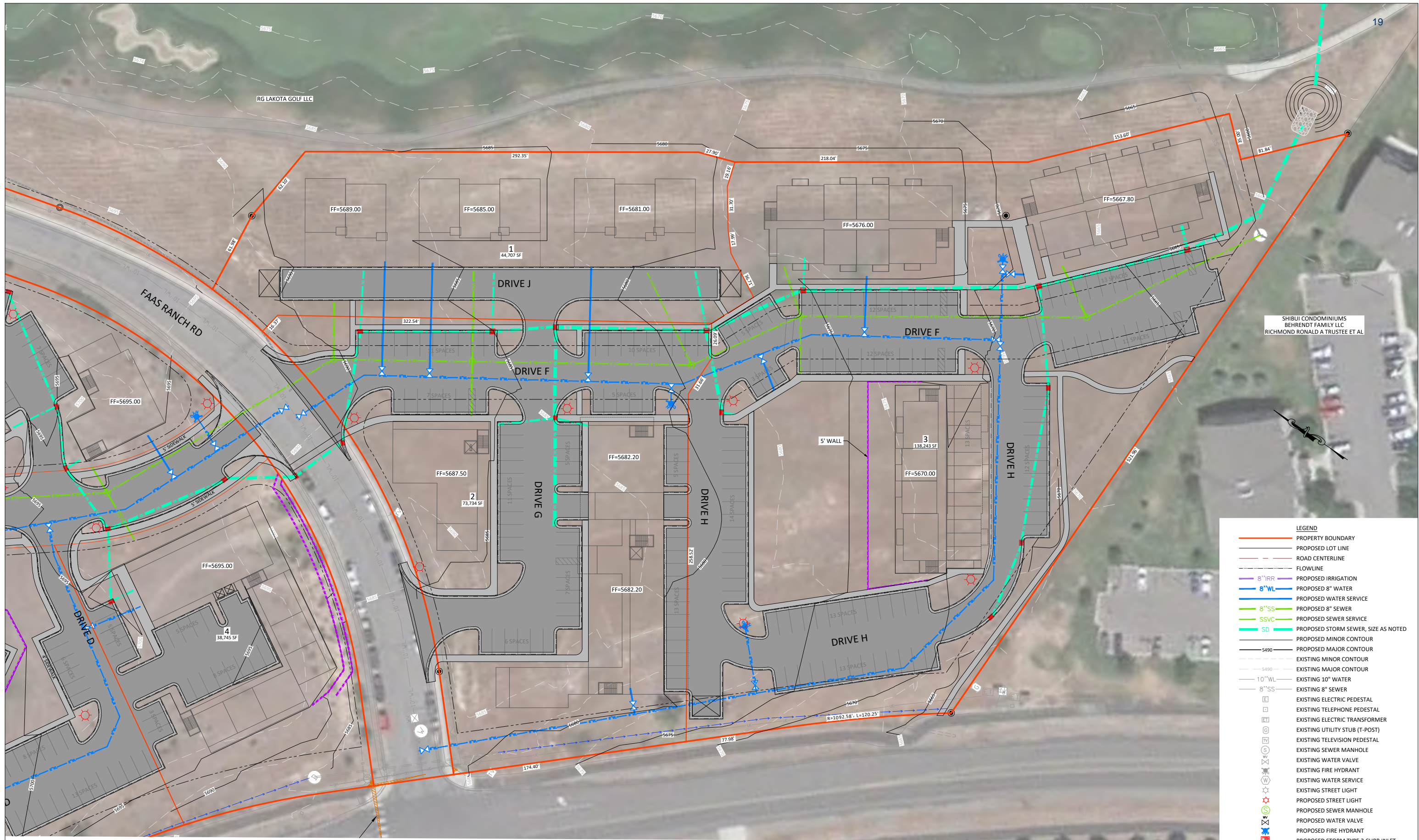
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: PRELIMINARY PLAN NORTH
 Sheet Number: B

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



SHIBUI CONDOMINIUMS
BEHRENDT FAMILY LLC
RICHMOND RONALD A TRUSTEE ET AL

LEGEND	
	PROPERTY BOUNDARY
	PROPOSED LOT LINE
	ROAD CENTERLINE
	FLOWLINE
	PROPOSED IRRIGATION
	PROPOSED 8" WATER
	PROPOSED WATER SERVICE
	PROPOSED 8" SEWER
	PROPOSED SEWER SERVICE
	PROPOSED STORM SEWER, SIZE AS NOTED
	PROPOSED MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING 10" WATER
	EXISTING 8" SEWER
	EXISTING ELECTRIC PEDESTAL
	EXISTING TELEPHONE PEDESTAL
	EXISTING UTILITY STUB (T-POST)
	EXISTING TELEVISION PEDESTAL
	EXISTING SEWER MANHOLE
	EXISTING WATER VALVE
	EXISTING FIRE HYDRANT
	EXISTING WATER SERVICE
	EXISTING STREET LIGHT
	PROPOSED STREET LIGHT
	PROPOSED SEWER MANHOLE
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED STORM TYPE 2 CURBINLET

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 30'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: PRELIMINARY PLAN SOUTH
 Sheet Number: C

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

GENERAL UTILITIES NOTES:

- ALL CONSTRUCTION SHALL COMPLY WITH THESE CONSTRUCTION PLANS PREPARED BY COLORADO RIVER ENGINEERING, INC.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF NEW CASTLE PUBLIC WORKS MANUAL AND SPECIFICATIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST TWO BUSINESS DAYS IN ADVANCE OF ANY CONSTRUCTION WHICH REQUIRES UTILITY LOCATES AND TO VERIFY LOCATION AND DEPTH BEFORE WORK BEGINS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES DURING CONSTRUCTION. ALL UTILITIES SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO, OR INTERRUPTION OF, SERVICES CAUSED BY THE CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND SCHEDULE ALL EARTHWORK, ROAD CONSTRUCTION, TRAFFIC REGULATION, UTILITY CONSTRUCTION, CONSTRUCTION INSPECTION AND GEOTECHNICAL TESTING.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ROAD ACCESS AND TRAFFIC CONTROL AT ALL TIMES DURING CONSTRUCTION.
- STORMWATER BEST MANAGEMENT PRACTICES SHALL BE UTILIZED FOR ALL CONSTRUCTION ACTIVITIES IN ALL PHASES OF CONSTRUCTION, UNTIL THE FINAL ACCEPTANCE OF THE PROJECT. THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE AS NECESSARY AS REQUIRED BY THE STATE OF COLORADO AND THE TOWN OF NEW CASTLE. CONTRACTOR SHALL TAKE PREVENTIVE MEASURES TO INSURE THAT MUD FROM VEHICLES AND/OR CONSTRUCTION DEBRIS ARE NOT DEPOSITED ON THE EXISTING STREETS. ANY SUCH MUD OR DEBRIS THAT IS TRACKED ON TO THE EXISTING STREETS FROM THIS SITE SHALL BE COMPLETELY REMOVED BEFORE CONSTRUCTION ACTIVITIES HAVE ENDED FOR THE DAY. NO SUCH MUD OR DEBRIS SHALL BE ALLOWED TO REMAIN IN ANY STREET OVER NIGHT.
- SILT FENCE SHALL BE PLACED AT THE TOE OF ALL FILL SECTIONS. THE BOTTOM OF ALL SILT FENCE SHALL BE TRENCHED IN THE SOIL AS SHOWN IN THE DETAILS.
- ALL EROSION CONTROL DEVICES SHALL REMAIN IN-PLACE AND MAINTAINED UNTIL A 70% RE-VEGETATION IS ESTABLISHED.
- ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER AND HIS REPRESENTATIVES. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY MATERIALS AND/OR WORKMANSHIP THAT DO NOT CONFORM TO THE APPROVED DRAWINGS AND SPECIFICATIONS.
- THE MINIMUM DEPTH OF BURY FOR ALL WATER LINE IS TO BE 5.5 FEET FROM FINISHED GRADE TO CROWN OF PIPE PER TOWN OF NEW CASTLE DETAILS.
- THE TOPOGRAPHIC, AND SITE PLAN INFORMATION SHOWN ON THESE PLANS WAS PROVIDED BY BOOKCLIFF SURVEY SERVICES.
- ALL WATERLINE AND SEWERLINE CONSTRUCTION SHALL COMPLY WITH COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REGULATIONS.
- ALL WATERLINE SHALL BE C900 PVC SCHEDULE 200 PIPE, INSTALLED IN ACCORDANCE WITH AWWA AND MANUFACTURER'S SPECIFICATIONS.
- ALL SIGNS SHALL BE IN ACCORDANCE WITH THE MUTCD.
- ALL PEDESTRIAN RAMPS SHALL BE IN ACCORDANCE WITH ADA.
- ALL CURB, GUTTER AND SIDEWALK TO CONSIST OF MONOLITHIC POUR.
- CURRENT PAVEMENT DESIGN BY GROUND ENGINEERING (8-27-07) CALLS FOR 5.5" HBP OVER MIN. 12" SUBGRADE STABILIZED WITH FLY ASH OR PORTLAND CEMENT. SEE REPORT DATED 8-13-2007 FOR FLY ASH RECOMMENDATION.

EROSION CONTROL NOTES:

- THIS RE-VEGETATION AND EROSION CONTROL PLAN IS INCLUDED IN THE CONSTRUCTION PLAN SET AS A GUIDE. THE CONTRACTOR IS REQUIRED TO REVIEW, ADHERE TO, AND KEEP CURRENT, THE LAKOTA CANYON RANCH DEER VALLEY, PHASE II GRADING PERMIT APPLICATION PACKAGE. THE APPLICATION PACKAGE INCLUDES BEST MANAGEMENT PRACTICES (BMP'S) AND OTHER PERTINENT INFORMATION. STORMWATER BEST MANAGEMENT PRACTICES SHALL BE UTILIZED FOR ALL CONSTRUCTION ACTIVITIES.
- SILT FENCE SHALL BE PLACED AT THE TOE OF ALL FILL SECTIONS. THE BOTTOM OF ALL SILT FENCE SHALL BE TRENCHED IN THE SOIL AS SHOWN IN THE DETAILS.
- ALL EROSION CONTROL DEVICES SHALL REMAIN IN-PLACE AND MAINTAINED UNTIL A 70% RE-VEGETATION IS ESTABLISHED.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ALL UTILITY COMPANIES FOR FIELD LOCATIONS OF UTILITIES PRIOR TO CONSTRUCTION AND TO VERIFY LOCATION AND DEPTH BEFORE WORK BEGINS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES DURING CONSTRUCTION.
- ALL UTILITIES SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO, OR INTERRUPTION OF, SERVICES CAUSED BY THE CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND SCHEDULE ALL EARTHWORK, ROAD CONSTRUCTION, TRAFFIC REGULATION, UTILITY CONSTRUCTION, CONSTRUCTION INSPECTION AND GEOTECHNICAL TESTING.
- THROUGHOUT ALL PHASES OF CONSTRUCTION, UNTIL THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE AS NECESSARY AS REQUIRED BY THE STATE OF COLORADO AND THE TOWN OF NEW CASTLE. CONTRACTOR SHALL TAKE PREVENTIVE MEASURES TO INSURE THAT MUD FROM VEHICLES AND/OR CONSTRUCTION DEBRIS ARE NOT DEPOSITED ON THE EXISTING STREETS. ANY SUCH MUD OR DEBRIS THAT IS TRACKED ON TO THE EXISTING STREETS FROM THIS SITE SHALL BE COMPLETELY REMOVED BEFORE CONSTRUCTION ACTIVITIES HAVE ENDED FOR THE DAY. NO SUCH MUD OR DEBRIS SHALL BE ALLOWED TO REMAIN IN ANY STREET OVER NIGHT. RE-VEGETATION IS TO BE ACCOMPLISHED IN ACCORDANCE WITH LAKOTA CANYON RANCH SPECIFICATIONS AND REQUIREMENTS.
- OWNER MAY ADJUST REVEGETATION PLAN FROM DETAILS SHOWN ON THESE DRAWINGS. ULTIMATE ACCEPTANCE BY THE TOWN OF NEW CASTLE WILL BE SUBJECT TO VEGETATION ESTABLISHMENT AND CRITERIA SET FORTH IN NPDES PERMITS.

ROAD P&P NOTES:

- ALL CONSTRUCTION SHALL COMPLY WITH THESE CONSTRUCTION PLANS PREPARED BY COLORADO RIVER ENGINEERING, INC.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF NEW CASTLE PUBLIC WORKS MANUAL AND SPECIFICATIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST TWO BUSINESS DAYS IN ADVANCE OF ANY CONSTRUCTION WHICH REQUIRES UTILITY LOCATES AND TO VERIFY LOCATION AND DEPTH BEFORE WORK BEGINS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES DURING CONSTRUCTION. ALL UTILITIES SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO, OR INTERRUPTION OF, SERVICES CAUSED BY THE CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND SCHEDULE ALL EARTHWORK, ROAD CONSTRUCTION, TRAFFIC REGULATION, UTILITY CONSTRUCTION, CONSTRUCTION INSPECTION AND GEOTECHNICAL TESTING.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ROAD ACCESS AND TRAFFIC CONTROL AT ALL TIMES DURING CONSTRUCTION.
- STORMWATER BEST MANAGEMENT PRACTICES SHALL BE UTILIZED FOR ALL CONSTRUCTION ACTIVITIES IN ALL PHASES OF CONSTRUCTION, UNTIL THE FINAL ACCEPTANCE OF THE PROJECT. THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE AS NECESSARY AS REQUIRED BY THE STATE OF COLORADO AND THE TOWN OF NEW CASTLE. CONTRACTOR SHALL TAKE PREVENTIVE MEASURES TO INSURE THAT MUD FROM VEHICLES AND/OR CONSTRUCTION DEBRIS ARE NOT DEPOSITED ON THE EXISTING STREETS. ANY SUCH MUD OR DEBRIS THAT IS TRACKED ON TO THE EXISTING STREETS FROM THIS SITE SHALL BE COMPLETELY REMOVED BEFORE CONSTRUCTION ACTIVITIES HAVE ENDED FOR THE DAY. NO SUCH MUD OR DEBRIS SHALL BE ALLOWED TO REMAIN IN ANY STREET OVER NIGHT. SILT FENCE SHALL BE PLACED AT THE TOE OF ALL FILL SECTIONS. THE BOTTOM OF ALL SILT FENCE SHALL BE TRENCHED IN THE SOIL AS SHOWN IN THE DETAILS.
- ALL EROSION CONTROL DEVICES SHALL REMAIN IN-PLACE AND MAINTAINED UNTIL A 70% RE-VEGETATION IS ESTABLISHED.
- ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER AND HIS REPRESENTATIVES. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY MATERIALS AND/OR WORKMANSHIP THAT DO NOT CONFORM TO THE APPROVED DRAWINGS AND SPECIFICATIONS.
- THE MINIMUM DEPTH OF BURY FOR ALL WATER LINE IS TO BE 5.5 FEET FROM FINISHED GRADE TO CROWN OF PIPE PER TOWN OF NEW CASTLE DETAILS.
- THE TOPOGRAPHIC, AND SITE PLAN INFORMATION SHOWN ON THESE PLANS WAS PROVIDED BY BOOKCLIFF SURVEY SERVICES.
- ALL WATERLINE AND SEWERLINE CONSTRUCTION SHALL COMPLY WITH COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REGULATIONS.
- ALL WATERLINE SHALL BE C900 PVC SCHEDULE 200 PIPE, INSTALLED IN ACCORDANCE WITH AWWA AND MANUFACTURER'S SPECIFICATIONS.
- ALL SIGNS SHALL BE IN ACCORDANCE WITH THE MUTCD.
- ALL PEDESTRIAN RAMPS SHALL BE IN ACCORDANCE WITH ADA.
- ALL CURB, GUTTER AND SIDEWALK TO CONSIST OF MONOLITHIC POUR.
- CURRENT PAVEMENT DESIGN BY GROUND ENGINEERING (8-27-07) CALLS FOR 5.5" HBP OVER MIN. 12" SUBGRADE STABILIZED WITH FLY ASH OR PORTLAND CEMENT. SEE REPORT DATED 8-13-2007 FOR FLY ASH RECOMMENDATION.

COVER SHEET NOTES:

- WATER AND SEWER SERVICE STUBS SHOWN. FUTURE EXTENSION TO EACH HOUSE ACCOMPLISHED WHEN HOME CONSTRUCTED.
- WATER MAINS SHOWN BASED ON APPROVED MASTER UTILITY PLAN OR AS APPROVED BY TOWN ENGINEER
- ALL UTILITY DEVELOPMENT TO BE IN ACCORDANCE WITH THE TOWN OF NEW CASTLE PUBLIC WORKS MANUAL
- SHALLOW DRY UTILITIES (ELEC, GAS, PHONE, CATV) DESIGN LAYOUT BY UTILITY PROVIDERS. COPIES OF EACH UTILITY PROVIDERS' LAYOUTS SHALL BE PROVIDED TO THE TOWN OF NEW CASTLE PRIOR TO CONSTRUCTION.
- CONTRACTOR RESPONSIBLE FOR COORDINATING ALL UTILITY LOCATES AND AVOIDANCE.
- OWNER TO HAVE IMPROVEMENTS SURVEYED DURING CONSTRUCTION FOR RECORD DRAWINGS.
- WATER PIPE JOINT DEFLECTION TO BE APPROVED IF CONTRACTOR PRODUCES MANUFACTURES SPECIFICATIONS APPROVING DEFLECTION. ALTERNATIVELY, CONTRACTOR TO PROVIDE STRAIGHT RUNS WITH NECESSARY ELBOWS AS SHOWN ON PLANS.
- ALL WATER PIPE AND FITTINGS TO MEET TOWN OF NEW CASTLE PUBLIC WORKS MANUAL SPECIFICATIONS.
- C-900 PVC DR14 ON ALL WATER MAINS. DIP WATER FITTINGS TO BE POLY WRAPPED FOR CORROSION PROTECTION.
- WATER SERVICE STUBS SEAMLESS COPPER "TYPE K". NO SADDLE TAPS WITHIN 4-FT OF FITTINGS OR OTHER TAPS
- ALL SEWER PIPE MAINS AND SERVICE STUBS TO MEET ASTM 3034 WITH SDR 35 AS MINIMUM WALL THICKNESS.
- 4" DIAMETER ON ALL SEWER SERVICE STUBS TO INDIVIDUAL HOMES, 2% SLOPE.
- WATER LINES NOT SHOWN ON PROFILE, MINIMUM 5.5' BURY DEPTH.
- SEWER SYSTEM DESIGN SHOWS TABLE OF APPROXIMATE ELEVATION OF SERVICE STUB DEPTH TO THE LOTS BUILDING ENVELOPE ON THE STREET SIDE. SEWER SERVICE BY GRAVITY LIMITED ON SOME LARGER LOTS WITH BUILDING ENVELOPES DOWNHILL OF ROADWAYS. FUTURE LOT PURCHASERS COULD REQUIRE LIFT PUMPS FOR BASEMENTS ON STEEPER DOWNHILL LOTS.
- FINAL PAVEMENT DESIGN BY HP-GEOTECH RECOMMENDS 4" MINIMUM ASPHALT MAT WITH 8" BASE COURSE DEPTH. THE 4" MAT WILL REQUIRE TWO LIFTS. ALTERNATIVE 3" SINGLE LIFT MAT DESIGN IS PROVIDED BY GEOTECHNICAL ENGINEER. CONTRACTOR MUST PROVIDE A MINIMUM 1/4" LIP OF ASPHALT ABOVE GUTTER PAN FOR EITHER ASPHALT SCENARIO. THE 3" ALTERNATIVE WILL REQUIRE A TOWN INSPECTOR BE ON-SITE, AT THE COST OF THE CONTRACTOR, TO INSURE LIP IS PROVIDED.
- OWNER TO OBTAIN STORMWATER DISCHARGE PERMIT PRIOR TO CONSTRUCTION.
- CONTRACTOR TO MEET ALL SPECIFICATIONS AND TESTING REQUIREMENTS OF OVERLOT GRADING AS PER GEOTECHNICAL ENGINEER OVERSIGHT AND DESIGN REPORT BY HP-GEOTECH INC DATED 2-12-06
- CONTRACTOR TO OBTAIN AND PERFORM ALL WORK IN ACCORDANCE WITH TOWN OF NEW CASTLE ACCEPTANCE CHECKLIST FOR PUBLIC IMPROVEMENTS. SIGNATURES TO BE PROVIDED FOR ALL APPLICABLE WORK TO FACILITATE ACCEPTANCE BY TOWN AT THE END OF PROJECT.
- ALL SEWER MAINS IN PROJECT ARE GRAVITY PIPES. SOME LOTS COULD REQUIRE SEWAGE LIFT STATIONS FOR BASEMENT SERVICE. SEWER STUB DEPTH AND LOCATIONS PROVIDED THIS DRAWING SET.

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Print Date: March 21, 2022	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Issue & Revisions					Sheet Name: PROJECT NOTES	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: CRE Design - Lakota Mixed Use.dwg		Date:	Comments:	Drawn by:	Checked by:		Sheet Number: 2	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:								
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: EXISTING CONDITIONS
 Sheet Number: 3

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



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Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: SITE PLAN NORTH
 Sheet Number: 4

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



SHIBUI CONDOMINIUMS
 BEHRENT FAMILY LLC
 RICHMOND RONALD A TRUSTEE ET AL

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 30'

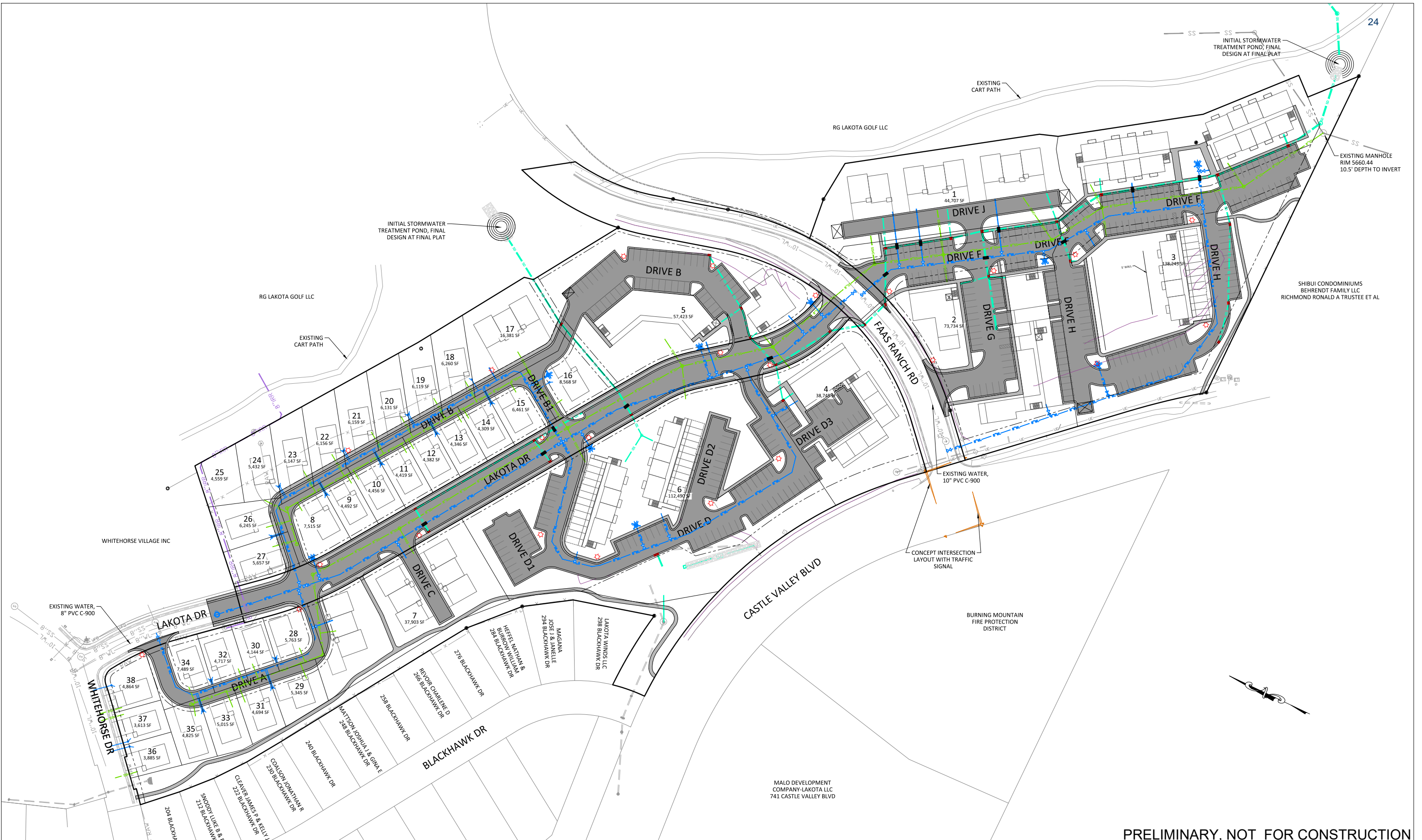
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: SITE PLAN SOUTH
 Sheet Number: 5

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



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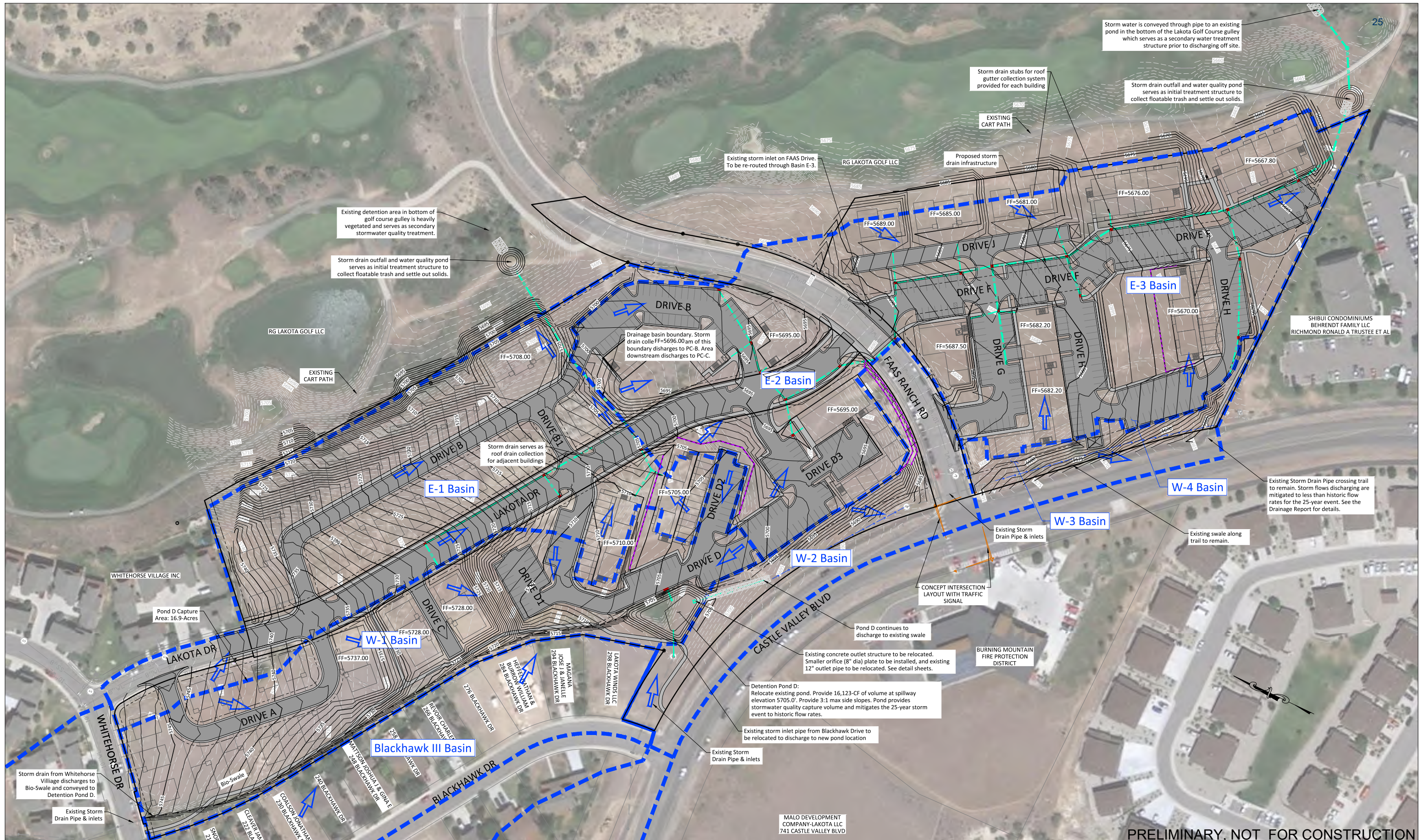
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 60'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: UTILITY OVERVIEW
 Sheet Number: 6

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



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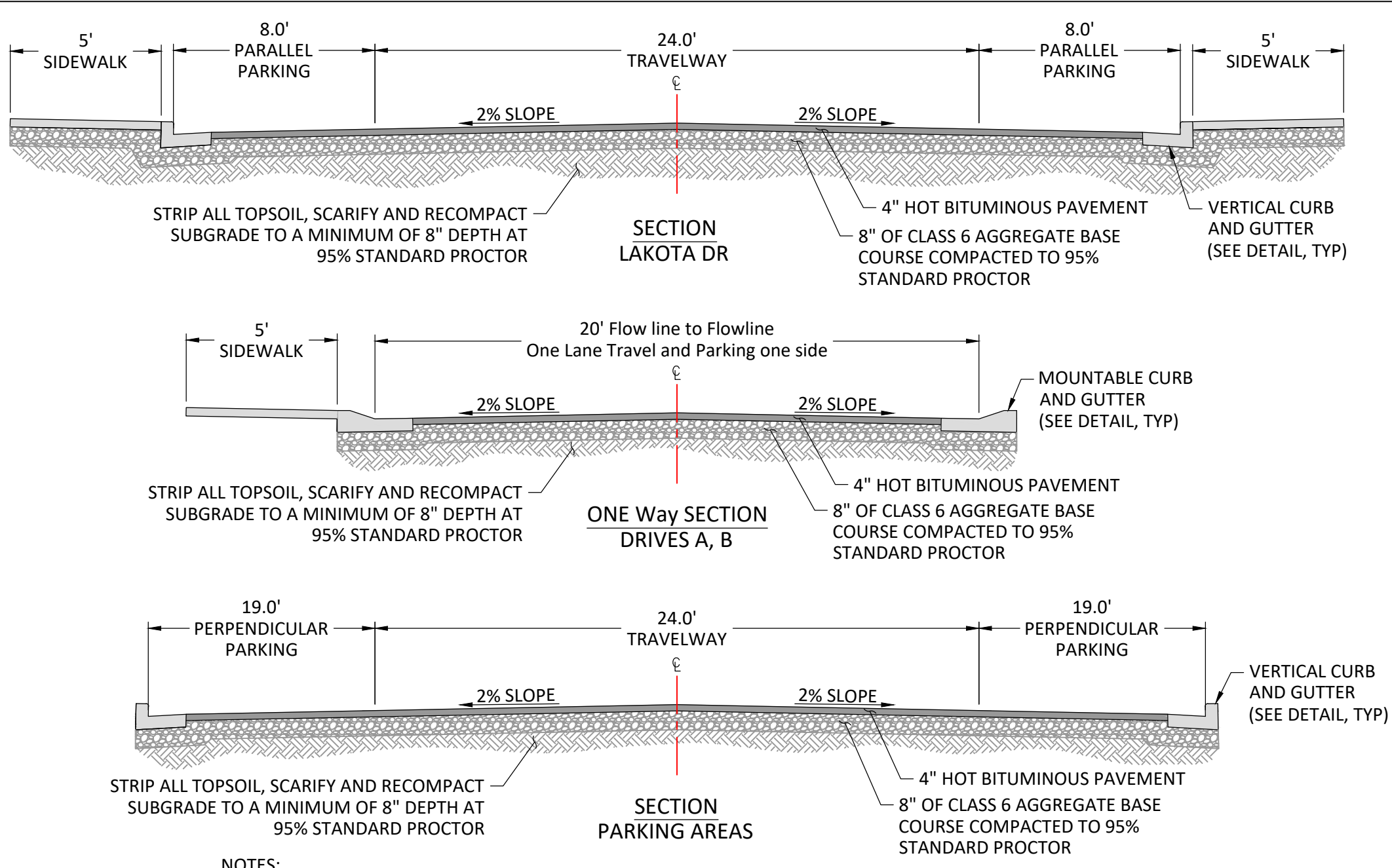
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 60'

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

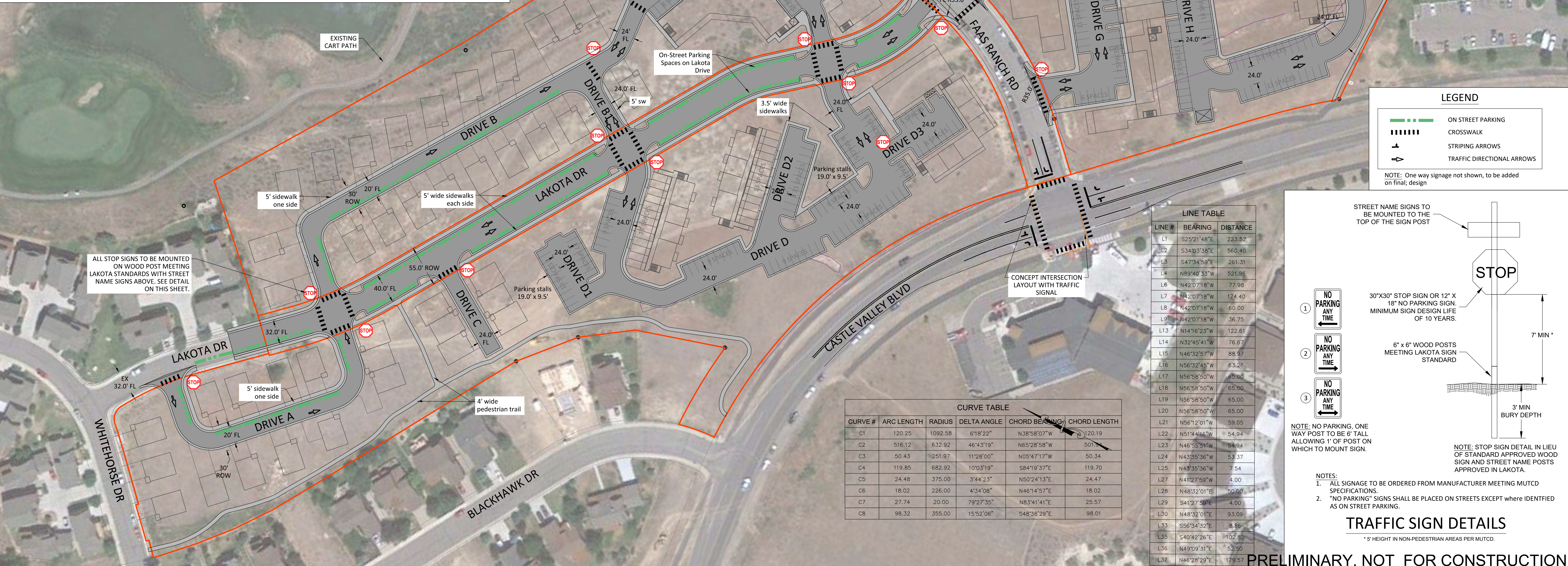
Sheet Name: GRADING AND DRAINAGE OVERVIEW
 Sheet Number: 7

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



- NOTES:
 1. ROAD SECTION SUBJECT TO CHANGE DEPENDENT ON SOILS EXPOSED DURING SUBGRADE CONSTRUCTION TO BE APPROVED BY GEOTECHNICAL ENGINEER DURING CONSTRUCTION.
 2. ROAD PAVEMENT DESIGN BASED OFF ADJACENT PROJECTS AND MAY CHANGE WITH PENDING GEOTECHNICAL REPORT.

TYPICAL ROAD SECTIONS



LEGEND

- ON STREET PARKING
- CROSSWALK
- STRIPING ARROWS
- TRAFFIC DIRECTIONAL ARROWS

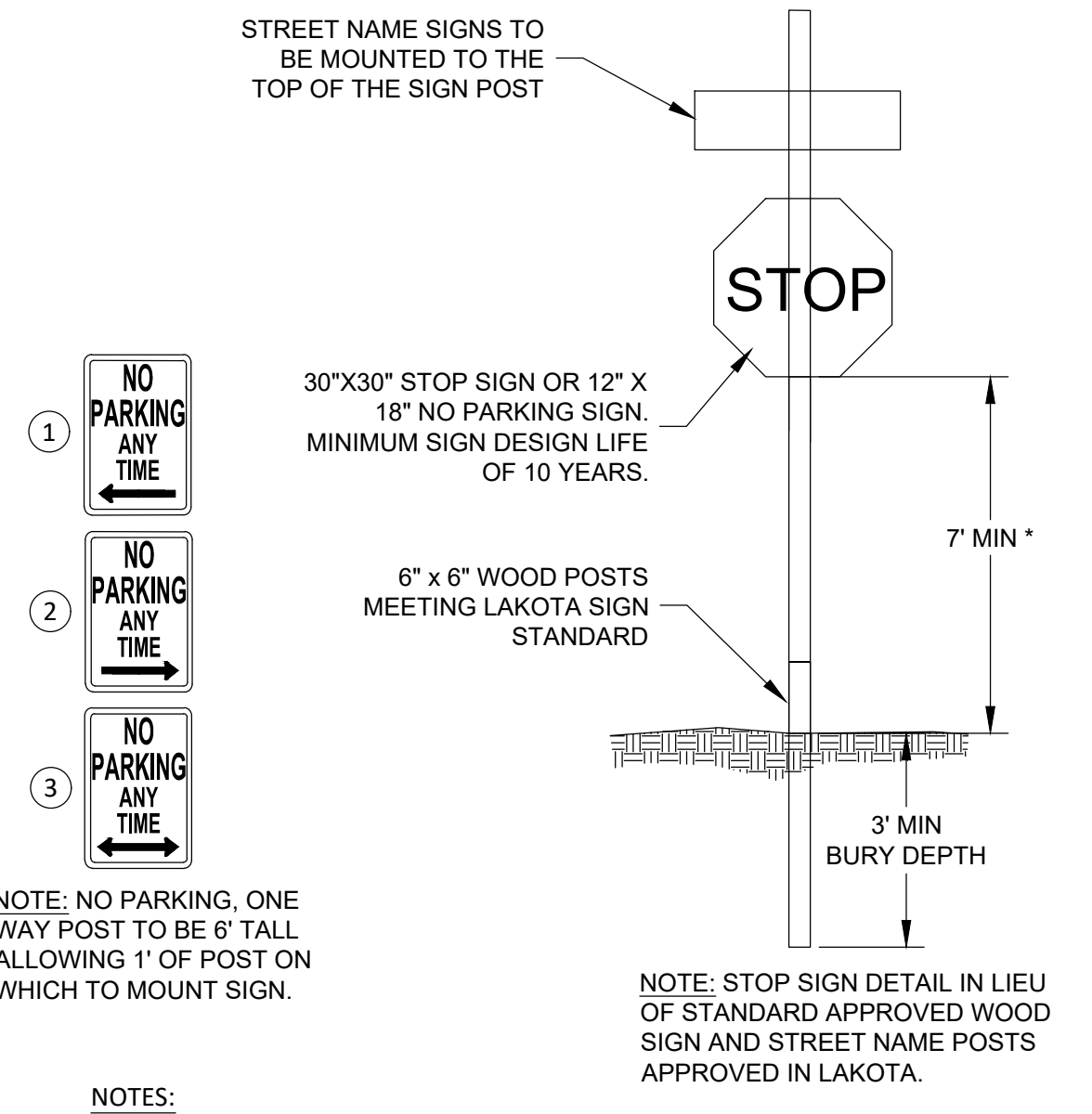
NOTE: One way signage not shown, to be added on final design

LINE TABLE

LINE #	BEARING	DISTANCE
L1	S25°21'48"E	223.52
L2	S34°03'38"E	560.40
L3	S47°34'59"E	261.31
L4	N89°40'33"W	521.96
L6	N42°07'18"W	77.98
L7	N42°07'18"W	174.40
L8	N42°07'18"W	60.00
L9	N42°07'18"W	36.75
L13	N14°16'23"W	122.61
L14	N32°45'41"W	76.67
L15	N46°32'57"W	88.97
L16	N56°32'45"W	63.26
L17	N56°58'50"W	65.00
L18	N56°58'50"W	65.00
L19	N56°58'50"W	65.00
L20	N56°58'50"W	65.00
L21	N56°12'01"W	59.05
L22	N51°44'46"W	54.94
L23	N46°55'51"W	54.94
L24	N43°55'36"W	53.37
L25	N43°35'36"W	7.54
L27	N41°27'59"W	4.00
L28	N48°32'01"E	50.00
L29	S41°27'59"E	4.00
L30	N48°32'01"E	93.09
L33	S56°34'32"E	8.96
L35	S40°42'26"E	102.82
L36	N49°09'31"E	52.90
L37	N46°28'29"E	179.57

CURVE TABLE

CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	120.25	1092.58	6°18'22"	N38°58'07"W	120.19
C2	516.12	632.92	46°43'19"	N65°28'58"W	501.54
C3	50.43	251.97	11°28'00"	N05°47'17"W	50.34
C4	119.85	682.92	10°03'19"	S84°19'37"E	119.70
C5	24.48	375.00	3°44'23"	N50°24'13"E	24.47
C6	18.02	226.00	4°34'08"	N46°14'57"E	18.02
C7	27.74	20.00	79°27'35"	N83°41'41"E	25.57
C8	98.32	355.00	15°52'06"	S48°38'29"E	98.01



- NOTE: NO PARKING, ONE WAY POST TO BE 6' TALL ALLOWING 1' OF POST ON WHICH TO MOUNT SIGN.
- NOTES:
 1. ALL SIGNAGE TO BE ORDERED FROM MANUFACTURER MEETING MUTCD SPECIFICATIONS.
 2. "NO PARKING" SIGNS SHALL BE PLACED ON STREETS EXCEPT WHERE IDENTIFIED AS ON STREET PARKING.

TRAFFIC SIGN DETAILS

* 5' HEIGHT IN NON-PEDESTRIAN AREAS PER MUTCD.

Print Date: March 21, 2022
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 Horiz. Scale: SCALE: 1" = 60'

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Issue & Revisions

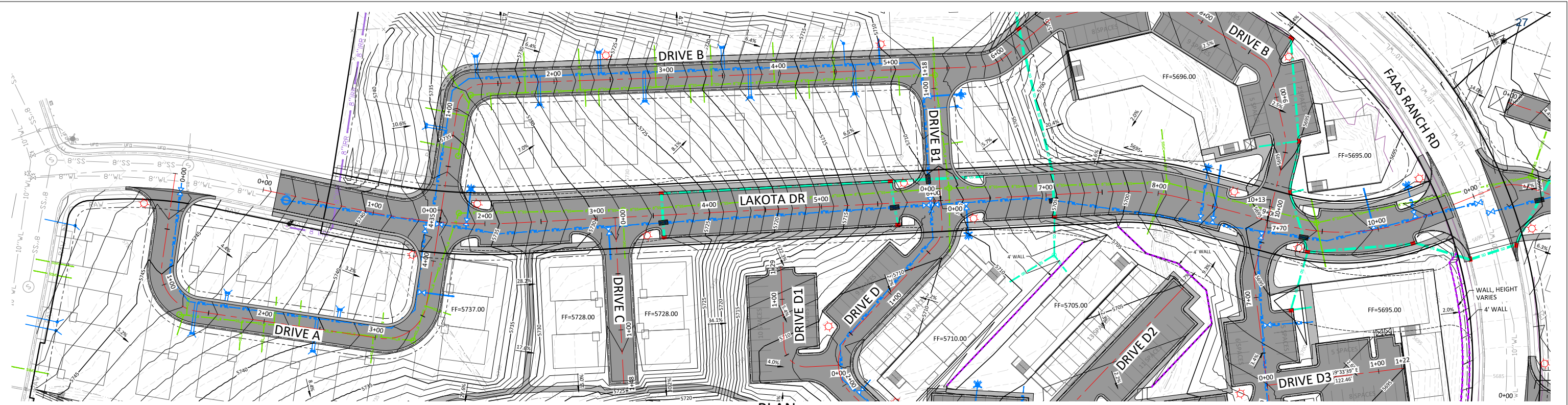
Date:	Comments:	Drawn by:	Checked by:
8/17/2022	Drive A&B to one way, parking one side, added 5' SW, crosswalks		

Sheet Name: ROADS, TRAFFIC AND SIGNAGE OVERVIEW
 Sheet Number: 8

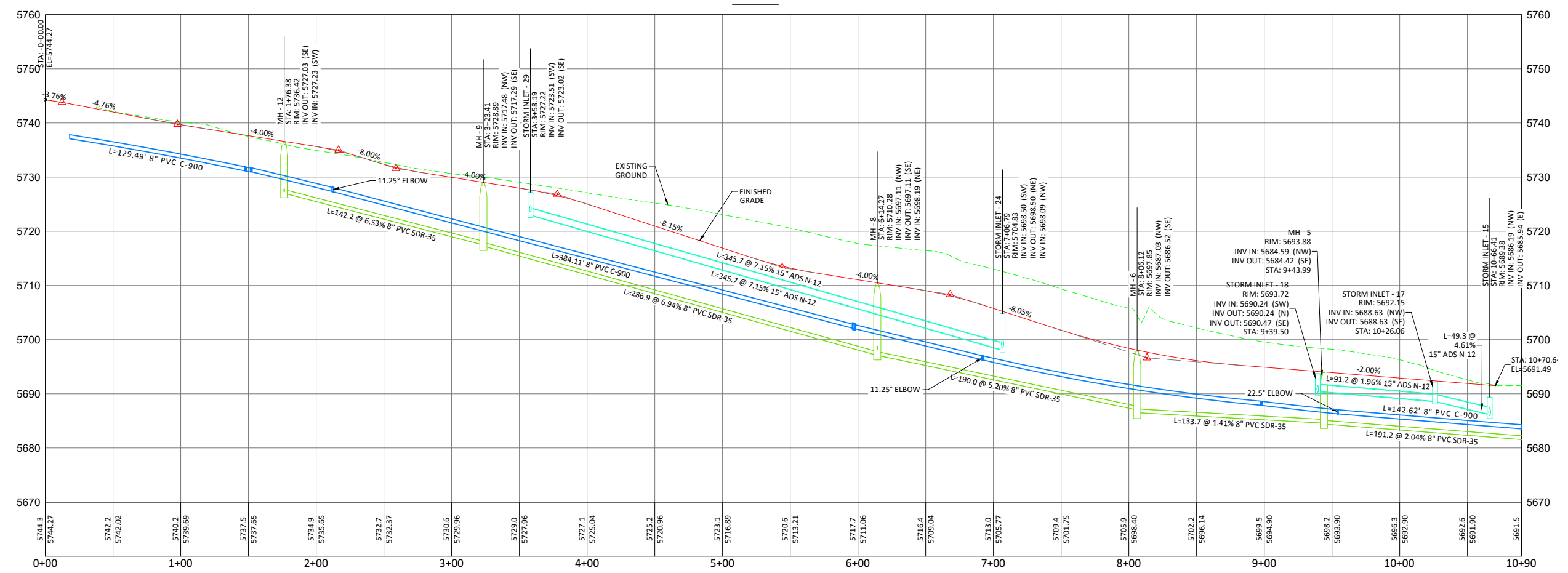
THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

PRELIMINARY, NOT FOR CONSTRUCTION



PLAN



LAKOTA DR PROFILE

HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 10'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
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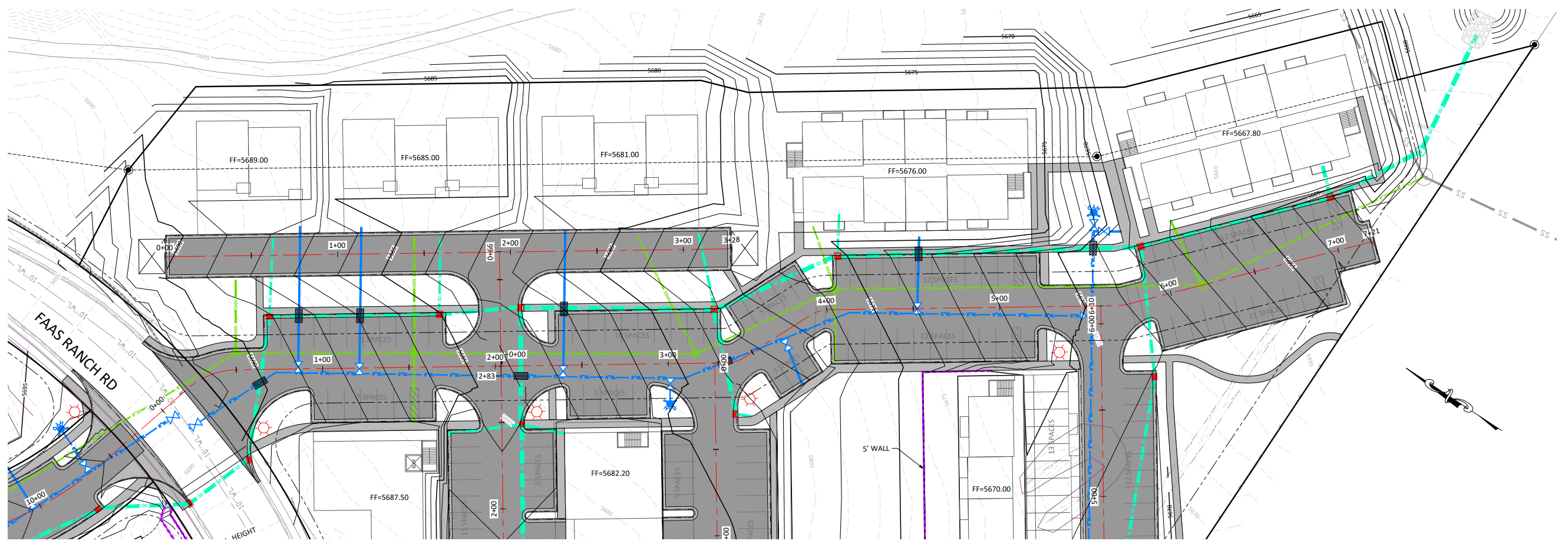
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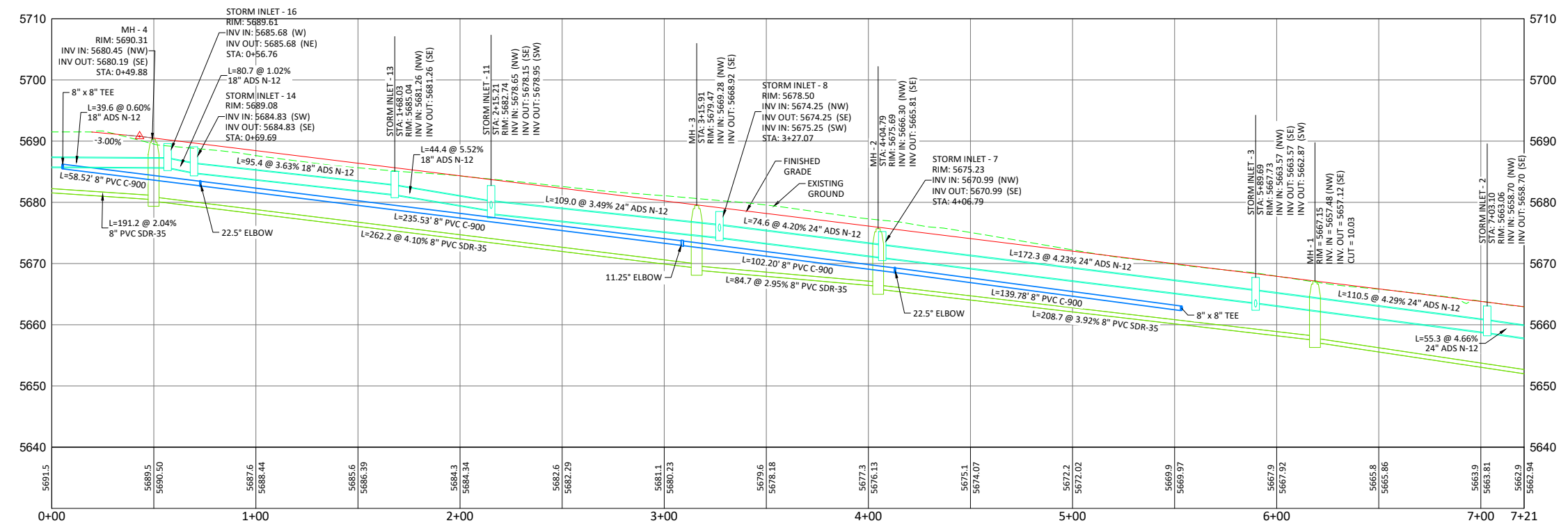


Sheet Name: NORTH PRELIMINARY PLAN & PROFILE
 Sheet Number: 9

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN



DRIVE F PROFILE

HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 10'

PRELIMINARY, NOT FOR CONSTRUCTION

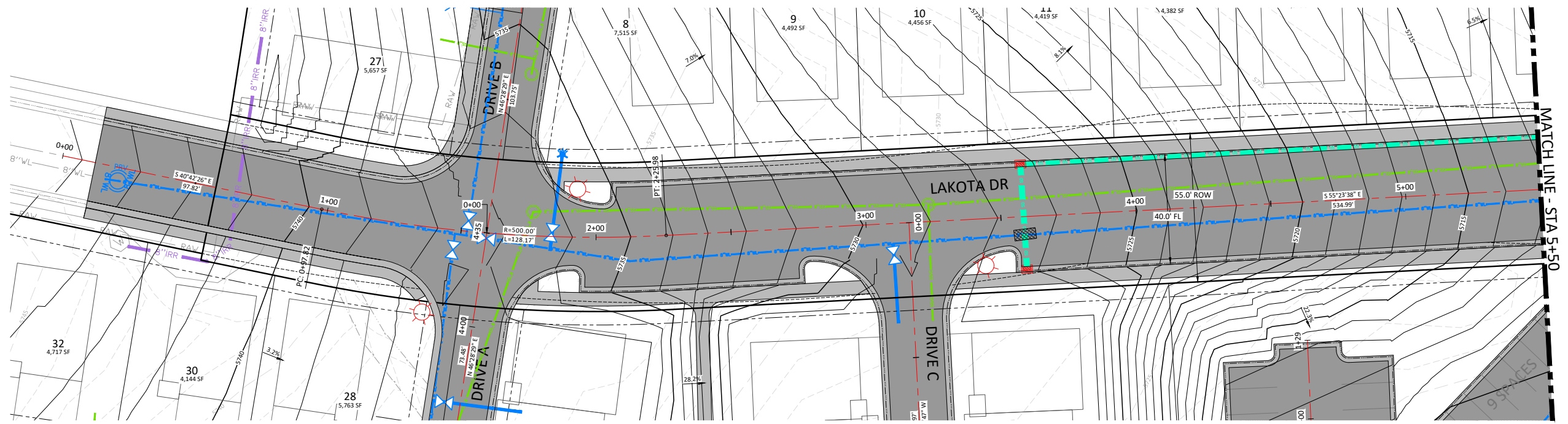
Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 30'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

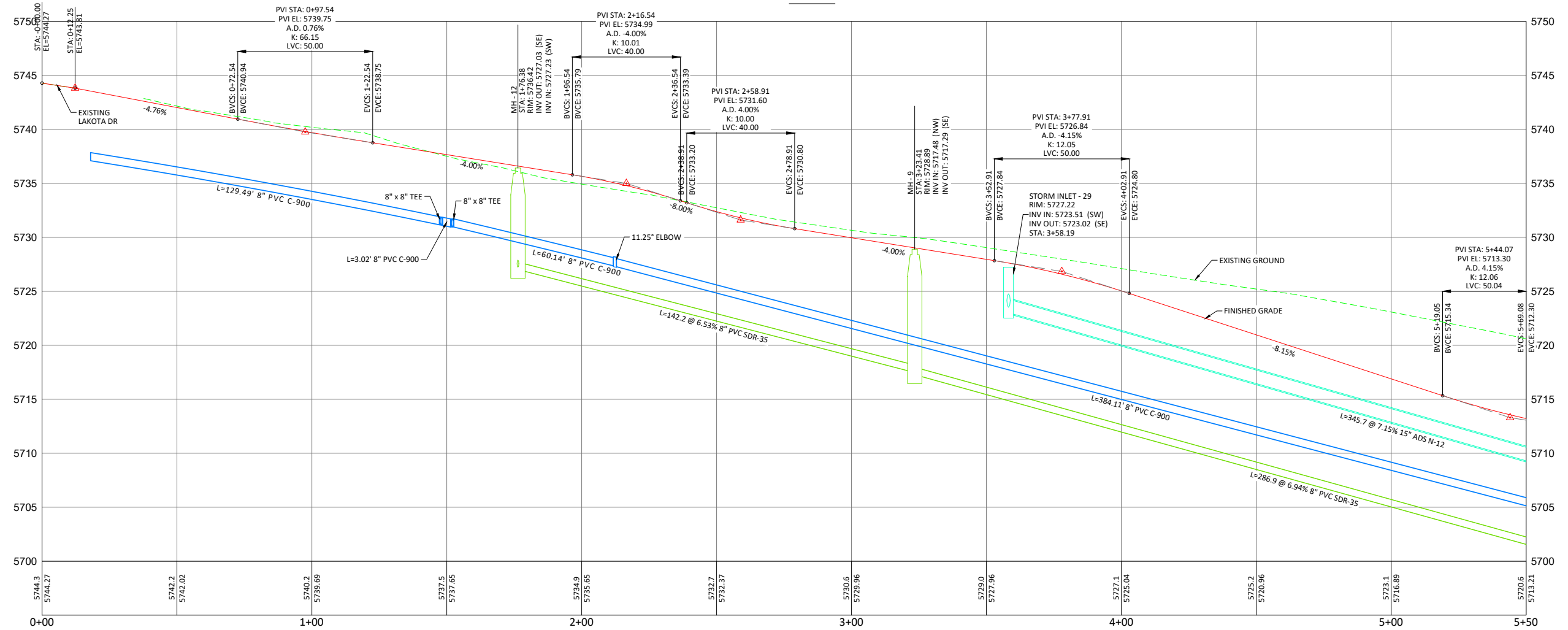
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: SOUTH PRELIMINARY PLAN & PROFILE
Sheet Number: 10

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PLAN



LAKOTA DR PROFILE

HORIZ. SCALE: 1" = 20'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

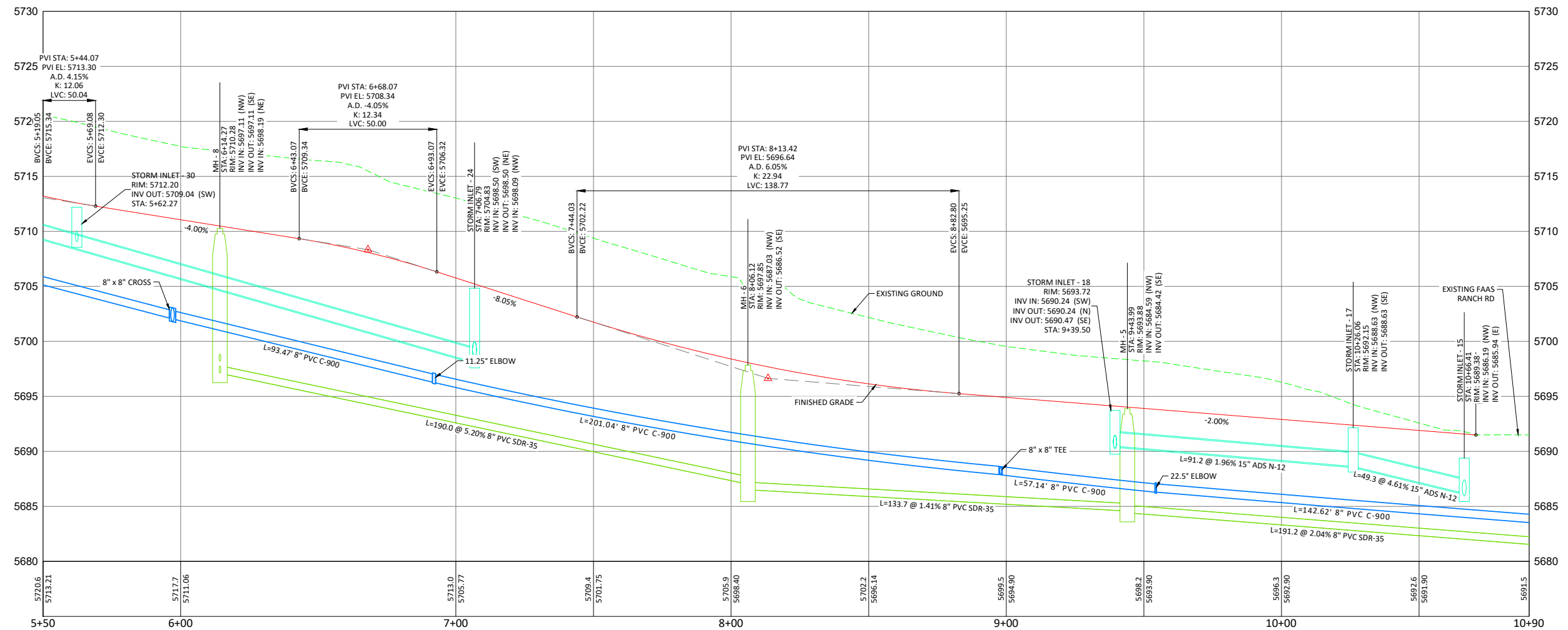
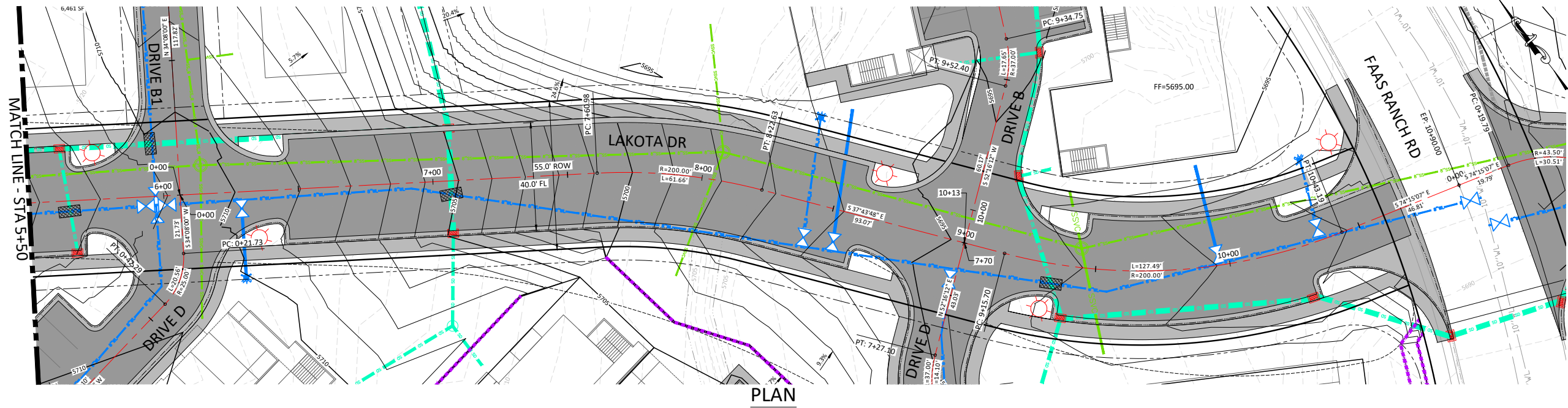
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: LAKOTA DR
 PLAN & PROFILE
 STA: 0+00 TO 5+50
 Sheet Number: 11

THE LONGVIEW AT LAKOTA
 CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

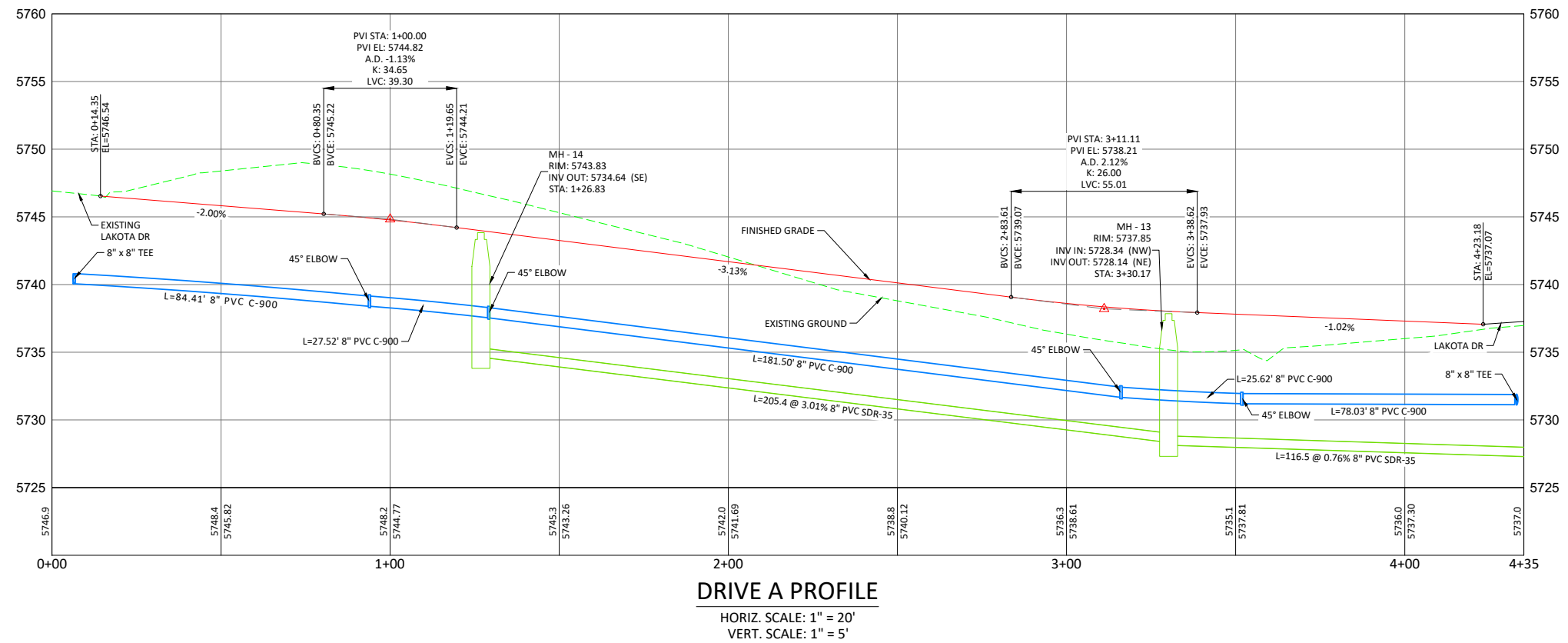
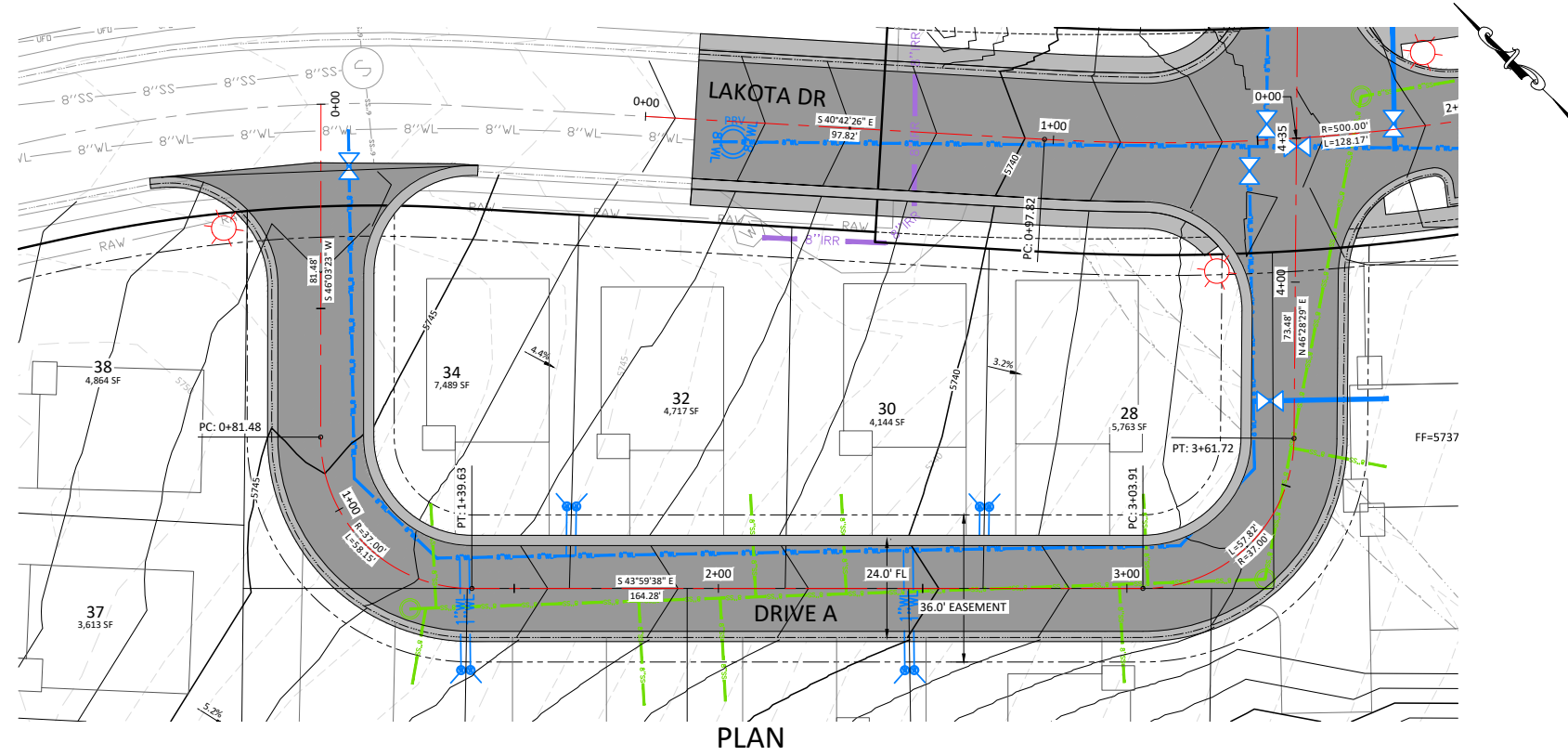
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: LAKOTA DRIVE
 PLAN & PROFILE
 STA: 5+50 TO 10+90

Sheet Number: 12

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

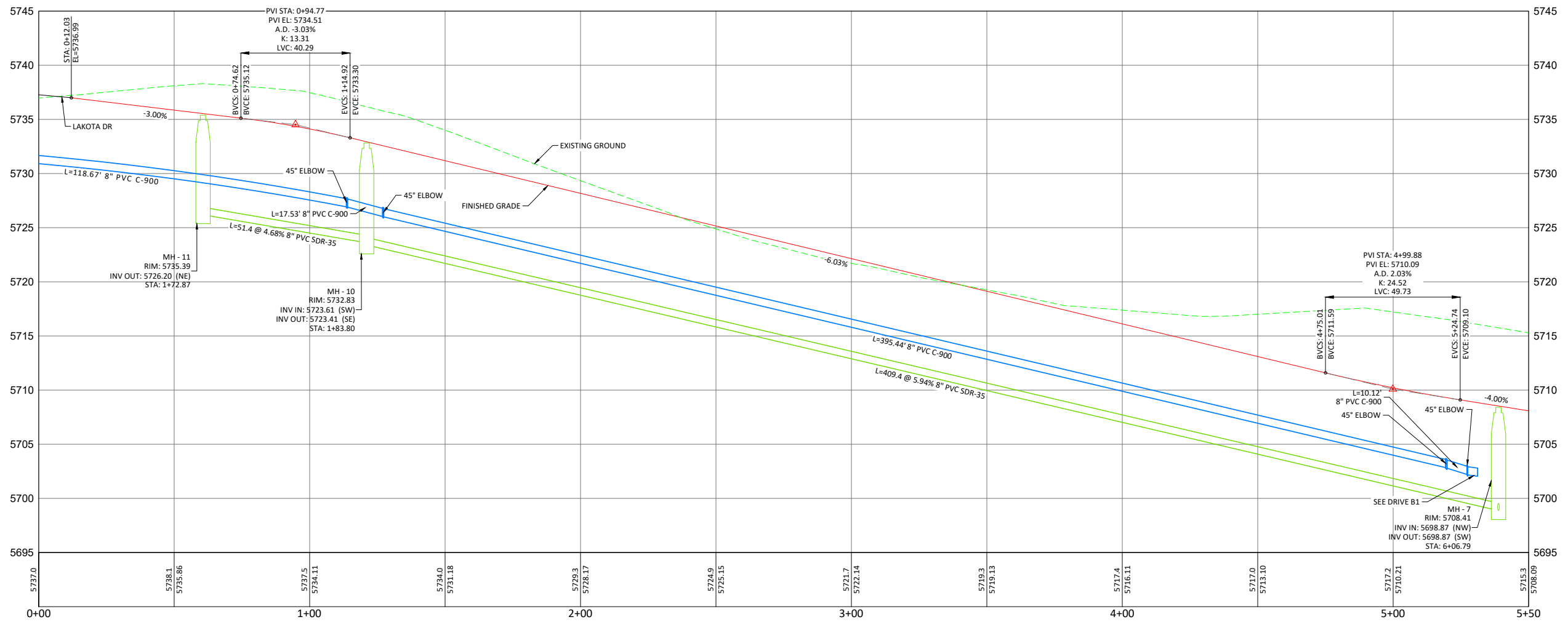
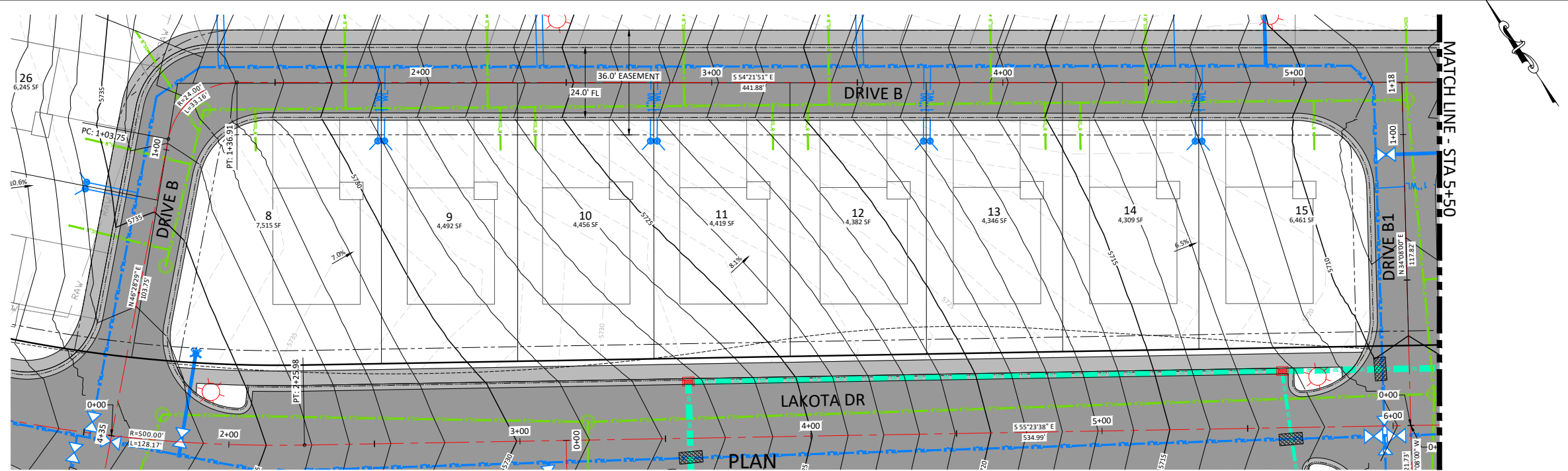
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: DRIVE A PLAN & PROFILE
 Sheet Number: 13

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

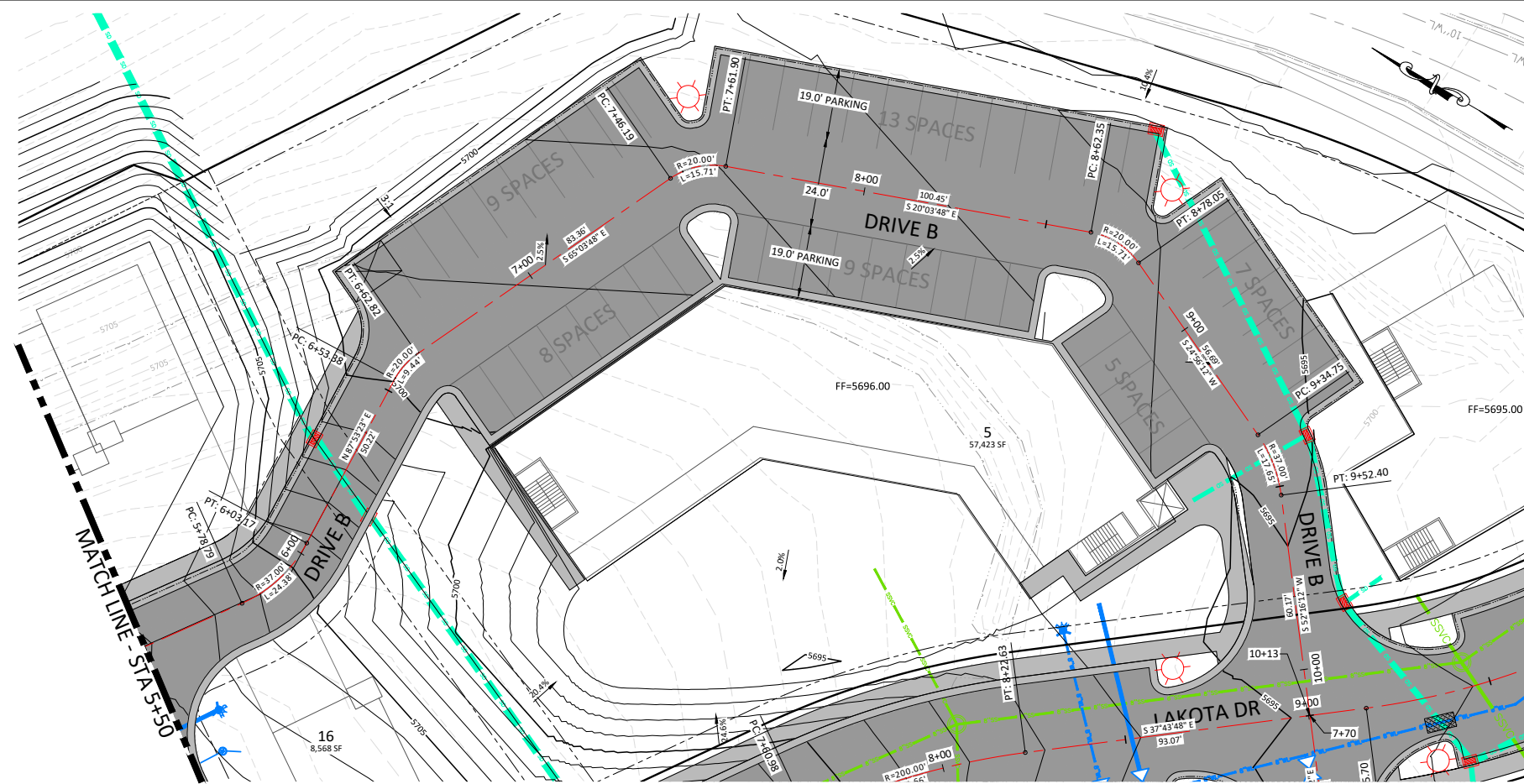


Sheet Name: DRIVE B PLAN & PROFILE
 STA: 0+00 TO 5+50

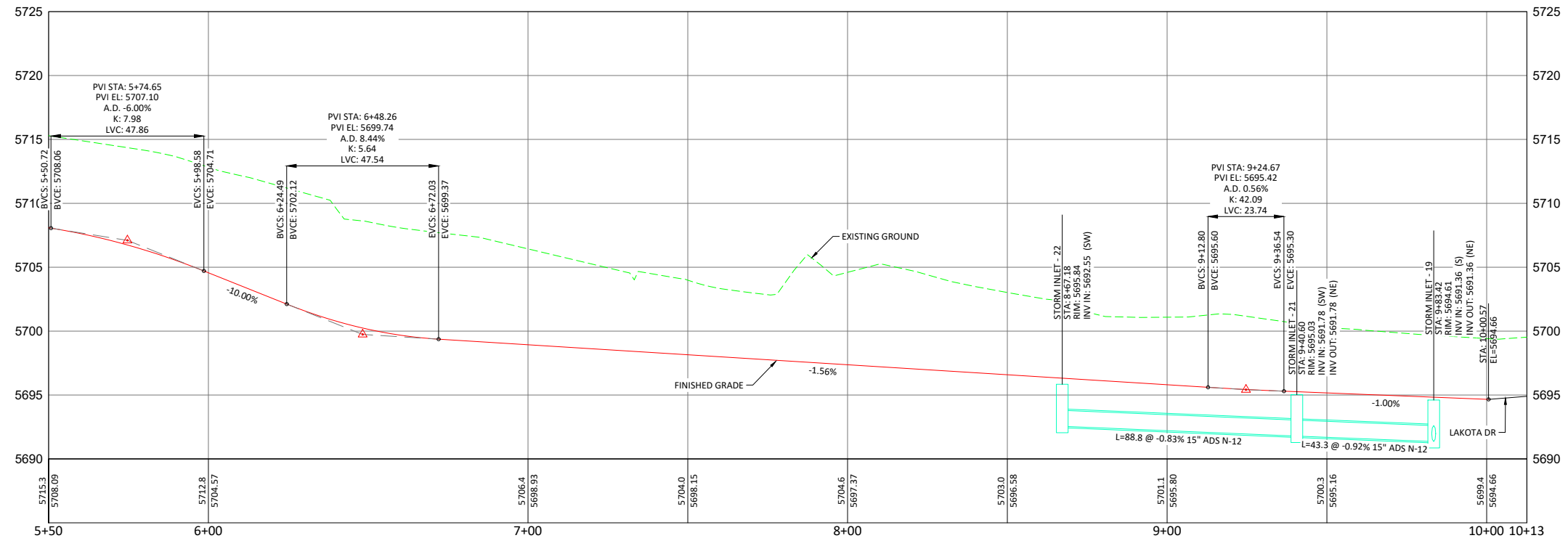
Sheet Number: 14

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN



DRIVE B PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

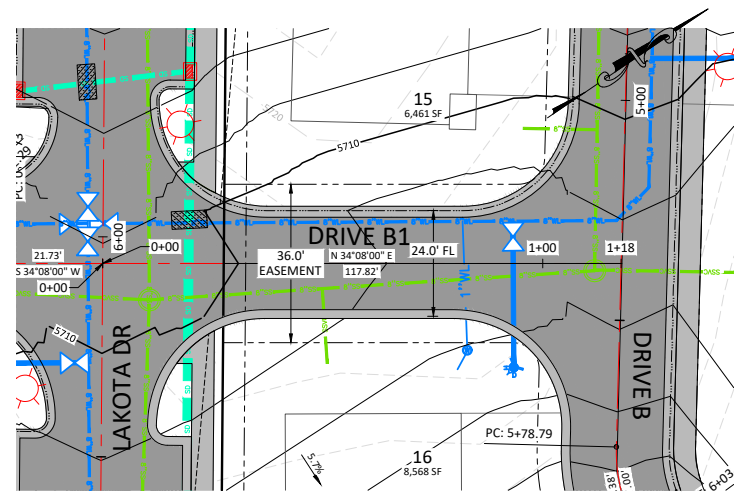
The block contains three logos: 'connect one DESIGN' with a stylized '1', 'COLORADO RIVER ENGINEERING INCORPORATED' in a bold, serif font, and 'ARCHITECTS' with a red and white graphic element.

Sheet Name: DRIVE B PLAN & PROFILE
STA: 5+50 TO 10+00

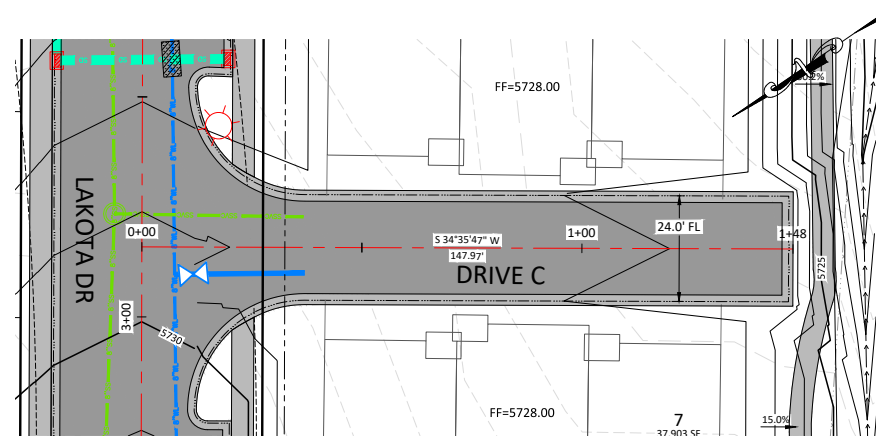
Sheet Number: 15

THE LONGVIEW AT LAKOTA CANYON RANCH

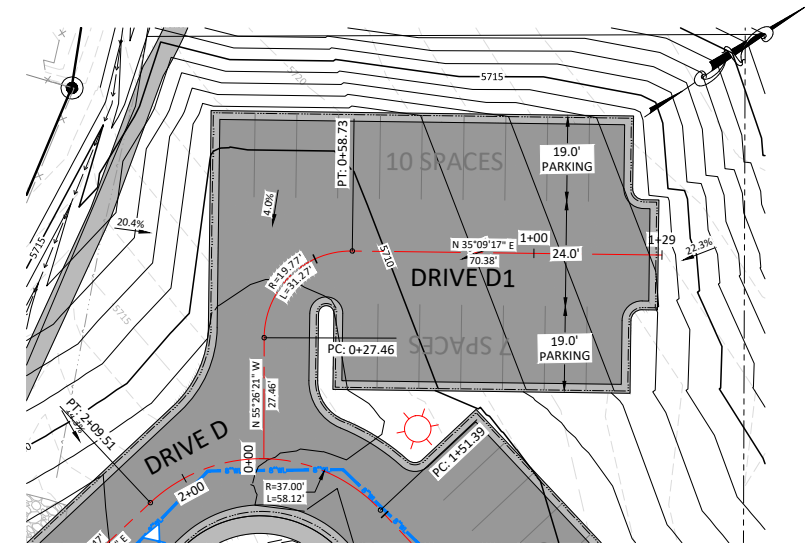
Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



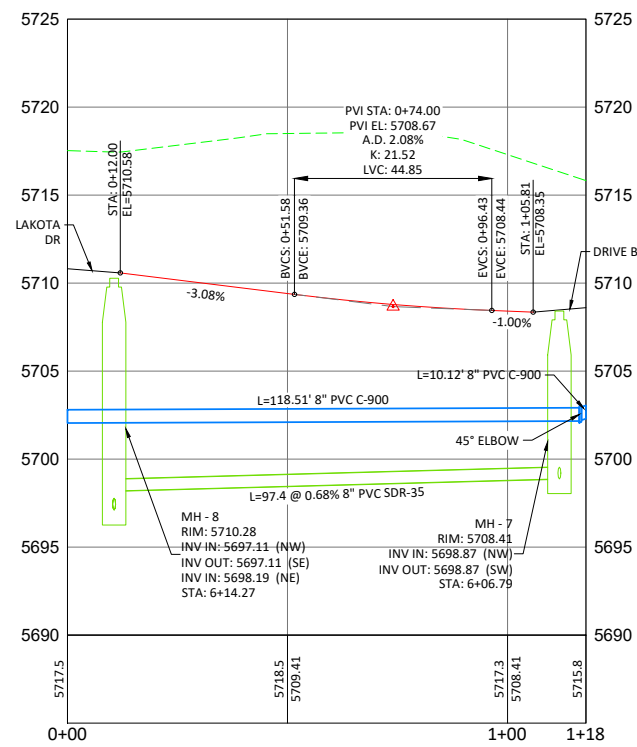
PLAN - DRIVE B1



PLAN - DRIVE C

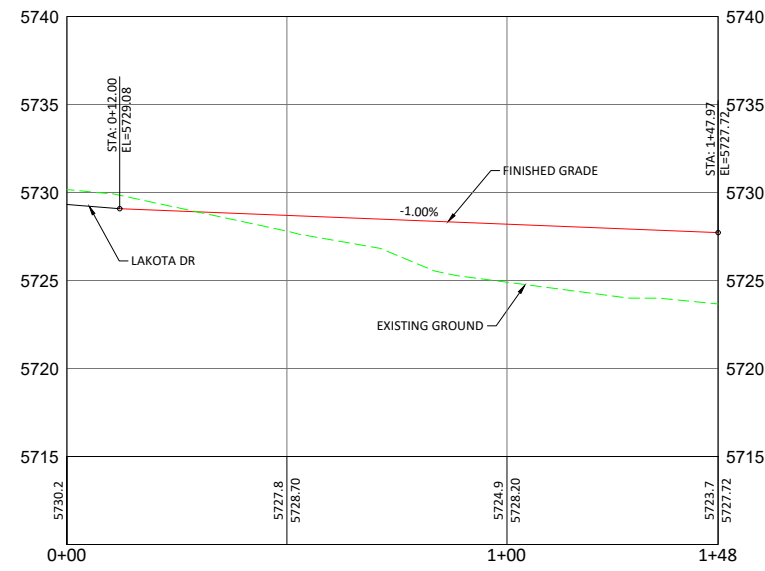


PLAN - DRIVE D1



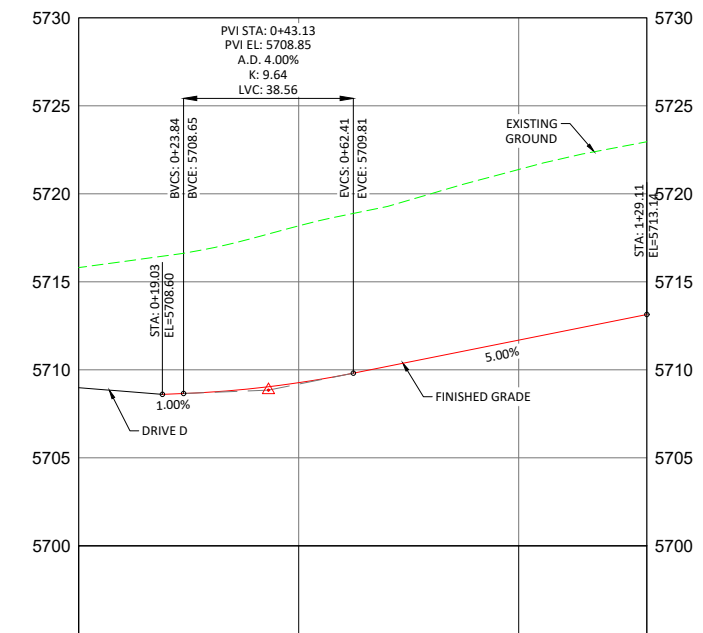
DRIVE B1 PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



DRIVE C PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



DRIVE D1 PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

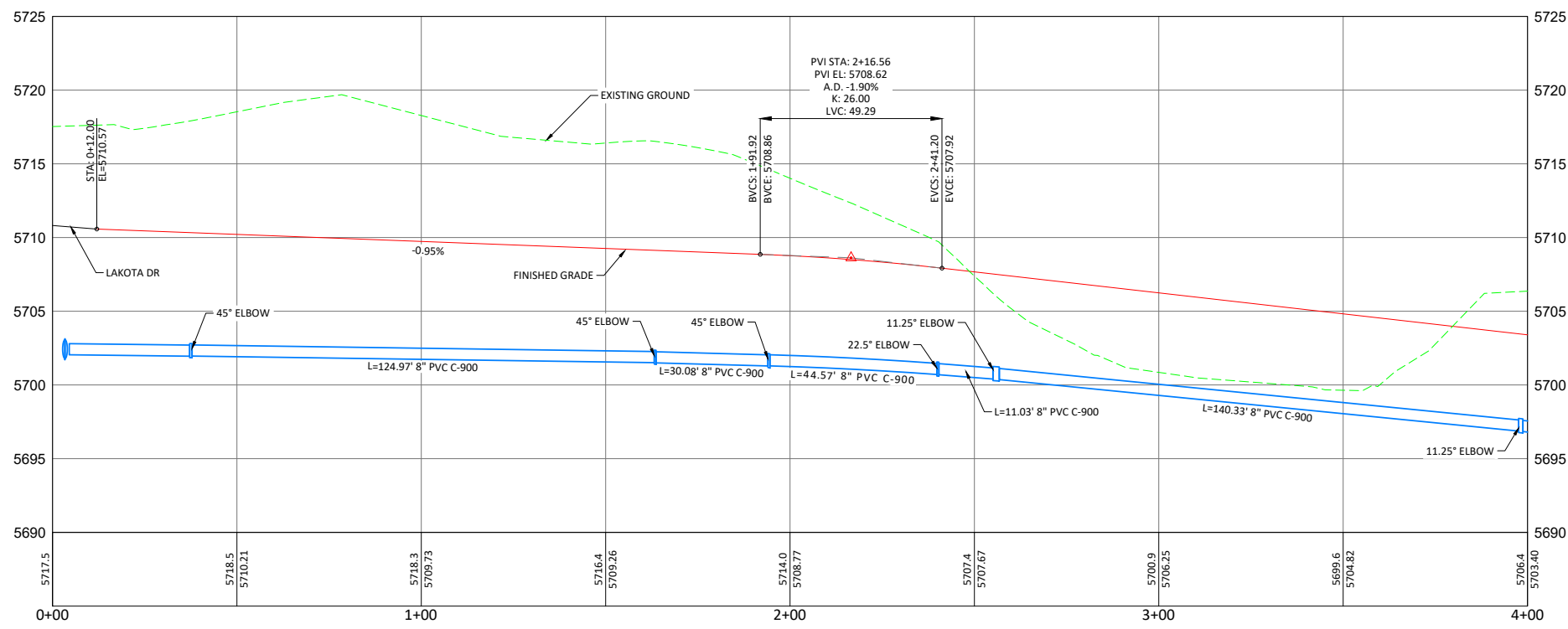
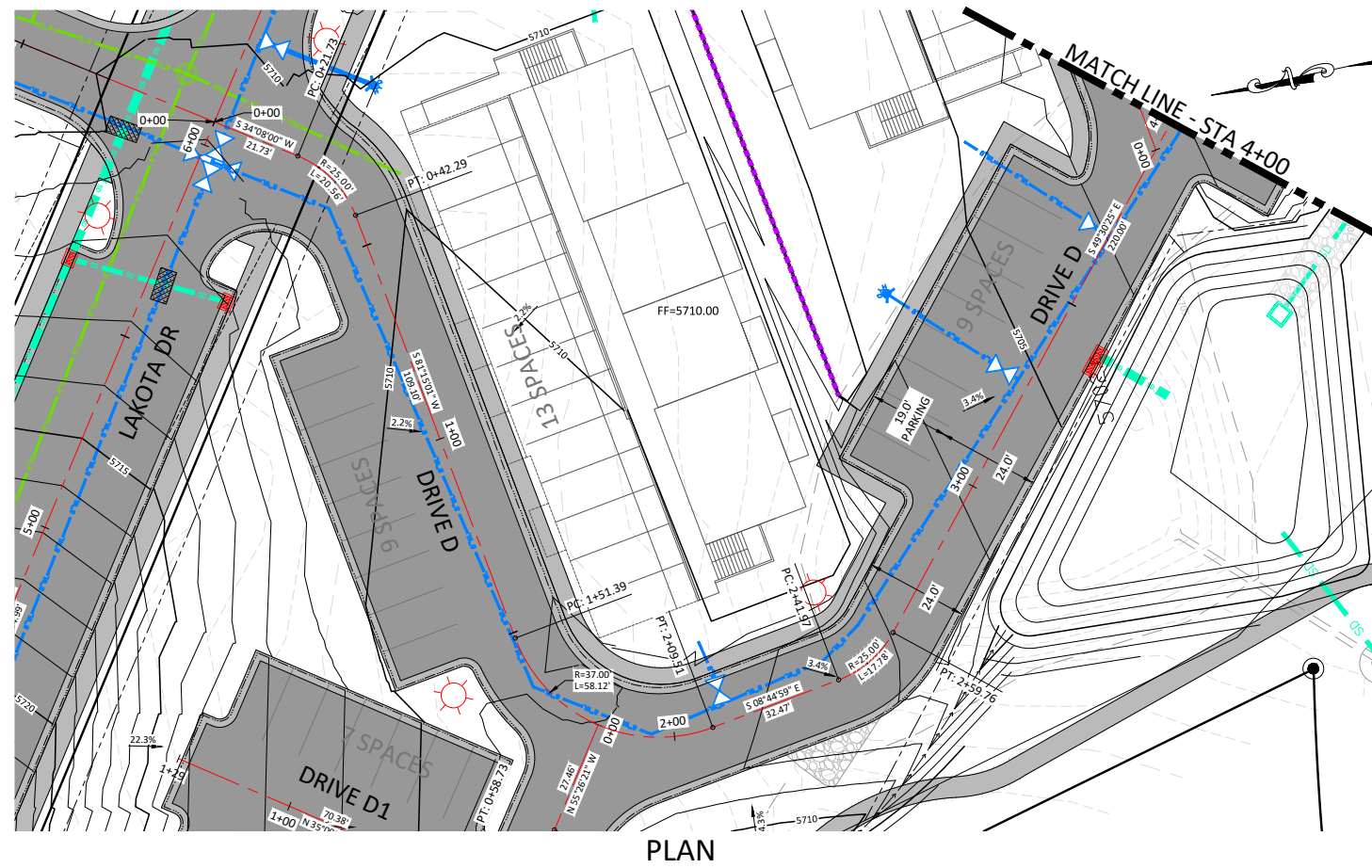
PRELIMINARY, NOT FOR CONSTRUCTION

Print Date:	March 21, 2022
File Name:	CRE Design - Lakota Mixed Use.dwg
Horiz. Scale:	SCALE: 1" = 20'
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.	

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name:	DRIVES B1, C AND D PLAN & PROFILES
Sheet Number:	16

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



DRIVE D PROFILE
 HORIZ. SCALE: 1" = 20'
 VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date:	March 21, 2022
File Name:	CRE Design - Lakota Mixed Use.dwg
Horiz. Scale:	SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

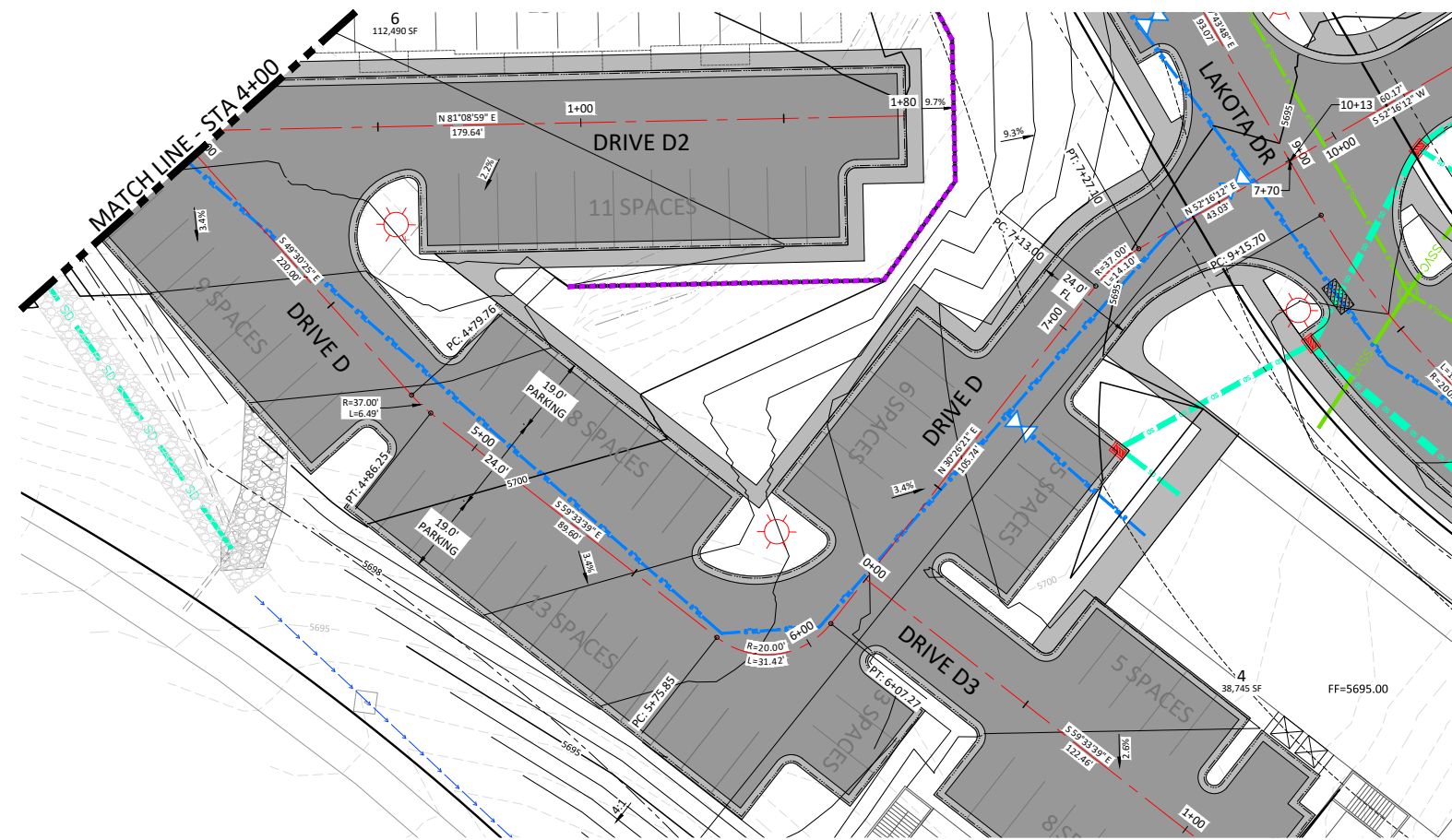
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: DRIVE D PLAN & PROFILE
 STA: 0+00 TO 4+00

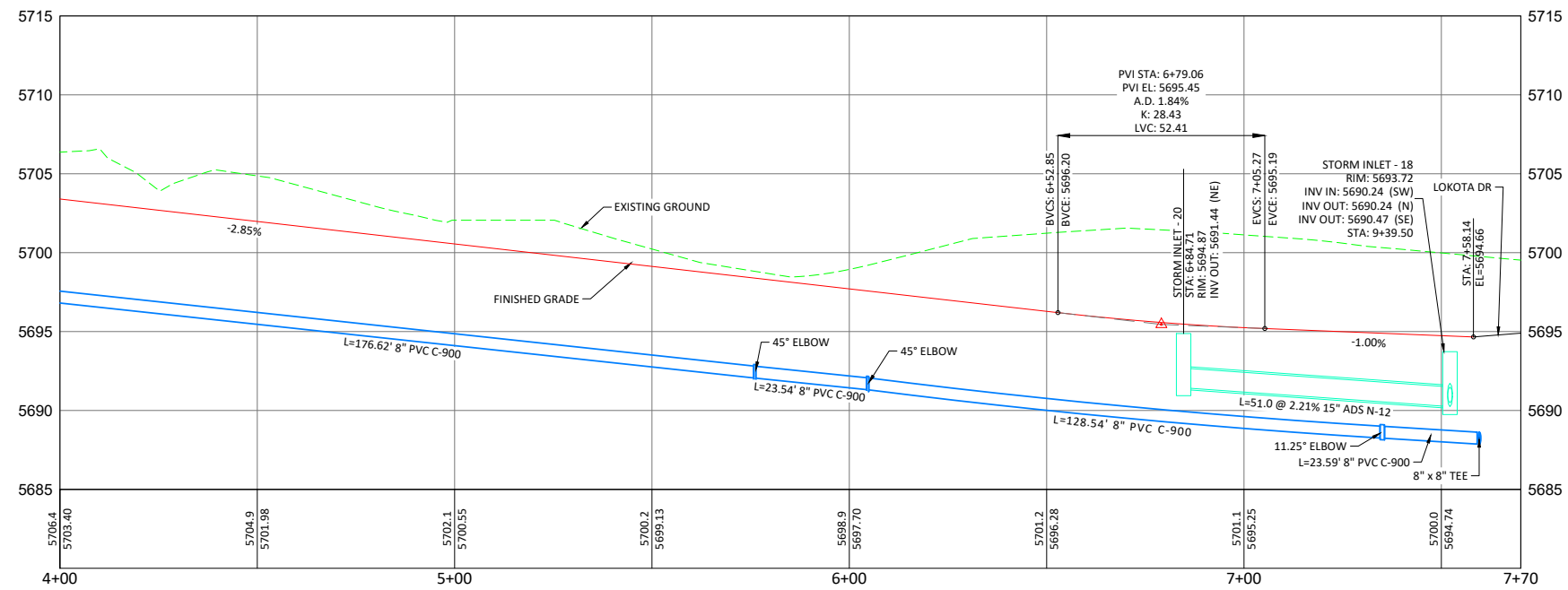
Sheet Number: 17

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN



DRIVE D PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

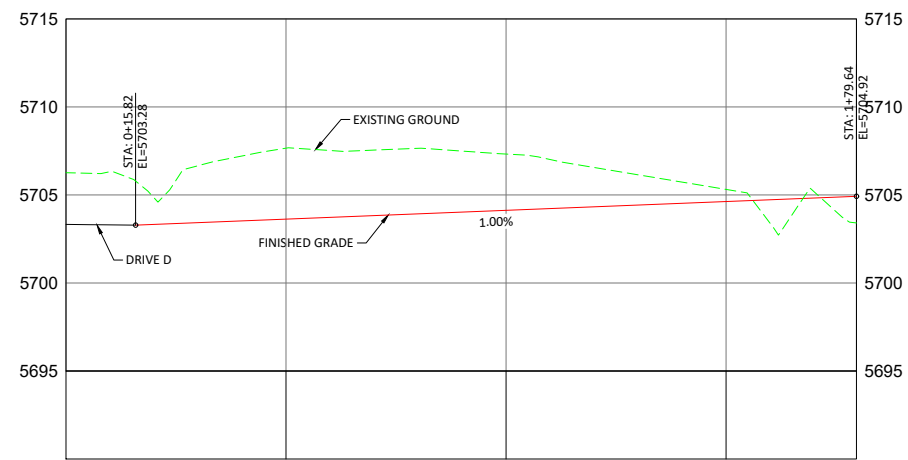
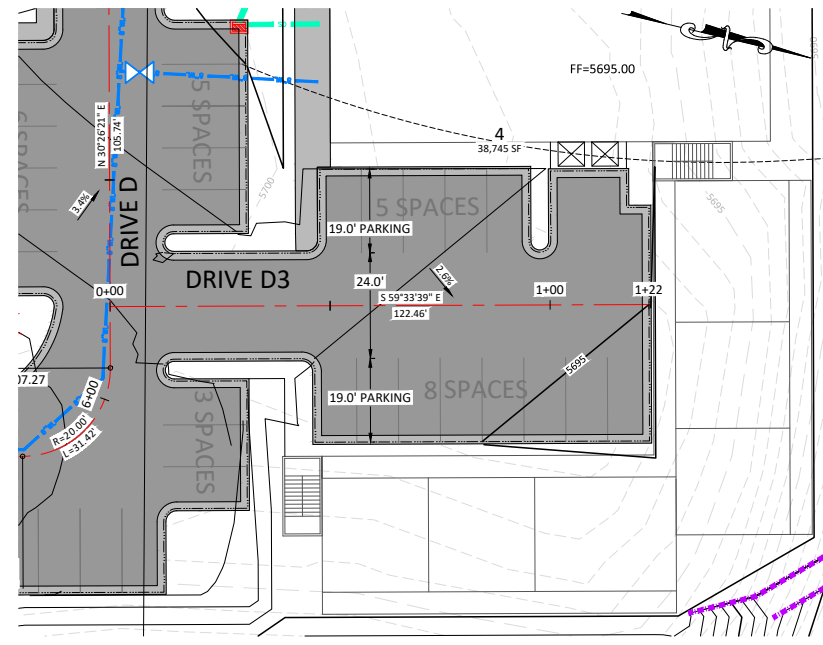
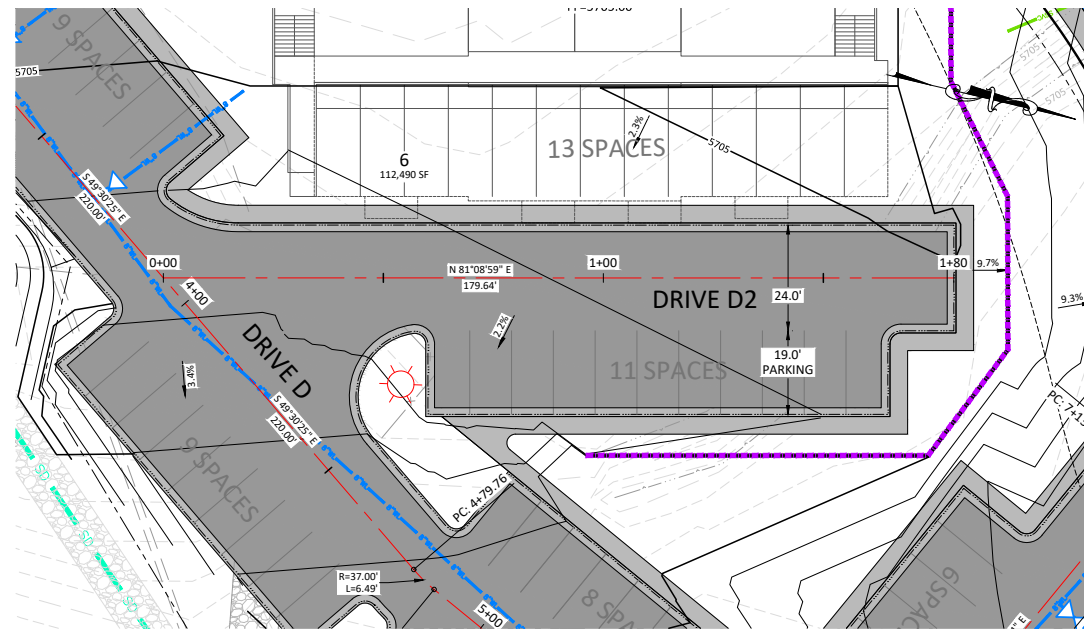
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: DRIVE D PLAN & PROFILE
 STA: 5+50 TO 7+70

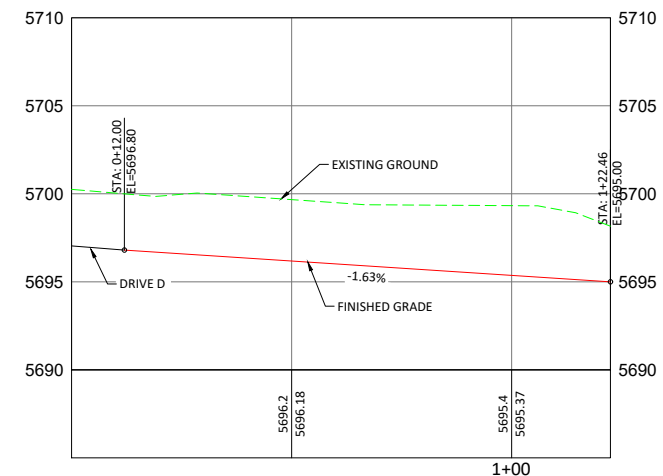
Sheet Number: 18

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



DRIVE D2 PROFILE
 HORIZ. SCALE: 1" = 20'
 VERT. SCALE: 1" = 5'



DRIVE D3 PROFILE
 HORIZ. SCALE: 1" = 20'
 VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

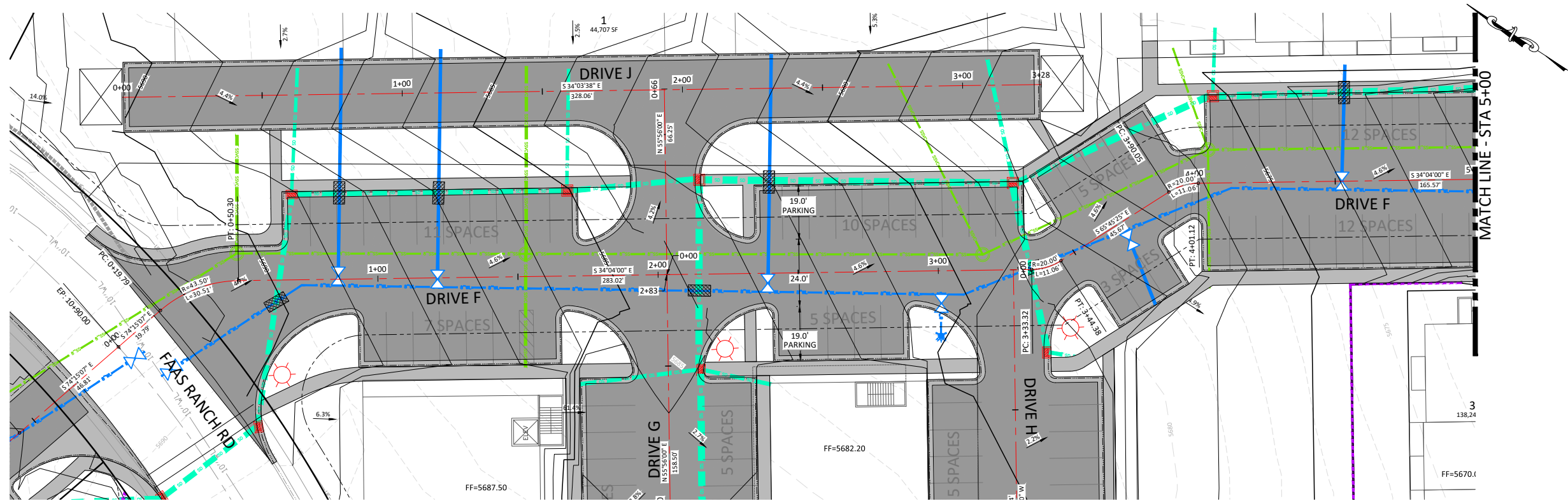
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale:
 These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

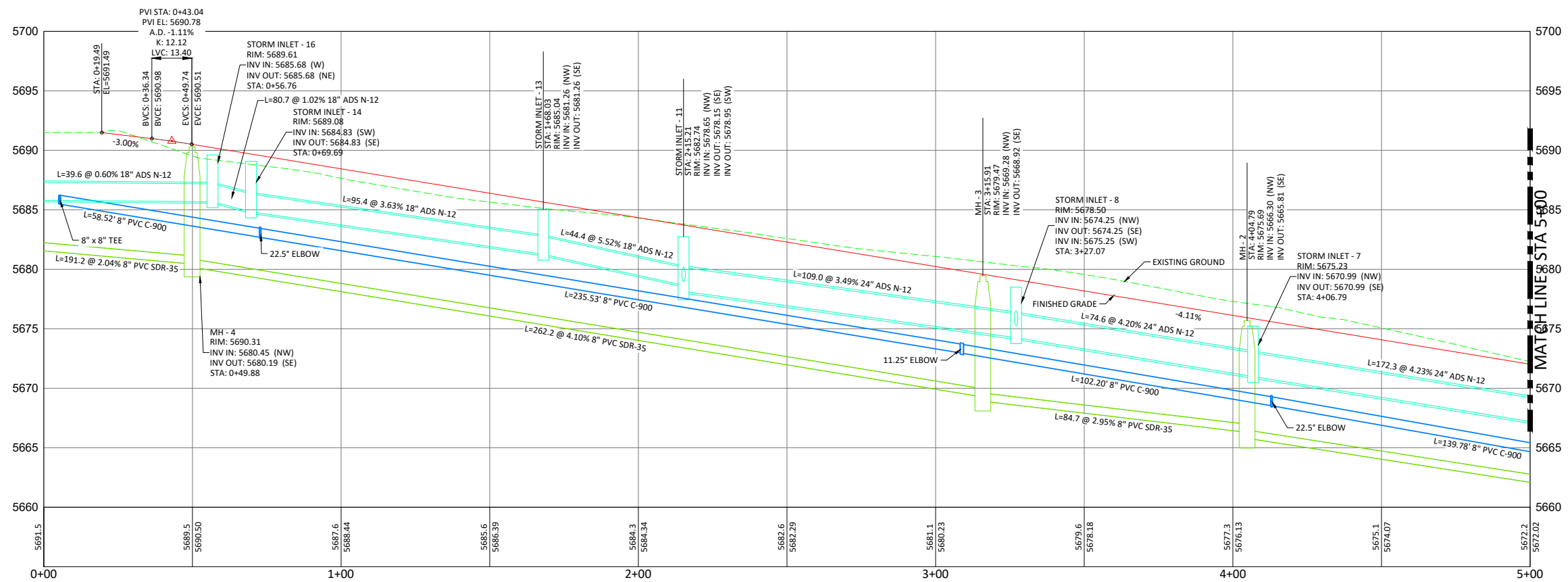


Sheet Name: DRIVES D2 AND D3
 PLAN & PROFILES
 Sheet Number: 19

THE LONGVIEW AT LAKOTA
 CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN



DRIVE F PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 20'

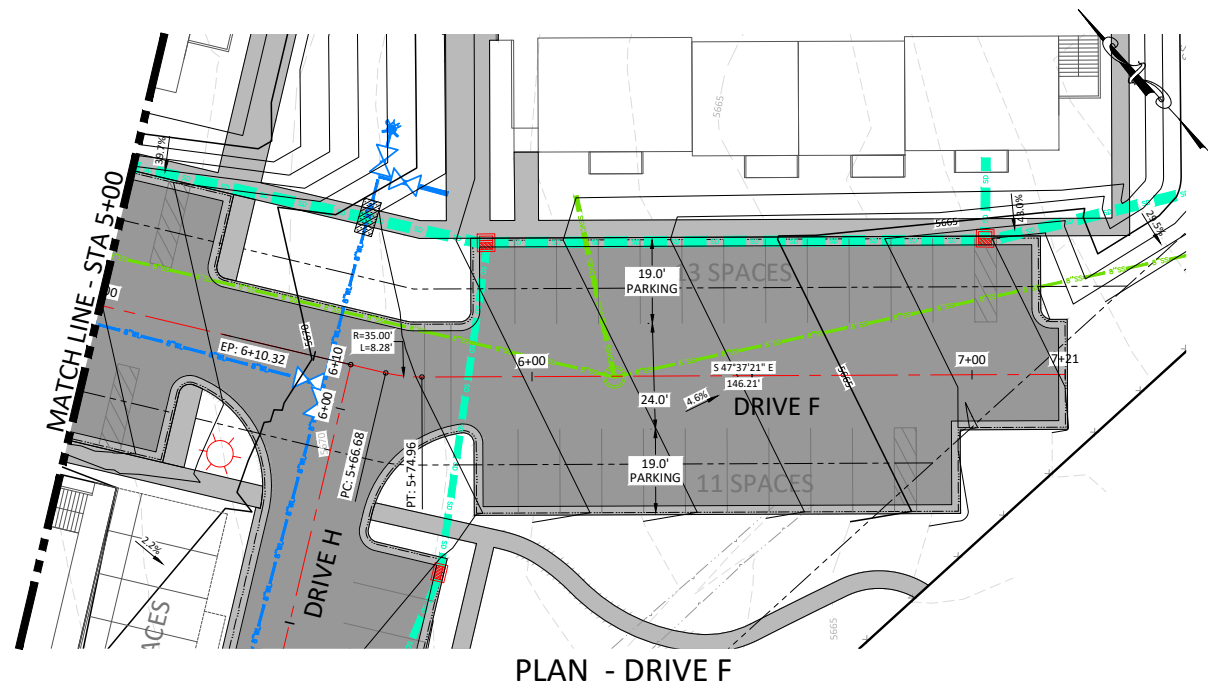
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

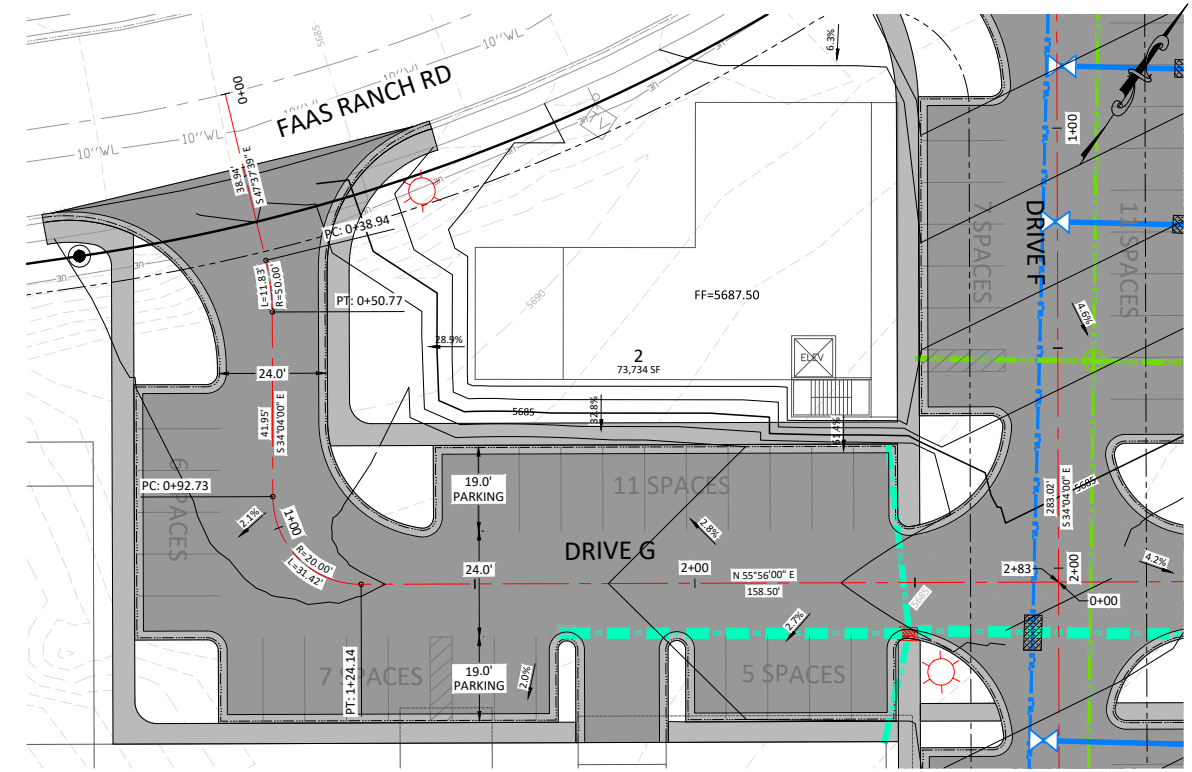
connect one DESIGN
COLORADO RIVER ENGINEERING INCORPORATED
 ARCHITECTS

Sheet Name: DRIVE F PLAN & PROFILE
 STA: 0+00 TO 5+00
 Sheet Number: 20

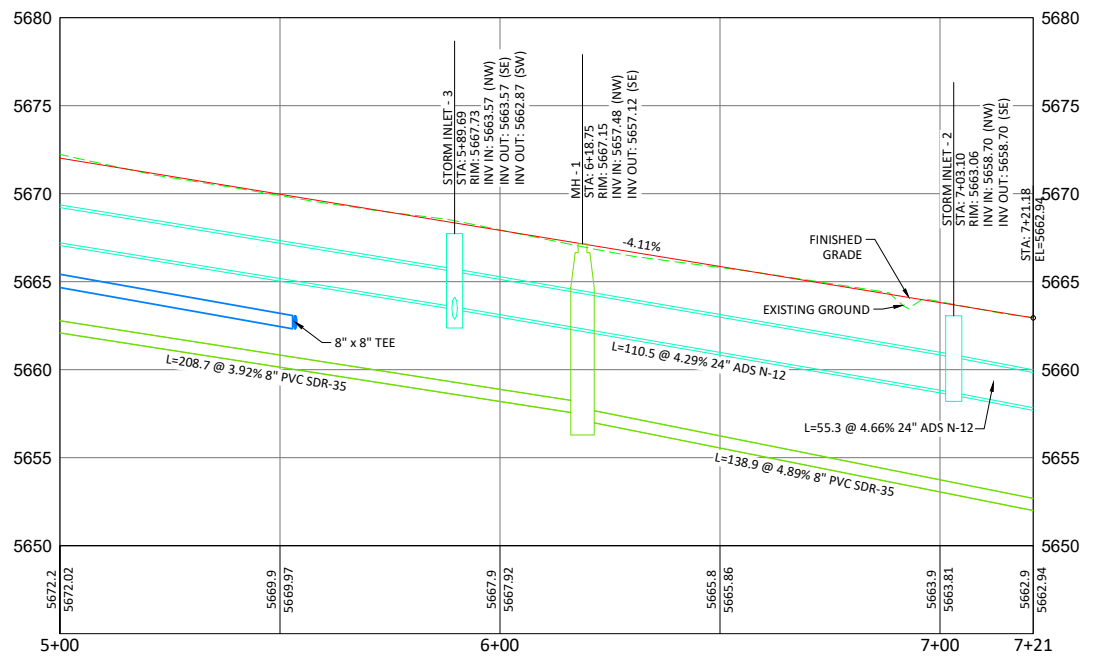
THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



PLAN - DRIVE F

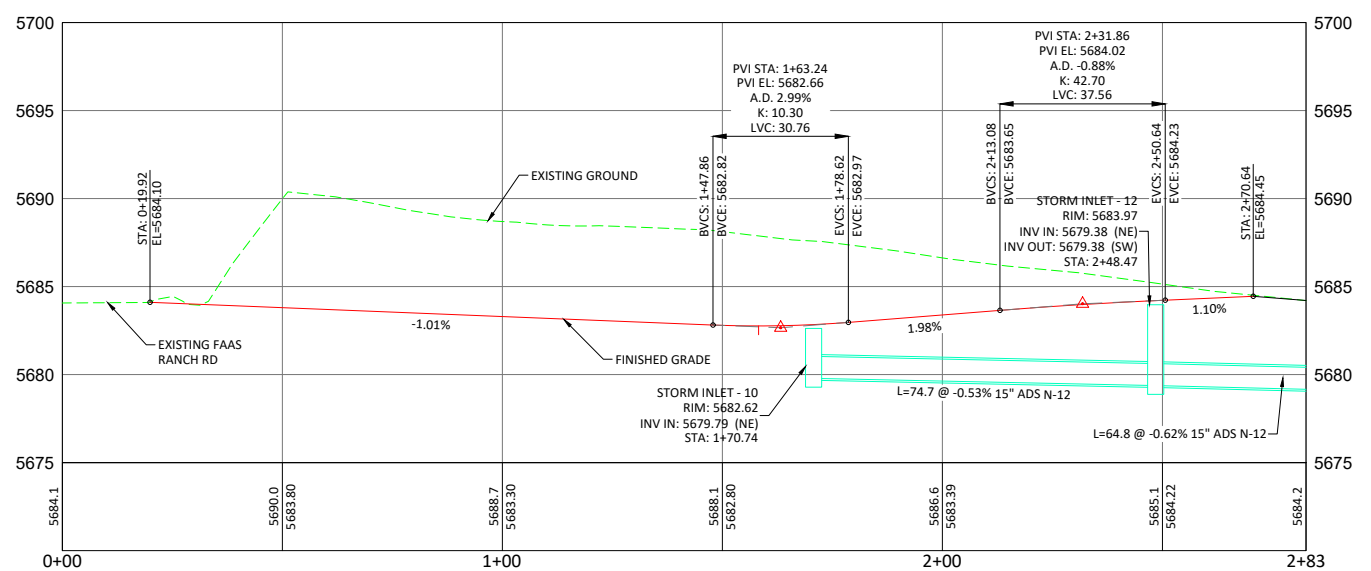


PLAN - DRIVE G



DRIVE F PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



DRIVE G PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 20'

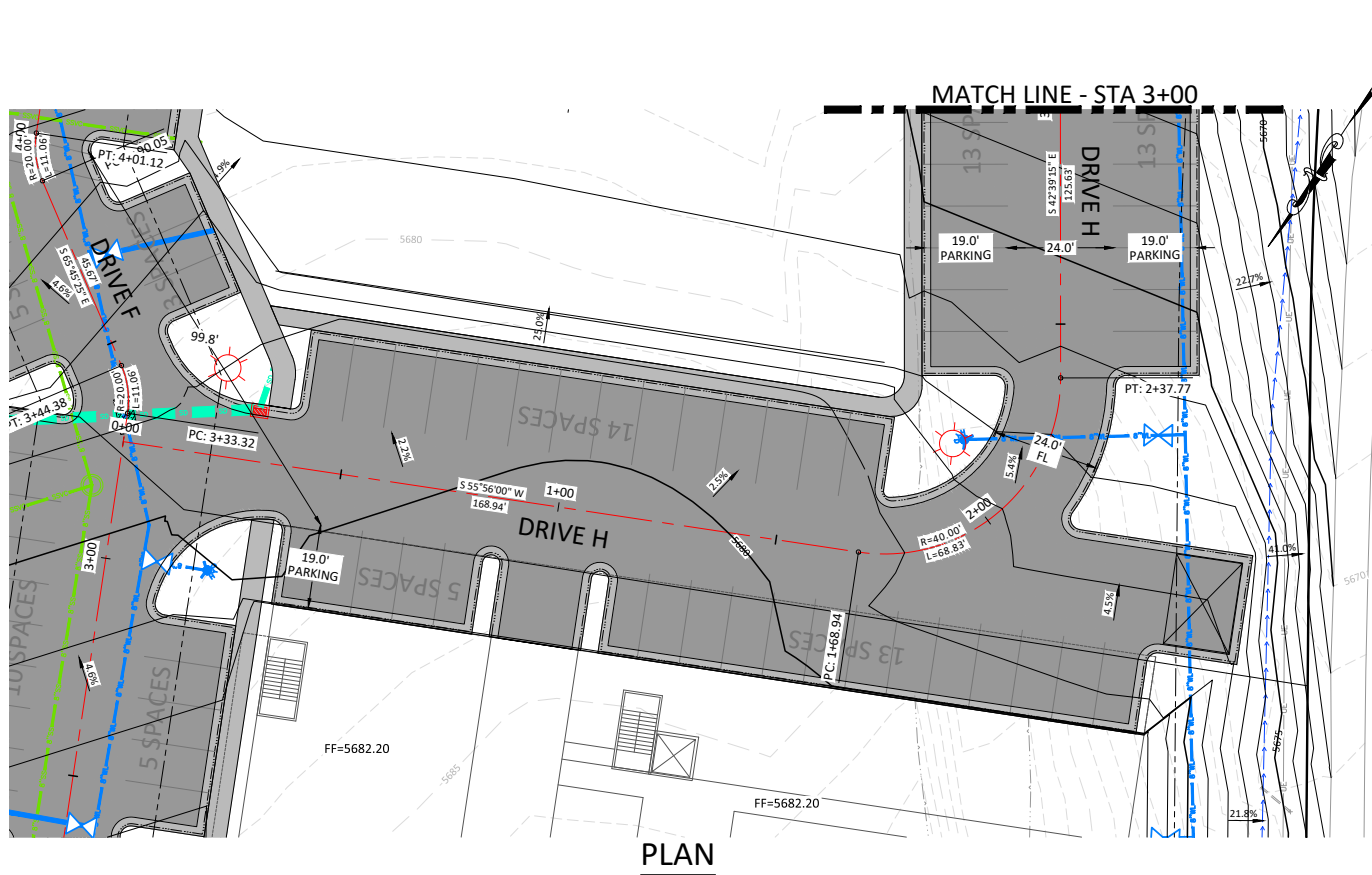
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: DRIVES F STA: 5+00 TO 7+21 AND G PLAN & PROFILES
Sheet Number: 21

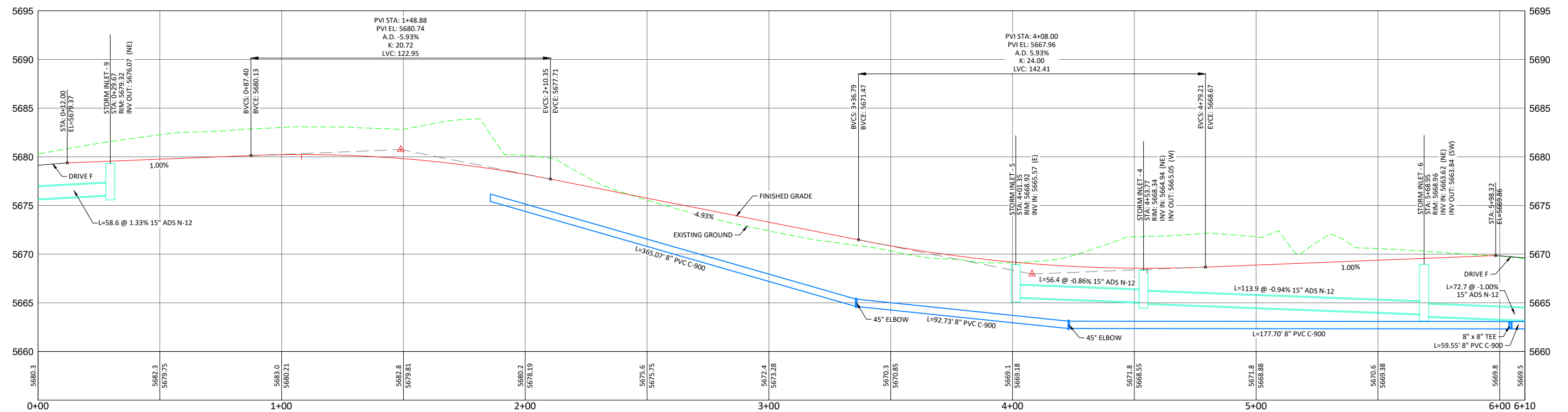
THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PLAN



PLAN



DRIVE H PROFILE

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 20'

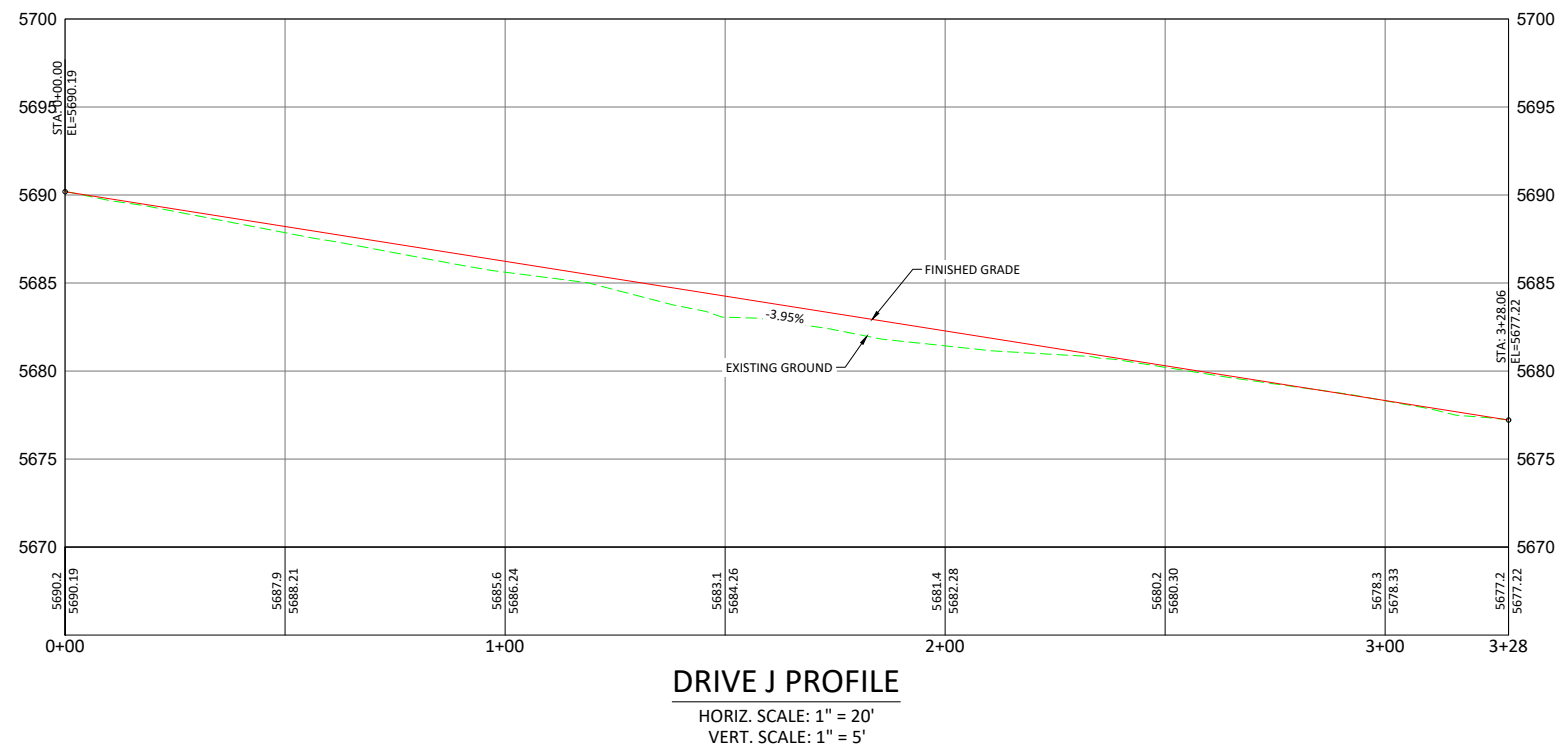
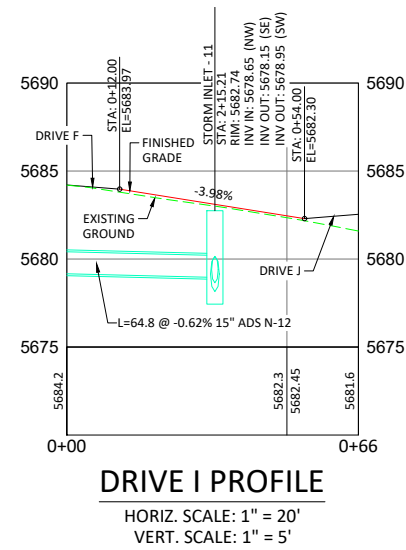
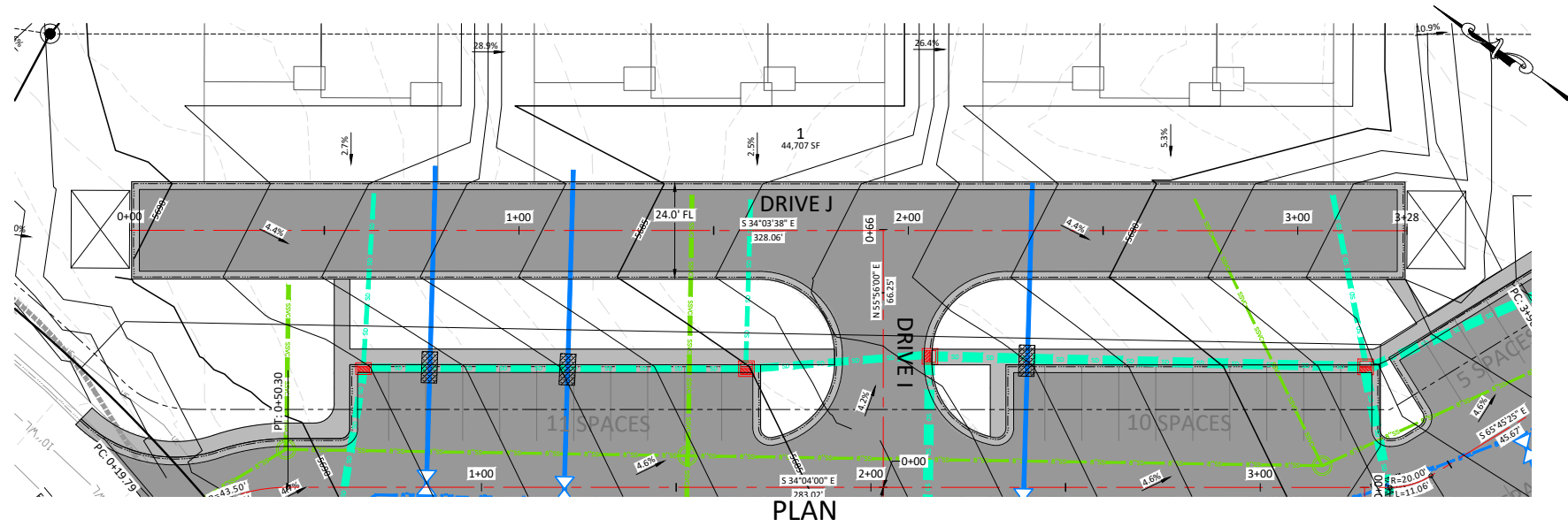
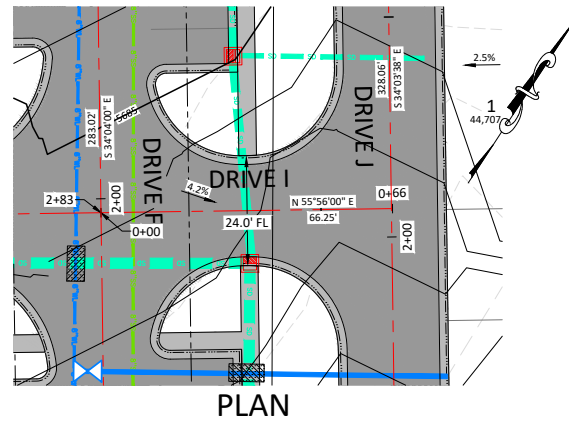
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: DRIVE H PLAN & PROFILE
Sheet Number: 22

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
File Name: CRE Design - Lakota Mixed Use.dwg
Horiz. Scale: SCALE: 1" = 20'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

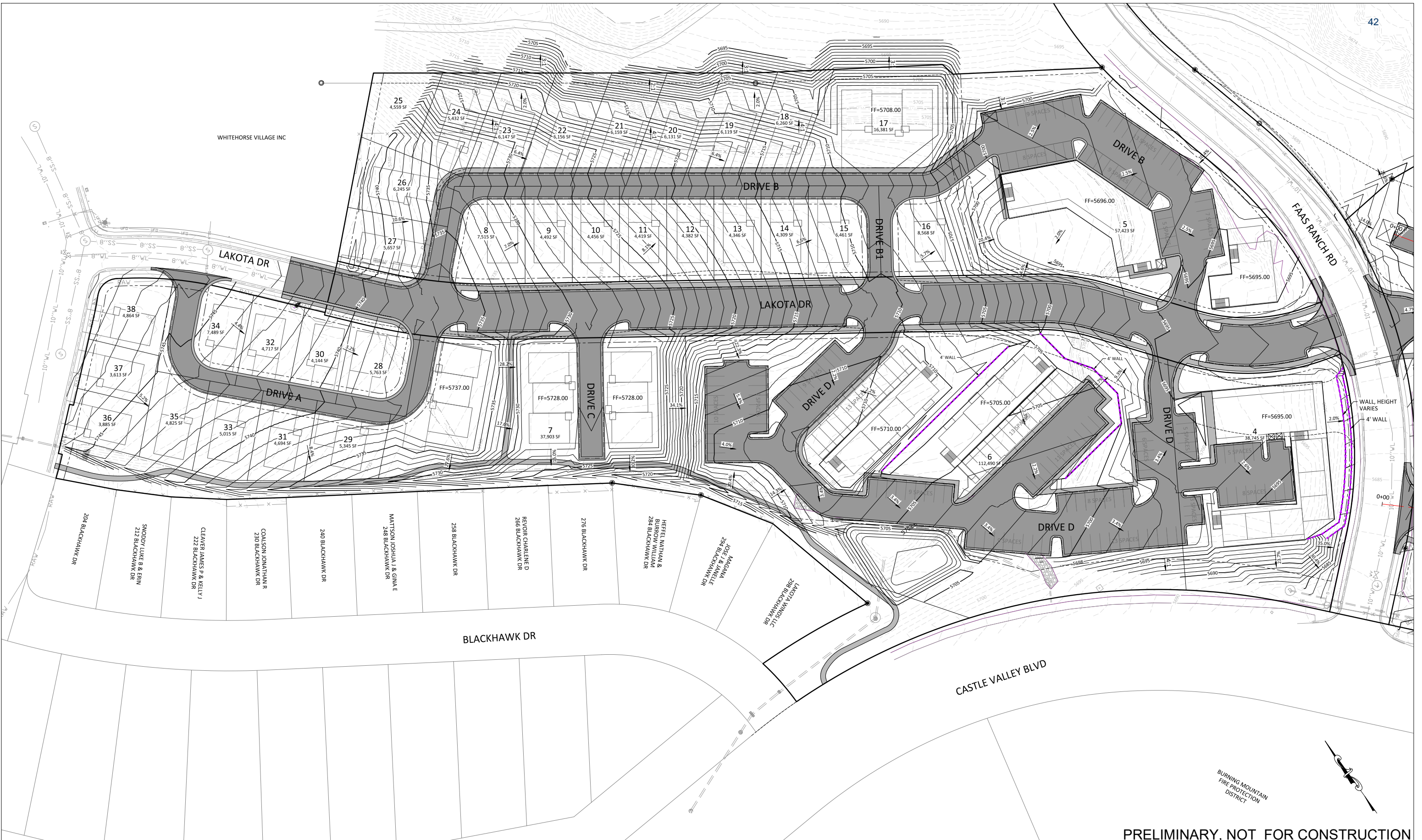


Sheet Name: DRIVES I AND J
PLAN & PROFILES

Sheet Number: 23

THE LONGVIEW AT LAKOTA
CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

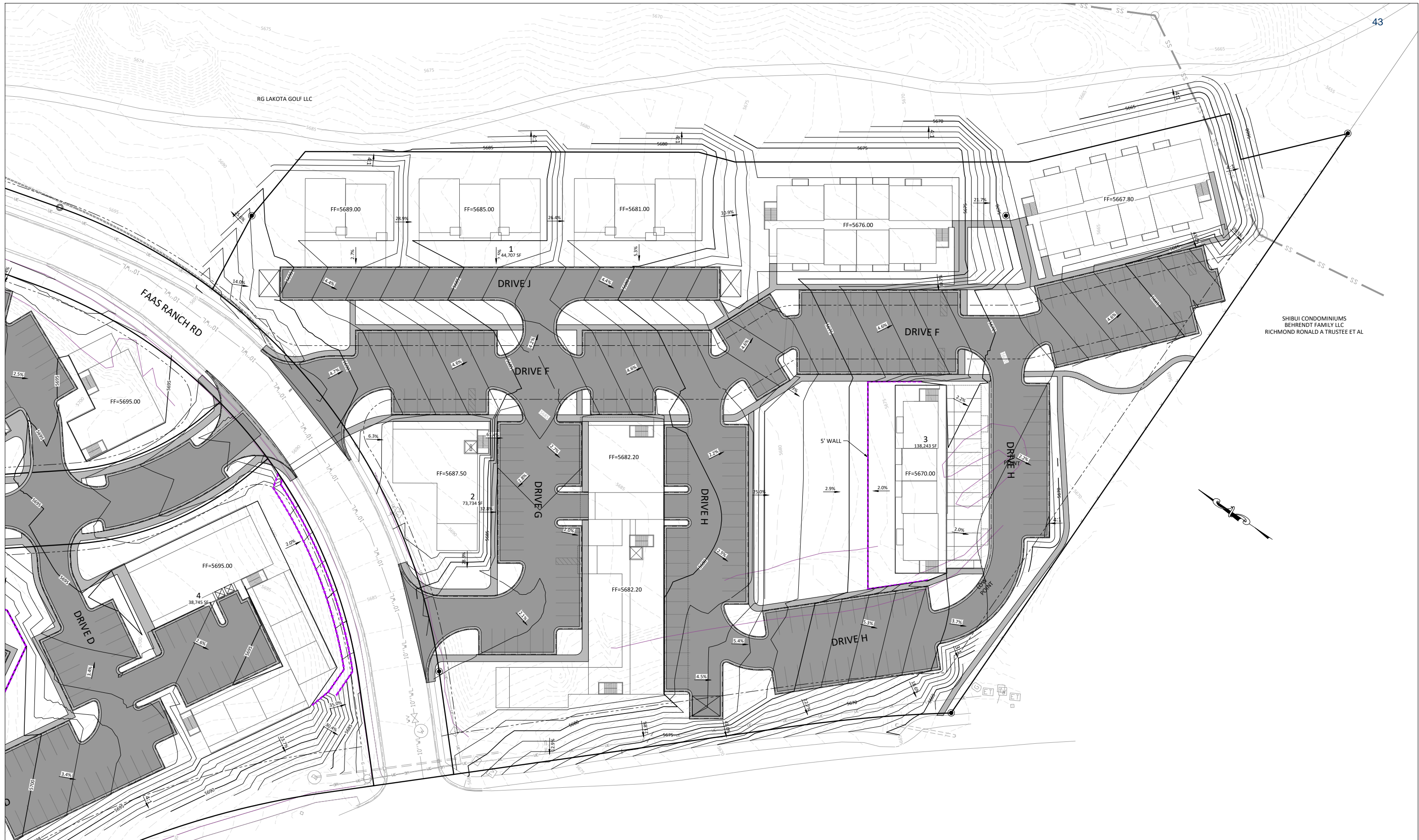
connect one
DESIGN

COLORADO RIVER
ENGINEERING
INCORPORATED

ARCHITECTS
GROUP

Sheet Name: NORTH GRADING PLAN
 Sheet Number: 24

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 30'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

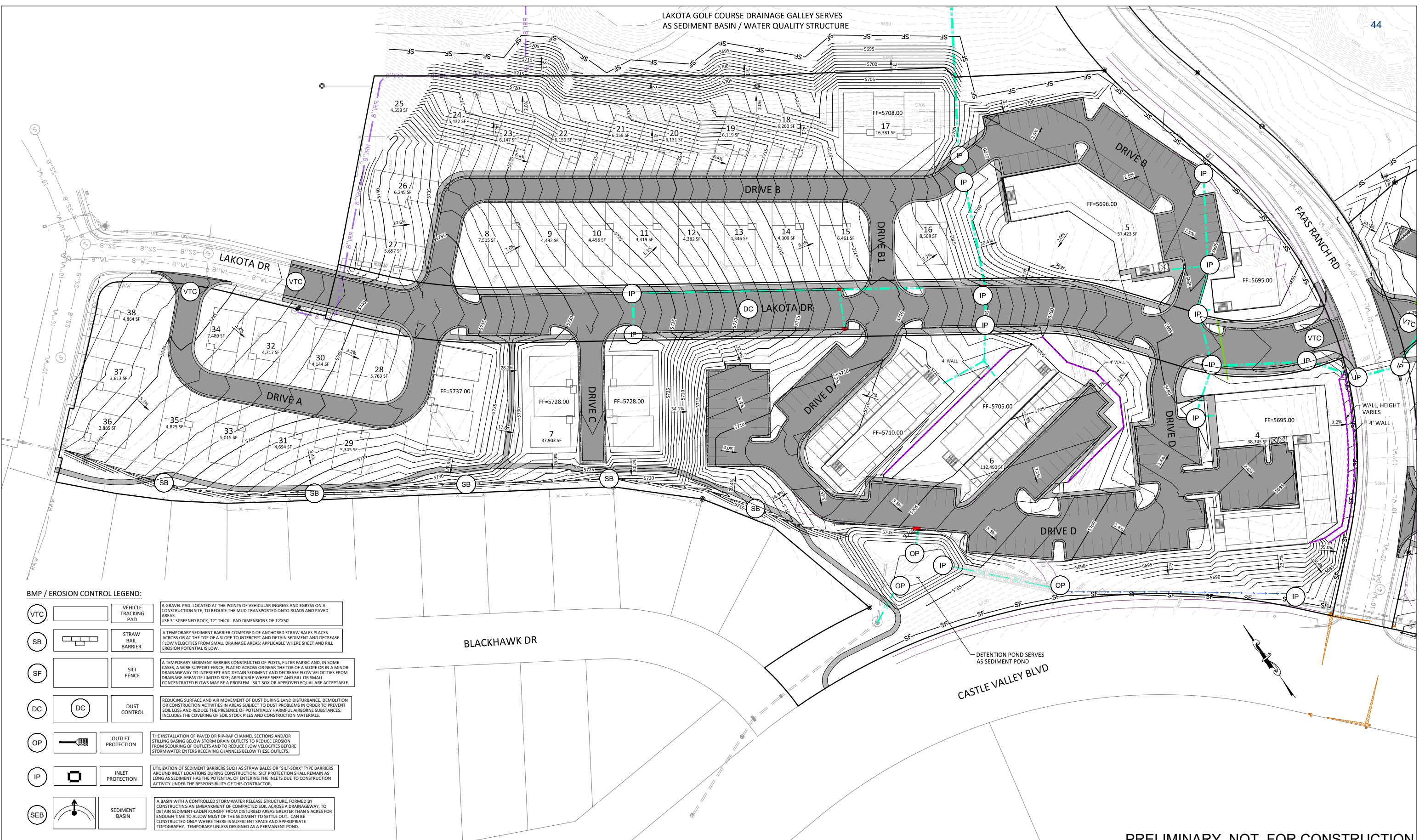
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

The block contains three logos. On the left is the 'connect one DESIGN' logo. In the center is the 'COLORADO RIVER ENGINEERING INCORPORATED' logo. On the right is the 'ARCHITECTS GROUP' logo.

Sheet Name: SOUTH GRADING PLAN
 Sheet Number: 25

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

LAKOTA GOLF COURSE DRAINAGE GALLEY SERVES AS SEDIMENT BASIN / WATER QUALITY STRUCTURE



BMP / EROSION CONTROL LEGEND:

	VEHICLE TRACKING PAD	A GRAVEL PAD, LOCATED AT THE POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE, TO REDUCE THE MUD TRANSPORTED ONTO ROADS AND PAVED AREAS. USE 3" SCREENED ROCK, 12" THICK. PAD DIMENSIONS OF 12'X50'.
	STRAW BALE BARRIER	A TEMPORARY SEDIMENT BARRIER COMPOSED OF ANCHORED STRAW BALES PLACED ACROSS OR AT THE TOE OF A SLOPE TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM SMALL DRAINAGE AREAS; APPLICABLE WHERE SHEET AND RILL EROSION POTENTIAL IS LOW.
	SILT FENCE	A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS, FILTER FABRIC AND, IN SOME CASES, A WIRE SUPPORT FENCE, PLACED ACROSS OR NEAR THE TOE OF A SLOPE OR IN A MINOR DRAINAGEWAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE; APPLICABLE WHERE SHEET AND RILL OR SMALL CONCENTRATED FLOWS MAY BE A PROBLEM. SILT-SOX OR APPROVED EQUAL ARE ACCEPTABLE.
	DUST CONTROL	REDUCING SURFACE AND AIR MOVEMENT OF DUST DURING LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES IN AREAS SUBJECT TO DUST PROBLEMS IN ORDER TO PREVENT SOIL LOSS AND REDUCE THE PRESENCE OF POTENTIALLY HARMFUL AIRBORNE SUBSTANCES. INCLUDES THE COVERING OF SOIL, STOCK PILES AND CONSTRUCTION MATERIALS.
	OUTLET PROTECTION	THE INSTALLATION OF PAVED OR RIP-RAP CHANNEL SECTIONS AND/OR STILLING BASING BELOW STORM DRAIN OUTLETS TO REDUCE EROSION FROM SCOURING OF OUTLETS AND TO REDUCE FLOW VELOCITIES BEFORE STORMWATER ENTERS RECEIVING CHANNELS BELOW THESE OUTLETS.
	INLET PROTECTION	UTILIZATION OF SEDIMENT BARRIERS SUCH AS STRAW BALES OR "SILT-SOX" TYPE BARRIERS AROUND INLET LOCATIONS DURING CONSTRUCTION. SILT PROTECTION SHALL REMAIN AS LONG AS SEDIMENT HAS THE POTENTIAL OF ENTERING THE INLETS DUE TO CONSTRUCTION ACTIVITY UNDER THE RESPONSIBILITY OF THIS CONTRACTOR.
	SEDIMENT BASIN	A BASIN WITH A CONTROLLED STORMWATER RELEASE STRUCTURE, FORMED BY CONSTRUCTING AN EMBANKMENT OF COMPACTED SOIL ACROSS A DRAINAGEWAY, TO DETAIN SEDIMENT-LADEN RUNOFF FROM DISTURBED AREAS GREATER THAN 5 ACRES FOR ENOUGH TIME TO ALLOW MOST OF THE SEDIMENT TO SETTLE OUT. CAN BE CONSTRUCTED ONLY WHERE THERE IS SUFFICIENT SPACE AND APPROPRIATE TOPOGRAPHY. TEMPORARY UNLESS DESIGNED AS A PERMANENT POND.

PRELIMINARY, NOT FOR CONSTRUCTION

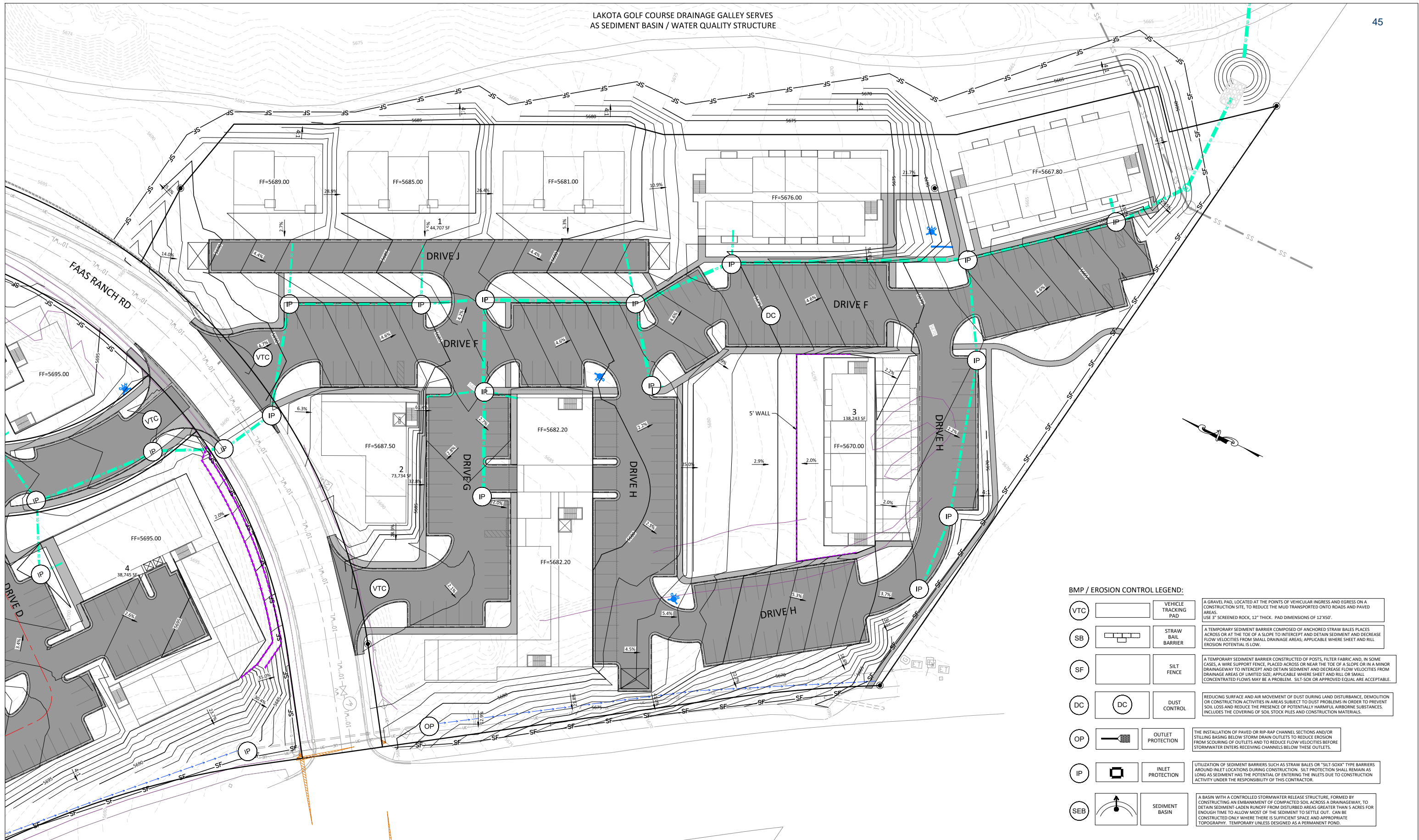
Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

Sheet Name: NORTH EROSION CONTROL PLAN
 Sheet Number: 26

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621



BMP / EROSION CONTROL LEGEND:

	VTC	VEHICLE TRACKING PAD	A GRAVEL PAD, LOCATED AT THE POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE, TO REDUCE THE MUD TRANSPORTED ONTO ROADS AND PAVED AREAS. USE 3" SCREENED ROCK, 12" THICK. PAD DIMENSIONS OF 12'X50'.
	SB	STRAW BAIT BARRIER	A TEMPORARY SEDIMENT BARRIER COMPOSED OF ANCHORED STRAW BALES PLACED ACROSS OR AT THE TOE OF A SLOPE TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM SMALL DRAINAGE AREAS; APPLICABLE WHERE SHEET AND RILL EROSION POTENTIAL IS LOW.
	SF	SILT FENCE	A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS, FILTER FABRIC AND, IN SOME CASES, A WIRE SUPPORT FENCE, PLACED ACROSS OR NEAR THE TOE OF A SLOPE OR IN A MINOR DRAINAGEWAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE; APPLICABLE WHERE SHEET AND RILL OR SMALL CONCENTRATED FLOWS MAY BE A PROBLEM. SILT-SOX OR APPROVED EQUAL ARE ACCEPTABLE.
	DC	DUST CONTROL	REDUCING SURFACE AND AIR MOVEMENT OF DUST DURING LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES IN AREAS SUBJECT TO DUST PROBLEMS IN ORDER TO PREVENT SOIL LOSS AND REDUCE THE PRESENCE OF POTENTIALLY HARMFUL AIRBORNE SUBSTANCES. INCLUDES THE COVERING OF SOIL STOCK PILES AND CONSTRUCTION MATERIALS.
	OP	OUTLET PROTECTION	THE INSTALLATION OF PAVED OR RIP-RAP CHANNEL SECTIONS AND/OR STILLING BASING BELOW STORM DRAIN OUTLETS TO REDUCE EROSION FROM SCOURING OF OUTLETS AND TO REDUCE FLOW VELOCITIES BEFORE STORMWATER ENTERS RECEIVING CHANNELS BELOW THESE OUTLETS.
	IP	INLET PROTECTION	UTILIZATION OF SEDIMENT BARRIERS SUCH AS STRAW BALES OR "SILT-SOX" TYPE BARRIERS AROUND INLET LOCATIONS DURING CONSTRUCTION. SILT PROTECTION SHALL REMAIN AS LONG AS SEDIMENT HAS THE POTENTIAL OF ENTERING THE INLETS DUE TO CONSTRUCTION ACTIVITY UNDER THE RESPONSIBILITY OF THIS CONTRACTOR.
	SEB	SEDIMENT BASIN	A BASIN WITH A CONTROLLED STORMWATER RELEASE STRUCTURE, FORMED BY CONSTRUCTING AN EMBANKMENT OF COMPACTED SOIL ACROSS A DRAINAGEWAY, TO DETAIN SEDIMENT-LOADED RUNOFF FROM DISTURBED AREAS GREATER THAN 5 ACRES FOR ENOUGH TIME TO ALLOW MOST OF THE SEDIMENT TO SETTLE OUT. CAN BE CONSTRUCTED ONLY WHERE THERE IS SUFFICIENT SPACE AND APPROPRIATE TOPOGRAPHY. TEMPORARY UNLESS DESIGNED AS A PERMANENT POND.

Print Date: March 21, 2022
 File Name: CRE Design - Lakota Mixed Use.dwg
 Horiz. Scale: SCALE: 1" = 40'

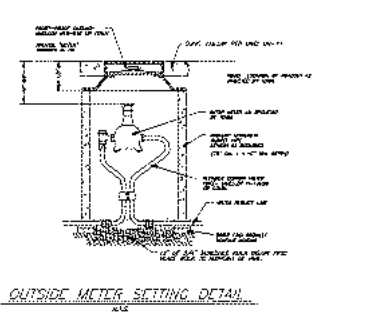
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

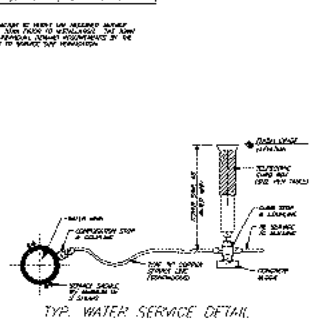


Sheet Name: SOUTH EROSION CONTROL PLAN
 Sheet Number: 27

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

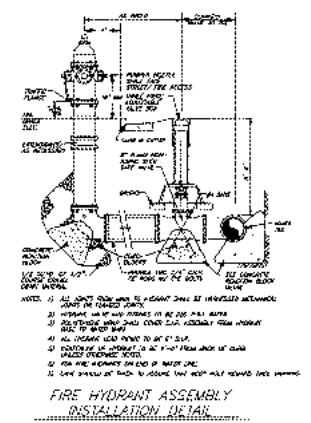


OUTSIDE METER SETTING DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-70



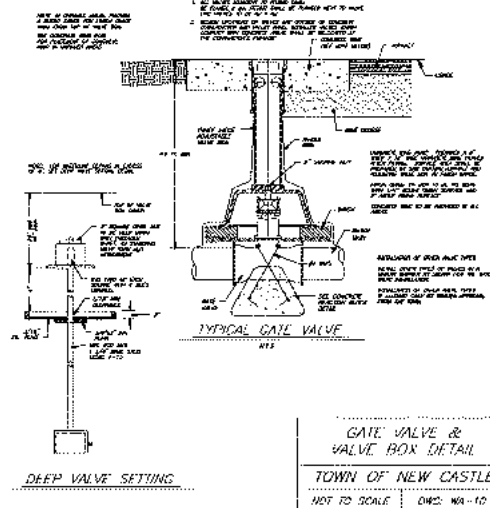
MODIFIED
TYPICAL WATER SERVICE DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-70

Note: May use continuous 1" diameter PURE-CORE instead of copper for water service. Bed with 3/8" screened gravel. Install tracer wire. SS INSERTS required at all fittings. See Water Main Trench Detail for bedding and cover requirements.

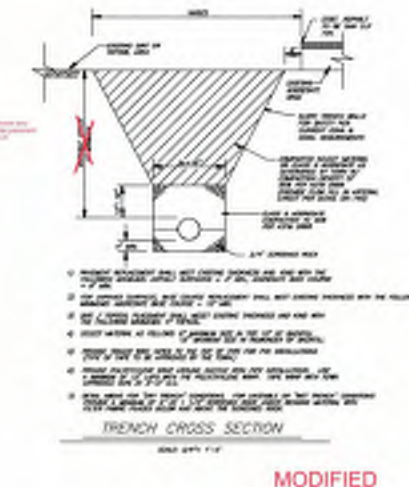


FIRE HYDRANT SETTING DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-20

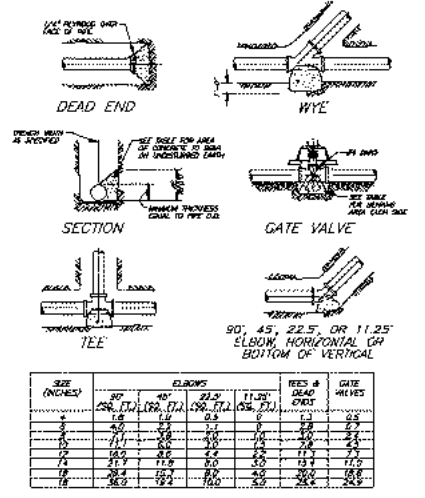
Note: Below grade concrete min. compressive strength 3000 psi. Minimum clearance between valve and trench bottom is 4".



GATE VALVE & VALVE BOX DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-10



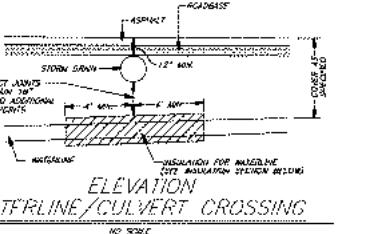
MODIFIED
STANDARD WATER MAIN TRENCH SECTION
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-40



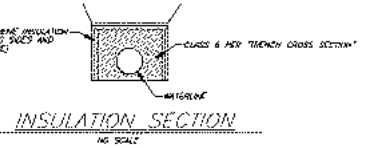
SIZE (INCHES)	90° ELBOW (INCHES)	45° ELBOW (INCHES)	22.5° ELBOW (INCHES)	11.25° ELBOW (INCHES)	tees & tees (INCHES)	GATE VALVES (INCHES)
8	10.0	10.0	10.0	10.0	10.0	10.0
10	12.0	12.0	12.0	12.0	12.0	12.0
12	14.0	14.0	14.0	14.0	14.0	14.0
14	16.0	16.0	16.0	16.0	16.0	16.0
16	18.0	18.0	18.0	18.0	18.0	18.0

NOTE: OTHER TABLES MAY APPLY WITH VARYING STRENGTHS OF PIPE AND JOINTS. MINIMUM CLEARANCE BETWEEN VALVE AND TRENCH BOTTOM IS 4".

TABLE OF BEARING AREAS IN SQ. FT.
TYP. CONCRETE REACTION BLOCK DETAILS



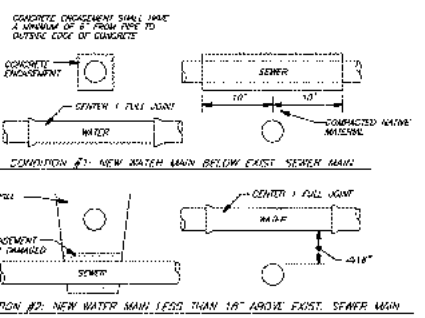
ELEVATION WATERLINE/CULVERT CROSSING
NO SCALE



INSULATION SECTION
NO SCALE

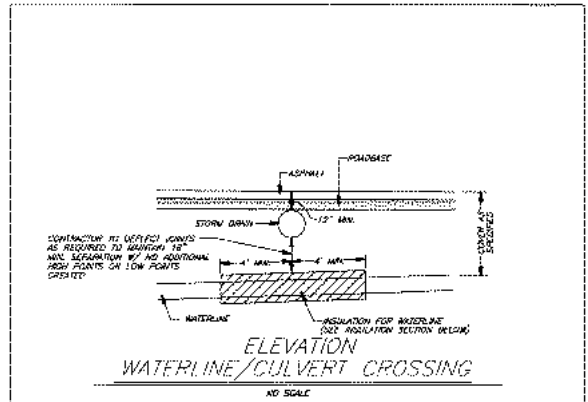
NOTE: AS SHOWN THE INSULATION DETAIL ADDRESSES EXISTING CROSSINGS. PROVIDE THE SAME DETAIL FOR THESE INSTANCES WHERE THE WATERLINE IS INSTALLED WITHIN 5' OF OPEN AIR.

WATERLINE INSULATION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-80

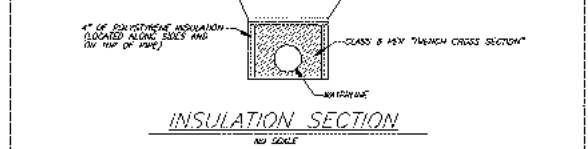


WATER / SEWER CROSSING

WATER/SEWER CROSSING DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-60



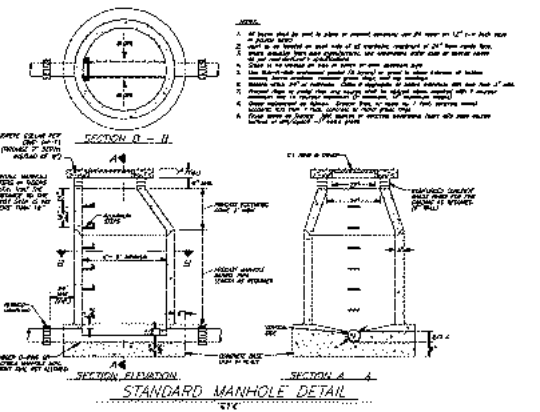
ELEVATION WATERLINE/CULVERT CROSSING
NO SCALE



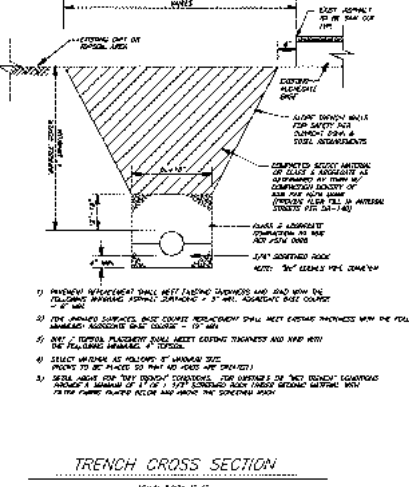
INSULATION SECTION
NO SCALE

NOTE: AS SHOWN THE INSULATION DETAIL ADDRESSES EXISTING CROSSINGS. PROVIDE THE SAME DETAIL FOR THESE INSTANCES WHERE THE WATERLINE IS INSTALLED WITHIN 5' OF OPEN AIR.

WATERLINE INSULATION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-80

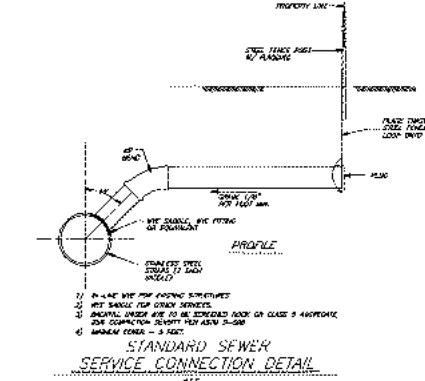


STANDARD SEWER MANHOLE DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-10



STANDARD SEWER MAIN TRENCH SECTION
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-50

MODIFIED
THRUST BLOCKING DETAILS
TOWN OF NEW CASTLE
NOT TO SCALE DWG: WA-50



MODIFIED
SEWER SERVICE CONNECTION DETAIL
TOWN OF NEW CASTLE
NOT TO SCALE DWG: SW-40

- Notes:
- Water and sewer service stubs shown. Future extension to each house accomplished when home constructed.
 - Water mains shown based on approved master utility plan or as approved by town engineer.
 - All utility development to be in accordance with the Town of New Castle Public Works Manual.
 - Shallow dry utilities (elec-gas-phone-cab) design layout by utility providers. Copies of each utility providers' layouts shall be provided to the Town of New Castle prior to construction.
 - Contractor responsible for coordinating all utility locates and avoidance of existing utilities.
 - Owner to have improvements surveyed during construction for Record Drawings.
 - Water pipe joint deflection to be approved if contractor produces manufacturer's specifications approving deflection. Alternatively, contractor to provide straight runs with necessary elbows AS SHOWN ON PLANS.
 - All water pipe and fittings to meet Town of New Castle Public Works Manual specifications.
 - All water main fittings to have megalugs.
 - C-500 PVC DR14 on all water mains. DIP water fittings to be poly wrapped for corrosion protection.
 - Water service stubs seamless copper "Type K" or 1" diameter HDPE pure-core. No saddle laps within 4-ft of fittings or other Taps.
 - All sewer pipe mains and service stubs to meet ASTM 3034 with SDR 35 as minimum wall thickness.
 - 4" diameter on all sewer Service stubs to individual homes, 2" slope.
 - Water lines not shown on profile, minimum 5.5' bury depth.
 - Sewer system design shows table of approximate elevation of service stub depth to the lots building envelope on the street side. Sewer service by gravity limited on some larger lots with building envelopes downhill of roadways. Future lot purchasers could require lift pumps for basements on steeper downhill lots.
 - Owner to obtain stormwater discharge permit prior to construction.
 - Contractor to meet all specifications and testing requirements of oversight grading as per geotechnical engineer oversight and design report.
 - Contractor to obtain and perform all work in accordance with Town of New Castle Acceptance Checklist for Public Improvements. Signatures to be provided for all applicable work to facilitate acceptance by town at the end of project.
 - All sewer mains in project are gravity pipes. Some lots could require sewage lift stations for basement service. Sewer stub depth and locations provided this drawing set.

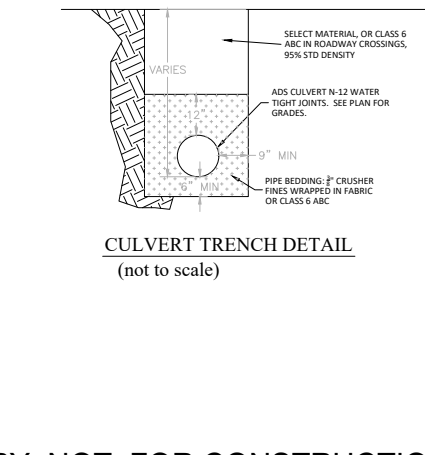
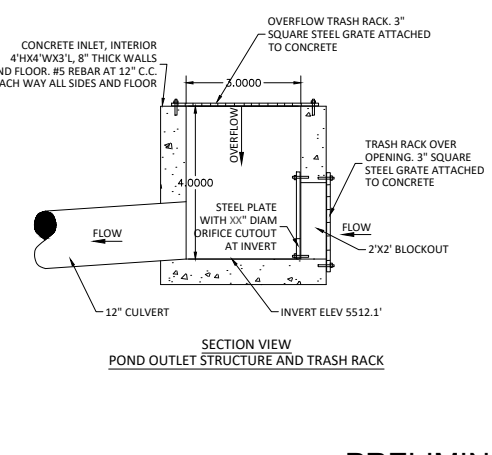
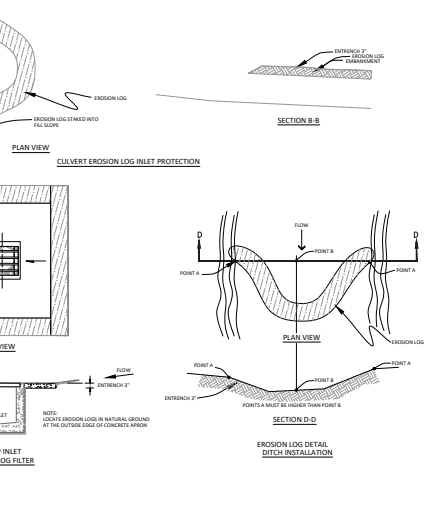
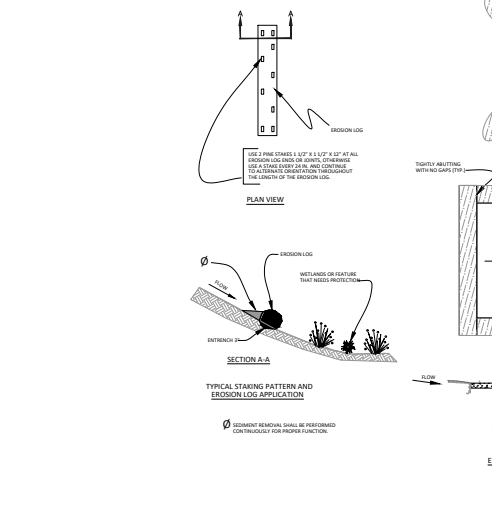
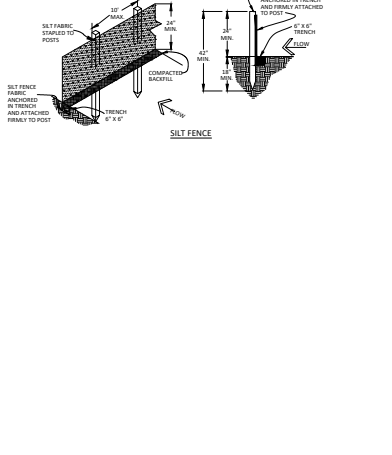
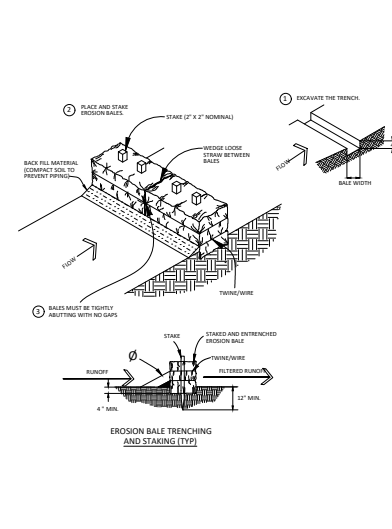
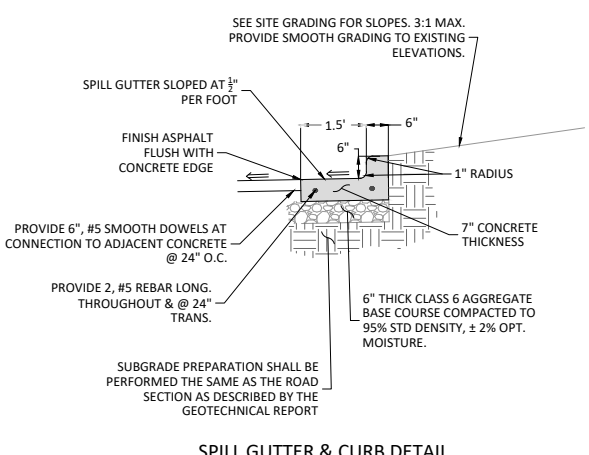
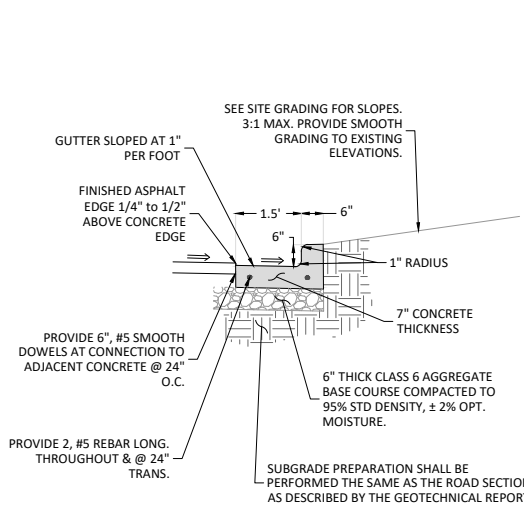
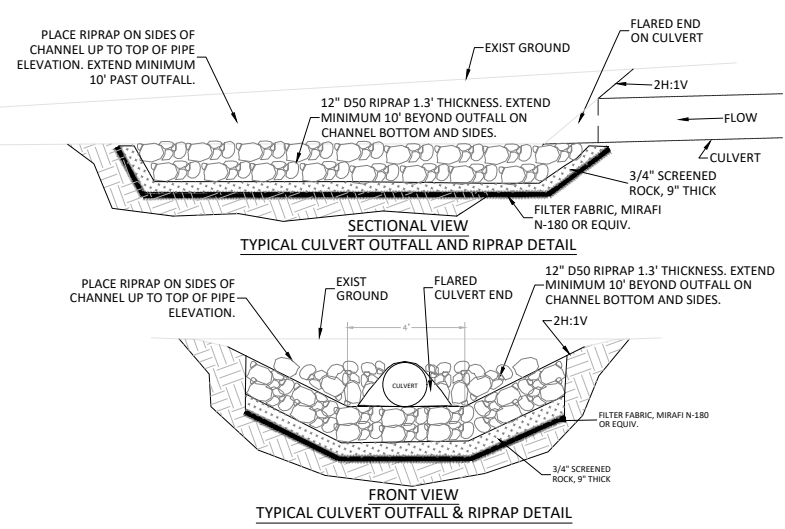
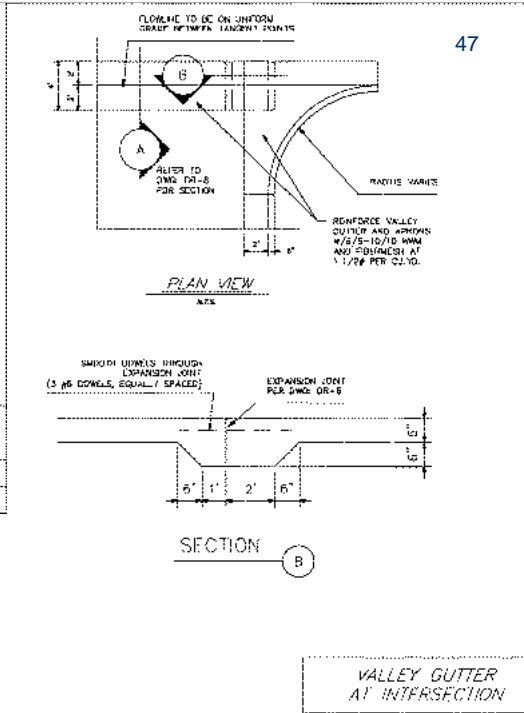
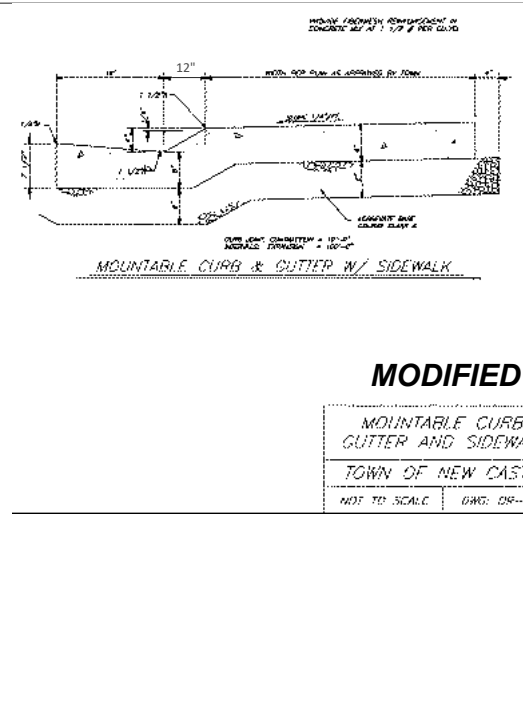
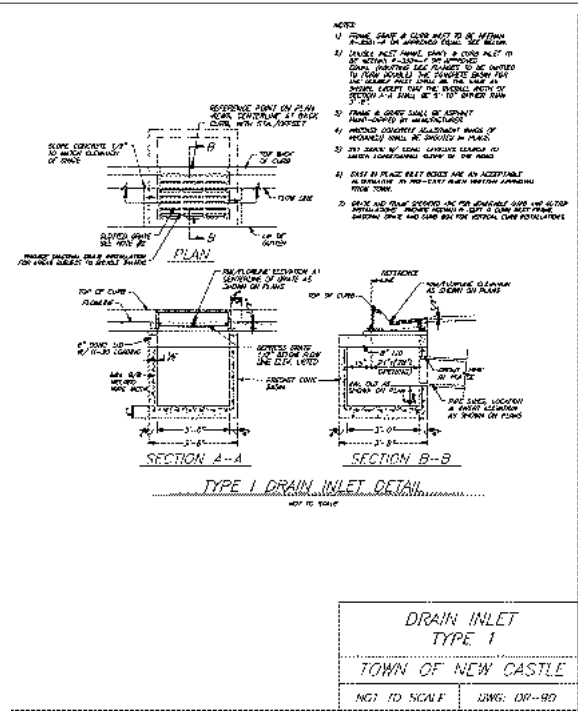
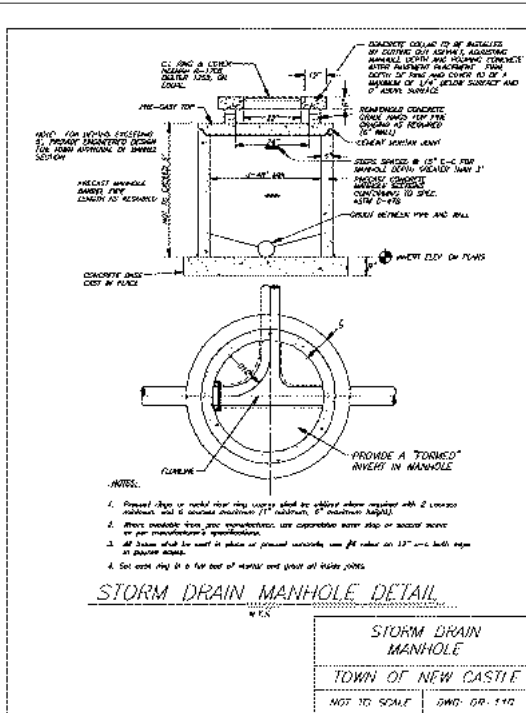
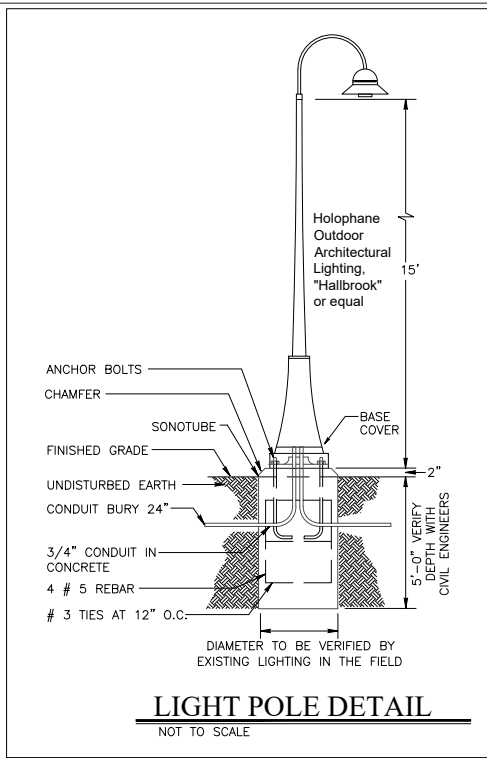
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Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	

Sheet Name: DETAILS WATER & SEWER
Sheet Number: 28

THE LONGVIEW AT LAKOTA CANYON RANCH
Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



PRELIMINARY, NOT FOR CONSTRUCTION

Print Date: March 21, 2022

File Name: Details.dwg

Horiz. Scale:

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Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	

connect one DESIGN

COLORADO RIVER ENGINEERING INCORPORATED

ARCHITECTS

Sheet Name: DETAILS - GENERAL

Sheet Number: 29

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



LAKOTA RESIDENTIAL TOTALS	
TOWNHOMES: 20 UNITS DUPLEX & TRIPLEX	TOWNHOMES: 43,040 sf = avg 2,152 sf/unit avg
APARTMENTS: 20(3) = 60 24(2) = 48 108 UNITS TOTAL	APARTMENTS: avg sf 19254 sf (2) = 38,508 sf avg sf 16511 sf (3) = 49,533 sf 88,041/108 = 815 sf/unit avg
MIXED USE (FLATS) RESIDENCES: 28 UNITS TOTAL	MIXED USE (FLATS) RESIDENCES: 25,960/28 = 927 sf/unit avg
LAKOTA RESIDENCES: 156 TOTAL UNITS	
SINGLE FAMILY LOTS 29 UNITS	

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Date:	Comments:	Drawn by:	Checked by:



Sheet Name: SITE PLAN
UNIT COUNTS INFO

Sheet Number:

THE LONGVIEW AT LAKOTA
CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



2 SECOND LEVEL FLOOR PLAN
A2.1 1/8" = 1'-0"



1 STREET LEVEL FLOOR PLAN
A2.1 1/8" = 1'-0"



Print Date: MARCH 18, 2022

File Name: THE LANDING AT LAKOTA CANYON RANCH

Horiz. Scale:

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Issue & Revisions			
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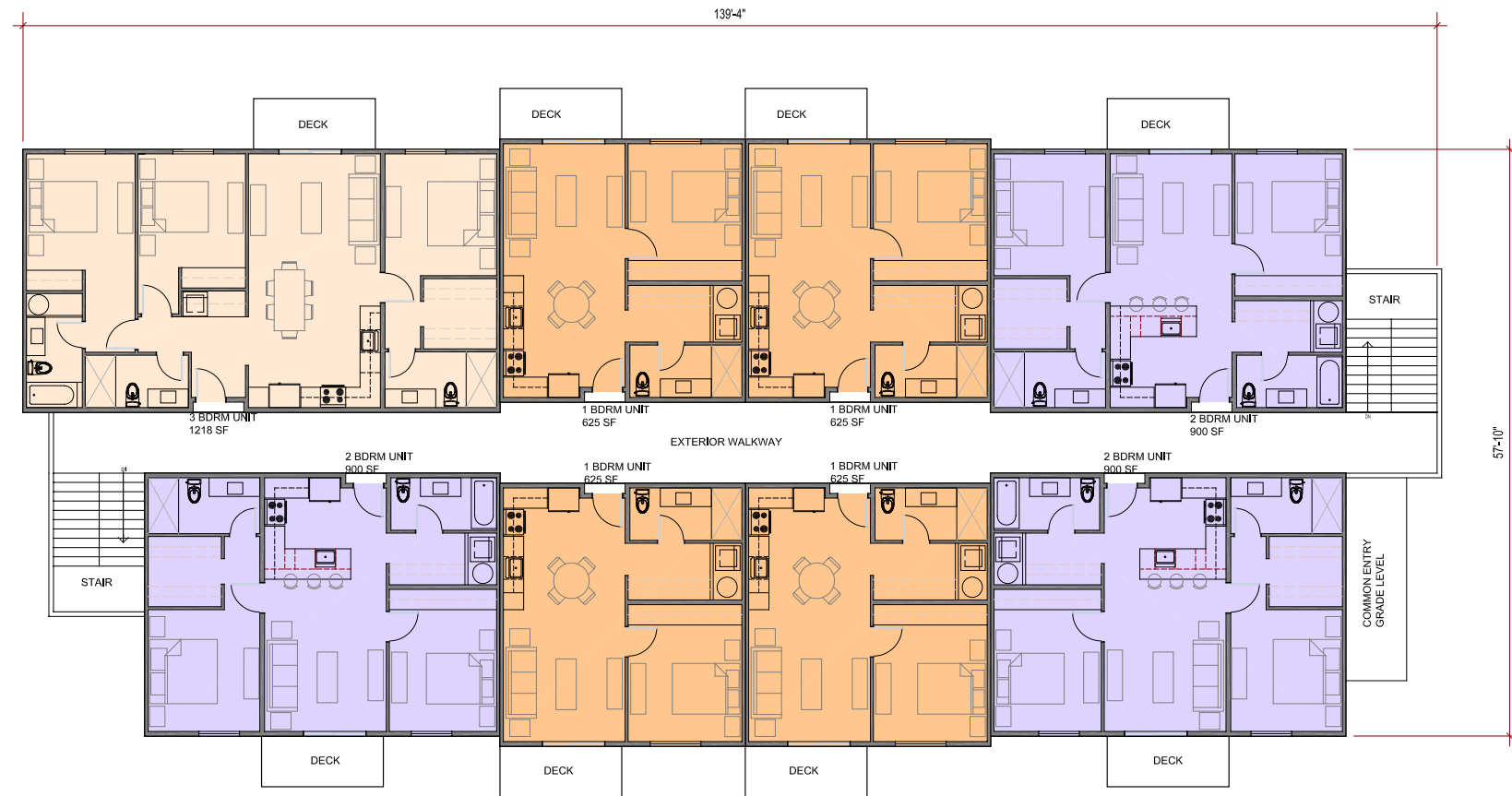


Sheet Name: APARTMENT 1 FLOOR PLANS




Sheet Number: **AI-2.1**

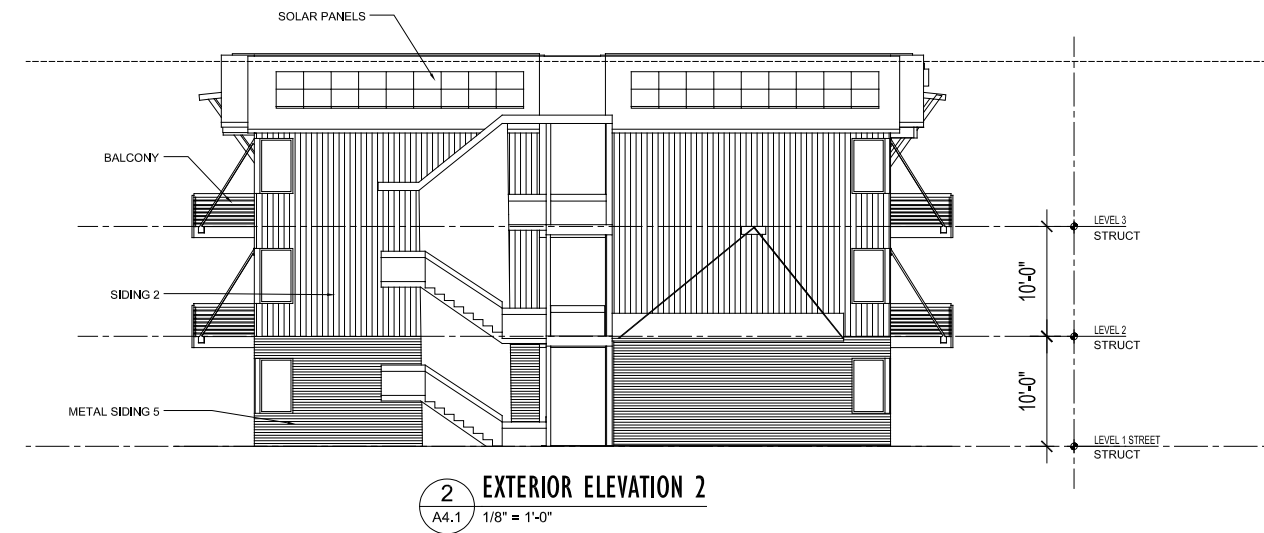
THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



1 THIRD LEVEL FLOOR PLAN
A2.2 1/8" = 1'-0" 

Print Date: MARCH 18, 2022	Issue & Revisions							Sheet Name: APARTMENT 1 FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH								Date:	Comments:
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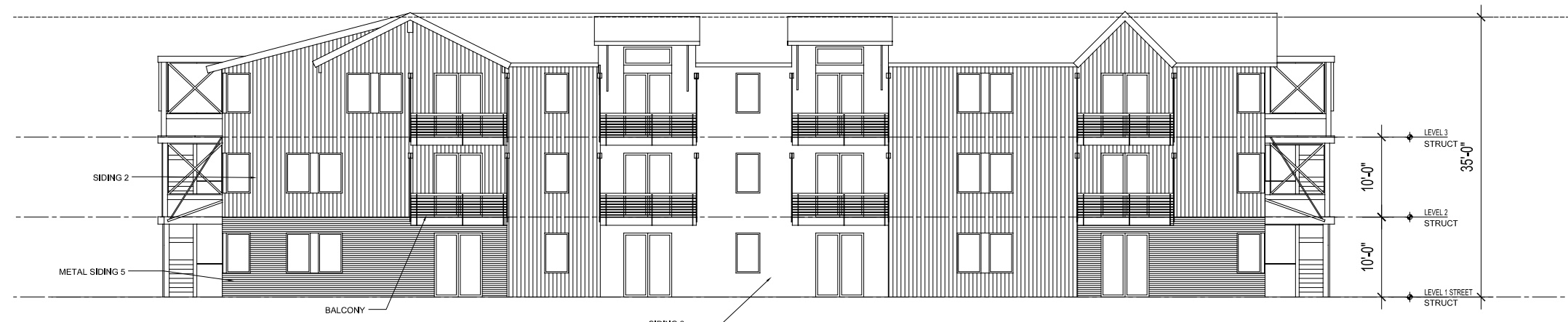


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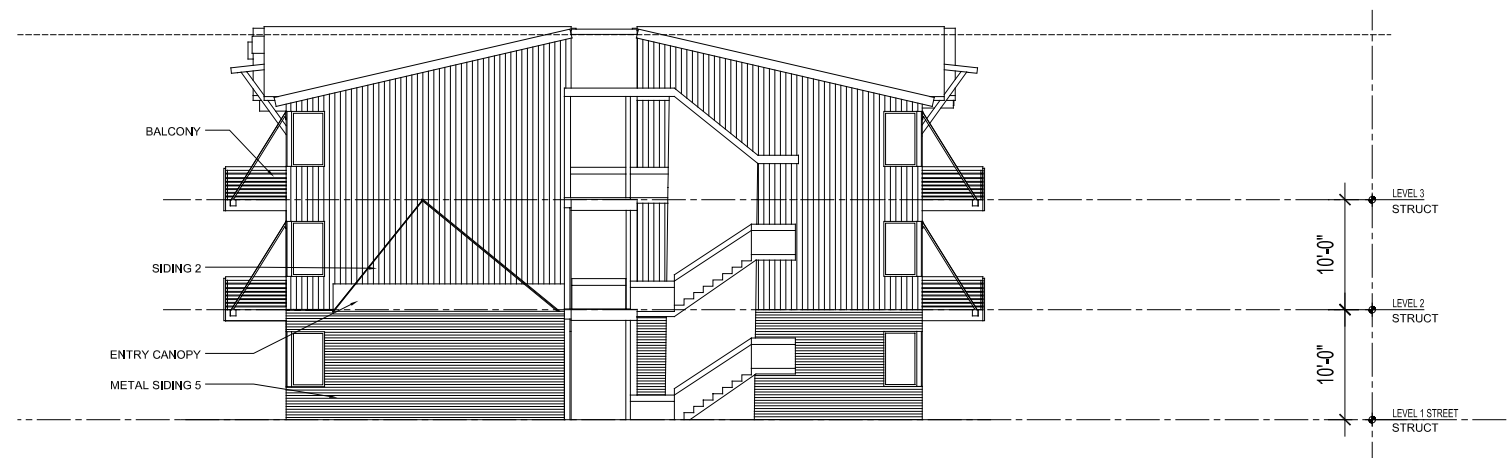
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Date:	Comments:	Drawn by:	Checked by:



Sheet Name: APARTMENT I EXT ELEVATIONS
 Sheet Number: **AI-4.1**
 THE LONGVIEW AT LAKOTA CANYON RANCH
 Client: The Romero Group
 350 Market Street Suite 304
 Basalt, CO 81621



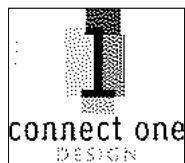
4 EXTERIOR ELEVATION 4
A4.1 1/8" = 1'-0"



3 EXTERIOR ELEVATION 3
A4.1 1/8" = 1'-0"

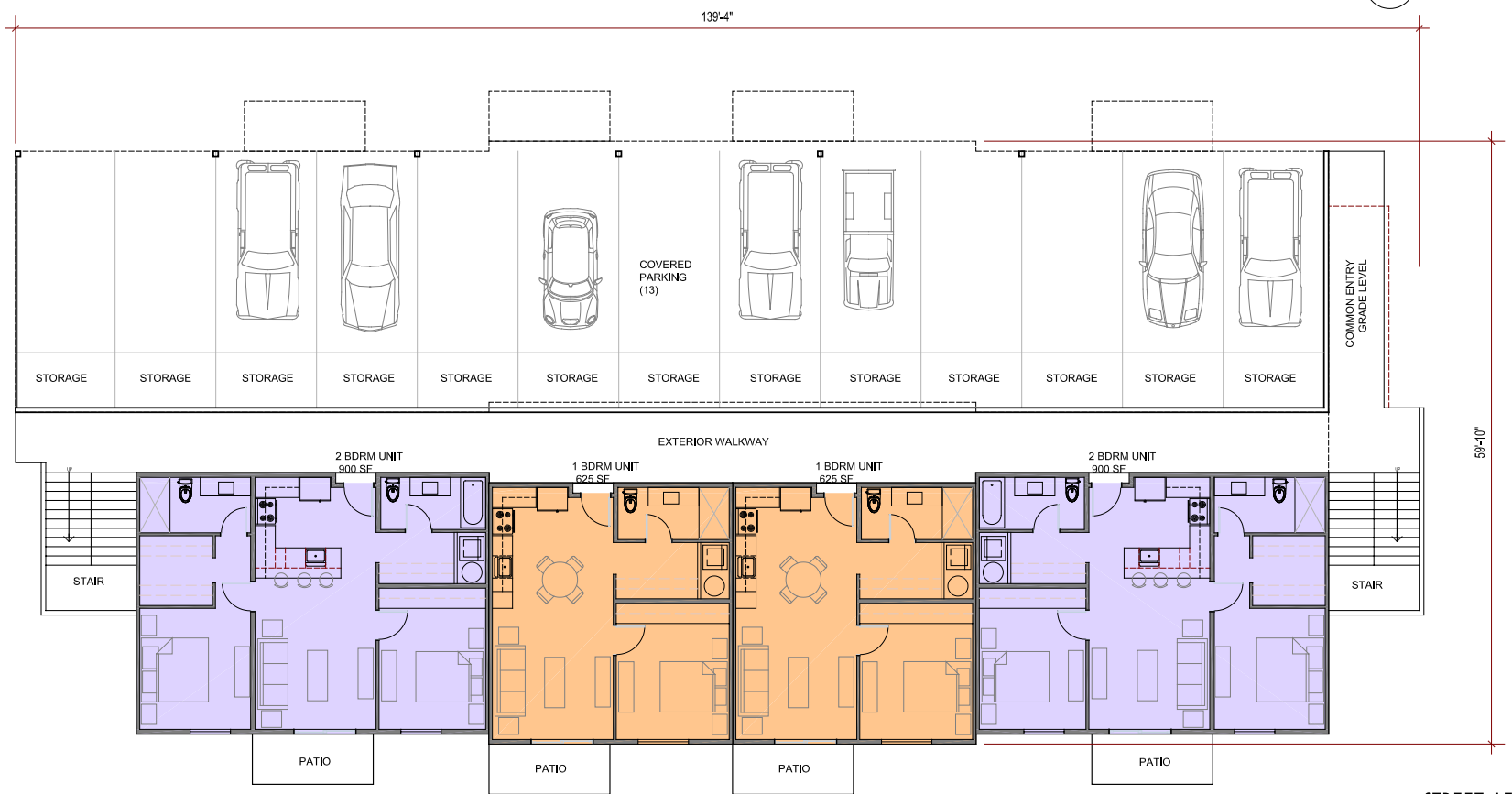
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Date:	Comments:	Drawn by:	Checked by:



Sheet Name:	APARTMENT I EXT ELEVATIONS
Sheet Number:	AI-4.2

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



Print Date: MARCH 18, 2022

File Name: THE LANDING AT LAKOTA CANYON RANCH

Horiz. Scale:

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

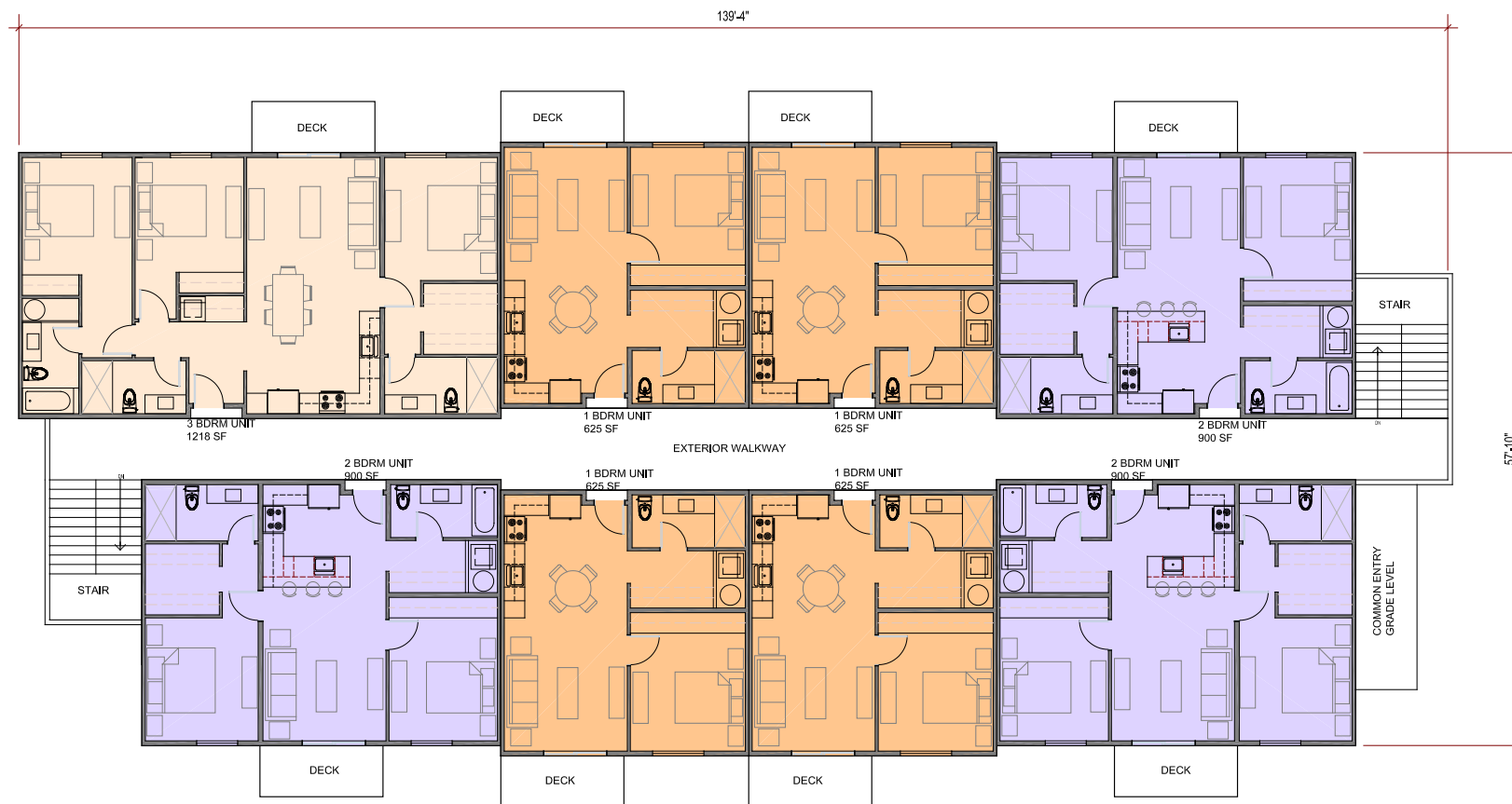


Sheet Name: APARTMENT 2 FLOOR PLANS

Sheet Number: **A2-2.1**

THE LONGVIEW AT LAKOTA CANYON RANCH

Client: The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



1 THIRD LEVEL FLOOR PLAN
A2.2 1/8" = 1'-0"

Print Date: MARCH 18, 2022

File Name: THE LANDING AT LAKOTA CANYON RANCH

Horiz. Scale:

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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

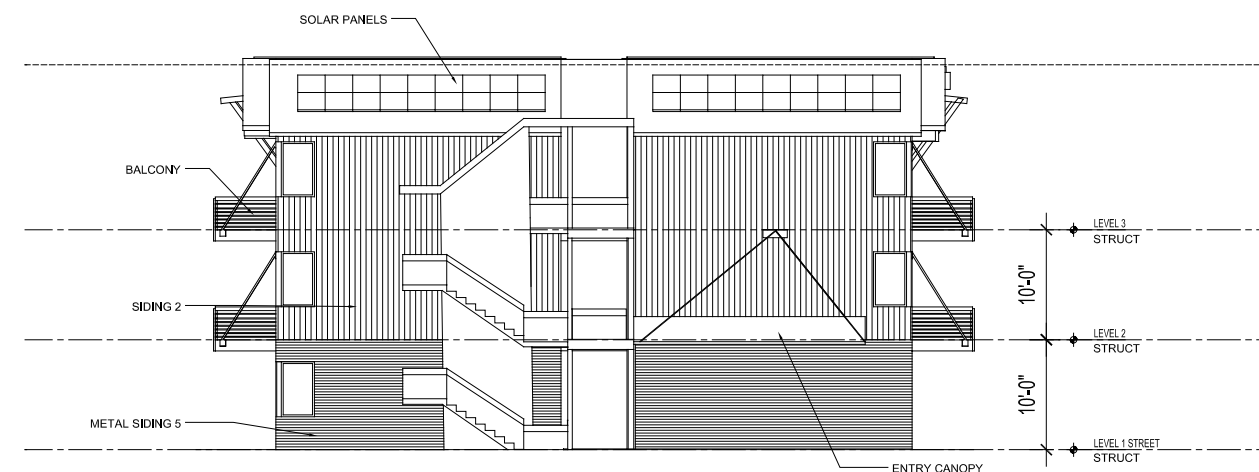


Sheet Name: APARTMENT 2 FLOOR PLANS

Sheet Number: **A2-2.2**

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



2 EXTERIOR ELEVATION 2
A4.1 1/8" = 1'-0"



1 EXTERIOR ELEVATION 1
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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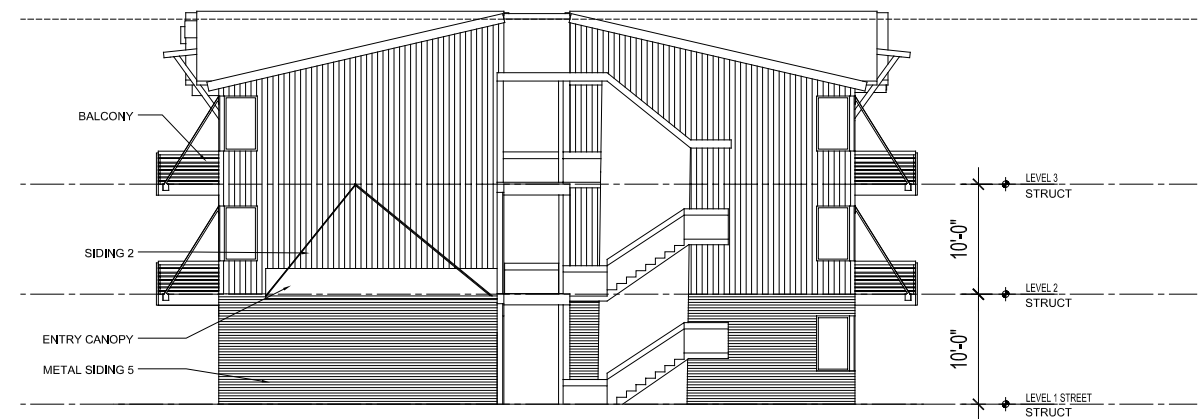


Sheet Name:	APARTMENT 2 EXT ELEVATIONS
Sheet Number:	A2-4.1

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



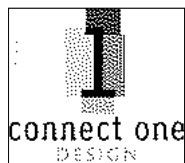
4 EXTERIOR ELEVATION 4
A4.1 1/8" = 1'-0"



3 EXTERIOR ELEVATION 3
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name:

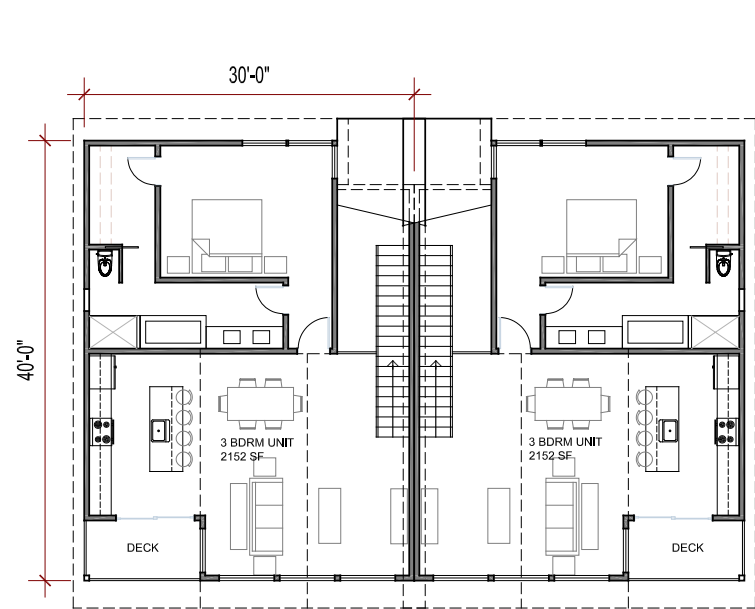
APARTMENT 2
EXT ELEVATIONS

THE LONGVIEW AT LAKOTA
CANYON RANCH

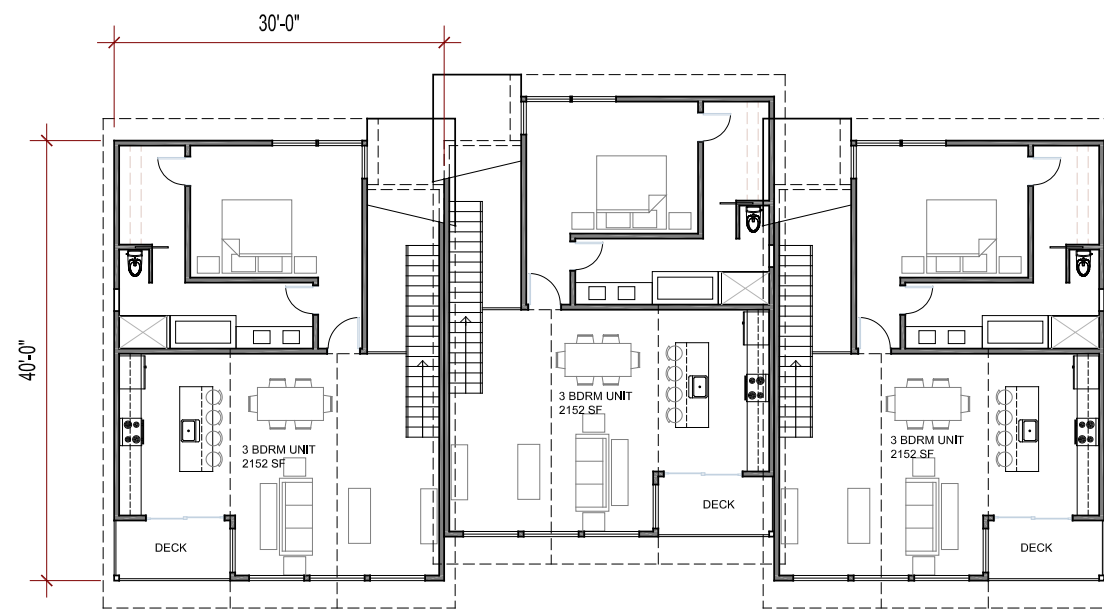
Sheet Number:

A2-4.2

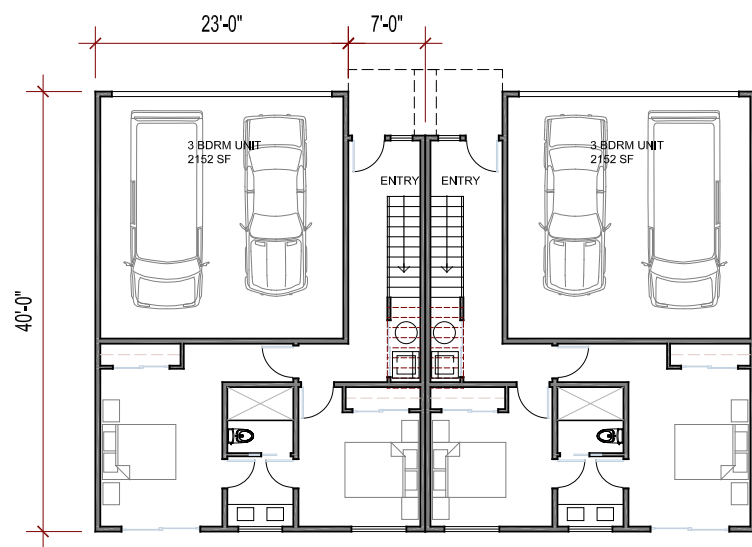
Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



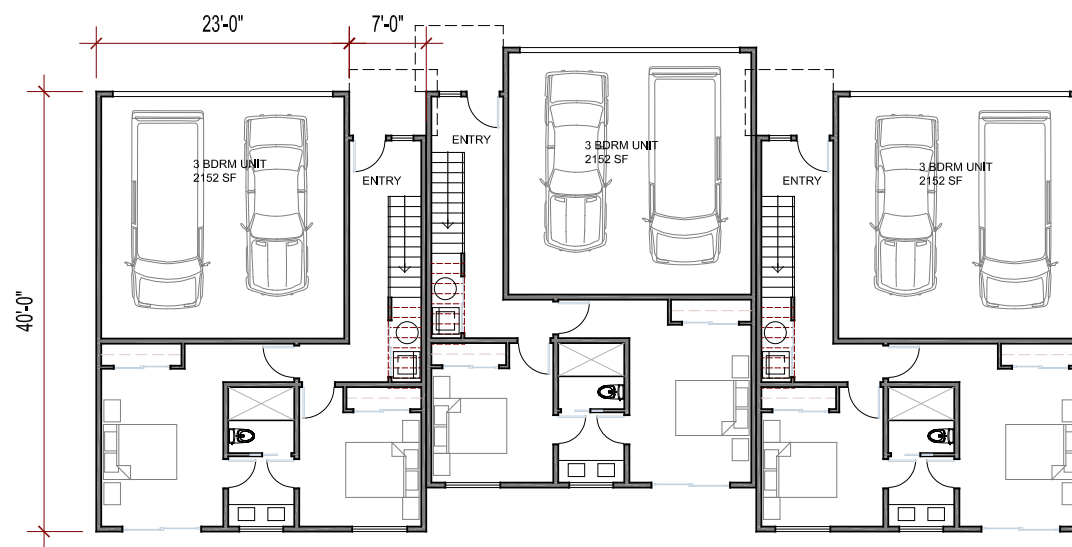
4 SECOND LEVEL FLOOR PLAN - DUPLEX
A2.1 1/8" = 1'-0"



2 SECOND LEVEL FLOOR PLAN - TRIPLEX
A2.1 1/8" = 1'-0" N



3 STREET LEVEL FLOOR PLAN - DUPLEX
A2.1 1/8" = 1'-0"



1 STREET LEVEL FLOOR PLAN - TRIPLEX
A2.1 1/8" = 1'-0" N

Print Date: MARCH 18, 2022
 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
 These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.

Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

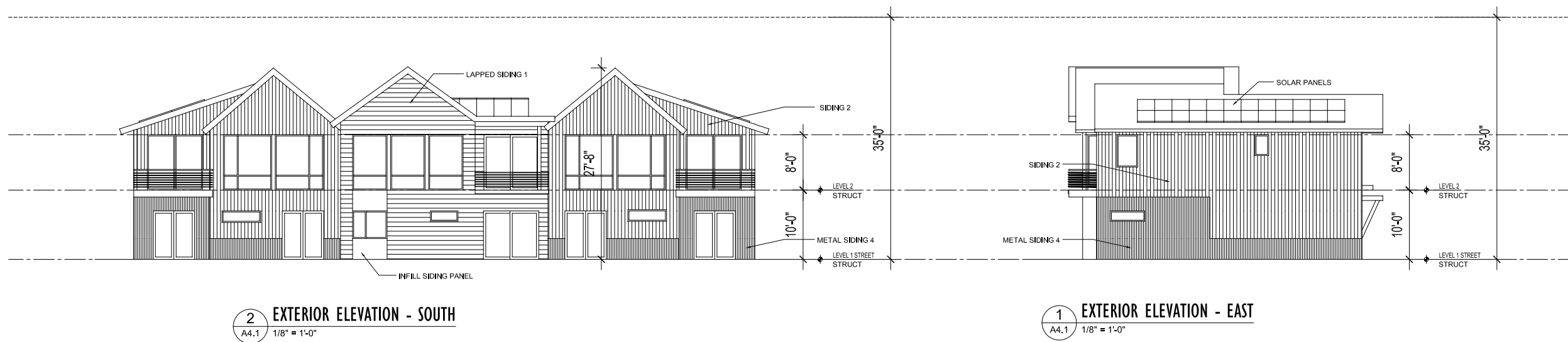
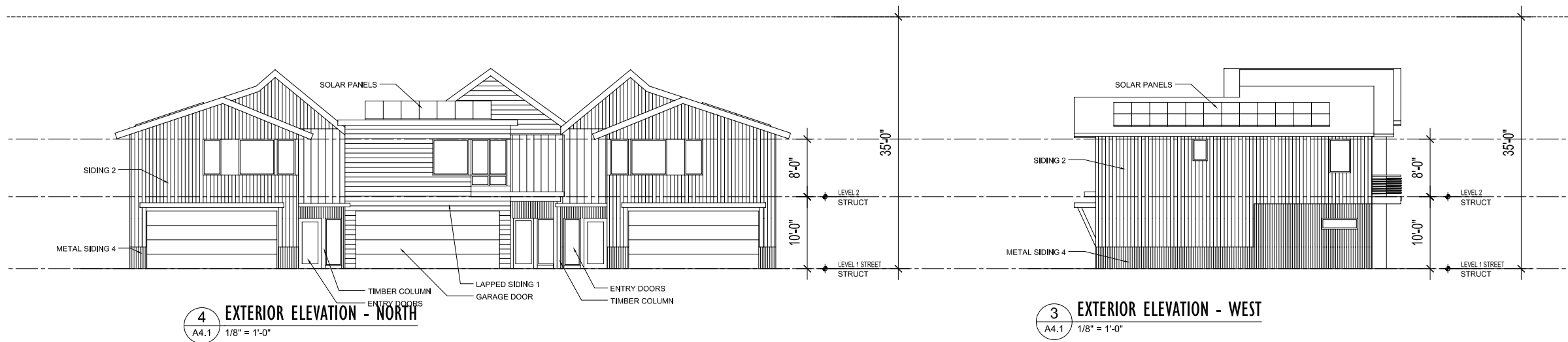


Sheet Name: TOWNHOME FLOOR PLANS

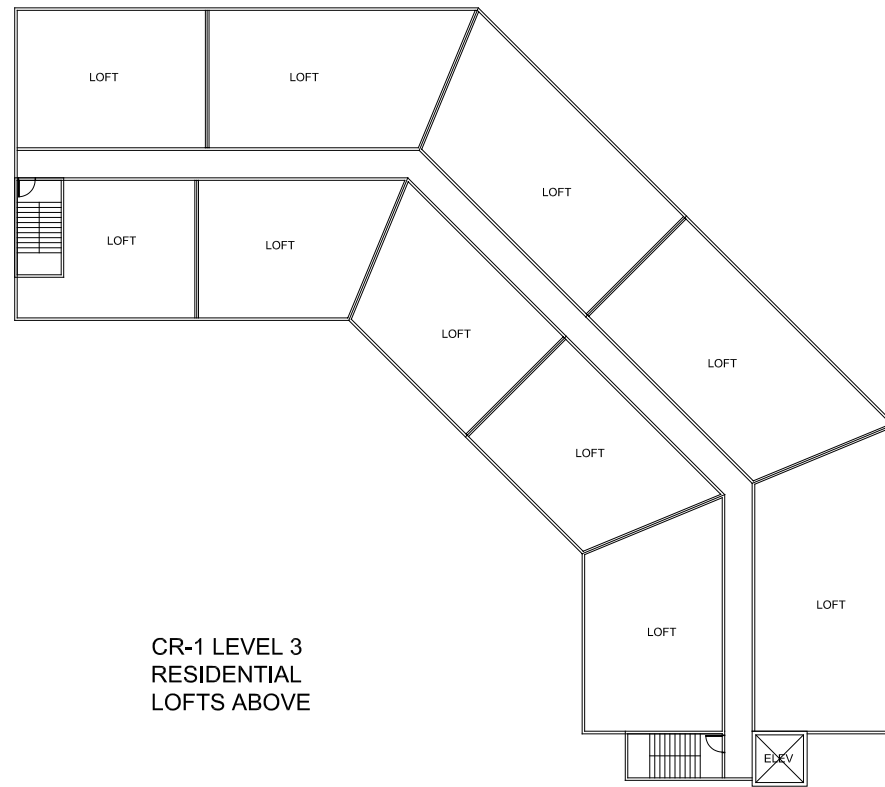
Sheet Number: TH-2.1

THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
 The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621

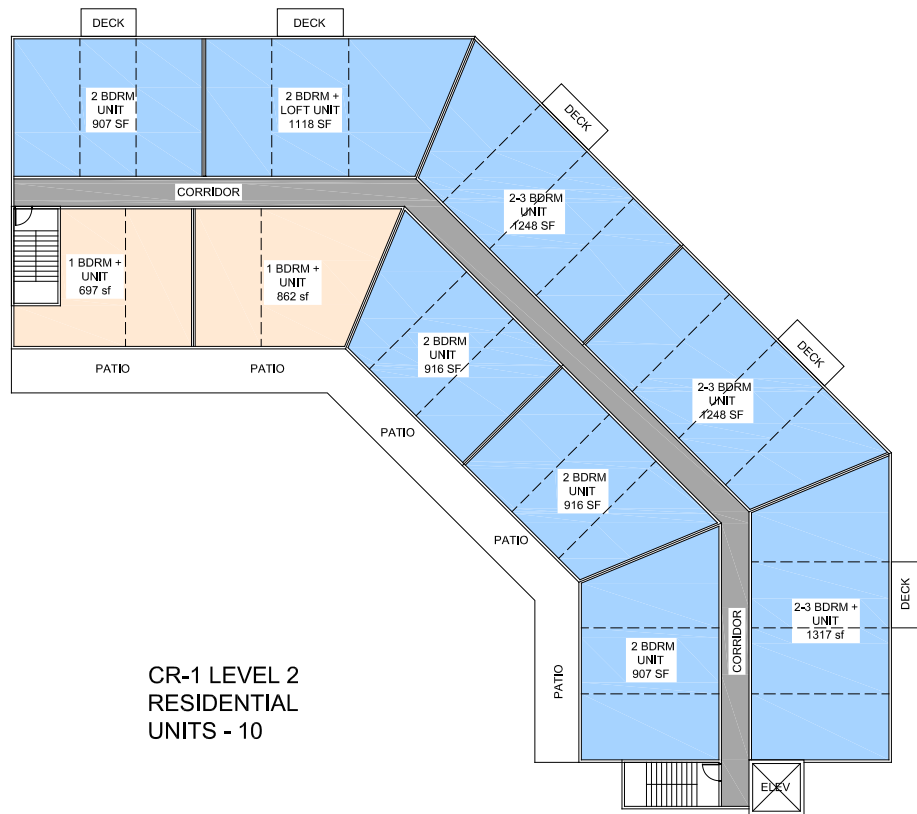


Print Date: MARCH 18, 2022	Issue & Revisions							Sheet Name: TRIPLEX TOWNHOME EXT ELEVATIONS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH	Date:	Comments:	Drawn by:	Checked by:				Sheet Number: TH-4.1	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:									
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.									



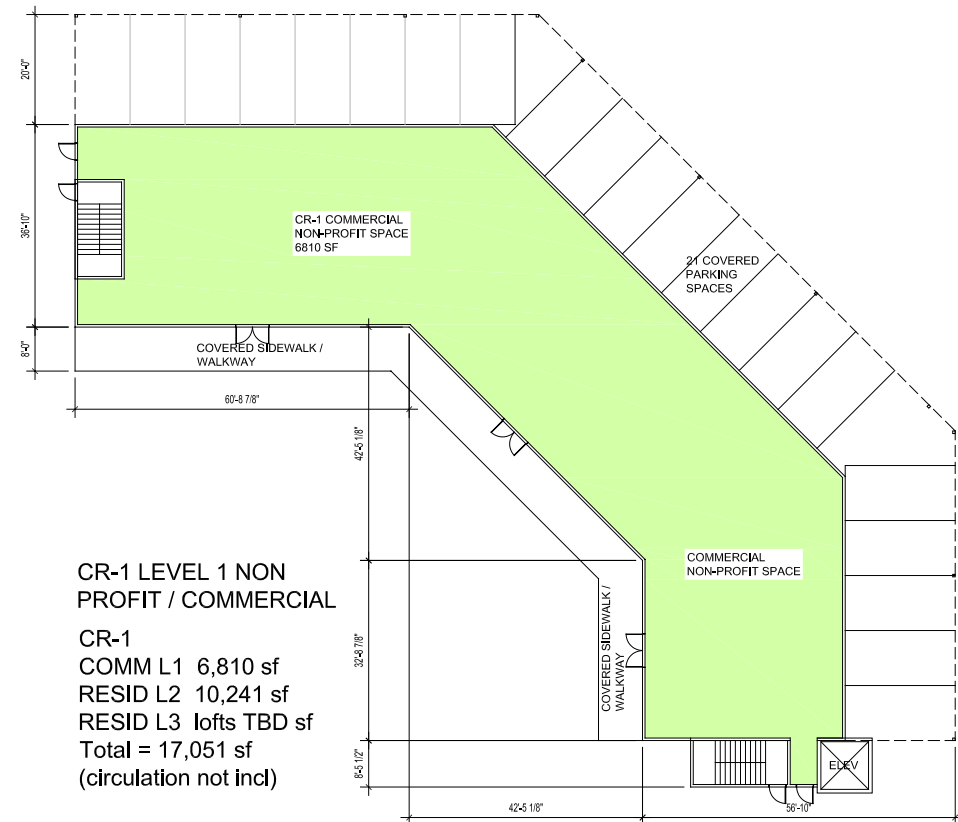
CR-1 LEVEL 3
RESIDENTIAL
LOFTS ABOVE

3 THIRD LEVEL FLOOR PLAN
CR-1 1/16" = 1'-0"



CR-1 LEVEL 2
RESIDENTIAL
UNITS - 10

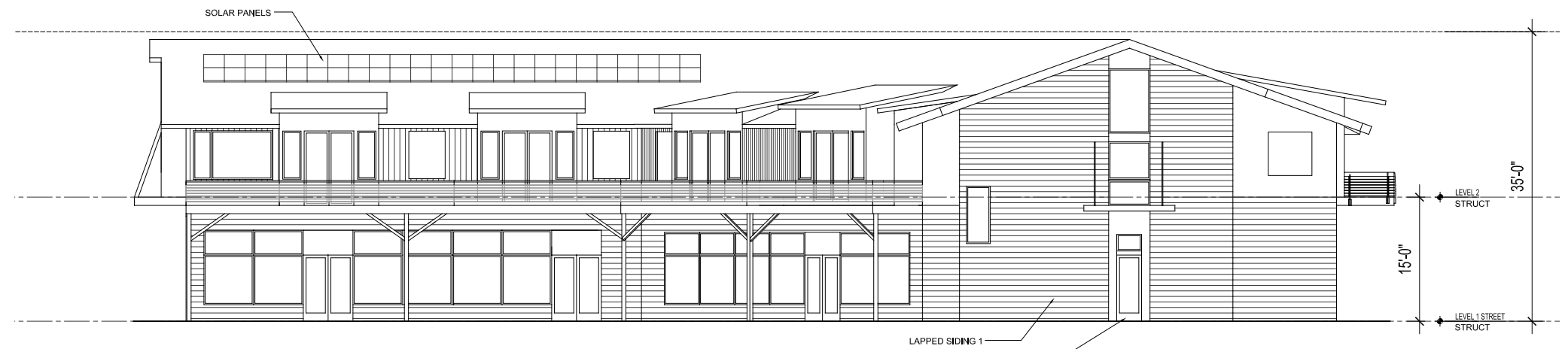
2 SECOND LEVEL FLOOR PLAN
CR-1 1/16" = 1'-0"



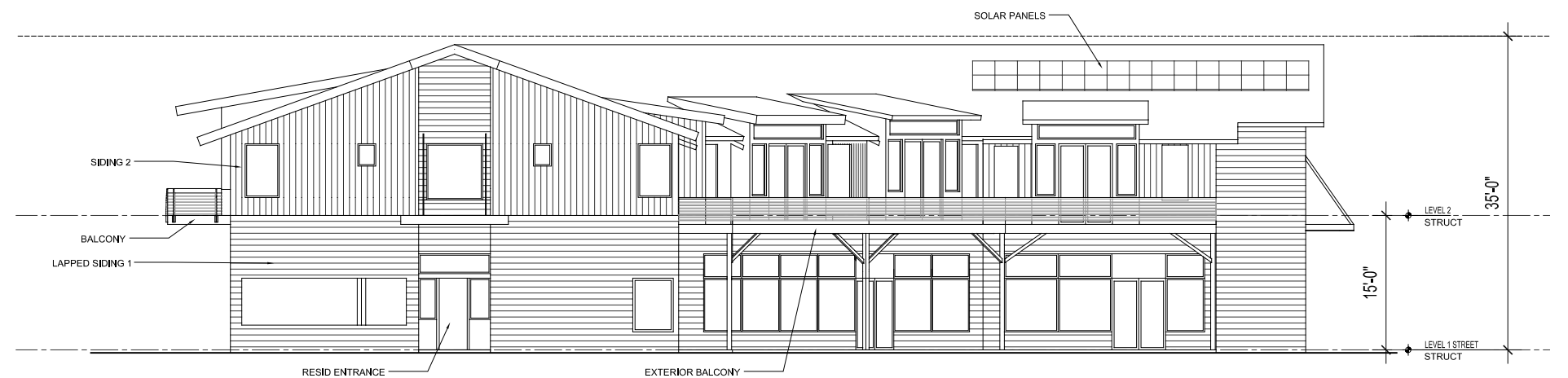
CR-1 LEVEL 1 NON
PROFIT / COMMERCIAL
CR-1
COMM L1 6,810 sf
RESID L2 10,241 sf
RESID L3 lofts TBD sf
Total = 17,051 sf
(circulation not incl)

1 STREET LEVEL FLOOR PLAN
CR-1 1/16" = 1'-0"

Print Date: MARCH 18, 2022	Issue & Revisions							Sheet Name: CR-1 FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH	Date:	Comments:	Drawn by:	Checked by:				Sheet Number: CR-1	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:									
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.									



2 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"



1 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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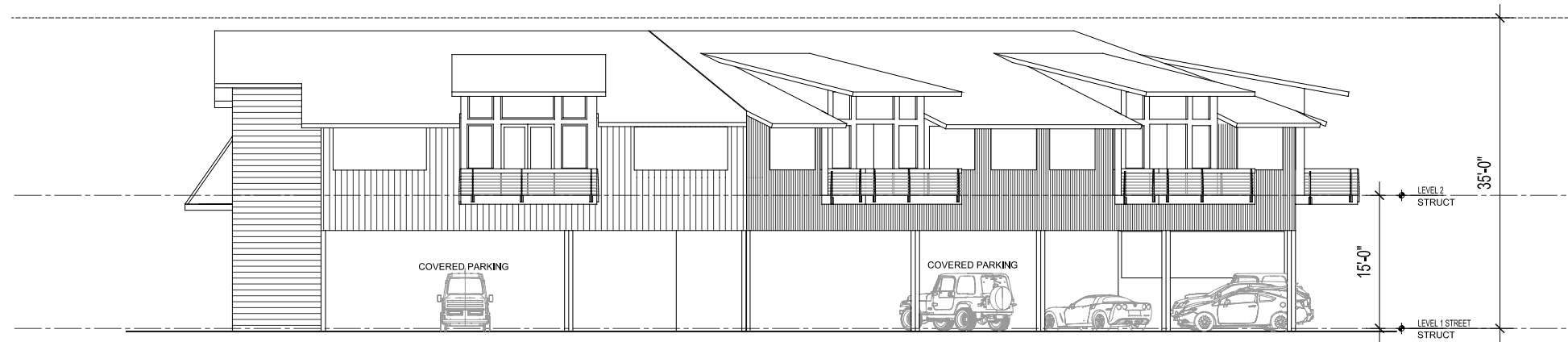
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name:	CR-1 EXTERIOR ELEVATIONS	THE LONGVIEW AT LAKOTA CANYON RANCH
Sheet Number:	CI-4.1	
		Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621

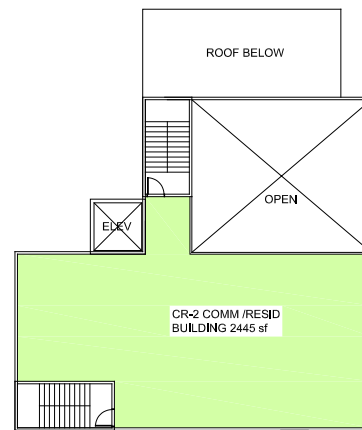


4 EXTERIOR ELEVATION - WEST
A4.1 1/8" = 1'-0"

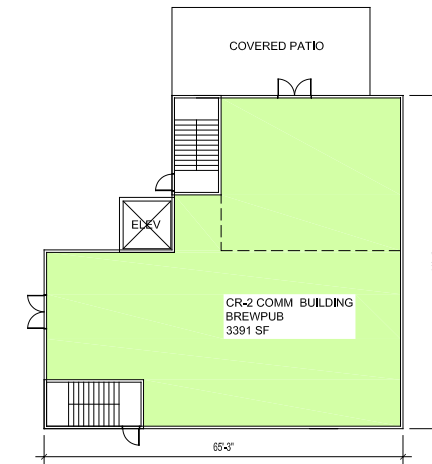


3 EXTERIOR ELEVATION - NORTH
A4.1 1/8" = 1'-0"

Print Date: MARCH 18, 2022	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Issue & Revisions				  	Sheet Name: CR-1 EXTERIOR ELEVATIONS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:		Sheet Number: CI-4.2	
Horiz. Scale:								
<p>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</p>								



CR-2 LEVEL 2
BREWPUB COMM



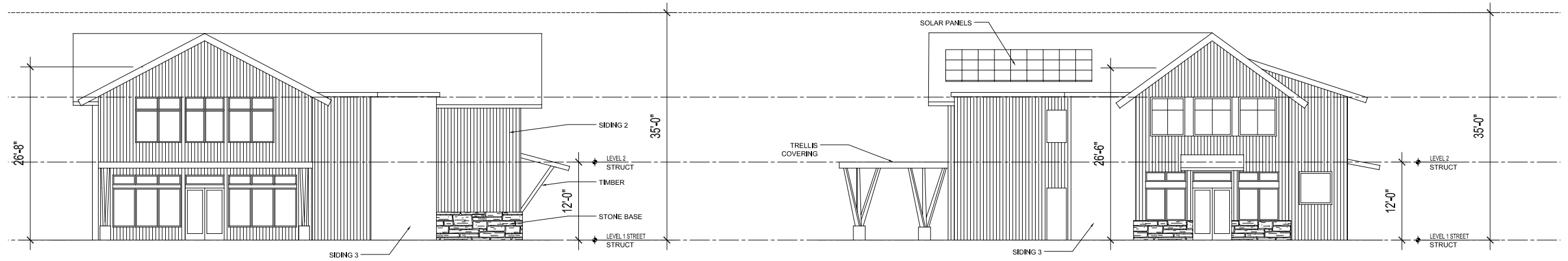
CR-2 LEVEL 1
BREWPUB /
COMMERCIAL

CR-2
COMMERCIAL
L1 3,391 sf
L2 2,445 sf
Total = 5,836 sf

2 SECOND LEVEL FLOOR PLAN
CR-2 1/16" = 1'-0"

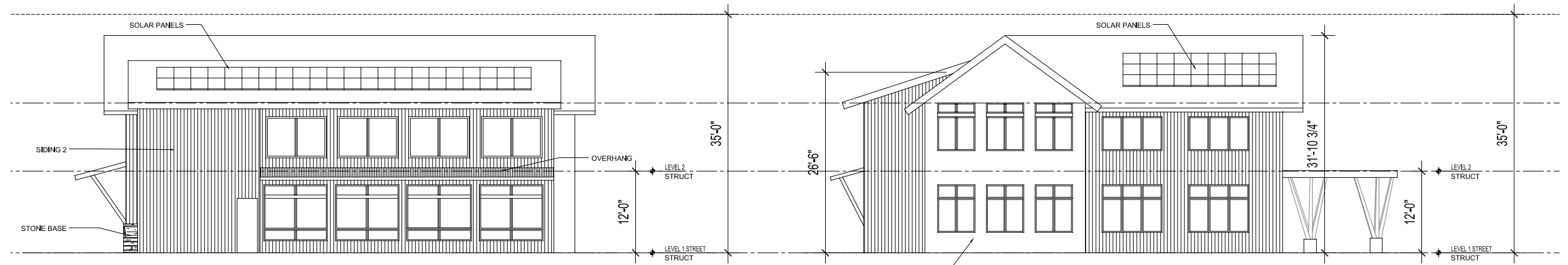
1 STREET LEVEL FLOOR PLAN
CR-2 1/16" = 1'-0"

Print Date: MARCH 18, 2022	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Issue & Revisions					Sheet Name: CR-2 FLOOR PLANS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:		Sheet Number: CR-2	Client: The Romero Group
Horiz. Scale:								350 Market Street
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.								Suite 304 Basalt, CO 81621



4 EXTERIOR ELEVATION - NORTH
A4.1 1/8" = 1'-0"

3 EXTERIOR ELEVATION - WEST
A4.1 1/8" = 1'-0"

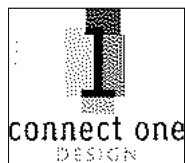


2 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

1 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"

Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

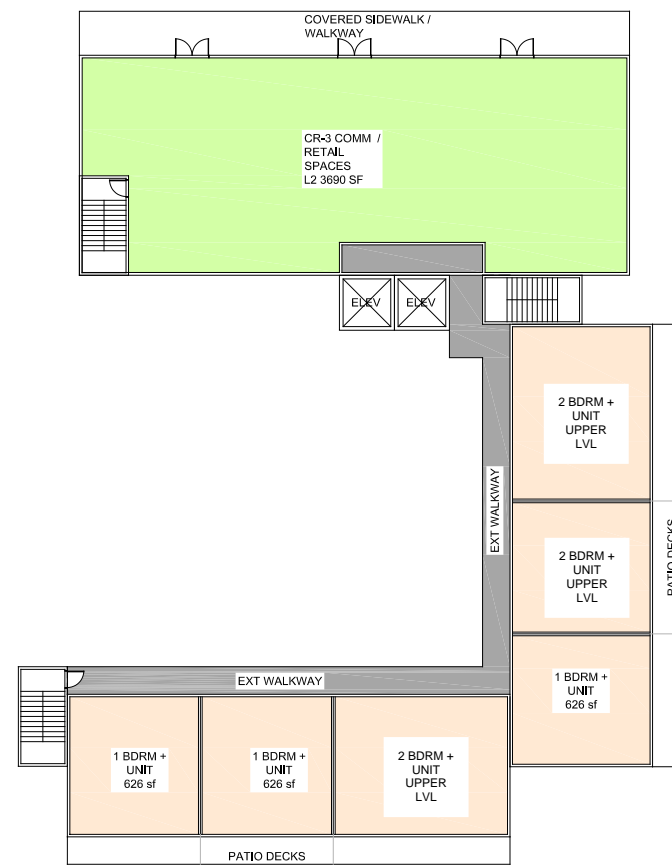


Sheet Name: CR-2 EXTERIOR ELEVATIONS

Sheet Number: **C2-4.1**

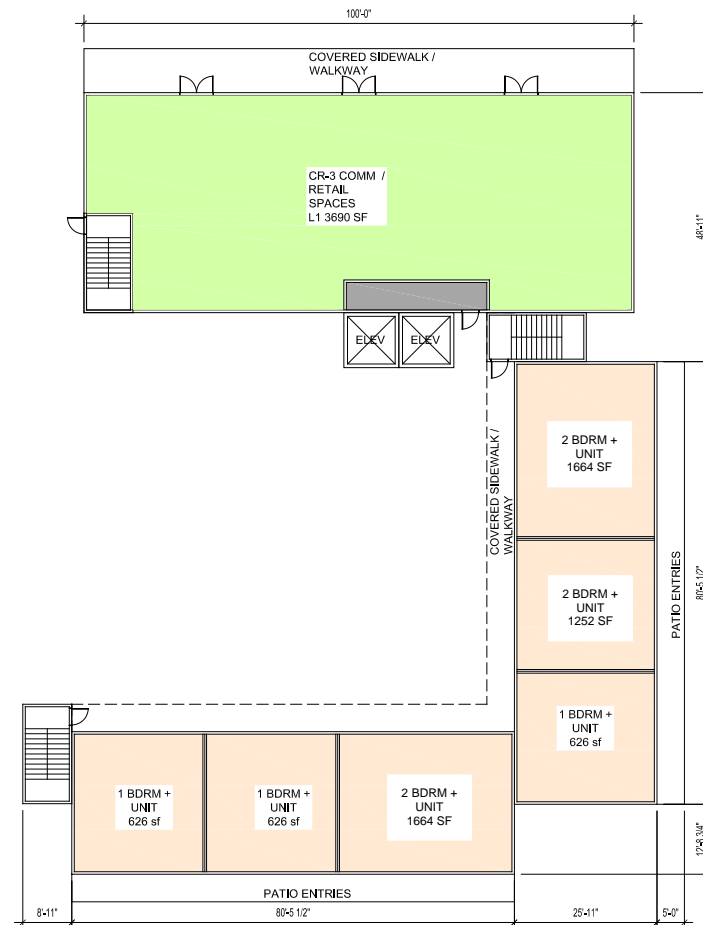
THE LONGVIEW AT LAKOTA CANYON RANCH

Client:
The Romero Group
350 Market Street
Suite 304
Basalt, CO 81621



CR-3 LEVEL 2 COMM / RESIDENTIAL
RESIDENTIAL UNITS - 6

2 SECOND LEVEL FLOOR PLAN
CR-3 1/16" = 1'-0"



CR-3 COMM L1 3,690 sf
COMM L2 3,690 sf
RESID L1 4,168 sf
RESID L2 4,168 sf
Total = 15,716 sf
(not incl circulation)

CR-3 LEVEL 1 COMM / RESIDENTIAL
RESIDENTIAL UNITS - 6

1 STREET LEVEL FLOOR PLAN
CR-3 1/16" = 1'-0"

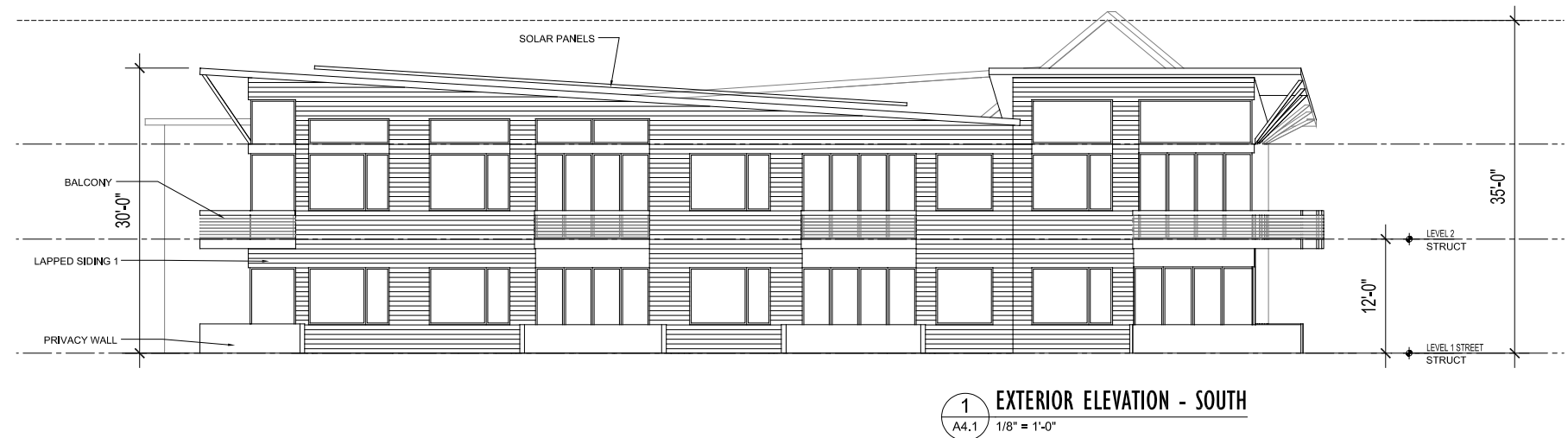
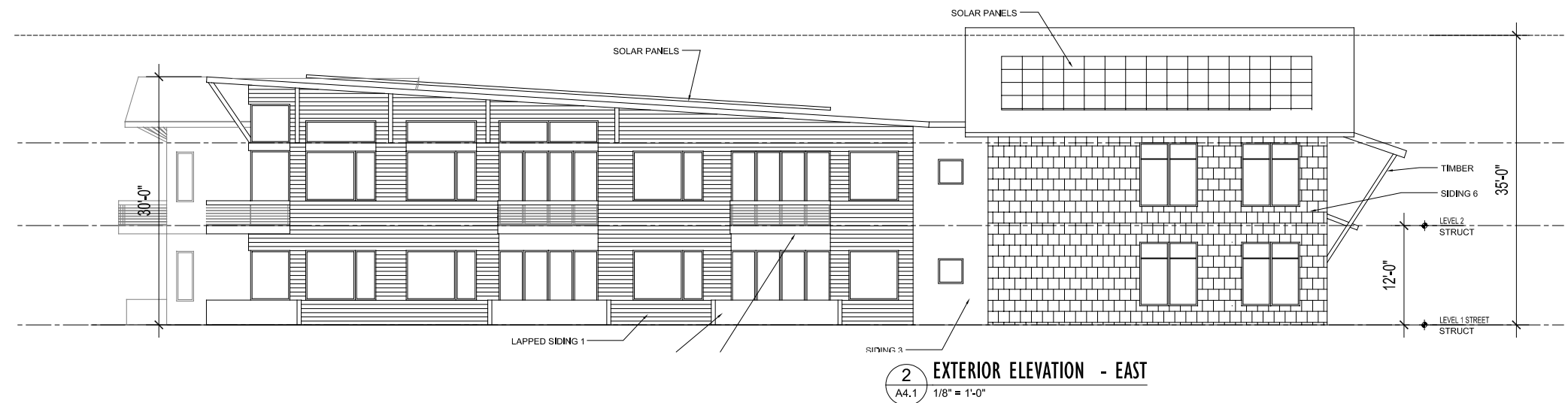
Print Date:	MARCH 18, 2022
File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

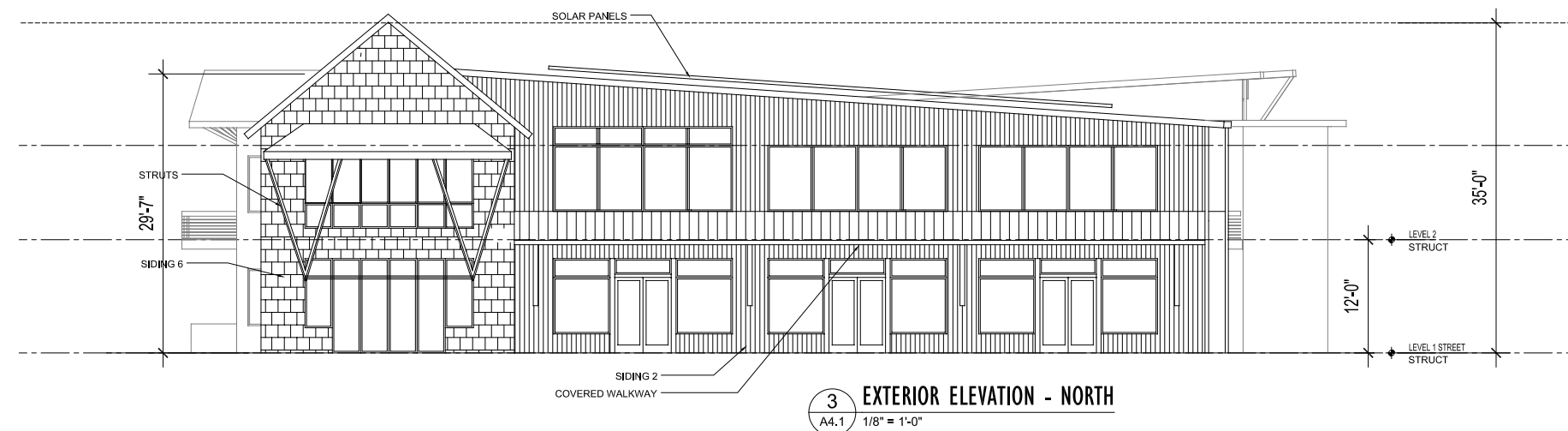
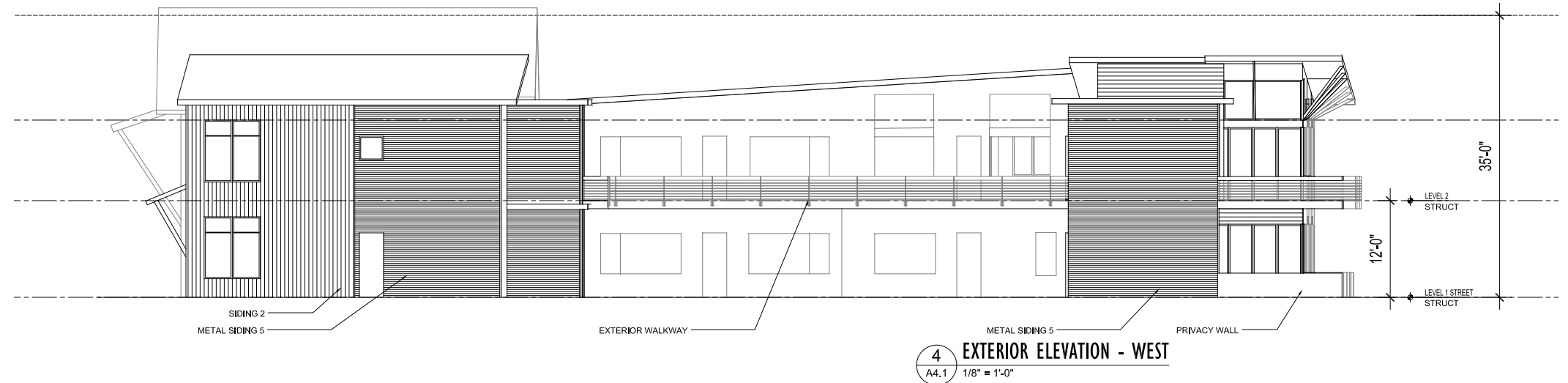


Sheet Name:	CR-3 FLOOR PLANS
Sheet Number:	CR-3

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



Print Date: MARCH 18, 2022	Issue & Revisions				  	Sheet Name: CR-3 EXTERIOR ELEVATIONS	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH	Date:	Comments:	Drawn by:	Checked by:		Sheet Number: C3-4.1	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:							
<small>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</small>							

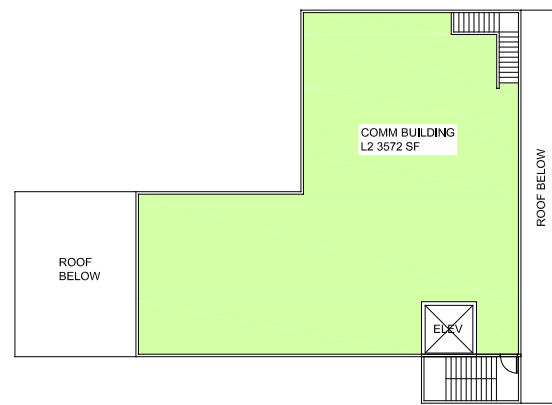


Print Date: MARCH 18, 2022
 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
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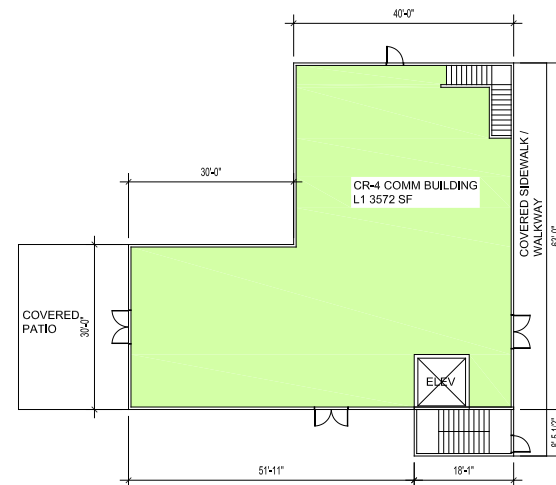
Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:



Sheet Name: CR-3 EXTERIOR ELEVATIONS
 Sheet Number: **C3-4.2**
 Client: The Romero Group
 350 Market Street
 Suite 304
 Basalt, CO 81621






CR-4 LEVEL 2 COMMERCIAL

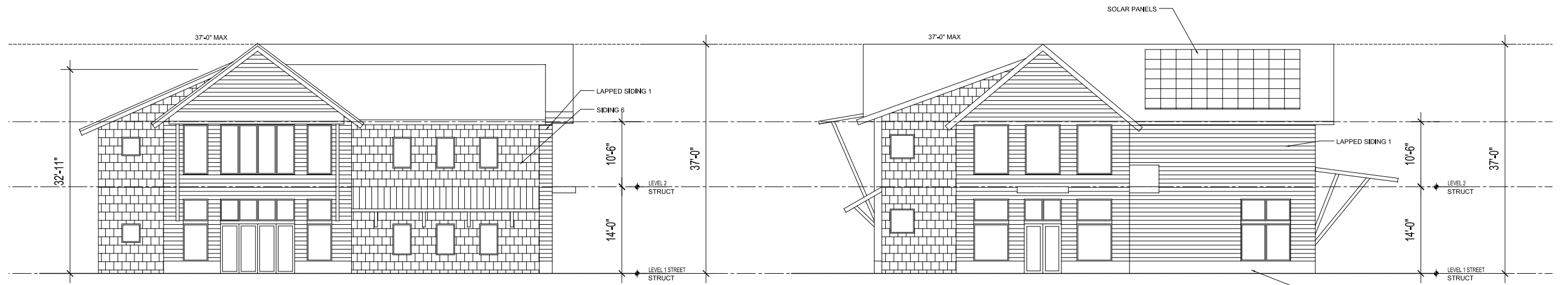


CR-4 LEVEL 1 COMMERCIAL

CR-4 COMMERCIAL
 L1 3,572 sf
 L2 3,572 sf
 Total 7,144 sf

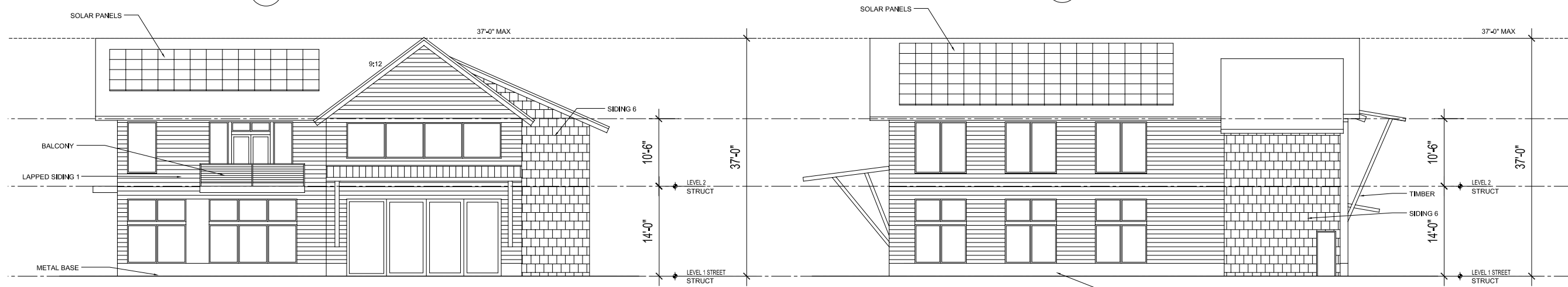


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File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:		Sheet Number: CR-4	Client: The Romero Group
Horiz. Scale:								Suite 304
These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.								Basalt, CO 81621



4 EXTERIOR ELEVATION - NORTH
A4.1 1/8" = 1'-0"

3 EXTERIOR ELEVATION - WEST
A4.1 1/8" = 1'-0"



2 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

1 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"

Print Date: MARCH 18, 2022
 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
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Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	

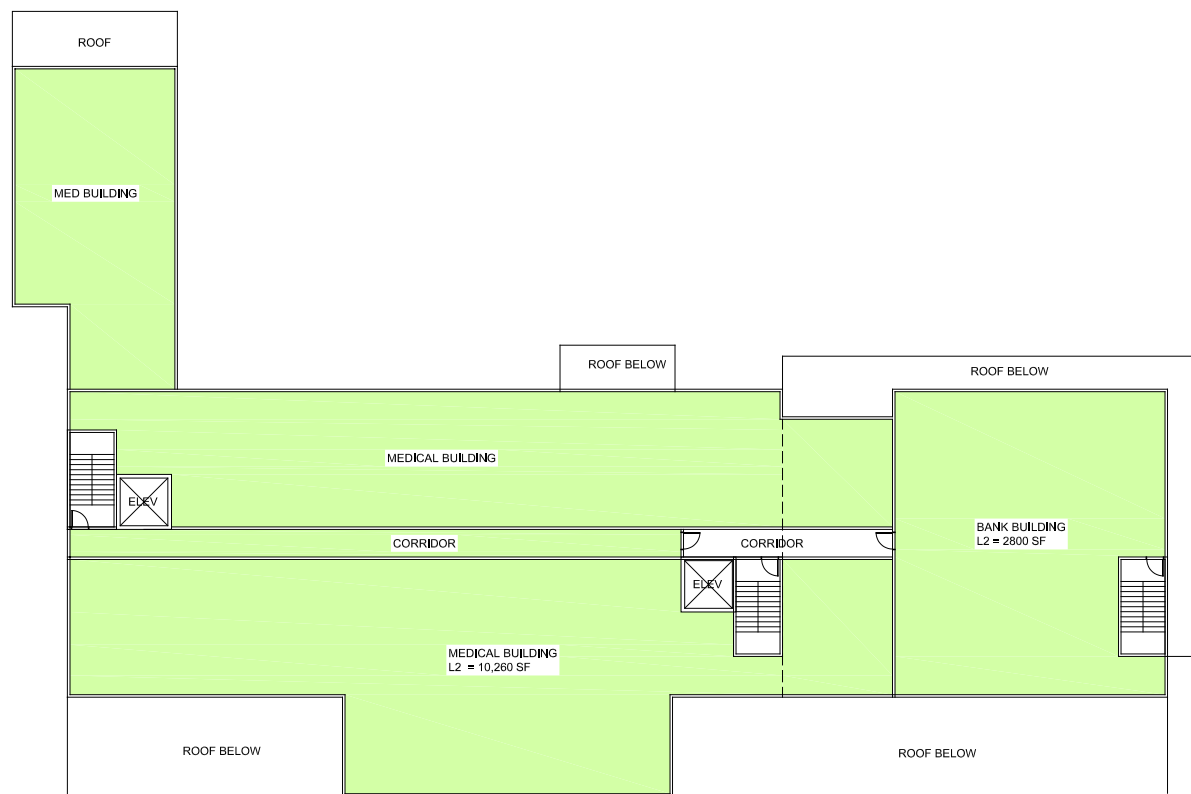


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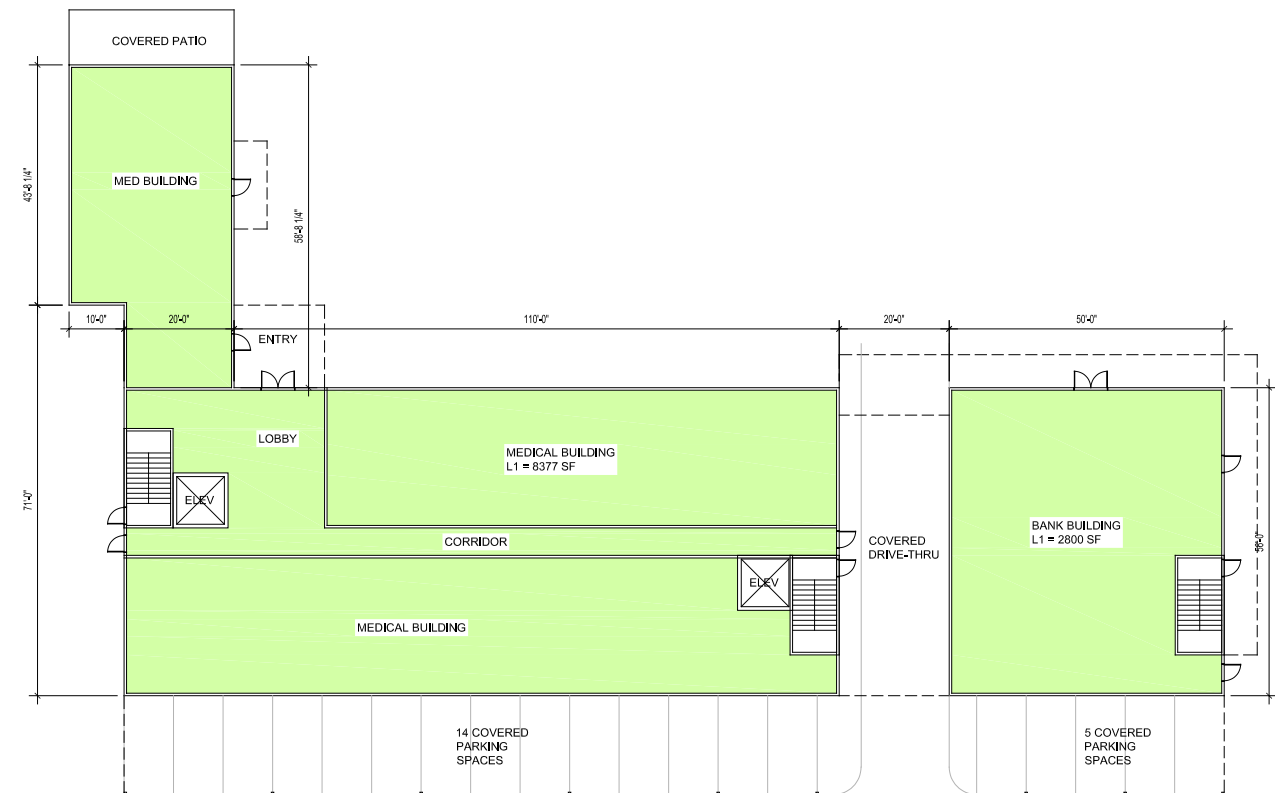
THE LONGVIEW AT LAKOTA CANYON RANCH
 Client: The Romero Group
 350 Market Street Suite 304
 Basalt, CO 81621



3 THIRD LEVEL FLOOR PLAN
CR-5 1/16" = 1'-0"



2 SECOND LEVEL FLOOR PLAN
CR-5 1/16" = 1'-0"



CR-5
COMMERCIAL 18,637 sf
BANK 5,600 sf
RESID L3 7,286 sf
Total = 31,523 sf
(circulation not incl)

CR-5 LEVEL 1 MEDICAL / COMMERCIAL

1 STREET LEVEL FLOOR PLAN
CR-5 1/16" = 1'-0"

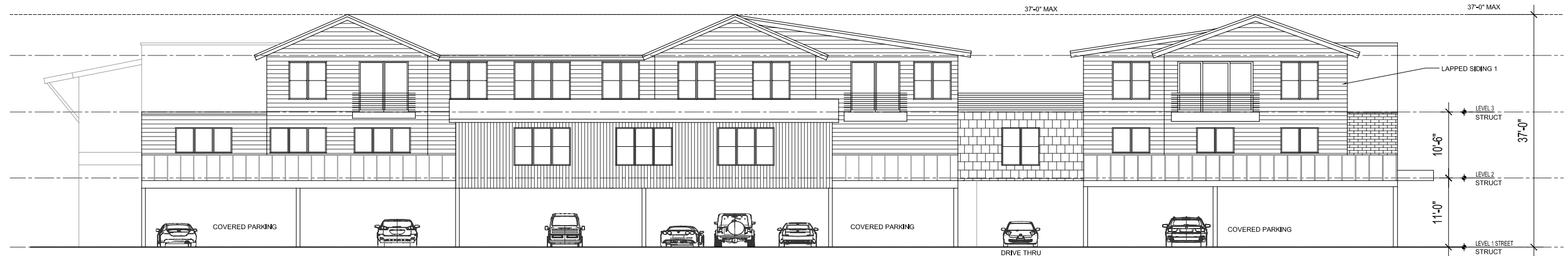
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File Name:	THE LANDING AT LAKOTA CANYON RANCH
Horiz. Scale:	
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Issue & Revisions			
Date:	Comments:	Drawn by:	Checked by:

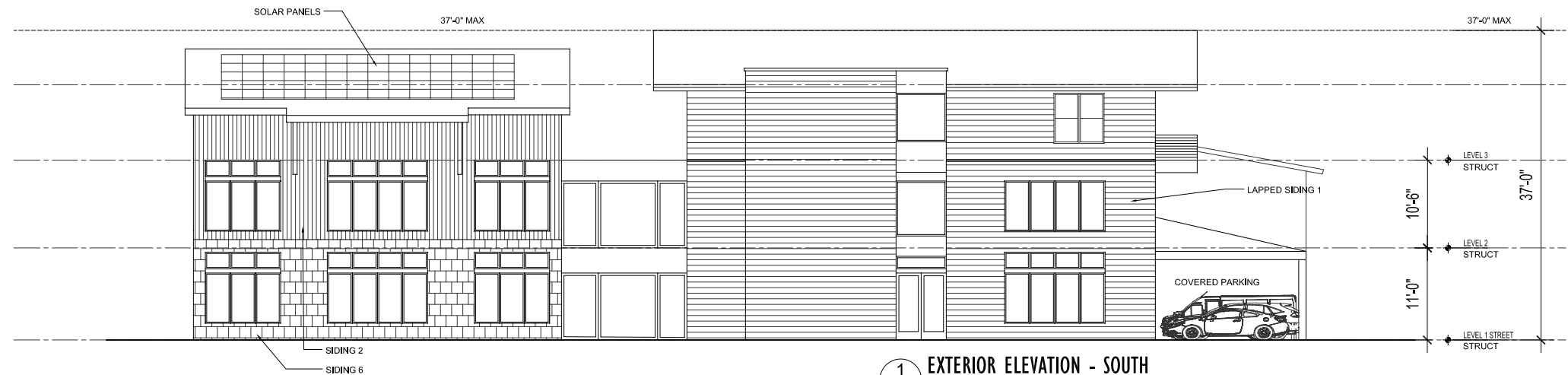


Sheet Name:	CR-5 FLOOR PLANS
Sheet Number:	CR-5

THE LONGVIEW AT LAKOTA CANYON RANCH
Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621



2 EXTERIOR ELEVATION - EAST
A4.1 1/8" = 1'-0"



1 EXTERIOR ELEVATION - SOUTH
A4.1 1/8" = 1'-0"

Print Date: MARCH 18, 2022
 File Name: THE LANDING AT LAKOTA CANYON RANCH
 Horiz. Scale:
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Issue & Revisions				
Date:	Comments:	Drawn by:	Checked by:	

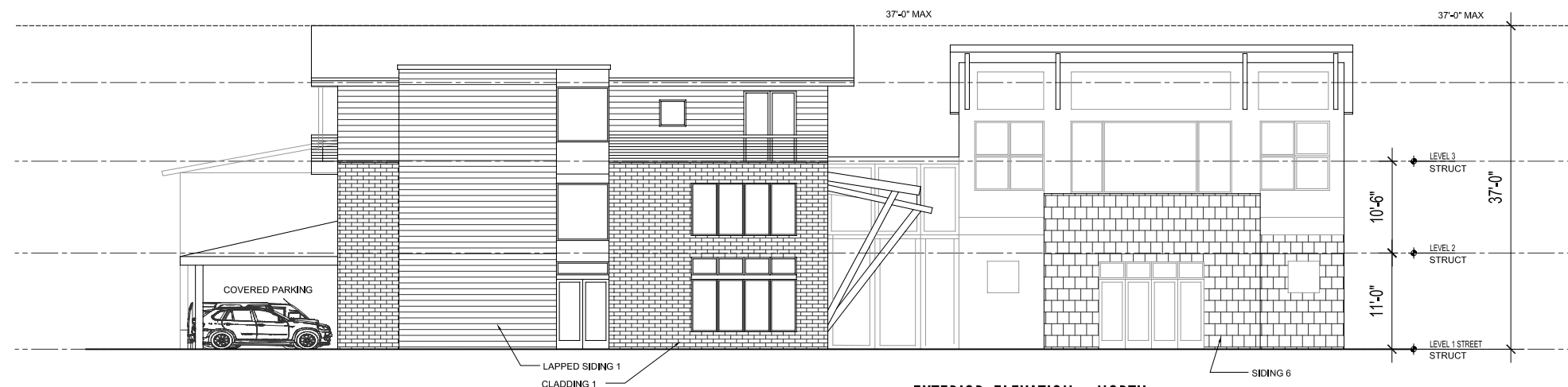


Sheet Name: CR-5 EXTERIOR ELEVATIONS
 Sheet Number: C5-4.1

THE LONGVIEW AT LAKOTA CANYON RANCH
 Client: The Romero Group
 350 Market Street Suite 304
 Basalt, CO 81621






4 EXTERIOR ELEVATION - WEST
A4.2 1/8" = 1'-0"



3 EXTERIOR ELEVATION - NORTH
A4.2 1/8" = 1'-0"

CR-5 EXTERIOR ELEVATIONS

Print Date: MARCH 18, 2022	Issue & Revisions				  	Sheet Name:	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH						Date:	Comments:
Horiz. Scale:							
<p>These drawings have been prepared for the client identified on the design sheet titleblock. Unless these drawings bear a signed seal, they may be used only at owners sole risk.</p>							



APARTMENTS



SINGLE FAMILY HOMES



COMMERCIAL MIXED USE BUILDINGS



TOWNHOMES AND MIXED USE BUILDINGS

Print Date: MARCH 18, 2022	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Issue & Revisions							Sheet Name: PRECEDENT IMAGES	THE LONGVIEW AT LAKOTA CANYON RANCH
File Name: THE LANDING AT LAKOTA CANYON RANCH		Date:	Comments:	Drawn by:	Checked by:				Sheet Number:	Client: The Romero Group 350 Market Street Suite 304 Basalt, CO 81621
Horiz. Scale:										

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COMPREHENSIVE PLAN COMPLIANCE

The Town of New Castle’s Comprehensive Plan is a guiding document that charts the course for growth and development in and around the town. It sets forth the vision and goals for the town. The Future Land Use Plan is self-described as focusing on areas outside the existing municipal boundary, primarily because most of New Castle falls within existing large and small PUDs. The Longview at Lakota falls within this category, having been master planned with an approved density and zoning during the approval of the larger Lakota Canyon PUD.

While the Future Land Use Plan’s specific use categories may not be applicable it is important to understand how Longview will contribute to the vision and goals of New Castle.

Vision – Page 8

“New residential-focused subdivisions incorporate traditional neighborhood design concepts with front porches, openness to the street, alleyways and separated sidewalks. Narrow streets contribute to neighborhood character with slower traffic speeds and high levels of social interaction. The range in size of dwelling units and unit types within all neighborhoods offers a variety of housing styles and prices. This housing diversity, in conjunction with designated affordable housing units, allows New Castle residents to work and live in their community.

Residential neighborhoods include live/work units with low-impact home occupations to allow residents to work where they live. The mix of uses lessens reliance on automobiles, decreases traffic, reduces noise/air pollution and enhances quality of life.”

The Longview focused from the outset of design on creating a sense of place and a sense of neighborhood. This is accomplished through complete and walkable streets, mixed uses of office/commercial/residential/retail/medical, and broad housing diversity. While there is not yet a robust infrastructure for alternative transportation within the town limits (such as bike share or bus circulator), Longview is about one-half mile from the RFTA park and ride so integration of a bus stop and bike infrastructure into the project was paramount. This will ensure bike and walking mobility in the near term and bus connections in the future. This and mixed uses will decrease the reliance on single and low occupancy vehicles. Traditional neighborhood design includes separated sidewalks throughout, and streets narrow enough to be approved by the Town and include ample on-street parking. The diversity of housing includes diversity of type and size. Apartments range from 1 to 3 bedrooms and are conducive to rental while modest townhouses and small lot single family homes may allow for affordable home ownership. The mixed uses within the community will be anchored by a medical hub, a much-needed resource in New Castle.

Goals – Page 33

It is the goal of the Future Land Use Plan to:

- Ensure a variety and mix of uses that complement the existing New Castle land-use patterns.
- Offer excellent non-motorized access and non-motorized traffic and interconnection between use areas for both motorized and non-motorized traffic
- Guarantee a balanced mix of housing types that support a broad range of pricing within the market.
- Make certain there are adequate open spaces, trails and connected parks.
- Offer protection of sensitive natural areas, preservation of older trees stands and conservation of resources.

COMPREHENSIVE PLAN COMPLIANCE

- Support development of activity centers that include a sense of place where the public can interact, find services, and secure employment, and that are sustainable in the long term.
- Allow for a feathered-edge community that transitions to rural areas where open lands and agricultural uses predominate.
- Concentrate development in areas where there is good access, efficiently provided services and cost-effective utility extensions.
- Promote service delivery efficiency and energy conservation in future development areas.

The Longview at Lakota intends to:

- Ensure a variety of residential and commercial uses that provide needed health and wellness resources, opportunities for low cost office space, food and beverage that complements other uses in the community, and affordable residential opportunities.
- Provide well positioned infrastructure to ensure motorized and non-motorized interconnectivity now and in the future.
- Provide a broad mix of residential unit types, sizes, and ownership potential. This will include secure affordable housing in perpetuity.
- Include adequate trails and park spaces that are open to the public and usable by all of New Castle, not just Longview residents.
- Protect the resources of the property by ensuring that buildings and roads work WITH the landform creating terraces and steps that ensure a balance cut-fill and limited import or export of material.
- Create a sustainable development with the mixed uses, employment opportunities, and the ability to live and work within the same neighborhood.
- Ensure appropriate infill where development and growth were planned for, thus ensuring appropriate utilities are already in place.
- Promote energy efficiency and conservation in the built environment through appropriate building materials and design.

**DECLARATION
OF
COVENANTS, CONDITIONS AND RESTRICTIONS
FOR
LONGVIEW AT LAKOTA**

TABLE OF CONTENTS

**LONGVIEW AT LAKOTA
DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS**

KNOW ALL MEN BY THESE PRESENTS that RG Lakota II, LLC, a Colorado limited liability company (“Declarant”) does hereby declare and adopt the following Declaration of Covenants, Conditions and Restrictions (the “Declaration”) which shall run with the real property hereafter described, and which shall be binding upon all parties acquiring any interest therein or thereto.

RECITALS

A. Declarant is the owner of certain real estate in the Town of New Castle (the “Town”), Garfield County (the “County”), State of Colorado, which is more particularly described as follows:

Parcel C2 on the Second Amended and Restated Subdivision Exclusion/Exemption Map, according to the Plat thereof recorded October 19, 2006 as Reception No. 709280; Future Development Parcel 3 on the Final Block Plat, Whitehorse Village at Lakota Canyon Ranch, according to the Plat thereof recorded October 19, 2004 as Reception No. 661957; and Future Development Parcel on the Lakota Canyon Ranch Filing 3, Phase 1, according to the Plat thereof recorded December 23, 2004 as Reception No. 665843 of the County Real Estate Records (collectively, the “Property”).

B. In accordance with the provisions of the Colorado Common Interest Ownership Act, C.R.S. § 38-33.3-101, *et seq.* (the “Act”), Declarant desires to create a Planned Community (the “Project”) on the Property under the name of "Longview at Lakota" in which portions of the Property will be designated for separate ownership and uses of a mixed-use nature.

C. Declarant has caused the "Longview at Lakota Owners Association, Inc.," a Colorado nonprofit corporation, to be incorporated under the laws of the State of Colorado, as an owners' association, for the purpose of exercising the functions as herein set forth.

D. Under the present P.U.D. Plan, _____ (____) legally separate Blocks, and _____ (____) legally separate Lots and _____ (____) legally separate Units are permitted to be created and developed in the Planned Community. The maximum number of Blocks, Lots and Units that may realistically be created and that Declarant reserves the right to create within the Planned Community is _____ (____) legally separate Blocks, and _____ (____) legally separate Lots and _____ (____) legally separate Units.

E. Declarant desires to establish covenants, conditions and restrictions upon the Planned Community, and certain mutually beneficial restrictions and limitations with respect to the proper use, occupancy, improvement and enjoyment thereof, all for the purposes of enhancing and protecting the value, desirability and attractiveness of the Planned Community and enhancing the quality of life within the Planned Community.

F. Declarant desires and intends that the Owners, Permittees and all other Persons hereafter acquiring any interest in the Planned Community shall at all times enjoy the benefits of, and shall hold their interests subject to, the covenants, conditions, restrictions, assessments, charges, servitudes, liens, reservations and easements contained in this Declaration, as it may be supplemented or amended from time to time.

ARTICLE 1 SUBMISSION/DEFINED TERMS

Section 1.1 Submission of Real Estate. The Declarant hereby submits the Property, together with all easements, rights, and appurtenances thereto and the buildings and improvements erected or to be erected thereon (collectively, the "Real Estate"), to the provisions of the Colorado Common Interest Ownership Act, C.R.S. §§ 38-33.3-101, *et seq.*, as it may be amended from time to time (the "Act") and to the terms and conditions of this Declaration. Declarant hereby declares that all of the Real Estate shall be held or sold, and conveyed subject to the following easements, restrictions, covenants, and conditions. Declarant further declares that, upon the Recording of this Declaration, the Property will be a "planned community" within the meaning of Section 103(22) of the Act and, thus, constitutes the Project. Each Owner, Permittee and Eligible Holder is subject to all provisions of this Declaration and those provisions are covenants running with the land or equitable servitudes, as the case may be, and bind every Person having any interest in the Project and inure to the benefit of every Owner.

Section 1.2 Defined Terms. Each capitalized term in this Declaration shall have the meaning specified or as used or defined in the Act, unless otherwise defined in this Declaration:

- (a) "Act" means the Colorado Common Interest Ownership Act, C.R.S. §§ 38-33.3-101, *et seq.*, as it may be amended from time to time.
- (b) "Assessment" includes all Common Expense Assessments, Special Benefit Assessments, and any other expense levied to a Block, Lot or Unit pursuant to this Declaration or the Act.
- (c) "Association" means Longview at Lakota Owners' Association, Inc., a Colorado nonprofit corporation, and its successors.
- (d) "Association Property" means any real property owned by the Association.
- (e) "Block" means any "Block" as designated on the Plat.
- (f) "Building Envelope" means and "Building Envelope" designated on the Plat.

(g) "Commercial Unit" means any one of the Units designated on the Plat or on any Condominium Map related to any portion of the Property as a Commercial, Retail, Office or Restaurant Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(h) "Common Expense" means any expenditure made a or liability incurred by or on behalf of the Association, together with any allocations to reserves, other than expenditures that relate to a particular Block, Lot or Unit.

(i) "Common Expense Assessment" means an Assessment levied for Common Expenses.

(j) "Community" or "Planned Community" means and refers to the mixed-use community of Longview at Lakota, which is a Planned Community as defined in the Act.

(k) "Declarant" means the Declarant named in this Declaration, and any successor and/or assignee designated by written notice or assignment executed by Declarant and by the transferee and recorded, to the extent any rights or powers reserved to Declarant are transferred or assigned to such transferee.

(l) "Declarant Control" means the period of time commencing on the date of recordation of this Declaration and expiring on the earlier of the occurrence of the events set forth in Section 7.2 hereof.

(m) "Development Rights" means those rights set forth in this Declaration and those rights set forth in the Act.

(n) "Director" means any person serving as a member of the Executive Board.

(o) "Eligible Holder" means a holder, insurer or guarantor of a first lien security interest who has delivered a written notice to the Association containing its name, address, the legal description and the address of the Block, Lot or Unit upon which it holds a security interest.

(p) "Executive Board," or "Board" means the body, regardless of name, designated in this Declaration to act on behalf of the Association.

(q) "Governing Documents" means this Declaration, the plat, any Map, the Articles of Incorporation, the Bylaws, the Rules and Regulations of the Association, and the Act, as all of the foregoing may be amended from time to time.

(r) "Improvement(s)" means structures installed within the Community or within or upon a Block or Lot.

(s) "Lot" means a "Lot" designated on the Plat or on the final plat of any Block.

(t) "Map" means a Condominium Map for any structure or land area within the Planned Community depicting and locating thereon the location of the buildings, the Units, the Common Elements, the Limited Common Elements, floors and elevations, and all of the land and improvements thereon, which Map is incorporated herein and made a part of this Declaration by reference.

(u) "Member" means and refers to those persons entitled to membership in the Association, as provided in the Bylaws and as set forth herein.

(v) "Officer" means any person serving as an officer of the Association in accordance with the Bylaws.

(w) "Owner" means any Person that owns a Block, Lot or Unit designated as such on the Plat or a final plat of a Lot or a Condominium Map within the Planned Community or any Subassociation within the Planned Community.

(x) "Permittee" means a Person, other than an Owner, rightfully present on or in rightful possession of a Block, Lot, Unit or Common Element, or a portion of a Block, Lot, Unit or Common Element, including without limitation, (i) a tenant of an Owner or the Association; or (ii) an agent, employee, customer, contractor, licensee, guest or invitee of an Owner, the Association, or a tenant of either of them.

(y) "Person" means a natural person, corporation, partnership, limited liability company, trust or other entity, or any combination of them.

(z) "Plat" means the Final Plat of Longview at Lakota approved by the Town of New Castle and recorded in the Garfield County Clerk and Recorder's Office on the ____ day of _____, 2022 at Reception No. _____, as the same may be supplemented or amended from time to time. The Plat is incorporated herein by this reference as a part of this Declaration.

(aa) "Property" has the meaning set forth in Recital A of this Declaration.

(bb) "P.U.D. Plan" or "PUD Plan" or "PUD Development Plan" means the Final PUD and Development Plan for Longview at Lakota as approved by the Town of New Castle pursuant to Ordinance No 2022-____, recorded the ____ day of _____, 2022 as Reception No. _____ of the Garfield County Clerk and Recorder's Office.

(cc) "Real Estate" means the Property described in Recital A above, together with all easements, rights, and appurtenances thereto and the buildings and improvements

erected or to be erected thereon. All easements and licenses which the Community is subject to as of the date of this Declaration are recited in Exhibit A.

(dd) "Residential Unit" means any of the Units designated as Residential Units on the Plat or a Map or in this Declaration, and any Garage Unit or Storage Unit appurtenant to any Residential Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(ee) "Restaurant Unit" means any of the Units designated as a Restaurant Unit on the Plat or any Map or in this Declaration, and any Garage Unit or Storage Unit appurtenant to any Restaurant Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(ff) "Retail Unit" means any of the Units designated as Retail Units on the Plat or any Map or in this Declaration, and any Garage Unit or Storage Unit appurtenant to any Retail Unit, subject to restrictions of record, and subject to the reserved right of Declarant to redesignate the type of use allowed.

(gg) "Rules and Regulations" means any instrument, however denominated, which is adopted by the Executive Board for the regulation and management of the Community, including any amendment to such instruments.

(hh) "Special Benefit Assessment" has the meaning set forth in Section 3.8 of this Declaration.

(ii) "Subassociation" means any Colorado nonprofit corporation, and its successors and assigns, organized and established by Declarant, or its successors and assigns, pursuant to or in connection with any portion of the Planned Community.

(jj) "Unit" means a physical portion of the Planned Community, designated for separate ownership, shown as a Unit on the recorded Plat or any Map for the Community, the boundaries of which are defined on the Plat or in the Map and in this Declaration or the declaration of any Subassociation.

(kk) "Utility Systems" has the meaning set forth in Section 2.6 of this Declaration.

ARTICLE 2

NAMES/DESCRIPTION OF REAL ESTATE

Section 2.1 Name and Type. The type of Common Interest Community is a mixed-use Planned Community. The name of the Planned Community is "Longview at Lakota." The name of the Association is the "Longview at Lakota Owners' Association."

Section 2.2 Division of Property. Declarant, pursuant to the Act, hereby divides the Property into the Blocks, Lots Units and Association Property designated on the Plat.

Section 2.3 Utility, Map and Plat Easements. Easements for utilities and other purposes over and across the Blocks, Lots, Units and Association Property may be as shown upon any recorded plat of the Community, and as may be established pursuant to the provisions of this Declaration or granted by authority reserved in any recorded document.

Section 2.4 Easements for the Association and Owners. Each Lot, Block and Unit shall be subject to an easement in favor of the Association (including its agents, employees and contractors) and to each Owner to allow for their performance of obligations in this Declaration. On exercising this easement right, the party exercising the right shall be responsible for any resulting damages, and a lien therefor is authorized and established against that party's property, pursuant to this Declaration.

Section 2.5 Emergency Easements. A nonexclusive easement for ingress and egress is hereby granted to all police, sheriff, fire protection, ambulance, and other similar emergency agencies or persons, now or hereafter servicing the Community, to enter upon any part of the Community in the performance of their duties.

Section 2.6 Utility Reservations. Declarant hereby creates and reserves to itself, until Declarant has sold the last Block, Lot or Unit that may be created to an Owner other than Declarant, and, thereafter, reserves to the Association, a blanket easement upon, across, over and under the Real Estate, the Community and the Blocks, Lots and Units for access, utilities, drainage and the installation, replacement, repair and maintenance of utilities, including but not limited to water, sewer, waste water treatment and effluent, irrigation systems, gas, telephone, internet and other telecommunications systems, electricity, heat and cooling systems, master television and satellite antenna or cable systems, roads, sidewalks, landscaping and any other utility systems as may be desired or provided (collectively, "Utility Systems"). By virtue of this blanket easement, it shall be expressly permissible for Declarant or the Association to erect and maintain the necessary facilities, equipment and appurtenances on the Real Estate and to affix, repair, and maintain landscaping, fencing, water, treated waste water, effluent, irrigation and sewer pipes, gas, electric, heat and cooling facilities, telephone and other telecommunications facilities, telephone and television wires, circuits, conduits and meters, roads, sidewalks and any other improvements or facilities appurtenant or relating to the Utility Systems. If any utility or quasi-utility company furnishing a service covered by the general easement created herein requests a specific easement, a separate right and authority to grant such easement upon, across, over or under any part or all of the Real Estate is reserved, provided the easement granted does not conflict with the terms hereof. The easement provided for in this Section shall in no way affect, avoid, extinguish or modify any other recorded easement on the Real Estate. Any damage to any improvement caused by Declarant or the Association in exercising its rights under this Section will be repaired promptly by the entity causing the damage. The foregoing, however, shall not be deemed to render the Association or Declarant liable for any damage caused by any third party, including, without limitation, any utility company.

ARTICLE 3 THE ASSOCIATION

Section 3.1 Membership. Every Person who is a record owner of a fee interest in any Block, Lot or Unit which is subject to this Declaration shall be a Member of the Association. Membership shall be appurtenant to and may not be separated from ownership of any Block, Lot or Unit. Ownership of such Block, Lot or Unit shall be the sole qualification for such membership. There shall be one (1) membership for each Block, Lot or Unit owned within the Planned Community.

Section 3.2 General Purposes and Powers of the Association. The Association, through its Executive Board, shall perform functions and manage the Community as provided in this Declaration to protect the value and desirability of the Community and the Blocks, Lots or Units and to further the collective interests of the Owners. Each purchaser of a Block, Lot or Unit shall be deemed to have assented to, ratified and approved such management. The Association shall have all power necessary or desirable to effectuate such purposes.

Section 3.3 Authority of the Association. The business affairs of the Community shall be managed by the Executive Board of the Association. The Association shall be governed by the Act, this Declaration, the Association's Articles of Incorporation and Bylaws, and any Rules and Regulations adopted by the Executive Board. The Executive Board may, by written resolution, delegate authority to a manager or managing agent for the Association, provided no such delegation shall relieve the Board of final responsibility.

Section 3.4 Specific Powers. The Association shall have the powers, authority and duties as necessary and proper to manage the business and affairs of the Community. The Association shall have all of the powers, authority and duties permitted or set forth in the Act, this Declaration, the Association's Articles of Incorporation and Bylaws, and any Rules and Regulations adopted by the Executive Board.

Section 3.5 Rules and Regulations. The Association may promulgate, supplement and amend from time to time, reasonable rules and regulations governing the use of the lots, which rules and regulations shall be consistent with the rights and duties established in this Declaration.

Section 3.6 Allocated Interests.

(a) The ownership interest, liability for Common Expenses, including for the purpose of paying real property taxes and assessments on the Association Property as provided in the Act, and the votes in the Association allocated to Blocks, Lots or Units are based upon the square footage a Unit or Lot/square footage allowed on a Block, Lot or Unit/number of Units that are (or may be) constructed at any time as set forth in this Declaration or the Map, provided that the Executive Board may determine to allocate liability for Common Expenses between or within Blocks and/or types of Units based on

usage.

(b) If Blocks, Lots or Units are added to or withdrawn from the Community pursuant to the provisions of this Declaration and the Act, the formula set forth above, or then in use, shall be used to reallocate the allocated interests.

Section 3.7 Assessments. The Association shall have the right to levy and make assessments, in accordance with its Bylaws and this Declaration, for the following purposes:

(a) To promote the recreation, health, safety, and welfare of the owners, tenants and occupants of the Property;

(b) To pay taxes and special assessments levied against any property of the Association;

(c) To provide snow removal services within the Development on a cooperative basis;

(d) To provide landscaping and irrigation services within the Development on a cooperative basis;

(e) To provide trash removal services within the Development on a cooperative basis;

(f) To pay expenses associated with the maintenance, repair, upkeep, reconstruction and replacement of roads, parking, sidewalks, and common water, sewer or storm drainage channels;

(g) To enforce and administer the covenants, conditions and restrictions herein contained and to observe and perform the functions contemplated, required or permitted by the Act, Declaration, Association's Articles of Incorporation and Bylaws, and any Rules and Regulations adopted by the Executive Board;

(h) To pay expenses associated with the maintenance of architectural integrity and design control within the Development, including the expense required to maintain and compensate the Architectural Review Committee;

(i) To pay expenses associated with coordinating community events and providing information to the members, businesses and occupants of the Development, through advertising, signage, newsletters and brochures;

(j) To sponsor or advance Community interest programs or events;

(k) To perform or provide other proper functions in the nature of Community

services;

(l) To pay costs associated with Community cleanup and improvement activities or similar projects;

(m) To provide and maintain appropriate signage identifying the Community and businesses therein;

(n) To pay wages for Association employees, Association management expenses, legal and accounting fees;

(o) To pay any deficit remaining from any previous assessment period;

(p) To create a reasonable contingency reserve, surplus and/or sinking fund;

(q) To pay any other expenses and liabilities which may be incurred by the Association for the benefit of the Owners under or by reason of the Act, this Declaration, The Association's Articles of Incorporation or Bylaws, or as otherwise permitted by law.

Section 3.8 Special Benefit Assessments. In addition to the assessments for common expenses, the Association may levy Special Benefit Assessments for other purposes which directly benefit a specific Block, Lot or group of Blocks or Lots, but fewer than all Blocks, Lots or Units. In any such case, the Special Benefit Assessment shall be levied only against the Block(s), Lot(s) or Unit(s) which directly benefit and the levy may be assessed in proportion to the size, frontage or other reasonable measure of the benefit received by each Block, Lot or Unit in comparison to the other Block(s), Lot(s) or Unit(s) within the group which benefit, all as reasonably determined by the Executive Board, or any other purposes, which in the opinion of the Executive Board, are necessary or appropriate.

Section 3.9 Indemnification. To the full extent permitted by law, each Officer and member of the Executive Board of the Association and the LRB shall be and hereby is indemnified by the Owners and the Association against all expenses and liabilities, including attorneys' fees and expenses, reasonably incurred by or imposed upon them in any proceeding to which they may be a party, or in which they may become involved, by reason of being or having been an Officer or member of the Executive Board of the Association or the LRB, or any settlements thereof, whether or not they are an Officer or member of the Executive Board of the Association or the LRB at the time such expenses are incurred; except in such cases wherein such Officer or member of the Executive Board or LRB is adjudged guilty of willful misfeasance in the performance of his or her duties; provided that in the event of a settlement, the indemnification shall apply only when the Executive Board approves such settlement and reimbursement, which approval shall not be unreasonably withheld.

ARTICLE 4 ARCHITECTURAL CONTROL

Section 4.1 Design Review Board. There is hereby established an Architectural Review Committee, known as the Longview Review Board (“LRB”), which shall consist of three (3) members appointed by the Executive Board of the Association.

Section 4.2 LRB Approval Required. No building permit application shall be submitted to the Town of New Castle and no improvements shall be constructed, erected, placed, maintained, changed or altered (including any change of exterior appearance, color or texture), nor any fence, landscaping, utility facilities or other structures be built, extended, installed or any work undertaken on any Block or Lot, until plans and specifications with respect thereto, in a form satisfactory to the LRB have been submitted to and approved by the LRB. The plans and specifications submitted shall show all exterior elevations, construction plans and specifications and include samples of materials and colors and other information as the LRB may reasonably request. In addition to building design, the application shall include a site plan, a landscape plan, and, if applicable, an irrigation plan. Such plans and specifications shall conform to the Uniform Building Code and other applicable state and local codes and be submitted in writing over the signature of the Owner of the Block or Lot or the Owner’s authorized representative. All improvements, landscaping and plans shall conform to the floor area limitations, lot coverage limitations, height restrictions, ground floor restrictions, parking requirements, design controls and development guidelines and all other requirements of the PUD Development Plan. The LRB may refuse approval of the plans upon any reasonable basis but shall not unreasonably withhold its approval of plans and specifications which are consistent with such guidelines and in harmony with the character of the neighborhood. The approval by a two-thirds (2/3) majority vote of the LRB shall constitute the approval of the LRB.

Section 4.3 Alterations. No alternation of the exterior appearance of any improvement (including color or texture), fence, utility facilities, landscaping or structures, shall be made without the approval of the LRB in like manner.

Section 4.4 Landscaping. A landscape plan shall be required as part of the approval process required for the construction of improvements on any Block or Lot. No landscaping plan shall be implemented until approval by the LRB has been obtained. No approval for the construction of a building or other improvement upon any Block or Lot shall be granted, except in conjunction with approval by the LRB of an appropriate landscaping plan. The landscape plan approved for any Block or Lot may not be altered without first submitting a revised plan to the LRB for approval.

Section 4.5 Design Standards. The LRB may revise the design controls and development guidelines imposed by the PUD Development Plan or prescribe additional standards and prescribe, revise and from time to time amend the procedures to be followed and materials to be submitted, review fees to be paid and outlining factors which will be taken into consideration in connection with the approval of any proposed improvement or landscaping.

Section 4.6 Review Fee. The LRB shall provide for the payment of a fee to

accompany each application for approval of any proposed improvement or landscaping to the Property. A uniform fee may be established, or the fee may be determined in any other reasonable manner by the LRB.

Section 4.7 Failure to Act. Any decision of the LRB shall be made within thirty (30) days after receipt of all materials required unless such time-period is extended by mutual agreement. The decision shall be in writing and, if the decision does not approve the application, the reasons shall be stated. The decision shall be promptly transmitted to the applicant at the address furnished by the applicant. Any request for approval shall be deemed approved unless disapproval or a request for additional information is transmitted to the applicant by the LRB within thirty (30) days after the date the application and all information and materials required have been submitted.

Section 4.8 Diligence in Completing the Work. Following approval of any proposed improvement, the Owner shall secure the requisite building permit from the Town of New Castle and the improvement shall be completed by the Owner as promptly and diligently as practicable in substantial conformance with the submittals made, and in accordance with all conditions imposed by the LRB. All such improvements shall be completed within twelve (12) months of the date of approval. The landscaping approved in connection with the construction of the initial improvements shall be completed within six (6) months after a Certificate of Occupancy has been issued. In all other cases, such landscaping shall be completed within six (6) months of the date of the approval. The LRB may grant extensions for excusable delays due to weather.

Section 4.9 Notice of Completion. Upon completion of the improvements and all other installations and work besides landscaping, the applicant shall give written notice to the LRB. Notice will not be deemed given until received by the LRB. Prior to the application for the issuance of any Certificate of Occupancy from the Town of New Castle, the LRB must first issue a Notice of Satisfactory Completion, or Conditional Notice of Satisfactory Completion. Failure to comply with the provisions of this paragraph shall subject the Owner to the imposition of fines, penalties and such other rights and remedies as may be available to the Association. Such failure to comply will also serve as a basis for denying the issuance of any Certificate of Occupancy by the Town of New Castle or the basis for revoking any Certificate of Occupancy obtained without compliance with the provisions of this paragraph.

Section 4.10 Inspection. The LRB or its representative, shall have the right to inspect the Block or Lot and the work prior, during and after completion.

Section 4.11 Non-Compliance. In the event the Owner fails to comply with the terms of the approval in all respects or fails to complete the work within the time specified above, the LRB shall notify the applicant in writing specifying the particulars of the non-compliance. Upon receipt of Notice of Non-Compliance, the applicant shall take such action as may be necessary to remedy and correct the deficiency. In the event of non-compliance, the LRB may, but shall not be required to accept a Performance Bond guaranteeing the satisfactory completion within a specified time. Any Performance Bond shall run to the Association. If accepted, the LRB may

then issue a Conditional Notice of Satisfactory Completion authorizing the applicant to request a Certificate of Occupancy from the Town of New Castle. The Performance Bond may be in the form of a bond issued by a corporate bonding company authorized to do business in the State of Colorado, a letter of credit upon a local bank, or a cash escrow. The amount, form, content and terms of the performance guarantee shall be determined by the LRB, in its sole and absolute discretion. All premiums, costs and expenses related to the bond, including any attorney's fees incurred by the LRB or the Association, shall be the obligation of the applicant.

Section 4.12 Non-Liability. There shall be no liability imposed on the LRB, or the Association or any member of the Executive Board of the Association, or the Declarant for any loss, damage or injury arising out of or in any way connected with the performance of the duties of the LRB, unless due to the willful misconduct of the party to be held liable. No review or approval by the LRB shall be deemed approval of the improvement for the conformance with the building codes or other governmental laws and regulations, nor shall it be deemed approval from the standpoint of safety, whether structural or otherwise. An applicant seeking the approval of the LRB for any matter shall provide the LRB with a written waiver reaffirming the foregoing and releasing the LRB, the Association, member of the Executive Board of the Association and the Declarant from any and all liability arising from or related to the LRB's approval of the improvement.

Section 4.13 No Application to Declarant. The activities of the Declarant are and shall be exempt from the provisions of this Article. Declarant reserves and shall have the right to assign all, or any part, of its rights under the provisions of this Declaration in conjunction with the transfer of the Property or any filing within the Property, by instrument executed by the Declarant and recorded in the records of Garfield County, Colorado, specifying the rights so assigned and the extent to which the assignee shall be exempt from the provisions of this Article. Thereafter, such assignee shall not be subject to the provisions of this Declaration insofar as expressly so authorized by the Declarant. Notwithstanding the foregoing, nothing contained in this Section or elsewhere in this Declaration shall exempt the Declarant from the design controls and development guidelines contained in the PUD Development Plan.

ARTICLE 5 COVENANT FOR COMMON EXPENSE ASSESSMENTS

Section 5.1 Creation of Association Lien and Personal Obligation to Pay Common Expense Assessments. Declarant, for each Block, Lot or Unit, shall be deemed to covenant and agree, and each Block, Lot or Unit Owner, by acceptance of a deed therefor, whether or not it shall be so expressed in any such deed or other conveyance, shall be deemed to covenant and agree to pay to the Association Common Expense Assessments, Special Benefit Assessments, and such other Assessments as are imposed by the Association. Such Assessments, including fees, charges, late charges, attorney fees, fines and interest charged by the Association shall be the personal obligation of the Block, Lot or Unit Owner from and after the time when the Assessment or other items charged by the Association become or fall due. The Association Common Expense Assessments and such other Assessments as are imposed by the Association,

including fees, charges, late charges, attorney fees, fines and interest charged by the Association, shall be a charge on each Block, Lot or Unit and shall be a continuing lien upon the Block, Lot or Unit against which each such Assessment or charge is made. If any Assessment is payable in installments, the full amount of the Assessment is a lien from the time the first installment becomes due. The personal obligation to pay any past due sums due the Association shall not pass to a successor in title unless expressly assumed by them and approved by the Executive Board. No Block, Lot or Unit Owner may become exempt from liability for payment of the Common Expense Assessments or other Association charges by waiver of the use or enjoyment of the Association Property or by abandonment of the Block, Lot or Unit against which the Common Expense Assessments are made. All Assessments and other Association charges shall be payable in the amounts specified in the levy thereof, and no offsets or reduction thereof shall be permitted for any reason including, without limitation, any claim that the Association or the Executive Board is not properly exercising its duties and powers under this Declaration.

Section 5.2 Assessment/Commencement of Common Expense Assessments. The Common Expense Assessment may be made on an annual basis against all Blocks, Lots or Units and shall be based upon the Association's advance budget of the cash requirements needed by it to provide for the administration and performance of its duties during each Assessment year. The budget shall be submitted to the Owners for ratification pursuant to Section 303(4) of the Act and as set forth in the Bylaws, as the Bylaws may be amended from time to time. The budget may be vetoed by votes of Owners representing three-quarters of the total votes in the Association, in which case the previously-existing budget shall continue in effect. Common Expense Assessments shall be due and payable in monthly, quarterly, or annual installments, or in any other manner, as determined by the Executive Board. Common Expense Assessments may begin on the first day of the month in which conveyance of the first Block, Lot or Unit to an Owner other than Declarant occurs. The omission or failure of the Executive Board to levy the Assessment for any period shall not be deemed a waiver, modification or a release of the Owners from their obligation to pay.

Section 5.3 Effect of Non-Payment of Assessments. Any Assessment or other Association charge provided for in this Declaration, or any monthly or other installment thereof, which is not fully paid within ten (10) days after the due date thereof, as established by the Executive Board, shall bear interest at the rate established by the Executive Board, on a per annum basis from the due date, and the Association may assess a reasonable late charge thereon as determined by the Executive Board. Failure to make payment within sixty (60) days of the due date thereof shall cause the total amount of such Owner's Common Expense Assessment for the remainder of that fiscal year to become immediately due and payable at the option of the Executive Board. Further, the Association may bring an action at law or in equity, or both, against any Owner personally obligated to pay such overdue Assessments or other Association charges, or monthly or other installments thereof, and may also proceed to foreclose its lien against such Owner's Block, Lot or Unit. An action at law or in equity by the Association against an Owner to recover a money judgment for unpaid Assessments or other Association charges, or monthly or other installments thereof, may be commenced and pursued by the Association without foreclosing, or in any way waiving, the Association's lien therefor.

Foreclosure or attempted foreclosure by the Association of its lien shall not be deemed to estop or otherwise preclude the Association from thereafter again foreclosing or attempting to foreclose its lien for any subsequent Assessment or other Association charges, or monthly or other installments thereof, which are not fully paid when due. The Association shall have the power and right to bid on or purchase any Block, Lot or Unit at foreclosure or other legal sale, and to acquire and hold, lease, mortgage, vote the Association votes appurtenant to ownership thereof, convey or otherwise deal with the same. If a foreclosure action is filed to foreclose any Assessment lien, and an Owner abandons or leaves vacant such Owner's Block, Lot or Unit, the Executive Board may take possession and rent such Block, Lot or Unit or apply for the appointment of a receiver for the Block, Lot or Unit without prior notice to the Owner. The rights of the Association shall be expressly subordinate to the rights of any holder of a first lien security interest as set forth in its deed of trust or mortgage (including any assignment of rents), to the extent permitted under the Act.

Section 5.4 Lien Priority. The lien of the Association under this Article is prior to all other liens and encumbrances on a Block, Lot or Unit except: (1) liens and encumbrances recorded before the recordation of this Declaration; (2) a first lien security interest on the Block, Lot or Unit (except as allowed by the Act with regard to the limited lien priority allowed to the Association); and (3) liens for real estate taxes and other governmental assessments or charges against the Block, Lot or Unit. This Section does not affect the priority of mechanics' or materialmen's liens. The lien of the Association under this Article is not subject to the provision of any homestead exemption as allowed under state or federal law. Sale or transfer of any Block, Lot or Unit shall not affect the lien for Assessments or other Association charges except that sale or transfer of any Block, Lot or Unit pursuant to foreclosure of any first lien security interest, or any proceeding in lieu thereof, including deed in lieu of foreclosure, or cancellation or forfeiture shall only extinguish the lien for Assessments or other Association charges as provided by applicable state law. No such sale, transfer, foreclosure, or any proceeding in lieu thereof, including deed in lieu of foreclosure, nor cancellation or forfeiture shall relieve any Block, Lot or Unit from continuing liability for any Assessment or other Association charges thereafter becoming due, nor from the lien therefor.

Section 5.5 Owner's Negligence or Misconduct. In the event that the need for maintenance, repair, or replacement of the Association Property, or any portion thereof, is caused through or by the negligent or willful act or omission or misconduct of an Owner, or the Owner's agents, employees, guests, customers, or invitees, then the expenses, costs, and fees incurred by the Association for such maintenance, repair, or replacement shall be a personal obligation of such Owner. If such expenses, costs and fees incurred by the Association are not repaid to the Association within seven (7) days after the Association shall have given notice to the Owner of such expenses, costs, and fees, then the failure to so repay shall be a default by the Owner under the provisions of this Declaration. Such expenses, costs, and fees shall automatically become a default Assessment determined and levied against such Block, Lot or Unit, and the Association may proceed in accordance with the provisions of this Article.

ARTICLE 6

RESTRICTIONS ON USE

Section 6.1 Use, Occupancy and Use Protection. The regulations contained in the PUD Development Plan shall control and govern the use and development of the Property. Uses permitted by right on any Block or Lot in Longview at Lakota are as set forth in the PUD Development Plan. For purposes of this Declaration, the property owner's association established in connection with any condominium developed upon a Lot, shall be considered and treated as the owner of that Lot for purposes of assessments and other purposes deemed convenient by the Association.

Section 6.2 Vehicular Parking, Storage, and Repairs.

(a) Subject to the development rights of Declarant, vehicular parking upon the Association Property shall be regulated by the Executive Board.

(b) No activity such as, but not limited to, maintenance, repair, rebuilding, dismantling, repainting, or servicing of any kind of vehicle, trailer or boat, may be performed or conducted within the Community.

(c) The Rules and Regulations of the Association shall govern the types of vehicles that may be parked or stored within the Community.

Section 6.3 Signs. A plan and description for all signs shall be submitted to the LRB in such detail as it may prescribe. Any such sign must be approved by the LRB before it may be erected upon any part of the Property. Signage within the Community shall comply with the requirements and limitations contained in the PUD Development Plan.

Section 6.4 Nuisances. No nuisance shall be permitted within the Community, nor any use, activity or practice which is reasonably the source of annoyance or embarrassment to, or which reasonably offends or disturbs, any Block, Lot or Unit Owner or which may unreasonably interfere with the peaceful enjoyment or possession or the proper use of a Block, Lot or Unit or Association Property, or any portion of the Community by Owners or Permittees. Further, no immoral, improper, offensive or unlawful use shall be permitted within the Community or any portion thereof. All valid laws, ordinances and regulations of all governmental bodies having jurisdiction over the Community or a portion thereof shall be observed. As used herein, the term "nuisance" shall not include any activities of Declarant or its assignees which are reasonably necessary to the development and construction of improvements within the Community.

Section 6.5 Compliance with Insurance Requirements. Except as may be approved in writing by the Executive Board, nothing shall be done or kept on the Community which may result in a material increase in the rates of insurance or would result in the cancellation of any insurance maintained by the Association.

Section 6.6 Leases. All lease agreements pertaining to any Block, Lot or Unit or

portion thereof shall be in writing. Every lease agreement shall provide that the lease is subject, in all respects, to the provisions of the PUD Development Plan, the Act, this Declaration, the Articles of Incorporation and the Bylaws of the Association, and that any failure by the tenant to comply with the terms of such documents shall be a default under the lease.

Section 6.7 Food-Related Operations. In addition to the restrictions and obligations set forth elsewhere in this Declaration and in the Rules and Regulations, owners of food-related businesses in the Community shall have special obligations, at their sole cost and expense, to assure that their trash is properly stored and removed, that grease generated by their operations is properly disposed of, that interceptors or traps relating to the disposal of such grease are properly maintained, that cooking odors emanating from their premises are properly vented, that they observe proper pest control practices, and that noise within or appurtenant to their establishments is controlled and does not become a nuisance, within the intent of Section 6.4 of this Declaration, to others in the Community. In the event any owner of a food-related business in the Community fails to comply with the requirements of this Section, the Association may make arrangements for the necessary services, the cost of such services shall be charged to the Owner of the Unit or Units in which such food-related business is conducted.

Section 6.9 Rules and Regulations. In furtherance of the provisions of this Declaration, Rules and Regulations concerning and governing the Community or any portion thereof may be adopted, amended, or repealed, from time to time, by the Executive Board, or its successors and assigns. The Executive Board may establish and enforce penalties or fines for the infraction thereof and take any other remedial action the Executive Board may deem necessary and proper for such purpose.

Section 6.10 Declarant's Use. Notwithstanding anything to the contrary contained in this Declaration, it shall be expressly permissible for Declarant, its assigns, employees and agents, to perform such reasonable activities, and to maintain upon portions of the Community such facilities as are reasonably necessary or incidental to the construction and sale of Blocks, Lots or Units in the development of the Community, specifically including, without limiting the generality of the foregoing, the maintenance of temporary business offices, construction trailers, storage areas, trash bins, construction yards and equipment, signs, model units, temporary sales offices, parking areas and lighting facilities.

ARTICLE 7 DECLARANT RESERVED RIGHTS

Section 7.1 This Article Controls. The provisions of this Article shall supersede and control all inconsistent and conflicting provisions of this Declaration.

Section 7.2 Period of Declarant Control. Notwithstanding any other provisions hereof, Declarant shall have and hereby reserves the power to appoint and remove, in its sole discretion, the members of the Executive Board and the officers of the Association during the period commencing upon the Recording of this Association and terminating no later than the

earlier of (a) sixty (60) days after conveyance of seventy-five percent (75%) of the Blocks, Lots and other portions of the Property that may be created to Owners other than Declarant; or (b) two (2) years after the last conveyance of a Lot, Block or Unit by the Declarant in the ordinary course of business; or (c) two (2) years after any right to add new Blocks, Lots or Units was last exercised by Declarant.

During said Period of Declarant Control of the Association:

(a) Not later than sixty (60) days after conveyance of twenty-five percent (25%) of the Blocks, Lots and Units that may be created to Owners other than Declarant, at least one (1) member and not less than twenty-five percent (25%) of the members of the Executive Board must be elected by Block, Lot and Unit Owners other than Declarant.

(b) Not later than sixty (60) days after conveyance of fifty percent (50%) of the Blocks, Lots or Units that may be created to Owners other than Declarant, not less than thirty-three and one-third percent (33-1/3%) of the members of the Executive Board must be elected by Block, Lot and Unit Owners other than Declarant.

At any time prior to the termination of the Period of Declarant Control of the Association, the Declarant may voluntarily surrender and relinquish the right to appoint and remove officers and members of the Executive Board, but in such event Declarant may require, for the duration of the Period of Declarant Control of the Association, that specified actions of the Association or the Executive Board, as described in a Recorded instrument executed by Declarant, be approved by Declarant before they become effective. As to such actions, Declarant may give its approval or disapproval in its sole discretion and option, and its disapproval shall invalidate any such action by the Executive Board or the Association. Not later than the termination of the Period of Declarant Control of the Association, the Owners (including Declarant) shall elect an Executive Board of at least three (3) members, at least a majority of whom must be Owners other than Declarant or designated representatives of Owners other than Declarant, and the Executive Board shall elect the officers, with such Executive Board members and officers to take office upon election. Pursuant to Section 38-33.3-303(9) of the Act, within sixty (60) days after Owners other than Declarant elect a majority of the members of the Executive Board, Declarant shall deliver to the Association all property of the Owners and of the Association held or controlled by Declarant, including without limitation the following items:

(a) The original or a certified copy of the recorded Association as amended, the Association's Articles of Incorporation, Bylaws, minute books, other books and records, and any rules and regulations which may have been promulgated;

(b) An accounting for Association funds and financial statements from the date the Association received funds and ending on the date the Period of Declarant Control ends. The financial statements shall be audited by an independent certified public accountant and shall be accompanied by the accountant's letter, expressing either the opinion that the financial statements present fairly the financial position of the

Association in conformity with generally accepted accounting principles or a disclaimer of the accountant's ability to attest to the fairness of the presentation of the financial information in conformity with generally accepted accounting principles and the reasons therefor. The expense of the audit shall not be paid for or charged to the Association.

- (c) The Association funds or control thereof;
- (d) All of the Declarant's tangible personal property that has been represented by the Declarant to be the property of the Association or all of the Declarant's tangible personal property that is necessary for, and has been used exclusively in, the operation and enjoyment of Association property, and inventories of these properties;
- (e) A copy, for the nonexclusive use by the Association, of any plans and specifications used in the construction of the improvements in the Planned Community;
- (f) All insurance policies then in force, in which the Owners, the Association, or its directors and officers are named as insured persons;
- (g) Copies of any certificates of occupancy that may have been issued with respect to any improvements comprising the Planned Community;
- (h) Any other permits issued by governmental bodies applicable to the Planned Community and which are currently in force or which were issued within one year prior to the date on which Block, Lot and Unit Owners other than the Declarant took control of the Association;
- (i) Written warranties of contractors, subcontractors, suppliers, and manufacturers that are still effective;
- (j) A roster of Owners and Occupants and Mortgagees and their addresses and telephone numbers, if known, as shown on the Declarant's records;
- (k) Employment contracts in which the Association is a contracting party; and
- (l) Any service contract in which the Association is a contracting party or in which the Association or the Owners have any obligation to pay a fee to the persons performing the services.

Section 7.3 Reserved Rights. Declarant hereby expressly reserves to itself and its successors and assigns the following described rights, which include Development Rights and Special Declarant Rights, any one or more of which rights may be exercised, in the sole and absolute discretion of Declarant, at any time and from time to time during the period commencing upon the Recording of this Declaration in the County and ending on the date of termination of such rights established under Section ____ below. It is expressly understood that Declarant shall not be obligated to exercise any of these reserved rights, and that no consent shall

be required from any Owner, Mortgagee, Special District or the Association for the effective exercise of any of these reserved rights.

Except as limited by this Article 7, such reserved rights may be exercised upon or in connection with all or any portion of the Planned Community. Such rights may be exercised with respect to different parcels of said real estate at different times, and in connection therewith Declarant hereby states that (i) no assurances are made regarding the boundaries of said different parcels or with respect to the order in which such parcels may be subjected to the exercise of these reserved rights, even if a reference to a phase or phasing appears in a legal description, Plat, P.U.D. Plan or other agreement relating to the property, and (ii) if a particular reserved right is exercised in any portion of the Property subject to that reserved right, that reserved right is not required to be exercised in all or any portion of the remainder of the Property.

The reserved rights hereinafter set forth shall be prior and superior to any other provisions of this Declaration or of any Supplemental Declaration, and may not be amended, modified, terminated or otherwise altered in any way without the express prior written consent of Declarant. All conveyances of Blocks, Lots and Units and other portions of the Planned Community hereafter made, whether by Declarant or otherwise, shall be deemed and construed to reserve to Declarant and/or to grant to Declarant all of the rights reserved by and to Declarant in this Article 7 and elsewhere in this Declaration or in any Supplemental Declaration, even though no specific reference to such rights appears in the conveyancing instruments. Nothing in this Article 7 shall limit or impair any other rights granted or reserved to Declarant by other provisions of this Declaration or of any Supplemental Declaration.

The following rights are hereby reserved to Declarant and its successors and assigns:

(a) The right, but not the obligation, to construct additional Improvements on the Property at any time and from time to time for the improvement and enhancement thereof. Furthermore, the right throughout the Planned Community to complete Improvements indicated on the Plat filed with this Declaration, and on any Supplemental Plats filed with any Supplemental Declarations, as such Plats and Declarations may be amended from time to time. Furthermore, the right to construct and complete Improvements required by the terms of any Subdivision Improvements Agreement(s) that may hereafter be executed by Declarant in connection with the Planned Community, as such Agreements may be amended from time to time. Furthermore, the right to create, grant and/or use and enjoy additional non-exclusive easements, and to relocate existing platted or other easements, upon or across any portion of the Planned Community (including Blocks and Lots), as may be reasonably required for the construction by Declarant of the above-described improvements or the effective exercise by Declarant of any of the other reserved rights described in this Article 7.

(b) The right to construct, locate or operate, and to maintain upon, and to remove from, any part of the Planned Community including Blocks and Lots owned by Declarant and Association property, in the discretion of Declarant, and in such number,

size and location as may be reasonably required by Declarant in connection with the completion of Improvements, the management of the development, and/or the promotion, marketing, sale or rental of Blocks, Lots or Units, the following: (1) sales offices, management offices, and/or construction offices, and structures containing or relating to the same. Such offices, to the extent they are not situated on a Lot, are hereby declared to be personal property of the Declarant and shall in any case be removable by Declarant or its successors or assigns promptly upon the Declarant or its successors or assigns ceasing to be a Block, Lot or Unit Owner; (2) signs identifying and advertising the Planned Community and the Blocks, Lots and/or Units therein, or relating to development or construction thereon; (3) model residences constructed or to be constructed on Lots; (4) parking areas and facilities, and lighting, necessary or desirable in the marketing of the Planned Community; (5) maintain employees in offices; equipment; vehicles; and marketing and construction materials; and (6) the right to attract, invite or bring prospective purchasers of Blocks, Lots and/or Units into the Planned Community at all times, and to permit them to use and enjoy the Planned Community.

(c) The right to make the Planned Community subject to the Lakota Canyon Ranch Master Association.

(d) The right to create Subassociations within the Planned Community subject to the Association.

(e) The right to record amendments to the Declaration and Plat, whether in the form of Supplemental Declarations and Supplemental Plats or otherwise, which reallocate the Allocated Interests in the Planned Community, shall automatically vest in each existing Owner the reallocated Allocated Interests appurtenant to the Owner's Block, Lot or Unit; and vest in each existing Mortgagee a perfected security interest in the reallocated Allocated Interests appurtenant to the encumbered Block, Lot or Unit.

(f) The right to subdivide any Declarant-owned Block, Lot or parcel located within the Planned Community to create additional Lots, Association Property, and/or streets, subject to the maximum number of Lots and Units set forth in this Declaration; provided, however, that such subdivision is consistent with the P.U.D. Plan as approved by the Town of New Castle or that said P.U.D. Plan is amended if necessary, and that the subdivision is accomplished in compliance with New Castle subdivision requirements. Upon the subdivision of any Block, Lot or parcel in accordance with the terms and conditions contained herein, the Allocated Interests of all Owners shall be reallocated in accordance with the definition of Allocated Interests contained in this Declaration.

(g) The right, but not the obligation, to transfer additional real and personal property, and Improvements thereon, to the Association from time to time in furtherance of this Declaration.

(h) Subject to compliance with any applicable Town of New Castle requirements, the right with respect to all or any Declarant-owned portion of the Planned

Community (including the Blocks or Lots) to (a) create Association property (including Limited Common Areas); (b) create additional Lots, subject to the maximum number set forth in this Declaration; (c) create Units; (d) subdivide Blocks or Lots; (e) combine Blocks and/or Lots; (f) reconfigure Blocks and/or Lots and/or Association Property and/or Association property, or otherwise modify or amend recorded Plats; (g) amend the P.U.D. Plan; (h) convert Lots into Association property and/or streets; and (i) convert Association Property into Lots and/or streets. Additionally, in order to effectively exercise the rights reserved to Declarant under this Article 7, the right to amend this Declaration (without the consent of Owners, Mortgagees or the Association being required) for purposes of (i) complying with or qualifying for federal or state registration of the project (ii) satisfying title insurance requirements, or (iii) bringing any provision or provisions of the Declaration into compliance with the Act.

Section 7.4 Owner Waiver. Each Owner, by its acceptance of a deed or other conveyance vesting in the Owner an interest in a Block, Lot or Unit in the Planned Community, acknowledges that the Owner has carefully reviewed and understands the P.U.D. Plan (as it may be amended from time to time) and the Declarant's reserved rights as set forth in this Article 7 or elsewhere in this Declaration or in any Supplemental Declaration, that the Owner accepts and approves such matters and appreciates any potential impacts that the implementation of the Planned Community and/or the exercise of such reserved rights may have on the Owner's Block, Lot or Unit, and expressly waives any rights the Owner may have to object to or to interfere in any way with the implementation of or the exercise of such rights.

Section 7.5 Owner's Attorney in Fact. Each Owner, by its acceptance of a deed or other conveyance vesting in the Owner an interest in a Block, Lot or Unit in the Planned Community, does hereby irrevocably constitute and appoint Declarant (with full power of substitution) as said Owner's attorney-in-fact, in said Owner's name, place and stead, to take any and all actions and to execute and deliver any and all instruments as may be necessary or appropriate to Declarant's exercise of the various rights reserved to Declarant under this Article 7 or elsewhere in this Declaration or in any Supplemental Declaration, specifically including without limitation Declarant's reserved right to use all existing easements within the Planned Community, or to create, grant, use and/or replat and relocate additional or existing easements across any portion of the Planned Community excepting platted Building Envelopes.

Section 7.6 Transfer of Declarant's Reserved Rights. Any one or more rights created or reserved for the benefit of Declarant under this Article 7 or elsewhere in this Declaration or in any Supplemental Declaration may be transferred to any Person by an instrument describing the right or rights transferred and recorded in Garfield County. Such instrument shall be executed by the transferor Declarant and the transferee. The provisions of Section 38-33.3-304 of the Act shall apply to any transfer of special declarant rights.

Section 7.7 Termination of Declarant's Reserved Rights. With the exception of Declarant's right to appoint or remove Executive Board members and officers of the Association, the rights reserved to Declarant in this Article 7 shall automatically terminate and expire upon the first to occur of (i) the date which is fifty (50) years after the Recording of this Declaration,

or (ii) Declarant's relinquishment and surrender of such rights by Recorded instrument. Declarant may from time to time relinquish and surrender one or more but less than all of the reserved rights, in which event the unrelinquished reserved rights shall remain fully valid and effective for the remainder of the term thereof. The Association may extend the time period for exercise of a development right, or reinstate a lapsed development right, subject to whatever terms, conditions and limitations the Association may impose on the subsequent exercise of the development right. The extension or renewal of a development right and any terms, conditions and limitations shall be included in an amendment executed by Declarant or the owner of the real estate subject to the development right and the Association.

ARTICLE 8 INSURANCE/CONDEMNATION

Section 8.1 Insurance Requirements. Commencing not later than the time of the first conveyance of a Block, Lot or Unit to a person other than Declarant, the Association shall maintain the following types of insurance to the extent that such insurance is reasonably available, considering the availability, cost and risk coverage provided by such insurance, and the cost of such coverage shall be paid by the Association as a Common Expense, unless assessed to the Owners based on risk. Notwithstanding any of the specific insurance requirements contained in this Article, the Association may also consider, in determining the types and amounts of insurance it needs to obtain, the then-existing requirements of the Agencies with respect to their insurance, guaranty, or purchase of mortgages:

(a) Property Insurance. A policy of property insurance covering all insurable improvements located within the Community, except for land, foundation, excavation and other matters normally excluded from coverage, in an amount not less than the full insurable replacement cost of the insured property less applicable deductibles at the time the insurance is purchased and at each renewal date. Such policy shall also include coverage for or contain a "Replacement Cost Endorsement" providing that any claim will be settled on a full replacement cost basis without deduction for depreciation, an "Inflation Guard Endorsement," and a "Steam Boiler and Machinery Coverage Endorsement" with minimum coverage per accident equal to the insurable value of the building in which the machinery is located. The Association will also purchase endorsements and/or coverage on personal property owned by the Association, including fixtures and building service equipment. Such insurance shall afford protection against at least loss or damage by fire and other perils normally covered by the standard extended coverage endorsement, and such other risks as shall customarily be covered with respect to projects similar in construction, location and use, including all perils normally covered by the standard "all risk" endorsement, where such is available.

(b) Liability Insurance. A comprehensive policy of general liability insurance against claims and liabilities arising in connection with the ownership, existence, use or management of the Association Property and covering public liability or claims of liability for injury to persons and/or property, and death of any person or persons. Such

liability insurance shall, to the extent reasonably obtainable, (i) have limits of not less than Two Million Dollars (\$2,000,000) in the aggregate and One Million Dollars (\$1,000,000) per occurrence; (ii) insure the Executive Board, the Association and its officers, and their respective employees, agents and all persons acting as agents; (iii) include the Owners as additional insureds, but only for claims and liabilities arising in connection with the ownership, existence, use or management of the Association Property; (iv) cover claims of one or more insured parties against other insured parties; and (v) be written on an occurrence basis.

(c) Fidelity Insurance. A policy providing comprehensive fidelity coverage or fidelity bonds to protect against dishonest acts on the part of Officers, Directors, trustees and employees of the Association and all others who handle or are responsible for handling funds of the Association, in an amount at least equal to the estimated maximum amount of funds, including reserves, in the custody of the Association, its Officers, Directors, trustees and employees at any given time. Such coverage shall name the Association as an obligee. In the event the Association has delegated some or all of its responsibility for the handling of funds to a managing agent, the Association may require the managing agent to purchase, at its own expense, a policy of fidelity insurance or bonds which fully complies with the provisions of this subparagraph (c). In addition, the managing agent may be required to maintain such other insurance for the benefit of the Association as the Association shall deem necessary.

(d) Directors and Officers Liability Insurance. A policy to protect Directors and Officers of the Association from personal liability in relation to their duties and responsibilities in acting as directors and officers on behalf of the Association.

(e) Worker's Compensation and Employer's Liability Insurance. Worker's compensation and employer's liability insurance and all other similar insurance with respect to the employees, if any, of the Association, in the amounts and forms as may be required by law.

(f) Other Insurance. The Association may obtain insurance against such other risks, of similar or dissimilar nature, including flood insurance, as the Executive Board shall deem appropriate, to the extent that such coverage is reasonably available.

Section 8.2 Insurance Trustee. The Executive Board shall have authority to authorize an insurance trustee to assist and consult with it and/or act as its agent and attorney-in-fact for one or more of the following purposes: to purchase and maintain the insurance required under this Declaration, to negotiate and compromise settlement of losses under any insurance, and to collect the proceeds from any insurance, hold such proceeds in trust for the Owners and Eligible Holders as their interests may appear and dispose of such proceeds as provided in this Declaration and in the Act.

Section 8.3 Notice of Cancellation. If any insurance required by this Article to be

obtained by the Association is not reasonably available or is canceled or not renewed without a replacement policy having been obtained, the Association shall promptly cause notice of that fact to be hand delivered or sent by prepaid first-class mail to all Owners.

Section 8.4 Nonliability of Association and Directors. Notwithstanding the duty of the Association to obtain insurance coverage, as stated herein, neither the Association nor any Director shall be liable to any Owner, mortgagee or other person if any risks or hazards are not covered by insurance, or if the appropriate insurance is not obtained because such insurance coverage is not reasonably obtainable on the Association's behalf, or if the amount of insurance is not adequate, and it shall be the responsibility of each Owner or other person to ascertain the coverage and protection afforded by the Association's insurance and to procure and pay for such additional insurance coverage and protection as the Owner or such other person may desire, provided that Owners (or their tenants) shall, in any event, be required to obtain the insurance specified in this Declaration.

Section 8.5 Distribution of Condemnation and Property Insurance Proceeds. In the event proceeds of condemnation or property insurance become available for distribution to Owners, the Association shall make such distribution in accordance with the respective interests of the Owners and mortgagees as they appear of record and pursuant to the Act.

ARTICLE 9 GENERAL PROVISIONS

Section 9.1 Compliance with and Enforcement of Governing Documents. In addition to the provisions this Declaration:

- (a) Every Owner and Permittee shall comply with the Governing Documents.
- (b) The Association, acting through the Executive Board, may enforce all applicable provisions of the Governing Documents and may impose sanctions for violation thereof. Such sanctions may include, without limitation:
 - (i) imposition of reasonable monetary fines, after notice and opportunity for a hearing, which fine shall constitute a lien upon the violator's Block, Lot or Block, Lot or Unit (in the event that any occupant, guest, or invitee of an Owner violates the Governing Documents and a fine is imposed, the fine shall first be assessed against the violator; provided, however, if the fine is not paid by the violator within the time period set by the Executive Board, the Owner shall pay the fine upon notice from the Executive Board);
 - (ii) suspension of the right to vote;
 - (iii) suspension of any services provided by the Association to an Owner or the Owner's Block, Lot or Unit if the Owner is more than thirty (30)

days delinquent in paying any Assessment or other charge owed to the Association;

(iv) exercise of self-help or action to abate any violation of the Governing Documents in a non-emergency situation;

(v) requiring an Owner, at the Owner's expense, to remove any structure or improvement on such Owner's Lot or Block in violation of the Governing Documents and to restore the Block or Lot to its previous condition and, upon failure of the Owner to do so, the Executive Board or its designee shall have the right to enter the property, remove the violation and restore the property to substantially the same condition as previously existed and any such action shall not be deemed a trespass; and

(vi) levy of specific Assessments to cover costs incurred by the Association to bring a Block, Lot or Unit into compliance with the Governing Documents.

(c) In addition, the Association, acting through the Executive Board, may take the following enforcement procedures to ensure compliance with the Governing Documents:

(i) exercise of self-help in any emergency situation (specifically including, but not limited to, the towing of vehicles that are in violation of any parking rules and regulations); and/or

(ii) institution of suit at law or in equity to enjoin any violation or to recover monetary damages or both.

(d) All remedies set forth in the Governing Documents shall be cumulative of any remedies available at law or in equity. In any action to enforce the Governing Documents, the prevailing party shall be entitled to recover all costs, including, without limitation, attorneys' fees and court costs reasonably incurred in such action.

(e) The decision to pursue enforcement action in any particular case shall be left to the Executive Board's discretion, except that the Executive Board shall not be arbitrary or capricious in taking enforcement action.

(f) Any Person attempting to enforce a provision of the Act, this Declaration, the Articles or the Bylaws, including, without limitation, attempting to collect delinquent Assessments, regardless of whether a suit is initiated, may recover reasonable attorneys' fees and other legal costs incurred in successfully enforcing the provision to the extent provided in Section 123 of the Act. Any Owner who is successful in defending such a claim raised against it is also entitled to reasonable attorneys' fees and other legal costs it

incurs in successfully defending such a claim to the extent provided in Section 123 of the Act.

(g) In accordance with and furtherance of Section 124 of the Act, before an aggrieved Owner may prosecute any proceeding at law or in equity enforcing the provisions of this Declaration or seeking other relief relating to a violation or attempted violation of the provisions of this Declaration, the Owner will first give written notice to the Board specifying the violation or attempted violation of the provisions of this Declaration, the facts and circumstances surrounding the violation, and the name of the Person alleged to have violated or attempted to violate the provisions of this Declaration. The Association may initiate a proceeding at law or in equity to enforce the provisions of this Declaration, to prevent a violation or to obtain damages for damage to the Association Property resulting from the violation or may otherwise enforce the provisions of this Declaration. The aggrieved Owner may exercise any of its rights if (i) the violation or attempted violation results or would result in direct and immediate physical damage to the Owner's Block, Lot or Unit; or (ii) the Association fails to enforce or cause enforcement of the violated provisions of this Declaration within 60 days after the Board receives the Owner's notice.

Section 9.2 Severability. Each of the provisions of this Declaration shall be deemed independent and severable. If any provision of this Declaration or the application thereof to any person or circumstances is held invalid, the invalidity shall not affect other provisions or applications of this Declaration which can be given effect without the invalid provisions or applications.

Section 9.3 Term of Declaration. The covenants and restrictions of this Declaration shall run with and bind the land in perpetuity.

Section 9.4 Amendment of Declaration by Declarant. If Declarant shall determine that any amendments to this Declaration shall be necessary in order to make non-material changes, such as for the correction of a technical, clerical or typographical error or clarification of a statement or for any changes to property not yet part of the Community, then, subject to the following sentence of this Section, Declarant shall have the right and power to make and execute any such amendments without obtaining the approval of any Owners. In furtherance of the foregoing, a power coupled with an interest is hereby reserved and granted to Declarant to make or consent to an amendment under this section on behalf of each Owner. Each deed, security interest, other evidence of obligation or other instrument affecting a Block, Lot or Unit and the acceptance thereof shall be deemed to be a grant and acknowledgment of, and a consent to the reservation of, the power of Declarant to make, execute and record an amendment under this Section.

Section 9.5 Amendment of Declaration by Owners. Except as otherwise provided in this Declaration and subject to provisions elsewhere contained in this Declaration requiring the consent of Declarant or others, any provision, covenant, condition, restriction or equitable

servitude contained in this Declaration may be amended or repealed at any time and from time to time upon approval of at least a majority of the total number of votes of the Members of the Association entitled to be cast, including after Declarant Control at least twenty-five percent (25%) of the votes entitled to be cast by the Members of the Association who own Residential Lots or Units and at least twenty-five (25%) of the votes entitled to be cast by the Members of the Association who own Commercial Lots or Units. The amendment or repeal shall be effective upon the recordation in the office of the Clerk and Recorder of Garfield County, State of Colorado of a certificate setting forth the amendment in full and certifying that the amendment has been approved as set forth above. Anything in the foregoing to the contrary notwithstanding, Sections of this Declaration concerning obtaining the approval of the Town of New Castle may not be amended without the written consent of the Town of New Castle.

Section 9.6 Exemption. The Declarant and the Declarant's activities shall, in all respects, comply with the provisions of the PUD Development Plan approved by the Town of New Castle. However, neither the Declarant, nor any of the Declarant's activities shall be subject to any of the other provisions in this Declaration or subject to the control or the jurisdiction of the LRB. The Declarant shall have the right, power, and authority to grant a lot or lots temporary or perpetual relief or exemption so granted shall be reduced to writing, executed by the Declarant, acknowledged in the manner of a deed and recorded in the office of the Clerk and Recorder of Garfield County, Colorado, before the same shall become effective. The Declarant may assign, in whole or in part, any of its privileges, exemptions, rights, and duties under this declaration to any other party.

Section 9.7 Captions. All captions and titles used in this Declaration are intended solely for convenience of reference and shall not enlarge, limit or otherwise affect that which is set forth in any paragraph, section or article hereof.

Section 9.8 Interpretation. The provisions of this Declaration shall be liberally construed to effectuate their purposes of creating a uniform plan for the development of the Community and of promoting and effectuating the fundamental concepts as set forth in the recitals of this Declaration. This Declaration shall be construed and governed under the laws of the State of Colorado.

Section 9.9 Singular Includes the Plural. Unless the context otherwise requires, the singular shall include the plural, and the plural shall include the singular, and each gender referral shall be deemed to include the masculine, feminine and neuter.

Section 9.10 Validity of Amendments. As provided by the Act, any action to challenge the validity of an amendment of this Declaration must be brought within one year after the amendment is recorded in the real property records of Garfield County, Colorado.

Section 9.11 No Waiver. In no event will the Association's failure to enforce any covenant, restriction or rule provided for in the Act, this Declaration, the Articles, the Bylaws or the Rules constitute a waiver of the Association's right to later enforce such provision or any

other covenant, restriction or rule.

Section 9.12 Recitals. The Recitals set forth above are incorporated into and are a material part of this Declaration.

ARTICLE 10 ALTERNATIVE DISPUTE RESOLUTION

IMPORTANT NOTICE: Agreement to Encourage Resolution of Disputes; Exclusive Procedures; Statutes of Limitation. Declarant, the Association, and their respective officers and directors, all Owners, and any person not otherwise subject to the Declaration but who agrees to submit to the procedures set forth in this Article (these “Procedures”), including all construction professionals as that term is defined in C.R.S. §13-20-802.5(4) (each of the foregoing being referred to as a “Party”), hereby agree to encourage the amicable resolution of disputes involving the Property and all of its improvements without the costs of litigation. Accordingly, each Party covenants and agrees to submit all Claims (as defined below) to the Procedures set forth herein and not to a court of law. **All Parties hereby agree to the mandatory mediation and arbitration of all Claims as set forth in this Article and irrevocably waive any right to trial of any Claim by jury or otherwise in a court of law.**

Section 10.01 Procedures Sole Remedy. Each Party agrees that these Procedures shall be the sole and exclusive remedy that each Party shall have for any Claim. Should any Party commence litigation or any other action against any other Party in violation of the terms of this Article, such Party shall reimburse all costs and expenses, including reasonable attorneys' fees, incurred by the other Party(ies) in such litigation or action within ten (10) days after written demand. The Parties understand and agree that no Claim may be initiated after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitation or statute of repose.

Section 10.02 Purpose. Without modifying or restricting the scope of these Procedures and as a statement of clarification only, the purpose and intent of these Procedures is to foster constructive dialogue between the Parties, to permit corrective measures to be implemented without the necessity of final settlement documentation, to inform Parties of implications related to certain Claims that may not otherwise be readily apparent to such Parties, and to assist the Parties in resolving Claims, if possible, *before* incurring significant legal and other expenses, particularly through the informal Procedures set forth in Section 10.05 below.

Section 10.03 Definitions.

- (a) Claim. As used in this article, the term “Claim” shall mean all claims, disputes and other controversies between one Party and another Party, regardless of how the same may have arisen or on what it might be based, excepting only those matters identified as exclusions in this Section below. Without limiting the generality of the foregoing, “Claim” shall include all claims, disputes or

controversies relating to or arising out of, in whole or in part, any of the following: (a) any purchase and sale agreement (“Agreement”) between Declarant and any Owner; (b) the Property or any Block, Lot or Unit (as defined in any such Agreement); (c) the purchase of the Property or the Unit; (d) the interpretation, application or enforcement of any of the Association Documents; (e) the soils of any property that lie within the Property or the presence of radon and/or mold within any Unit or other areas within the Property; (f) land development, design, construction and/or alteration of any of the improvements within the Property and/or any alleged defect therein; (g) any rights, obligations or duties of any Party under any of the Association Documents or any warranty, whether express, implied or limited, owed by a Party; (h) any limited warranty agreement between Declarant and any Owner and/or the Association; or (i) any breach of any of the foregoing referenced documents.

Notwithstanding the foregoing, the following will not be considered “Claims” unless all parties to the matter otherwise agree to submit the matter to the Procedures set forth in this Article: (i) any suit by the Association to collect assessments or other amounts due from any Owner, (ii) any suit or other action by the Association or Declarant to act under or enforce any provisions of this Declaration relating to additions or alteration of improvements by Owners and/or any restrictive covenants or obligations of this Declaration, including any suit to obtain a temporary restraining order or injunction (or equivalent emergency equitable relief) or such other ancillary relief as the court may deem necessary, and (iii) any suit between Parties, which does not include Declarant or the Association as a party.

- (b) Defect Claim. Any Claim involving the development, design, construction and/or alteration of the Property or any improvement within the Property and/or any alleged defect therein, however arising, is referred to herein as a “Defect Claim” and the alleged defect, the “Alleged Defect.” The Association, its officers, directors and members, and Owners generally acknowledge, understand and agree that not every necessary repair or replacement of an improvement within the Property is due to a design or construction defect and, similarly, Declarant and other construction professionals that are Parties hereunder generally acknowledge, understand and agree that not every necessary repair or replacement of an improvement is due to faulty required maintenance of or damage to such improvement. Often, such repair and replacement issues arise from a combination of issues that may or may not include the original design and construction, the level of inspection and maintenance programs (or lack thereof) and the existence of other factors such as unusual weather events or conditions, improper use and/or unforeseen wear and tear. This Article supports a proper evaluation of all factors and encourages a collaborative and comparative approach to responsibility.

Section 10.04 Association and Owner Responsibilities. The Association and its Executive Board and each Owner understand and acknowledge the importance of a regular inspection and maintenance program for the Property. The Association and each Owner shall perform such recommended inspection and maintenance and shall make all necessary repairs and maintenance called for to reasonably address the results of these inspections and to maintain the Property and its Units to a level consistent with its original quality, ordinary wear and tear excepted. Further, the Executive Board and each Owner shall cooperate, at no cost or expense to them, with all inspections that may be undertaken by or at the request of the Declarant on or with respect to the Property or its Units and any improvement thereon or therein. The Association and each Owner understand, assume the risk and agree that, if the Association or such Owner fails to follow the inspection, maintenance and repair requirements and standards contained in such manuals or materials delivered to them and such failure causes, whether in whole or in part, damage to the Property or its Units, to any improvement within the Property or to other property, the resulting damage shall not be deemed to be the result of a design or construction defect.

Section 10.05 Informal Procedures.

- (a) Association Meetings. From the date of recording this Declaration until eight (8) years following the last sale of a Unit by Declarant, notices of Association and director meetings (including notice of agenda items relating to potential Defect Claims) shall be provided to Declarant, and Declarant and/or its representative(s) shall be entitled to attend and participate in at least one (1) meeting of the Association's members to discuss any potential Claim against Declarant. The Declarant and the Executive Board agree to use their respective good faith efforts to engage in constructive dialogue toward the goal of resolving any design or construction defects.
- (b) Initial Notice. Any Party asserting a Claim ("Claimant") against another Party ("Respondent") shall give written notice to each Respondent and to the Executive Board stating Claimant's good faith description of: (i) the nature of the Claim, including the persons involved and the Respondent's role in the Claim, and (ii) the Claimants' desire to meet with the Respondent to discuss in good faith, ways to resolve the Claim. In that legal and professional fees are discouraged at this stage of these Procedures, no statement as to the legal basis of the Claim or of any proposed remedy is necessary.
- (c) Right to be Heard; Negotiation. Any Respondent shall have the right to be heard by the Claimant and, if any Claimant is the Association, the Claimant shall make itself reasonably available upon the request of Respondent to meet in person and to confer for the purpose of resolving the Claim. The Parties shall confer and negotiate in good faith toward such resolution for a minimum period of forty-five (45) days after the date that the Claimant has provided notice to each Respondent pursuant to Section 10.05(b) above. Notwithstanding such minimum negotiations period, the Parties are encouraged throughout these Procedures to attempt to

resolve any differences between them through ongoing communications and informal dialogue. Any settlement of the Claim through discussion and negotiation shall be documented in writing and signed by the Parties in the manner described below.

- (d) Right to Inspect, Cure and Correct. Any Respondent shall have the right (without obligation), before the institution by the Claimant of binding arbitration below, to inspect, cure and correct any improvement or condition within the Property with respect to a Defect Claim, as follows:
- i. In addition to other rights and obligations set forth in this Article, a Respondent may elect to inspect the Alleged Defect, in which event the Respondent shall complete the initial inspection and testing within thirty (30) days after the date that the Claimant has provided notice to each Respondent pursuant to Section 10.05(b) above, and at a mutually agreeable date and time. The Respondent shall bear all costs of inspection and testing, including to repair any damage caused by the inspection and testing. Before entering onto the Property for the inspection, the Respondent shall supply the Claimant with proof of liability insurance coverage. The Respondent shall, upon request, allow the inspection to be observed and recorded or photographed. Nothing that occurs during a Respondent's inspection may be used or introduced as evidence to support a defense of spoliation of evidence by the Claimant or any potential party in subsequent litigation.
 - ii. Within sixty (60) days of completion of the initial inspection or testing, the Respondent may elect to repair some or all of the Alleged Defects by sending a written notice of election to repair to the Claimant. Notwithstanding any tolling provided by law, the applicable statutes of limitation and repose on any and all Claims relating to the Alleged Defects shall be tolled (i) from the completion of the initial inspection and/or testing until (a) Respondent's written notice of election to repair, or (b) the expiration of sixty (60) days, whichever is sooner; and (ii) from the date of any written notice of election to repair by Respondent until sixty (60) days after substantial completion of the repairs. This tolling applies to any and all Claims relating to Alleged Defects for which Claimant has given written notice pursuant to subparagraph 10.05(b) (regardless of whether Respondent has elected to repair none, some or all of the Alleged Defects). If the Respondent elects to repair some or all of the Alleged Defects, then (i) Respondent has the right to do so and the Claimant may not, directly or indirectly, impair, impede or prohibit the Respondent from making repairs; and (ii) until after the substantial completion of the repairs (a) the Claimant shall not file or pursue final binding arbitration (but may pursue mediation), and (b) if the Claimant is the Association, the Claimant shall not undertake the procedures for a consensus vote for Association action set forth in

subparagraph 10.06(d). With any notice of election to repair, Respondent shall provide to Claimant a list of the Alleged Defects that Respondent has elected to repair, a detailed explanation of the repair work to be performed and the reasonably expected completion date for the repairs. The notice shall also include the name of any contractors the Respondent intends to employ for the repairs. Claimant shall promptly cooperate with the Respondent to schedule the repairs and provide reasonable access to the Property (including Common Areas and Units) for the repairs.

- iii. For the purpose of exercising the rights to inspect, cure, correct and repair set forth above, Declarant reserves for itself, its designees, the Association and its designees, a perpetual nonexclusive easement of access throughout the Property (including Common Area and Units) to the extent reasonably necessary to exercise such rights.
- iv. Within ten (10) days after receipt of the Respondent's notice of election to repair, a Claimant may deliver to the Respondent a written objection to the proposed repair if the Claimant believes in good faith that the proposed repairs will not remedy the Alleged Defect. The Respondent may elect to modify the proposal in accordance with the Claimant's objection or may proceed with the scope of work set forth in the original proposal.
- v. If the Respondent fails to send a notice of election to repair or otherwise strictly comply with this Section within the specified time frames, or if the Respondent does not complete the repairs within the time set forth in the notice of election to repair, the Claimant shall be released from the requirements of this Section and may proceed with the formal procedures set forth below. Notwithstanding the foregoing, if the Respondent notifies the Claimant in writing before the stated completion date that the repair work will not be completed by the completion date, the Respondent shall be entitled to one reasonable extension of the completion date.
- vi. The Respondent shall notify the Claimant when repairs have been completed. The Claimant shall have ten (10) days following the completion date to have the work inspected to verify that the repairs are complete and satisfactorily resolved the Alleged Defect. A Claimant who believes in good faith that the repairs made do not resolve the Alleged Defect may proceed with the formal procedures set forth below.
- vii. The specific materials and workmanship related to the repair work performed by the Respondent shall be warranted against material defects for a period of one (1) year, which warranty shall be in addition to any express warranties on the original work and shall be subject to the same terms and

conditions of the original express warranty, but which repair work shall not be construed to be an “improvement” to real property for purposes of C.R.S. § 13-80-104.

- viii. Any Alleged Defect discovered after repairs have been completed shall be subject to the same requirements of this Article if the Respondent did not have notice or an opportunity to repair the new Alleged Defect.
- ix. No Requirement for Final Settlement to Begin Repairs; Settlement Proposal. The informal Procedures set forth in this Section are for the purpose of encouraging early resolution of Claims and no formal written settlement or other agreement shall be required for inspection and corrective work to occur pursuant to this Section. No Party shall be deemed to have waived any rights or Claims by reason of such corrective work, and the Claimant shall be entitled to monitor the effectiveness of the corrective measures instituted.
- x. Alternatively, if the Respondent desires a formal settlement agreement before commencing corrective measures or other action to resolve the subject matter of the Claim, the following Procedures may be employed:
 - (a) Within thirty (30) days following completion of the inspection process, the Respondent may give Claimant written notification of its settlement proposal, including, in the case of a proposal to remedy a Defect Claim, a report of the scope, findings and results of the inspection, the damage caused by the Alleged Defect and a description of and a timetable for the work necessary to remedy the Alleged Defect.
 - (b) Within fifteen (15) days after its receipt of Respondent's settlement proposal, Claimant shall notify Respondent of its acceptance or rejection thereof. Failure to give such notice shall be deemed to be a rejection of the proposal.
 - (c) If the settlement proposal for remedial work is accepted, Claimant and Respondent shall endeavor to document the settlement proposal in writing within thirty (30) days after acceptance, which settlement shall be signed by the Parties in the manner described below.
- xi. Effect of Corrective Work. It is acknowledged and agreed by all Parties and by any guarantors, insurers and/or indemnitors of the Parties that any work conducted pursuant to this Section 10.05(d): (a) is in the nature of corrective or repair work and does not constitute nor shall be asserted or construed to be an “improvement” to real property for purposes of C.R.S. § 13-80-104, and (b) unless part of a written settlement agreement signed by the Claimant and each Respondent, does not constitute nor shall be asserted or

construed to be a voluntary payment or assumption of a voluntary obligation without insurer consent under any applicable commercial general liability insurance policy.

- (e) Broad Construction. The Informal Procedures set forth in this Section 10.05 are designed to encourage the good faith resolution of a Claim or appropriate correction of improvements and the right of the Respondent to be heard and to inspect and correct shall be ongoing and construed liberally throughout all of the Procedures set forth in this Article so as to permit the same, for example but not limitation, as there arise new issues, legal theories, engineering opinions, developments with insurers, and other developments and information, even if after the formal dispute resolution procedures commence as described below. Accordingly, the informal and formal dispute resolution procedures are anticipated to run concurrently from time to time and the Parties agree to reasonably, timely and in good faith cooperate with each other to respond to requests, to permit the rights set forth in these Procedures and to facilitate the processes of these Procedures toward the goal of a successful and voluntary resolution of Claims.

Section 10.06 Formal Notice and Association Consensus.

- (a) At any time following the forty-five (45) day negotiation period described in the Informal Procedures above (or following such longer period as the Parties may agree), the Claimant may provide written formal notice to each Respondent stating (i) the nature of the Claim, including if applicable a list of any alleged construction defects and a description, in reasonable detail, of the type and location of such defects, the damages claimed to have been caused thereby, and Respondent's responsibility for the Claim, (ii) the legal or contractual basis of the Claim (*i.e.*, the specific authority out of which the Claim arises), (iii) the date on which the Claim first arose, and (iv) the specific relief and/or proposed remedy sought. Notwithstanding the foregoing or any contrary provision herein, the Claimant shall, in addition to complying with these Procedures, follow the alternative dispute resolution procedures set out in the Construction Defect Action Reform Act, §§ 13-20-801, *et seq.*, C.R.S., as it may be amended from time to time ("CDARA") and the procedures set forth in §§ 38-33.3-303.5, *et seq.*, C.R.S. ("CCIOA Construction Defect Procedures") with respect to any Defect Claim, and the initial formal notice required under CDARA and required pursuant to § 38-33.3-303.5(l)(e), C.R.S., may be combined with the formal notice of Claim required by this Section. Formal written notice as provided in this Section, following the satisfaction of the Association Consensus Vote (defined below), if applicable, is required as an express condition to commence the resolution Procedures set forth in this Section and the following sections.
- (b) Association Defect Claims. Notwithstanding any contrary provision herein, no

formal notice of Claim under Section 10.06 (including, without limitation, a Notice of Claim under CDARA) may be made by a Claimant (a) if the Claim is a Defect Claim which relates, in whole or in part, to the Common Area (including the Limited Common Area) of the Property or to any portion of the Units that is the responsibility of the Association to maintain, repair, and replace or to any Defect Claim that the Association intends to assert on its own behalf or on behalf of Owners (referred to herein as an "Association Defect Claim"), and (b) unless and until the Procedures set forth in this Section below are satisfied. The Parties understand and agree that the Procedures of this Section 10.06 are essential to the protection of individual Owners who may not understand the implications and effects of the assertion of an Association Defect Claim by the Association, including, without limitation, the possible impact of such Claim on sales of Units within the Property and/or the ability of Owners to borrow funds when an Owner's Unit is being pledged as collateral for a loan.

- (c) Power of Attorney to Association. The Association is hereby designated to act as the exclusive representative of all Owners in asserting any Association Defect Claim, and each Owner does hereby appoint the Association to exclusively act under its power of attorney (which power shall be irrevocable) with respect to any Association Defect Claims, including the right to compromise and settle the same. No Owner shall assert an Association Defect Claim except through the Association.
- (d) Consensus Vote for Association Action. Notwithstanding anything contained in these Procedures to the contrary and in addition to any requirements prescribed by law, before asserting a Claim the Association shall do the following:
 - i. The Executive Board of the Association, following the approval of an Association Defect Claim by a majority of all Directors, shall mail or deliver written notice to each Owner at the Owner's last-known address described in the Association's records and to each Respondent containing all of the information and disclosures required by § 38-33.3-303.5(1)(c), C.R.S., and, to the extent not required by such Statute, the following: (a) the manner in which the Association proposes to fund the cost of the Association Defect Claim, including any proposed special assessments or use of reserves, (b) the anticipated duration of the Association Defect Claim, the likelihood of its success, and the risks to which the Association is exposed (*e.g.*, an assertion of counter-claims and/or other potential liability to the Association), (c) a reasonable assessment and explanation of the anticipated impact of the Association Defect Claim on the marketability of Units for sale within the Property and the impact on the ability of Owners to refinance and buyers of Units to secure financing, explained for both during the pendency of the Association Defect Claim and after its resolution, together with a prominent statement advising

Owners if it is concluded that any such impact does exist, (d) a prominent statement advising Owners that the existence of the Association Defect Claim may represent a material matter requiring legal disclosure to lenders, purchasers, auditors and/or other appropriate parties, and (e) providing proper notice for a meeting of Owners to be held not sooner than ten (10) days or longer than fifteen (15) days after such mailing, at which Owners shall discuss (but not yet vote) on whether to approve the Association Defect Claim as described below. A failure to hold the meeting within this time period voids the subsequent vote. A quorum is not required at the meeting. Respondents will be invited to attend and will have an opportunity to address the Owners concerning the Association Defect Claim as required by § 38-33.3-303.5(1)(c), C.R.S.

- ii. The Association Defect Claim must be approved and authorized by the affirmative written vote during the voting period, which voting period commences upon the conclusion of the Owner meeting described in the preceding subparagraph and extends to the date falling ninety (90) days after the date of the notice described in the preceding subparagraph (or, if earlier, the date when the Association determines that the Association Defect Claim is either approved or disapproved) (the "Voting Period"), by delivery of a written ballot or other written form approved by the Executive Board directing the specific vote of the Owner (but not by proxy granting discretion to the proxy holder as to how to vote), of Owners holding at least a majority of the total voting rights in the Association (the "Association Consensus Vote").
- iii. The Association Consensus Vote must be obtained before the expiration of the Voting Period; otherwise the Owners shall be deemed to have declined to provide their approval of Association Defect Claim.
- iv. Notwithstanding any contrary provision or lack of provision herein, the Association shall fully and timely comply with all requirements of §§ 38-33.3-303.5, *et seq.*, C.R.S., as supplemented by this Section 10.06. Further, notwithstanding this Section 10.06(d), the notice to Owners, meeting and vote set forth in this Section 10.06(d) is not required for an Association to proceed when the Association is the contracting party for the performance of labor or purchase of services or materials.

Section 10.07 Limit on Director and Officer Liability. No director or officer of the Association shall be liable to any person or entity for failure to institute or maintain or bring to conclusion a cause of action, mediation or arbitration for an Association Defect Claim if the following criteria are satisfied: (i) the director or officer was acting within the scope of their or her duties; (ii) the director or officer was not acting in bad faith; and (iii) the act or omission was not willful, wanton, grossly negligent or fraudulent.

Section 10.08 Tolling. All statutes of limitation and repose applicable to an Association Defect Claim shall be deemed tolled as provided in §§ 38-33.3-303.5, *et seq.*, C.R.S.

Section 10.09 Mandatory Mediation. Following the formal written notice discussed above and, if applicable, the approval of the Association Consensus Vote within the Voting Period, the Claimant shall have thirty (30) days to submit the Claim to mediation with an entity designated by the Association (if the Association is not a party to the Claim) or to an independent agency providing dispute resolution services in the County in which the Property is located, unless otherwise agreed by the Parties. A mediator shall be selected no later than forty-five (45) days after the Claimant has given notice to the Respondent of its submittal to mediation and, if the Association is a Party and the Parties are unable to agree on a mediator, one shall be chosen by the American Arbitration Association. Each Party shall bear its own costs of the mediation, including attorneys' fees, and each Party shall share equally all charges rendered by the mediator.

- (a) If the Claimant does not submit the Claim to mediation within such time, or does not appear for the mediation when scheduled, the Claimant shall be deemed to have waived the Claim, and the Respondent shall be released and discharged from any and all liability to Claimant on account of such Claim; provided, nothing herein shall release or discharge Respondent from any liability to any person other than the Claimant.
- (b) If the parties do not settle the Claim within thirty (30) days after submission of the matter to mediation, or within such time as determined reasonable by the mediator, the mediator shall issue a notice of termination of the mediation proceedings indicating that the parties are at an impasse and the date that mediation was terminated. The Claimant shall thereafter be entitled to submit the Claim to binding arbitration as provided below.
- (c) Any settlement of the Claim through mediation or through negotiation shall be documented in writing and signed by the Parties. If any Party thereafter fails to abide by the terms of such agreement, then any other Party may file suit or initiate administrative proceedings to enforce such agreement without the need to again comply with the Procedures set forth in this Article. In such event, the Party taking action to enforce the agreement or award shall, upon prevailing, be entitled to recover from the non-complying Party (or if more than one non-complying Party, from all such Parties in equal proportions) all costs incurred in enforcing such agreement or award, including, without limitation, reasonable attorney's fees and court costs.

Section 10.10 Final Binding Arbitration. Upon termination of mediation as provided above, if Claimant desires to pursue the Claim, Claimant shall have forty-five (45) days to deliver an arbitration notice to Respondent(s) and to initiate final, binding arbitration of the

Claim under the auspices of the American Arbitration Association (“AAA”) in accordance with the AAA's Commercial or Construction Industry Arbitration Rules, as appropriate. If any Claim is not timely submitted to arbitration, or if Claimant fails to appear for the arbitration proceeding, then the Claim shall be deemed waived and abandoned, and Respondent(s) shall be released and discharged from any and all liability to Claimant arising out of any such Claim. The following arbitration procedures shall be applicable to each Claim that is arbitrated:

- (a) The arbitrator must be a person qualified, with applicable industry experience and/or legal experience, to consider and resolve the applicable Claim.
- (b) No person shall serve as the arbitrator where that person has any financial or personal interest in the result of the arbitration. Any person designated as an arbitrator shall immediately disclose in writing to all Parties any circumstance likely to affect the appearance of impartiality, including any bias or financial or personal interest in the outcome of the arbitration (“Arbitrator Disclosure”). If any Party objects to the service of any arbitrator within fourteen (14) days after receipt of the Arbitrator's Disclosure, such arbitrator shall be replaced in the same manner in which that arbitrator was selected.
- (c) The arbitration shall be presided over by a single arbitrator. Notwithstanding any other provision of this Article 10, if the Parties are unable to agree upon an arbitrator to resolve a Claim, they shall request from the AAA a list of qualified arbitrators. Promptly following their receipt of the list, the Parties shall meet in person or by telephone and shall follow the AAA procedures of ranking and striking names so as to determine the person who shall serve as the arbitrator. The cost of the list shall be split equally by the Parties.
- (d) The arbitrator shall hold at least one hearing in which the Parties, their attorneys and expert consultants may participate. The arbitrator shall fix the date, time and place for the hearing. The arbitration proceedings shall be conducted in the County in which the Property is located unless otherwise agreed by the Parties.
- (e) Discovery shall be limited to document disclosures as provided by the AAA, and no other discovery shall be conducted in the absence of an order of the arbitrator or express written agreement among all the Parties. The manner, timing and extent of any discovery shall be committed to the arbitrator's sound discretion, provided that under no circumstances shall the arbitrator allow more depositions or interrogatories than permitted by the presumptive limitations set forth in the Colorado Rules of Civil Procedure 30(a)(2)(A) and 33(a). The arbitrator shall levy appropriate sanctions, including an award of reasonable attorneys' fees, against any Party that fails to cooperate in good faith in discovery agreed to by the Parties or ordered by the arbitrator pursuant to this Section.
- (f) The arbitrator may, in their reasonable discretion, permit the Parties to submit pre-

hearing briefs, post-hearings briefs and/or proposed findings of fact and conclusions of law. The arbitrator shall also have authority to establish reasonable terms regarding inspections, destructive testing and retention of independent consultants, if applicable.

- (g) The Parties agree that where any Claim, dispute or other controversy existing between them is submitted to arbitration, and any other Party may have liability with respect thereto, all Parties agree that the third parties may be joined as additional Parties in the arbitration, or if a separate arbitration exists or is separately initiated, to the consolidation of all such arbitrations. By way of example only and not by limitation, in the event of an Alleged Defect, Declarant would have the right to join in the arbitration any construction professional or other third party whose acts or omissions allegedly caused or contributed to the damages.
- (h) The arbitration award shall address each specific Claim to be resolved in the arbitration, provide a summary of the reasons therefore and the relief granted, and be rendered promptly after the close of the hearing and no later than thirty (30) days from the close of the hearing, unless otherwise agreed by the Parties or required by the arbitration. The arbitration award shall be in writing and shall be signed by the arbitrator.
- (i) The arbitrator shall apply the substantive law of Colorado and may award injunctive relief or any other remedy available in Colorado.
- (j) The award rendered by the arbitrator shall be final and binding, may be filed with any court of competent jurisdiction in the County in which the Property is located in accordance with applicable law and judgment obtained thereon, and execution may issue. If any Party objects to entry of judgment upon any arbitration award entered pursuant to this Section, the Party that substantially prevails in any ensuing dispute concerning the entry of judgment upon such award shall be entitled to all reasonable attorneys' fees and costs incurred in the enforcement of the award.
- (k) The fees and costs of the arbitration, including without limitation the arbitrator and its consultants, shall be borne equally by the Parties.
- (l) Except as may be required by law or for confirmation of an arbitration award, neither a Party nor an arbitrator may disclose the existence or contents of any arbitration or arbitration award without the prior written consent of all Parties to the Claim.

Section 10.11 Amendments to this Article; Standing to Enforce. Notwithstanding anything to the contrary contained in this Declaration or any of the Association Documents, the

terms and provisions of this Article 10 inure to the benefit of Declarant, are enforceable by Declarant, and shall not ever be amended or nullified without the written consent of Declarant and without regard to whether Declarant owns any portion of the Property at the time of such amendment. BY TAKING TITLE TO A UNIT, EACH OWNER ACKNOWLEDGES AND AGREES THAT THE TERMS OF THIS ARTICLE 10 ARE A SIGNIFICANT INDUCEMENT TO THE DECLARANT'S WILLINGNESS TO DEVELOP AND SELL THE UNITS AND THAT IN THE ABSENCE OF THE PROVISIONS CONTAINED IN THIS ARTICLE, DECLARANT WOULD HAVE BEEN UNABLE AND UNWILLING TO DEVELOP AND SELL THE UNITS FOR THE PRICES PAID BY THE ORIGINAL PURCHASERS. Any amendment made without the requisite written consent of Declarant shall be null and void and shall have no effect. Further, all employees and agents of Declarant and all contractors, subcontractors, architects, engineers and other development professionals associated with the design or construction of any portion of the Property (each a "Third Party Beneficiary") are third-party beneficiaries of this Article and of the terms and conditions contained herein, including without limitation the requirement for binding arbitration, and any Third Party Beneficiary has standing to enforce the terms and conditions of this Article, including without limitation to compel binding arbitration.

Section 10.12 Reformation. The Parties agree that reliance upon courts of law and equity can add significant costs and delays to the process of resolving Claims. Accordingly, they recognize that an essential part of the Declaration is this Article and its agreement between and among the Parties to provide for the submission of all Claims to informal negotiation and correction efforts, mediation and final and binding arbitration. Therefore, if any court or arbitrator concludes that any provision of these Procedures is void, voidable or otherwise unenforceable, the Parties understand and agree that the court or arbitrator shall reform each such provision to render it enforceable, but only to the extent absolutely necessary to render the provision enforceable and only in view of the Parties' express desire that the merits of all Claims be resolved only by arbitration and, to the greatest extent permitted by law, in accordance with the principles, limitations and procedures set forth in these Procedures.

Section 10.13 Notices; Computation of Time. All notices given or required by these Procedures shall be in writing and shall be deemed given and received (a) when hand delivered to the intended recipient by whatever means; (b) three business days after the same is deposited in the United States mail, with adequate postage prepaid and sent by certified mail, return receipt requested, or (c) one business day after the same is deposited with an overnight courier service of national reputation, with the delivery charges prepaid. In the event any date called for herein falls on a Saturday, Sunday or legal holiday for which U.S. mail service is not provided, such date shall be extended to the next business day following such Saturday, Sunday or holiday.

IN WITNESS THEREOF, Declarant has caused this Declaration of Longview at the Lakota to be executed by its duly authorized agents this __ day of _____ 2022.

RG Lakota II, LLC,
a Colorado limited liability company

By: _____
Manager and Authorized Agent

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing Declaration was acknowledged before me on this ____ day of _____, 2022, by _____ as Manager and Authorized Agent of RG Lakota II, LLC, a Colorado limited liability company.

Witness my hand and official seal.

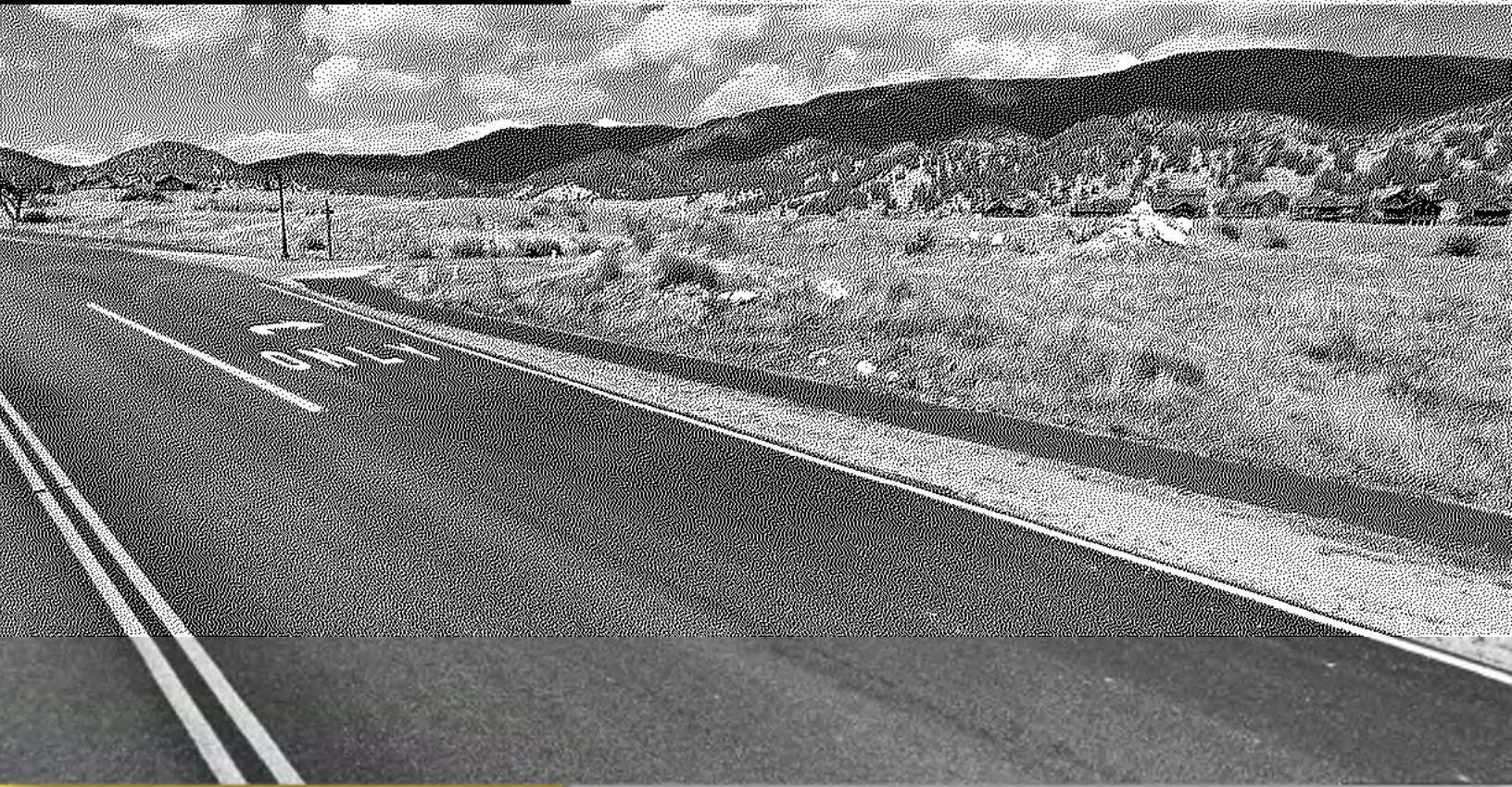
Notary Public

My Commission Expires: _____

EXHIBIT A
Easements and Other Encumbrances Affecting Title to the Property
(to be attached)

Lakota Canyon¹¹⁹ Ranch

Traffic Impact Study



Date: March 21, 2022

Submitted To:

The Romero Group, LLC
350 Market Street, Suite 304
PO Box 4100
Basalt, CO 81621-4100

Submitted By:

Fox Tuttle Transportation Group, LLC
1624 Market Street, Suite 202
Denver, CO 80202



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LAKOTA CANYON RANCH DEVELOPMENT

TRAFFIC IMPACT STUDY

1.0 Introduction

The Fox Tuttle Transportation Group has prepared this traffic impact study for the proposed Lakota Canyon Ranch Mixed-Use Development in New Castle, Colorado. The property includes 16± acres that is located north of Castle Valley Boulevard and on both sides of Faas Ranch Road. The property is currently vacant and surrounded by residential homes, Lakota Links golf course, and the fire station. The Lakota Canyon Ranch project includes a mix of residential homes and commercial/office uses next to the south end of the golf course. The property will be developed over time and anticipated to be completed by 2030. **Figure 1** provides a vicinity map for the proposed project.

The purpose of this study is to assist in identifying potential traffic impacts within the study area as a result of the Lakota Canyon Ranch Development. The traffic study addresses existing, short-term, and long-term peak hour intersection conditions in the study area with and without the project-generated traffic. The information contained in this study is anticipated to be used by Town of New Castle staff in identifying any intersection or roadway deficiencies and potential improvements for the build-out condition and long-term future scenarios. This study focused on the weekday AM and PM peak hours which represents the periods of highest volumes on the adjacent streets.

2.0 Project Description

The Lakota Canyon Ranch development plans to develop vacant land into a variety of residential and commercial uses to support the existing and future residents and visitors of New Castle. The land use plan for the property proposes a variety of residential unit types, including single-family homes, townhomes, and apartments. The commercial spaces are proposed to consist of retail space, small office space, a restaurant, and medical offices. There are several buildings that will include residential units above the commercial space to support a mixed-use community.

For the purpose of this traffic study, the following land uses were assumed:

- 29 single-family detached homes
- 20 townhomes
- 136 multi-family apartments
- 12,730± square feet of medical office/clinic space
- 36,000± square feet of retail/office/restaurant space

For conservative purposes, it was assumed that Lakota Canyon Ranch Mixed-Use Development will be completed by Year 2030. The analysis also includes the scenario that the project is constructed by Year 2025 to understand the potential roadway and intersection needs if the project were completed earlier. Note that these land uses represent one scenario that could adjust slightly based on market dynamics. It is anticipated that this report evaluates the highest density and mix of uses that would be built within the Lakota Canyon Ranch property.

The project proposes to provide three (3) accesses into the development; two along Faas Ranch Road and the extension of Lakota Drive. The first access on Faas Ranch Road will be a T-intersection with the addition of an access road into the southeast area of the project. This access is proposed to be located approximately 125 feet north of Castle Valley Boulevard, with full movement and side-street stop-control. The second access on Faas Ranch Road is proposed to provide entry into both sides of the development. This access is proposed to be located approximately 180 feet north of Access 1, with full movement and side-street stop control.

The Lakota Canyon Ranch project will extend Lakota Drive (existing local roadway) through the site to provide additional access, connecting to Faas Ranch Road. Lakota Drive connects to White Horse Drive and is approximately 195 feet in length currently to serve a few existing homes. With the proposed project, Lakota Drive will be extended to connect to Faas Ranch Road to serve the existing and future community. The Lakota Canyon Ranch project proposes to construct the extended roadway to include one travel lane per direction and on-street parking. It is proposed that three (3) access intersections be built on the new Lakota Drive to serve the mixed-uses and provide safe crossing locations for pedestrians. The conceptual site plan and accesses are provided on **Figure 2**.

3.0 Study Considerations

3.1 Data Collection

Intersection turning movement volumes were collected in November 2021 at four (4) existing intersections during the weekday AM and PM peak hours, including pedestrians and bicyclists. Daily traffic volumes were also collected at two locations on Castle Valley Boulevard, one location on Blackhawk Drive, and one location on Faas Ranch Road. The existing traffic volumes are illustrated on **Figure 3**. The existing intersection geometry and traffic control are also shown on this figure. Count data sheets are provided in the **Appendix**.

After analyzing nearby CDOT collected count data, it was determined that no adjustments due to COVID were needed since data indicated daily volumes are similar or greater than volumes collected in Year 2019. The CDOT continuous traffic count station on I-70 near the Town of Silt (#103011) counted approximately 19,350 vehicles per day (vpd) during the week of November 2019. In November 2021, the same count station counted 22,670 vpd.

3.2 Evaluation Methodology

The traffic operations analysis addressed the roundabout intersection operations using the procedures and methodologies set forth by the *Highway Capacity Manual (HCM)*¹. Existing peak hour factor were applied to the intersections for the existing, short-term, and long-term scenarios. Study intersections were evaluated using Synchro software (v10).

3.3 Level of Service Capacity Analysis

A Level of Service analysis was conducted to determine the existing and future performance of the study area intersections and accesses to determine the most appropriate intersection traffic controls and auxiliary lanes for future conditions.

To measure and describe the operational status of the study intersections, transportation engineers and planners commonly use a grading system referred to as “Level of Service” (LOS) that is defined by the *HCM*. LOS characterizes the operational conditions of an intersections traffic flow, ranging from LOS A

¹ *Highway Capacity Manual*, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 6th Edition (2016).

(indicating very good, free flow operations) and LOS F (indicating congested and sometimes oversaturated conditions). These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with traveling through the intersections. The intersection LOS is represented as a delay in seconds per vehicle for the intersection as a whole and for each turning movement.

Typically, LOS A through C is considered to be acceptable for the overall intersection operations and LOS D overall during peak hours is acceptable. Individual movements may be allowed to fall to LOS E at intersections if the queuing is reasonable and mitigation is not warranted. Minor movements at unsignalized intersections, such as left turns onto a major arterial, may be allowed to fall below LOS D if mitigation is not feasible or necessary. Criteria contained in the *HCM* is applied for these analyses in order to determine peak hour LOS for each scenario. A more detailed discussion of LOS methodology is contained in the **Appendix** for reference.

4.0 Existing Conditions

4.1 Roadways

The study area boundaries are based on the amount of traffic to be generated by the project and potential impact to the existing roadway network. The primary public roadways that serve the project site are discussed in the following text and illustrated on **Figure 1**.

Castle Valley Boulevard is a two-lane, minor arterial roadway that extends from Midland Avenue/Buford Road (west) to US Highway 6 (south), approximately 2.1 miles in length. This roadway becomes County Road 240 south of US Highway 6, which travels over I-70 and provides a full movement interchange. Castle Valley Boulevard provides access to several residential neighborhoods, the Lakota Links golf course, the New Castle Plaza Shopping Center, the Lakota Canyon Ranch Fire Station, Kathryn Senor Elementary School, and Riverside Middle School. Castle Valley Boulevard has a paved section between 35 feet and 58 feet adjacent to the project site, with one through lane per direction and right-turn auxiliary lanes at Faas Ranch Road, Blackhawk Drive, and Clubhouse Drive. The posted speed limit is 30 miles per hour (mph) with an average upslope towards the northwest of approximately 4% adjacent to the project site. West of Clubhouse Drive, Castle Valley Boulevard currently serves approximately 5,150 vpd during the week and approximately 6,100 vpd south of Faas Ranch Road. Castle Valley Boulevard is the western boundary of the project property.

Faas Ranch Road is a two-lane, local roadway that leads to several single-family homes located along the side of the ridge. Faas Ranch Road has a paved section between 26 feet and 42 feet adjacent to the project site, with one through lane per direction and an average upslope of 4.5% from Castle Valley Boulevard towards the ridge. This roadway has a posted speed limit of 20 mph. Faas Ranch Road services roughly 305 vpd north of Castle Valley Boulevard. Note that there have been historic discussions to extend Faas Ranch Road to the east to connect to Bruce Road; however, there are several limitations to implementing this potential connection and this was not included in the traffic analysis.

Blackhawk Drive, White Horse Drive, and Lakota Drive are two-lane, local roadways that provide access to existing residents and the Lakota Links golf course. These roadways include one lane per direction and on-street parking on one or both sides of the street. Blackhawk Drive currently serves roughly 315 vpd. The paved cross-section on these local streets ranges from 30 feet to 36 feet and the posted speed limit is 20 mph.

4.2 Intersections

The study area includes four (4) existing intersections that are listed below with the current traffic control and were analyzed for existing and future year traffic operations:

1. Castle Valley Boulevard at Blackhawk Drive [side-street stop-control]
2. Castle Valley Boulevard at Faas Ranch Road/Lakota Fire Station [side-street stop-control]
3. Blackhawk Drive at White Horse Drive [side-street stop-control]
4. White Horse Drive at Lakota Drive [side-street stop-control]

The existing lane configuration at each of the study locations are illustrated on **Figure 3**.

4.3 Pedestrian and Bicycle

Along the north side of Castle Valley Boulevard, there is an 8-foot detached multi-use path that extends from the elementary school to US Highway 6. There is a similar 8-foot detached multi-use path on the south side of Castle Valley Boulevard which extends from US Highway 6 to nearly Blackhawk Drive. It is anticipated that the southern path will be completed as development occurs. Both multi-use paths transition to sidewalks as they approach the New Castle Plaza and US Highway 6. Faas Ranch Road has a sidewalk on the east side for the entire length. Blackhawk Drive, White Horse Drive, and Lakota Drive have sidewalks along both sides of the roads. There are no bike lanes on the study roadways, but bicyclists are permitted to ride on the roads and on the multi-use paths.

4.4 Transit

The Town of New Castle does not currently have a local transit service; however, it is serviced by the Roaring Fork Transportation Authority (RFTA) for regional transit. The Hogback route travels between Glenwood Springs and Rifle with stops along the way, including within New Castle. This route travels through Town via US Highway 6 with one park-n-ride west of Castle Valley Boulevard and another bus stop near 6th Street. Patrons that utilize RFTA buses can transfer to other routes that connect to communities, employment businesses, civic centers, shopping areas, and recreational spaces along State Highway 82 between Glenwood Springs and Aspen or Silt and Rifle to the west on I-70. Based on data collected by RFTA, 9% of workers that live in New Castle utilize transit service (*Efficiency Review for the Roaring Fork Transportation Authority, October 2016*).

4.5 Existing Intersection Capacity Analysis

The existing volumes, lane configuration, and traffic control are illustrated on **Figure 3**. The results of the LOS calculations for the intersections are summarized in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

All of the study intersections currently operate overall at LOS A in both peak periods with all movements operating at LOS C or better. The 95th percentile queues were estimated to be one vehicle or less at all of the study intersections.

5.0 Future Conditions

5.1 Annual Growth Factor and Future Volume Methodology

CDOT maintains a database of 20-year projected growth factors for all roadway segments that make up the state highway system in Colorado. In theory, these growth factors should include the additional traffic for developments, such as Lakota Canyon Ranch, that may develop within the next 20 years. For this project, CDOT's traffic growth factors for US Highway 6 within New Castle were reviewed. The resulting 20-year traffic growth factors used for this study are:

US 6 west of Castle Valley Boulevard: 1.23 = 1.0% annual growth rate
 US 6 east of Castle Valley Boulevard: 1.45 = 1.9% annual growth rate
Average: 1.34 = 1.5% annual growth rate

For conservative purposes, the estimated trips for Eagle Ridge's multi-family development project and Lakota Ridge Senior Housing project were added to the background volumes in addition to the growth rate. Using these assumptions, the Year 2025 background traffic is summarized on **Figure 4** and the Year 2030 background traffic is summarized on **Figure 5**. Note that the 20-year horizon was not evaluated since this was included in the Lakota Canyon Ranch and Castle Valley Ranch master plans and engineering reports.

5.2 Year 2025 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the Year 2025 background scenario and to identify any capacity constraints associated with background traffic. The background volumes, lane configuration, and traffic control are illustrated on **Figure 4**.

The Level of Service criteria discussed previously was applied to the study area intersections to determine the impacts with the short-term background volumes. The details of LOS for each movement are provided in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

In summary, the study intersections operate similarly to the existing conditions. Overall, the study intersections were calculated to operate at LOS A in both peak hours with all movements operating at LOS C or better. The 95th percentile queues were estimated to be one vehicle or less at all of the study intersections.

5.3 Year 2030 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the Year 2030 background scenario and to identify any capacity constraints associated with background traffic in the long-term scenario. The long-term background volumes, lane configuration, and traffic control are illustrated on **Figure 5**.

The Level of Service criteria discussed previously was applied to the study area intersections to determine the impacts with the long-term background volumes. The results of capacity analysis are shown in **Table 1** with the overall LOS and for each movement. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

In summary, the study intersections are anticipated to continue to operate overall at LOS A during both peak hours with all of the movements operating at LOS D or better. The 95th percentile queues were estimated to be one vehicle or less at all of the study intersections.

6.0 Future Conditions with the Lakota Canyon Ranch Project

6.1 Future Roadway Infrastructure

With the development of Lakota Canyon Ranch, it is anticipated that the intersection of Castle Valley Boulevard at Faas Ranch Road will need an eastbound left-turn lane and a southbound left-turn lane. If an eastbound left-turn lane is added to Castle Valley Boulevard, then a westbound left-turn lane should also be added to align the lanes across the intersection and provide easy access to the Fire Station. It appears that both roadways are currently wide enough to accommodate the additional lanes with restriping of pavement markings, which would need to be verified with survey and design. For the purpose of this study, it was assumed that the existing eastbound and westbound right-turns would remain.

Currently, Lakota Drive dead-ends at the Lakota Canyon Ranch property line. With the project, this roadway will be extended to Faas Ranch Road and provide internal access to the parcels within Lakota Canyon Ranch. Internal circulation on the southeast side of the project property will occur with internal access streets that wind around the site and connect to both proposed accesses on Faas Ranch Road. On the northwest side of the project property, the internal circulation will be centered around the extended Lakota Drive. Service and delivery vehicles will access Lakota Canyon Ranch via Faas Ranch Road and not Blackhawk Drive.

Parking will be provided on-site to serve the residents, employees, and visitors to Lakota Canyon Ranch. Refer to the separate parking study for details on parking demand and potential for shared parking. In summary, the proposed number of parking spaces is anticipated to adequately serve the calculated parking demand of the project.

6.2 Future Pedestrian, Bicyclist, and Transit Infrastructure

Lakota Canyon Ranch will construct sidewalks along Lakota Drive and throughout the site. A multi-use path will be provided along the west side of the property, connecting the existing multi-use path on Castle Valley Boulevard to Whitehorse Drive and to Lakota Drive. This multi-use path will meander between the existing homes located on Blackhawk Drive and future single-family homes in Lakota Canyon Ranch.

At this time, there is no transit infrastructure proposed on or near the project site since a local transit service does not exist and RFTA will most likely not travel up Castle Valley Boulevard as a local connection. If local transit service were to be provided in the future, Lakota Canyon Ranch would be an optimal location to provide a bus stop which is anticipated to reduce single-occupancy vehicle trips into and out of the site and potentially reduce the parking demand.

6.3 Trip Generation

A trip generation estimate was performed to determine the traffic characteristics of the proposed density and land uses of the Lakota Canyon Ranch development. The trip rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation Handbook and Manual*² were applied to estimate the traffic for the proposed land uses:

- #210 “Single-family Detached Housing”
- #215 “Single-family Attached Housing”
- #220 “Multi-family Housing (Low-Rise)”
- #221 “Multi-family Housing (Mid-Rise)”
- #720 “Medical-Dental Office Building”
- #820 “Shopping Center”
- #822 “Retail Plaza (<40k)”
- #912 “Drive-In Bank”
- #971 “Brewery Tap Room”

Table 3 provides the detailed trip generation estimates for the project (refer to the **Appendix**). The proposed project is expected to experience mostly new trips, also known as ‘primary trips’, as well as pass-by, internal, and non-auto trips which are discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered “new” trips. Primary trips would not have been made if the proposed project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis.

Pass-By Trips. A pass-by trip is an intermediate stop on route from an origin to the ultimate trip destination without route diversion. These are drivers that already utilize the adjacent roadways and choose to make a stop within the site and then continue to their destination. Pass-by trips do not create any increase in the traffic volumes within the primary impact area. In fact, the only impact of the pass-by trips is at the site driveways and adjacent intersections where through movements become turning movements into and out of the site. Therefore, pass-by trips have no additional impact on the road system beyond the site’s driveways or immediately adjacent intersections. With or without pass-by trips, the total trips to/from a project will remain the same. Pass-by was only applied to the commercial portions of the Lakota Canyon Ranch site. Per ITE data, the pass-by percentage for “Shopping Center” is 34% in the PM peak hour; 29% for “Drive-

² *Trip Generation Handbook and Manual, 10th Edition*, Institute of Transportation Engineers, 2017.

In Bank” in the AM peak hour; and 35% for “Drive-In Bank” in the PM peak hour. For pass-by trips, the methodology set forth in the ITE’s *Trip Generation Manual* (Chapter 10) was utilized.

Multi-Use (Internal) Trips. These internal trips occur from one land use or building to another within the site boundaries. Multi-use or multi-purpose trips typically do not affect the exterior site access points, nor add any additional traffic volumes to the adjacent street network. It was estimated that 5% of trips will be internal to the site.

Non-Auto Trips. These trips are those that are completed by walking, biking, or transit. The existing and future pedestrian and bicycle amenities will encourage employees, residents, and visitors to make non-auto trips to/from the Lakota Canyon Ranch project. The non-auto trips are assumed to be a 5%.

The Lakota Canyon Ranch project was estimated to generate approximately 3,494 daily trips with 215 trips in the AM peak hour and 439 trips in the PM peak hour, with roughly 20% as pass-by trips.

6.4 Trip Distribution and Assignment

The estimated trip volumes were distributed onto the study area street network based on existing traffic characteristics, land uses, and traffic patterns in the area, as well as regional growth and future roadway infrastructure. The assumed distributions are listed in **Table 4**.

Table 4: Trip Distribution Summary

To/From	Residential (Southeast)	Residential (Northwest)	Commercial (Southeast)	Commercial (Northwest)
North Castle Valley Boulevard to Faas Ranch Road	20%	0%	0%	0%
North Castle Valley Boulevard to Lakota Drive	0%	20%	35%	35%
South Castle Valley Boulevard to Faas Ranch Road	80%	50%	60%	60%
South Castle Valley Boulevard to Lakota Drive	0%	30%	0%	0%
West Blackhawk Drive / North Clubhouse Drive	0%	0%	3%	3%
East Faas Ranch Road	0%	0%	2%	2%

Figure 6A, Figure 6B, Figure 6C and Figure 6D illustrate the trip distribution for the residential trips on the southeast side of the project property, the residential trips on the northwest side of the project property, the commercial trips on the southeast side, and the commercial trips on the northwest side, respectively.

Using these distribution assumptions, the projected site traffic was assigned to the study area roadway network and proposed access for the weekday AM and PM peak hour periods. The site-generated volumes are shown on **Figure 7**.

6.5 Year 2025 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the development of the Lakota Canyon Ranch property in the short-term scenario. The site-generated volumes were added to the Year 2025 background volumes and are illustrated on **Figure 8**. The details of the LOS for each movement are listed in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

At the majority of the study intersections, the project trips minimally increase the delay with all of the intersections continuing to operate acceptably overall (LOS C or better). The capacity analysis indicated that most movements are operating acceptably in the AM and PM peak hours, with the following exceptions:

- **#4 – Castle Valley Boulevard at Faas Ranch Road:** This side-street stop-controlled intersection was calculated to operate overall at LOS A in the AM peak hour and LOS B in the PM peak hour. The southbound left-turn on Faas Ranch Road was estimated to operate at LOS E in the AM peak hour and LOS F in the PM peak hour resultant of the increased traffic turning onto Castle Valley Boulevard from the Lakota Canyon Ranch project. The 95th percentile queue was calculated to be up to 145 feet (about six vehicles), which would extend to the first proposed access intersection.

Recommendations: Consider signaling this intersection since the volumes meet the peak hour and four-hour signal warrant thresholds set forth by the *MUTCD*. Refer to the **Appendix** for signal warrant worksheets. The signal was estimated to improve all movements to LOS B or better in both peak hours. The 95th percentile queue on the southbound left-turn would be reduced to 87 feet (about four vehicles) and not impact the first access on Faas Ranch Road. The level of service and queuing results with this improvement is summarized in **Table 1** and **Table 2**, respectively.

The proposed access intersections on Faas Ranch Road were estimated to operate overall at LOS A in both peak hours with all approaches operating at LOS B or better. The 95th percentile queues on the side-street approaches were calculated to be no more than one vehicle.

The scenario that Lakota Canyon Ranch is fully built by Year 2025 is a very conservative assumption and it is likely that the full buildout will be phased over 10± years.

6.6 Year 2030 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the Lakota Canyon Ranch project in the long-term scenario. The site-generated volumes were added to the Year 2030 background volumes and are illustrated on **Figure 9**. The recommended signalization and additional auxiliary lanes presented in Year 2025 background + project were assumed to be implemented. The details of the LOS for each movement are listed in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

The project trips are anticipated to have little impact on the operations at the existing study intersections with the recommended improvements at Castle Valley Boulevard and Faas Ranch Road. The warranted signal at Castle Valley Boulevard and Faas Ranch Road would reduce the potential side-street delay from over two minutes to less than 20 seconds. If a signal were not installed, then the 95th percentile queue for the southbound left-turn would extend beyond the first access.

The proposed access intersections on Faas Ranch Road were estimated to operate overall at LOS A in both peak hours with all approaches operating at LOS B or better. The 95th percentile queues on the side-street approaches were calculated to be no more than one vehicle. No additional mitigation measures are recommended.

7.0 Queuing Analysis

A queuing analysis was performed to determine if the 95th percentile queues would be accommodated by the existing storage length, to determine the storage lengths for future auxiliary lanes, and if any of the queues would impact an upstream intersection/access. **Table 2** provides the existing or proposed storage lengths, as well as the 95th percentile queues for each existing and future scenario as calculated by Synchro (assuming each vehicle utilizes 25 feet of space). It should be noted that the 95th percentile queue length is a theoretical queue that is 1.65 standard deviations above the average queue length. In theory, the 95th

percentile queue would be exceeded 5% of the time based on the average queue length, but it is also possible that a queue this long may not occur.

The queues on Faas Ranch Road between Castle Valley Boulevard and the accesses were evaluated to ensure they would not block an upstream intersection. Without a signal at the intersection of Castle Valley Boulevard and Faas Ranch Road, the southbound left-turn queue was estimated to reach the first access intersection. With a signal, the queue is anticipated to not extend to the first access. Queues between the access intersections were estimated to be one vehicle or less and not impact one another.

8.0 Roundabout vs. Signal

At the intersection of Castle Valley Boulevard and Faas Ranch Road, a change in traffic control will be warranted in the future with additional traffic from background growth and the development of Lakota Canyon Ranch. Based on the analysis, this intersection will warrant a signal with the completion of Lakota Canyon Ranch. It is understood that there is a desire from Town staff that this currently side-street stop-controlled intersection to be redesigned as a roundabout, instead of a signal. It is recommended that this intersection become signalized instead of a roundabout for the following reasons:

- **Need to narrow fire station access.** The fire station access would need to be narrowed to one access and align with Faas Ranch Road. A roundabout cannot accommodate the existing double access design.
- **Limited land:** There is not enough distance from the intersection to the firehouse to provide the appropriate entry design for the fire station approach.
 - A roundabout in the available property and distance to the firehouse is anticipated to not be able to accommodate the large fire vehicles that need to turn left onto Castle Valley Boulevard.
 - There may not be enough width on the west side of Castle Valley Boulevard to accommodate the necessary roundabout design features (deflection, median, entry angles) for the south-eastbound approach to slow the approaching vehicles to a safe entering speed.

-
- **Cannot be designed as multi-lane roundabout.** To accommodate the future widening of Castle Valley Boulevard, the footprint of a multi-lane roundabout would encroach into the fire station property and potentially remove the internal circulation at the front of the building.
 - **Difficult topography.** The roadway profile topography along Castle Valley Boulevard exceeds 4% at the intersection with Faas Ranch Road and exceeds 5% slope for the approaches to the intersection. It is generally not desirable to place roundabouts in locations where grades through the intersection are greater than 4%. The land east of Castle Valley Boulevard has immediate change in grades to head uphill on Faas Ranch Road which makes it difficult to design a roundabout.
 - **Signalization provides emergency preemption:** A signal can easily be controlled by the fire department during an emergency by having a remote to turn the signal to all-red and stopping all traffic for quick response. This cannot be accomplished with a roundabout.

It is recommended that the intersection of Castle Valley Ranch at Faas Ranch Road be signalized when warranted since a roundabout will not be able to be designed to safely accommodate the fire station and due to the constraints with the topography and available property.

9.0 Conclusions

The Lakota Canyon Ranch project proposes to develop up to 29 single-family homes, 156 multi-family homes, 12,730 sq. ft. of medical office space, and 36,000 sq. ft. of commercial space. The project property is located on the east side of Castle Valley Boulevard and along both sides of Faas Ranch Road. The Lakota Canyon Ranch project proposes to extend Lakota Drive through the development to Faas Ranch Road for one full-movement access and then provide a second access on Faas Ranch Road north of Castle Valley Boulevard.

The full build-out of the project is estimated to generate approximately 3,494 daily trips with 215 trips in the AM peak hour and 439 trips in the PM peak hour, with roughly 20% as pass-by trips. The following mitigations measures should be considered to improve the project related traffic impacts:

- **Castle Valley Boulevard at Faas Ranch Road:**
 - Signalize (warrants met in both peak hours and four-hour with full buildout)
 - Restripe to provide one eastbound left-turn (minimum 100 feet of storage), one westbound left-turn lane (minimum 50 feet of storage), one southbound through/right-

turn lane, and one southbound left-turn lane (minimum 90 feet of storage). Maintain the eastbound and westbound right-turn lanes.

- **Access intersections on Faas Ranch Road:**

- Construct one inbound and one outbound lane.
- Provide full-movement and side-street stop-control.

Tables and Figures:

Table 1 – Peak Hour Intersection Level of Service Summary

Table 2 – Peak Hour 95th Percentile Queue Summary

Table 3 – Trip Generation Summary

Table 4 – Trip Distribution Summary [IN REPORT]

Figure 1 – Vicinity Map

Figure 2 – Conceptual Site Plan and Access

Figure 3 – Existing Traffic Volumes

Figure 4 – Year 2025 Background Traffic Volumes

Figure 5 – Year 2030 Background Traffic Volumes

Figure 6A – Trip Distribution – Southeast Residential

Figure 6B – Trip Distribution – Northwest Residential

Figure 6C – Trip Distribution – Southeast Commercial

Figure 6D – Trip Distribution – Northwest Commercial

Figure 7 – Site-Generated Traffic Volumes

Figure 8 – Year 2025 Background + Site-Generated Traffic Volumes

Figure 9 – Year 2030 Background + Site-Generated Traffic Volumes

Table 1 - Peak Hour Intersection Level of Service Summary

Intersection and Lanes Groups	2021 Existing		2025 Background		2025 Bkgrd + Project		2025 Bkgrd + Project (w/ Improvements)		2030 Background		2030 Bkgrd + Project					
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak				
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS				
STOP SIGN CONTROL																
1. White Horse Dr at Lakota Dr	1	A	1	A	1	A	5	A	5	A	1	A	4	A	4	A
Westbound Left+Right	9	A	9	A	9	A	9	A	9	A	9	A	9	A	9	A
Northbound Through+Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Southbound Left+Through	0	A	0	A	0	A	7	A	7	A	0	A	7	A	7	A
2. Blackhawk Dr at White Horse Dr	4	A	3	A	4	A	1	A	5	A	3	A	4	A	1	A
Eastbound Left+Through	7	A	7	A	7	A	0	A	7	A	7	A	0	A	7	A
Westbound Through+Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Southbound Left+Right	9	A	9	A	9	A	9	A	9	A	9	A	9	A	9	A
3. Castle Valley Blvd at Blackhawk Dr	1	A	1	A	1	A	1	A	1	A	1	A	2	A	1	A
Eastbound Left+Through	8	A	0	A	8	A	0	A	8	A	9	A	8	A	9	A
Westbound Through	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Westbound Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Southbound Left+Right	16	C	14	B	18	C	15	B	20	C	17	C	19	C	16	C
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway	2	A	1	A	2	A	1	A	5	A	11	B				
Eastbound Left+Through	8	A	8	A	8	A	9	A	Analyzed with Signal		8	A	9	A	Analyzed with Signal	
Eastbound Left							8	A	9	A						
Eastbound Through							0	A	0	A						
Eastbound Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Westbound Left+Through	9	A	0	A	9	A	0	A			9	A	0	A		
Westbound Left							9	A	0	A						
Westbound Through							0	A	0	A						
Westbound Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Northbound Left+Through+Right	16	C	0	A	17	C	0	A	17	C	0	A	18	C	0	A
Southbound Left+Through+Right	20	C	15	B	23	C	16	C			25	D	18	C		
Southbound Left							46	E	63	F						
Southbound Through+Right							10	A	13	B						
5. Access 1 on Faas Ranch Rd							1	A	3	A					1	A
Westbound Left+Right							10	A	12	B					10	A
Northbound Through+Right							0	A	8	A					0	A
Southbound Left+Through							8	A	0	A					8	A
6. Access 2 on Faas Ranch Rd							5	A	6	A					5	A
Eastbound Left+Through+Right							9	A	9	A					9	A
Westbound Left+Through+Right							10	A	12	B					10	A
Northbound Left+Through+Right							7	A	7	A					7	A
Southbound Left+Through+Right							7	A	7	A					7	A
SIGNAL CONTROL																
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway									10	A	12	B			12	B
Eastbound Left									8	A	9	A			8	A
Eastbound Through									9	A	5	A			11	B
Eastbound Right									5	A	0	A			5	A
Westbound Left									12	B	0	A			15	B
Westbound Through									12	B	15	B			13	B
Westbound Right									10	B	11	B			11	B
Northbound Left+Through+Right									14	B	0	A			14	B
Southbound Left									14	B	17	B			16	B
Southbound Through+Right									13	B	17	B			14	B

Note: Delay represented in average seconds per vehicle.

Table 2 - Peak Hour 95th Percentile Queue Summary

Intersection and Lanes Groups	Storage or Distance to Adj. Int.	2021 Existing		2025 Background		2025 Bkgrd + Project		2025 Bkgrd + Project (w/ Improvements)		2030 Background		2030 Bkgrd + Project			
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
STOP SIGN CONTROL															
1. White Horse Dr at Lakota Dr															
Westbound Left+Right	-	0'	0'	0'	0'	3'	5'			0'	0'	3'	5'		
Northbound Through+Right	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'		
Southbound Left+Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'		
2. Blackhawk Dr at White Horse Dr															
Eastbound Left+Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'		
Westbound Through+Right	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'		
Southbound Left+Right	-	3'	0'	3'	0'	5'	3'			3'	0'	5'	3'		
3. Castle Valley Blvd at Blackhawk Dr															
Eastbound Left+Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'		
Westbound Through	-	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'		
Westbound Right	205'	0'	0'	0'	0'	0'	0'			0'	0'	0'	0'		
Southbound Left+Right	-	10'	5'	13'	5'	23'	13'			15'	8'	28'	15'		
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway															
Eastbound Left+Through	-	0'	0'	0'	0'			Analyzed as Signal	8'	0'			Analyzed as Signal		
Eastbound Left	200'					3'	8'								
Eastbound Through	-					0'	0'								
Eastbound Right	75'	0'	0'	0'	0'	0'	0'			0'	0'				
Westbound Left+Through	-	0'	0'	0'	0'					9'	0'				
Westbound Left	50'					0'	0'								
Westbound Through	-					0'	0'								
Westbound Right	60' (200')	0'	0'	0'	0'	0'	0'			0'	0'				
Northbound Left+Through+Right	-	3'	0'	3'	0'	3'	0'			18'	0'				
Southbound Left+Through+Right	-	23'	5'	28'	5'					25'	8'				
Southbound Left	100'					78'	145'								
Southbound Through+Right	-					3'	15'								
5. Access 1 on Faas Ranch Rd															
Westbound Left+Right	-					3'	15'							3'	15'
Northbound Through+Right	-					0'	0'					0'	0'		
Southbound Left+Through	-					0'	0'					0'	0'		
6. Access 2 on Faas Ranch Rd															
Eastbound Left+Through+Right	-					3'	8'					3'	8'		
Westbound Left+Through+Right	-					5'	5'					5'	8'		
Northbound Left+Through+Right	-					3'	5'					3'	5'		
Southbound Left+Through+Right	-					0'	0'					0'	0'		
SIGNAL CONTROL															
4. Castle Valley Blvd at Faas Ranch Rd/Fire Station Driveway															
Eastbound Left	200'							17'	39'			22'	38'		
Eastbound Through	-							234'	97'			334'	98'		
Eastbound Right	75'							0'	0'			0'	0'		
Westbound Left	50'							4'	0'			5'	0'		
Westbound Through	-							105'	289'			131'	323'		
Westbound Right	200'							10'	35'			11'	37'		
Northbound Left+Through+Right	-							0'	0'			0'	0'		
Southbound Left	100'							67'	87'			55'	86'		
Southbound Through+Right	-							0'	0'			0'	0'		

Table 3. Trip Generation Summary

Land Use	Size	Unit	Internal Capture & Non-Auto Factor	Average Daily Trips				AM Peak Hour Trips				PM Peak Hour Trips			
				Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Parcel 1															
ITE 221 - Multi-Family (Mid Rise) Housing	69	DU	10%	4.54	282	141	141	0.4	23	5	18	0.39	24	15	9
Parcel 2															
ITE 221 - Multi-Family (Mid Rise) Housing	9	DU	10%	4.54	37	19	18	0.4	3	1	2	0.39	3	2	1
ITE 822 - Retail Plaza (<40k)	10.38	KSF	10%	54.45	509	255	254	2.36	22	13	9	6.59	62	31	31
ITE 912 - Drive-In Bank	5.6	KSF	10%	100.35	506	253	253	9.95	50	29	21	21.01	106	53	53
ITE 720 - Medical-Dental Office Building	12.732	KSF	10%	36.0	413	207	206	3.10	36	28	8	3.93	45	14	31
<i>Subtotal of Trips</i>					1,465	734	731		111	71	40		216	100	116
<i>Pass-by Trips: Shopping Center 34%</i>					-173	-87	-86		0	0	0		-21	-11	-10
<i>Pass-by Trips: Bank (AM) 29%</i>					0	0	0		-15	-8	-7		0	0	0
<i>Pass-by Trips: Bank (PM) 35%</i>					-177	-89	-88		0	0	0		-37	-19	-18
<i>Subtotal of New Trips</i>					1,115	558	557		96	63	33		158	70	88
Parcel 3															
ITE 215 - Single-Family Attached Housing	8	DU	10%	7.2	52	26	26	0.48	3	1	2	0.57	4	2	2
Parcel 4															
ITE 220 - Multi-Family (Low Rise) Housing	6	DU	10%	6.74	36	18	18	0.40	2	0	2	0.51	3	2	1
ITE 822 - Retail Plaza (<40k)	7.38	KSF	10%	54.45	362	181	181	2.36	16	10	6	6.59	44	22	22
<i>Pass-by Trips: Shopping Center 34%</i>					-123	-62	-61		0	0	0		-15	-7	-8
<i>Subtotal of New Trips</i>					275	137	138		18	10	8		32	17	15
Parcel 5															
ITE 220 - Multi-Family (Low Rise) Housing	10	DU	10%	6.74	61	31	30	0.40	4	1	3	0.51	5	3	2
ITE 822 - Retail Plaza (<40k)	6.81	KSF	10%	54.45	334	167	167	2.36	14	8	6	6.59	40	20	20
ITE 971 - Brewery Tap Room	5.836	KSF	10%	61.69	324	162	162	0.68	4	4	0	9.83	52	31	21
<i>Pass-by Trips: Shopping Center 34%</i>					-224	-112	-112		0	0	0		-31	-17	-14
<i>Subtotal of New Trips</i>					495	248	247		22	13	9		66	37	29
Parcel 6															
ITE 220 - Multi-Family (Low Rise) Housing	42	DU	10%	6.74	255	128	127	0.40	15	4	11	0.51	19	12	7
Parcel 7															
ITE 215 - Single-Family Attached Housing	0	DU	10%	7.2	0	0	0	0.48	0	0	0	0.57	0	0	0
Parcel 8															
ITE 215 - Single-Family Attached Housing	3	DU	10%	7.2	19	10	9	0.48	1	0	1	0.57	2	1	1
Parcel 9															
ITE 215 - Single-Family Attached Housing	9	DU	10%	7.2	58	29	29	0.48	4	1	3	0.57	5	3	2
Parcel 10 - 39															
ITE 210 - Single-Family Detached Housing	29	DU	10%	9.43	246	123	123	0.70	18	5	13	0.94	25	16	9
<i>Total New Trips</i>					2,797	1,400	1,397		200	102	98		335	173	162
<i>Total Pass-By Trips</i>					697	350	347		15	8	7		104	54	50
<i>Total Trips</i>					3,494	1,750	1,744		215	110	105		439	227	212



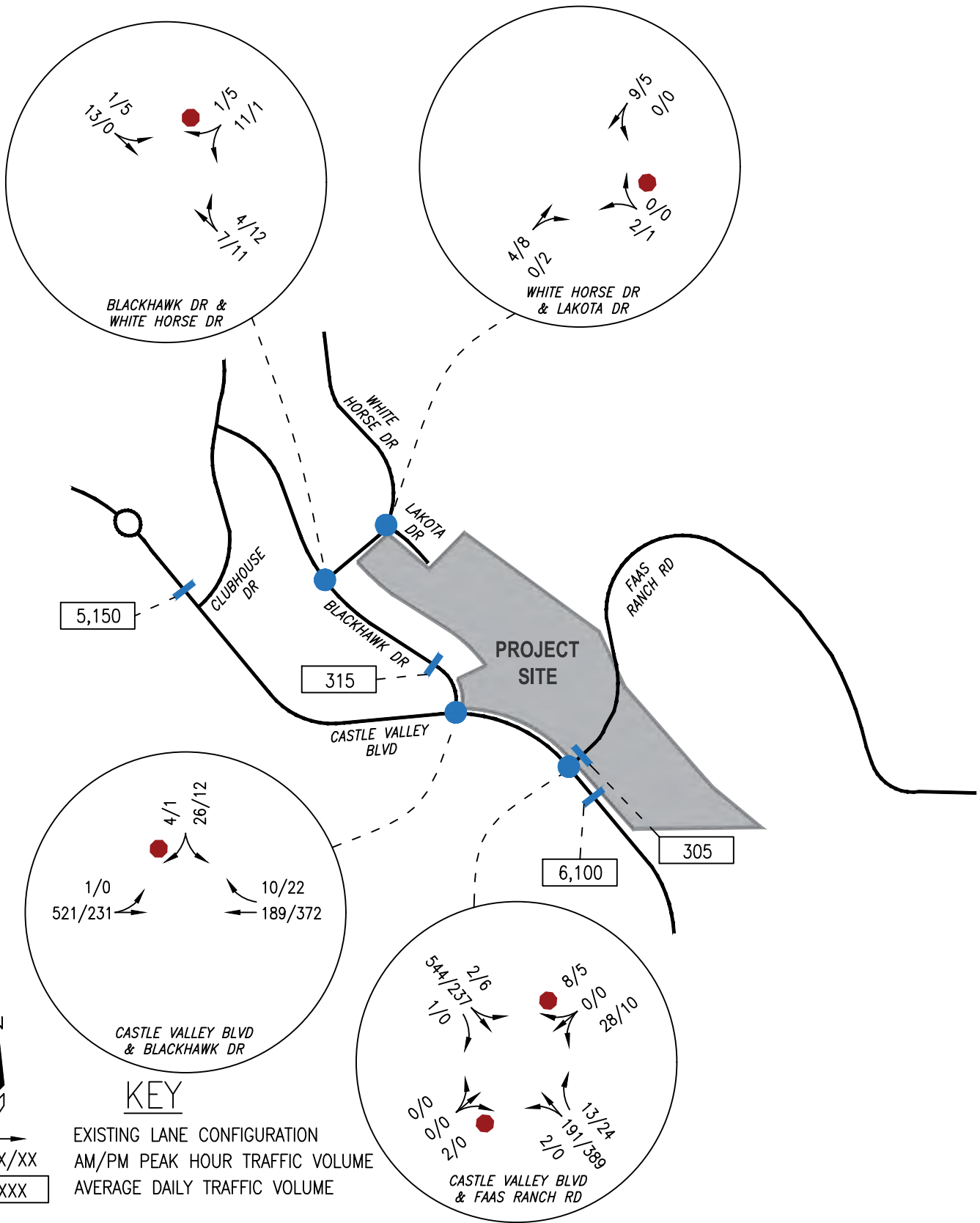
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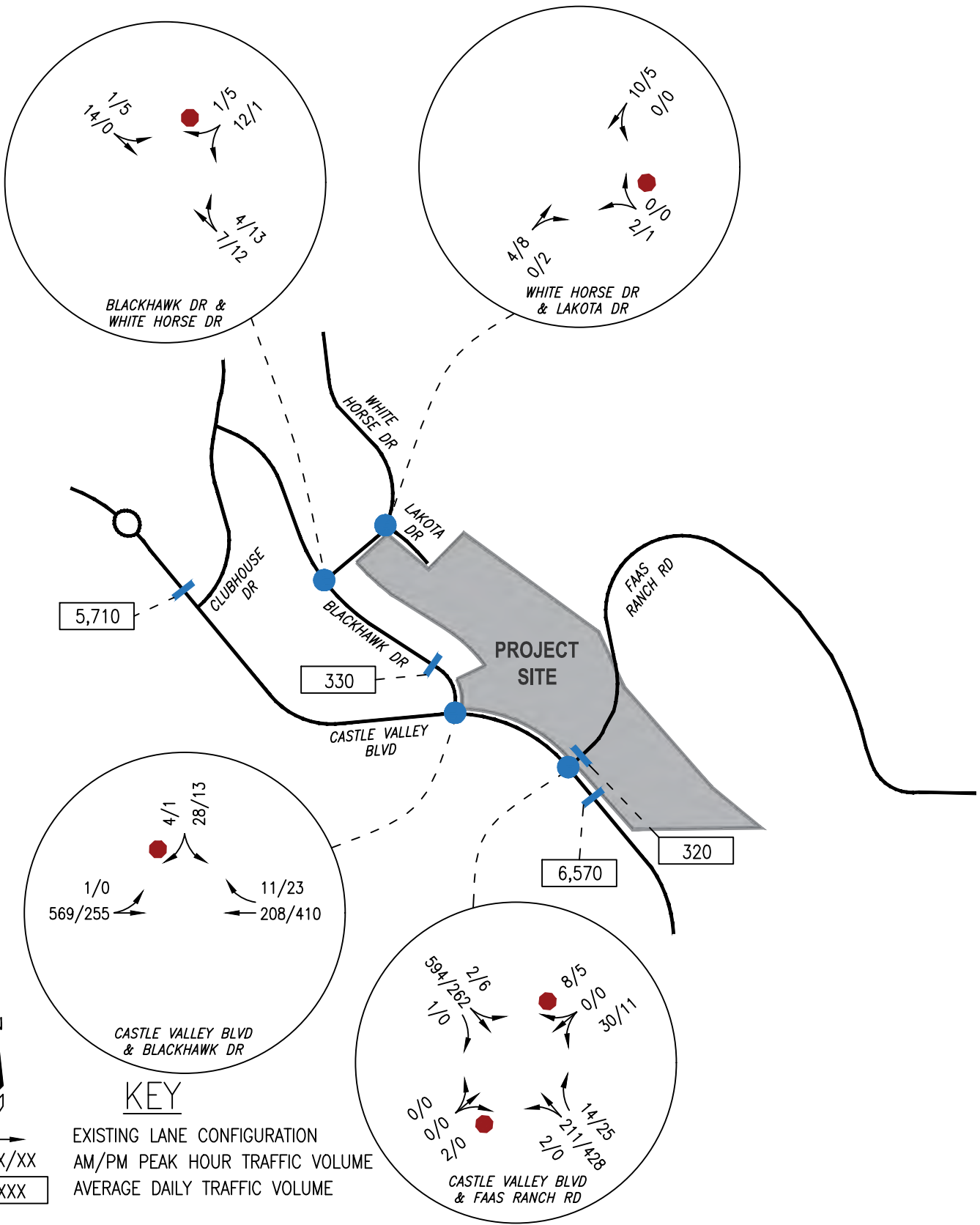
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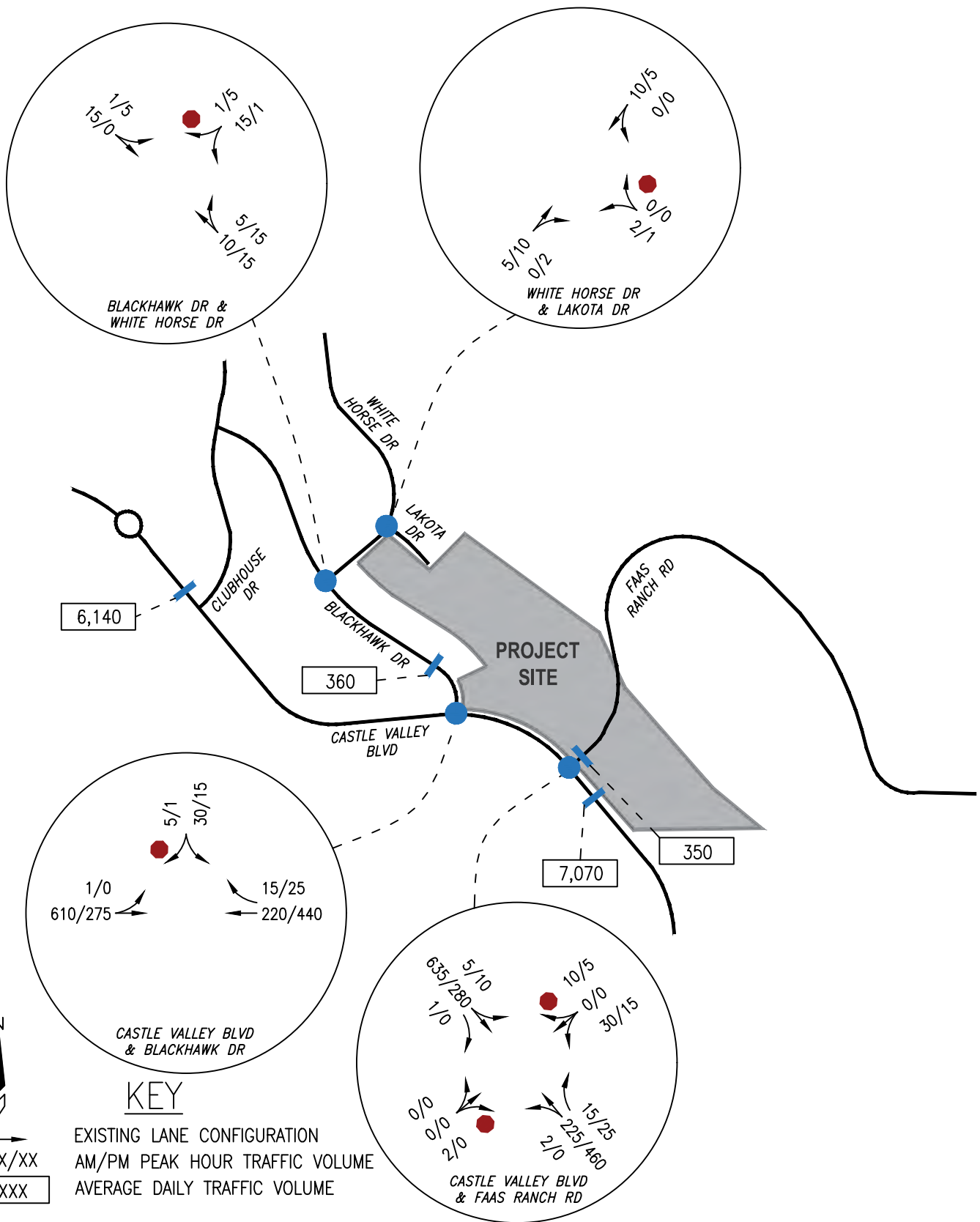


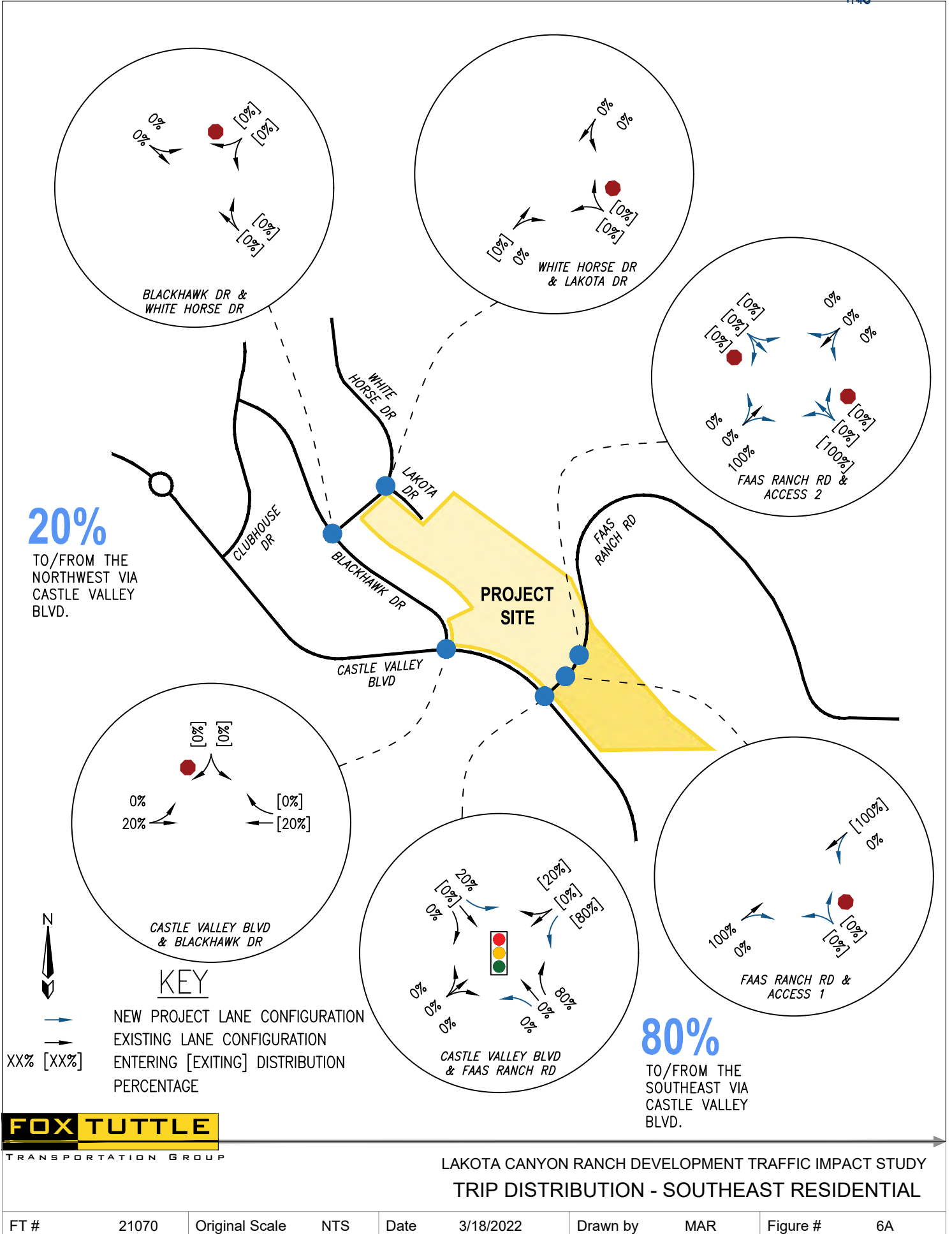
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CONCEPTUAL SITE AND ACCESS PLAN

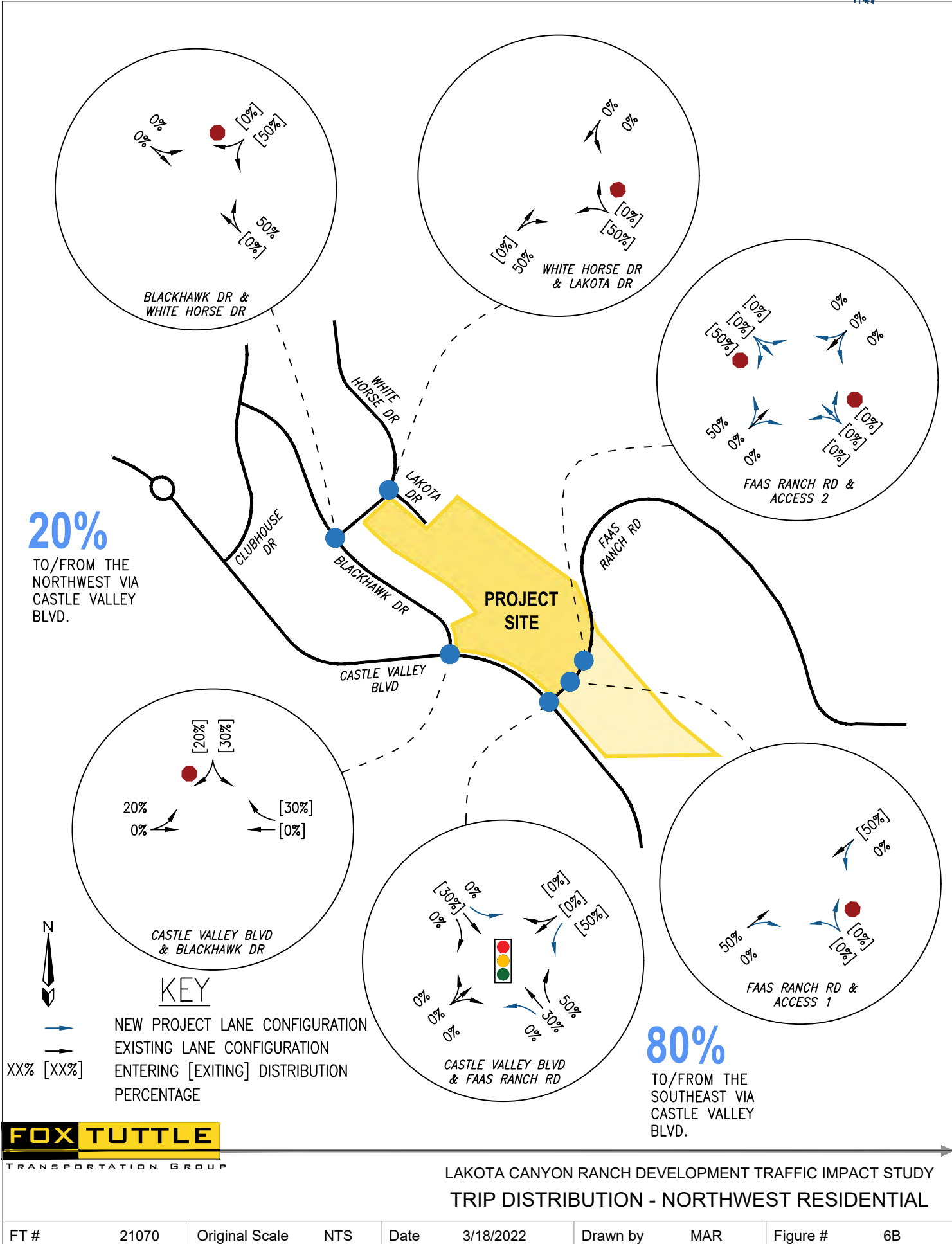
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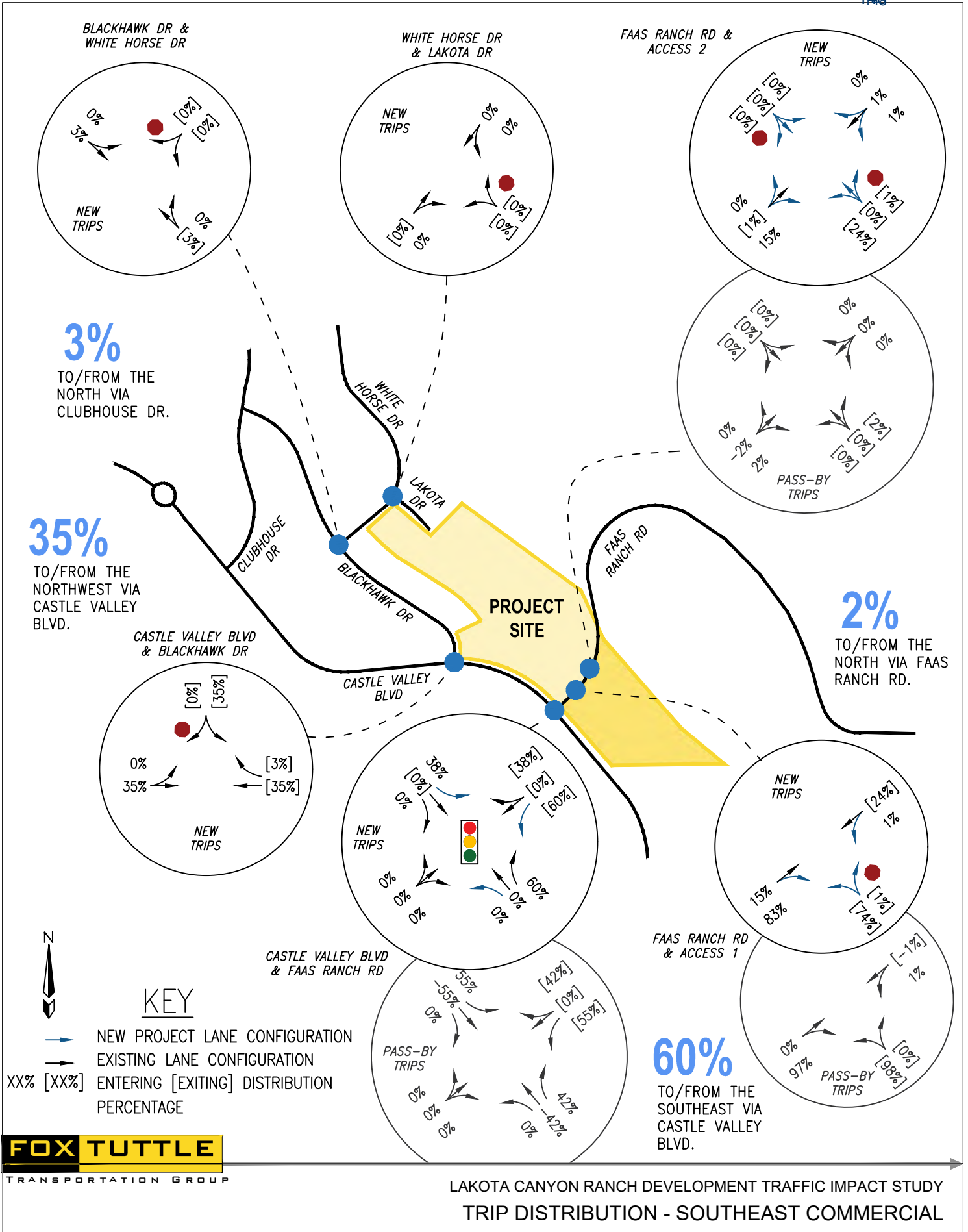




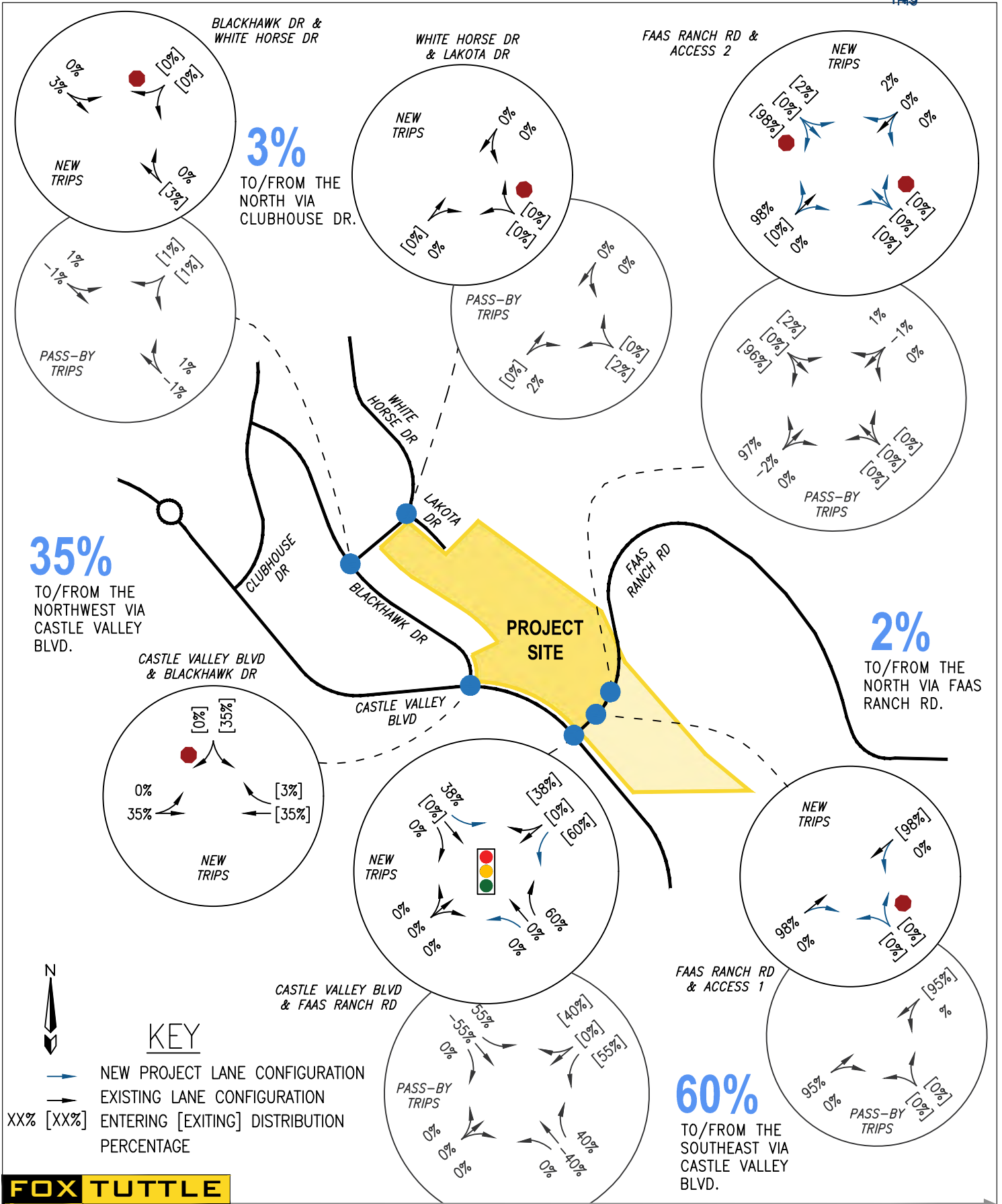


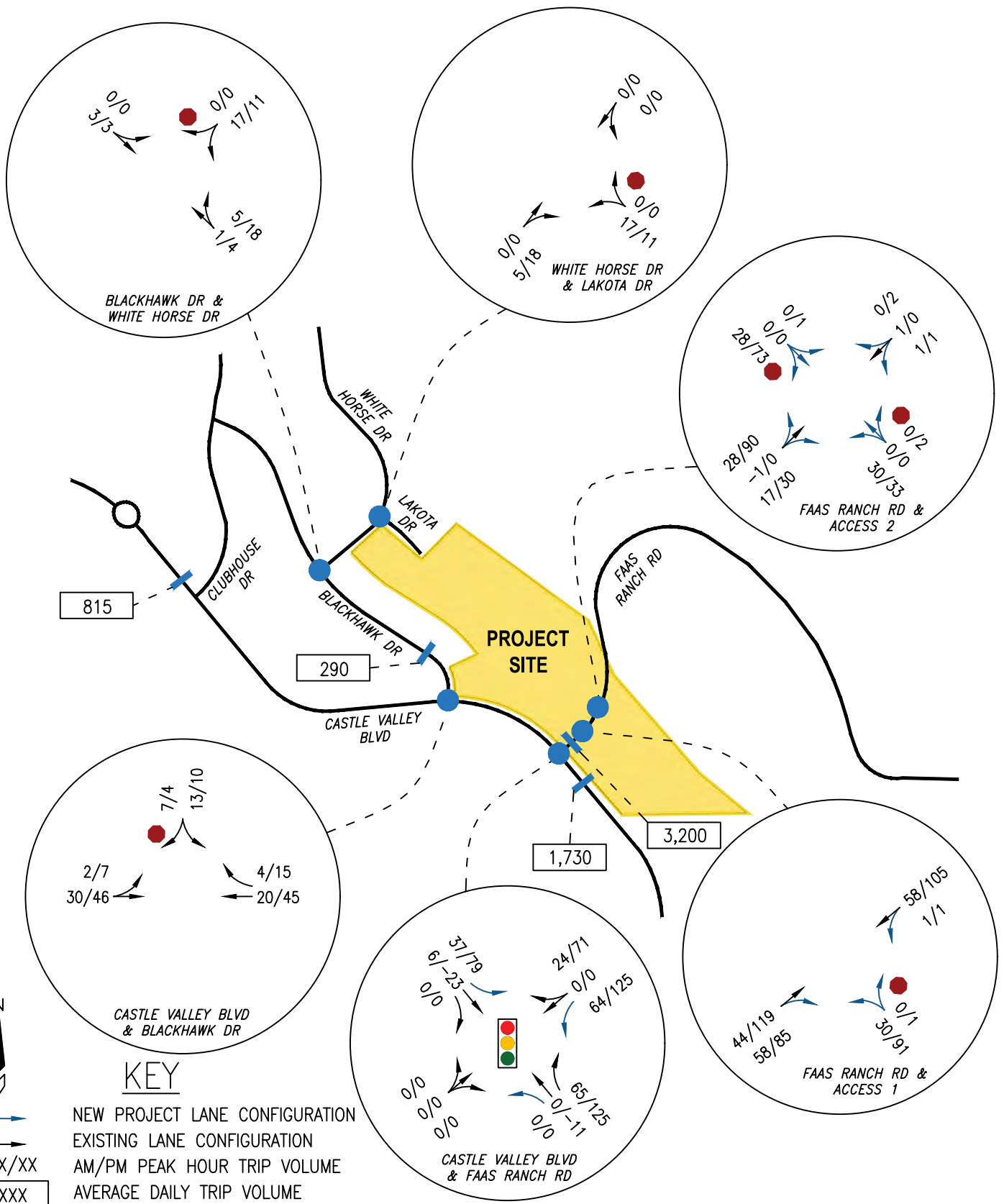


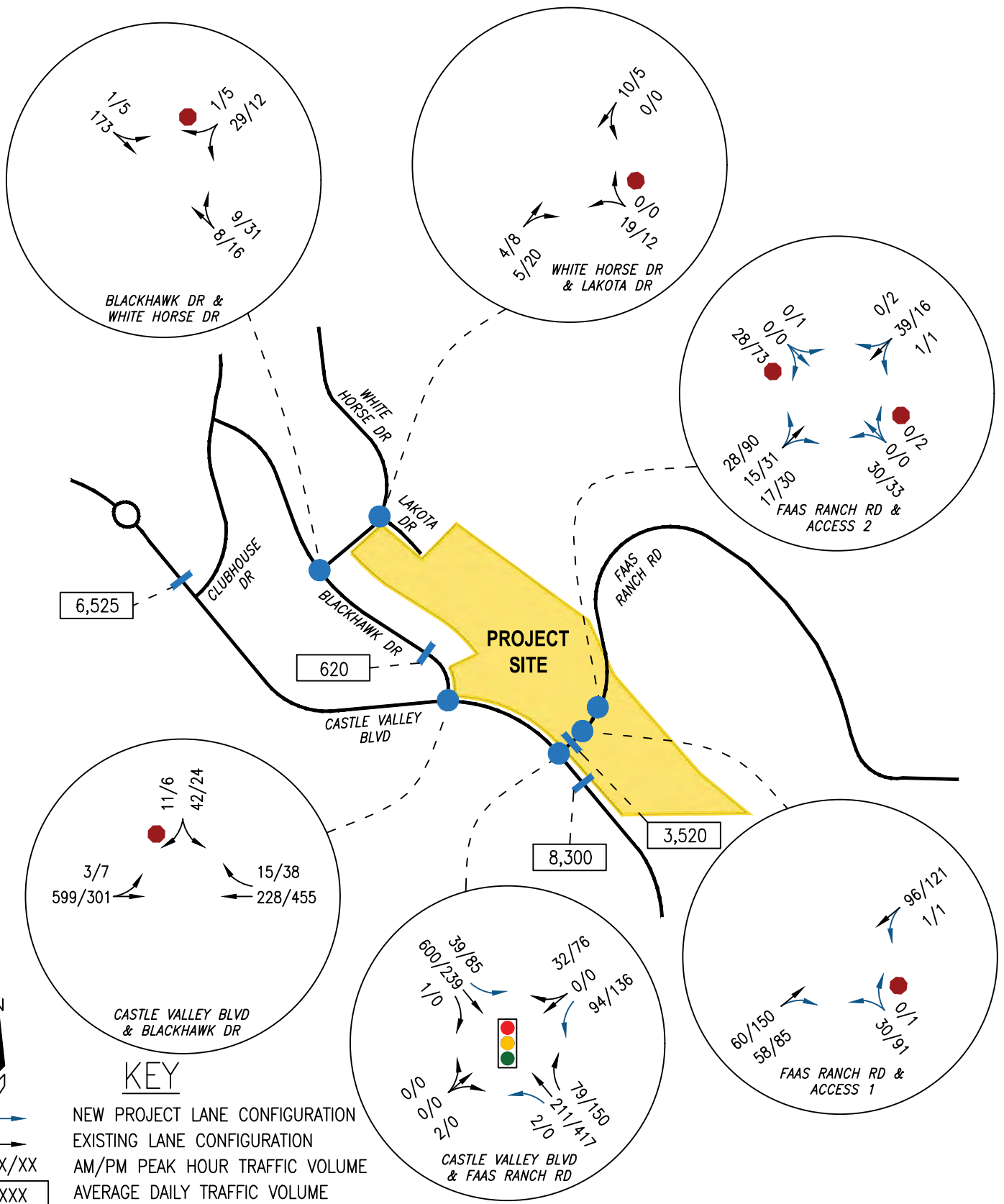


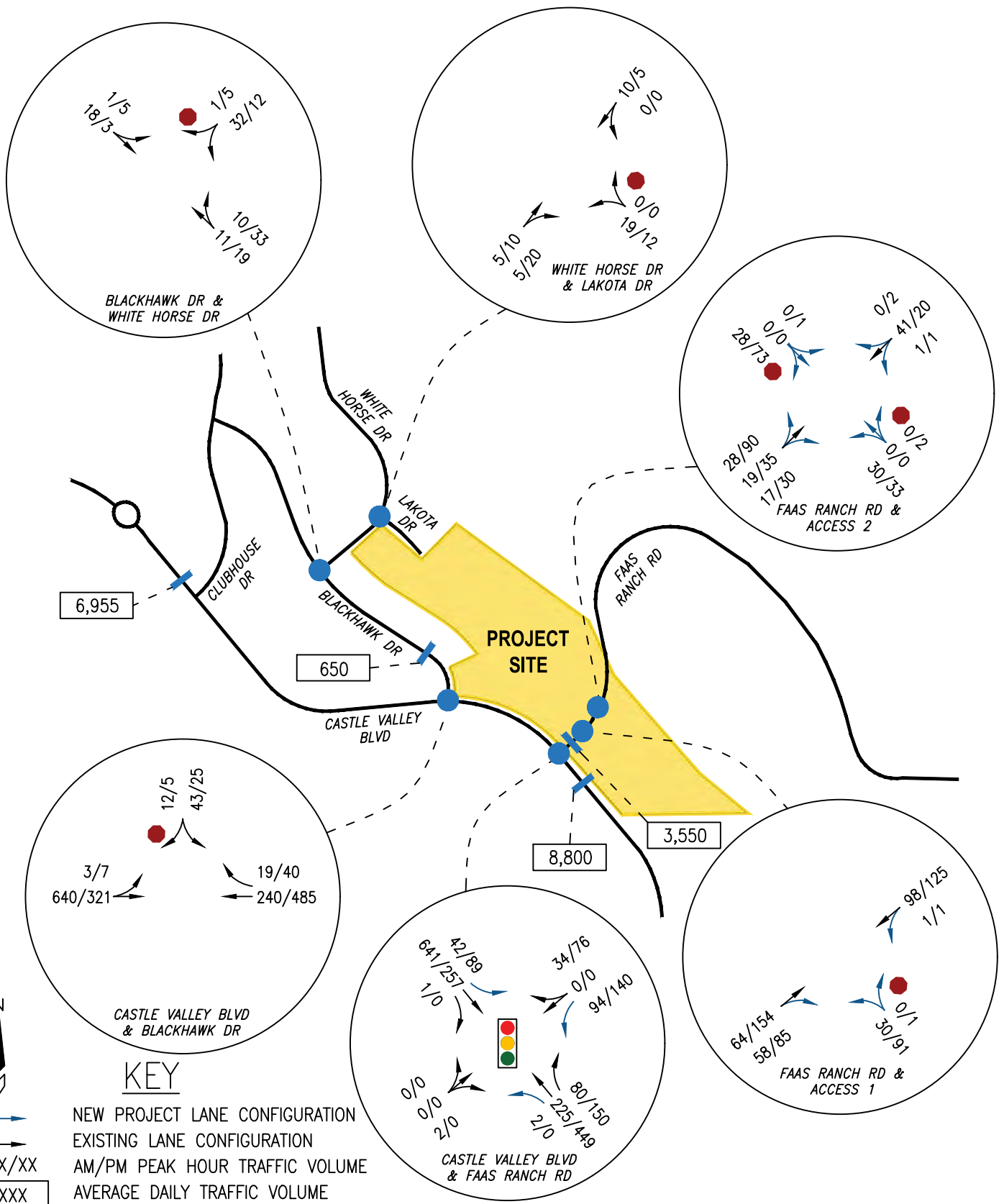


FT #	21070	Original Scale	NTS	Date	3/18/2022	Drawn by	MAR	Figure #	6C
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Appendix:

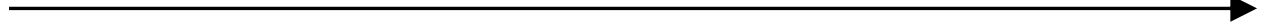
Level of Service Definitions

Existing Traffic Data

Intersection Capacity Worksheets

Signal Warrant Evaluation





Level of Service Definitions

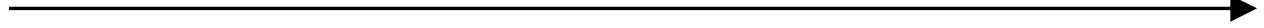


LEVEL OF SERVICE DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, “Levels of Service” (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

Level of Service Rating	Delay in seconds per vehicle (a)		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers are able to maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially, and stoppages may occur for short or long periods of time because of downstream congestion.

(a) Delay ranges based on Highway Capacity Manual (6th Edition, 2016) criteria.



Existing Traffic Data

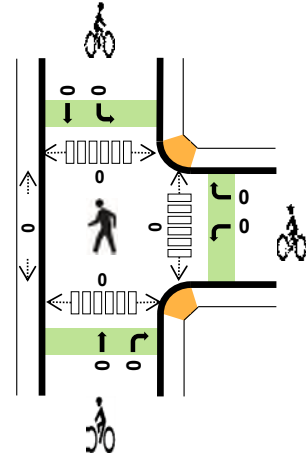
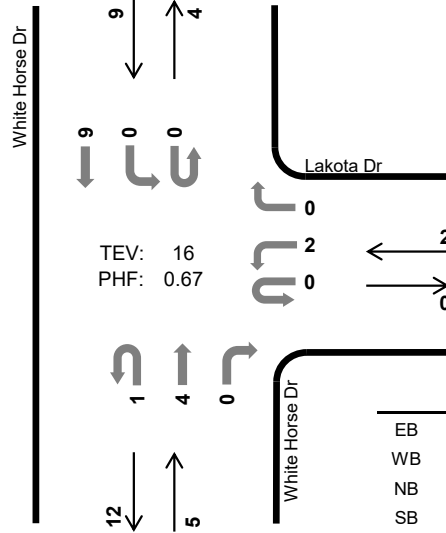


White Horse Dr Lakota Dr



Peak Hour

Date: 11/09/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	0.0%	0.50
NB	0.0%	0.42
SB	0.0%	0.56
TOTAL	0.0%	0.67

Two-Hour Count Summaries

Interval Start	0				Lakota Dr				White Horse Dr				White Horse Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	0	
7:45 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4	0	6	11	
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4	14	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	15	
8:30 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	5	16	
8:45 AM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	3	0	6	16	
Count Total	0	0	0	0	0	3	0	0	1	0	7	0	0	0	16	0	27	0	
Peak Hour	All	0	0	0	0	0	2	0	0	1	0	4	0	0	0	9	0	16	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HV%	-	-	-	-	-	0%	-	-	0%	-	0%	-	-	-	0%	-	0%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Peak Hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	0				Lakota Dr				White Horse Dr				White Horse Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	0			Lakota Dr			White Horse Dr			White Horse Dr					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0			

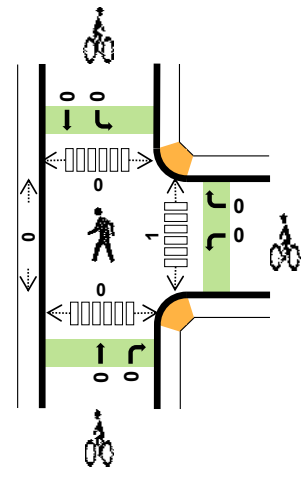
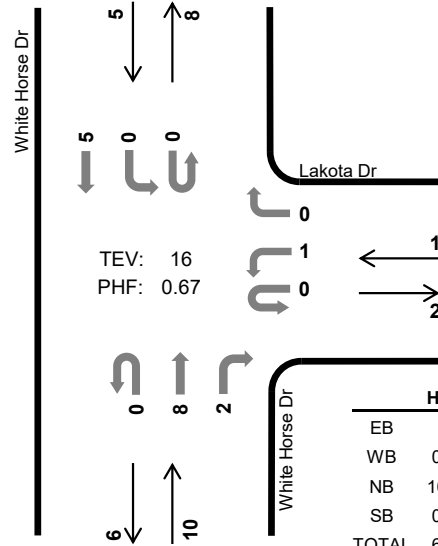
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

White Horse Dr Lakota Dr



Peak Hour

Date: 11/09/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	-	-
WB	0.0%	0.25
NB	10.0%	0.63
SB	0.0%	0.63
TOTAL	6.3%	0.67

Two-Hour Count Summaries

Interval Start	0			Lakota Dr			White Horse Dr				White Horse Dr				15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound				Southbound								
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	4	0	
4:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	3	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	13	
5:00 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	4	13	
5:15 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	6	15	
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	4	16	
5:45 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	16	
Count Total	0	0	0	0	0	2	0	1	0	0	16	3	0	0	7	0	29	0	
Peak Hour	All	0	0	0	0	0	1	0	0	0	0	8	2	0	0	5	0	16	0
	HV	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
	HV%	-	-	-	-	-	0%	-	-	-	-	0%	50%	-	-	0%	-	6%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	1	0	0	0	0	0	3	0	0	0	3
Peak Hr	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	0				Lakota Dr				White Horse Dr				White Horse Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	0			Lakota Dr			White Horse Dr			White Horse Dr					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0			

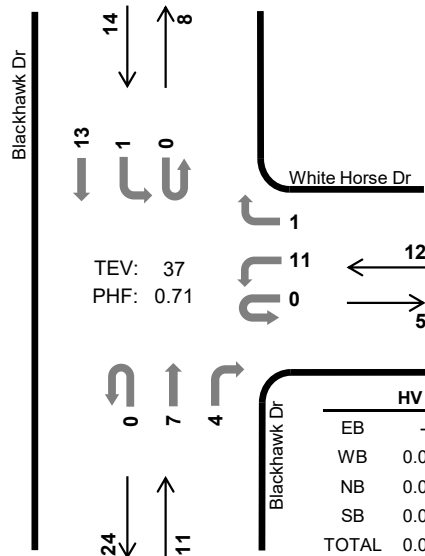
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Blackhawk Dr White Horse Dr

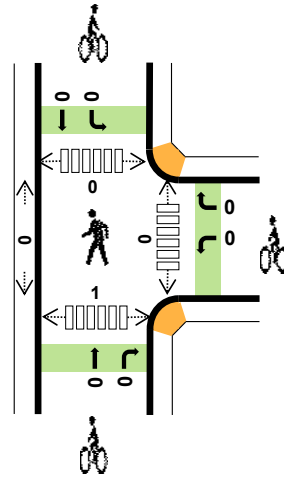


Peak Hour

Date: 11/09/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	-	-
WB	0.0%	0.50
NB	0.0%	0.69
SB	0.0%	0.88
TOTAL	0.0%	0.71



Two-Hour Count Summaries

Interval Start	0				White Horse Dr				Blackhawk Dr				Blackhawk Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	4	0	
7:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	4	0	7	0	
7:30 AM	0	0	0	0	0	4	0	0	0	0	1	1	0	0	4	0	10	0	
7:45 AM	0	0	0	0	0	6	0	0	0	0	3	1	0	0	3	0	13	34	
8:00 AM	0	0	0	0	0	1	0	0	0	0	1	2	0	1	2	0	7	37	
8:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	3	33	
8:30 AM	0	0	0	0	0	3	0	1	0	0	0	1	0	0	3	0	8	31	
8:45 AM	0	0	0	0	0	3	0	0	0	0	0	1	0	2	3	0	9	27	
Count Total	0	0	0	0	0	21	0	2	0	0	7	6	0	3	22	0	61	0	
Peak Hour	All	0	0	0	0	0	11	0	1	0	0	7	4	0	1	13	0	37	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HV%	-	-	-	-	-	0%	-	0%	-	-	0%	0%	-	0%	0%	-	0%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	0	2	3
Peak Hr	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	0				White Horse Dr				Blackhawk Dr				15-min Total	Rolling One Hour				
	Eastbound				Westbound				Northbound						Southbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			UT	LT	TH	RT
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

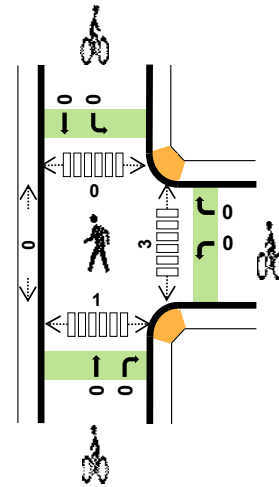
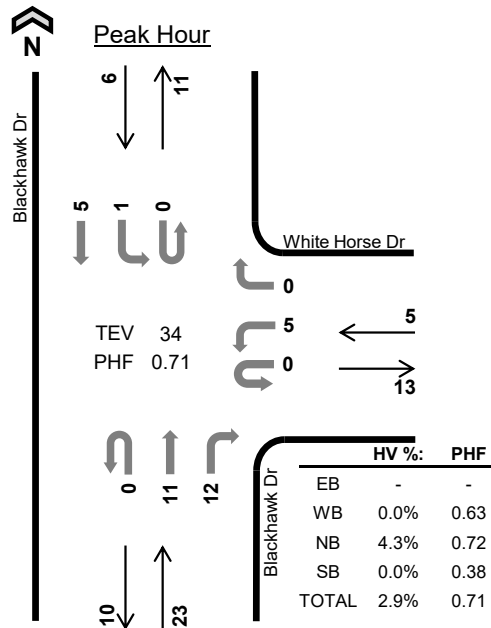
Two-Hour Count Summaries - Bikes														
Interval Start	0			White Horse Dr			Blackhawk Dr			Blackhawk Dr			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Blackhawk Dr White Horse Dr



Date: 11/09/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



Two-Hour Count Summaries

Interval Start	0			White Horse Dr			Blackhawk Dr				Blackhawk Dr				15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound				Southbound								
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT			TH	RT	
4:00 PM	0	0	0	0	0	0	0	1	0	0	2	1	0	2	2	0	8	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	3	0	2	0	0	7	0	
4:30 PM	0	0	0	0	0	3	0	0	0	0	5	1	0	1	1	0	11	0	
4:45 PM	0	0	0	0	0	1	0	0	0	0	3	2	0	0	0	0	6	32	
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	3	0	0	1	0	5	29	
5:15 PM	0	0	0	0	0	2	0	0	0	0	4	4	0	0	1	0	11	33	
5:30 PM	0	0	0	0	0	1	0	0	0	0	4	3	0	1	3	0	12	34	
5:45 PM	0	0	0	0	0	1	0	0	0	0	2	1	0	0	1	0	5	33	
Count Total	0	0	0	0	0	9	0	1	0	0	22	18	0	6	9	0	65	0	
Peak Hour	All	0	0	0	0	0	5	0	0	0	0	11	12	0	1	5	0	34	0
	HV	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
	HV%	-	-	-	-	-	0%	-	-	-	-	0%	8%	-	0%	0%	-	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

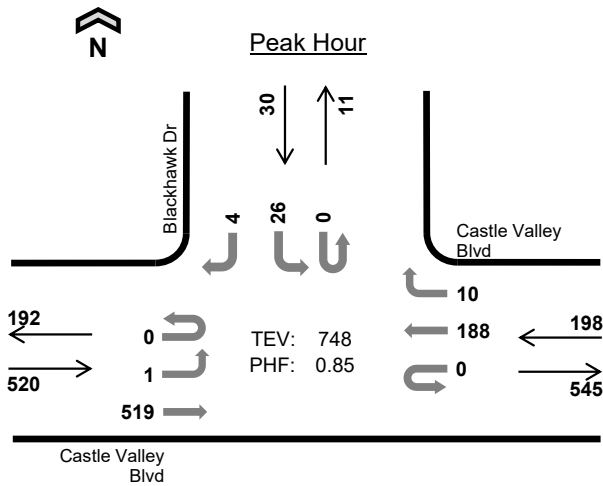
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	1	0	0	0	0	0	3	0	1	1	5
Peak Hr	0	0	1	0	1	0	0	0	0	0	3	0	0	1	4

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	0				White Horse Dr				Blackhawk Dr				Blackhawk Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		

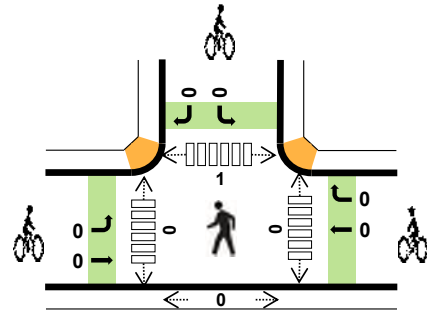
Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	0			White Horse Dr			Blackhawk Dr			Blackhawk Dr					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Blackhawk Dr Castle Valley Blvd



Date: 11/09/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	1.3%	0.84
WB	4.0%	0.87
NB	-	-
SB	0.0%	0.68
TOTAL	2.0%	0.85

Two-Hour Count Summaries

Interval Start	Castle Valley Blvd Eastbound				Castle Valley Blvd Westbound				0 Northbound				Blackhawk Dr Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	1	83	0	0	0	39	0	0	0	0	0	0	5	0	0	128	0	
7:15 AM	0	1	103	0	0	0	46	1	0	0	0	0	0	5	0	1	157	0	
7:30 AM	0	0	147	0	0	0	56	1	0	0	0	0	0	9	0	2	215	0	
7:45 AM	0	0	154	0	0	0	53	4	0	0	0	0	0	8	0	1	220	720	
8:00 AM	0	0	115	0	0	0	33	4	0	0	0	0	0	4	0	0	156	748	
8:15 AM	0	0	74	0	0	0	23	3	0	0	0	0	0	3	0	0	103	694	
8:30 AM	0	0	68	0	0	0	26	2	0	0	0	0	0	3	0	1	100	579	
8:45 AM	0	0	43	0	0	0	23	2	0	0	0	0	0	6	0	1	75	434	
Count Total	0	2	787	0	0	0	299	17	0	0	0	0	0	43	0	6	1,154	0	
Peak Hour	All	0	1	519	0	0	0	188	10	0	0	0	0	0	26	0	4	748	0
	HV	0	0	7	0	0	0	8	0	0	0	0	0	0	0	0	0	15	0
	HV%	-	0%	1%	-	-	-	4%	0%	-	-	-	-	-	0%	-	0%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

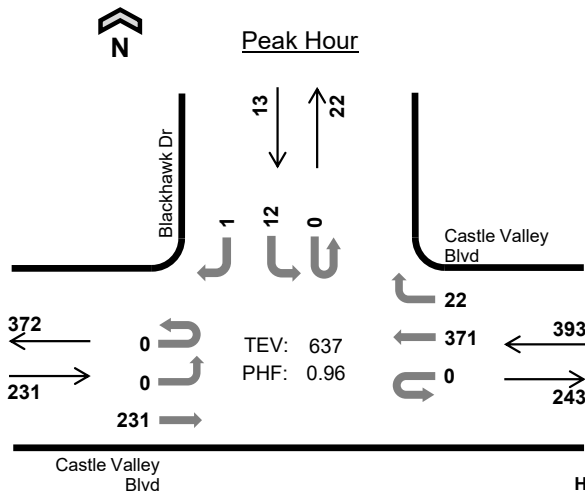
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	4	0	0	6	0	0	0	0	0	0	0	1	0	1
7:30 AM	2	3	0	0	5	0	0	0	0	0	0	0	0	0	0
7:45 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	1	0	0	2	0	0	0	0	0	1	0	1	0	2
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	12	12	0	0	24	0	0	0	0	0	1	0	2	0	3
Peak Hr	7	8	0	0	15	0	0	0	0	0	0	0	1	0	1

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd				Castle Valley Blvd				0				Blackhawk Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:15 AM	0	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	6	0
7:30 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
7:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	17
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	15
8:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	11
8:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	7
Count Total	0	0	12	0	0	0	12	0	0	0	0	0	0	0	0	0	24	0
Peak Hour	0	0	7	0	0	0	8	0	0	0	0	0	0	0	0	0	15	0

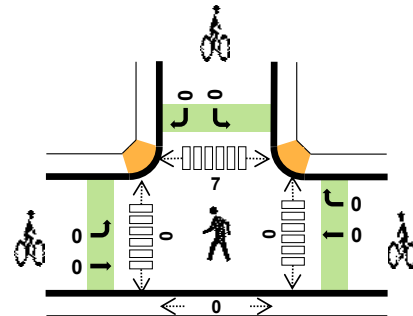
Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd			Castle Valley Blvd			0			Blackhawk Dr								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Blackhawk Dr Castle Valley Blvd



Date: 11/09/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	4.3%	0.88
WB	1.8%	0.94
NB	-	-
SB	0.0%	0.54
TOTAL	2.7%	0.96

Two-Hour Count Summaries

Interval Start	Castle Valley Blvd Eastbound				Castle Valley Blvd Westbound				0 Northbound				Blackhawk Dr Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	66	0	0	0	87	5	0	0	0	0	0	3	0	0	161	0	
4:15 PM	0	0	54	0	0	0	99	6	0	0	0	0	0	2	0	0	161	0	
4:30 PM	0	0	58	0	0	0	96	6	0	0	0	0	0	5	0	1	166	0	
4:45 PM	0	0	53	0	0	0	89	5	0	0	0	0	0	2	0	0	149	637	
5:00 PM	0	0	47	0	0	0	93	3	0	0	0	0	0	2	0	0	145	621	
5:15 PM	0	1	42	0	0	0	105	7	0	0	0	0	0	3	0	0	158	618	
5:30 PM	0	0	50	0	0	0	117	7	0	0	0	0	0	3	0	0	177	629	
5:45 PM	0	0	43	0	0	0	78	5	0	0	0	0	0	3	0	1	130	610	
Count Total	0	1	413	0	0	0	764	44	0	0	0	0	0	23	0	2	1,247	0	
Peak Hour	All	0	0	231	0	0	0	371	22	0	0	0	0	0	12	0	1	637	0
	HV	0	0	10	0	0	0	6	1	0	0	0	0	0	0	0	0	17	0
	HV%	-	-	4%	-	-	-	2%	5%	-	-	-	-	-	0%	-	0%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	1	0	0	6	0	0	0	0	0	0	0	3	0	3
4:15 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
4:30 PM	3	2	0	0	5	0	0	0	0	0	0	0	2	0	2
4:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	2	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
5:15 PM	0	1	0	0	1	0	0	0	0	0	1	0	2	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Count Total	10	8	0	0	18	0	0	0	0	0	1	1	11	0	13
Peak Hr	10	7	0	0	17	0	0	0	0	0	0	0	7	0	7

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	Castle Valley Blvd				Castle Valley Blvd				0				Blackhawk Dr					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	6	0
4:15 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0
4:30 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5	0
4:45 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	17
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	8
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	10	0	0	0	7	1	0	0	0	0	0	0	0	0	18	0
Peak Hour	0	0	10	0	0	0	6	1	0	0	0	0	0	0	0	0	17	0

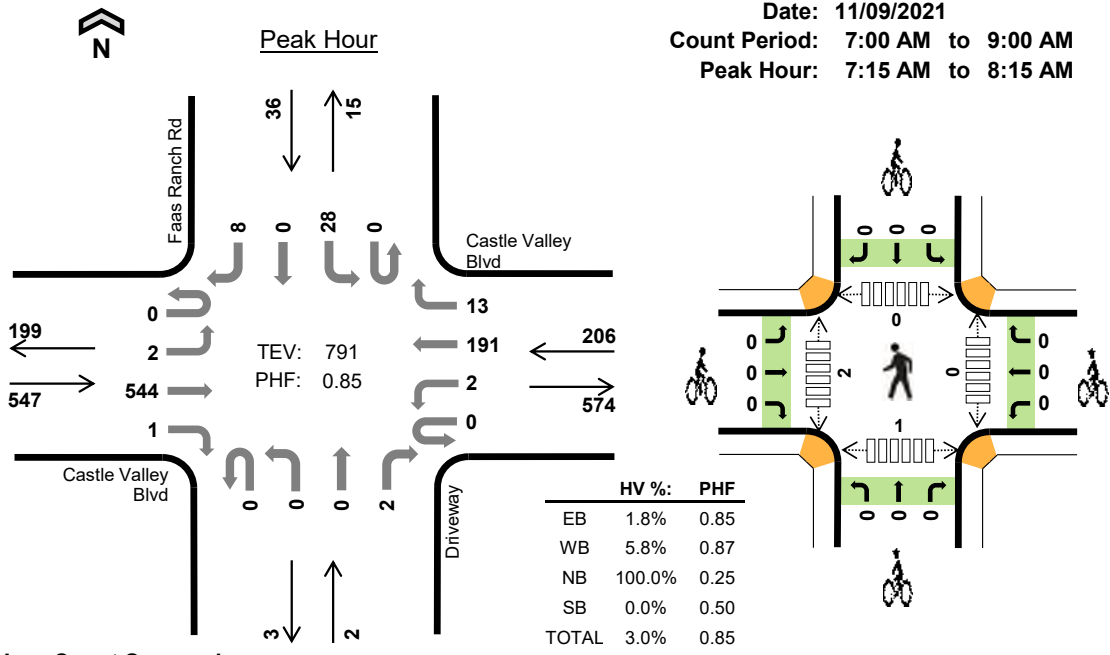
Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour		
Interval Start	Castle Valley Blvd			Castle Valley Blvd			0			Blackhawk Dr							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Faas Ranch Rd Castle Valley Blvd



Date: 11/09/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



Two-Hour Count Summaries

Interval Start	Castle Valley Blvd Eastbound				Castle Valley Blvd Westbound				Driveway Northbound				Faas Ranch Rd Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	87	0	0	0	39	3	0	0	0	0	0	2	0	0	131	0	
7:15 AM	0	0	106	0	0	0	48	1	0	0	0	2	0	4	0	1	162	0	
7:30 AM	0	0	161	0	0	1	51	1	0	0	0	0	0	12	0	6	232	0	
7:45 AM	0	1	158	1	0	0	58	1	0	0	0	0	0	7	0	0	226	751	
8:00 AM	0	1	119	0	0	1	34	10	0	0	0	0	0	5	0	1	171	791	
8:15 AM	0	1	76	0	0	0	26	4	0	0	0	1	0	2	0	0	110	739	
8:30 AM	0	0	71	0	0	0	28	1	0	0	0	0	0	2	0	0	102	609	
8:45 AM	0	0	50	0	0	0	24	2	0	0	0	0	0	3	0	1	80	463	
Count Total	0	3	828	1	0	2	308	23	0	0	0	3	0	37	0	9	1,214	0	
Peak Hour	All	0	2	544	1	0	2	191	13	0	0	0	2	0	28	0	8	791	0
	HV	0	0	9	1	0	1	11	0	0	0	0	2	0	0	0	0	24	0
	HV%	-	0%	2%	100%	-	50%	6%	0%	-	-	-	100%	-	0%	-	0%	3%	0

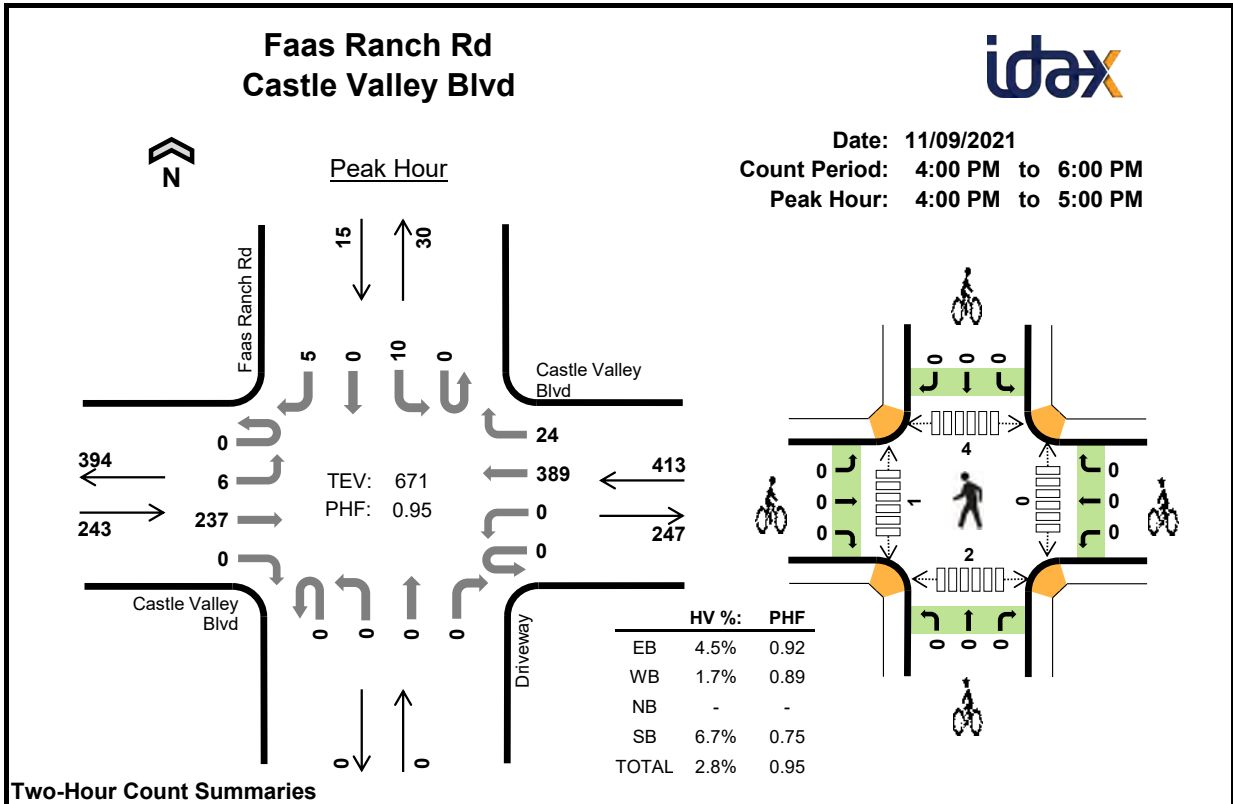
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	4	2	0	8	0	0	0	0	0	0	1	0	0	1
7:30 AM	3	5	0	0	8	0	0	0	0	0	0	0	0	0	0
7:45 AM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
8:00 AM	3	2	0	0	5	0	0	0	0	0	0	1	0	1	2
8:15 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	1	1
8:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	1	2	5
8:45 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	15	17	2	0	34	0	0	0	0	0	0	4	1	4	9
Peak Hour	10	12	2	0	24	0	0	0	0	0	0	2	0	1	3

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Castle Valley Blvd				Castle Valley Blvd				Driveway				Faas Ranch Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	4	0	
7:15 AM	0	0	2	0	0	0	4	0	0	0	0	2	0	0	0	8	0	
7:30 AM	0	0	3	0	0	1	4	0	0	0	0	0	0	0	0	8	0	
7:45 AM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	3	23	
8:00 AM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	5	24	
8:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	18	
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	12	
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	11	
Count Total	0	0	14	1	0	1	16	0	0	0	0	2	0	0	0	34	0	
Peak Hour	0	0	9	1	0	1	11	0	0	0	0	2	0	0	0	24	0	

Two-Hour Count Summaries - Bikes																
Interval Start	Castle Valley Blvd			Castle Valley Blvd			Driveway			Faas Ranch Rd			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start	Castle Valley Blvd Eastbound				Castle Valley Blvd Westbound				Driveway Northbound				Faas Ranch Rd Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
	4:00 PM	0	2	64	0	0	0	89	7	0	0	0	0	0	3	0			2
4:15 PM	0	2	56	0	0	0	107	9	0	0	0	0	0	3	0	0	177	0	
4:30 PM	0	1	64	0	0	0	99	4	0	0	0	0	0	4	0	1	173	0	
4:45 PM	0	1	53	0	0	0	94	4	0	0	0	0	0	0	0	2	154	671	
5:00 PM	0	2	48	0	0	2	97	3	0	0	0	0	0	1	0	0	153	657	
5:15 PM	0	0	44	0	0	1	110	4	0	0	0	1	0	3	0	1	164	644	
5:30 PM	0	0	54	0	0	4	118	5	0	0	0	1	0	1	0	1	184	655	
5:45 PM	0	0	46	0	0	5	85	4	0	0	0	1	0	0	0	1	142	643	
Count Total	0	8	429	0	0	12	799	40	0	0	0	3	0	15	0	8	1,314	0	
Peak Hour	All	0	6	237	0	0	0	389	24	0	0	0	0	0	10	0	5	671	0
	HV	0	1	10	0	0	0	7	0	0	0	0	0	0	1	0	0	19	0
	HV%	-	17%	4%	-	-	-	2%	0%	-	-	-	-	-	10%	-	0%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	3	0	1	6	0	0	0	0	0	0	0	1	0	1
4:30 PM	3	2	0	0	5	0	0	0	0	0	0	0	2	1	3
4:45 PM	2	1	0	0	3	0	0	0	0	0	0	1	1	1	3
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1
5:15 PM	0	1	1	0	2	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Count Total	12	8	1	1	22	0	0	0	0	0	0	2	8	3	13
Peak Hour	11	7	0	1	19	0	0	0	0	0	0	1	4	2	7

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Castle Valley Blvd				Castle Valley Blvd				Driveway				Faas Ranch Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	3	0	0	0	1	0	0	0	0	0	0	0	0	5	0	
4:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	1	0	6	0	
4:30 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	5	0	
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	3	19	
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	15	
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2	11	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
Count Total	0	1	11	0	0	0	8	0	0	0	0	1	0	1	0	22	0	
Peak Hour	0	1	10	0	0	0	7	0	0	0	0	0	0	1	0	19	0	

Two-Hour Count Summaries - Bikes																
Interval Start	Castle Valley Blvd			Castle Valley Blvd			Driveway			Faas Ranch Rd			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Vehicle Classification Report Summary

Location: CASTLE VALLEY BLVD W-O CLUBHOUSE DR
Count Direction: Eastbound / Westbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 01

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Eastbound	2	1,519	493	1	462	5	0	0	1	0	0	0	0	2,483
Percent	0.1%	61.2%	19.9%	0.0%	18.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	6	1,817	642	1	162	29	0	0	0	0	0	0	1	2,658
Percent	0.2%	68.4%	24.2%	0.0%	6.1%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	8	3,336	1,135	2	624	34	0	0	1	0	0	0	1	5,141
Percent	0.2%	64.9%	22.1%	0.0%	12.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification

Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: **CASTLE VALLEY BLVD W-O CLUBHOUSE DR**
 Count Direction: **Eastbound / Westbound**
 Date Range: **11/9/2021 to 11/9/2021**
 Site Code: **01**

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Eastbound	4	16	35	141	855	1,231	186	14	1	0	0	0	0	0	0	0	0	2,483
Percent	0.2%	0.6%	1.4%	5.7%	34.4%	49.6%	7.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	0	2	55	298	1,435	778	77	9	1	0	0	0	0	3	0	0	0	2,658
Percent	0.0%	0.1%	2.1%	11.2%	54.0%	29.3%	2.9%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	100%
Total	4	18	90	439	2,290	2,009	263	23	2	0	0	0	0	3	0	0	0	5,141
Percent	0.1%	0.4%	1.8%	8.5%	44.5%	39.1%	5.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Eastbound			Eastbound		
50th Percentile (Median)	30.5	mph	Mean (Average) Speed	30.2	mph
85th Percentile	33.8	mph	10 mph Pace	25.5 - 35.5	mph
95th Percentile	36.0	mph	Percent in Pace	84.5	%
Westbound			Westbound		
50th Percentile (Median)	28.6	mph	Mean (Average) Speed	28.6	mph
85th Percentile	31.9	mph	10 mph Pace	23.5 - 33.5	mph
95th Percentile	34.1	mph	Percent in Pace	85.3	%

Location: CASTLE VALLEY BLVD W-O CLUBHOUSE DR
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 01

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average				
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021			Mid-Week Average				
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total		
12:00 AM	0	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	4
1:00 AM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
2:00 AM	1	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	6	7
3:00 AM	7	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	1	8
4:00 AM	28	2	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	2	30
5:00 AM	113	7	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	113	7	120
6:00 AM	195	58	253	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	58	253
7:00 AM	467	247	714	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	467	247	714
8:00 AM	269	106	375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	269	106	375
9:00 AM	157	89	246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	157	89	246
10:00 AM	125	90	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125	90	215
11:00 AM	121	99	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	121	99	220
12:00 PM	107	133	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	133	240
1:00 PM	104	138	242	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	138	242
2:00 PM	103	128	231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103	128	231
3:00 PM	124	236	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	124	236	360
4:00 PM	211	368	579	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	211	368	579
5:00 PM	151	381	532	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	151	381	532
6:00 PM	95	281	376	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	281	376
7:00 PM	55	136	191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	136	191
8:00 PM	28	67	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	67	95
9:00 PM	12	57	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	57	69
10:00 PM	6	9	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	9	15
11:00 PM	3	14	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	14	17
Total	2,483	2,658	5,141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,483	2,658	5,141
Percent	48%	52%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48%	52%	-

1. Mid-week average includes data between Tuesday and Thursday.

Vehicle Classification Report Summary

Location: BLACKHAWK DR N-O CASTLE VALLEY BLVD
Count Direction: Northbound / Southbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 02

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Northbound	1	99	19	0	40	0	0	0	0	0	0	0	0	159
Percent	0.6%	62.3%	11.9%	0.0%	25.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	1	112	35	0	7	1	0	0	0	0	0	0	0	156
Percent	0.6%	71.8%	22.4%	0.0%	4.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	2	211	54	0	47	1	0	0	0	0	0	0	0	315
Percent	0.6%	67.0%	17.1%	0.0%	14.9%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification

Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: **BLACKHAWK DR N-O CASTLE VALLEY BLVD**
 Count Direction: **Northbound / Southbound**
 Date Range: **11/9/2021 to 11/9/2021**
 Site Code: **02**

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Northbound	1	14	52	72	19	1	0	0	0	0	0	0	0	0	0	0	0	159
Percent	0.6%	8.8%	32.7%	45.3%	11.9%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	5	14	55	65	14	1	2	0	0	0	0	0	0	0	0	0	0	156
Percent	3.2%	9.0%	35.3%	41.7%	9.0%	0.6%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	6	28	107	137	33	2	2	0	0	0	0	0	0	0	0	0	0	315
Percent	1.9%	8.9%	34.0%	43.5%	10.5%	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Northbound			Northbound		
50th Percentile (Median)	20.8	mph	Mean (Average) Speed	20.6	mph
85th Percentile	24.6	mph	10 mph Pace	15.0 - 25.0	mph
95th Percentile	26.7	mph	Percent in Pace	78.6	%
Southbound			Southbound		
50th Percentile (Median)	20.2	mph	Mean (Average) Speed	20.0	mph
85th Percentile	23.9	mph	10 mph Pace	15.8 - 25.8	mph
95th Percentile	26.5	mph	Percent in Pace	78.2	%



Location: BLACKHAWK DR N-O CASTLE VALLEY BLVD
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 02

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
1:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
2:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
3:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
4:00 AM	0	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	2
5:00 AM	2	8	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	8	10
6:00 AM	1	14	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14	15
7:00 AM	9	27	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	27	36
8:00 AM	5	18	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	23
9:00 AM	11	12	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	12	23
10:00 AM	9	5	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	5	14
11:00 AM	9	9	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	9	18
12:00 PM	8	9	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	9	17
1:00 PM	7	11	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	11	18
2:00 PM	7	4	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	4	11
3:00 PM	10	10	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10	20
4:00 PM	22	7	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	7	29
5:00 PM	22	11	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	11	33
6:00 PM	16	2	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	2	18
7:00 PM	13	4	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	4	17
8:00 PM	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	4
9:00 PM	5	0	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0	5
10:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
11:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Total	159	156	315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	159	156	315
Percent	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50%	50%	-

1. Mid-week average includes data between Tuesday and Thursday.

Vehicle Classification Report Summary

Location: CASTLE VALLEY BLVD E-O FAAS RANCH RD
Count Direction: Eastbound / Westbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 03

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Eastbound	1	1,759	666	2	608	7	0	0	1	0	0	0	0	3,044
Percent	0.0%	57.8%	21.9%	0.1%	20.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	0	2,109	704	2	238	3	0	0	2	0	0	0	0	3,058
Percent	0.0%	69.0%	23.0%	0.1%	7.8%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	100%
Total	1	3,868	1,370	4	846	10	0	0	3	0	0	0	0	6,102
Percent	0.0%	63.4%	22.5%	0.1%	13.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: CASTLE VALLEY BLVD E-O FAAS RANCH RD
 Count Direction: Eastbound / Westbound
 Date Range: 11/9/2021 to 11/9/2021
 Site Code: 03

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Eastbound	1	7	44	189	773	1,409	555	63	3	0	0	0	0	0	0	0	0	3,044
Percent	0.0%	0.2%	1.4%	6.2%	25.4%	46.3%	18.2%	2.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Westbound	0	2	25	104	843	1,706	349	29	0	0	0	0	0	0	0	0	0	3,058
Percent	0.0%	0.1%	0.8%	3.4%	27.6%	55.8%	11.4%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	1	9	69	293	1,616	3,115	904	92	3	0	0	0	0	0	0	0	0	6,102
Percent	0.0%	0.1%	1.1%	4.8%	26.5%	51.0%	14.8%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Eastbound			Eastbound		
50th Percentile (Median)	31.8	mph	Mean (Average) Speed	31.5	mph
85th Percentile	35.9	mph	10 mph Pace	27.3 - 37.3	mph
95th Percentile	38.0	mph	Percent in Pace	77.5	%
Westbound			Westbound		
50th Percentile (Median)	31.4	mph	Mean (Average) Speed	31.3	mph
85th Percentile	34.6	mph	10 mph Pace	26.8 - 36.8	mph
95th Percentile	36.7	mph	Percent in Pace	87.4	%



Location: CASTLE VALLEY BLVD E-O FAAS RANCH RD
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 03

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	0	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	3
1:00 AM	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4
2:00 AM	2	5	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	7
3:00 AM	8	1	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	1	9
4:00 AM	32	2	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	2	34
5:00 AM	133	8	141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	133	8	141
6:00 AM	239	45	284	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	239	45	284
7:00 AM	535	201	736	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	535	201	736
8:00 AM	339	116	455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	339	116	455
9:00 AM	188	121	309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	121	309
10:00 AM	162	118	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	162	118	280
11:00 AM	141	127	268	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	141	127	268
12:00 PM	138	186	324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	186	324
1:00 PM	134	160	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	134	160	294
2:00 PM	146	148	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	148	294
3:00 PM	159	283	442	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	159	283	442
4:00 PM	250	415	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	415	665
5:00 PM	193	446	639	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	193	446	639
6:00 PM	107	340	447	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	340	447
7:00 PM	72	161	233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	161	233
8:00 PM	38	77	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	77	115
9:00 PM	14	67	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	67	81
10:00 PM	7	11	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	11	18
11:00 PM	5	15	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	15	20
Total	3,044	3,058	6,102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,044	3,058	6,102
Percent	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50%	50%	-

1. Mid-week average includes data between Tuesday and Thursday.

Vehicle Classification Report Summary

Location: FAAS RANCH RD N-O CASTLE VALLEY BLVD
Count Direction: Northbound / Southbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 04

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Northbound	0	77	40	0	34	1	0	0	0	0	0	0	0	152
Percent	0.0%	50.7%	26.3%	0.0%	22.4%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	0	103	40	0	10	0	0	0	0	0	0	0	0	153
Percent	0.0%	67.3%	26.1%	0.0%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	0	180	80	0	44	1	0	0	0	0	0	0	0	305
Percent	0.0%	59.0%	26.2%	0.0%	14.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Vehicle Speed Report Summary

Location: FAAS RANCH RD N-O CASTLE VALLEY BLVD
Count Direction: Northbound / Southbound
Date Range: 11/9/2021 to 11/9/2021
Site Code: 04

	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
Study Total																		
Northbound	2	11	16	57	60	6	0	0	0	0	0	0	0	0	0	0	0	152
Percent	1.3%	7.2%	10.5%	37.5%	39.5%	3.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Southbound	0	1	15	67	68	2	0	0	0	0	0	0	0	0	0	0	0	153
Percent	0.0%	0.7%	9.8%	43.8%	44.4%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Total	2	12	31	124	128	8	0	0	0	0	0	0	0	0	0	0	0	305
Percent	0.7%	3.9%	10.2%	40.7%	42.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Total Study Percentile Speed Summary			Total Study Speed Statistics		
Northbound			Northbound		
50th Percentile (Median)	24.2	mph	Mean (Average) Speed	23.3	mph
85th Percentile	28.0	mph	10 mph Pace	19.1 - 29.1	mph
95th Percentile	30.0	mph	Percent in Pace	77.6	%
Southbound			Southbound		
50th Percentile (Median)	24.5	mph	Mean (Average) Speed	24.4	mph
85th Percentile	27.5	mph	10 mph Pace	19.8 - 29.8	mph
95th Percentile	29.4	mph	Percent in Pace	88.9	%



Location: FAAS RANCH RD N-O CASTLE VALLEY BLVD
 Date Range: 11/9/2021 - 11/15/2021
 Site Code: 04

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	11/9/2021			11/10/2021			11/11/2021			11/12/2021			11/13/2021			11/14/2021			11/15/2021					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
1:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
2:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
3:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
4:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
5:00 AM	0	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	3
6:00 AM	1	10	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	11
7:00 AM	5	32	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	32	37
8:00 AM	10	14	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	14	24
9:00 AM	5	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	8
10:00 AM	6	7	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	7	13
11:00 AM	9	7	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	7	16
12:00 PM	10	13	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	13	23
1:00 PM	10	11	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	11	21
2:00 PM	10	7	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	7	17
3:00 PM	9	9	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	9	18
4:00 PM	30	15	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	15	45
5:00 PM	18	7	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	7	25
6:00 PM	16	9	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	9	25
7:00 PM	8	4	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	4	12
8:00 PM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
9:00 PM	4	0	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	4
10:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
11:00 PM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Total	152	153	305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	152	153	305
Percent	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50%	50%	-

1. Mid-week average includes data between Tuesday and Thursday.



***Intersection Capacity Worksheets:
Existing***



HCM 6th TWSC
01/05/2022

1: White Horse Drive & Lakota Drive
2021 Existing - AM Peak Hour

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	2	0	4	0	0	9
Future Vol, veh/h	2	0	4	0	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	4	0	10	0	0	16

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	26	10	0	0	10	0
Stage 1	10	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	992	1074	-	-	1616	-
Stage 1	1016	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	992	1074	-	-	1616	-
Mov Cap-2 Maneuver	992	-	-	-	-	-
Stage 1	1016	-	-	-	-	-
Stage 2	1009	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	992	1616
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	13	7	4	11	1
Future Vol, veh/h	1	13	7	4	11	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	15	10	6	22	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	16	0	-	0	31
Stage 1	-	-	-	-	13
Stage 2	-	-	-	-	18
Critical Hdwy	4.11	-	-	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	2.209	-	-	-	3.509
Pot Cap-1 Maneuver	1608	-	-	-	986
Stage 1	-	-	-	-	1012
Stage 2	-	-	-	-	1007
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1608	-	-	-	985
Mov Cap-2 Maneuver	-	-	-	-	985
Stage 1	-	-	-	-	1011
Stage 2	-	-	-	-	1007

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1608	-	-	-	992
HCM Lane V/C Ratio	0.001	-	-	-	0.024
HCM Control Delay (s)	7.2	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	1	521	189	10	26	4
Future Vol, veh/h	1	521	189	10	26	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	1	620	217	11	38	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	228	0	-	0	839 217
Stage 1	-	-	-	-	217 -
Stage 2	-	-	-	-	622 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1346	-	-	-	337 825
Stage 1	-	-	-	-	822 -
Stage 2	-	-	-	-	537 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1346	-	-	-	337 825
Mov Cap-2 Maneuver	-	-	-	-	337 -
Stage 1	-	-	-	-	821 -
Stage 2	-	-	-	-	537 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1346	-	-	-	366
HCM Lane V/C Ratio	0.001	-	-	-	0.121
HCM Control Delay (s)	7.7	0	-	-	16.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

HCM 6th TWSC
01/05/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2021 Existing - AM Peak Hour

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	2	544	1	2	191	13	0	0	2	28	0	8
Future Vol, veh/h	2	544	1	2	191	13	0	0	2	28	0	8
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	50	50	50
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	2	640	1	2	220	15	0	0	8	56	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	235	0	0	642	0	0	885	884	643	875	870	220
Stage 1	-	-	-	-	-	-	645	645	-	224	224	-
Stage 2	-	-	-	-	-	-	240	239	-	651	646	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1338	-	-	947	-	-	183	200	337	271	291	822
Stage 1	-	-	-	-	-	-	331	344	-	781	720	-
Stage 2	-	-	-	-	-	-	588	559	-	459	469	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1338	-	-	946	-	-	179	199	336	263	290	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	179	199	-	263	290	-
Stage 1	-	-	-	-	-	-	330	343	-	779	719	-
Stage 2	-	-	-	-	-	-	575	558	-	446	468	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			16			20.1		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	336	1338	-	-	946	-	-	310
HCM Lane V/C Ratio	0.024	0.002	-	-	0.002	-	-	0.232
HCM Control Delay (s)	16	7.7	0	-	8.8	0	-	20.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.9

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	1	0	8	2	0	5
Future Vol, veh/h	1	0	8	2	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	4	0	13	3	0	8

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	23	15	0	0	16
Stage 1	15	-	-	-	-
Stage 2	8	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	996	1067	-	-	1608
Stage 1	1010	-	-	-	-
Stage 2	1018	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	996	1067	-	-	1608
Mov Cap-2 Maneuver	996	-	-	-	-
Stage 1	1010	-	-	-	-
Stage 2	1018	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	996	1608
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	0	11	12	1	5
Future Vol, veh/h	5	0	11	12	1	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	0	15	17	2	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	35	0	-	0	54 27
Stage 1	-	-	-	-	27 -
Stage 2	-	-	-	-	27 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1583	-	-	-	957 1051
Stage 1	-	-	-	-	998 -
Stage 2	-	-	-	-	998 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1578	-	-	-	944 1048
Mov Cap-2 Maneuver	-	-	-	-	944 -
Stage 1	-	-	-	-	987 -
Stage 2	-	-	-	-	995 -

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1578	-	-	-	1029
HCM Lane V/C Ratio	0.008	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↑	↕	
Traffic Vol, veh/h	0	231	372	22	12	1
Future Vol, veh/h	0	231	372	22	12	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	0	263	396	23	22	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	426	0	-	0	666 403
Stage 1	-	-	-	-	403 -
Stage 2	-	-	-	-	263 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1123	-	-	-	426 650
Stage 1	-	-	-	-	677 -
Stage 2	-	-	-	-	783 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1116	-	-	-	420 646
Mov Cap-2 Maneuver	-	-	-	-	420 -
Stage 1	-	-	-	-	672 -
Stage 2	-	-	-	-	778 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1116	-	-	-	432
HCM Lane V/C Ratio	-	-	-	-	0.056
HCM Control Delay (s)	0	-	-	-	13.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC
01/05/2022

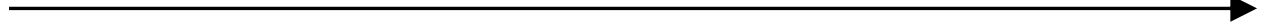
4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2021 Existing - PM Peak Hour

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	6	237	0	0	389	24	0	0	0	10	0	5
Future Vol, veh/h	6	237	0	0	389	24	0	0	0	10	0	5
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	7	258	0	0	437	27	0	0	0	13	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	468	0	0	260	0	0	729	742	260	713	715	442
Stage 1	-	-	-	-	-	-	274	274	-	441	441	-
Stage 2	-	-	-	-	-	-	455	468	-	272	274	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	1083	-	-	1304	-	-	340	345	781	340	357	605
Stage 1	-	-	-	-	-	-	734	685	-	586	579	-
Stage 2	-	-	-	-	-	-	587	563	-	723	685	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1079	-	-	1302	-	-	333	340	780	337	352	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	333	340	-	337	352	-
Stage 1	-	-	-	-	-	-	727	678	-	579	577	-
Stage 2	-	-	-	-	-	-	580	561	-	717	678	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	14.6
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1079	-	-	1302	-	-	395
HCM Lane V/C Ratio	-	0.006	-	-	-	-	-	0.051
HCM Control Delay (s)	0	8.4	0	-	0	-	-	14.6
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2



***Intersection Capacity Worksheets:
2025 Background***



Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	2	0	4	0	0	10
Future Vol, veh/h	2	0	4	0	0	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	4	0	10	0	0	18

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	33	15	0	0	15
Stage 1	15	-	-	-	-
Stage 2	18	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	983	1067	-	-	1609
Stage 1	1010	-	-	-	-
Stage 2	1007	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	978	1062	-	-	1601
Mov Cap-2 Maneuver	978	-	-	-	-
Stage 1	1005	-	-	-	-
Stage 2	1007	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	978	1601
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.7	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	15	10	4	15	1
Future Vol, veh/h	1	15	10	4	15	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	17	14	6	30	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	20	0	-	0	37
Stage 1	-	-	-	-	17
Stage 2	-	-	-	-	20
Critical Hdwy	4.11	-	-	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	2.209	-	-	-	3.509
Pot Cap-1 Maneuver	1603	-	-	-	978
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	1005
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1603	-	-	-	977
Mov Cap-2 Maneuver	-	-	-	-	977
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	1005

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1603	-	-	-	982
HCM Lane V/C Ratio	0.001	-	-	-	0.033
HCM Control Delay (s)	7.2	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	1	569	208	11	28	4
Future Vol, veh/h	1	569	208	11	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	1	677	239	13	41	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	252	0	-	0	918 239
Stage 1	-	-	-	-	239 -
Stage 2	-	-	-	-	679 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1319	-	-	-	303 802
Stage 1	-	-	-	-	803 -
Stage 2	-	-	-	-	506 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1319	-	-	-	303 802
Mov Cap-2 Maneuver	-	-	-	-	303 -
Stage 1	-	-	-	-	802 -
Stage 2	-	-	-	-	506 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1319	-	-	-	329
HCM Lane V/C Ratio	0.001	-	-	-	0.143
HCM Control Delay (s)	7.7	0	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	2	594	1	2	211	14	0	0	2	30	0	8
Future Vol, veh/h	2	594	1	2	211	14	0	0	2	30	0	8
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	50	50	50
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	2	699	1	2	243	16	0	0	8	60	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	701	0	0	967	967	702	957	952	243
Stage 1	-	-	-	-	-	-	704	704	-	247	247	-
Stage 2	-	-	-	-	-	-	263	263	-	710	705	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1311	-	-	901	-	-	158	176	308	238	260	798
Stage 1	-	-	-	-	-	-	304	320	-	759	704	-
Stage 2	-	-	-	-	-	-	570	544	-	426	441	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1311	-	-	900	-	-	154	175	307	230	258	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	175	-	230	258	-
Stage 1	-	-	-	-	-	-	303	319	-	757	702	-
Stage 2	-	-	-	-	-	-	557	542	-	413	440	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			17			23.4		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	307	1311	-	-	900	-	-	271
HCM Lane V/C Ratio	0.026	0.002	-	-	0.003	-	-	0.28
HCM Control Delay (s)	17	7.8	0	-	9	0	-	23.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	1.1

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	1	0	8	2	0	5
Future Vol, veh/h	1	0	8	2	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	4	0	13	3	0	8

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	23	15	0	0	16
Stage 1	15	-	-	-	-
Stage 2	8	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	996	1067	-	-	1608
Stage 1	1010	-	-	-	-
Stage 2	1018	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	996	1067	-	-	1608
Mov Cap-2 Maneuver	996	-	-	-	-
Stage 1	1010	-	-	-	-
Stage 2	1018	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	996	1608
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	5	12	13	1	5
Future Vol, veh/h	0	5	12	13	1	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	13	17	18	2	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	38	0	-	0	43 29
Stage 1	-	-	-	-	29 -
Stage 2	-	-	-	-	14 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1579	-	-	-	970 1049
Stage 1	-	-	-	-	996 -
Stage 2	-	-	-	-	1011 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1574	-	-	-	964 1046
Mov Cap-2 Maneuver	-	-	-	-	964 -
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	1008 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1574	-	-	-	1031
HCM Lane V/C Ratio	-	-	-	-	0.009
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	0	255	410	23	13	1
Future Vol, veh/h	0	255	410	23	13	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	0	290	436	24	24	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	467	0	-	0	733 443
Stage 1	-	-	-	-	443 -
Stage 2	-	-	-	-	290 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1084	-	-	-	389 617
Stage 1	-	-	-	-	649 -
Stage 2	-	-	-	-	762 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1077	-	-	-	384 613
Mov Cap-2 Maneuver	-	-	-	-	384 -
Stage 1	-	-	-	-	644 -
Stage 2	-	-	-	-	757 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1077	-	-	-	395
HCM Lane V/C Ratio	-	-	-	-	0.066
HCM Control Delay (s)	0	-	-	-	14.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	6	262	0	0	428	25	0	0	0	11	0	5
Future Vol, veh/h	6	262	0	0	428	25	0	0	0	11	0	5
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	7	285	0	0	481	28	0	0	0	15	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	287	0	0	801	814	287	784	786	486
Stage 1	-	-	-	-	-	-	301	301	-	485	485	-
Stage 2	-	-	-	-	-	-	500	513	-	299	301	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	1042	-	-	1275	-	-	304	313	754	305	325	571
Stage 1	-	-	-	-	-	-	710	667	-	554	553	-
Stage 2	-	-	-	-	-	-	555	538	-	699	667	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1038	-	-	1273	-	-	298	309	753	302	320	568
Mov Cap-2 Maneuver	-	-	-	-	-	-	298	309	-	302	320	-
Stage 1	-	-	-	-	-	-	703	660	-	547	551	-
Stage 2	-	-	-	-	-	-	548	536	-	693	660	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	15.8
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1038	-	-	1273	-	-	354
HCM Lane V/C Ratio	-	0.006	-	-	-	-	-	0.06
HCM Control Delay (s)	0	8.5	0	-	0	-	-	15.8
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2



***Intersection Capacity Worksheets:
2030 Background***



Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	2	0	5	0	0	10
Future Vol, veh/h	2	0	5	0	0	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	4	0	12	0	0	18

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	35	17	0	0	17	0
Stage 1	17	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	980	1065	-	-	1607	-
Stage 1	1008	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	975	1060	-	-	1599	-
Mov Cap-2 Maneuver	975	-	-	-	-	-
Stage 1	1003	-	-	-	-	-
Stage 2	1007	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1599
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.7	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	15	10	5	15	1
Future Vol, veh/h	1	15	10	5	15	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	17	14	7	30	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	21	0	-	0	38 18
Stage 1	-	-	-	-	18 -
Stage 2	-	-	-	-	20 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1601	-	-	-	977 1063
Stage 1	-	-	-	-	1007 -
Stage 2	-	-	-	-	1005 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1601	-	-	-	976 1063
Mov Cap-2 Maneuver	-	-	-	-	976 -
Stage 1	-	-	-	-	1006 -
Stage 2	-	-	-	-	1005 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1601	-	-	-	981
HCM Lane V/C Ratio	0.001	-	-	-	0.033
HCM Control Delay (s)	7.2	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	1	610	220	15	30	5
Future Vol, veh/h	1	610	220	15	30	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	1	726	253	17	44	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	270	0	-	0	981 253
Stage 1	-	-	-	-	253 -
Stage 2	-	-	-	-	728 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1299	-	-	-	278 788
Stage 1	-	-	-	-	791 -
Stage 2	-	-	-	-	480 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1299	-	-	-	278 788
Mov Cap-2 Maneuver	-	-	-	-	278 -
Stage 1	-	-	-	-	790 -
Stage 2	-	-	-	-	480 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1299	-	-	-	306
HCM Lane V/C Ratio	0.001	-	-	-	0.168
HCM Control Delay (s)	7.8	0	-	-	19.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	2	635	1	2	225	15	0	0	2	30	0	10
Future Vol, veh/h	2	635	1	2	225	15	0	0	2	30	0	10
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	50	50	50
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	2	747	1	2	259	17	0	0	8	60	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	276	0	0	749	0	0	1034	1032	750	1021	1016	259
Stage 1	-	-	-	-	-	-	752	752	-	263	263	-
Stage 2	-	-	-	-	-	-	282	280	-	758	753	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1293	-	-	864	-	-	141	159	287	216	239	782
Stage 1	-	-	-	-	-	-	284	302	-	744	693	-
Stage 2	-	-	-	-	-	-	555	533	-	401	419	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1293	-	-	863	-	-	137	158	286	209	237	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	158	-	209	237	-
Stage 1	-	-	-	-	-	-	283	301	-	742	691	-
Stage 2	-	-	-	-	-	-	539	531	-	388	417	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			17.9			25.3		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	286	1293	-	-	863	-	-	256
HCM Lane V/C Ratio	0.028	0.002	-	-	0.003	-	-	0.313
HCM Control Delay (s)	17.9	7.8	0	-	9.2	0	-	25.3
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	1.3

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	1	0	10	2	0	5
Future Vol, veh/h	1	0	10	2	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	4	0	16	3	0	8

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	26	18	0	0	19
Stage 1	18	-	-	-	-
Stage 2	8	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	992	1063	-	-	1604
Stage 1	1007	-	-	-	-
Stage 2	1018	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	992	1063	-	-	1604
Mov Cap-2 Maneuver	992	-	-	-	-
Stage 1	1007	-	-	-	-
Stage 2	1018	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	992	1604
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	8.6	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	5	15	15	1	5
Future Vol, veh/h	0	5	15	15	1	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	13	21	21	2	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	45	0	-	0	49 35
Stage 1	-	-	-	-	35 -
Stage 2	-	-	-	-	14 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1570	-	-	-	963 1041
Stage 1	-	-	-	-	990 -
Stage 2	-	-	-	-	1011 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1566	-	-	-	957 1038
Mov Cap-2 Maneuver	-	-	-	-	957 -
Stage 1	-	-	-	-	987 -
Stage 2	-	-	-	-	1008 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1566	-	-	-	1024
HCM Lane V/C Ratio	-	-	-	-	0.009
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	0	275	440	25	15	1
Future Vol, veh/h	0	275	440	25	15	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	0	313	468	27	28	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	502	0	-	0	788 475
Stage 1	-	-	-	-	475 -
Stage 2	-	-	-	-	313 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1052	-	-	-	361 592
Stage 1	-	-	-	-	628 -
Stage 2	-	-	-	-	744 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1045	-	-	-	356 588
Mov Cap-2 Maneuver	-	-	-	-	356 -
Stage 1	-	-	-	-	624 -
Stage 2	-	-	-	-	739 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1045	-	-	-	365
HCM Lane V/C Ratio	-	-	-	-	0.081
HCM Control Delay (s)	0	-	-	-	15.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
01/05/2022

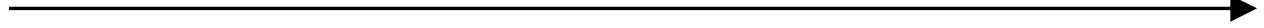
4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2030 Background - PM Peak Hour

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕			↕	↕
Traffic Vol, veh/h	10	280	0	0	460	25	0	0	0	15	0	5
Future Vol, veh/h	10	280	0	0	460	25	0	0	0	15	0	5
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	73	-	-	58	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	11	304	0	0	517	28	0	0	0	20	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	549	0	0	306	0	0	864	877	306	847	849	522
Stage 1	-	-	-	-	-	-	328	328	-	521	521	-
Stage 2	-	-	-	-	-	-	536	549	-	326	328	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	1011	-	-	1255	-	-	276	288	736	276	299	545
Stage 1	-	-	-	-	-	-	687	649	-	529	533	-
Stage 2	-	-	-	-	-	-	530	518	-	676	649	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1007	-	-	1253	-	-	269	283	735	272	293	542
Mov Cap-2 Maneuver	-	-	-	-	-	-	269	283	-	272	293	-
Stage 1	-	-	-	-	-	-	677	639	-	520	531	-
Stage 2	-	-	-	-	-	-	523	516	-	667	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	17.7
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1007	-	-	1253	-	-	311
HCM Lane V/C Ratio	-	0.011	-	-	-	-	-	0.086
HCM Control Delay (s)		0	8.6	0	0	-	-	17.7
HCM Lane LOS		A	A	A	-	A	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.3



***Intersection Capacity Worksheets:
2025 Background +
Project***



Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	19	1	4	5	1	10
Future Vol, veh/h	19	1	4	5	1	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	38	2	10	12	2	18

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	43	21	0	0	27
Stage 1	21	-	-	-	-
Stage 2	22	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	970	1059	-	-	1593
Stage 1	1004	-	-	-	-
Stage 2	1003	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	964	1054	-	-	1585
Mov Cap-2 Maneuver	964	-	-	-	-
Stage 1	999	-	-	-	-
Stage 2	1002	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	968	1585
HCM Lane V/C Ratio	-	-	0.041	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	17	9	9	29	1
Future Vol, veh/h	1	17	9	9	29	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	19	13	13	58	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	26	0	-	0	42 20
Stage 1	-	-	-	-	20 -
Stage 2	-	-	-	-	22 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1595	-	-	-	972 1061
Stage 1	-	-	-	-	1005 -
Stage 2	-	-	-	-	1003 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1595	-	-	-	971 1061
Mov Cap-2 Maneuver	-	-	-	-	971 -
Stage 1	-	-	-	-	1004 -
Stage 2	-	-	-	-	1003 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1595	-	-	-	974
HCM Lane V/C Ratio	0.001	-	-	-	0.062
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	3	599	228	15	41	11
Future Vol, veh/h	3	599	228	15	41	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	4	713	262	17	60	16
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	279	0	-	0	983	262
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1289	-	-	-	277	779
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	483	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1289	-	-	-	276	779
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	483	-
Approach	EB	WB	SB			
HCM Control Delay, s	0	0	19.7			
HCM LOS						C
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1289	-	-	-	320	
HCM Lane V/C Ratio	0.003	-	-	-	0.239	
HCM Control Delay (s)	7.8	0	-	-	19.7	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.9	

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗		↔		↙	↗	
Traffic Vol, veh/h	39	600	1	2	211	79	0	0	2	94	0	32
Future Vol, veh/h	39	600	1	2	211	79	0	0	2	94	0	32
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	73	50	-	150	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	25	25	25	85	85	85
Heavy Vehicles, %	1	2	1	1	6	1	100	100	100	1	1	1
Mvmt Flow	46	706	1	2	243	91	0	0	8	111	0	38

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	334	0	0	708	0	0	1111	1137	709	1052	1047	243
Stage 1	-	-	-	-	-	-	799	799	-	247	247	-
Stage 2	-	-	-	-	-	-	312	338	-	805	800	-
Critical Hdwy	4.11	-	-	4.11	-	-	8.1	7.5	7.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	4.4	4.9	4.2	3.509	4.009	3.309
Pot Cap-1 Maneuver	1231	-	-	895	-	-	123	135	305	205	229	798
Stage 1	-	-	-	-	-	-	265	285	-	759	704	-
Stage 2	-	-	-	-	-	-	532	498	-	378	399	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1231	-	-	894	-	-	114	130	304	193	220	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	130	-	193	220	-
Stage 1	-	-	-	-	-	-	255	274	-	731	703	-
Stage 2	-	-	-	-	-	-	506	497	-	354	384	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.5		0.1		17.2		36.9	
HCM LOS					C		E	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	304	1231	-	-	894	-	-	193	798
HCM Lane V/C Ratio	0.026	0.037	-	-	0.003	-	-	0.573	0.047
HCM Control Delay (s)	17.2	8	-	-	9	-	-	46.1	9.7
HCM Lane LOS	C	A	-	-	A	-	-	E	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	3.1	0.1

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			B
Traffic Vol, veh/h	30	1	60	58	1	96
Future Vol, veh/h	30	1	60	58	1	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	1	71	68	1	113

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	220	105	0	0	139
Stage 1	105	-	-	-	-
Stage 2	115	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	768	949	-	-	1445
Stage 1	919	-	-	-	-
Stage 2	910	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	767	949	-	-	1445
Mov Cap-2 Maneuver	767	-	-	-	-
Stage 1	919	-	-	-	-
Stage 2	909	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	772	1445
HCM Lane V/C Ratio	-	-	0.047	0.001
HCM Control Delay (s)	-	-	9.9	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	1	28	30	1	1	28	15	17	1	39	1
Future Vol, veh/h	1	1	28	30	1	1	28	15	17	1	39	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	33	35	1	1	33	18	20	1	46	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	144	153	47	160	143	28	47	0	0	38	0	0
Stage 1	49	49	-	94	94	-	-	-	-	-	-	-
Stage 2	95	104	-	66	49	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	825	739	1022	806	748	1047	1560	-	-	1572	-	-
Stage 1	964	854	-	913	817	-	-	-	-	-	-	-
Stage 2	912	809	-	945	854	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	809	722	1022	766	731	1047	1560	-	-	1572	-	-
Mov Cap-2 Maneuver	809	722	-	766	731	-	-	-	-	-	-	-
Stage 1	943	853	-	893	799	-	-	-	-	-	-	-
Stage 2	890	791	-	912	853	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	9.9	3.4	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1560	-	-	999	771	1572	-	-
HCM Lane V/C Ratio	0.021	-	-	0.035	0.049	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.7	9.9	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0	-	-

Intersection						
Int Delay, s/veh	4.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	12	1	8	20	1	5
Future Vol, veh/h	12	1	8	20	1	5
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	48	4	13	32	2	8

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	42	29	0	0	45
Stage 1	29	-	-	-	-
Stage 2	13	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	972	1049	-	-	1570
Stage 1	996	-	-	-	-
Stage 2	1012	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	970	1049	-	-	1570
Mov Cap-2 Maneuver	970	-	-	-	-
Stage 1	996	-	-	-	-
Stage 2	1010	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	976	1570
HCM Lane V/C Ratio	-	-	0.053	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	3	16	31	12	5
Future Vol, veh/h	5	3	16	31	12	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	8	22	43	19	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	68	0	-	0	82 47
Stage 1	-	-	-	-	47 -
Stage 2	-	-	-	-	35 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1540	-	-	-	922 1025
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	990 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1536	-	-	-	908 1022
Mov Cap-2 Maneuver	-	-	-	-	908 -
Stage 1	-	-	-	-	966 -
Stage 2	-	-	-	-	987 -

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1536	-	-	-	939
HCM Lane V/C Ratio	0.009	-	-	-	0.029
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↑	↕	
Traffic Vol, veh/h	7	301	455	38	23	5
Future Vol, veh/h	7	301	455	38	23	5
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	8	342	484	40	43	9

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	531	0	-	0	849 491
Stage 1	-	-	-	-	491 -
Stage 2	-	-	-	-	358 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1026	-	-	-	333 580
Stage 1	-	-	-	-	617 -
Stage 2	-	-	-	-	710 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1019	-	-	-	325 576
Mov Cap-2 Maneuver	-	-	-	-	325 -
Stage 1	-	-	-	-	607 -
Stage 2	-	-	-	-	705 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	17
HCM LOS			C




Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1019	-	-	-	352
HCM Lane V/C Ratio	0.008	-	-	-	0.147
HCM Control Delay (s)	8.6	0	-	-	17
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection												
Int Delay, s/veh	10.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗		↔		↙	↗	
Traffic Vol, veh/h	85	239	0	0	417	150	0	0	0	136	0	76
Future Vol, veh/h	85	239	0	0	417	150	0	0	0	136	0	76
Conflicting Peds, #/hr	4	0	2	2	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	73	50	-	150	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	88	88	88	75	75	75
Heavy Vehicles, %	4	4	4	2	2	2	1	1	1	7	1	7
Mvmt Flow	92	260	0	0	469	169	0	0	0	181	0	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	642	0	0	262	0	0	1051	1088	262	917	919	474
Stage 1	-	-	-	-	-	-	446	446	-	473	473	-
Stage 2	-	-	-	-	-	-	605	642	-	444	446	-
Critical Hdwy	4.14	-	-	4.12	-	-	7.11	6.51	6.21	7.17	6.51	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.17	5.51	-
Follow-up Hdwy	2.236	-	-	2.218	-	-	3.509	4.009	3.309	3.563	4.009	3.363
Pot Cap-1 Maneuver	933	-	-	1302	-	-	206	217	779	248	272	580
Stage 1	-	-	-	-	-	-	593	576	-	562	560	-
Stage 2	-	-	-	-	-	-	486	470	-	583	576	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	929	-	-	1300	-	-	157	194	778	228	244	577
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	194	-	228	244	-
Stage 1	-	-	-	-	-	-	533	518	-	505	558	-
Stage 2	-	-	-	-	-	-	400	468	-	525	518	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0	0	44.9
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	929	-	-	1300	-	-	228	577
HCM Lane V/C Ratio	-	0.099	-	-	-	-	-	0.795	0.176
HCM Control Delay (s)	0	9.3	-	-	0	-	-	62.9	12.6
HCM Lane LOS	A	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	5.8	0.6

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	91	1	150	85	1	121
Future Vol, veh/h	91	1	150	85	1	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	1	176	100	1	142

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	370	226	0	0	276
Stage 1	226	-	-	-	-
Stage 2	144	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	630	813	-	-	1287
Stage 1	812	-	-	-	-
Stage 2	883	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	629	813	-	-	1287
Mov Cap-2 Maneuver	629	-	-	-	-
Stage 1	812	-	-	-	-
Stage 2	882	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	631	1287
HCM Lane V/C Ratio	-	-	0.172	0.001
HCM Control Delay (s)	-	-	11.9	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕		↕		↕		↕		↕	
Traffic Vol, veh/h	1	1	73	33	1	2	90	31	30	1	16	2
Future Vol, veh/h	1	1	73	33	1	2	90	31	30	1	16	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	86	39	1	2	106	36	35	1	19	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	289	305	20	332	289	54	21	0	0	71	0	0
Stage 1	22	22	-	266	266	-	-	-	-	-	-	-
Stage 2	267	283	-	66	23	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	663	608	1058	621	621	1013	1595	-	-	1529	-	-
Stage 1	996	877	-	739	689	-	-	-	-	-	-	-
Stage 2	738	677	-	945	876	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	625	565	1058	539	577	1013	1595	-	-	1529	-	-
Mov Cap-2 Maneuver	625	565	-	539	577	-	-	-	-	-	-	-
Stage 1	926	876	-	687	641	-	-	-	-	-	-	-
Stage 2	683	630	-	866	875	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		12		4.4		0.4	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1595	-	-	1036	554	1529	-	-
HCM Lane V/C Ratio	0.066	-	-	0.085	0.076	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.8	12	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	0.2	0	-	-



***Intersection Capacity Worksheets:
2025 Background +
Project
With Improvements***



Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	39	600	1	2	211	79	0	94	0
Future Volume (vph)	39	600	1	2	211	79	0	94	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4			8		2		6
Permitted Phases	4		4	8		8		6	
Detector Phase	7	4	4	8	8	8	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	39.0	39.0	28.0	28.0	28.0	31.0	31.0	31.0
Total Split (%)	15.7%	55.7%	55.7%	40.0%	40.0%	40.0%	44.3%	44.3%	44.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag			
Lead-Lag Optimize?	Yes			Yes	Yes	Yes			
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	22.7	22.7	22.7	19.1	19.1	19.1	9.4	9.4	9.4
Actuated g/C Ratio	0.51	0.51	0.51	0.43	0.43	0.43	0.21	0.21	0.21
v/c Ratio	0.08	0.75	0.00	0.01	0.32	0.12	0.03	0.38	0.05

Intersection Summary

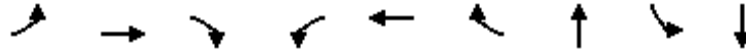
Cycle Length: 70
 Actuated Cycle Length: 44.7
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 12.8
 Intersection Capacity Utilization 54.3%
 Analysis Period (min) 15

Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

Ø2	Ø4
31 s	39 s
Ø6	Ø7
31 s	11 s
	Ø8
	28 s

Queues
03/18/2022
























4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	46	706	1	2	243	91	8	111	38
v/c Ratio	0.08	0.75	0.00	0.01	0.32	0.12	0.03	0.38	0.05
Control Delay	5.9	14.5	0.0	11.0	12.0	1.5	0.0	21.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	14.5	0.0	11.0	12.0	1.5	0.0	21.3	0.1
Queue Length 50th (ft)	5	123	0	0	30	0	0	25	0
Queue Length 95th (ft)	17	234	0	4	105	10	0	67	0
Internal Link Dist (ft)		514			395		67		159
Turn Bay Length (ft)	150		73	50		150		100	
Base Capacity (vph)	549	1421	1204	385	937	902	534	829	1158
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.50	0.00	0.01	0.26	0.10	0.01	0.13	0.03

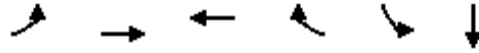
Intersection Summary

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.
03/18/2022 2025 Bkgrd + Project (with Improvements) - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	600	1	2	211	79	0	0	2	94	0	32
Future Volume (veh/h)	39	600	1	2	211	79	0	0	2	94	0	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1885	1811	1885	418	418	418	1885	1885	1885
Adj Flow Rate, veh/h	46	706	1	2	243	91	0	0	8	111	0	38
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.25	0.25	0.25	0.85	0.85	0.85
Percent Heavy Veh, %	1	2	1	1	6	1	100	100	100	1	1	1
Cap, veh/h	468	929	793	343	506	445	0	0	60	413	0	271
Arrive On Green	0.05	0.50	0.50	0.28	0.28	0.28	0.00	0.00	0.17	0.17	0.00	0.17
Sat Flow, veh/h	1795	1870	1596	747	1811	1595	0	0	352	1411	0	1588
Grp Volume(v), veh/h	46	706	1	2	243	91	0	0	8	111	0	38
Grp Sat Flow(s),veh/h/ln	1795	1870	1596	747	1811	1595	0	0	352	1411	0	1588
Q Serve(g_s), s	0.6	11.0	0.0	0.1	4.0	1.6	0.0	0.0	0.7	2.6	0.0	0.7
Cycle Q Clear(g_c), s	0.6	11.0	0.0	3.2	4.0	1.6	0.0	0.0	0.7	3.3	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	468	929	793	343	506	445	0	0	60	413	0	271
V/C Ratio(X)	0.10	0.76	0.00	0.01	0.48	0.20	0.00	0.00	0.13	0.27	0.00	0.14
Avail Cap(c_a), veh/h	625	1710	1459	589	1104	972	0	0	244	1150	0	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.5	7.3	4.6	11.8	10.8	9.9	0.0	0.0	12.7	14.1	0.0	12.7
Incr Delay (d2), s/veh	0.1	1.3	0.0	0.0	0.7	0.2	0.0	0.0	1.0	0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.5	0.0	0.0	1.3	0.4	0.0	0.0	0.1	0.7	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	8.6	4.6	11.8	11.5	10.2	0.0	0.0	13.7	14.4	0.0	12.9
LnGrp LOS	A	A	A	B	B	B	A	A	B	B	A	B
Approach Vol, veh/h		753			336			8				149
Approach Delay, s/veh		8.6			11.2			13.7				14.1
Approach LOS		A			B			B				B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		12.2		23.9		12.2	7.8	16.1				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		25.0		33.0		25.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		2.7		13.0		5.3	2.6	6.0				
Green Ext Time (p_c), s		0.0		4.8		0.5	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay				10.0								
HCM 6th LOS				A								

Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBT	Ø2
Lane Configurations	↶	↷	↶	↷	↶	↷	↓
Traffic Volume (vph)	85	239	417	150	136	0	
Future Volume (vph)	85	239	417	150	136	0	
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	
Protected Phases	7	4	8			6	2
Permitted Phases	4			8	6		
Detector Phase	7	4	8	8	6	6	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	39.0	28.0	28.0	31.0	31.0	31.0
Total Split (%)	15.7%	55.7%	40.0%	40.0%	44.3%	44.3%	44%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	None	None	None	Min	Min	Min
Act Effct Green (s)	26.2	26.2	18.3	18.3	12.9	12.9	
Actuated g/C Ratio	0.50	0.50	0.35	0.35	0.25	0.25	
v/c Ratio	0.26	0.28	0.72	0.26	0.55	0.17	

Intersection Summary

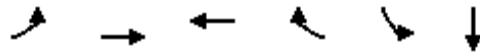
Cycle Length: 70
 Actuated Cycle Length: 52.2
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 15.6
 Intersection Capacity Utilization 49.6%
 Analysis Period (min) 15

Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

↶ Ø2 31 s	↷ Ø4 39 s
↶ Ø6 31 s	↷ Ø7 11 s
	↶ Ø8 28 s

Queues
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.
2025 Bkgrd + Project (with Improvements) - PM Peak Hour



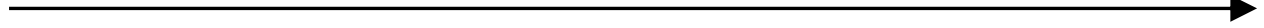
Lane Group	EBL	EBT	WBT	WBR	SBL	SBT
Lane Group Flow (vph)	92	260	469	169	181	101
v/c Ratio	0.26	0.28	0.72	0.26	0.55	0.17
Control Delay	9.0	8.6	24.3	4.2	25.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	8.6	24.3	4.2	25.7	0.6
Queue Length 50th (ft)	13	40	130	0	54	0
Queue Length 95th (ft)	39	97	#289	35	87	0
Internal Link Dist (ft)		514	395			159
Turn Bay Length (ft)	150			150	100	
Base Capacity (vph)	360	1203	853	797	699	923
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.22	0.55	0.21	0.26	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.
 03/18/2022 2025 Bkgrd + Project (with Improvements) - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	239	0	0	417	150	0	0	0	136	0	76
Future Volume (veh/h)	85	239	0	0	417	150	0	0	0	136	0	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1870	1870	1870	1885	1885	1885	1796	1885	1796
Adj Flow Rate, veh/h	92	260	0	0	469	169	0	0	0	181	0	101
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.88	0.88	0.88	0.75	0.75	0.75
Percent Heavy Veh, %	4	4	4	2	2	2	1	1	1	7	1	7
Cap, veh/h	387	1010	856	167	622	524	0	328	0	463	0	277
Arrive On Green	0.08	0.55	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.17	0.00	0.17
Sat Flow, veh/h	1753	1841	1560	1119	1870	1576	0	1885	0	1706	0	1593
Grp Volume(v), veh/h	92	260	0	0	469	169	0	0	0	181	0	101
Grp Sat Flow(s),veh/h/ln	1753	1841	1560	1119	1870	1576	0	1885	0	1706	0	1593
Q Serve(g_s), s	1.3	3.2	0.0	0.0	9.7	3.5	0.0	0.0	0.0	4.2	0.0	2.4
Cycle Q Clear(g_c), s	1.3	3.2	0.0	0.0	9.7	3.5	0.0	0.0	0.0	4.2	0.0	2.4
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	1010	856	167	622	524	0	328	0	463	0	277
V/C Ratio(X)	0.24	0.26	0.00	0.00	0.75	0.32	0.00	0.00	0.00	0.39	0.00	0.36
Avail Cap(c_a), veh/h	454	1405	1190	364	952	802	0	1090	0	1153	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	5.1	0.0	0.0	12.9	10.8	0.0	0.0	0.0	16.5	0.0	15.8
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.0	1.9	0.4	0.0	0.0	0.0	0.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.7	0.0	0.0	3.4	1.0	0.0	0.0	0.0	1.5	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.8	5.3	0.0	0.0	14.7	11.1	0.0	0.0	0.0	17.1	0.0	16.6
LnGrp LOS	A	A	A	A	B	B	A	A	A	B	A	B
Approach Vol, veh/h		352			638			0				282
Approach Delay, s/veh		6.2			13.8			0.0				16.9
Approach LOS		A			B							B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		13.5		29.7		13.5	9.3	20.4				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		25.0		33.0		25.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		0.0		5.2		6.2	3.3	11.7				
Green Ext Time (p_c), s		0.0		1.5		1.1	0.0	2.5				
Intersection Summary												
HCM 6th Ctrl Delay				12.4								
HCM 6th LOS				B								



***Intersection Capacity Worksheets:
2030 Background +
Project***



Intersection						
Int Delay, s/veh	4.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	19	1	5	5	1	10
Future Vol, veh/h	19	1	5	5	1	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	42	42	56	56
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	38	2	12	12	2	18

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	45	23	0	0	29
Stage 1	23	-	-	-	-
Stage 2	22	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209
Pot Cap-1 Maneuver	968	1057	-	-	1591
Stage 1	1002	-	-	-	-
Stage 2	1003	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	962	1052	-	-	1583
Mov Cap-2 Maneuver	962	-	-	-	-
Stage 1	997	-	-	-	-
Stage 2	1002	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	966	1583
HCM Lane V/C Ratio	-	-	0.041	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	18	11	10	32	1
Future Vol, veh/h	1	18	11	10	32	1
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	69	69	50	50
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	20	16	14	64	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	30	0	-	0	46 23
Stage 1	-	-	-	-	23 -
Stage 2	-	-	-	-	23 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1589	-	-	-	967 1057
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	1002 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1589	-	-	-	966 1057
Mov Cap-2 Maneuver	-	-	-	-	966 -
Stage 1	-	-	-	-	1001 -
Stage 2	-	-	-	-	1002 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1589	-	-	-	969
HCM Lane V/C Ratio	0.001	-	-	-	0.068
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	3	640	240	19	43	12
Future Vol, veh/h	3	640	240	19	43	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	87	87	68	68
Heavy Vehicles, %	1	1	4	1	1	1
Mvmt Flow	4	762	276	22	63	18

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	298	0	-	0	1046 276
Stage 1	-	-	-	-	276 -
Stage 2	-	-	-	-	770 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1269	-	-	-	254 765
Stage 1	-	-	-	-	773 -
Stage 2	-	-	-	-	459 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1269	-	-	-	253 765
Mov Cap-2 Maneuver	-	-	-	-	253 -
Stage 1	-	-	-	-	769 -
Stage 2	-	-	-	-	459 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1269	-	-	-	296
HCM Lane V/C Ratio	0.003	-	-	-	0.273
HCM Control Delay (s)	7.8	0	-	-	21.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.1

Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

2030 Bkgrd + Project - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	42	641	1	2	225	80	0	94	0
Future Volume (vph)	42	641	1	2	225	80	0	94	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4			8		2		6
Permitted Phases	4		4	8		8		6	
Detector Phase	7	4	4	8	8	8	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	39.0	39.0	28.0	28.0	28.0	31.0	31.0	31.0
Total Split (%)	15.7%	55.7%	55.7%	40.0%	40.0%	40.0%	44.3%	44.3%	44.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag			
Lead-Lag Optimize?	Yes			Yes	Yes	Yes			
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	26.0	26.0	26.0	20.3	20.3	20.3	12.7	12.7	12.7
Actuated g/C Ratio	0.51	0.51	0.51	0.39	0.39	0.39	0.25	0.25	0.25
v/c Ratio	0.09	0.80	0.00	0.01	0.37	0.13	0.03	0.54	0.09

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 51.4
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 16.7
 Intersection Capacity Utilization 56.8%
 Analysis Period (min) 15

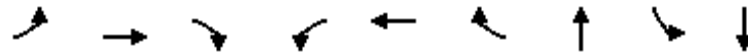
Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

Ø2	Ø4
31 s	39 s
Ø6	Ø7
31 s	11 s
	Ø8
	28 s

Queues
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.






















2030 Bkgrd + Project - AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	49	754	1	2	259	92	8	188	68
v/c Ratio	0.09	0.80	0.00	0.01	0.37	0.13	0.03	0.54	0.09
Control Delay	7.5	19.2	0.0	13.5	15.6	1.8	0.0	24.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	19.2	0.0	13.5	15.6	1.8	0.0	24.5	0.2
Queue Length 50th (ft)	7	166	0	0	63	0	0	52	0
Queue Length 95th (ft)	22	334	0	5	131	11	0	55	0
Internal Link Dist (ft)		514			395		67		159
Turn Bay Length (ft)	150		73	50		150		100	
Base Capacity (vph)	533	1260	1073	270	807	797	479	722	1067
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.60	0.00	0.01	0.32	0.12	0.02	0.26	0.06

Intersection Summary

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.
03/18/2022 2030 Bkgrd + Project - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	641	1	2	225	80	0	0	2	94	0	34
Future Volume (veh/h)	42	641	1	2	225	80	0	0	2	94	0	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1885	1811	1885	418	418	418	1885	1885	1885
Adj Flow Rate, veh/h	49	754	1	2	259	92	0	0	8	188	0	68
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.25	0.25	0.25	0.50	0.50	0.50
Percent Heavy Veh, %	1	2	1	1	6	1	100	100	100	1	1	1
Cap, veh/h	460	934	797	285	555	489	0	0	77	451	0	346
Arrive On Green	0.05	0.50	0.50	0.31	0.31	0.31	0.00	0.00	0.22	0.22	0.00	0.22
Sat Flow, veh/h	1795	1870	1596	714	1811	1595	0	0	353	1412	0	1590
Grp Volume(v), veh/h	49	754	1	2	259	92	0	0	8	188	0	68
Grp Sat Flow(s),veh/h/ln	1795	1870	1596	714	1811	1595	0	0	353	1412	0	1590
Q Serve(g_s), s	0.7	14.3	0.0	0.1	4.9	1.8	0.0	0.0	0.8	5.2	0.0	1.5
Cycle Q Clear(g_c), s	0.7	14.3	0.0	6.2	4.9	1.8	0.0	0.0	0.8	6.0	0.0	1.5
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	934	797	285	555	489	0	0	77	451	0	346
V/C Ratio(X)	0.11	0.81	0.00	0.01	0.47	0.19	0.00	0.00	0.10	0.42	0.00	0.20
Avail Cap(c_a), veh/h	579	1456	1242	437	940	828	0	0	208	977	0	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	8.9	5.3	14.9	11.9	10.8	0.0	0.0	13.3	15.7	0.0	13.6
Incr Delay (d2), s/veh	0.1	1.9	0.0	0.0	0.6	0.2	0.0	0.0	0.6	0.6	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.0	0.0	0.0	1.6	0.5	0.0	0.0	0.1	1.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.4	10.8	5.3	15.0	12.5	11.0	0.0	0.0	13.9	16.3	0.0	13.8
LnGrp LOS	A	B	A	B	B	B	A	A	B	B	A	B
Approach Vol, veh/h		804			353			8				256
Approach Delay, s/veh		10.7			12.1			13.9				15.6
Approach LOS		B			B			B				B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		15.2		27.2		15.2	8.2	19.0				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		25.0		33.0		25.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		2.8		16.3		8.0	2.7	8.2				
Green Ext Time (p_c), s		0.0		4.9		0.8	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay				11.9								
HCM 6th LOS				B								

HCM 6th TWSC
03/18/2022

5: Faas Ranch Road & Access 1
2030 Bkgrd + Project - AM Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	30	1	64	58	1	98
Future Vol, veh/h	30	1	64	58	1	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	1	75	68	1	115

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	226	109	0	0	143
Stage 1	109	-	-	-	-
Stage 2	117	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	762	945	-	-	1440
Stage 1	916	-	-	-	-
Stage 2	908	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	761	945	-	-	1440
Mov Cap-2 Maneuver	761	-	-	-	-
Stage 1	916	-	-	-	-
Stage 2	907	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	766	1440
HCM Lane V/C Ratio	-	-	0.048	0.001
HCM Control Delay (s)	-	-	9.9	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	1	28	30	1	1	28	19	17	1	41	1
Future Vol, veh/h	1	1	28	30	1	1	28	19	17	1	41	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	33	35	1	1	33	22	20	1	48	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	150	159	49	166	149	32	49	0	0	42	0	0
Stage 1	51	51	-	98	98	-	-	-	-	-	-	-
Stage 2	99	108	-	68	51	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	818	733	1020	798	743	1042	1558	-	-	1567	-	-
Stage 1	962	852	-	908	814	-	-	-	-	-	-	-
Stage 2	907	806	-	942	852	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	802	716	1020	758	726	1042	1558	-	-	1567	-	-
Mov Cap-2 Maneuver	802	716	-	758	726	-	-	-	-	-	-	-
Stage 1	941	851	-	888	796	-	-	-	-	-	-	-
Stage 2	885	788	-	909	851	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.7		10		3.2		0.2	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	997	763	1567	-	-
HCM Lane V/C Ratio	0.021	-	-	0.035	0.049	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.7	10	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0	-	-

Intersection						
Int Delay, s/veh	4.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	12	1	10	20	1	5
Future Vol, veh/h	12	1	10	20	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	63	63	63	63
Heavy Vehicles, %	1	1	10	1	1	1
Mvmt Flow	48	4	16	32	2	8

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	44	32	0	0	48	0
Stage 1	32	-	-	-	-	-
Stage 2	12	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	969	1045	-	-	1566	-
Stage 1	993	-	-	-	-	-
Stage 2	1014	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	968	1045	-	-	1566	-
Mov Cap-2 Maneuver	968	-	-	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	1013	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	974	1566
HCM Lane V/C Ratio	-	-	0.053	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	3	19	33	12	5
Future Vol, veh/h	5	3	19	33	12	5
Conflicting Peds, #/hr	3	0	0	3	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	38	38	72	72	63	63
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	8	26	46	19	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	75	0	-	0	87 52
Stage 1	-	-	-	-	52 -
Stage 2	-	-	-	-	35 -
Critical Hdwy	4.11	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.209	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1531	-	-	-	916 1019
Stage 1	-	-	-	-	973 -
Stage 2	-	-	-	-	990 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1527	-	-	-	902 1016
Mov Cap-2 Maneuver	-	-	-	-	902 -
Stage 1	-	-	-	-	961 -
Stage 2	-	-	-	-	987 -

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1527	-	-	-	933
HCM Lane V/C Ratio	0.009	-	-	-	0.029
HCM Control Delay (s)	7.4	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	7	321	485	40	25	5
Future Vol, veh/h	7	321	485	40	25	5
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	94	94	54	54
Heavy Vehicles, %	4	4	2	2	1	1
Mvmt Flow	8	365	516	43	46	9

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	566	0	-	0	904 523
Stage 1	-	-	-	-	523 -
Stage 2	-	-	-	-	381 -
Critical Hdwy	4.14	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.236	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	996	-	-	-	309 556
Stage 1	-	-	-	-	597 -
Stage 2	-	-	-	-	693 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	989	-	-	-	302 552
Mov Cap-2 Maneuver	-	-	-	-	302 -
Stage 1	-	-	-	-	587 -
Stage 2	-	-	-	-	688 -

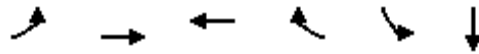
Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	989	-	-	-	327
HCM Lane V/C Ratio	0.008	-	-	-	0.17
HCM Control Delay (s)	8.7	0	-	-	18.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Timings
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

2030 Bkgrd + Project - PM Peak Hour

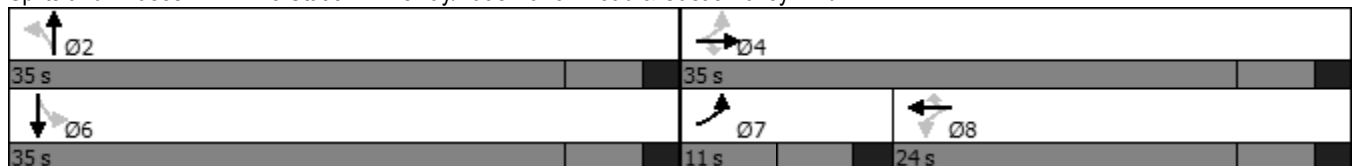


Lane Group	EBL	EBT	WBT	WBR	SBL	SBT	Ø2
Lane Configurations	↶	↷	↷	↷	↶	↷	↓
Traffic Volume (vph)	89	257	449	150	140	0	
Future Volume (vph)	89	257	449	150	140	0	
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	
Protected Phases	7	4	8			6	2
Permitted Phases	4			8	6		
Detector Phase	7	4	8	8	6	6	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	31.0	31.0	31.0
Total Split (s)	11.0	35.0	24.0	24.0	35.0	35.0	35.0
Total Split (%)	15.7%	50.0%	34.3%	34.3%	50.0%	50.0%	50%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	None	None	None	Min	Min	Min
Act Effct Green (s)	26.8	26.8	18.5	18.5	11.6	11.6	
Actuated g/C Ratio	0.53	0.53	0.36	0.36	0.23	0.23	
v/c Ratio	0.28	0.29	0.74	0.25	0.54	0.16	

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 50.7
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 16.3
 Intersection Capacity Utilization 51.7%
 Analysis Period (min) 15

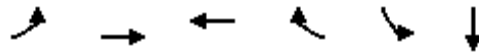
Splits and Phases: 4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.



Queues
03/18/2022

4: Fire Station Driveway/Faas Ranch Road & Castle Valley Blvd.

2030 Bkgrd + Project - PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBT
Lane Group Flow (vph)	97	279	504	169	165	89
v/c Ratio	0.28	0.29	0.74	0.25	0.54	0.16
Control Delay	8.9	8.3	26.1	4.7	24.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	8.3	26.1	4.7	24.8	0.6
Queue Length 50th (ft)	13	40	137	1	46	0
Queue Length 95th (ft)	38	98	#323	37	86	0
Internal Link Dist (ft)		514	395			159
Turn Bay Length (ft)	150			150	100	
Base Capacity (vph)	351	1074	679	664	790	990
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.26	0.74	0.25	0.21	0.09























Intersection Summary




95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Simulation Driveway/Faas Ranch Road & Castle Valley Blvd.
03/18/2022

2030 Bkgrd + Project - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	257	0	0	449	150	0	0	0	140	0	76
Future Volume (veh/h)	89	257	0	0	449	150	0	0	0	140	0	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1870	1870	1870	1885	1885	1885	1796	1885	1796
Adj Flow Rate, veh/h	97	279	0	0	504	169	0	0	0	165	0	89
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.88	0.88	0.88	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	2	2	2	1	1	1	7	1	7
Cap, veh/h	377	1024	868	168	631	531	0	310	0	448	0	261
Arrive On Green	0.08	0.56	0.00	0.00	0.34	0.34	0.00	0.00	0.00	0.16	0.00	0.16
Sat Flow, veh/h	1753	1841	1560	1100	1870	1576	0	1885	0	1706	0	1593
Grp Volume(v), veh/h	97	279	0	0	504	169	0	0	0	165	0	89
Grp Sat Flow(s),veh/h/ln	1753	1841	1560	1100	1870	1576	0	1885	0	1706	0	1593
Q Serve(g_s), s	1.4	3.4	0.0	0.0	10.5	3.4	0.0	0.0	0.0	3.8	0.0	2.1
Cycle Q Clear(g_c), s	1.4	3.4	0.0	0.0	10.5	3.4	0.0	0.0	0.0	3.8	0.0	2.1
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	377	1024	868	168	631	531	0	310	0	448	0	261
V/C Ratio(X)	0.26	0.27	0.00	0.00	0.80	0.32	0.00	0.00	0.00	0.37	0.00	0.34
Avail Cap(c_a), veh/h	441	1242	1053	258	784	660	0	1272	0	1319	0	1075
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.6	5.0	0.0	0.0	12.9	10.6	0.0	0.0	0.0	16.6	0.0	15.9
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	4.8	0.3	0.0	0.0	0.0	0.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.8	0.0	0.0	4.1	1.0	0.0	0.0	0.0	1.4	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	5.1	0.0	0.0	17.7	10.9	0.0	0.0	0.0	17.1	0.0	16.7
LnGrp LOS	A	A	A	A	B	B	A	A	A	B	A	B
Approach Vol, veh/h		376			673			0				254
Approach Delay, s/veh		6.1			16.0			0.0				17.0
Approach LOS		A			B							B
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		13.1		29.9		13.1	9.4	20.5				
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		29.0		29.0		29.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		0.0		5.4		5.8	3.4	12.5				
Green Ext Time (p_c), s		0.0		1.5		1.0	0.0	1.8				
Intersection Summary												
HCM 6th Ctrl Delay				13.3								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	91	1	154	85	1	125
Future Vol, veh/h	91	1	154	85	1	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	1	181	100	1	147

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	380	231	0	0	281
Stage 1	231	-	-	-	-
Stage 2	149	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	622	808	-	-	1282
Stage 1	807	-	-	-	-
Stage 2	879	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	621	808	-	-	1282
Mov Cap-2 Maneuver	621	-	-	-	-
Stage 1	807	-	-	-	-
Stage 2	878	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	1282
HCM Lane V/C Ratio	-	-	0.174	0.001
HCM Control Delay (s)	-	-	12	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	1	73	33	1	2	90	35	30	1	20	2
Future Vol, veh/h	1	1	73	33	1	2	90	35	30	1	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	86	39	1	2	106	41	35	1	24	2

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	299	315	25	342	299	59	26	0	0	76	0	0
Stage 1	27	27	-	271	271	-	-	-	-	-	-	-
Stage 2	272	288	-	71	28	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	653	601	1051	612	613	1007	1588	-	-	1523	-	-
Stage 1	990	873	-	735	685	-	-	-	-	-	-	-
Stage 2	734	674	-	939	872	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	615	558	1051	531	569	1007	1588	-	-	1523	-	-
Mov Cap-2 Maneuver	615	558	-	531	569	-	-	-	-	-	-	-
Stage 1	921	872	-	684	637	-	-	-	-	-	-	-
Stage 2	680	627	-	860	871	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		12.1		4.3		0.3	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1588	-	-	1029	546	1523	-	-
HCM Lane V/C Ratio	0.067	-	-	0.086	0.078	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.8	12.1	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	0.3	0	-	-



***Signal Warrant
Evaluation***



Table A1: MUTCD Signal Warrant Evaluation Summary
Lakota Ranch (New Castle, CO)

Intersection	Scenario	Warrant 2: 4 Hour Met?	Warrant 3: Peak Hour ¹	
			AM	PM
Castle Valley Blvd. at Faas Ranch Rd.	2021 Existing	No	No	No
	2025 Background	No	No	No
	2030 Background	No	No	No
	2025 Background + Project	Yes	No	Yes
	2030 Background + Project	Yes	Yes	Yes

¹ Does not meet the "unusal cases" condition as specified in the MUTCD for the Peak Hour Warrant. Evaluated in this report for planning purposes only.

Intersection: Castle Valley Blvd. at Faas Ranch Rd.
Warrant 2: 4 Hour Analysis - 2025 Background + Project Volumes

Time of Day	Major	Minor*	Warrant 2 (Figure 4C-1)
	Castle Valley Blvd.	Faas Ranch Rd.	
	Number of Lanes		
	2	1	
0:00			no
1:00			no
2:00			no
3:00			no
4:00	47	4	no
5:00	177	10	no
6:00	363	38	no
7:00	932	126	Yes
8:00	578	82	no
9:00	391	28	no
10:00			no
11:00			no
12:00			no
13:00			no
14:00	392	81	no
15:00	588	85	no
16:00	891	212	Yes
17:00	855	119	Yes
18:00	597	119	Yes
19:00	312	57	no
20:00			no
21:00			no
22:00			no
23:00			no
Total	6,123	961	4 Met

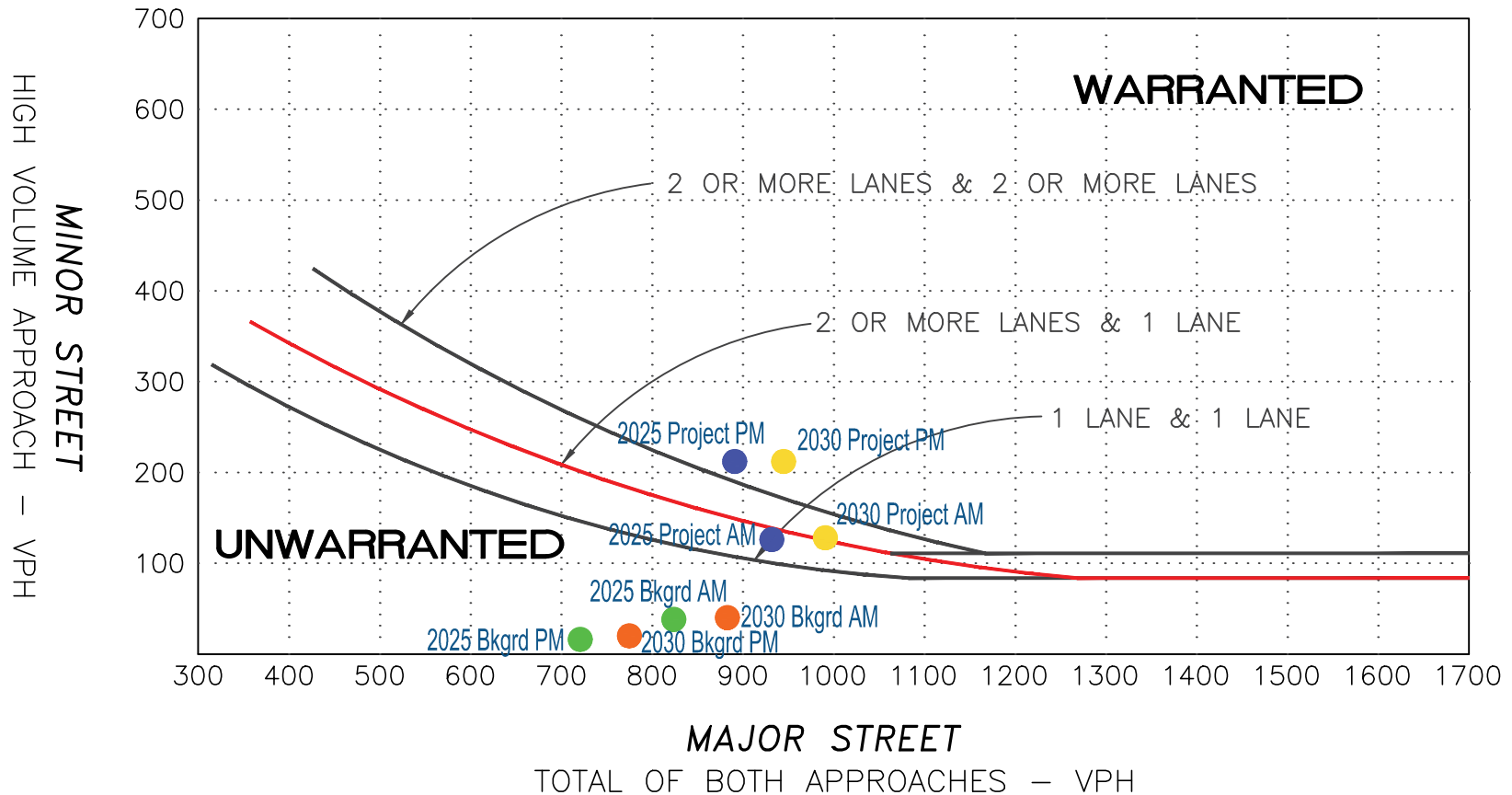
*The minor volume for each hour represents the higher of either minor approach.

Intersection: Castle Valley Blvd. at Faas Ranch Rd.
Warrant 2: 4 Hour Analysis - 2025 Background + Project Volumes

Time of Day	Major	Minor*	Warrant 2 (Figure 4C-1)
	Castle Valley Blvd.	Faas Ranch Rd.	
	Number of Lanes		
	2	1	
0:00			no
1:00			no
2:00			no
3:00			no
4:00	50	4	no
5:00	188	10	no
6:00	386	38	no
7:00	991	128	Yes
8:00	614	83	no
9:00	416	28	no
10:00			no
11:00			no
12:00			no
13:00			no
14:00	416	82	no
15:00	624	86	no
16:00	945	216	Yes
17:00	907	121	Yes
18:00	633	121	Yes
19:00	331	58	no
20:00			no
21:00			no
22:00			no
23:00			no
Total	6,501	975	4 Met

*The minor volume for each hour represents the higher of either minor approach.

PEAK HOUR VOLUME WARRANT (70%) Castle Valley Blvd. at Faas Ranch Rd.



NOTE: 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.



FT Project #	21070	Original Scale	NTS	Date	3/15/2022	Drawn by	MAR	Figure #	A1
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MEMORANDUM

To: The Romero Group, LLC
From: Cassie Slade, PE, PTOE
Date: August 16, 2022
Project: Lakota Canyon Ranch
Subject: Parking Analysis - Updated

The Fox Tuttle Transportation Group has completed a review of the proposed Lakota Canyon Ranch project with respect to peak parking demand and feasibility of sharing parking spaces with the proposed mix of land uses. Lakota Canyon Ranch is located in New Castle, CO on the east side of Castle Valley Boulevard and on both sides of Faas Ranch Road, as shown to the right. The most current land plan includes 31,853± square feet of commercial space, 19,554± square feet of office space, 29 single-family dwelling units, 20 townhomes, and 136 multi-family units. This memorandum summarizes our analysis and findings related to parking.



Town of New Castle Requirements

Parking supply for projects within New Castle are based on the guidelines set for in the *Municipal Code (Section 17.76.020)*. **Table 1** summarizes the anticipated land use types, sizes and required off-street parking supply rate.

Table 1. New Castle Off-Street Parking Supply Requirements

Land Use Type	Size		New Castle Code	
			Requirement	Spaces
Office Space	19,554	sq. ft.	1 per 300 sq. ft.	65
Commercial Space	31,853	sq. ft.	2 per 300 sq. ft.	212
Townhomes	49	units	2 per unit	98
Multi-Family	136	units	2 per unit	272
Total				647

Applying the Town parking rates to the anticipated land use types and sizes equates to a parking supply requirement of 647 spaces. The proposed site plan provides 435 off-street parking spaces (33% reduction) within surface lots, covered facilities, and parallel parking spaces along the internal roadways.

ITE Recommendations for Parking Demand

One of leading industry parking resources was reviewed within the context of this project and discussed in this memorandum: Institute of Transportation Engineers’ (ITE) *Parking Generation, 5th Edition (2019)*. ITE publishes parking generation data for various land uses based on numerous studies and empirical data calculating average peak parking demand. For majority of land uses, ITE provides both urban and suburban parking formulas, near and not near rail transit, to predict peak parking demand. Lakota Canyon Ranch is within an urban/suburban environment that does not have rail transit. The appropriate ITE weekday parking demand rates for each land use type was applied. The ITE rates were multiplied by the square footage or dwelling units to calculate the peak parking demand as shown in **Table 2** (weekday) and **Table 3** (weekend) to estimate the accumulative parking demand. Note that the single-family homes and townhomes were not included in the calculations since parking will be provided via a garage and/or driveway for each home that will not be shared with adjacent land uses.

Table 2. ITE Parking Demand - Weekday

Land Use Type	Size		ITE Parking Rates			Parking Demand	
			Code	Average	85th %	Average	85th %
Office Space	19,554	sq. ft.	710	2.39	3.30	47	65
Commercial Space	31,853	sq. ft.	820	1.95	3.68	63	118
Townhomes	49	units	220	1.21	1.52	72	90
Multi-Family	136	units	221	1.31	1.47	103	116
Total Parking Weekday Demand						285	389

Table 3. ITE Parking Demand - Weekend

Land Use Type	Size		ITE Parking Rates			Parking Demand	
			Code	Average	85th %	Average	85th %
Office Space	19,554	sq. ft.	710	0.28	0.73	6	15
Commercial Space	31,853	sq. ft.	820	2.91	3.74	93	120
Townhomes	49	units	220	1.31	1.61	78	95
Multi-Family	136	units	221	1.22	1.33	96	104
Total Parking Weekend Demand						273	334

The national data is an accumulative parking demand and does not consider the ability for parking spaces to be shared between land uses throughout the day based on the fluctuation in parking needs. Based on the national parking demand rates, the average parking demand for Lakota Canyon Ranch was calculated to be 285 spaces and occurring on the weekday. The highest demand (85th percentile) was calculated to occur during the weekday with 389 spaces.

Shared Parking

The complementary land uses found in mixed-use developments allow for the required number of parking spaces to be reduced. This is because mixed-use development encourages visits to multiple land uses during the same visit, allowing a visitor, employee, or resident to “park once.” The mix of commercial uses also allows for some shared parking to occur on the site. Shared parking is the use of the same parking space by more than one user. This is possible because most parking spaces are only used part time by an individual user, and the highest parking demand for some land uses occurs at different times of the day or different days of the week. Most land uses have parking demand that accumulates at specific, predictable times of the day and week. The development proposes to have a variety of residential and commercial land uses that can benefit from shared parking.

The Urban Land Institute (ULI) is a nonprofit education and research company that provides resources to estimate the shared parking of these developments. To determine the most appropriate adjustment to the parking requirement, the data provided in ULI’s *Shared Parking Manual* was utilized. The data provides percentage of parking by land use classification, time of day, and weekday versus weekend. Applying the shared parking percentages to the estimated average and 85th percentile parking demand, the parking demand in Lakota Canyon Ranch is estimated to be 307 parking spaces. Refer to **Table 4** on the for the shared parking calculations.

Table 4. Shared Parking Calculation

Land Use Classification	ITE Parking Demand (85 th %)	Weekday					
		1:00 a.m. - 7:00 a.m.		7:00 a.m. - 6:00 p.m.		6:00 p.m. - 1:00 a.m.	
		Percent	Parking Spaces	Percent	Parking Spaces	Percent	Parking Spaces
Office	65	5%	4	100%	65	5%	4
Commercial	118	0%	0	100%	118	80%	95
Multi-family residential	116	100%	116	60%	70	100%	116
Total Parking with Shared Model			120		253		215

Table 4 (continued). Shared Parking Calculation

Land Use Classification	ITE Parking Demand (85 th %)	Weekend					
		1:00 a.m. - 7:00 a.m.		7:00 a.m. - 6:00 p.m.		6:00 p.m. - 1:00 a.m.	
		Percent	Parking Spaces	Percent	Parking Spaces	Percent	Parking Spaces
Office	15	0%	0	15%	3	0%	0
Commercial	120	0%	0	100%	120	60%	72
Multi-family residential	104	100%	104	75%	78	95%	99
Total Parking with Shared Model			104		201		171

Based on the shared parking guidelines, the highest parking demand for the assumed commercial and multi-family land uses in Lakota Canyon Ranch is anticipated to be 253 parking spaces.

If the shared parking demand estimate is added to the parking spaces for the townhomes (not being shared), then **the site is anticipated to need 351 spaces [253 shared + 98 townhomes]**. The current site plan proposes to provide 435 on-site parking spaces which will adequately accommodate the parking needs of Lakota Canyon Ranch.

Summary and Recommendations

The Lakota Canyon Ranch project is proposing to construct a mix of residential and commercial land uses along the east side of Castle Valley Boulevard along both sides of Faas Ranch Road. New Castle’s Municipal Code requires 647 parking spaces for this project; however, the parking demand was calculated to be up to 389 spaces without shared parking and up to 351 with shared parking. The project proposes to provide 435 parking spaces on-site (0% reduction on townhomes and 39% reduction on commercial/multi-family). Based on the ITE parking demand calculations and the ULI shared parking reductions, the **provided parking supply of 435 spaces will adequately accommodate the estimated peak parking demand (between 351 and 389 spaces) and have excess parking spaces during several periods of the weekday or weekend.**

/CRS



Fiscal Impact Study of the Lakota Canyon Ranch Mixed-Use Development, 3/7/22

Introduction

The Romero Group hired Triple Point Strategic Consulting to conduct a Fiscal Impact Study of the Lakota Canyon Ranch Mixed-Use Development sketch plan. The project is located in the Town of New Castle, Colorado. Both revenues to be received and costs to be incurred as a result of the proposed development have been projected out to 2045 on the basis of available data and various assumptions. The projection period through 2045 is intended to capture ongoing impacts for the first 15 years following full built-out.

According to David Reynolds cover to the Town's 2022 Adopted Budget:

Current indications are that New Castle will experience significant growth in residential housing over the next several years. Development along Castle Valley Boulevard in Lakota and Castle Valley Ranch are likely to become a reality in the near future as land owners now have active development applications before the Town. Small pockets of commercial development along Castle Valley Boulevard are also anticipated as land parcels that are zoned Mixed Use now pique the interest of area developers.

On the basis of various assumptions, such building cost per square foot, annual local spending per household and others, we will estimate the economic impact arising from the construction of the residential and commercial space and from the increased economic activity over time.

Methodology

To study the fiscal impacts of the proposed development, Triple Point constructed a hybrid buildout-proforma model. The number of units and commercial space planned, phasing, and building costs were used to create a buildout model of the development occurring over seven years from 2023 to 2029.

The financial impacts of construction were estimated using an additional economic input-output model developed by IMPLAN and using national average data. Four different industry sectors were incorporated in the model representing infrastructure, commercial, multifamily, and single-family residential construction. Total construction cost is estimated to be \$95 million, which was reduced to 60 percent or \$57 million to conservatively capture only local impact. IMPLAN modeling also estimates multiplier effects known as indirect and induced impacts as construction investment ripples through New Castle's economy. IMPLAN also provides estimates of the number of jobs resulting from a given level and type of investment.

Financial impacts were extrapolated from the incremental growth in population and units arising from the development. IMPLAN was used to estimate indirect and induced impacts arising from incremental retail sales activity.

Property tax impacts are inferred for each time of proposed property based on comparable property assessments and using New Castle's 8.551 mill levy. The current property tax paid on the three parcels is netted out.

Revenue and expense categories explicitly modeled:

- Construction sales tax
- Construction use tax
- Incremental General Fund revenue (residents)
- Incremental Utility Fund revenue (housing units)
- Incremental retail direct sales tax
- Incremental retail multiplier sales tax
- Property tax - residential
- Property tax - commercial
- Property tax - current
- Incremental General Fund expense (residents)
- Incremental Utility Fund expense (housing units)

Total property tax impacts are also estimated which include revenue for hospital, school, water, fire, library and other jurisdictions in addition to the Town of New Castle.

Results

The population of New Castle has grown at an annual average growth rate of 2.5 percent from 2017 to 2020. To be conservative, we estimate the population growing at an annual average growth rate of 1.25 percent from 2021 to 2045. At this rate, New Castle's population will grow from 4,916 to 6,706 in 2045, an increase of 1,790. Using an average of 2.71 people per housing unit (from Colorado State Demographer), the proposed development will house a total of 501 people by 2029.

The \$57 million construction investment modeled generates an indirect impact of \$29 million and induced impact of \$64 million, for a total of \$150 million. Forty-one percent of this construction impact is estimated to be intermediate expenditures, or \$61 million and largely subject to sales tax. We assume New Castle sales tax (3.5%) will be paid on 55 percent of intermediate expenditures. To be conservative, we assume the two percent use tax will be paid on 45 percent of the 60 percent of actual estimated cost. Total use tax to be paid over the seven years from 2023 through 2029 is estimated to be \$515,278.

Incremental general fund revenue is extrapolated from the estimate number of new residents in the development. This is revenue that results from everything from tobacco taxes to soccer registration. Taking an average of 2019 actual through 2022 budget, we find an average of \$895 per person. Following buildout, revenues are assumed to grow at an annual average rate of two percent annually.

Incremental utility fund revenue is extrapolated in a similar manner as general fund revenue from the estimated number of new housing units in the development. Only the three primary operating accounts are included: water, wastewater, and trash.

A total of 52,400 commercial square feet is proposed, of which 30,300 is anticipated to generate sales tax. Conservative assumptions for sales per square foot per type of space, ranging from \$50/sq ft to \$325/sq ft were adopted from online search. New Castle's sales tax rate (3.5%) was applied to direct sales as well as indirect and induced sales, using purchaser prices for the latter to be conservative.

Property tax revenue remitted to New Castle begins with initial construction in 2023 and gradually increased as the development is built out. The full amount of current property tax, a little over \$800, is netted out beginning in 2023. Property values are assumed to increase at three percent annually through 2045.

The incremental increased costs incurred by the Town are estimated by taking the average general fund expenditure per person for the years 2017 to 2021 estimated or \$711 per person. We deliberately did not include 2022 budget to be conservative, since budgeted expenses exceeded actuals for the past two years by wide margin. Utility fund expenses are extrapolated in the same manner as utility fund revenues, from incremental housing units and per unit expenses.

Employment

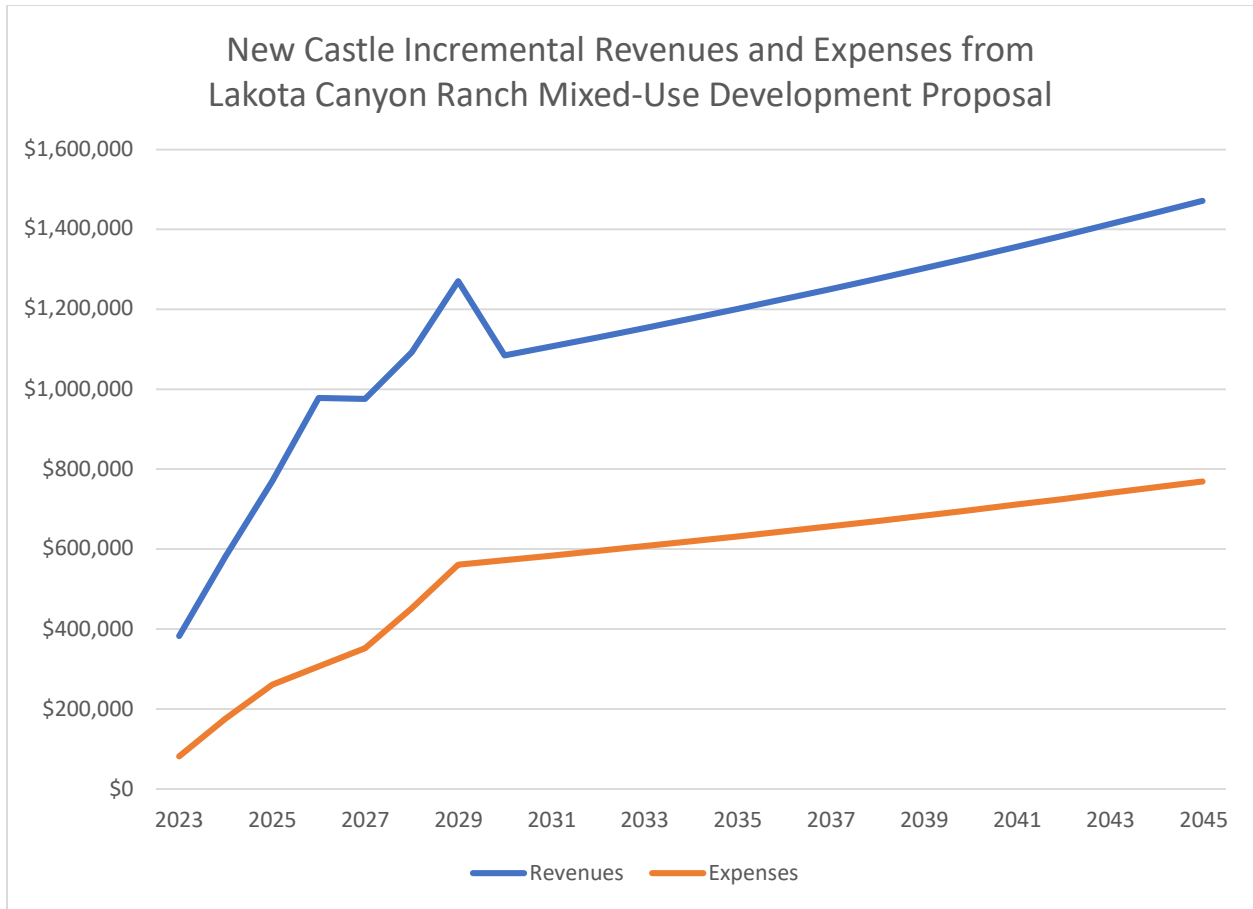
The table below shows the jobs directly resulting from construction as well as the total jobs including multiplier impacts. The direct jobs are included in the total job count.

	2023	2024	2025	2026	2027	2028	2029
Direct Jobs	80	72	65	81	60	60	62
Total Jobs	152	135	122	167	123	111	114

Fiscal Impacts

The economic benefit averages \$1.15 million over the 23 years from 2023 to 2045. After a boost from the use tax collected in 2023, the revenue grows from \$510,000 in 2023 to \$1.5 million by 2045 as shown in the chart below. Incremental expenses range from \$82,000 in 2023 to \$760,000 by 2045, averaging \$560,000.

Following buildout, the total amount of property tax collected for all jurisdictions is \$468,000.



Properties w/in 250' of Lakota Canyon Ranch Mixed Use Parcels

Owner	Mailing Address
BURNING MTN FIRE PROTECTION DISTRICT	PO BOX 2 SILT, CO 81652
TURTLEPOOP LLC	109 FOX PROWL CARBONDALE, CO 81623
NEW CASTLE, TOWN OF	PO BOX 90 NEW CASTLE, CO 81647-016E
RRENTAL SHIBUI LLC	820 CASTLE VALLEY BLVD STE 107 NEW CASTLE, CO 81647
DE LEON, AGUEDA	792 CASTLE VALLEY BLVD #B NEW CASTLE, CO 81647
NUTILE, MAUREEN	792 CASTLE VALLEY BLVD UNIT C NEW CASTLE, CO 81647
BRENDLINGER, ERIC S & PATRICIA P	2023 GRACELAND DRIVE CARBONDALE, CO 81623-283E
GUTIERREZ, LOURDES	792 CASTLE VALLEY BLVD UNIT G NEW CASTLE, CO 81647
LAZO, PAUL E	417 N 8TH STREET CARBONDALE, CO 81623
BENNETT, KATHRYN S	792 CASTLE VALLEY BLVD UNIT 1 NEW CASTLE, CO 81647
MCCOLLUM, MICHAEL D & JOHNSON, SHAEL	PO BOX 3549 ASPEN, CO 81612
RAMSEY, BRYAN J & CARLA	792 CASTLE VALLEY BLVD, UNIT K NEW CASTLE, CO 81647
LOPEZ, MARIA DOLORES & GAMEZ, VICTOR RAUL	77 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
NUTTER, PHILLIP E & JANEAN E	PO BOX 300 SILT, CO 81652
J & S CASTLE RIDGE, LLC	PO BOX 1323 CARBONDALE, CO 81623
DOHERTY, MICHAEL & DIANE	1084 HERITAGE DRIVE CARBONDALE, CO 81623
DAVIS, ROBERT E	1432 SUMMERSVILLE ALLEY GLENWOOD SPRINGS, CO 81601
ESPINOZA, ANAYELI SARAHI	66 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
GARCIA, JUAN	72 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
OUTZEN, ASHLEY & BARTON III	80 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
WAREN, JENNIFER	2034 DIAMOND STREET SAN DIEGO, CA 9210E
SNOW, CHRISTOPHER M	7440 S BLACKHAWK STREET UNIT 14306 ENGLEWOOD, CO 8011E
DENVER TRUST	PO BOX 862 NEW CASTLE, CO 81647
MURRIETA TRUST	PO BOX 862 NEW CASTLE, CO 81647
SMITH, SANDRA L & STEFAN N	114 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
CAMUNEZ, DANIELA	122 CASTLE RIDGE DRIVE NEW CASTLE, CO 81647
HUMERICKHOUSE, SUMMER	790 CASTLE VALLEY BOULEVARD #A NEW CASTLE, CO 81647
PRICE, TIMOTHY S	790 CASTLE VALLEY BLVD, UNIT B NEW CASTLE, CO 81647
FLAMAND, KAREN	790 CASTLE VALLEY BOULEVARD, UNIT C NEW CASTLE, CO 81647
GALLUCCIO, VINCENT	325 OAK LANE ASPEN, CO 81611
HAUSKINS, CHRISTINE W	670 RIVER BEND WAY GLENWOOD SPRINGS, CO 81601-866E
BALLARD ENTERPRISES LLC	1605 WINTERS LANE GLENWOOD SPRINGS, CO 81601
TEHRANI, REZA	231 5TH STREET SILT, CO 81652
LUJAN NEVAREZ, FABIAN	790 CASTLE VALLEY BLVD UNIT I NEW CASTLE, CO 81647
GREENE, ANTHONY FRANK TRUST	64 EASTWOOD DRIVE ASPEN, CO 81611
LOVEKAMP, JORDAN MICHAEL & MERAZ LOVEKAMP, MARIELA	790 CASTLE VALLEY BLVD #K NEW CASTLE, CO 81647
PRICE, RONALD TODD	54 SUMMIT LOOP B8 CARBONDALE, CO 81623
CLASSEN, R SETH & GLORIA	10 BUCKSKIN CIR NEW CASTLE, CO 81647
788 SHIBUI B LLC	0832 CANYON CREEK GLENWOOD SPRINGS, CO 81601
DUNN, SCOTT	788 CASTLE VALLEY BLVD NEW CASTLE, CO 81647
CHENOWETH, JOHN JAMES & KIMBERLY	6411 COUNTY ROAD 214 NEW CASTLE, CO 81647
PERRIN, KIMBERLEY	303 W PARK STREET MARBLE, CO 81623
MEYER, KAREN N	PO BOX 1507 BASALT, CO 81621-1507
AJARIAN, ANTRANIK	788 CASTLE VALLEY BLVD UNIT G NEW CASTLE, CO 81647
PEREA, LUCIO	788 CASTLE VALLEY BLVD UNIT H NEW CASTLE, CO 81647
ALARIE, ELIZABETH R & FRANCIS E III	6564 HAWALL KAI DRIVE HONOLULU, HI 96825-111E
PARLETT, MARK DAVID & SON HWA	788 CASTLE VALLEY BLVD #J NEW CASTLE, CO 81647
NEGRETE, ROSALYN	788 CASTLE VALLEY BLVD #K NEW CASTLE, CO 81647
HOTTENDORF, HILDE	788 CASTLE VALLEY BLVD UNIT L NEW CASTLE, CO 81647
BEHRENDT FAMILY , LLC, RICHMOND, RONALD A TRUSTEE ETAL	334 W HYMAN ASPEN, CO 81611
KOCHEVAR, JANET M & BULLOCK, DORIS M	PO BOX 3109 GLENWOOD SPRINGS, CO 81602
LAMOREAUX, TIMOTHY L & JOAN C	3648 COUNTY ROAD 117 GLENWOOD SPRINGS, CO 81601
KRANTZ, MAYNARD L & LISA J	4900 BOARDWALK DRIVE APT # I 302 FORT COLLINS, CO 8052E
PENSCO TRUST COMPANY FBO RICH WAGAR IRA	6718 W HARBOR DRIVE ELK RAPIDS, MI 49629-977E
SHEFFIELD, ROGER D TRUSTEE, OF THE SHEFFIELD REVOCABLE LI	P. O. BOX 2013 GLENWOOD SPRINGS, CO 81602-201E
BRUCKER, MISSEN LYNETTE	195 BLACKHAWK DRIVE NEW CASTLE, CO 81647
NEWMAN, ROBERT L & CAROL L TRUST	187 BLACKHAWK DRIVE NEW CASTLE, CO 81647
HLADKY, THOMAS L & VIKI M	249 WHITE HORSE DRIVE NEW CASTLE, CO 81647
RIVERS, WALEZKA G	259 WHITEHORSE DRIVE NEW CASTLE, CO 81647
DELGADO, CESAR H HERRERA	269 WHITEHORSE DRIVE NEW CASTLE , CO 81647
PELKY, MEGAN M	279 WHITEHORSE DRIVE NEW CASTLE, CO 81647
GALLEGOS RANGEL, OSCAR I	289 WHITEHORSE DRIVE NEW CASTLE, CO 81647
RODMAN, RICHARD E & MARIA T	299 WHITEHORSE DRIVE NEW CASTLE, CO 81647
LAKOTA CANYON RANCH MASTER ASSOCIATION INC	1512 GRAND AVENUE, SUITE 109 GLENWOOD SPRINGS, CO 81601
FERNANDEZ, JOSUE & GUILLEN, KARINA	300 WHITEHORSE DRIVE NEW CASTLE, CO 81647

BOSKO, STEVEN J & SARALYNN	3340 EL SUYO DRIVE SAN RAMON, CA 94583
VAUGHN FAMILY PROPERTIES, INC	201 ARREZO LANE GEORGETOWN, TX 78628
CHIMOVITZ, DAVID	230 WHITE HORSE DRIVE NEW CASTLE, CO 81647
TAYLOR, MELISSA & WILLIAM T	220 WHITE HORSE DRIVE NEW CASTLE, CO 81647
HUGHES, JOHN & GRETCHEN	210 WHITEHORSE DRIVE NEW CASTLE, CO 81647
SCHERRER, JAMES	1812 OURAY ROAD GLENWOOD SPRINGS, CO 81601
TRACE, DONALD GRANT	4996 CACTUS PLACE PRESCOTT, AZ 86301
BOSSERT, RICHARD A	110 LAKOTA DRIVE NEW CASTLE, CO 81647
OSBORNE, KEVIN SCOTT & CHELSEA JURGENS	120 LAKOTA DRIVE NEW CASTLE, CO 81647
HAYES, TIMOTHY JAMES & JOAN RANKIN	130 LAKOTA DRIVE NEW CASTLE, CO 81647
GERVAIS, MARTIN J & MARY C	140 LAKOTA DRIVE NEW CASTLE, CO 81647
PHEIFFER, BETTY JO	118 JUNIPER TRAIL CARBONDALE, CO 81623
SELBY, STEPHEN G & MICHELLE L	201 BLACKHAWK DRIVE NEW CASTLE, CO 81647
GAIR, RONALD W & CAROL ANN	667 RIVER BEND WAY GLENWOOD SPRINGS, CO 81601
DUBOIS, ROBERT E & ELAINE M	217 BLACKHAWK DRIVE NEW CASTLE, CO 81647-8502
HUYNH, KIM HANG T	5312 KATHRYN DRIVE GRAND PRAIRIE, TX 75052
RATAJCZAK, ZDZISLAW & HALINA	627 N WILDHORSE DRIVE NEW CASTLE, CO 81647
OLSEN, DEANNA K & KELLEY, GEORGE E	1120 SKYLIGHT VIEW COLORADO SPRINGS, CO 80906
PETERS, GREGORY N & BRENDA J	5351 COUNTY ROAD 100 CARBONDALE, CO 81623
SHOCKLEY, MEAGAN & SHOCKLEY, AARON & COLLINS, PATTI & C	261 BLACKHAWK DRIVE NEW CASTLE, CO 81647
HALE, BENJAMIN D & WENDELIN L	271 BLACKHAWK DRIVE NEW CASTLE, CO 81647
DETLEFSEN, GERALD L & SANDRA E	289 BLACKHAWK DRIVE NEW CASTLE, CO 81647
GUZMAN, NEIL DE & CHRISTIANSON, NICOLE	204 BLACKHAWK DRIVE NEW CASTLE, CO 81647
SNODDY, LUKE B & ERIN	212 BLACKHAWK DR NEW CASTLE, CO 81647
COON, BENJAMIN DON & BRUCKER-COON, ERICA LESLIE	222 BLACKHAWK DRIVE NEW CASTLE, CO 81647
COALSON, JONATHAN R	120 MIDLAND AVENUE #170 GLENWOOD SPRINGS, CO 81601
RUBIN, JOSHUA DAVID & CAROLINE MARIE COLBURN	240 BLACKHAWK DRIVE NEW CASTLE, CO 81647
MATTSON, JOSHUA J & MATTSON, GINA E	248 BLACKHAWK DRIVE NEW CASTLE, CO 81647
RAVENSCHLAG, KURT W	258 BLACKHAWK DRIVE NEW CASTLE, CO 81647
REVOIR, CHARLENE D	0266 BLACKHAWK DRIVE NEW CASTLE, CO 81647
LUJAN, CARLOS & MARIA SELENE	98 COUNTY ROAD 132 GLENWOOD SPRINGS, CO 81601
HEFFEL, NATHAN & BURROW, WILLIAM	284 BLACKHAWK DRIVE NEW CASTLE, CO 81647
MAGANA, JOSE J & JANELLE	294 BLACKHAWK DRIVE NEW CASTLE, CO 81647
LAKOTA WINDS, LLC	90 CABALLO STREET CARBONDALE, CO 81623
WHITEHORSE VILLAGE INC	5282 RED PASS WAY CASTLE ROCK, CO 80108
JESSUP, KIP	101 WHITE HORSE DRIVE NEW CASTLE, CO 81647
CRAFT, JACQUELYN & MICHAEL S & CAPUTO, BARBARA	111 WHITEHORSE DRIVE NEW CASTLE, CO 81647
RAYBURN, ANITA R & TUDGE, CHRISTOPHER	460 WOODS ROAD ASPEN, CO 81611
STANNER, JOHN THOMAS & JOANNE MARIE	131 WHITEHORSE DRIVE NEW CASTLE, CO 81647
FOOTE, GREGORY & SHELLY	141 WHITE HORSE DRIVE NEW CASTLE, CO 81647
LAKOTA RIDGE SENIOR APARTMENTS LLLP	7305 LOWELL BLVD SUITE 200 WESTMINSTER, CO 80030
MALO DEVELOPMENT COMPANY-LAKOTA LLC	300 HORSESHOE DRIVE BASALT, CO 81621

April 5, 2022

Romero Group
Dwayne Romero, President & CEO
Via Email: dromero@romero-group.com;

**RE: Job#1219.2 – Longview at Lakota Canyon Ranch –
Preliminary Plan Engineering Summary**

Dear Mr. Romero,

Colorado River Engineering, Inc. has prepared this letter report to summarize engineering components as part of the Preliminary Plan documents submittal packet for the Longview Multi Use project.

Enclosed for submittal and review by the Town of New Castle are the following documents;

1. Preliminary Plan submittal Sheets A through C (24"x36")
2. Preliminary Plan "Draft" Construction Drawings Sheets Nos. 1 to 29 (24" x36")
3. Appendix A - Drainage Report
4. Appendix B – Water and Sewer EQR analysis (Sketch Plan submittal)
5. Appendix C – Geotechnical Investigations

Existing Parcels

Longview consist of three parcels within the mixed use "M-U" zone district as part of the Lakota Canyon Ranch Planned Unit Development (PUD). The development parcels include 15.58 acres of title lands and 1.19 acres of previously dedicated right-of-way dedicated to Lakota Drive. The Preliminary Plat (Sheet A) shows the existing parcels boundary. The proposed subdivision includes adjusting the alignment of the right-of-way of Lakota Drive and increasing its width from 50-feet to 55-feet. The project proposes to adjust the boundary line along the golf course. Adjustments to the golf course and right-of way are discussed herewith in this letter report.

Development Parcels

This mixed-use development project consists of 37 development parcels and 2 open space parcels (24 & 39) as shown on Sheet A. The development parcels consist of 29 single family residential lots, and 8 multi-family lots consisting of apartment buildings, duplex and tri-plex townhomes. Three commercial lots include 25 second level residential flats. Sheets A through C graphically depict the proposed parcels with a Land Use summary table provided on Sheet A.

Boundary Line Adjustment

The boundary line is proposed to be adjusted between the development parcels and the golf course boundary. This has occurred in numerous past applications at the Lakota Canyon Ranch PUD as it was impractical to complete final design level analysis at the master planning stages of the Golf Course and development. The project proposes to adjust the parcels by 0.58 acres (Sheet A) by changing the golf course boundary. The past adjustments were facilitated through owners who represented both the golf course and land development ownership groups, which we understand is same as the current situation.

A table summarizing historic boundary adjustments was prepared based on review of PUD plats. The drawings show that the Golf Course area has gained 6.11 acres while losing approximately 5.74 acres. The gains consist of areas adjacent to grassed holes and include inland pockets of open space between lots and golf holes. The attached Table totals all known gains and losses;

Lakota Canyon Ranch			
Golf Course Boundary Adjustment Summary			
Development Phase	Added to Golf Course (acres)	Removed from Golf Course (acres)	Net Acres to/from Golf Course Net (acres)
Spur	0.19	-1.72	-1.54
Deer Valley I	0.71	-1.42	-0.71
Deer Valley II	5.01	-1.82	3.19
Whitehorse	0.07	-0.07	0.00
Longview (Mixed Use)	0.12	-0.70	-0.58
Total	6.11	-5.74	0.37

Phasing

Sheet A highlights the phasing plan.

Phase-1 consists of three residential lots along Whitehorse Drive. This road is completed and includes all utility services in the roadway. Development of these lots would require street cuts to connect water and sewer stubs.

Phase-2 consists of the parcel south of Faas Ranch Road. In general, the phasing plan is developed to accommodate the construction of sanitary sewer and storm sewer from the lower elevation portion of the project to the upper elevation areas. The low elevation for both sewers originate in the south east corner of the property.

Phase-3 consists of the commercial and multifamily housing as sanitary sewer would be extended uphill to the north.

Phases-4 & 5 consist of the residential phases that could be developed with the extension of utilities to the north.

Drainage

The subject parcels are not within any floodplain boundaries. These lands historically consisted of both native vegetation and flood irrigated pastures. The parcels are on a topographic drainage divide with flows directed either to the west towards Castle Valley Boulevard or to the east towards the golf course and gully (Lakota Canyon) that ultimately discharges to the Colorado River. There are limited off site basins that contribute flow to the subject parcels. Existing and proposed drainage improvements are shown on the engineering drawings. Attached as Appendix A is a detailed drainage analysis report that documents historic conditions, developed flows, and mitigation of developed runoff peak flows to be maintained at or below historic conditions.

The drainage plan utilizes stormwater piping and inlets along Lakota Drive and through the southern parcel to collect and safely deliver water to Lakota Canyon. Detailed stormwater piping around the commercial facilities and multifamily areas is not included in the preliminary plan as these parcels will develop site specific grading and drainage plans as part of their site plan development requirements. These parcels will have access to the stormwater infrastructure and project mitigation for detention and stormwater quality. Drainage towards Castle Valley Boulevard is mitigated through a regional detention facility (Detention Pond D) constructed as part of the adjacent Black Hawk filing to the west. The detention pond is proposed to be adjusted in location to accommodate the project development plans. An open channel swale will convey flows that originate in Whitehorse Drive to the north. The swale will parallel an open space corridor and trail.

Roads

See Traffic engineering report by Fox Tuttle Transportation Group for detailed traffic study analysis. Details on road profiles, signage, striping plan, and road sections are shown on the engineering construction drawings. All roads and parking lot travel lanes were analyzed for turning movements sufficient to pass fire response Ladder trucks and WB-40 vehicles.

Lakota Drive was originally identified as a local residential road in the master plan. The preliminary road design includes 40-feet of paved width to accommodate 12-foot travel lanes and 8-foot parallel parking on each side of the road. This street size is similar to a collector street dimensions. Larger 5-foot sidewalks are provided each side and undulating landscape islands at intersections which will minimize pedestrian crosswalk lengths and improve aesthetics. The proposed right of way alignment is being slightly altered and increased from 50-feet to 55-feet (Sheet A). The profile is shown on the construction drawings. The grade from the existing Lakota Drive to Faas Ranch Road averages 6%. The preliminary design provides a 4% grade at for distances within 25-feet of intersections as outlined in the design standards for the original PUD application. Flattening the intersection increases the grade above 6% in other sections of the road but stays under 10% design guidelines.

Drive A & Drive B

These roads are designed as a private road with 24-feet of paved driving width. No parking or sidewalks are included and are to be private drives.

Potable Water Supply

The subject development parcels are surrounded by water mains constructed as part of earlier phases. Faas Ranch Road has a 10-inch supply line constructed with Filing 2. This pipeline is tied into the Castle Valley Boulevard water main that is fed by the Castle Valley Ranch water tank and is referred to as the lower pressure zone. A concrete vault was found in Faas ranch Road with the water line running through the vault. It is assumed this vault could've been installed for a possible Pressure Reducing Valve. The upper pressure zone is supplied by the Lakota water tank and feeds water mains in Whitehorse Drive and Blackhawk including a stub to the fire station. The water supply plan is to interconnect an 8" pipeline from Whitehorse Drive to Faas Ranch Road. A pressure reducing valve will be required to allow the interconnect. The final PRV location will be determined at final construction design and will be dictated by input from the Town Engineer using the existing water system model. The interconnect will provide increased storage supplies and redundancy in supply alternatives for this new phase as well as the existing Filing 2. Negligible pressure reductions will occur under normal water use demands due to the large mains, looped delivery systems, and the dual pressure zone supplies.

The Town's water system model can also verify the fire flows are greater than the 2,000 gpm utilized in the master planning design for Lakota Canyon ranch PUD. The Preliminary Plan also includes looped water lines through the private drives to the single family residences. The higher density multi-family and commercial lots include looped lines for fire hydrant supply around the buildings.

EQR Estimates

For purpose of calculating water and sewer loading, an estimate of Equivalent Residential Units (EQR's) was made following Town Municipal Code requirements for determining tap fees (due at building permit application). The analysis was made at sketch plan submittal and is conservatively high because unit counts have decreased. The method used by the Town establishes the water use by a single-family home (EQR) as 3.5 people using 100 gallons per day each and the outside irrigation of 2,500 square feet. Using minor reductions for multi-family structures and engineers estimates of commercial development use, the total EQR's for the project are 220.

Water and Sewer Estimates

Water demands during the non-irrigation season are about 77,000 gallons per day (gpd), or 54 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring are about 165,000 gallons per day (gpd), or 115 gallons per minute (gpm). Sewer loading estimates are 73,300 gpd. The loading shows that the project flows are much lower than the capacity associated with the minimum sizing of pipes used in the Town Code and allotted for in the master planning of the Lakota Canyon Ranch infrastructure. These loading estimates are very conservatively high as the EQR approach

greatly overestimates water use which is appropriate when sizing water and sewer pipeline infrastructure.

For purposes of estimating loading with respect to water and sewer plant capacities, the actual loads will be considerably smaller. The project water use will be considerably less for both inside and outside uses. Population changes and advances in conservation through plumbing codes has greatly reduced indoor water uses. Furthermore, average single family home populations are lower at 2.65 per home versus 3.5 used in the past. Per capita water use is also down to 58.6 gpd versus 100 gpd used currently. Average use per household is now 138 gpd and the typical single family home indoor uses average 155 gpd which is 44% of the 350 gpd currently used in the town EQR method. The outside irrigation component using the EQR method does not equitably estimate higher density and commercial projects that typically have significantly less irrigated area. For example, using the EQR approach the irrigated area of the project is 12.2 acres where the maximum landscaping area of the project (non-impervious) was measured to be ± 7 acres.

Our engineers estimate of water and sewer loading using project specific data and modern water use per capita data shows water demands during the non-irrigation season are about 33,000 gpd, or 23 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring is about 82,000 gpd, or 57 gpm. Sewer loading estimates are 31,200 gpd.

Sanitary Sewer

The Sewer Master Plan shows a trunk line running from the northern project area Roundup Drive (from Whitehorse Village) routed to the south on the future Lakota Drive to the sewer main in Castle Valley Boulevard. The sewer from Whitehorse Village did not construct improvements through the subject parcels (Lakota Drive) and instead was able to extend sewer to Blackhawk Drive. This means the subject parcels are not encumbered by the previous "Sewer E" alignment and the new sewer system was designed to match the land development layout. Note that the "Sewer F" line from the Faas Ranch Road homes does cross the southeastern corner of the project. Surveying was completed during snow cover and the exact location of the sewer could not be determined. Site inspection reveal that the sewer could be constructed different than the engineering design drawings and should be located prior to final design.

Raw Water

The golf course back up supply pipeline (6"-PVC) runs through the subject parcels south of Whitehorse Village and will require relocation to accommodate the new residential lot layout.

Soils

Site specific geotechnical engineering investigations are being pursued and were not available at the time of Preliminary Plan submittal. The developability of these lots with respect to geologic conditions, hazards, and preliminary foundation design been included in past studies as part of the original PUD approvals and the surrounding Filings. Past studies are attached in Appendix C. Site specific geotechnical engineering and foundation design by a structural engineer is the common practice at the

PUD and is recommended to be a plat note on the Final Plat. These past studies and our past experience in this area of Lakota indicates that the soils in the subject parcels are higher quality than other project soils and will likely not need intensive mitigation efforts related to infrastructure and structure foundation construction. The road design sections for the surrounding filings (Faas ranch Rd, Clubhouse Drive, Blackhawk Drive, Whitehorse Drive have utilized on average 3-inches of asphalt on 8-inches of Class 6 aggregate base. These roads have all performed well and the improvements at Longview are anticipated to have similar sections. Final road sections will be based on the geotechnical recommendations and incorporated into the construction drawings.

If you have any questions, please do not hesitate to call 970-625-4933.

Sincerely,



Christopher Manera, P.E.

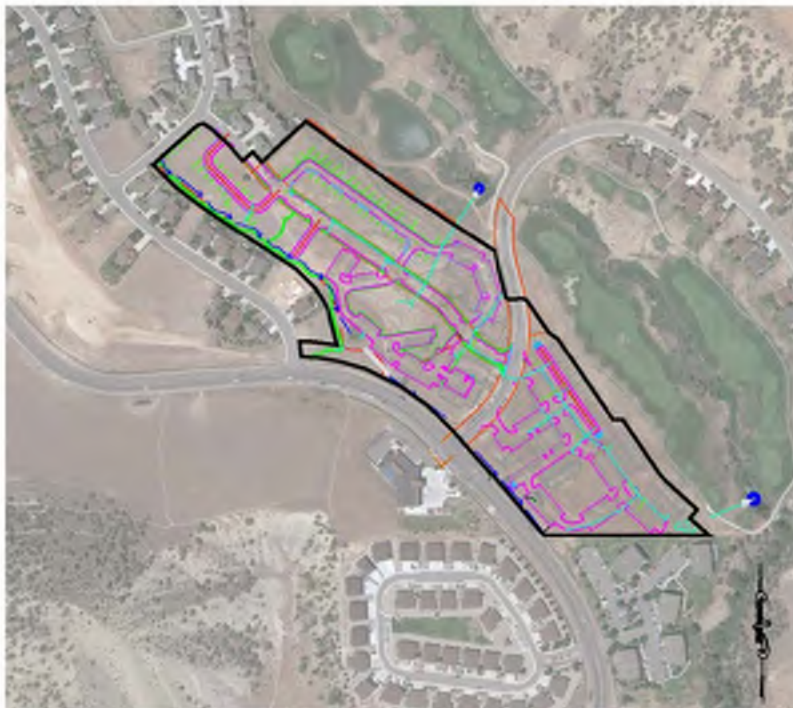
APPENDIX A

The Longview at Lakota Canyon Ranch PUD Drainage Report

April 5, 2022

Prepared for:

The Romero Group, LLC



Prepared By:

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List of Attachments

Figure 1 – Drainage Overview

Figure 2 – Drainage Basins

Figure 3 – Proposed Drainage Infrastructure

Appendix A – NRCS Soils Information & NOAA Rainfall Data

Appendix B – Hydrology Calculations

Appendix C – Blackhawk II Drainage Analysis

INTRODUCTION

The Longview at Lakota Canyon Ranch PUD, Mixed Use development is a ±17.9-acre project with commercial and residential uses located in the Town of Newcastle, CO. The project is situated along the east and north sides of Castle Valley Boulevard in the southeast corner of the Lakota Canyon Ranch Planned Unit Development (PUD). This report summarizes the drainage analysis, storm drain design, and mitigation of increased runoff flows from the proposed developed improvements. Past studies include drainage analysis originally performed by Enartech Inc. dated July 2002 as well as subsequent analyses completed Colorado River Engineering, Inc. (CRE) for surrounding filings including Whitehorse Village and Blackhawk Drive upstream and tributary to this project. Drainage basin labeling will remain the same for offsite basins from the previous Blackhawk II Amended Drainage Plan Analysis prepared by CRE consistency. This project is not located in or near any regulated 100-year Floodplain. The golf course is adjacent to the project along the eastern boundary and serves as the primary tributary stream and watershed.

This report was prepared to support a Preliminary Plan application through the Town of New Castle and provides the stormwater design flows to be used for future final design. The analyses include preliminary design of stormwater conveyance structures which will be updated when final design of the phased project is completed.

PROJECT AREA DESCRIPTION

The project drainage basin boundary is a total of ±32.4-acres with offsite basins upstream extending to the intersection of Blackhawk Drive and Clubhouse Drive (See Figure 1). Detention Pond “D” was built on the Longview property as a part of a regional detention pond and coincided with the construction of Filing 3 (Blackhawk Drive). Pond D will be modified to accommodate project specific criteria to mitigate storm runoff to pre development conditions and provide water quality treatment. There are three locations where stormwater will be discharged off-site identified as Points of Concentration A, B & C. Point of Concentration A (PC-A) discharges to a roadside swale along Castle Valley Boulevard in the southeast corner of the project. PC-B & PC-C both discharge to the PUD’s major drainage referred to in this report as “Lakota Canyon”. This drainage runs through the project from north to south ultimately discharging into the Colorado River.

No new detention ponds are proposed to reduce stormwater peak flow rates for PC-B or PC-C due to excess detention credits that exist resulting from construction of the golf course and previous filings at Lakota. The original drainage report for the PUD and Plat for Filing 1, which includes the golf course, was previously prepared by Enartech Engineers, dated July 2002, and will be referred to as the Enartech report. The second drainage report that included Longview basins was prepared by High Country Engineering entitled “Golf Course Drainage Calculations”, dated December 2002. Our references to this report will be called the HCE report. The HCE

analysis included the golf course (Enertech's Basin C). The report states on page 1, "Enartech has determined that the existing conditions 25-year historic flow from the site is 171.77 cfs." "Since the 25-year post development flows will only be 39.27 cfs based on Filing 2 construction and the golf course construction, it can be stated that there will be no adverse effects to the downstream and adjacent property owners during the 25-year storm event." Using the previously approved analyses, the calculated remaining capacity is 132.5 cfs, draining south from the golf course and out of basin C onto downstream property (171.77 historic – 39.27 HCE filing 2 & golf course).

Longview PC-B and PC-C are all part of the original Basin C in the Enartech Report. In this design, water in Basin C will stay in its historic watershed discharging into the golf course and "Lakota Canyon". There will not be any increase in historic runoff to downstream properties. This was recognized in the HCE report with approximately 132.5-cfs reduction of flow in Lakota Canyon from the golf course and PUD improvements. Therefore, there is no need to build additional storm water detention ponds for Longview. All hydrology calculations are based on the 25-year storm frequency in accordance with the Town of New Castle design standards.

Existing Conditions Drainage Basins (Figure 2)

Whitehorse Village Basin: Consists of the lots along the east side of Blackhawk Drive north of Whitehorse Drive along with half of the roadway and one housing "6-pack" of Whitehorse Village. Inlets in Whitehorse Drive and 15-in. culvert discharge to a swale conveying drainage to Detention Pond D.

Blackhawk I Basin: Consists of the portion of the lots along the west side of Blackhawk Drive and half of the roadway. Existing storm inlets near the intersection of Blackhawk Dr. and Castle Valley Blvd. capture flows into an 18-in pipe that discharges to Detention Pond D.

Blackhawk II Basin: Portion of lots along west side of Blackhawk Drive, open space area, and half of Castle Valley Blvd roadway. Existing storm drain pipe conveys flow into to Detention Pond D.

Blackhawk III Basin: The lots along the east side of Blackhawk Drive and half of the adjacent roadway. Existing storm drain inlets and pipe discharge to Detention Pond D.

[Proposed Drainage Basins \(Figure 2\)](#)

W-1 Basin: Basins named “W” flow to the west and end up at Point of Concentration A (PC-A). W-1 consists of the portion of the new development that flows to Detention Pond D. The basin includes residential housing on the north side and commercial buildings with parking areas on the south side. Access roads and driveways are included. A meandering trail system along the western property edge will have an adjacent bio-swale, capturing drainage and serving as a water quality feature. Storm drain inlets and pipe will convey water to Detention Pond D. Whitehorse Village Basin discharges through a culvert crossing Whitehorse Drive and will be conveyed through the bio-swale to Detention Pond D.

W-2 Basin: This basin is primarily open space below Detention Pond D and includes half of Castle Valley Boulevard. This basin is conveyed across Faas Ranch Road with an existing 15-in. diameter pipe.

W-3 Basin: This is directly downstream of W-2 and includes the open space and half of Castle Valley Boulevard.

Detention Pond D: Detention Pond D was built during Blackhawk Filing 3 phase and will continue to serve to mitigate the peak developed runoff down to historic conditions for the 25-year, 24-hour storm event. The Whitehorse Village, Blackhawk, and W-1 basins are all tributary to Detention Pond D. The existing concrete outlet structure has a 6-in. diameter orifice plate and 12-in. diameter outlet pipe. The existing pond will be re-graded, new orifice plate installed, and the inlet and outlet pipes will be re-installed at new grades. A reduction in volume is allowed for this pond because less area is being collected by Pond D due to site grading that will direct flow to Lakota Canyon drainage. Attached for reference, see the Blackhawk II, Amended Drainage Analysis prepared by Colorado River Engineering, Aug. 31st 2004 provided in Appx C.

E-1 Basin: The basins named “E” flow to the east into the Lakota Canyon along the golf course where no detention is required. This basin starts at the intersection of Whitehorse Drive and includes the majority of Lakota Drive through the north portion of the project. Multi-family housing, commercial buildings, looped access road, and driveways are included. Storm inlets along Lakota Drive will be served by an 18-in. diameter pipe discharging to near the bottom of the adjacent Lakota Canyon upstream of Faas Ranch Road.

E-2 Basin: This basin is located downstream of basin E-1 and includes commercial buildings, parking areas, and a portion of Faas Ranch Road. There is an existing inlet and pipe serving Faas Ranch Road that will be removed and replaced when the intersection of Faas Ranch Road and

Lakota Drive is built. Inlets and storm pipe will serve to drain this basin and will be routed through Basin E-3.

E-3 Basin: This basin is located in the southeast corner (furthest downstream) and contains primarily commercial development, apartments, and park areas. A 24-in. diameter pipe will serve as the primary stormwater conductor through the lower part of the basin and reducing to 18-in. upstream. Several branches of smaller pipes and inlets will serve to drain parking areas and buildings. The pipe will discharge into water quality treatment ponds to be located between the project and the existing golf course ponds in Lakota Canyon. The new treatment ponds and discharge structure to dissipate energy will be designed at Final Plat submittal.

RUNOFF CALCULATIONS

METHODOLOGY

The peak runoff flows for this analysis were determined using HydroCAD 10.00 stormwater modeling program which utilizes the methodology given in the Soil Conservation Service’s “Technical Release No. 20, Urban Hydrology”. Input includes precipitation, land use cover and soil characteristics, basin size, and time of concentration.

Precipitation

Design criteria for the project examined discharge rate and volume for the 2-year, 25-year, and 100-year frequency, 24 hour storm event. Design criteria mitigated flows for the 25-year event. NOAA atlas precipitation frequency estimates (**Appendix A**) for the project area were used as summarized in **Table 1**:

*Table 1
Precipitation Frequencies
NOAA Atlas 14*

Storm Frequency (years)	Duration (hours)	Rainfall (inches)
2	24	1.17
25	24	1.98
100	24	2.50

Soils & Curve Numbers

Soil properties were obtained from the Soil Conservation Service, USDA Web Soil Survey. 97% of the soils are Potts-Ildefonso complex with hydraulic rating C. The southeast corner of the project containing Basins W-1 through 3 consists of Ildefonso-Lazear complex with hydraulic rating A.

These hydraulic ratings are used to determine the runoff curve numbers. Soils information can be found in Appendix A attached. The type of ground cover and density also affect the runoff

volume on the site. The ground cover consists of native range, landscaped grass areas, impervious form road and sidewalks, and dirt roads or parking areas. Given this information the following curve numbers (CN) based on soil type and ground cover were used for the analysis for each of the basins:

Table 2 - Curve Numbers

CN	Description
98	Paved Roads, Parking Areas, Buildings, Trail
79	Pasture/grassland/Range Fair Condition "C"
74	>75% Grass cover "C"
61	>75% Grass cover "B"
39	>75% Grass cover "A"
69	Open Space
83	1/4 acre lots "C"
80	1/3 acre lots "C"

Time of concentration was calculated by the flow path of each basin. Model output results can be found in Appendix B and are summarized below in Table 3:

Peak Runoff Flows

*Table 3
Basin Characteristics and Flow Calculations*

Basin	Area (Acres)	Curve Number (weighted)	Time of Concentration (min)	Q25 (CFS)	Tributary to POND-D	Point of Concentration
White Horse Village	4.00	86	8.3	5.40	√	A
Blackhawk I	2.92	85	12	3.20	√	A
Blackhawk II	3.48	75	12	1.54	√	A
Blackhawk III	2.67	83	6	3.15	√	A
W1	3.07	85	18.3	2.73	√	A
W2	1.68	83	14.1	1.47		B
W3	0.71	69	6.5	0.17		C
E1	5.19	88	4	9.27		B
E2	3.01	94	2.8	7.63		C
E3	6.07	89	7.8	10.11		C
E1 Historic	5.19	79	13.1	3.35		B
E2 Historic	3.01	79	9.1	2.27		C
E3 Historic	5.10	79	11.7	3.48		C

The historic peak runoff flows from the original Enartech analysis for PC-A had a flow of 4.14-cfs. Detention Pond D was sized such that its outflow combined with the other contributing basins will be less than the historic amount, as Shown in Table 4.

*Table 4
 Peak Runoff Flows at Point of Concentration*

Point of Concentration	Q25 Historic ¹ (CFS)	Q25 Developed (CFS)
A	4.14	3.63
B	3.35	8.68
C	5.75	15.8

1/Note: Q at PC-B & PC-C are only contributing flows from Longview basins and not the totals for the entire basins.

The historic and developed flows in Table 4 for PC-B and PC-C show the runoff amounts contributed from the basins in the Longview project to show the relative increase from the development. The increases are minor when compared to the excess credits available identified in the HCE reports.

Improvements - Point of Concentration A & Detention Pond D

The roadside swale along the north side of Castle Valley Boulevard at the southwest corner of the project is the discharge point for PC-A. Detention Pond D has an inflow of 10.69-cfs and an outflow of 3.38-cfs, allowing developed flows to be mitigated to less than the historic flows of 4.14-cfs. The improvements to Detention Pond D include re-grading, outlet structure relocation, new orifice plate installation, outlet pipe replacement, and inlet pipe replacement. The existing pond will be relocated to accommodate the grading plans of the project. The existing outlet structure intake is a 4-foot rectangular concrete box 4-foot tall. A steel orifice plate at the invert serving as the primary outlet to restrict outflow. A steel grate on top serving as the secondary outlet in the event the orifice plate becomes plugged.

The existing 6-inch diameter orifice plate will be replaced with an 8-inch diameter plate. During the 25-year storm event, the water elevation in Pond D will reach a max height of 5703.88-foot elevation which is below the secondary outlet height of 5704.00-feet, after a 6" riser is installed on the outlet structure. If a storm event larger than the 25-year event occurs, or if the orifice plate becomes plugged with debris, the secondary outlet on top of the structure is a 3' x 3' opening with a steel grate and will serve to convey storm water into the 12-inch diameter outlet pipe. An emergency overflow spillway channel has also been provided in the top of the dam in the possible event that both outlets on the structure become plugged, submerged, and the outlet pipe reaches capacity. The overflow channel will be rip-rap lined for erosion protection of the downstream dam slope, conveying storm water to the outlet pipe discharge location.

Point of Concentration B

Basin E-1 will be captured by storm drain infrastructure in Lakota Drive. The Lakota Drive roadway serves as the main conductor of drainage water with vertical curbs on each side. Inlet structures

will be placed to capture water at a minimum to allow one lane of traffic to be open during 25-year storm events. The inlets will convey water to an 18-inch diameter pipeline that discharges to Lakota Canyon. The 18-inch diameter pipe will be operating at 60% capacity during a 25-year storm event which conservatively allows 40% plugging or larger storm events. PC-B discharge location is upstream of Faas Ranch Road. A new water quality treatment pond is proposed to capture sediment, floatables, and debris from new development. The ponds will be constructed on golf course property between the pipe outfall and the existing Lakota Canyon. A rip-rap channel sized for the storm flow velocity will be installed for erosion protection. No detention is required for this area due to storm water credits on the Lakota Ranch Development upstream of this area.

Point of Concentration C

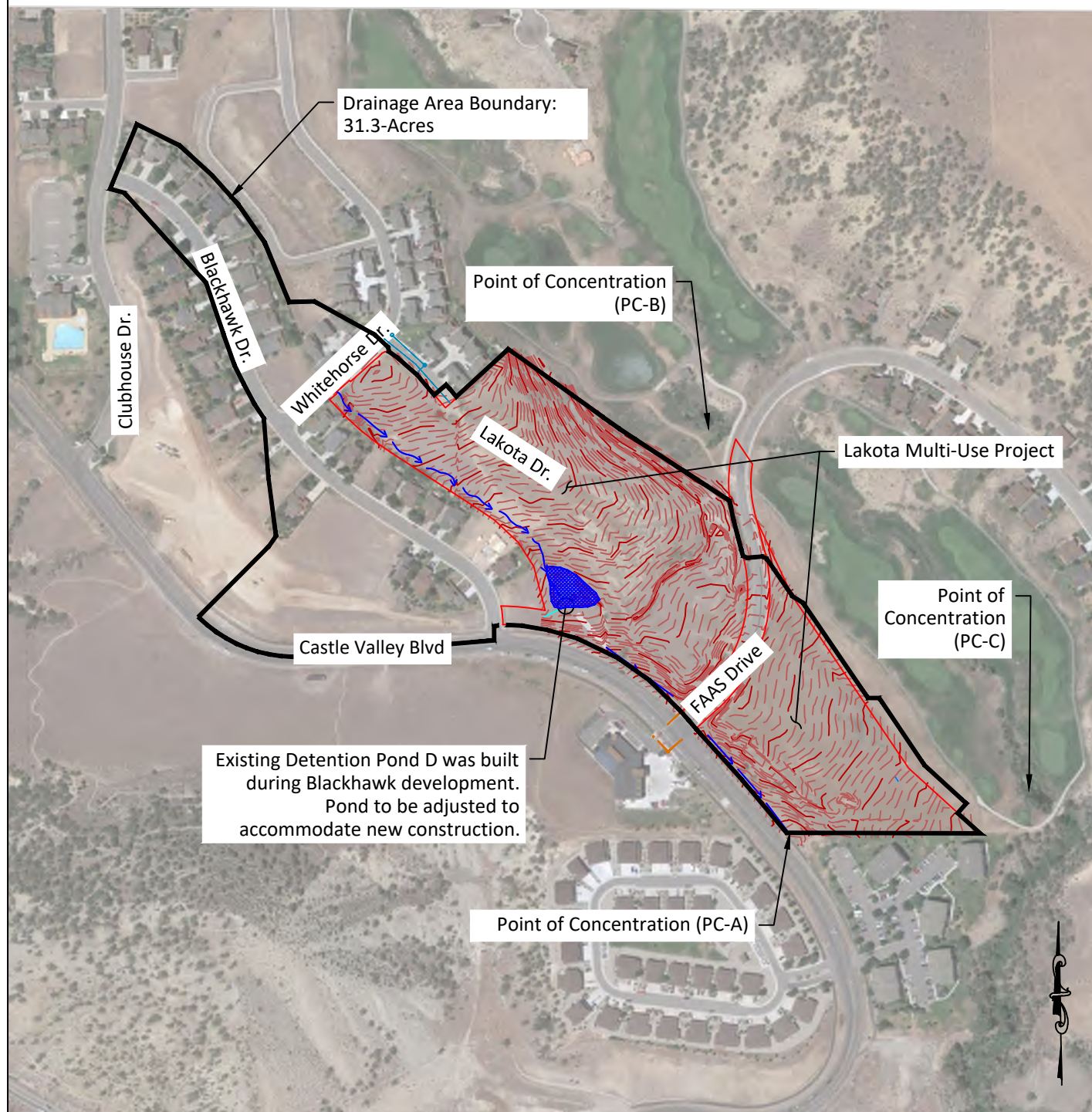
Basin E-2 & E-3 will be discharged at PC-B which is also located in the golf course drainage Lakota Canyon. A 24-inch diameter pipeline will extend from the discharge location upstream and connect to inlet structures as well as pipe stubs to connect to roof gutter services for buildings. The pipe will be reduced to 18-in. prior to crossing Faas Ranch Road and serve Basin E-2 and a portion of Faas Ranch Road. Both the 24-inch and 18-inch pipes will be operating at 60% capacity during a 25-year storm event which conservatively allows 40% plugging or excess capacity for larger storm events. New water quality treatment ponds are proposed to capture sediment, floatables, and debris from new development. The ponds will be constructed on golf course property between the pipe outfall and the existing pond in the golf course along Lakota Canyon will serve as water quality settlement and mitigation. A rip-rap channel sized for the storm flow velocity will be installed for erosion protection. No detention is required for this area due to storm water credits created by existing ponds on the Lakota Ranch Development upstream of this area.

Stormwater Treatment for Water Quality

The inlet structures onsite will have a 12-in sump to help capture solids as an initial treatment. Storm flows reaching PC-B & C will be discharged to new treatment ponds in the golf course drainage which will settle out suspended solids and help capture floatable pollutants. Lakota Canyon is highly vegetated and will slow down flow rates and provide natural water treatment to further mitigate pollutants prior to discharging offsite. For storm flows reaching PC-A, a bio-swale will be constructed along the western boundary of the project upstream of Detention Pond D. The bio-swale will be a heavily vegetated channel winding along the proposed trail and discharges into Detention Pond D. Detention Pond D will serve to slow down flows, settle out dissolved solids, and capture floatable pollutants. Detention Pond D will continue to discharge to the roadside swale along Castle Valley Boulevard, as it has done historically. Downstream of Pond D, the only areas being served by the roadside swale are open space or landscaped areas.

SUMMARY

This report summarizes the drainage analysis of the Longview development at Lakota Canyon Ranch PUD Multi-Use Project. The proposed Detention Pond D improvements described herein will serve to mitigate peak flow rates for the 25-year, 24-hour event down to historic levels and provide stormwater quality structures to remove pollutants prior to discharging to the receiving waterways. Stormwater pipe and inlet structures are proposed to collect runoff internal to the project and convey it to Lakota Canyon. Proposed commercial and multifamily development can connect to the storm system and no additional detention is required for lots developed within the project. Design of hydraulic structures including pipeline and stormwater inlets will be completed as part of final engineering construction documents.



PO Box 1301
Rifle, CO 81650
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Drainage Overview Lakota Canyon Ranch PUD

Figure:

1

File Name: Drainage CRE Design - Lakota Mixed Use

Job No: 1219.02

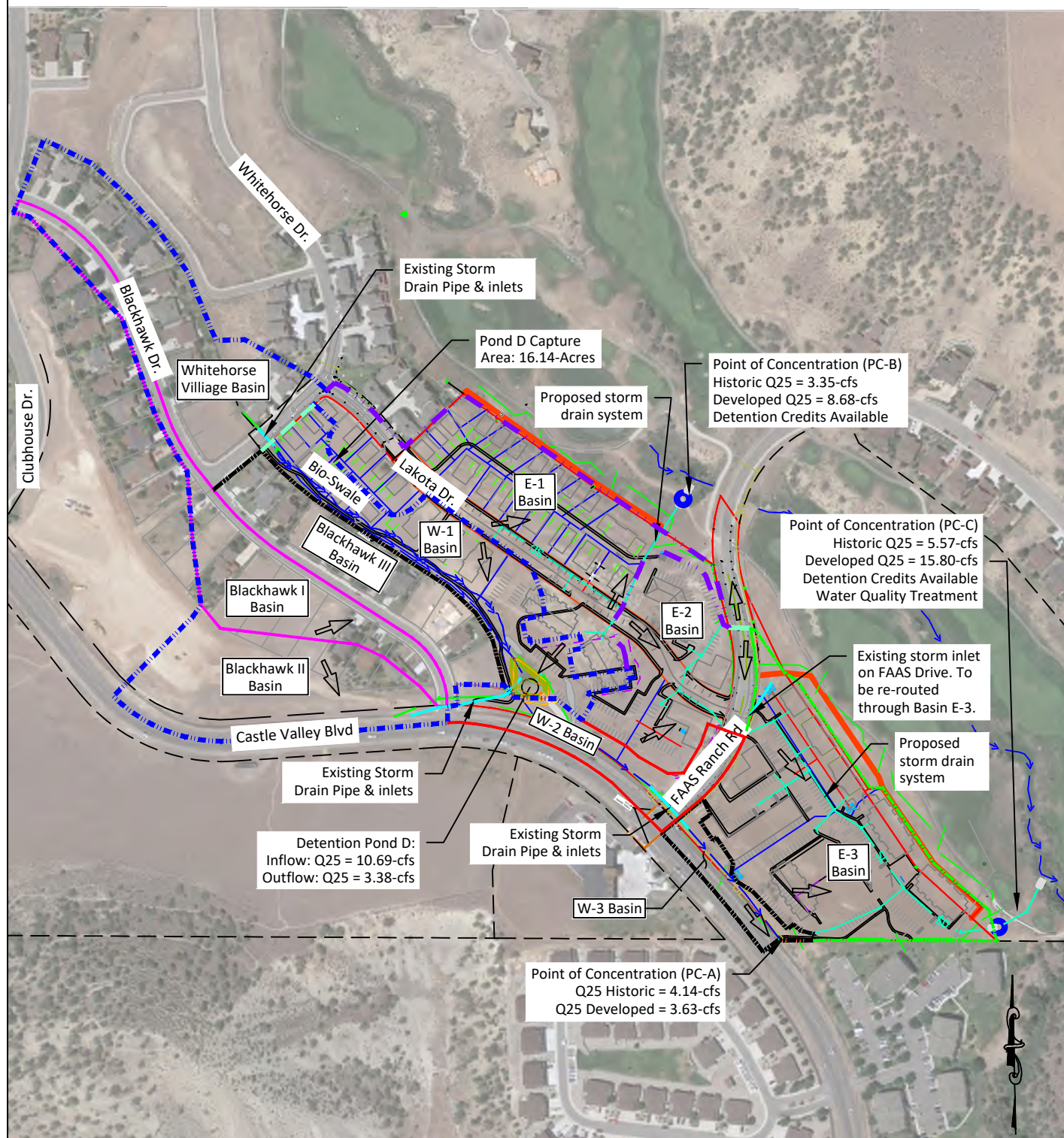
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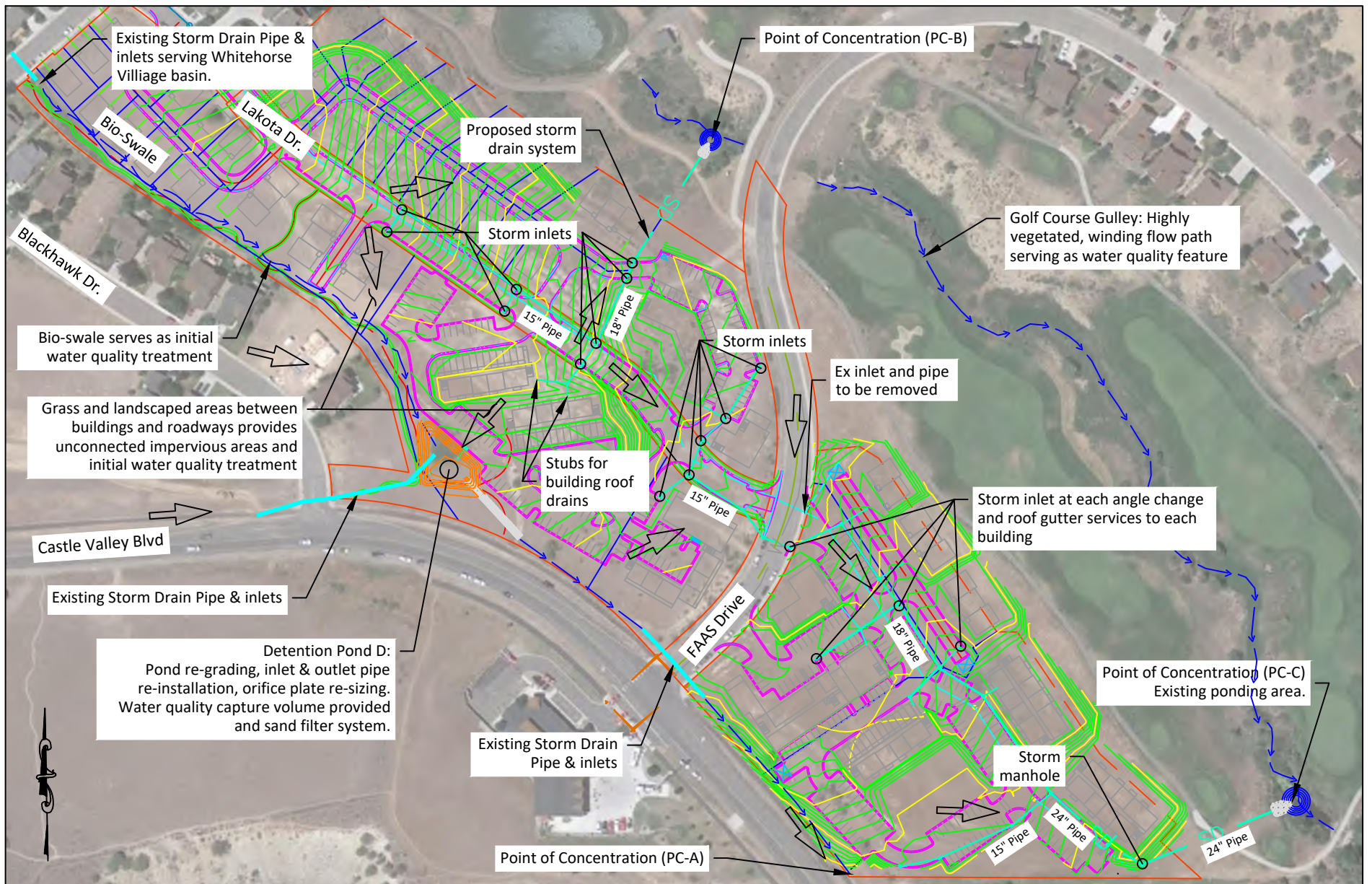
Drawn by: EB

Approved by: CM

Date: 3/2/22

The Romero Group, LLC





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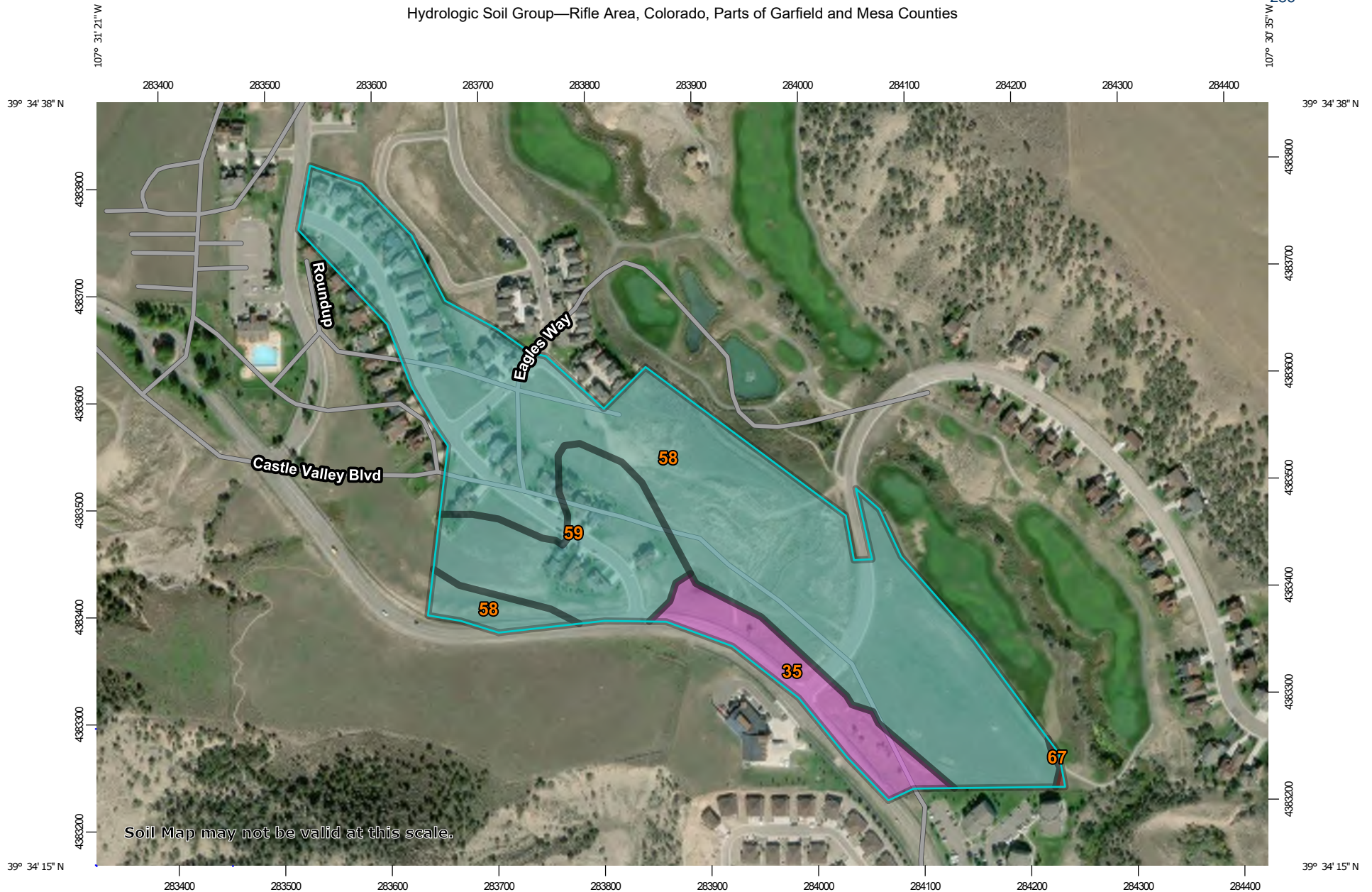
Proposed Drainage Infrastructure Lakota Canyon Ranch PUD

Figure:
3

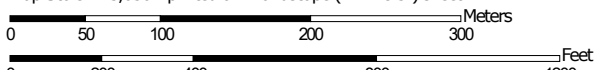
File Name: Drainage CRE Design - Lakota Canyon Ranch PUD 19.2		Client:
Drawn by: EB	Approved by: CM	The Romero Group, LLC
Date: 3/4/22		

APPENDIX A
NRCS Soils Information
&
NOAA Rainfall Data.

Hydrologic Soil Group—Rifle Area, Colorado, Parts of Garfield and Mesa Counties



































Map Scale: 1:5,030 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84



MAP LEGEND

- Area of Interest (AOI)**
 -  Area of Interest (AOI)
- Soils**
 - Soil Rating Polygons**
 -  A
 -  A/D
 -  B
 -  B/D
 -  C
 -  C/D
 -  D
 -  Not rated or not available
 - Soil Rating Lines**
 -  A
 -  A/D
 -  B
 -  B/D
 -  C
 -  C/D
 -  D
 -  Not rated or not available
 - Soil Rating Points**
 -  A
 -  A/D
 -  B
 -  B/D
-  C
-  C/D
-  D
-  Not rated or not available
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads
- Background**
 -  Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.
 Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rifle Area, Colorado, Parts of Garfield and Mesa Counties
 Survey Area Data: Version 14, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 14, 2010—Nov 1, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35	Ildefonso-Lazear complex, 6 to 65 percent slopes	A	3.0	9.0%
58	Potts-Ildefonso complex, 12 to 25 percent slopes	C	24.5	74.1%
59	Potts-Ildefonso complex, 25 to 45 percent slopes	C	5.6	16.8%
67	Torriorhents-Rock outcrop complex, steep	D	0.0	0.1%
Totals for Area of Interest			33.1	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



General Information

- Homepage
- Progress Reports
- FAQ
- Glossary

Precipitation Frequency

- Data Server
- GIS Grids
- Maps
- Time Series
- Temporals
- Documents

Probable Maximum Precipitation

- Documents

Miscellaneous

- Publications
- Storm Analysis
- Record Precipitation

Contact Us

- Inquiries



NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: CO

Data description

Data type: Precipitation depth Units: English Time series type: Partial duration

Select location

1) Manually:

a) By location (decimal degrees, use "-" for S and W): Latitude: Longitude:

b) By station (list of CO stations): Select station

c) By address

2) Use map (if ESRI interactive map is not loading, try adding the host: <https://is.arcois.com/> to the firewall, or contact us at hdsc.questions@noaa.gov):

a) Select location
Move crosshair or double click

b) Click on station icon
 Show stations on map

Location information:
Name: New Castle, Colorado, USA
Latitude: 39.5742°
Longitude: -107.5161°
Elevation: 5771.33 ft **

* Source: ESRI Maps
 ** Source: USGS

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES
 WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
 NOAA Atlas 14, Volume 8, Version 2

[PF tabular](#)

[PF graphical](#)

[Supplementary information](#)

[Print page](#)

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.124 (0.097-0.159)	0.164 (0.128-0.211)	0.232 (0.180-0.299)	0.289 (0.224-0.375)	0.371 (0.277-0.502)	0.435 (0.318-0.599)	0.501 (0.353-0.710)	0.570 (0.385-0.834)	0.663 (0.431-1.00)	0.736 (0.466-1.13)
10-min	0.182 (0.142-0.233)	0.241 (0.188-0.309)	0.339 (0.264-0.437)	0.424 (0.328-0.549)	0.543 (0.406-0.736)	0.637 (0.465-0.877)	0.734 (0.518-1.04)	0.835 (0.564-1.22)	0.971 (0.631-1.47)	1.08 (0.682-1.65)
15-min	0.222 (0.173-0.285)	0.294 (0.229-0.377)	0.414 (0.322-0.534)	0.516 (0.400-0.669)	0.662 (0.495-0.897)	0.777 (0.567-1.07)	0.895 (0.631-1.27)	1.02 (0.688-1.49)	1.18 (0.770-1.79)	1.31 (0.832-2.02)
30-min	0.286 (0.223-0.366)	0.382 (0.298-0.491)	0.541 (0.421-0.697)	0.673 (0.521-0.872)	0.856 (0.638-1.15)	0.998 (0.726-1.37)	1.14 (0.802-1.61)	1.29 (0.867-1.87)	1.48 (0.958-2.23)	1.62 (1.03-2.49)
60-min	0.372 (0.291-0.477)	0.474 (0.370-0.609)	0.642 (0.500-0.828)	0.783 (0.606-1.01)	0.979 (0.730-1.32)	1.13 (0.824-1.55)	1.28 (0.904-1.81)	1.44 (0.972-2.10)	1.65 (1.07-2.48)	1.81 (1.14-2.78)
2-hr	0.458 (0.362-0.582)	0.566 (0.446-0.719)	0.744 (0.585-0.949)	0.893 (0.698-1.15)	1.10 (0.830-1.47)	1.26 (0.931-1.71)	1.43 (1.02-1.99)	1.60 (1.09-2.30)	1.82 (1.19-2.71)	1.99 (1.27-3.02)
3-hr	0.535 (0.424-0.675)	0.632 (0.502-0.799)	0.797 (0.630-1.01)	0.937 (0.736-1.19)	1.14 (0.864-1.51)	1.29 (0.961-1.74)	1.46 (1.05-2.02)	1.63 (1.12-2.33)	1.85 (1.23-2.74)	2.03 (1.31-3.05)
6-hr	0.678 (0.544-0.846)	0.776 (0.622-0.970)	0.942 (0.752-1.18)	1.09 (0.861-1.37)	1.29 (0.993-1.69)	1.46 (1.09-1.94)	1.62 (1.18-2.22)	1.80 (1.25-2.54)	2.05 (1.37-2.98)	2.24 (1.45-3.31)
12-hr	0.839	0.963	1.17	1.35	1.61	1.82	2.03	2.25	2.55	2.78

	(0.680-1.04)	(0.779-1.19)	(0.946-1.45)	(1.09-1.69)	(1.25-2.08)	(1.38-2.38)	(1.48-2.74)	(1.58-3.13)	(1.72-3.62)	91	(1.83-4.06)
24-hr	1.02 (0.836-1.25)	1.17 (0.959-1.43)	1.43 (1.17-1.76)	1.66 (1.34-2.04)	1.98 (1.55-2.53)	2.23 (1.71-2.90)	2.50 (1.85-3.34)	2.78 (1.98-3.82)	3.17 (2.16-4.48)		3.47 (2.30-4.98)
2-day	1.22 (1.01-1.48)	1.39 (1.15-1.69)	1.69 (1.39-2.05)	1.95 (1.59-2.37)	2.32 (1.84-2.94)	2.62 (2.04-3.37)	2.94 (2.20-3.88)	3.28 (2.35-4.45)	3.74 (2.58-5.23)		4.11 (2.76-5.82)
3-day	1.35 (1.12-1.61)	1.55 (1.29-1.86)	1.89 (1.56-2.27)	2.18 (1.79-2.64)	2.60 (2.07-3.26)	2.93 (2.29-3.73)	3.28 (2.47-4.28)	3.64 (2.63-4.89)	4.14 (2.87-5.72)		4.52 (3.06-6.34)
4-day	1.45 (1.21-1.73)	1.67 (1.39-2.00)	2.04 (1.70-2.44)	2.35 (1.95-2.84)	2.80 (2.24-3.49)	3.15 (2.47-3.99)	3.51 (2.66-4.56)	3.89 (2.82-5.19)	4.40 (3.07-6.04)		4.79 (3.25-6.68)
7-day	1.74 (1.46-2.06)	1.97 (1.66-2.33)	2.36 (1.98-2.80)	2.69 (2.24-3.21)	3.16 (2.55-3.89)	3.52 (2.78-4.40)	3.90 (2.97-5.00)	4.29 (3.13-5.65)	4.81 (3.38-6.52)		5.22 (3.57-7.18)
10-day	1.99 (1.68-2.34)	2.23 (1.88-2.62)	2.63 (2.21-3.10)	2.96 (2.49-3.51)	3.44 (2.80-4.21)	3.82 (3.03-4.74)	4.20 (3.22-5.35)	4.60 (3.38-6.01)	5.14 (3.64-6.91)		5.56 (3.83-7.58)
20-day	2.67 (2.29-3.11)	2.96 (2.53-3.45)	3.43 (2.93-4.01)	3.83 (3.25-4.49)	4.38 (3.60-5.28)	4.82 (3.86-5.89)	5.25 (4.07-6.57)	5.70 (4.23-7.32)	6.29 (4.50-8.31)		6.75 (4.70-9.06)
30-day	3.24 (2.79-3.74)	3.59 (3.09-4.15)	4.16 (3.57-4.82)	4.63 (3.95-5.39)	5.27 (4.35-6.29)	5.76 (4.64-6.98)	6.25 (4.87-7.74)	6.74 (5.03-8.57)	7.38 (5.30-9.65)		7.86 (5.51-10.5)
45-day	3.95 (3.43-4.53)	4.41 (3.82-5.06)	5.12 (4.42-5.90)	5.70 (4.90-6.59)	6.48 (5.36-7.65)	7.05 (5.71-8.45)	7.61 (5.96-9.33)	8.16 (6.12-10.3)	8.85 (6.39-11.4)		9.36 (6.60-12.3)
60-day	4.57 (3.98-5.22)	5.12 (4.45-5.85)	5.98 (5.19-6.85)	6.66 (5.75-7.66)	7.55 (6.27-8.86)	8.21 (6.67-9.76)	8.82 (6.93-10.7)	9.42 (7.10-11.8)	10.2 (7.36-13.0)		10.7 (7.56-14.0)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in CSV format: [Precipitation frequency estimates](#)

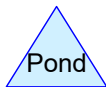
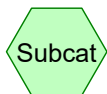
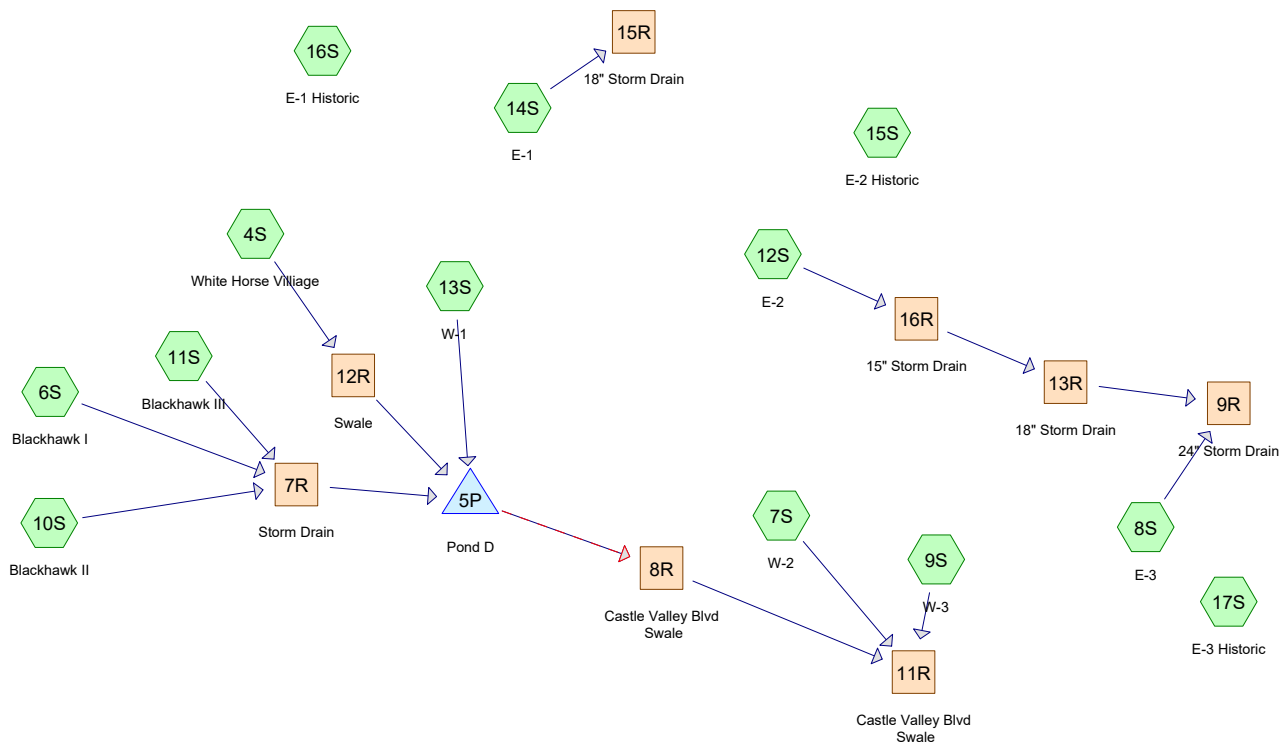
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APPENDIX B
Hydrology Calculations



Routing Diagram for Lakota Multi-use Drainage
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Lakota Multi-use Drainage

Prepared by Microsoft

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.120	80	1/3 acre lots, 30% imp, HSG C (6S, 10S, 11S)
3.200	83	1/4 acre lots, 38% imp, HSG C (4S)
0.350	39	>75% Grass cover, Good, HSG A (9S)
0.700	61	>75% Grass cover, Good, HSG B (7S)
6.630	74	>75% Grass cover, Good, HSG C (8S, 12S, 13S, 14S)
2.150	98	Buildings (8S, 12S)
1.420	98	Buildings & Driveways (14S)
0.830	98	Castle Valley Blvd (9S, 10S)
2.260	69	Open Space (10S)
13.300	79	Pasture/grassland/range, Fair, HSG C (15S, 16S, 17S)
1.290	98	Roads, Parking, & Buildings (13S)
8.706	98	Roadway (4S, 6S, 7S, 8S, 11S, 12S, 14S)
0.140	98	Trail (13S)
46.096	84	TOTAL AREA

Lakota Multi-use Drainage

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.350	HSG A	9S
0.700	HSG B	7S
28.250	HSG C	4S, 6S, 8S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S
0.000	HSG D	
16.796	Other	4S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S
46.096		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	5.120	0.000	0.000	5.120	1/3 acre lots, 30% imp	6S, 10S, 11S
0.000	0.000	3.200	0.000	0.000	3.200	1/4 acre lots, 38% imp	4S
0.350	0.700	6.630	0.000	0.000	7.680	>75% Grass cover, Good	7S, 8S, 9S, 12S, 13S, 14S
0.000	0.000	0.000	0.000	2.150	2.150	Buildings	8S, 12S
0.000	0.000	0.000	0.000	1.420	1.420	Buildings & Driveways	14S
0.000	0.000	0.000	0.000	0.830	0.830	Castle Valley Blvd	9S, 10S
0.000	0.000	0.000	0.000	2.260	2.260	Open Space	10S
0.000	0.000	13.300	0.000	0.000	13.300	Pasture/grassland/range, Fair	15S, 16S, 17S
0.000	0.000	0.000	0.000	1.290	1.290	Roads, Parking, & Buildings	13S
0.000	0.000	0.000	0.000	8.706	8.706	Roadway	4S, 6S, 7S, 8S, 11S, 12S, 14S
0.000	0.000	0.000	0.000	0.140	0.140	Trail	13S
0.350	0.700	28.250	0.000	16.796	46.096	TOTAL AREA	

Lakota Multi-use Drainage

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	4S	0.00	0.00	40.0	0.0100	0.120	12.0	0.0	0.0
2	7S	0.00	0.00	150.0	0.0300	0.012	12.0	0.0	0.0
3	7R	5,705.00	5,700.00	240.0	0.0208	0.012	18.0	0.0	0.0
4	9R	5,668.00	5,660.00	650.0	0.0123	0.012	24.0	0.0	0.0
5	13R	5,680.00	5,665.00	370.0	0.0405	0.012	18.0	0.0	0.0
6	15R	5,702.00	5,695.00	370.0	0.0189	0.012	18.0	0.0	0.0
7	16R	5,690.00	5,680.00	275.0	0.0364	0.012	15.0	0.0	0.0

Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Page 6

Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4S: White Horse Villiage	Runoff Area=4.000 ac 50.40% Impervious Runoff Depth>0.76" Flow Length=1,037' Tc=8.3 min CN=86 Runoff=5.40 cfs 0.254 af
Subcatchment 6S: Blackhawk I	Runoff Area=2.916 ac 49.59% Impervious Runoff Depth>0.71" Tc=12.0 min CN=85 Runoff=3.20 cfs 0.172 af
Subcatchment 7S: W-2	Runoff Area=1.680 ac 58.33% Impervious Runoff Depth>0.61" Flow Length=682' Tc=14.1 min CN=83 Runoff=1.47 cfs 0.086 af
Subcatchment 8S: E-3	Runoff Area=6.070 ac 60.79% Impervious Runoff Depth>0.93" Flow Length=714' Tc=7.8 min CN=89 Runoff=10.11 cfs 0.471 af
Subcatchment 9S: W-3	Runoff Area=0.710 ac 50.70% Impervious Runoff Depth>0.18" Flow Length=371' Slope=0.0300 '/ Tc=6.5 min CN=69 Runoff=0.17 cfs 0.010 af
Subcatchment 10S: Blackhawk II	Runoff Area=3.480 ac 19.97% Impervious Runoff Depth>0.32" Tc=12.0 min CN=75 Runoff=1.54 cfs 0.094 af
Subcatchment 11S: Blackhawk III	Runoff Area=2.670 ac 40.49% Impervious Runoff Depth>0.62" Tc=6.0 min CN=83 Runoff=3.15 cfs 0.137 af
Subcatchment 12S: E-2	Runoff Area=3.010 ac 83.72% Impervious Runoff Depth>1.29" Flow Length=592' Tc=2.8 min CN=94 Runoff=7.63 cfs 0.323 af
Subcatchment 13S: W-1	Runoff Area=3.070 ac 46.58% Impervious Runoff Depth>0.71" Flow Length=889' Tc=18.3 min CN=85 Runoff=2.73 cfs 0.181 af
Subcatchment 14S: E-1	Runoff Area=5.190 ac 59.15% Impervious Runoff Depth>0.87" Flow Length=932' Tc=4.0 min CN=88 Runoff=9.27 cfs 0.377 af
Subcatchment 15S: E-2 Historic	Runoff Area=3.010 ac 0.00% Impervious Runoff Depth>0.45" Flow Length=525' Tc=9.1 min CN=79 Runoff=2.27 cfs 0.114 af
Subcatchment 16S: E-1 Historic	Runoff Area=5.190 ac 0.00% Impervious Runoff Depth>0.45" Flow Length=932' Tc=13.1 min CN=79 Runoff=3.35 cfs 0.196 af
Subcatchment 17S: E-3 Historic	Runoff Area=5.100 ac 0.00% Impervious Runoff Depth>0.45" Flow Length=714' Tc=11.7 min CN=79 Runoff=3.48 cfs 0.193 af
Reach 7R: Storm Drain	Avg. Flow Depth=0.70' Max Vel=8.96 fps Inflow=7.24 cfs 0.403 af 18.0" Round Pipe n=0.012 L=240.0' S=0.0208 '/ Capacity=16.43 cfs Outflow=7.05 cfs 0.403 af
Reach 8R: Castle Valley Blvd Swale	Avg. Flow Depth=0.35' Max Vel=3.13 fps Inflow=3.38 cfs 0.832 af n=0.035 L=967.0' S=0.0336 '/ Capacity=27.70 cfs Outflow=3.37 cfs 0.826 af
Reach 9R: 24" Storm Drain	Avg. Flow Depth=1.12' Max Vel=9.05 fps Inflow=16.53 cfs 0.794 af 24.0" Round Pipe n=0.012 L=650.0' S=0.0123 '/ Capacity=27.19 cfs Outflow=15.80 cfs 0.792 af

Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Reach 11R: Castle Valley Blvd Swale Avg. Flow Depth=0.35' Max Vel=3.40 fps Inflow=3.63 cfs 0.922 af
n=0.035 L=10.0' S=0.0400 '/ Capacity=30.22 cfs Outflow=3.63 cfs 0.922 af

Reach 12R: Swale Avg. Flow Depth=0.37' Max Vel=1.61 fps Inflow=5.40 cfs 0.254 af
n=0.080 L=890.0' S=0.0382 '/ Capacity=6.71 cfs Outflow=3.86 cfs 0.248 af

Reach 13R: 18" Storm Drain Avg. Flow Depth=0.58' Max Vel=11.53 fps Inflow=7.42 cfs 0.323 af
18.0" Round Pipe n=0.012 L=370.0' S=0.0405 '/ Capacity=22.91 cfs Outflow=7.14 cfs 0.323 af

Reach 15R: 18" Storm Drain Avg. Flow Depth=0.82' Max Vel=9.17 fps Inflow=9.27 cfs 0.377 af
18.0" Round Pipe n=0.012 L=370.0' S=0.0189 '/ Capacity=15.65 cfs Outflow=8.68 cfs 0.377 af

Reach 16R: 15" Storm Drain Avg. Flow Depth=0.68' Max Vel=11.17 fps Inflow=7.63 cfs 0.323 af
15.0" Round Pipe n=0.012 L=275.0' S=0.0364 '/ Capacity=13.34 cfs Outflow=7.42 cfs 0.323 af

Pond 5P: Pond D Peak Elev=5,703.88' Storage=10,329 cf Inflow=10.69 cfs 0.832 af
Primary=3.38 cfs 0.832 af Secondary=0.00 cfs 0.000 af Outflow=3.38 cfs 0.832 af

Total Runoff Area = 46.096 ac Runoff Volume = 2.610 af Average Runoff Depth = 0.68"
62.50% Pervious = 28.808 ac 37.50% Impervious = 17.288 ac

Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 4S: White Horse Villiage

Runoff = 5.40 cfs @ 12.00 hrs, Volume= 0.254 af, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.800	98	Roadway
3.200	83	1/4 acre lots, 38% imp, HSG C
4.000	86	Weighted Average
1.984		49.60% Pervious Area
2.016		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	30	0.0350	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
0.6	117	0.0300	3.52		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	850	0.0400	9.83	49.14	Channel Flow, Area= 5.0 sf Perim= 20.0' r= 0.25' n= 0.012 Concrete pipe, finished
1.4	40	0.0100	0.49	0.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.120
8.3	1,037	Total			

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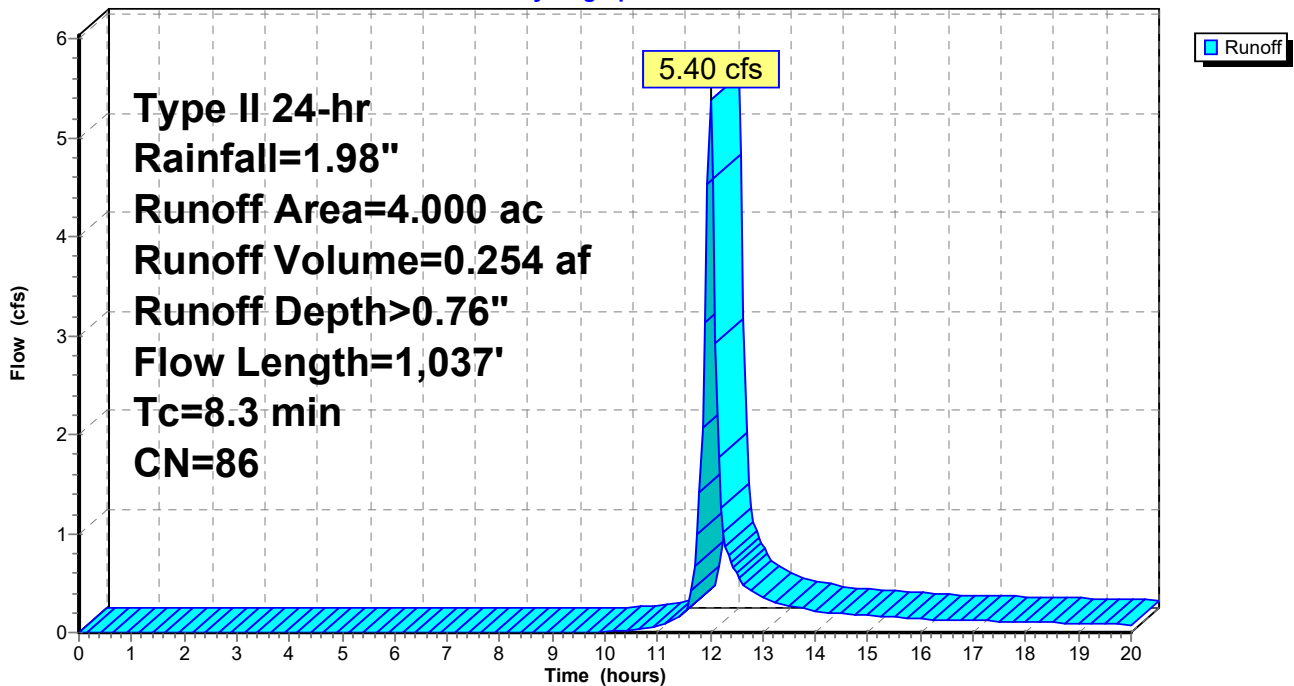
Type II 24-hr Rainfall=1.98"

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Subcatchment 4S: White Horse Villiage

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 6S: Blackhawk I

Runoff = 3.20 cfs @ 12.05 hrs, Volume= 0.172 af, Depth> 0.71"

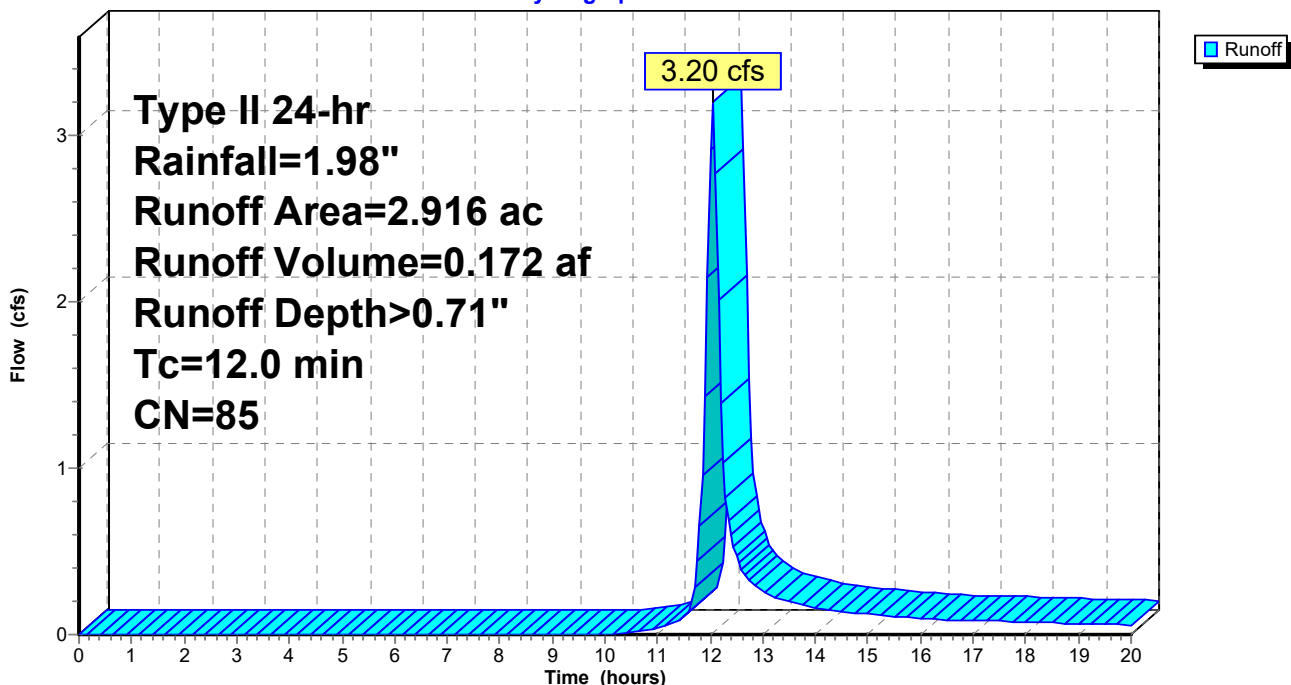
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.816	98	Roadway
* 2.100	80	1/3 acre lots, 30% imp, HSG C
2.916	85	Weighted Average
1.470		50.41% Pervious Area
1.446		49.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Subcatchment 6S: Blackhawk I

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 7S: W-2

Runoff = 1.47 cfs @ 12.07 hrs, Volume= 0.086 af, Depth> 0.61"

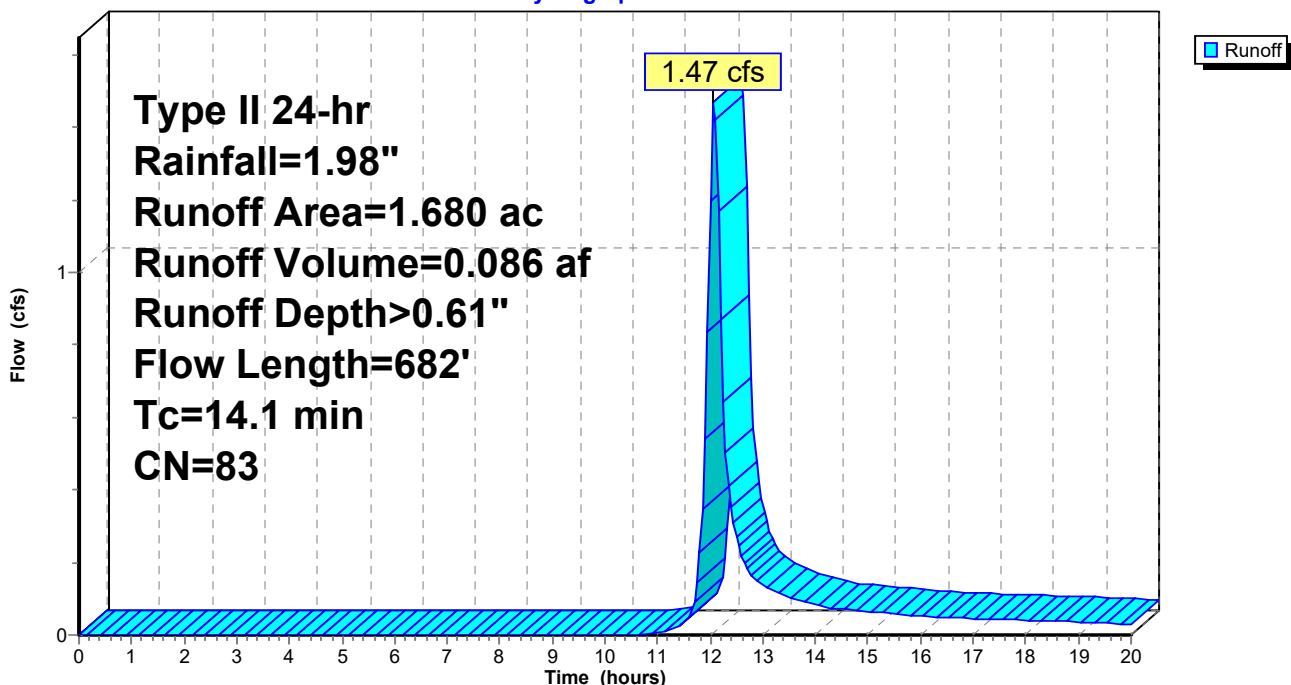
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.980	98	Roadway
0.700	61	>75% Grass cover, Good, HSG B
1.680	83	Weighted Average
0.700		41.67% Pervious Area
0.980		58.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	70	0.0300	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
3.4	462	0.0400	2.27	2.95	Channel Flow, Area= 1.3 sf Perim= 9.4' r= 0.14' n= 0.035 High grass
0.3	150	0.0300	8.51	6.69	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
14.1	682	Total			

Subcatchment 7S: W-2

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 8S: E-3

Runoff = 10.11 cfs @ 11.99 hrs, Volume= 0.471 af, Depth> 0.93"

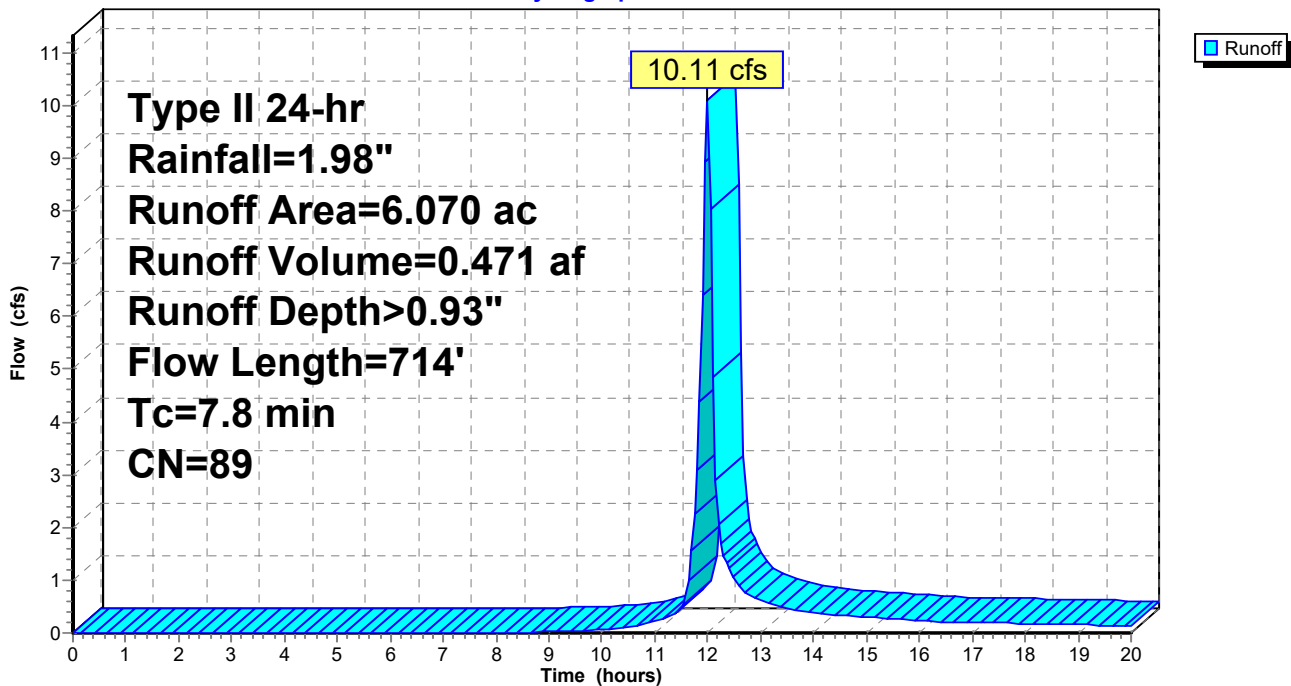
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 2.270	98	Roadway
* 1.420	98	Buildings
2.380	74	>75% Grass cover, Good, HSG C
6.070	89	Weighted Average
2.380		39.21% Pervious Area
3.690		60.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	25	0.0200	0.08		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
2.5	689	0.0400	4.51	18.92	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.013 Concrete, trowel finish
7.8	714	Total			

Subcatchment 8S: E-3

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 9S: W-3

Runoff = 0.17 cfs @ 12.01 hrs, Volume= 0.010 af, Depth> 0.18"

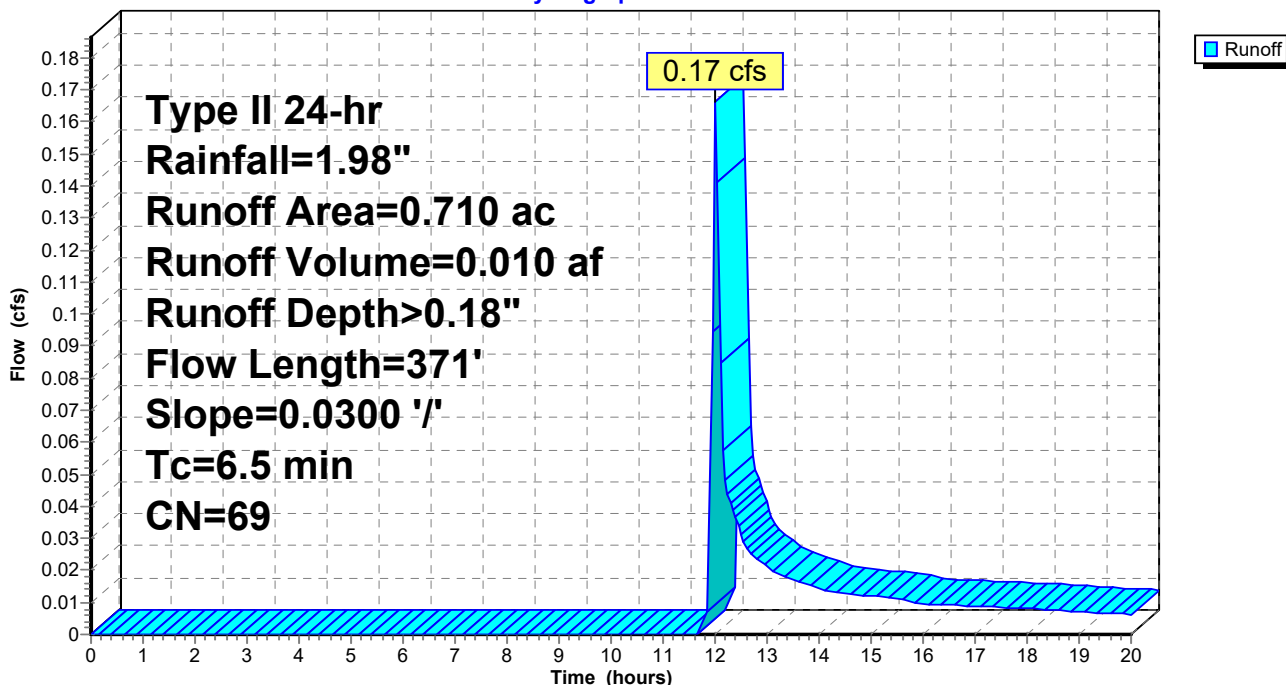
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
0.350	39	>75% Grass cover, Good, HSG A
* 0.360	98	Castle Valley Blvd
0.710	69	Weighted Average
0.350		49.30% Pervious Area
0.360		50.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	25	0.0300	0.09		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
2.0	346	0.0300	2.92	8.76	Channel Flow, Area= 3.0 sf Perim= 12.0' r= 0.25' n= 0.035 Earth, dense weeds
6.5	371	Total			

Subcatchment 9S: W-3

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 10S: Blackhawk II

Runoff = 1.54 cfs @ 12.06 hrs, Volume= 0.094 af, Depth> 0.32"

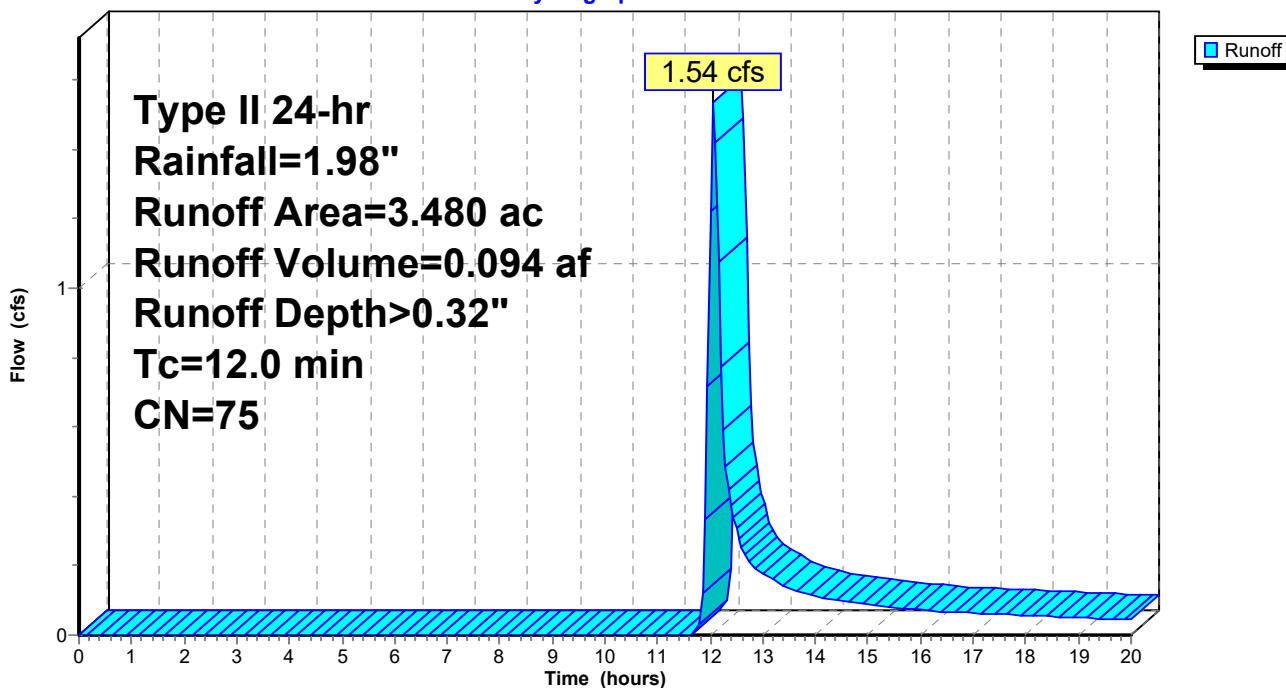
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 0.750	80	1/3 acre lots, 30% imp, HSG C
* 2.260	69	Open Space
* 0.470	98	Castle Valley Blvd
3.480	75	Weighted Average
2.785		80.03% Pervious Area
0.695		19.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Subcatchment 10S: Blackhawk II

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 11S: Blackhawk III

Runoff = 3.15 cfs @ 11.98 hrs, Volume= 0.137 af, Depth> 0.62"

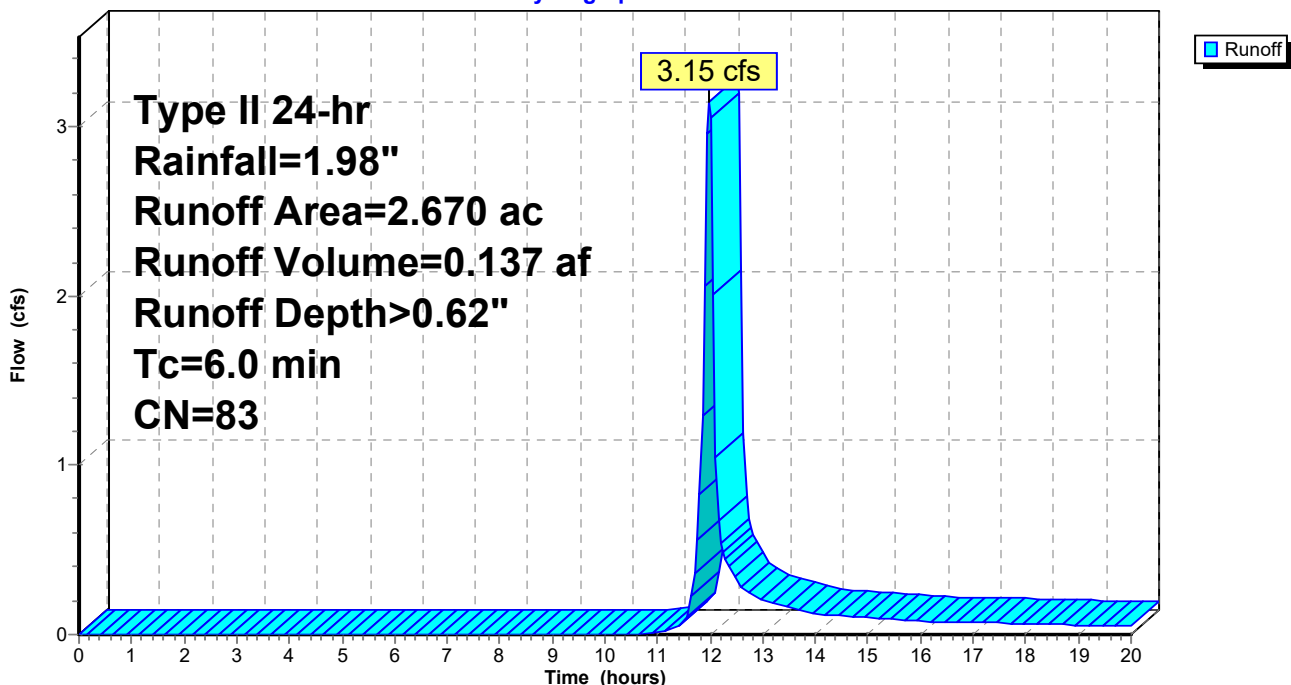
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 2.270	80	1/3 acre lots, 30% imp, HSG C
* 0.400	98	Roadway
2.670	83	Weighted Average
1.589		59.51% Pervious Area
1.081		40.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 11S: Blackhawk III

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 12S: E-2

[49] Hint: Tc<2dt may require smaller dt

Runoff = 7.63 cfs @ 11.93 hrs, Volume= 0.323 af, Depth> 1.29"

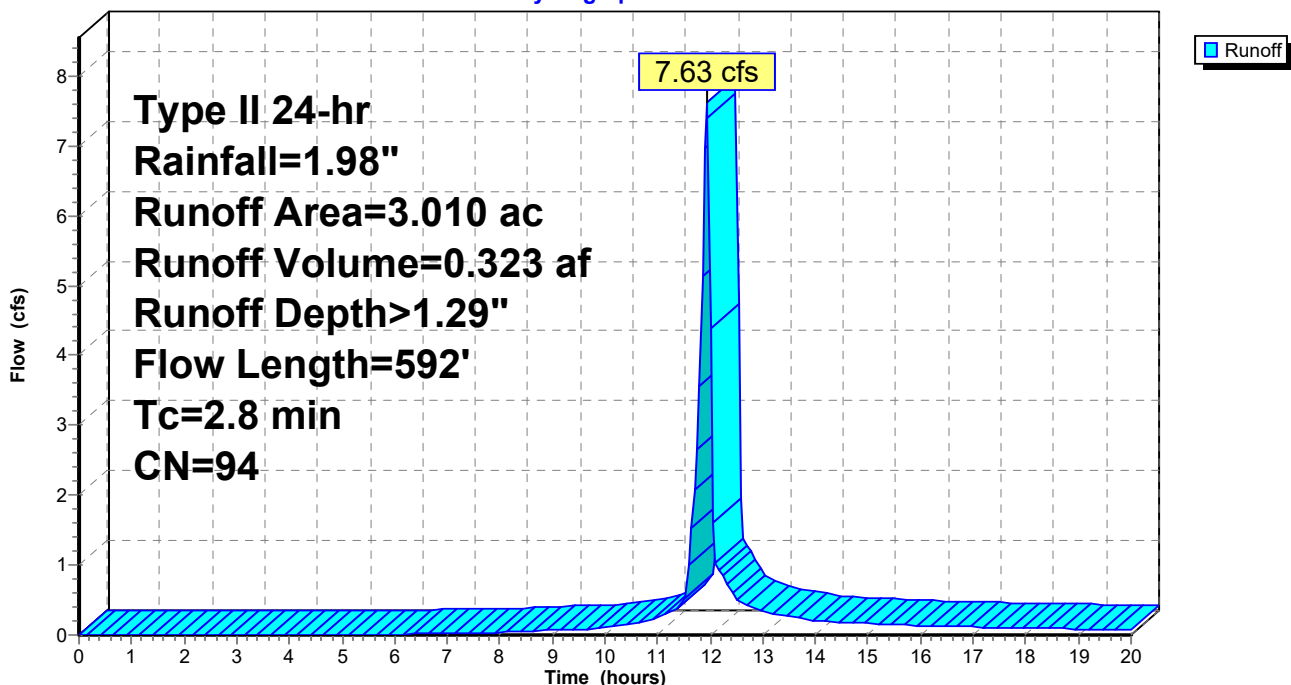
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 1.790	98	Roadway
* 0.730	98	Buildings
0.490	74	>75% Grass cover, Good, HSG C
3.010	94	Weighted Average
0.490		16.28% Pervious Area
2.520		83.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	25	0.0200	0.63		Sheet Flow, Smooth surfaces n= 0.011 P2= 1.17"
2.1	567	0.0400	4.51	18.92	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.013 Concrete, trowel finish
2.8	592	Total			

Subcatchment 12S: E-2

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 13S: W-1

Runoff = 2.73 cfs @ 12.12 hrs, Volume= 0.181 af, Depth> 0.71"

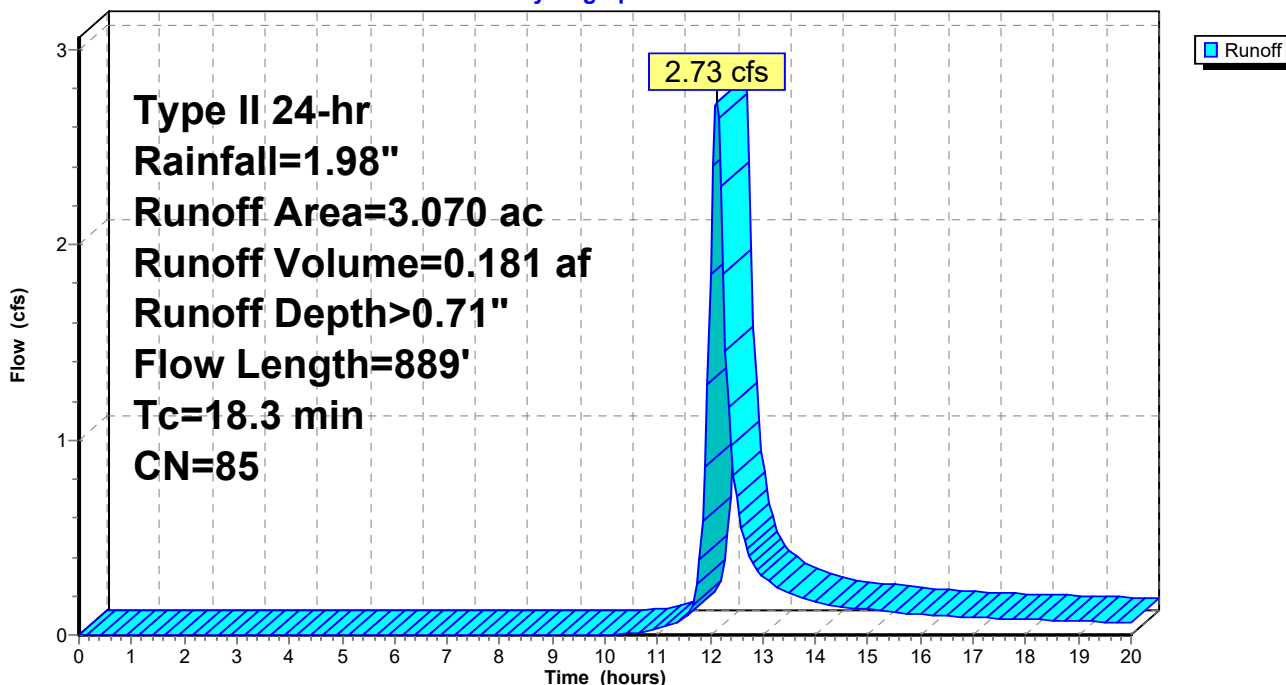
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 1.290	98	Roads, Parking, & Buildings
* 0.140	98	Trail
1.640	74	>75% Grass cover, Good, HSG C
3.070	85	Weighted Average
1.640		53.42% Pervious Area
1.430		46.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	75	0.0200	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 1.17"
5.4	814	0.0400	2.49	8.73	Channel Flow, Area= 3.5 sf Perim= 18.0' r= 0.19' n= 0.040 Earth, dense weeds
18.3	889	Total			

Subcatchment 13S: W-1

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 14S: E-1

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 9.27 cfs @ 11.95 hrs, Volume= 0.377 af, Depth> 0.87"

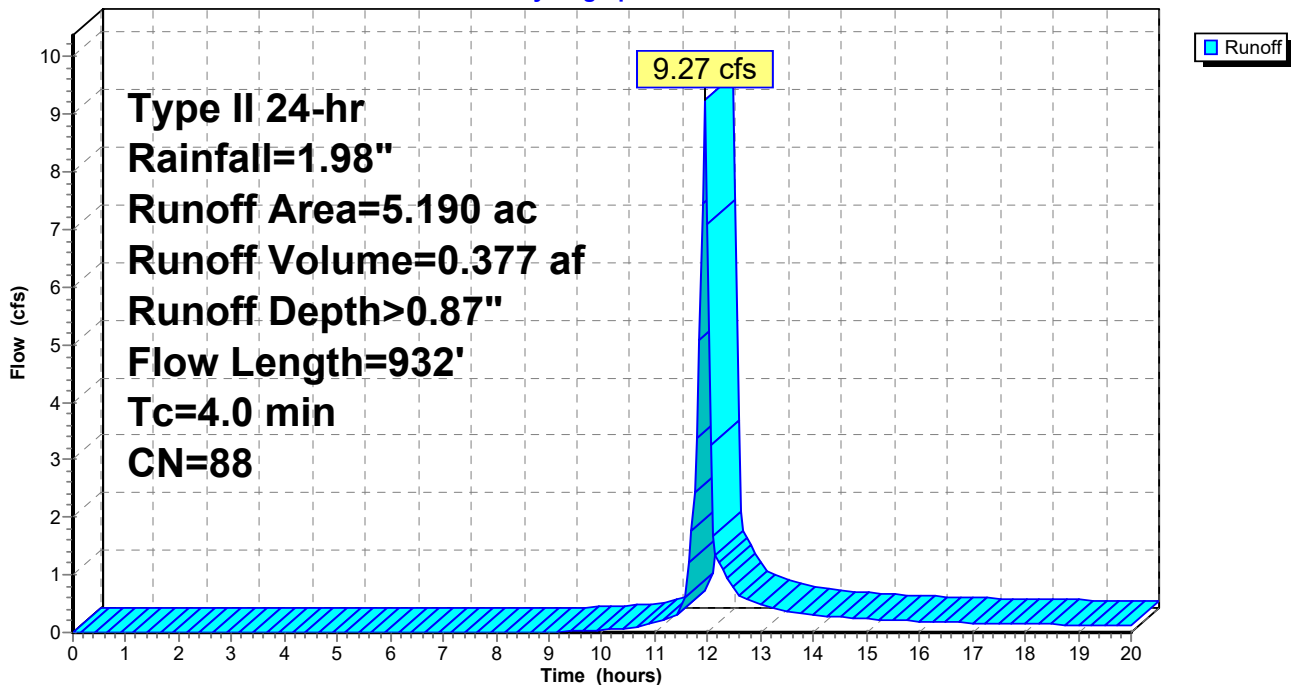
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
* 1.650	98	Roadway
* 1.420	98	Buildings & Driveways
2.120	74	>75% Grass cover, Good, HSG C
5.190	88	Weighted Average
2.120		40.85% Pervious Area
3.070		59.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	25	0.0300	0.74		Sheet Flow, Smooth surfaces n= 0.011 P2= 1.17"
3.4	907	0.0330	4.43	18.62	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.012
4.0	932	Total			

Subcatchment 14S: E-1

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Subcatchment 15S: E-2 Historic

Runoff = 2.27 cfs @ 12.02 hrs, Volume= 0.114 af, Depth> 0.45"

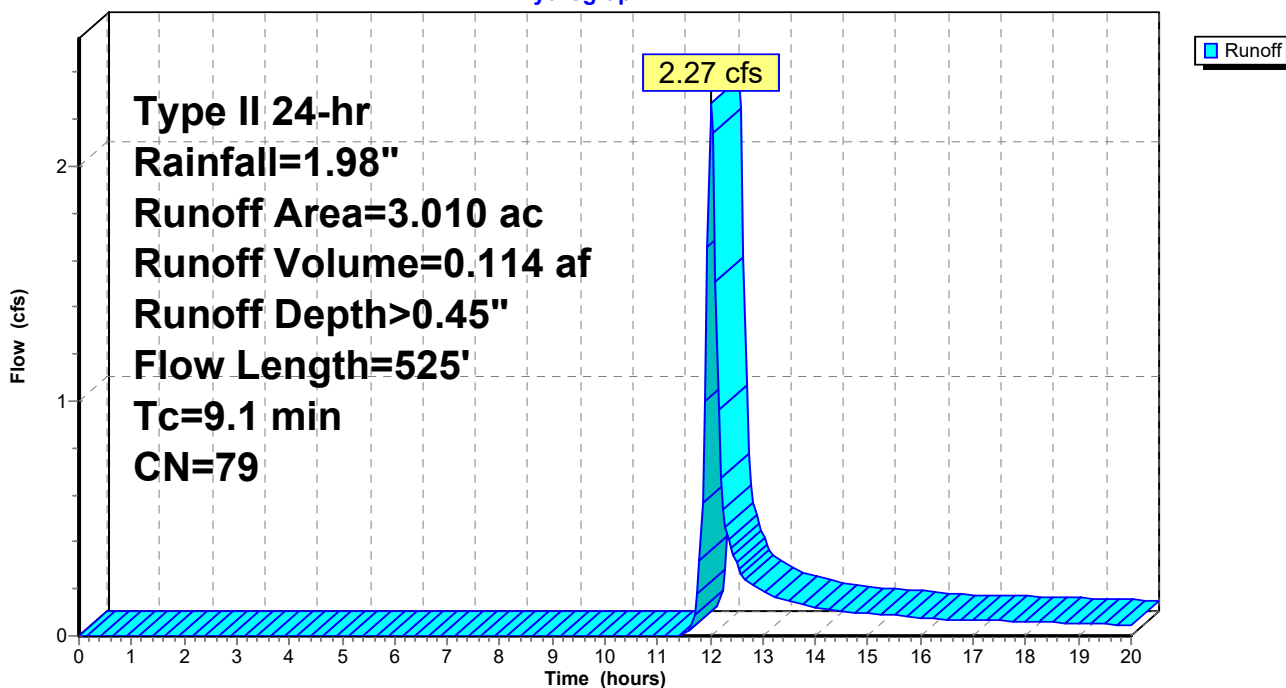
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
3.010	79	Pasture/grassland/range, Fair, HSG C
3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	25	0.0300	0.10		Sheet Flow, Range n= 0.130 P2= 1.17"
5.0	500	0.0400	1.67	7.03	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.035 Earth, dense weeds
9.1	525	Total			

Subcatchment 15S: E-2 Historic

Hydrograph



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Summary for Subcatchment 16S: E-1 Historic

Runoff = 3.35 cfs @ 12.07 hrs, Volume= 0.196 af, Depth> 0.45"

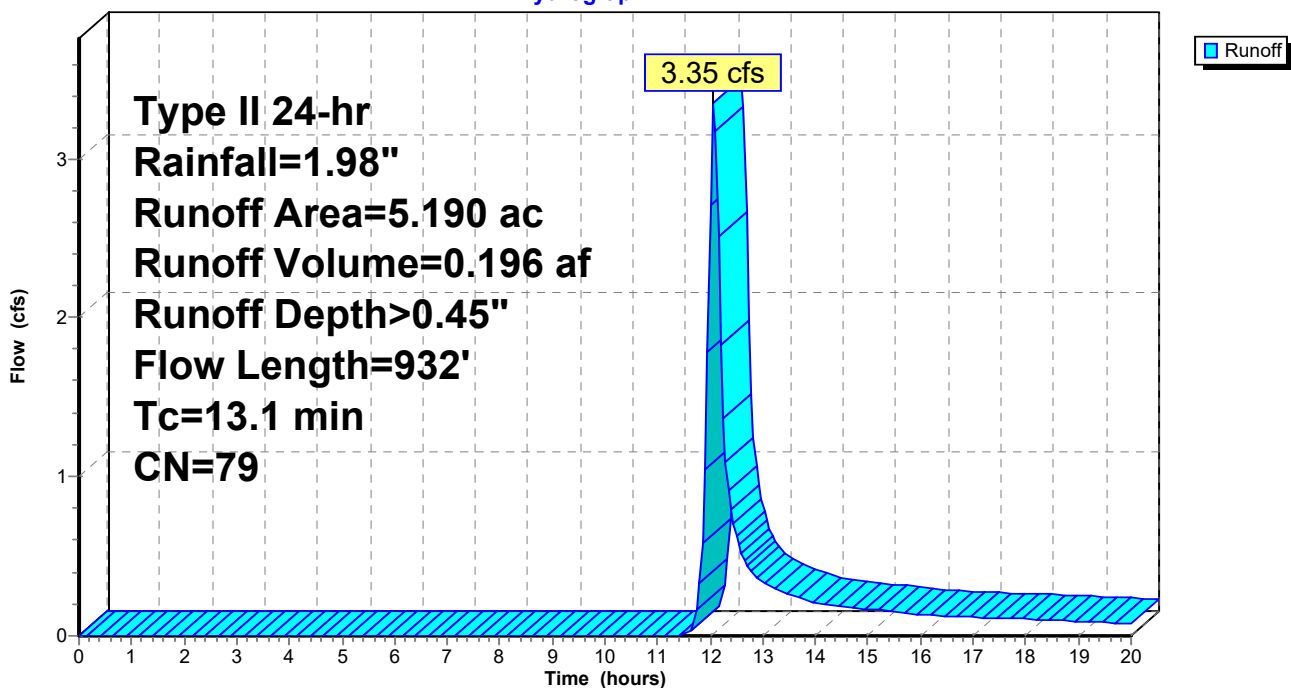
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
5.190	79	Pasture/grassland/range, Fair, HSG C
5.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	25	0.0300	0.10		Sheet Flow, Range n= 0.130 P2= 1.17"
9.0	907	0.0400	1.67	7.03	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.035 Earth, dense weeds
13.1	932	Total			

Subcatchment 16S: E-1 Historic

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Summary for Subcatchment 17S: E-3 Historic

Runoff = 3.48 cfs @ 12.05 hrs, Volume= 0.193 af, Depth> 0.45"

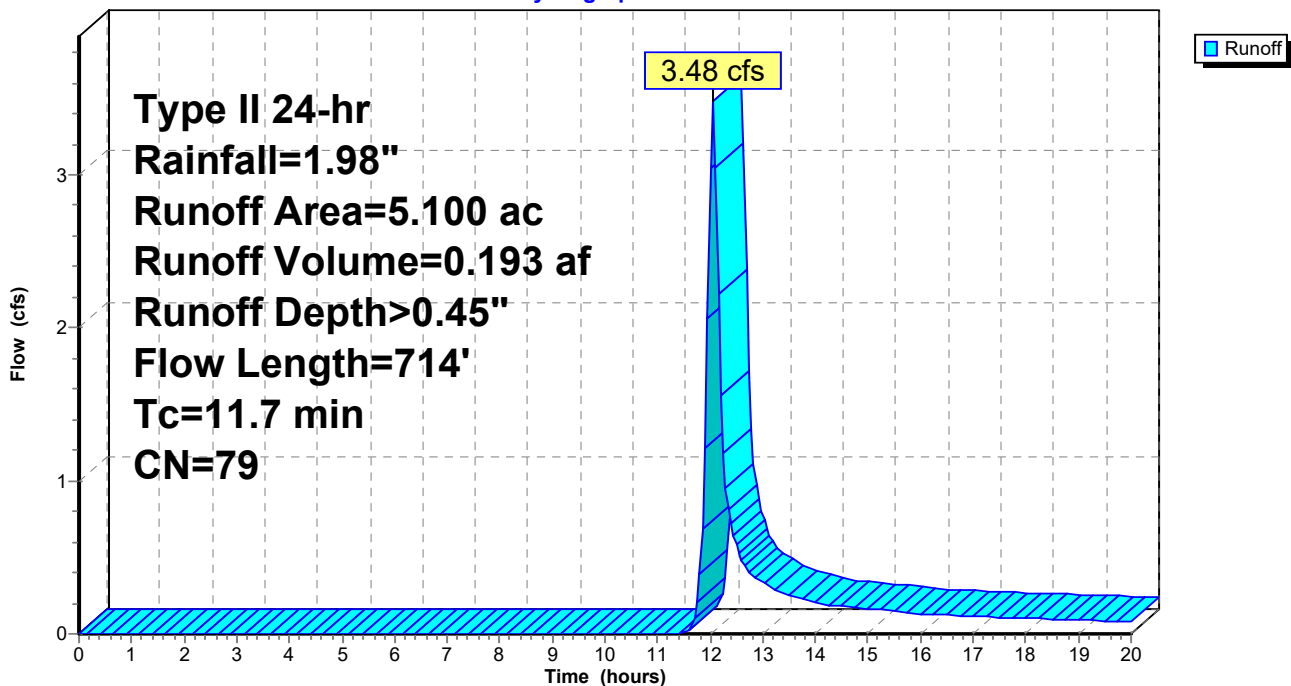
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=1.98"

Area (ac)	CN	Description
5.100	79	Pasture/grassland/range, Fair, HSG C
5.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		Sheet Flow, Range n= 0.130 P2= 1.17"
6.9	689	0.0400	1.67	7.03	Channel Flow, Area= 4.2 sf Perim= 48.0' r= 0.09' n= 0.035 Earth, dense weeds
11.7	714	Total			

Subcatchment 17S: E-3 Historic

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Summary for Reach 7R: Storm Drain

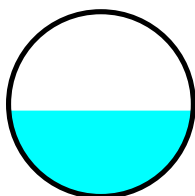
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 9.066 ac, 35.54% Impervious, Inflow Depth > 0.53"
 Inflow = 7.24 cfs @ 12.01 hrs, Volume= 0.403 af
 Outflow = 7.05 cfs @ 12.03 hrs, Volume= 0.403 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 8.96 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 3.52 fps, Avg. Travel Time= 1.1 min

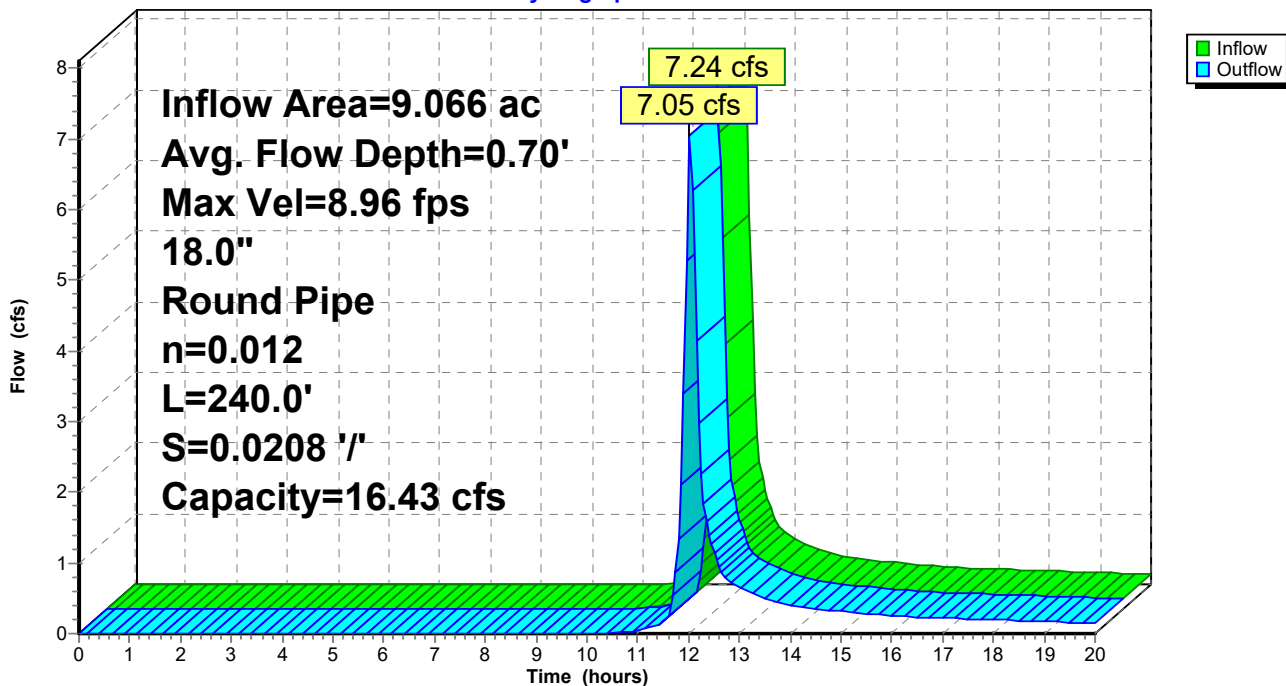
Peak Storage= 193 cf @ 12.02 hrs
 Average Depth at Peak Storage= 0.70'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 16.43 cfs

18.0" Round Pipe
 n= 0.012
 Length= 240.0' Slope= 0.0208 '/'
 Inlet Invert= 5,705.00', Outlet Invert= 5,700.00'



Reach 7R: Storm Drain

Hydrograph



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Type II 24-hr Rainfall=1.98"

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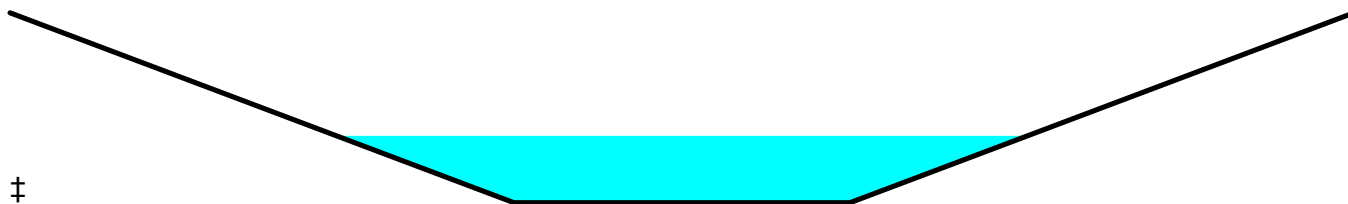
Summary for Reach 8R: Castle Valley Blvd Swale

Inflow Area = 16.136 ac, 41.32% Impervious, Inflow Depth > 0.62"
 Inflow = 3.38 cfs @ 12.50 hrs, Volume= 0.832 af
 Outflow = 3.37 cfs @ 12.66 hrs, Volume= 0.826 af, Atten= 0%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.13 fps, Min. Travel Time= 5.2 min
 Avg. Velocity = 1.86 fps, Avg. Travel Time= 8.7 min

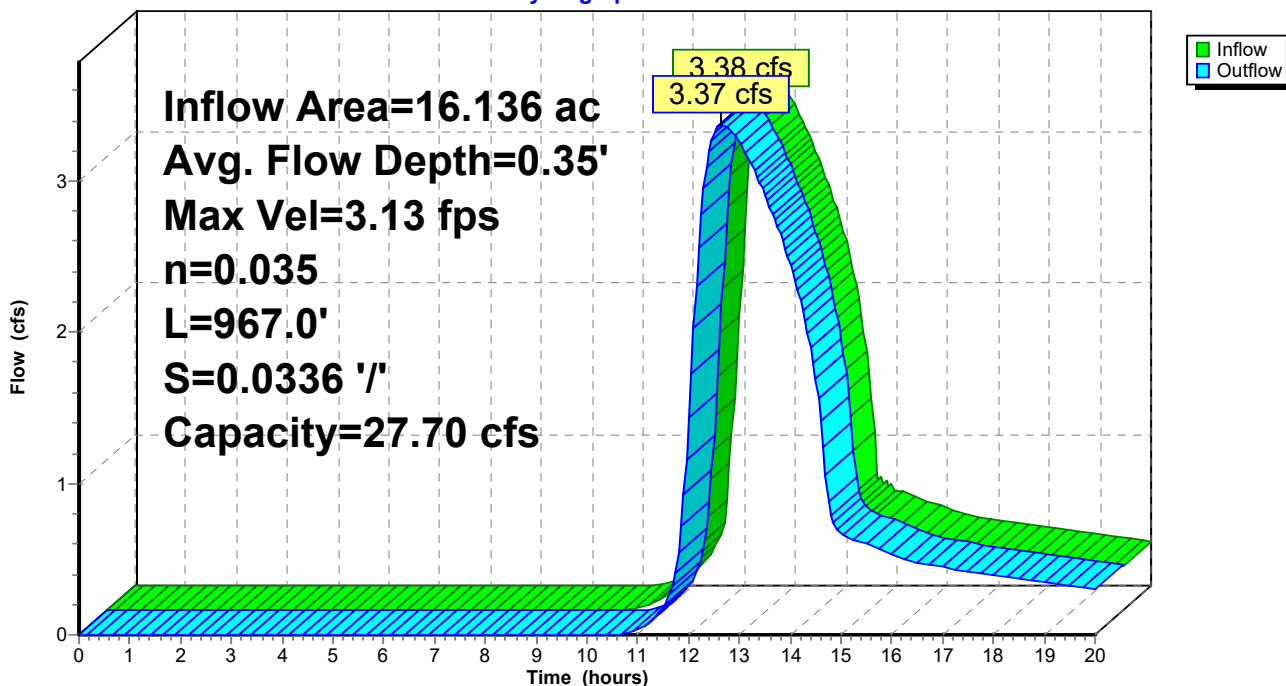
Peak Storage= 1,042 cf @ 12.57 hrs
 Average Depth at Peak Storage= 0.35'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 27.70 cfs

2.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 967.0' Slope= 0.0336 '/'
 Inlet Invert= 5,697.00', Outlet Invert= 5,664.50'



Reach 8R: Castle Valley Blvd Swale

Hydrograph



Lakota Multi-use Drainage*Type II 24-hr Rainfall=1.98"*

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Summary for Reach 9R: 24" Storm Drain

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 13R OUTLET depth by 3.63' @ 12.05 hrs

Inflow Area = 9.080 ac, 68.39% Impervious, Inflow Depth > 1.05"
 Inflow = 16.53 cfs @ 11.97 hrs, Volume= 0.794 af
 Outflow = 15.80 cfs @ 12.01 hrs, Volume= 0.792 af, Atten= 4%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 9.05 fps, Min. Travel Time= 1.2 min

Avg. Velocity = 2.81 fps, Avg. Travel Time= 3.8 min

Peak Storage= 1,179 cf @ 11.99 hrs

Average Depth at Peak Storage= 1.12'

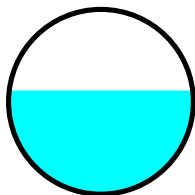
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.19 cfs

24.0" Round Pipe

n= 0.012

Length= 650.0' Slope= 0.0123 '/'

Inlet Invert= 5,668.00', Outlet Invert= 5,660.00'



Lakota Multi-use Drainage

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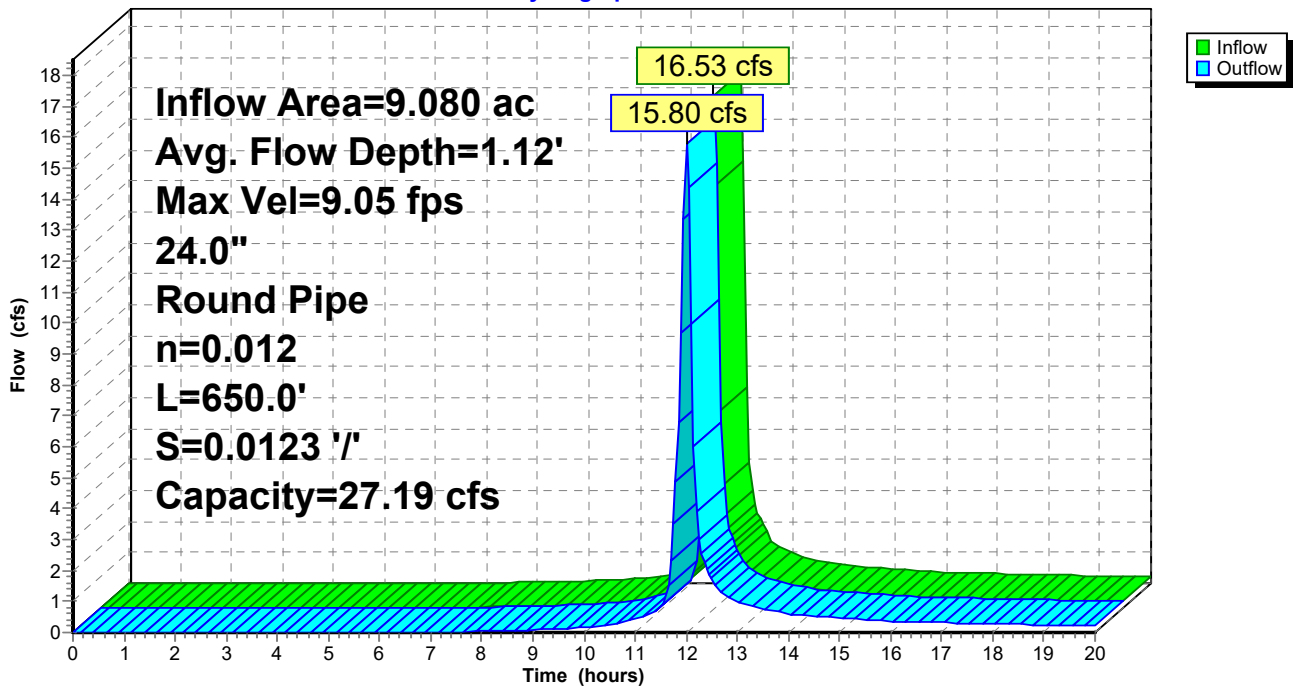
Type II 24-hr Rainfall=1.98"

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Page 25

Reach 9R: 24" Storm Drain

Hydrograph



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Type II 24-hr Rainfall=1.98"

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Summary for Reach 11R: Castle Valley Blvd Swale

[62] Hint: Exceeded Reach 8R OUTLET depth by 0.45' @ 12.05 hrs

Inflow Area = 18.526 ac, 43.23% Impervious, Inflow Depth > 0.60"
 Inflow = 3.63 cfs @ 12.52 hrs, Volume= 0.922 af
 Outflow = 3.63 cfs @ 12.52 hrs, Volume= 0.922 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.40 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 2.05 fps, Avg. Travel Time= 0.1 min

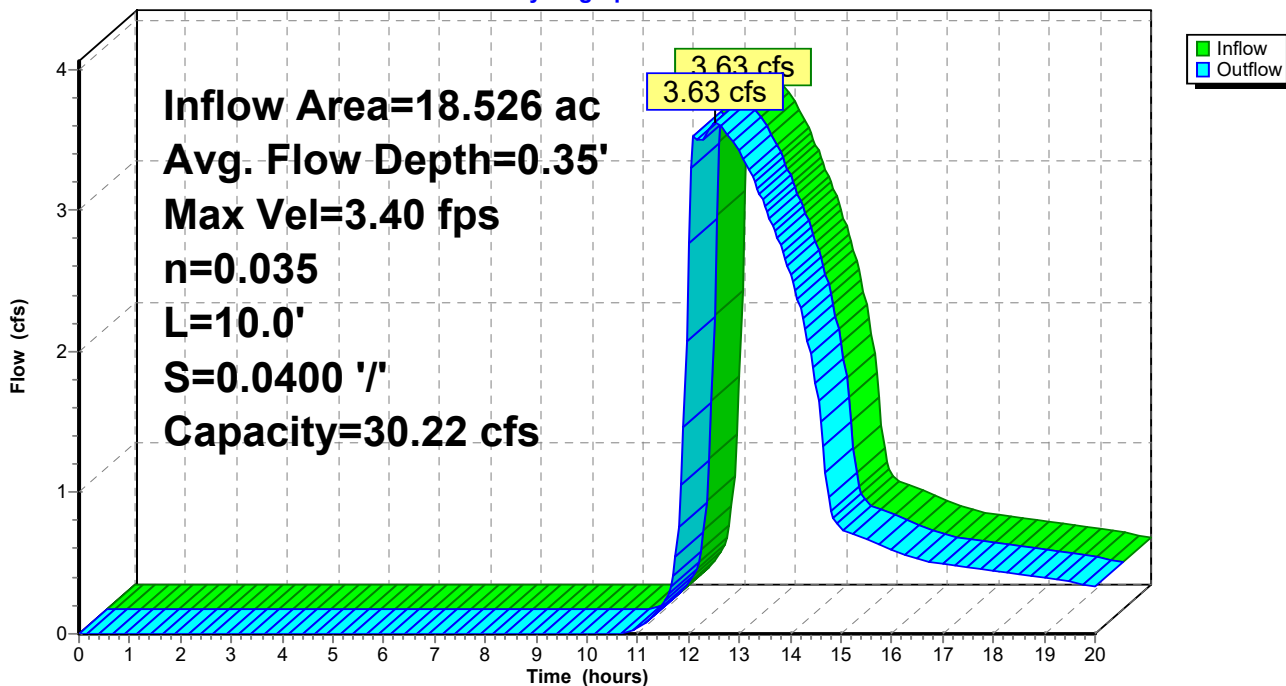
Peak Storage= 11 cf @ 12.52 hrs
 Average Depth at Peak Storage= 0.35'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 30.22 cfs

2.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 10.0' Slope= 0.0400 '/'
 Inlet Invert= 5,664.90', Outlet Invert= 5,664.50'



Reach 11R: Castle Valley Blvd Swale

Hydrograph



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Summary for Reach 12R: Swale

Inflow Area = 4.000 ac, 50.40% Impervious, Inflow Depth > 0.76"
 Inflow = 5.40 cfs @ 12.00 hrs, Volume= 0.254 af
 Outflow = 3.86 cfs @ 12.23 hrs, Volume= 0.248 af, Atten= 28%, Lag= 13.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.61 fps, Min. Travel Time= 9.2 min
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 27.8 min

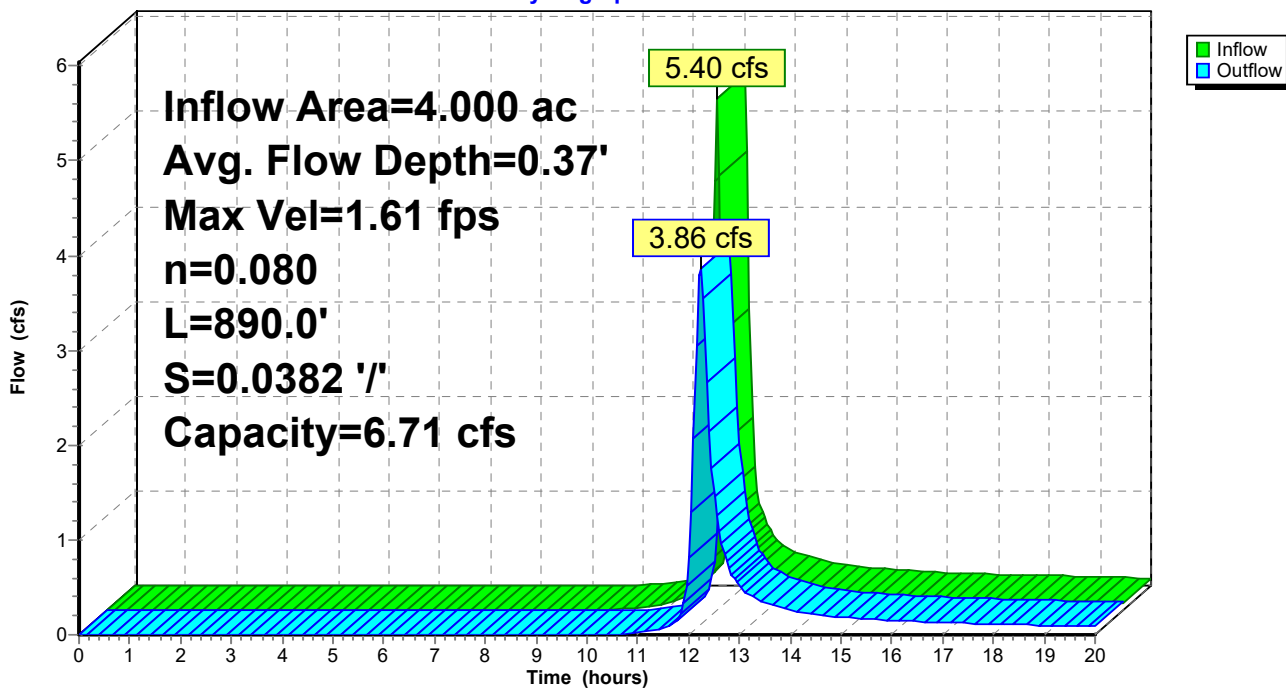
Peak Storage= 2,144 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.37'
 Bank-Full Depth= 0.50' Flow Area= 3.5 sf, Capacity= 6.71 cfs

5.00' x 0.50' deep channel, n= 0.080 Earth, long dense weeds
 Side Slope Z-value= 4.0 '/' Top Width= 9.00'
 Length= 890.0' Slope= 0.0382 '/'
 Inlet Invert= 5,744.00', Outlet Invert= 5,710.00'



Reach 12R: Swale

Hydrograph



Lakota Multi-use Drainage*Type II 24-hr Rainfall=1.98"*

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Summary for Reach 13R: 18" Storm Drain

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 16R OUTLET depth by 0.03' @ 12.05 hrs

Inflow Area = 3.010 ac, 83.72% Impervious, Inflow Depth > 1.29"
 Inflow = 7.42 cfs @ 11.94 hrs, Volume= 0.323 af
 Outflow = 7.14 cfs @ 11.95 hrs, Volume= 0.323 af, Atten= 4%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 11.53 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 3.50 fps, Avg. Travel Time= 1.8 min

Peak Storage= 235 cf @ 11.94 hrs

Average Depth at Peak Storage= 0.58'

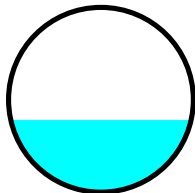
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 22.91 cfs

18.0" Round Pipe

n= 0.012

Length= 370.0' Slope= 0.0405 '/'

Inlet Invert= 5,680.00', Outlet Invert= 5,665.00'



Lakota Multi-use Drainage

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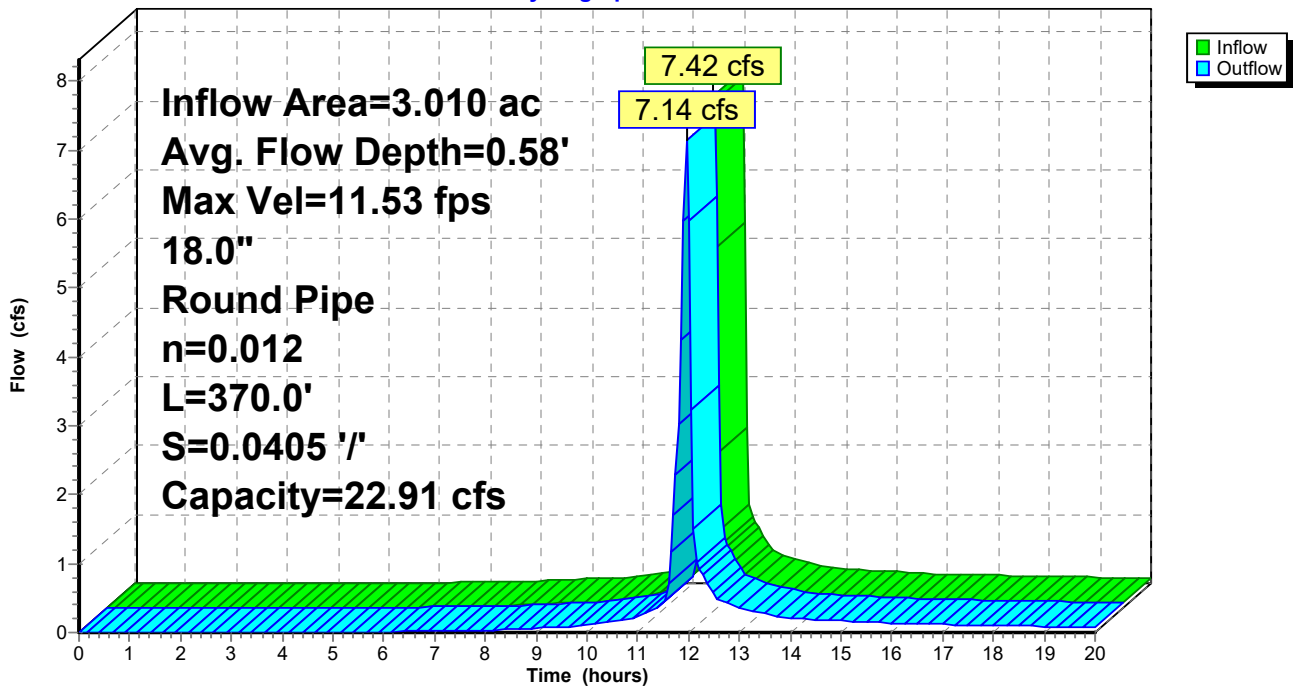
Type II 24-hr Rainfall=1.98"

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Reach 13R: 18" Storm Drain

Hydrograph



Lakota Multi-use Drainage

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Type II 24-hr Rainfall=1.98"

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Page 30

Summary for Reach 15R: 18" Storm Drain

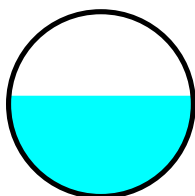
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 5.190 ac, 59.15% Impervious, Inflow Depth > 0.87"
 Inflow = 9.27 cfs @ 11.95 hrs, Volume= 0.377 af
 Outflow = 8.68 cfs @ 11.96 hrs, Volume= 0.377 af, Atten= 6%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 9.17 fps, Min. Travel Time= 0.7 min
 Avg. Velocity = 3.13 fps, Avg. Travel Time= 2.0 min

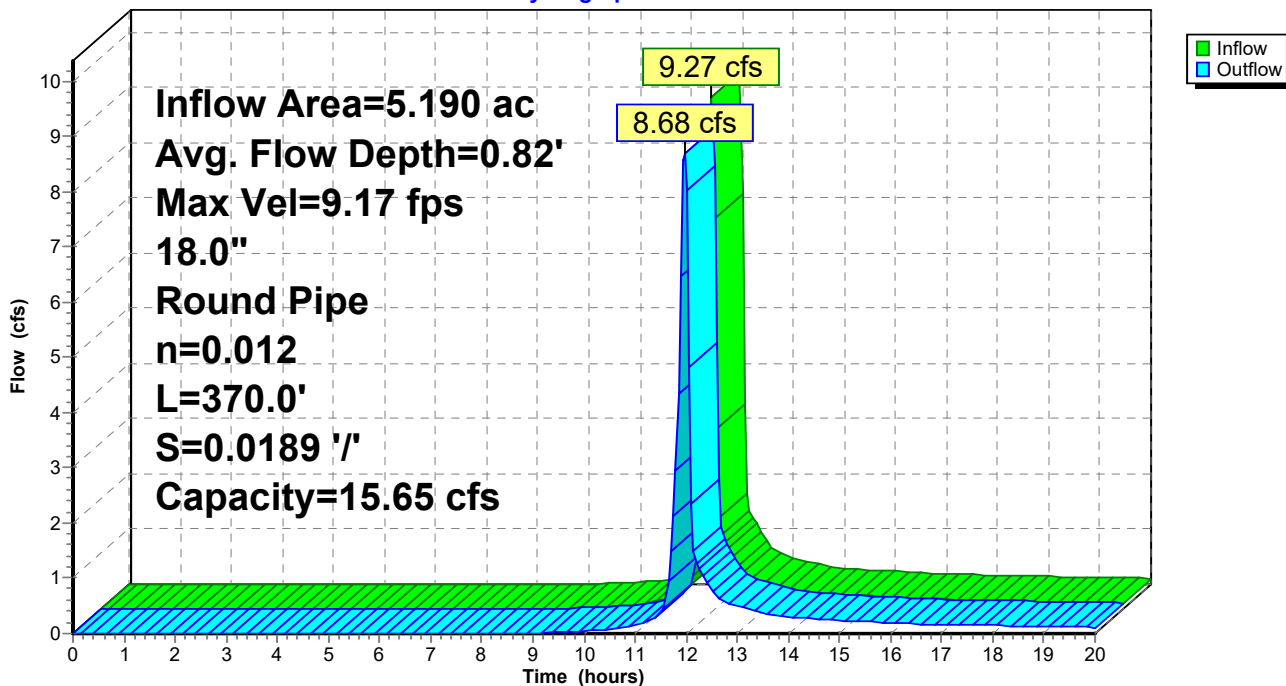
Peak Storage= 365 cf @ 11.96 hrs
 Average Depth at Peak Storage= 0.82'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.65 cfs

18.0" Round Pipe
 n= 0.012
 Length= 370.0' Slope= 0.0189 '/'
 Inlet Invert= 5,702.00', Outlet Invert= 5,695.00'



Reach 15R: 18" Storm Drain

Hydrograph



Lakota Multi-use Drainage

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Type II 24-hr Rainfall=1.98"

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Summary for Reach 16R: 15" Storm Drain

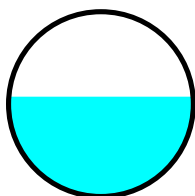
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 3.010 ac, 83.72% Impervious, Inflow Depth > 1.29"
 Inflow = 7.63 cfs @ 11.93 hrs, Volume= 0.323 af
 Outflow = 7.42 cfs @ 11.94 hrs, Volume= 0.323 af, Atten= 3%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 11.17 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 3.44 fps, Avg. Travel Time= 1.3 min

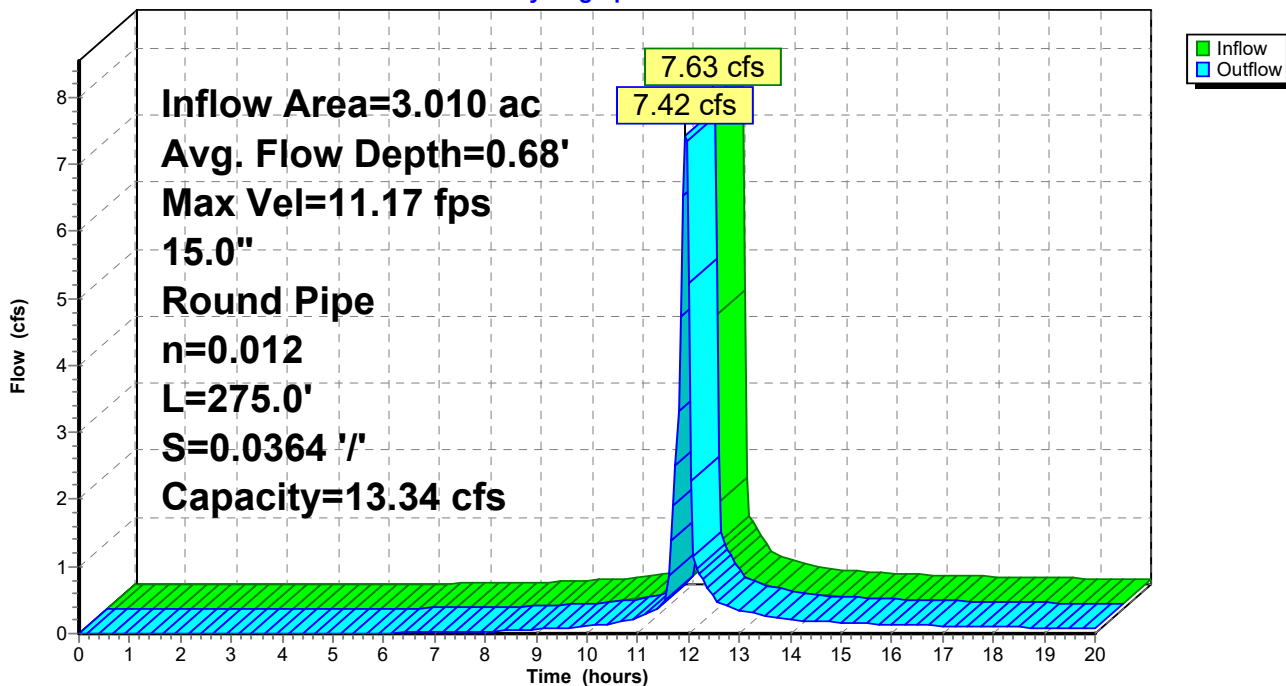
Peak Storage= 186 cf @ 11.93 hrs
 Average Depth at Peak Storage= 0.68'
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 13.34 cfs

15.0" Round Pipe
 n= 0.012
 Length= 275.0' Slope= 0.0364 '/'
 Inlet Invert= 5,690.00', Outlet Invert= 5,680.00'



Reach 16R: 15" Storm Drain

Hydrograph



Lakota Multi-use Drainage

Type II 24-hr Rainfall=1.98"

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Summary for Pond 5P: Pond D

[85] Warning: Oscillations may require Finer Routing>1

[62] Hint: Exceeded Reach 7R OUTLET depth by 3.62' @ 12.55 hrs

Inflow Area = 16.136 ac, 41.32% Impervious, Inflow Depth > 0.62"
 Inflow = 10.69 cfs @ 12.07 hrs, Volume= 0.832 af
 Outflow = 3.38 cfs @ 12.50 hrs, Volume= 0.832 af, Atten= 68%, Lag= 25.7 min
 Primary = 3.38 cfs @ 12.50 hrs, Volume= 0.832 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 5,703.88' @ 12.50 hrs Surf.Area= 4,662 sf Storage= 10,329 cf

Plug-Flow detention time= 23.8 min calculated for 0.830 af (100% of inflow)
 Center-of-Mass det. time= 23.7 min (837.6 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	5,700.00'	22,281 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5,700.00	50	0	0
5,701.00	1,438	744	744
5,702.00	3,143	2,291	3,035
5,703.00	3,914	3,529	6,563
5,704.00	4,765	4,340	10,903
5,705.00	5,676	5,221	16,123
5,706.00	6,639	6,158	22,281

Device	Routing	Invert	Outlet Devices
#1	Primary	5,699.50'	8.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	5,705.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#3	Secondary	5,704.00'	48.0" x 48.0" Horiz. Orifice/Grate C= 0.600 in 48.0" x 48.0" Grate Limited to weir flow at low heads

Primary OutFlow Max=3.38 cfs @ 12.50 hrs HW=5,703.88' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 3.38 cfs @ 9.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5,700.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
 ↑3=Orifice/Grate (Controls 0.00 cfs)

Lakota Multi-use Drainage

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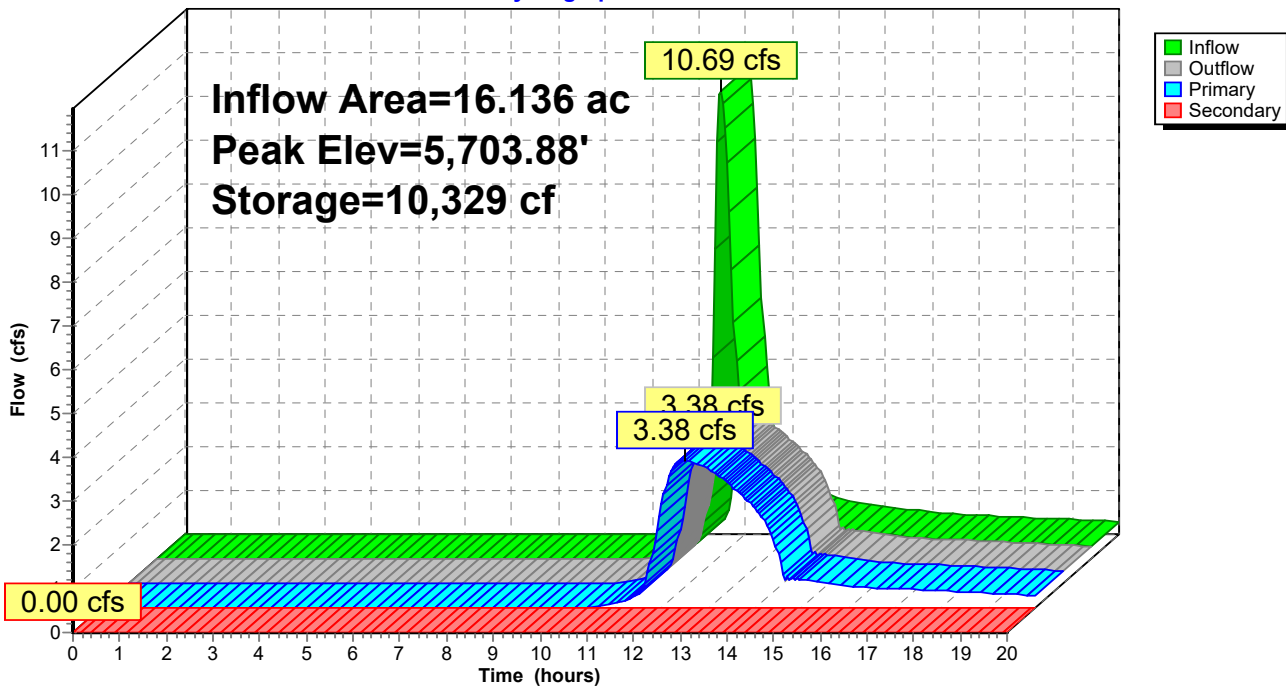
Type II 24-hr Rainfall=1.98"

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Pond 5P: Pond D

Hydrograph



APPENDIX C

Blackhawk II Drainage Plan Analysis



P.O. Box 1301
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

August 31, 2004

Mr. Jim Colombo
 Lakota Canyon Ranch
 300 Horseshoe Dr.
 Basalt, CO 81621

RE: Blackhawk II – Amended Drainage Plan Analysis

Mr. Jim Columbo,

Colorado River Engineering, Inc. has completed a Drainage Plan analysis for Blackhawk II of Lakota Canyon Ranch, PUD. This filing is for the development of 22 single-family lots along the south half of Blackhawk Drive. This analysis has been completed in support of the Preliminary Plan submittal and includes design calculations for the project being submitted simultaneously for Final Plan approval. The purpose of the analysis is to calculate pre-development and post development runoff and provide mitigation, if necessary, to prevent increased runoff to downstream properties. The analysis also presents hydraulic calculations for drainage infrastructure internal to the project

BACKGROUND - PUD DRAINAGE ANALYSES

The original drainage report for the PUD and the Preliminary Subdivision Plat for Phase 1, which includes the golf course, was previously prepared by Enartech Engineers, dated July 2002, and will be referred to as the Enartech report. To avoid confusion, this report will utilize the same naming convention for basins as established in the Enartech report.

The second report that impacts this area was completed by Colorado River Engineering (CRE) on March 18, 2004 for Lakota Filing 1 Blocks A & B1 (Whitehorse Village), and will be referred to as the WHV report.

ENARTECH'S HISTORIC AND DEVELOPED RUNOFF FLOWS

This development impacts two drainage basins as identified by Enartech – basins A & D, see Figure 1 & 2. Historic runoff flows, in cubic feet per second (cfs), have been previously calculated in Enartech's report and have not been recalculated as part of this report. Below, is select pre and post project runoff information contained in Enartech's report for their basins A & D (pg. 3 of section K):

ENARTECH ANALYSIS				
Basin	Area (Ac)	CN	Tc	25-yr Peak (cfs)
A – Historic	9.210	81.9	21.5	5.27
A – Post development	9.210	73.7	21.5	2.38
D – Historic	22.064	71.7	23.3	4.14
D – Post development	22.62	82.2	23.3	13.49

Basin A

Basin A is shown in Figures 1, 2, and 4. Figure 4 shows basin A in relation to Blackhawk II. As shown in the table above, there is a (5.27 – 2.38) 2.89-cfs reduction of flow from historic to developed for the 25-year event for Basin A. This report does not redress the minimal impact of the Blackhawk II lot development on basin A for two reasons. First, the developed acreage for the small portions of the three lots in basin A total 0.28-acres. This acreage contains some portion of the building envelope of two lots and the remainder of the area will become good condition turf grass. This turf grass will essentially offset the increased runoff from the impervious roof area. Second, as discussed above, Enartech calculated there will be a 2.98-cfs reduction in flow from historic to developed insuring the 0.28-acre area will not raise the peak developed flow above the peak historic flow. Any subsequent development in basin A, most likely as park facilities, will need to account for these three Blackhawk II lots that drain into basin A.

Basin D

The main basin, identified by Enartech, impacted by Blackhawk II is basin D. This basin will be discussed in the remainder of this report. As shown in the table above, Enartech calculated an increased flow of (13.49 – 4.14) 9.35-cfs in Basin D. This basin is delineated in the attached Figures 4 & 5.

In Enartech's Phase 1A Construction Drawings there was to be a drainage basin transfer post-development from Basin C to Basin D, see attached and marked Figure 3. This transfer was to travel along Roundup Drive (subsequently renamed Whitehorse Drive) and discharge between Lakota Drive and Blackhawk Drive. See following discussion.

CRE's WHV DRAINAGE REPORT

In Colorado River Engineering's final engineering submittal for Whitehorse Village, approved July 2004, Enartech's basin C water was not transferred to basin D but was discharged to the golf course within basin C. This has reduced the anticipated cross basin flows to basin D. This was accomplished by changing the road grade to create the low point of the road within basin C and discharging the outflow into a new detention pond above the golf course and then onto the golf course.

HYDROLOGY ANALYSIS – BLACKHAWK II

The hydrology analysis quantifies change in runoff. Residential development increases the amount of impervious area and rainfall response time and can result in increased runoff conditions to downstream property owners. The increased runoff typically must be retained or detained to mitigate impacts. Flood flow hydrographs have been calculated to determine the increase from the proposed development. Hydrographs were calculated using the Graphical method developed by the Soil Conservation Service in "Technical Release-55, Urban Hydrology for Small Watersheds". Hydrologic calculations include data input for storm type and rainfall amount, drainage area, runoff curve numbers determined from soil types and vegetation cover and water flow path time of concentration. Supporting engineering calculations for the data input and runoff hydrographs have been included in the attached appendices.

A design storm of 25-year frequency has been used based on design criteria established by the Town of New Castle. The rainfall amount of 2.0-inches for a 24-hour period was determined from the NOAA Atlas II, Volume III. The historic runoff was not calculated due to previous discussion on developed flows being less than historic.

DEVELOPED RUNOFF CONDITIONS

Drainage for Blackhawk II was analyzed in three different ways – overall drainage for basin D (Figure 4), drainage within subbasins of D (Figure 5), and drainage to storm drain inlets (Figure 6). The historic and developed flow conditions of basin D are contained in Appendix A. The table below is a compilation of the mitigated developed flows and shows that developed flows are less than historic flows.

Basin	Historic Flows (Enartech Calc's)	Developed Flows (CRE Calc's)
D	4.14-cfs	3.47-cfs

Basin D is broken into two subbasins, D1 and Pond D as shown in Figure 5 with calculations in Appendix A. The peak flow to the pond (subbasin Pond D) is 7.7-cfs. This flow is detained and reduced to 2-cfs with a 6" diameter orifice opening at the inlet of the outlet box within Pond D, see Appendix B for calculations. This 2.0-cfs flow combined with the contributing flow in the downstream basin D1, 1.47-cfs, creates a total developed flow of 3.47-cfs. This developed runoff will follow the same path as the historic flow as it moves out of basin D – along the north side of Castle Valley Boulevard in existing drainage ditches heading downhill to the northeast.

HYDRAULIC CALCULATIONS

Hydraulic calculations were performed for Pond D detention sizing, drainage ditches, pond inlet discharge, storm drain inlets, and storm drain pipes and are attached in Appendix C. All drainage structures have the capacity to pass the 25-year storm event. Pond D was oversized and designed with a flexible outlet structure that can be modified due to the unknown impacts from future development, particularly in basin A. A new drainage ditch, see design drawings, will run along the northeast side of the north lots on Blackhawk Drive. This ditch was designed with a wide trench width to reduce flow velocity and thereby reduce scouring and incising. The ditch was designed along the north edge of the Blackhawk lots. All street drainage is routed down gutters into Type I storm drain curb inlets. The portion of subbasin Pond D that flows along Castle Valley Boulevard is captured in two inlet basins on either side of the bike path and upstream of the Castle Valley Blvd. and Blackhawk Drive intersection. This storm water is then transferred to Pond D.

SUMMARY

The developed conditions of Blackhawk II will not increase runoff to downstream properties. Incorporating the information from past analyses, the developed flows into basin D, 3.47-cfs, will be 0.67-cfs less than the historic peak flows, 4.14-cfs, from a 25-year storm event.

If you have any questions, please do not hesitate to call 970-625-4933.

Sincerely,

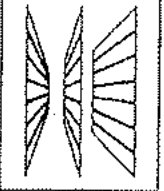

Christopher Manera, P.E.




Brian Brown, Staff Engineer

CM:bb
Drainage.doc
Attachments: Figures 1-6, Appendices A-C

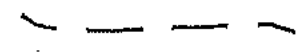
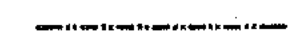

ENARTECH INC.
CONSULTING ENGINEERS AND HYDROLOGISTS
302 BLDG. 211, GLENWOOD SPRINGS, CO. 81601
PHONE: (970) 844-2238 FAX: (970) 844-2577

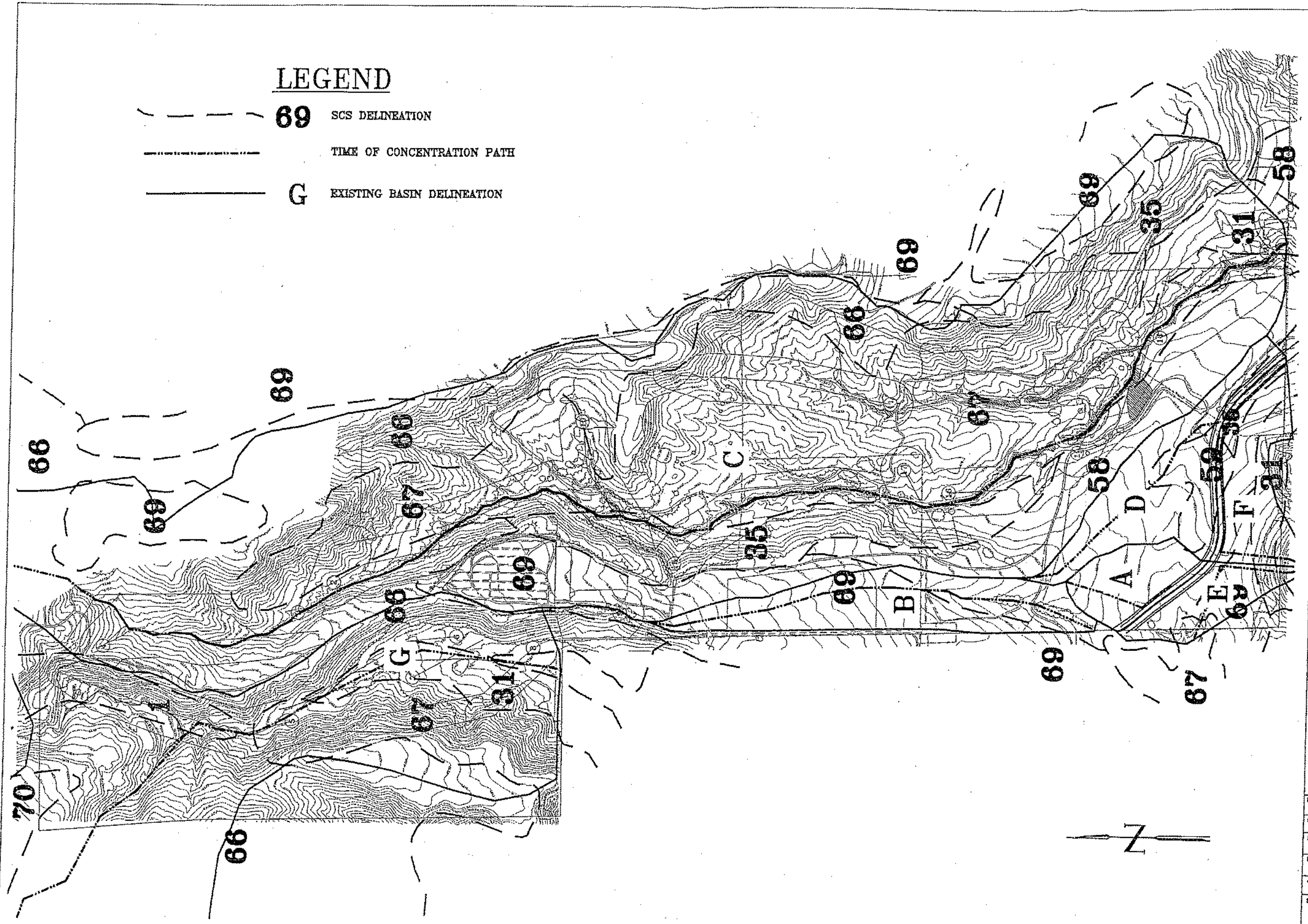


EAGLES RIDGE RANCH
BASIN CHARACTERISTICS & EXISTING DELINEATION

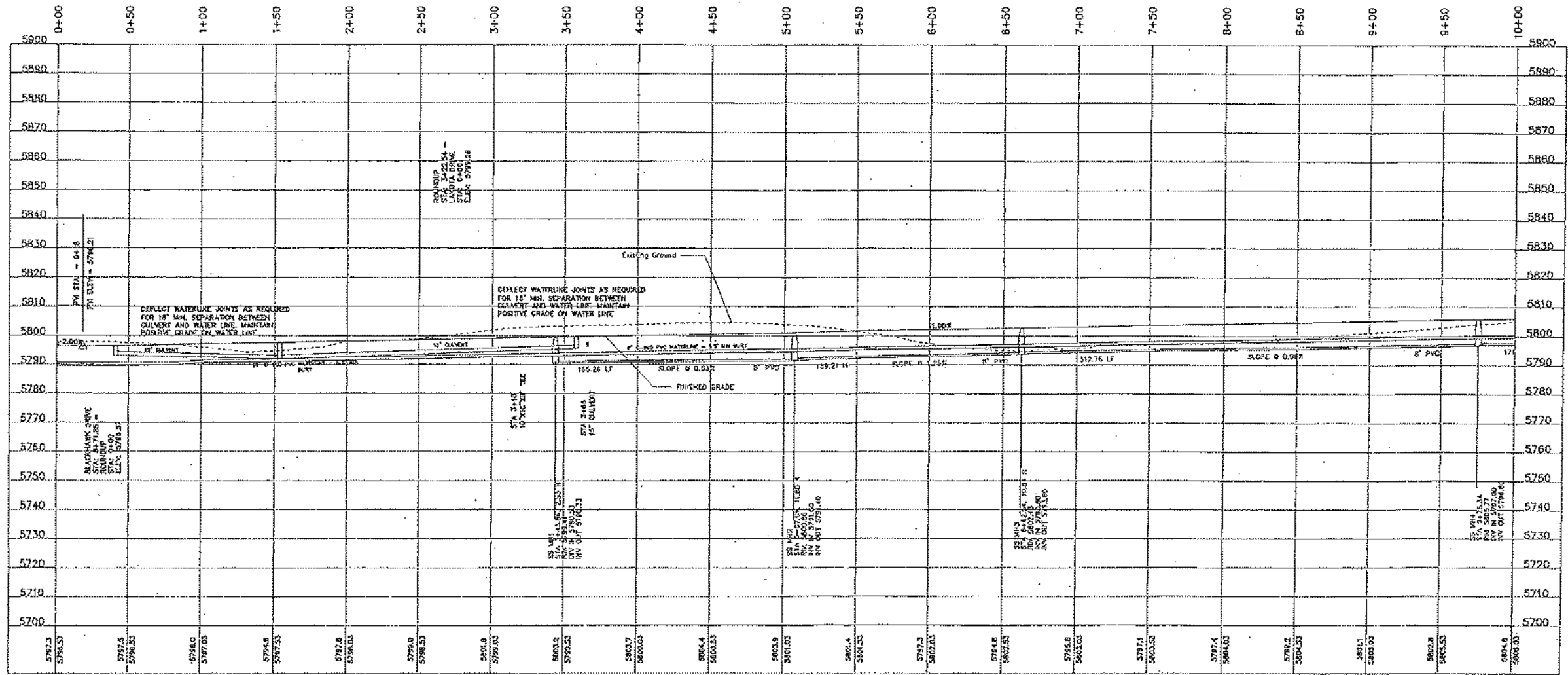
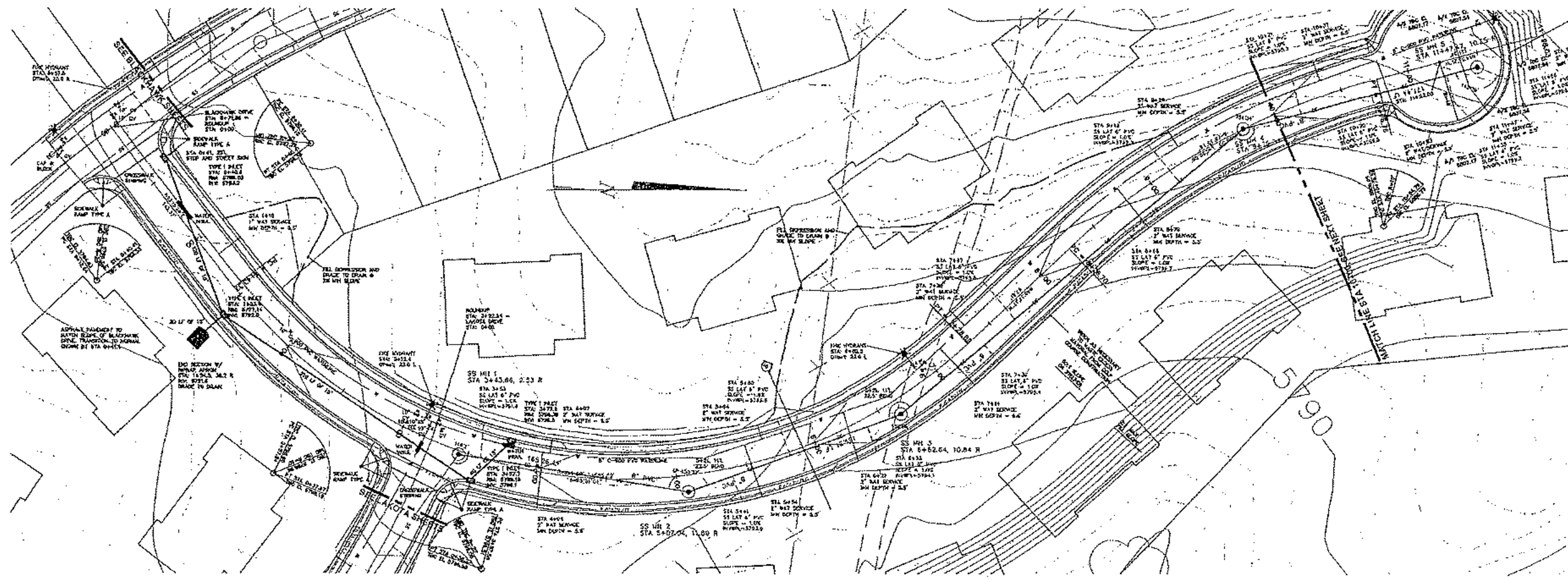
Figure 1

LEGEND

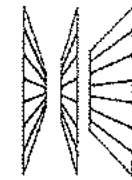
-  **69** SCS DELINEATION
-  TIME OF CONCENTRATION PATH
-  **G** EXISTING BASIN DELINEATION



REVISIONS	DATE	BY	COMMENTS
	08/25/02		
SCALE NOT TO SCALE			
ENGINEER C. HALE			
DRAW FILE 474-drainage			
JOB 474-01			
SHEET 1			



ENARTECH INC.
 CONSULTING ENGINEERS AND HYDROLOGISTS
 332 BOX ST. GLENWOOD SPRINGS, CO 81602
 P.O. BOX 160, GLENWOOD SPRINGS, CO 81602
 (970) 845-2136 FAX (970) 845-2577

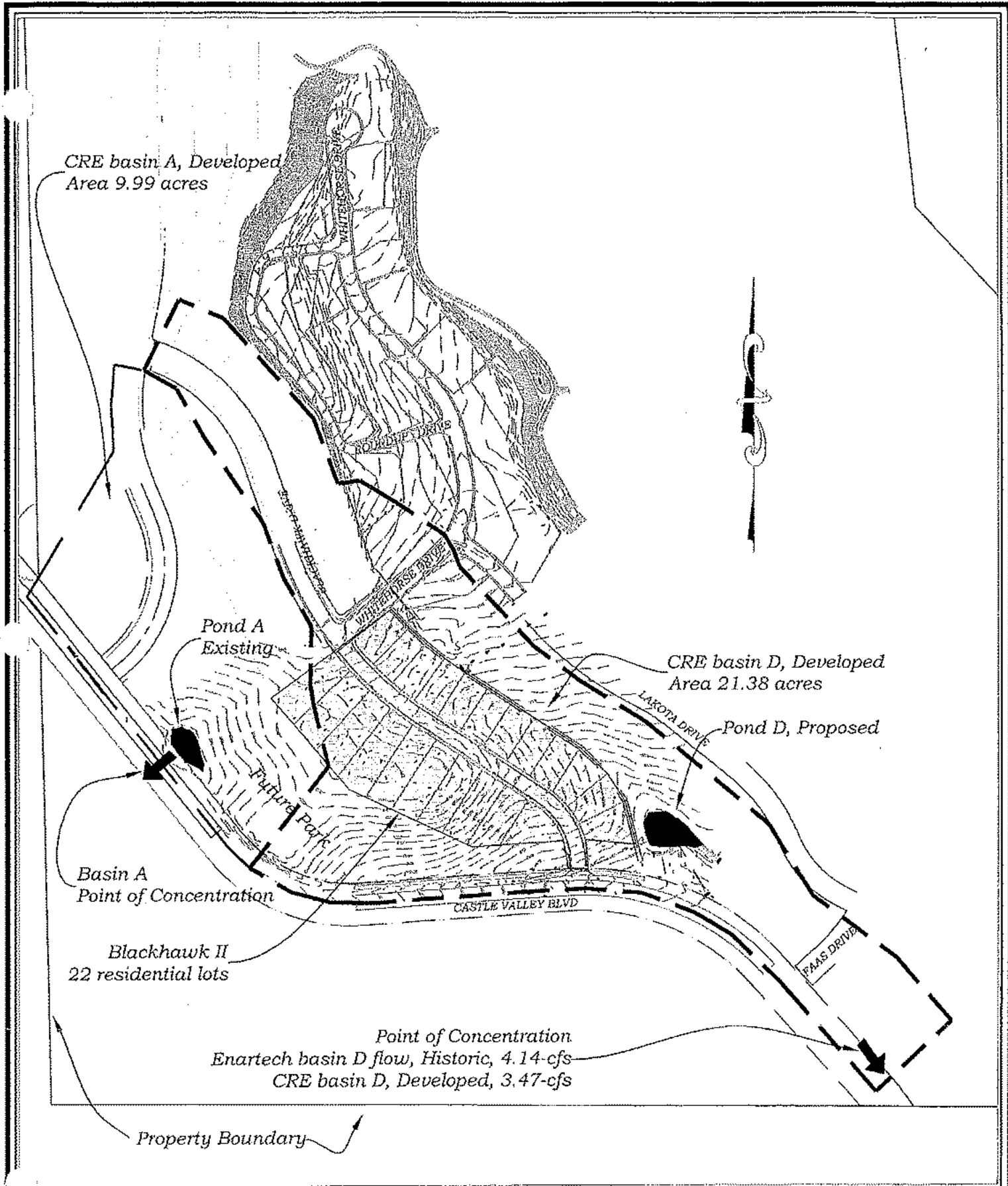


**LAKOTA CANYON RANCH
 ROUNDUP
 PLAN AND PROFILE - STA 0+00 to STA 10+00**

REVISIONS	DATE	BY	COMMENTS

DATE: 11/10/02
 SCALE: HORIZ: 1"=40'
 VERT: 1"=20'
 ENGINEER: C. HALE
 PNG FILE: Roundup
 JOB: 474-01
 SHEET: PP8

Figure 3



PO Box 1301
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

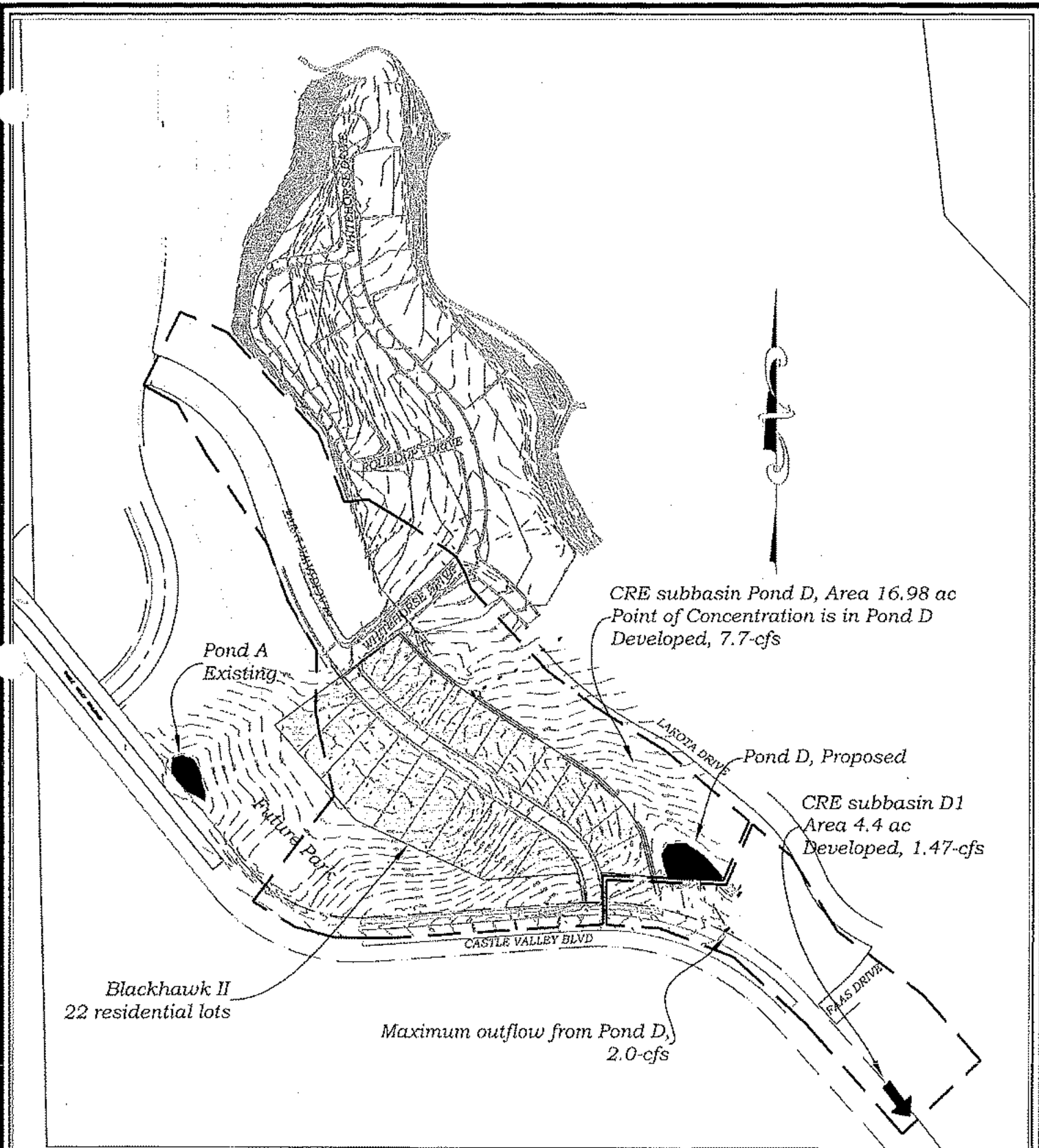
COLORADO RIVER ENGINEERING
 Civil Engineering

Water Rights, Augmentation Plans
 Hydrology, Flood Plain Analysis
 Groundwater, Well Permitting
 Canals, Pipelines, Dams

Basin Drainage

FIGURE NO.
4

File Name: Drainage.dwg	Job No: 560.3	Client: Lakota, Blackhawk II
Drawn by: BB	Aprvd by: CM	Date: Aug 27, 2004



PO Box 1301
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564



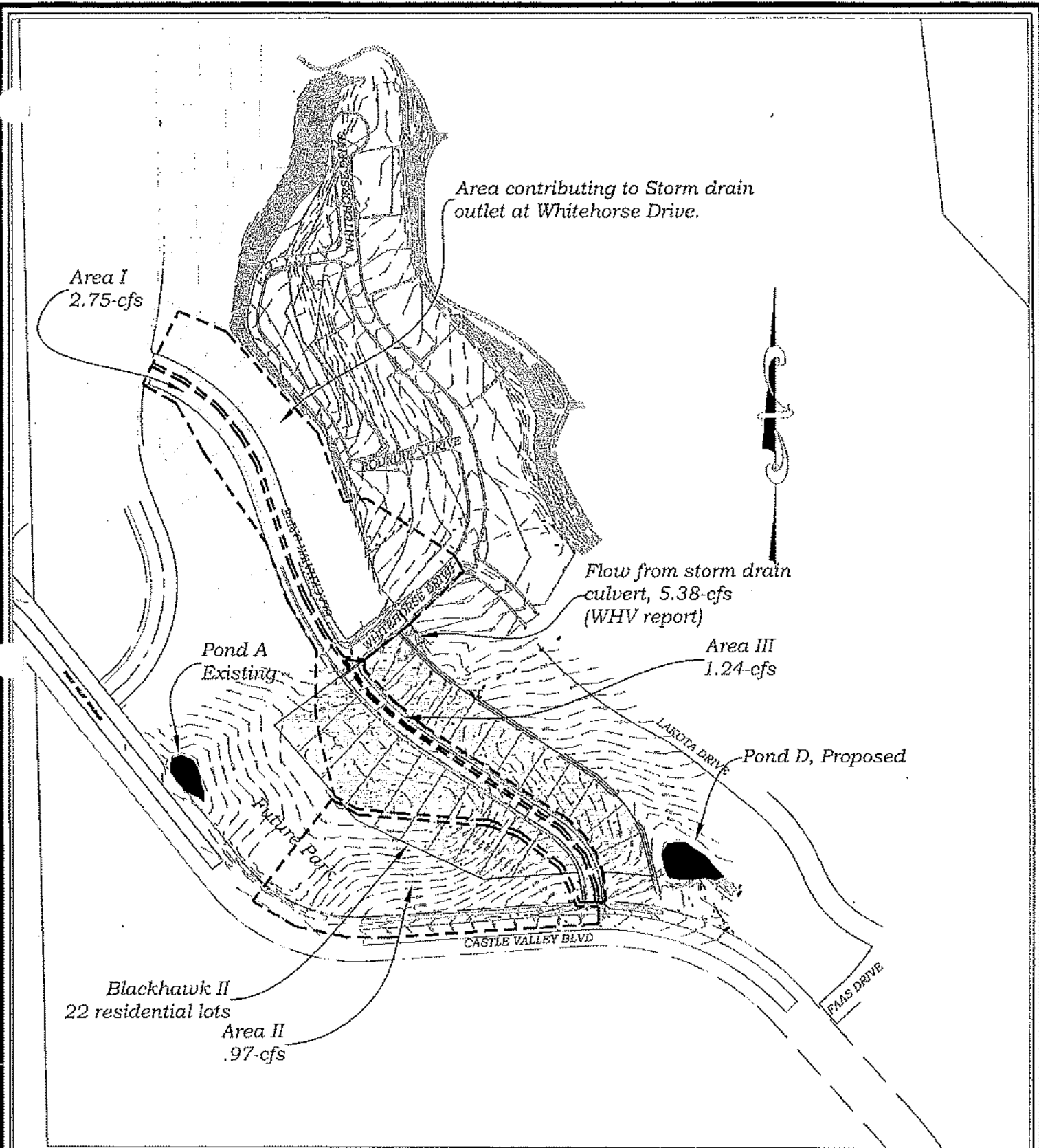
Water Rights, Augmentation Plans Groundwater, Well Permitting
 Hydrology, Flood Plain Analysis Canals, Pipelines, Dams

D Subbasin Drainage

FIGURE NO.

5

File Name: Drainage.dwg	Job No: 560.3	Client: Lakota, Blackhawk II
Drawn by: BB	Aprvd by: CM	Date: Aug 27, 2004



PO Box 1301
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

COLORADO RIVER ENGINEERING
 Civil Engineering

Water Rights, Augmentation Plans
 Hydrology, Flood Plain Analysis
 Groundwater, Well Permitting
 Canals, Pipelines, Dams

Stormdrain Flows

FIGURE NO.
6

File Name: Drainage.dwg	Job No: 560.3	Client: Lakota, Blackhawk II
Drawn by: BB	Appvd by: CM	Date: Aug 27, 2004

Appendix A
Historic and Developed Conditions Hydrology Calculations

Copy from: Lakota Canyon Ranch; Drainage Report & Calculations,
Phase IA Construction Drawings, by Enertech, Aug. 2002

tmp#45.txt

Graphical Peak Discharge method

Given Input Data:

Description	Pre D 25
Rainfall distribution	Type II
Frequency	25 years
Rainfall, P (24-hours)	2.0000 in
Drainage area	22.0640 ac
Runoff curve number, CN	72
Time of concentration, TC	23.3000 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.7778 in
Ia/P	0.3889
Unit peak discharge, q_u	410.8909 csm/in
Runoff, Q	0.2923 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, q_p	4.1401 cfs



Date Aug 2004
 Job No. 360.3
 Job Name _____
 Description _____

P.O. Box 1301, 136 E. 3rd
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

Page ___ of ___

Dev CRE basin D Entire D basin SCS Curve # 5.9459
 Hyd soil group B

CN
 98 Roads Blackhawk 1650x46, WH Drive 330'x40', Faas Dr 170x40, English Hill Blvd 1680x15'
 = 2.78 acres

* Poss. hard surface courts (tennis, basketball, etc.)
 = .2 acres

Imperv. total = 2.98 = 3.0 acres

80 Homes (on 1/4 acre)
 Designated Lots 7.91 ac Future Lots on Lakota Dr. 3.31 ac = 11.22 ac

Open Space = 7.18 ac
 69 Assume 70% native = 5.03 ac
 69 30% turf grass (fair cond.) = 2.15 ac

CN_{comp} $98 \left(\frac{2.98}{21.38} \right) + 80 \left(\frac{11.22}{21.38} \right) + 69 \left(\frac{7.18}{21.38} \right) = 78.8 = 79$

tmp#6.txt

Sheet Flow

```

Description .....
Manning's n ..... 0.2400
Flow Length ..... 125.0000 ft
Two Yr, 24 hr Rainfall ..... 2.0000 in
Land Slope ..... 0.0480 ft/ft
Computed sheet flow time .....> 15.2032 min

```

Shallow Concentrated Flow

```

Description .....
Surface ..... Paved
Flow Length ..... 145.0000 ft
Watercourse Slope ..... 0.0140 ft/ft
Velocity ..... 2.4053 fps
Computed shallow flow time .....> 1.0047 min

```

Shallow Concentrated Flow

```

Description .....
Surface ..... Unpaved
Flow Length ..... 1428.0000 ft
Watercourse Slope ..... 0.0450 ft/ft
Velocity ..... 3.4226 fps
Computed shallow flow time .....> 6.9537 min

```

```

*****
Total Time of Concentration .....> 23.1616 min
*****

```

tmp#7.txt

Graphical Peak Discharge method

Given Input Data:

Description	CRE basin D, Devel.
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	21.3800 ac
Runoff curve number, CN	79
Time of concentration, Tc	23.1616 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.5316 in
Ia/P	0.2658
Unit peak discharge, qu	521.0359 csm/in
Runoff, Q	0.5225 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	9.0942 cfs



Date Aug 2003
 Job No. 560-3
 Job Name _____
 Description _____

P.O. Box 1301, 136 E. 3rd
 Rifle, CO 81650
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 Fax 970-625-4564

Page ___ of ___

Dev	CRE sub basin D1	
78	Roads	Faas Rd, Castle Hill Blvd. 170 x 140 B66 x 18" = 5.1 ac
80	Homes Floors	S side Lakota, Facing Faas Dr 1,02 ac .16 = 1.18 ac
69	Open	2.7 acres
$CN_{comp} = 78 \left(\frac{1.51}{4.4} \right) + 80 \left(\frac{1.18}{4.4} \right) + 69 \left(\frac{2.7}{4.4} \right) = 75$		

tmp#9.txt

Sheet Flow

```
-----  
Description .....  
Manning's n ..... 0.2400  
Flow Length ..... 100.0000 ft  
Two Yr, 24 hr Rainfall ..... 2.0000 in  
Land Slope ..... 0.0400 ft/ft  
Computed Sheet flow time .....> 13.6798 min
```

Shallow Concentrated Flow

```
-----  
Description .....  
Surface ..... Unpaved  
Flow Length ..... 600.0000 ft  
Watercourse Slope ..... 0.0450 ft/ft  
Velocity ..... 3.4226 fps  
Computed shallow flow time .....> 2.9217 min
```

```
*****  
Total Time of Concentration .....> 16.6015 min  
*****
```

tmp#10.txt

Graphical Peak Discharge method

Given Input Data:

Description	CRE subbasin D1, Devel
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	4.4000 ac
Runoff curve number, CN	75
Time of concentration, Tc	16.6015 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.6667 in
Ia/P	0.3333
Unit peak discharge, qu	561.5334 csm/in
Runoff, Q	0.3810 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	1.4707 cfs

tmp#11.txt

Sheet Flow

```

-----
Description .....
Manning's n ..... 0.2400
Flow Length ..... 125.0000 ft
Two Yr, 24 hr Rainfall ..... 2.0000 in
Land Slope ..... 0.0450 ft/ft
Computed Sheet flow time .....> 15.6008 min

```

Shallow Concentrated Flow

```

-----
Description .....
Surface ..... Paved
Flow Length ..... 145.0000 ft
Watercourse Slope ..... 0.0140 ft/ft
Velocity ..... 2.4053 fps
Computed Shallow flow time .....> 1.0047 min

```

Shallow Concentrated Flow

```

-----
Description .....
Surface ..... Unpaved
Flow Length ..... 780.0000 ft
Watercourse Slope ..... 0.0450 ft/ft
Velocity ..... 3.4226 fps
Computed shallow flow time .....> 3.7982 min

```

```

*****
Total Time of Concentration .....> 20.4037 min
*****

```

tmp#12.txt

Graphical Peak Discharge method

Given Input Data:

Description	Pond D Basin, contrib area
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	16.9800 ac
Runoff curve number, CN	79
Time of concentration, Tc	20.4037 min
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.5316 in
Ia/P	0.2658
Unit peak discharge, qu	555.8426 csm/in
Runoff, Q	0.5225 in $\times 16.98 \text{ ac} = 32,205 \text{ ft}^3$
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	7.7051 cfs

Appendix B
Pond Routing and Outlet Calculations

tmp#20.txt

TR-55 Tabular Hydrograph Method
Input Summary

Description
 Pond D basin, contrib area
 Rainfall Distribution Type II
 Ia/P Interpolation Off
 Total Area 16.9800 ac

Peak Time 12.3000 hrs
 Peak Flow 7.9568 cfs

Given Input Data:

Subarea Description	D/S Subareas	Area (ac)	CN	Tc (hrs)	Tt (hrs)	Rainfall (in)
Pond D		16.9800	79	0.3400	0.0000	2.0000

Support Data:

Messages:

Info: Time of Concentration rounded to 0.3000 hrs in row <1>.

tmp#21.txt

TR-55 Tabular Data

Pond D

11.0000	hrs	0.0000	cfs
11.3000	hrs	0.0000	cfs
11.6000	hrs	0.0000	cfs
11.9000	hrs	0.1525	cfs
12.0000	hrs	0.8872	cfs
12.1000	hrs	3.4794	cfs
12.2000	hrs	7.2776	cfs
12.3000	hrs	7.9568	cfs
12.4000	hrs	6.2934	cfs
12.5000	hrs	4.2002	cfs
12.6000	hrs	3.0635	cfs
12.7000	hrs	2.3981	cfs
12.8000	hrs	1.9407	cfs
13.0000	hrs	1.4417	cfs
13.2000	hrs	1.2199	cfs
13.4000	hrs	1.0674	cfs
13.6000	hrs	0.9703	cfs
13.8000	hrs	0.8872	cfs
14.0000	hrs	0.8040	cfs
14.3000	hrs	0.7070	cfs
14.6000	hrs	0.6515	cfs
15.0000	hrs	0.6099	cfs
15.5000	hrs	0.5545	cfs
16.0000	hrs	0.4990	cfs
16.5000	hrs	0.4436	cfs
17.0000	hrs	0.4297	cfs
17.5000	hrs	0.4020	cfs
18.0000	hrs	0.3881	cfs
19.0000	hrs	0.3327	cfs
20.0000	hrs	0.2911	cfs
22.0000	hrs	0.2634	cfs
26.0000	hrs	0.0000	cfs

} Period needing dampening

Total Flow Values

11.0000	hrs	0.0000	cfs
11.3000	hrs	0.0000	cfs
11.6000	hrs	0.0000	cfs
11.9000	hrs	0.1525	cfs
12.0000	hrs	0.8872	cfs
12.1000	hrs	3.4794	cfs
12.2000	hrs	7.2776	cfs
12.3000	hrs	7.9568	cfs
12.4000	hrs	6.2934	cfs
12.5000	hrs	4.2002	cfs
12.6000	hrs	3.0635	cfs
12.7000	hrs	2.3981	cfs
12.8000	hrs	1.9407	cfs
13.0000	hrs	1.4417	cfs
13.2000	hrs	1.2199	cfs
13.4000	hrs	1.0674	cfs
13.6000	hrs	0.9703	cfs
13.8000	hrs	0.8872	cfs
14.0000	hrs	0.8040	cfs
14.3000	hrs	0.7070	cfs
14.6000	hrs	0.6515	cfs
15.0000	hrs	0.6099	cfs
15.5000	hrs	0.5545	cfs
16.0000	hrs	0.4990	cfs
16.5000	hrs	0.4436	cfs

tmp#21.txt

17.0000 hrs 0.4297 cfs
17.5000 hrs 0.4020 cfs
18.0000 hrs 0.3881 cfs
19.0000 hrs 0.3327 cfs
20.0000 hrs 0.2911 cfs
22.0000 hrs 0.2634 cfs
26.0000 hrs 0.0000 cfs

Peak Time and Flow
12.3000 hrs 7.9568 cfs

Untitled
 PIPE CULVERT ANALYSIS
 COMPUTATION OF CULVERT PERFORMANCE CURVE

August 27, 2004

DESCRIPTION	VALUE
PROGRAM INPUT DATA	
Culvert Diameter (ft).....	1.0
FHWA Chart Number.....	2
FHWA Scale Number (Type of Culvert Entrance).....	2
Manning's Roughness Coefficient (n-value).....	0.011
Entrance Loss Coefficient of Culvert Opening.....	0.5
Culvert Length (ft).....	147.0
Invert Elevation at Downstream end of Culvert (ft).....	0.0
Invert Elevation at Upstream end of Culvert (ft).....	1.47
Culvert slope (ft/ft).....	0.01
Starting Flow Rate (cfs).....	1.0
Incremental Flow Rate (cfs).....	0.5
Ending Flow Rate (cfs).....	4.0
Starting Tailwater Depth (ft).....	0.0
Incremental Tailwater Depth (ft).....	0.0
Ending Tailwater Depth (ft).....	0.0

↓
 COMPUTATION RESULTS

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater Inlet Control (ft)	Headwater Outlet Control (ft)	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
1.0	0.0	0.61	0.0	0.33	0.42	0.33	4.38
1.5	0.0	0.78	0.0	0.41	0.52	0.41	4.9
2.0	0.0	0.94	0.0	0.48	0.6	0.48	5.3
2.5	0.0	1.09	0.0	0.55	0.68	0.55	5.6
3.0	0.0	1.4	0.0	0.62	0.74	0.62	5.82
3.5	0.0	1.68	0.0	0.7	0.8	0.7	5.99
4.0	0.0	1.96	0.0	0.78	0.85	0.78	6.1

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 Phone:(281)440-3787, Fax:(281)440-4742, Email:software@dodson-hydro.com
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1'Ø creates inlet control, 0% restriction is orifice

tmp#22.txt

orifice calculator

Given Input Data:

solving for	Flowrate
Coefficient	0.6100
Diameter	6.0000 in
Headwater	4.5000 ft
Tailwater	0.0000 ft

Computed Results:

Flowrate	2.0381 cfs
velocity	10.3801 fps

tmp#2.rtc

#Units=Structural Dimensions,in,Flowrate,cfs

#Orifice Rating Curve Data

#Depth - ft Flowrate - cfs

```

#-----
1.0000000, 0.96078730
1.0700000, 0.99384611
1.1400000, 1.02584011
1.2100000, 1.05686602
1.2800000, 1.08700674
1.3500000, 1.11633396
1.4200000, 1.14491020
1.4900000, 1.17279036
1.5600000, 1.20002295
1.6300000, 1.22665110
1.7000000, 1.25271337
1.7700000, 1.27824436
1.8400000, 1.30327530
1.9100000, 1.32783446
1.9800000, 1.35194756
2.0500000, 1.37563806
2.1200000, 1.39892742
2.1900000, 1.42183535
2.2600000, 1.44438002
2.3300000, 1.46657816
2.4000000, 1.48844528
2.4700000, 1.50999576
2.5400000, 1.53124298
2.6100000, 1.55219938
2.6800000, 1.57287659
2.7500000, 1.59328548
2.8200000, 1.61343623
2.8900000, 1.63333840
2.9600000, 1.65300097
3.0300000, 1.67243237
3.1000000, 1.69164059
3.1700000, 1.71063315
3.2400000, 1.72941713
3.3100000, 1.74799928
3.3800000, 1.76638595
3.4500000, 1.78458320
3.5200000, 1.80259675
3.5900000, 1.82043206
3.6600000, 1.83809433
3.7300000, 1.85558848
3.8000000, 1.87291924
3.8700000, 1.89009109
3.9400000, 1.90710833
4.0100000, 1.92397506
4.0800000, 1.94069521
4.1500000, 1.95727253
4.2200000, 1.97371062
4.2900000, 1.99001293
4.3600000, 2.00618277
4.4300000, 2.02222332
4.5000000, 2.03813764
4.5000000, 2.03813764

```

Lakota Canyon, Blackhawk II, Pond D volume estimates, 12" ADS w/6" orifice inlet								
Time	Time Incre	Flow in	Total Volume	Cumulative	Est Head	Flow out	Volume Out	Cumulative
	(hours)	(cfs)	(cu. ft.)	Volume In (cu. ft.)	(ft.)	6" orifice (cfs)	(cu. ft.)	Volume Out (cu. ft.)
11								
11.3	0.3	0	0			0		
11.6	0.3	0	0			0		
11.9	0.3	0.1525	164.7	164.7		0.1525	164.7	164.7
12	0.1	0.8872	319.392	484.092	0.3	0.8872	319.392	484.092
12.1	0.1	3.4794	1252.584	1736.676	1	1	360	844.092
12.2	0.1	7.2776	2619.936	4356.612	2.2	1.4	504	1348.092
12.3	0.1	7.9568	2864.448	7221.06	3	1.7	612	1960.092
12.4	0.1	6.2934	2265.624	9486.684	3.5	1.8	648	2608.092
12.5	0.1	4.202	1512.72	10999.404	3.8	1.9	684	3292.092
12.6	0.1	3.0635	1102.86	12102.264	4.2	2	720	4012.092
12.7	0.1	2.3981	863.316	12965.58	4.4	2	720	4732.092
12.8	0.1	1.9407	698.652	13664.232	4.5	2	720	5452.092
13	0.2	1.4417	1038.024	14702.256	4.5	2	1440	6892.092
13.2	0.2	1.2199	878.328	15580.584	4.3	2	1440	8332.092
13.4	0.2	1.0674	768.528	16349.112	4.2	2	1440	9772.092
13.6	0.2	0.9703	698.616	17047.728	3.9	1.9	1368	11140.092
13.8	0.2	0.8872	638.784	17686.512	3.3	1.7	1224	12364.092
14	0.2	0.804	578.88	18265.392	3	1.7	1224	13588.092
14.3	0.3	0.707	763.56	19028.952	2.6	1.6	1728	15316.092
14.6	0.3	0.6515	703.62	19732.572	2.1	1.5	1620	16936.092
15	0.4	0.6099	878.256	20610.828	1.6	1.2	1728	18664.092
15.5	0.5	0.5545	998.1	21608.928	1.3	1.1	1980	20644.092
16	0.5	0.499	898.2	22507.128	1	1	1800	22444.092
16.5	0.5	0.4436	798.48	23305.608		0.4436	798.48	23242.572
17	0.5	0.4297	773.46	24079.068		0.4297	773.46	24016.032
17.5	0.5	0.402	723.6	24802.668		0.402	723.6	24739.632
18	0.5	0.3881	698.58	25501.248		0.3881	698.58	25438.212
19	1	0.3327	1197.72	26698.968		0.3327	1197.72	26635.932
20	1	0.2911	1047.96	27746.928		0.2911	1047.96	27683.892
22	2	0.2634	1896.48	29643.408		0.2634	1896.48	29580.372
26	4	0	0	29643.408		0	0	29580.372

Appendix C
Hydraulic Capacity Calculations



Date Aug 2004
 Job No. 560.3
 Job Name Blkwt II
 Description _____

P.O. Box 1301, 136 E. 3rd
 Rifle, CO 81650
 Tel 970-625-4933
 Fax 970-625-4564

Page ___ of ___

Area I			
W 1/2 of Blackhawk	1580' x 22.5'		
	= .8161 ac	w/CN = 98	
Total Area I	2.91 ac		
	<u>.8161 ac</u>		
	2.1 ac res	CN = 80	
CN _I	$= \left(\frac{.8161}{2.91} \right) 98 + \left(\frac{2.1}{2.91} \right) 80 = 85$		
Area II			
Total Area	4.23 ac	CN	CN _{II} = 71
Res. Area	<u>.75 ac</u>	80	
Open Space Area	3.48 ac	69	
Area III			
Total Area	7.2 ac	CN	
Imperv. 780' x 22.5'	<u>.4 ac</u>	98	CN _{III} = 90
Res	.32 ac	80	

tmp#238.txt

Graphical Peak Discharge method

Given Input Data:

Description	Blackhawk 2	<i>Area I</i>
Rainfall distribution	Type II	
Frequency	1 year	
Rainfall, P (24-hours)	2.0000 in	
Drainage area	2.9100 ac	
Runoff curve number, CN	85	
Time of concentration, Tc	0.2000 hrs	
Pond and Swamp Areas	0.0000 % of Area	

Computed Results:

Initial abstraction, Ia	0.3529 in	
Ia/P	0.1765	
Unit peak discharge, qu	760.7434 csm/in	
Runoff, Q	0.7951 in	
Pond and swamp adjustment, Fp ...	1.0000	
Peak discharge, qp	2.7504 cfs	<i>< SCS 00 I type I</i>

tmp#239.txt

Graphical Peak Discharge method

Given Input Data:

Description	Blackhawk 2	<i>Area II</i>
Rainfall distribution	Type II	
Frequency	1 year	
Rainfall, P (24-hours)	2.0000 in	
Drainage area	4.2300 ac	
Runoff curve number, CN	71	
Time of concentration, Tc	0.2000 hrs	
Pond and Swamp Areas	0.0000 % of Area	

Computed Results:

Initial abstraction, Ia	0.8169 in
Ia/P	0.4085
Unit peak discharge, qu	553.5566 csm/in
Runoff, Q	0.2657 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	0.9722 cfs

tmp#240.txt

Graphical Peak Discharge method

Given Input Data:

Description	Blackhawk 2	<i>Area III</i>
Rainfall distribution	Type II	
Frequency	1 year	
Rainfall, P (24-hours)	2.0000 in	
Drainage area	0.7200 ac	
Runoff curve number, CN	90	
Time of concentration, Tc	0.1000 hrs	
Pond and Swamp Areas	0.0000 % of Area	

Computed Results:

Initial abstraction, Ia	0.2222 in	
Ia/P	0.1111	
Unit peak discharge, qu	1005.8912 csm/in	
Runoff, Q	1.0940 in	
Pond and swamp adjustment, Fp ...	1.0000	
Peak discharge, qp	1.2380 cfs	<i>< 5 cfs @ 1 type I inlet</i>

tmp#23.txt

Sheet Flow

```

Description .....
Manning's n ..... 0.2400
Flow Length ..... 100.0000 ft
Two Yr, 24 hr Rainfall ..... 2.0000 in
Land Slope ..... 0.0300 ft/ft
Computed Sheet flow time .....> 0.2558 hrs

```

Shallow Concentrated Flow

```

Description .....
Surface ..... Unpaved
Flow Length ..... 720.0000 ft
Watercourse Slope ..... 0.0500 ft/ft
Velocity ..... 3.6078 fps
Computed Shallow flow time .....> 0.0554 hrs

```

```

*****
Total Time of Concentration .....> 0.3112 hrs
*****

```

tmp#24.txt

Graphical Peak Discharge method

Given Input Data:

Description	Swale brwn. Lakota Dr. and Blackhawk Dr.
Rainfall distribution	Type II
Frequency	1 year
Rainfall, P (24-hours)	2.0000 in
Drainage area	4.7800 ac
Runoff curve number, CN	79
Time of concentration, Tc	0.3112 hrs
Pond and Swamp Areas	0.0000 % of Area

Computed Results:

Initial abstraction, Ia	0.5316 in
Ia/P	0.2658
Unit peak discharge, qu	580.9605 csm/in
Runoff, Q	0.5225 in
Pond and swamp adjustment, Fp ...	1.0000
Peak discharge, qp	2.2671 cfs

+5.38 cfs flow from Stormdrain in WH Dr.

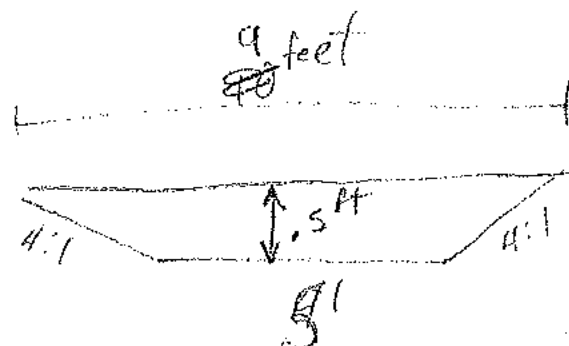
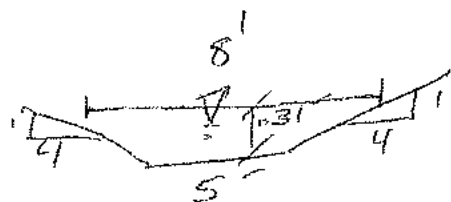
8.65

Worksheet
Worksheet for Trapezoidal Channel

Project Description	
Project File	untitled.fm2
Worksheet	Blackhawk swale
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.030
Channel Slope	0.050000 ft/ft
Left Side Slope	4.000000 H : V
Right Side Slope	4.000000 H : V
Bottom Width	5.00 ft
Discharge	8.65 cfs

Results	
Depth	0.31 ft
Flow Area	1.94 ft ²
Wetted Perimeter	7.56 ft
Top Width	7.48 ft
Critical Depth	0.40 ft
Critical Slope	0.019384 ft/ft
Velocity	4.47 ft/s
Velocity Head	0.31 ft
Specific Energy	0.62 ft
Froude Number	1.55
Flow is supercritical.	



5 ft/s max allowable for easily eroded soils

From Urban Drainage Vol II

APPENDIX B

June 17, 2021

Romero Group
Dwayne Romero, President & CEO
Via Email: dromero@romero-group.com;

RE: Job#1219 - Lakota Canyon Ranch - Sketch Plan Engineering - Water and Sewer Loads

Dear Mr. Romero,

Colorado River Engineering, Inc. has prepared this letter to summarize the water and sewer loads for the Sketch Plan submittal as required in Title 16.16.010.C.4. The Sketch Plan is comprised of both residential and commercial structures as summarized in the attached **Table 1**. The 196 residential units consist of single-family residences, townhomes, and apartment buildings. The commercial space consists of 5 buildings with the 1st floor uses anticipated to be retail, recreation, and entertainment while the 2nd floor uses will consist of office space.

EQR Estimates

For purpose of calculating water and sewer loading, an estimate of Equivalent Residential Units (EQR's) was made following Town Municipal Code requirements for determining tap fees (due at building permit application). The method used by the Town establishes the water use by a single-family home (EQR) as 3.5 people using 100 gallons per day each and the outside irrigation of 2,500 square feet. Using minor reductions for multi-family structures and engineers estimates of commercial development use, the total EQR's for the project are **220.3** as summarized in the attached **Table 2**.

Water and Sewer Estimates

The attached **Table 3** summarizes the water and sewer loading using the EQR approach. Water demands during the non-irrigation season are about 77,000 gallons per day (gpd), or 54 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring are about 165,000 gallons per day (gpd), or 115 gallons per minute (gpm). Sewer loading estimates are 73,300 gpd. The loading shows that the project flows are much lower than the capacity associated with the minimum sizing of pipes used in the Town Code and allotted for in the master planning of the Lakota Canyon Ranch infrastructure. These loading estimates are very conservatively high as the EQR approach greatly overestimates water use which is appropriate when sizing water and sewer pipeline infrastructure.

For purposes of estimating loading with respect to water and sewer plant capacities, the actual loads will be considerably smaller. The project water use will be considerably less for both inside and outside uses. Population changes and advances in conservation through plumbing codes has greatly reduced indoor water uses. Furthermore, average single family home populations are lower at 2.65 per home

versus 3.5 used in the past. Per capita water use is also down to 58.6 gpd versus 100 gpd used currently. Average use per household is now 138 gpd and the typical single family home indoor uses average 155 gpd which is 44% of the 350 gpd currently used in the town EQR method. The outside irrigation component using the EQR method does not equitably estimate higher density and commercial projects that typically have significantly less irrigated area. For example, using the EQR approach the irrigated area of the project is 12.2 acres where the maximum landscaping area of the project (non-impervious) was measured to be ± 7 acres.

Our engineers estimate of water and sewer loading using project specific data and modern water use per capita data is summarized in **Table 4**. Water demands during the non-irrigation season are about 33,000 gpd, or 23 gallons per minute (gpm). Peak demands during the summer months when irrigation is occurring is about 82,000 gpd, or 57 gpm. Sewer loading estimates are 31,200 gpd.

Future Engineering Design - Drainage, Water, and Sewer Infrastructure

Although not required at sketch plan submittal, we have prepared a general description of historical information related to engineering design that will be incorporated into the next design level preparation for a Preliminary Plan.

Drainage

Increased runoff from the development of Lakota Canyon Ranch has previously been mitigated with the construction of the golf course and numerous ponds; therefore, large-scale detention pond construction is not anticipated. However, to address water quality issues with stormwater runoff from roads and parking lots, best management practices will be required to mitigate water quality. This project can use sediment tarps, bio swales, and other passive treatment options utilized in the past to treat stormwater.

Sewer

The Sewer Master Plan (attached) shows a trunk line running from the northern project area Roundup Drive (from Whitehorse Village) routed to the south on the future Lakota Drive to the sewer main in Castle Valley Boulevard. The sewer from Whitehorse Village did not construct improvements through the subject parcels (Lakota Drive) and instead was able to extend sewer to Blackhawk Drive. This means the subject parcels are not encumbered by the previous "Sewer E" alignment and the new sewer system can be designed to match the land development layout. Note that the "Sewer F" line from the Faas Ranch Road homes does cross the southeastern corner of the project and will need to be included in the preliminary plan design.

Water

The Water Master Plan (attached) shows a trunk line running from the northern project area (from Whitehorse Village) to the southern parcel and consists of 8" and 10" size pipelines. The size and location of the new water mains will need to be analyzed at Preliminary Plan to ensure design flows (fire suppression) can be maintained to the multi-family and commercial uses.

Raw Water

The golf course back up supply pipeline (6"-PVC) runs through the subject parcels south of Whitehorse Village and should be analyzed and included in the Preliminary Plan Design.

Soils

Site specific geotechnical engineering investigations will be required for the Preliminary Plan. Our past experience in this area of Lakota indicates that the soils in the subject parcels are higher quality than other project soils and will likely not need intensive mitigation efforts related to infrastructure and structure construction.

If you have any questions, please do not hesitate to call 970-625-4933.

Sincerely,



Christopher Manera, P.E.

Table 1 - Development Structures Summary

	RESIDENTIAL			Commercial (sq. ft.)	
	1 bedroom	2 bedroom	3 bedroom		
East of Faas Road					
Residential					
Apartments	36	18	18		
Townhomes			10		
Small Lot Single Family					
Commercial					
1st floor commercial (likely retail sales, recreation, entertainment, restaurant)				13,400	
2nd floor undesignated commercial (likely services and office)				17,000	
Medical space				14,000	
TOTAL - EAST OF FAAS RD	82	36	18	28	44,400
West of Faas Road					
Residential					
Apartments	24	12	12		
Townhomes			38		
Flats			7		
Small Lot Single Family			21		
Commercial					
1st floor commercial (likely retail sales, recreation, entertainment, restaurant)				20,000	
2nd floor undesignated commercial (likely services and office)				11,500	
Medical space					
TOTAL - WEST OF FAAS RD	114	24	12	78	31,500
GRAND TOTALS	196	60	30	106	75,900

Table 2 - EQR Estimates

Structure Summary (From Table 1)		(A)			(A)			EQR's (Town Tap Fee Estimates)			
		(A)			(A)			(B)			
		1 bedroom	2 bedroom	3 bedroom	1 bedroom	2 bedroom	3 bedroom	1 bedroom	2 bedroom	3 bedroom	=(A)x(B)
Residential	Units	60	30	30	0.8	0.8	1	0.8	0.8	1	102
	Multi family - Apartments	0	0	48	0.8	0.8	1	0.8	0.8	1	48
	Multi family - Townhomes	0	0	7	0.8	0.8	1	0.8	0.8	1	7
	Multi Family - Flats	0	0	21	1	1	1	1	1	1	21
	Single Family Lots										
	Total Units	196									178
<i>EQR's per # of rooms (tap Fees Table 13.20.60)</i>											
Total Residential EQR's 178											
Commercial		(Sq Ft)									
1st floor	33,400	assume 50% restaurant or food service								10	
2nd floor	28,500									15	
Medical	14,000									9.3	
	Total Units	75,900									8.0
<i>EQR's 1.0 per restroom (tap Fees Table 13.20.60)</i>											
Total Commercial EQR's 42.3											
										Total Phase EQR's 220.3	

**Table 3 - Water and Sewer Loading (EQR Method)
Lakota Sketch Plan Submittal - Town of New Castle**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
WATER DIVERSIONS													
(1) Indoor Uses	ac-ft	7.3	6.6	7.3	7.3	7.1	7.3	7.3	7.1	7.3	7.1	7.3	86.4
(2) Irrigation	ac-ft			0.0	5.2	6.7	8.4	5.7	4.2	3.7			34.1
Totals	ac-ft	7.3	6.6	7.3	12.6	13.8	15.8	13.1	11.3	11.0	7.1	7.3	120.5
	gallons/day	77,117	77,117	77,117	132,048	150,359	165,716	137,364	122,893	116,100	77,117	77,117	
	gpm	54	54	54	92	104	115	95	85	81	54	54	
WATER CONSUMPTIVE USE													
(3) In-House	ac-ft	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.3
(4) Irrigation	ac-ft			0.000	3.920	5.058	6.323	4.299	3.161	2.782			25.5
Totals	ac-ft	0.367	0.331	0.367	4.287	5.413	6.690	4.666	3.516	3.149	0.355	0.367	29.9
Sewer Loading													
(5) Totals	ac-ft	7.0	6.3	7.0	7.0	6.7	7.0	7.0	6.7	7.0	6.7	7.0	82.1
	gallons/day	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	73,261	
	Avg gpm	51	51	51	51	51	51	51	51	51	51	51	

SUMMARY OF INPUT DATA USED IN CALCULATING DEMANDS

In-house uses	
(A) Total EQR's	220.3 EQR's (from Table 2)
(B) Inside use	350 gal/day/EQR (3.5 people @ 100 gal/per)
(C)	
(D) In-house depletion	5%
Outside uses	
(E) Irrigated area	2,500 sq.ft./EQR Mun code
(F) Irrigated Area	12.6 acres = (A) x (E)/43560
(G) Irrigation Efficiency	75%
(H)	
(I)	

- (1) = (A) x (B) x (C) x days in month / 325800
- (2) = (F) x (J) / (G)
- (3) = (1) x (D)
- (4) = (2) x (G)
- (5) = (1)-(3)

Unit Consumptive Use Demands (Irrigation and Water Feature Uses, if any)

Estimated to reach 0.14 af/EQR's

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
(J) Irrigation	feet			0.000	0.310	0.400	0.500	0.340	0.250	0.220	0.340	0.220	2.020

**Table 4 - Engineers Estimate Water and Sewer Loading
Lakota Sketch Plan Submittal - Town of New Castle**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
WATER DIVERSIONS													
(1) Indoor Uses	ac-ft	3.1	2.8	3.1	3.1	3.0	3.1	3.1	3.0	3.1	3.0	3.1	36.8
(2) Irrigation	ac-ft			0.0	2.9	3.7	4.7	3.2	2.3	2.1			18.9
Totals	ac-ft	3.1	2.8	3.1	6.0	6.8	7.8	6.3	5.4	5.2	3.0	3.1	55.6
	gallons/day	32,844	32,844	32,844	63,252	73,388	81,889	66,195	58,184	54,424	32,844	32,844	
	gpm	23	23	23	44	51	57	46	40	38	23	23	
WATER CONSUMPTIVE USE													
(3) In-House	ac-ft	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.8
(4) Irrigation	ac-ft			0.000	2.170	2.800	3.500	2.380	1.750	1.540			14.1
Totals	ac-ft	0.156	0.141	0.156	2.326	2.951	3.656	2.536	1.901	1.696	0.151	0.156	16.0
Sewer Loading													
(5) Totals	ac-ft	3.0	2.7	3.0	3.0	2.9	3.0	3.0	2.9	3.0	2.9	3.0	35.0
	gallons/day	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	31,202	
	Avg gpm	22	22	22	22	22	22	22	22	22	22	22	

SUMMARY OF INPUT DATA USED IN CALCULATING DEMANDS

In-house uses	
(A) Total Residences	196.0
(B) Inside use	138 gal/day/unit (avg water use studies)
(C) Commercial equiv residences	42.0
(D) In-house depletion	5%
Outside uses	
(E) Irrigated area	n/a
(F) Irrigated Area	sq.ft./EQR Mun code
(G) Irrigation Efficiency	7.0 acres = measured
(H)	75%
(I)	

- (1) = ((A)+(C)) x (B) x C) x days in month / 325800
- (2) = (F) x (J) / (G)
- (3) = (1) x (D)
- (4) = (2) x (G)
- (5) = (1)-(3)

Unit Consumptive Use Demands (Irrigation and Water Feature Uses, if any)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
(J) Irrigation	feet			0.000	0.310	0.400	0.500	0.340	0.250	0.220	0.220	0.156	2.020

Estimated to reach 0.14 af/EQR's

EAGLES RIDGE RANCH P.U.D., NEW CASTLE INFRASTRUCTURE MASTER PLAN – SEWER SERVICE



WASTEWATER FLOW

	TOTAL SQFT	AVERAGE DAY (PROPOSED)		PEAK DESIGN (PROPOSED)	
		MGD	MGD	MGD	MGD
PHASE 1A	282	0.10	0.11	0.18	0.24
PHASE 1B	61	0.02	0.03	0.04	0.06
PHASE 2	123	0.04	0.05	0.08	0.12
PHASE 3	61	0.02	0.03	0.04	0.06
PHASE 4	101	0.04	0.05	0.08	0.12
PHASE 5	42	0.01	0.02	0.03	0.05
PHASE 6	83	0.03	0.04	0.06	0.09
PHASE 7	170	0.06	0.07	0.12	0.18
PHASE 8	96	0.03	0.04	0.06	0.09
TOTALS	1029	0.36	0.43	0.72	1.08

SEWER MAINS WITHIN EAGLES RIDGE RANCH

SEWER MAIN	PHASE	LEN FOOT	PIPE DIA. IN.	WVL SLOPE %	10 FULL CAPACITY GPD
A	1A	104	8	0.20	409
	1B	32	8	0.20	129
	2	83	8	0.20	331
	3	83	8	0.20	331
	7	83	8	0.20	331
A* TOTAL		485	8"	0.20	1530
B	1A	82	8	0.40	321
	7	72	8	0.40	281
B* TOTAL		154	8"	0.40	602
C	1	88	24	0.40	391
	7	100	24	0.40	431
C* TOTAL		188	24"	0.40	822
E	1A	88	8	0.20	409
	4	87	8	0.20	409
E* TOTAL		175	8"	0.20	818
F	1B	81	8	0.40	321
	2	103	8	0.40	381
	7	61	8	0.40	281
F* TOTAL		245	8"	0.40	983
SEWER MAIN TOTAL		1026	8"	0.20	4044

LEGEND

- PROPOSED SEWER MAIN
- EXISTING SEWER MAIN
- ALL SEWER MAINS ARE 8-INCH DIAMETER

OFF-SITE, WASTEWATER FROM EAGLES RIDGE RANCH WILL FLOW THROUGH THE EXISTING SEWER MAIN IN CASTLE VALLEY BLVD. IN PHASE 7 OF THE BURNING MOUNTAIN P.U.D., THROUGH THE EXISTING SEWER MAIN IN PHASE 7 OF THE BURNING MOUNTAIN P.U.D. AND THROUGH THE SOUTH TOWN SEWER INTERCEPTOR TO THE TOWN'S WASTEWATER TREATMENT PLANT. THE EXISTING SEWER MAIN IN CASTLE VALLEY BLVD. TO CITY MARKET IS AN 8-INCH SEWER WITH A MINIMUM SLOPE OF 0.15%. THIS SEWER MAIN HAS SUFFICIENT CAPACITY AS INDICATED ABOVE. 80.0% OF CITY MARKET, THE EXISTING SOUTH TOWN INTERCEPTOR SEWER AND BURNING MOUNTAIN SEWER MAIN ARE AT MAXIMUM GRADE AND DO NOT HAVE SUFFICIENT CAPACITY.

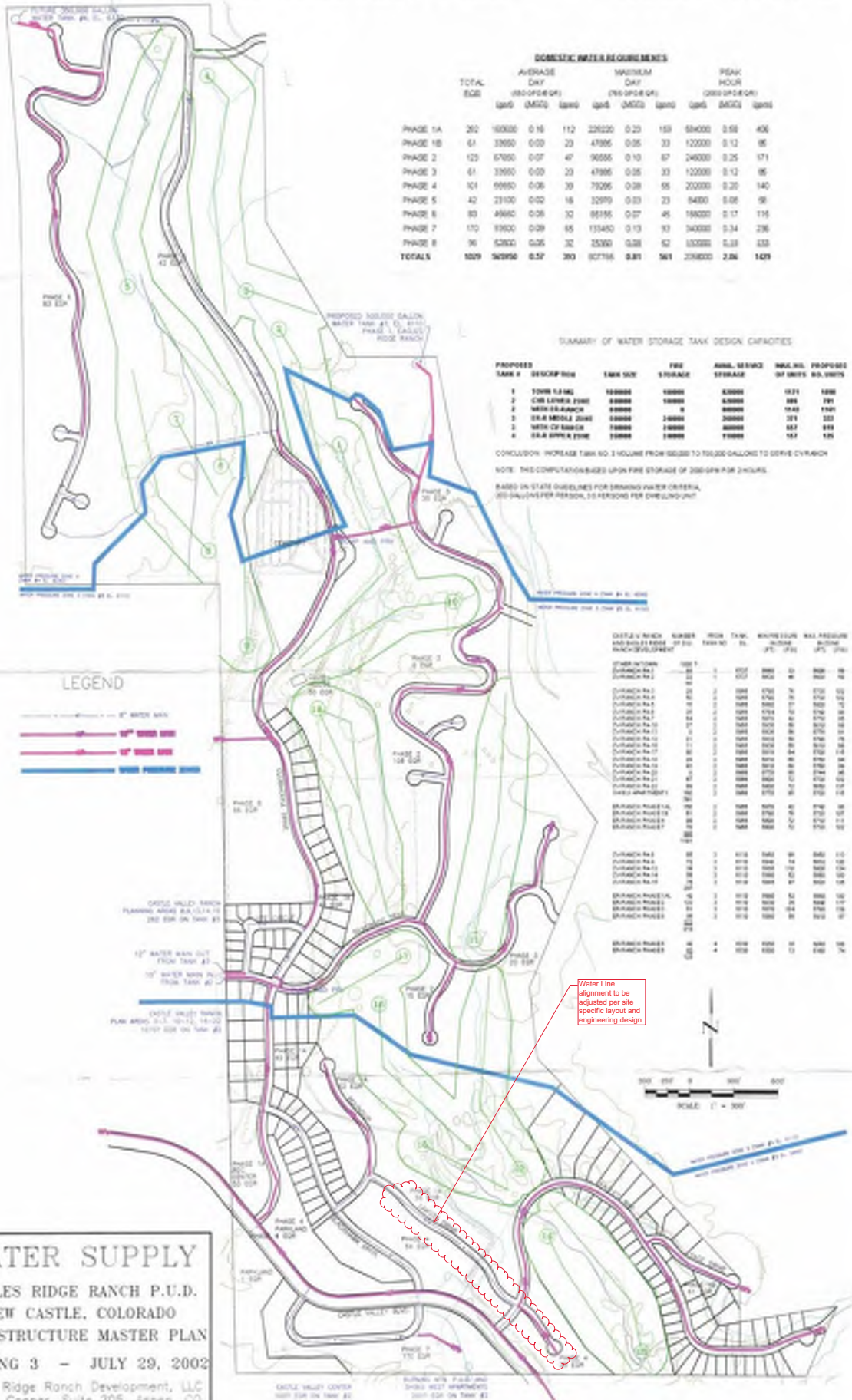
SEWER SERVICE
 EAGLES RIDGE RANCH P.U.D.,
 NEW CASTLE, COLORADO
 INFRASTRUCTURE MASTER PLAN
 DRAWING 4 - JULY 29, 2002
 Eagles Ridge Ranch Development, LLC
 520 E. Cooper, Suite 205, Aspen, CO

Sewer Line constructed as Part of Whitehorse Village

Sewer Line E not constructed

Constructed Sewer Line F

EAGLES RIDGE RANCH P.U.D., NEW CASTLE 371 INFRASTRUCTURE MASTER PLAN – WATER SUPPLY



APPENDIX C



High Performance Geotechnical, Inc.
5020 County Road 154
Glenwood Springs, Colorado 81601
Phone: 970-945-7988

Fax: 970-945-8454
hpgeo@hpgeotech.com

**PRELIMINARY GEOTECHNICAL STUDY
EAGLE RIDGE RANCH
EAST OF CASTLE VALLEY BOULEVARD
NEW CASTLE, COLORADO**

JOB NO. 101 441

APRIL 26, 2002

PREPARED FOR:

**ACCESS COLOMBO
ATTN: JIM COLOMBO
520 EAST COOPER STREET, SUITE 205
ASPEN, COLORADO 81611**

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

April 26, 2002

Access Colombo
Attn: Jim Colombo
520 East Cooper Street, Suite 205
Aspen, Colorado 81611

Job No. 101 441

Subject: Report Transmittal, Preliminary Geotechnical Study, Eagles Ridge Ranch, East of Castle Valley Boulevard, New Castle, Colorado.

Dear Mr. Colombo:

As requested, we have conducted a geotechnical study for the proposed residential development at the subject site.

The property is suitable for the proposed development based on geologic and geotechnical conditions. There are several conditions of a geologic nature that should be considered in project planning and design as presented in this report.

Subsurface conditions encountered in the exploratory borings drilled in the general development area consist of up to about 2½ feet of topsoil overlying stiff to hard sandy silty clay. Relatively dense, mainly granular soils were encountered beneath the topsoil in Borings 3, 5 and 19 and beneath the sandy clay in Borings 4, 6 and 9. Weathered and medium hard to very hard claystone bedrock was encountered in most of the borings beneath the topsoil, clay or granular soils. Groundwater was not encountered in the borings at the time of drilling and the soils were slightly moist to moist.

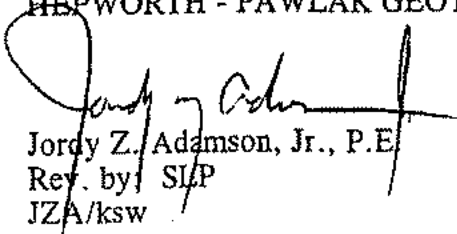
Spread footings placed on the natural clay and granular soils and designed for an allowable bearing pressure of 2,000 psf to 4,000 psf appear suitable for building. The footings may need to be designed for minimum dead load pressure if expansive clays are encountered. The claystone bedrock appears to be expansive in most areas and drilled piers may be needed where the expansion potential is moderate to high.

The report which follows describes our exploration, summarizes our findings, and presents our recommendations suitable for planning and preliminary design. It is important that we provide consultation during design, and field services during construction to review and monitor the implementation of the geotechnical recommendations.

If you have any questions regarding this report, please contact us.

Sincerely,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.



Jordy Z. Adamson, Jr., P.E.
Rev. by SLP
JZA/ksw

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PURPOSE AND SCOPE OF STUDY

This report presents the results of a preliminary geotechnical study for the proposed Eagles Ridge Ranch to be located east of Castle Valley Boulevard, New Castle, Colorado. The project site is shown on Fig. 1. The purpose of the study was to evaluate the geologic and subsurface conditions and their potential impacts on the project. The study was conducted in accordance with our agreement for geotechnical engineering services to Access Columbo, dated June 11, 2001.

A field exploration program consisting of a reconnaissance and exploratory borings was conducted to obtain information on the site and subsurface conditions. Samples of the subsoils obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for project planning and preliminary design. This report summarizes the data obtained during this study and presents our conclusions and recommendations based on the proposed development and the subsurface conditions encountered.

PROPOSED DEVELOPMENT

The Eagle Ridge Ranch Development will consist of an 18 hole golf course and residential development located adjacent to the northeast of New Castle. The preliminary development plan is shown on Figs. 1, 2 and 3. The project area covers about 318 acres. The golf course and residential areas will cover most of the property to the north of Castle Valley Boulevard. A small commercial center and recreational facilities will be located to the south of Castle Valley Boulevard. The residential tracts will be on the more gently sloping ground along the lower valley floors and on the upland benches. At the time of this study, development planning was in the preliminary stages and the extent of development grading had not been determined. It is expected that relatively extensive grading will be needed in some areas to construct the golf course, streets and residential areas. We should review the proposed development and

grading plans when available to determine if they are consistent with the recommendations presented in this report.

SITE CONDITIONS

The project site covers about 318 acres and is located to the north of the Colorado River and Highway I-70 in the northeastern part of New Castle. The site covers parts of Sections 19, 20, 29, 30 and 32 in T. 5 S., R. 90 W. The general topography is shown by the contour lines on Figs. 1, 2 and 3. The terrain on the property is varied and consists of two, north trending valley tributaries to the Colorado River. The tributary valleys have been eroded below moderately sloping pediment benches along the southern side of the Flat Tops plateau. Steep mountain sides that form the southern plateau flank lie just to the north of the property. Three levels of gently sloping pediment benches are present in the project area. The pediment surfaces usually do not exceed 6% and they stand between 30 and 220 feet above the adjacent tributary valley floors. The valley sides between the pediments and adjacent valley floors are steep, typically between about 40% and 60%. The streams in the two tributary valleys are ephemeral and only have surface flow following heavy rainfall. The off-site drainage basin for the eastern tributary valley is small and covers less than 0.1 square miles. The western tributary valley has a relatively large off-site basin that covers several square miles. The property is largely undeveloped. The High Land Cemetery is located in the northern part of the property. The pediment benches to the south and east of the cemetery have historically been irrigated for hay and pasture. Vegetation outside the irrigated areas is mostly sage and other brush with junipers.

GEOLOGIC SETTING

The project site is in a prominent strike valley along the southern side of the White River uplift that general coincides with the Flat Tops plateau. The northern strike valley side is formed by erosion resistant Mesozoic and Paleozoic-age sedimentary rocks on the south flank of the uplift. The southern strike valley side is the

Grand Hogback monocline that lies to the south of the Colorado River. The relatively weak Mancos Shale underlies the interior of the valley and is the predominant formation at the project site. The southern flank of the uplift in the project area is cut by several, northwest-trending, thrust faults with a maximum displacement of about 7,000 feet (Scott and Shroba, 1997). The thrust faults are rotated ramp faults that developed during the Laramide orogeny about 40 to 70 million years ago. They do not have evidence of geologically young movement and are not considered to be potentially active (Widmann and Others, 1998). Surficial soil deposits in the project area consist of colluvium, alluvial fans, loess, pediment deposits, and Colorado River outwash. The principle geologic features at the project site are shown on Fig. 1, 2 and 3.

FORMATION ROCK

Most of the project area is underlain by the upper member of the late Cretaceous-age Mancos Shale (Kmu). Other members of the Mancos are also present to a lesser extent. They include in descending stratigraphic order the Niobrara member (Kmn), the Juana Lopez member (Kmj) and the lower member (Kml). The upper member is a medium gray to dark gray, fissile shale or claystone that contains thin sandstone beds from 1 to 8 feet thick near its top (Scott and Shroba, 1997). The Niobrara member is a light-gray, fissile shale or claystone, calcareous shale or claystone and shaley limestone (Scott and Shroba, 1997). The Juana Lopez member is a dark-gray fissile shale or claystone with gray and yellow, thin bedded, calcareous siltstone and sandstone (Scott and Shroba, 1997). The lower member is a yellowish-brown and gray, fissile shale or claystone (Scott and Shroba, 1997).

Regionally the Mancos bedding strikes nearly east-west and dips from 11° to 48° to the south. Except for some thin sandstone and limestone beds the Mancos is non-cemented but firm to hard. Laboratory testing of shale samples from our exploratory borings show that the shale has a moderate to high swell potential. Rock outcrops are locally present but the Mancos is usually covered by thin colluvium and other, ticker surficial soil deposits.

SURFICIAL SOIL DEPOSITS

Pediment Alluvium and Loess: The gently sloping pediment benches that form the uplands in the project area are underlain by wind deposited loess and pediment alluvium derived from the White River Plateau to the north. Three pediment levels are present in the project area. The lower level (Qp1) lies about 30 to 60 feet above the modern valley floors, the intermediate level (Qp2) lies about 90 to 120 feet above the valley floors and the upper level (Qp3) is about 170 to 220 feet above the valley floors. The loess is a fine sandy, low plasticity clay and at the boring sites it is from 9 to 12 feet thick. Laboratory tests indicate that the loess has a low to moderate swell potential. The underlying pediment alluvium consists of subangular gravel, cobbles and small boulders in a silty to clayey sand matrix. At the boring the pediment alluvium is 1.5 to greater than 16.0 feet thick and it may or may not be covered by loess.

Colluvium: Thin colluvium (Qc) is usually present on the valley sides that separate the pediment benches from the tributary valley floors. At the boring locations the colluvium is from 0.5 to 6.0 feet thick and overlies the Mancos Shale. The colluvium is a low plasticity clay with scattered rock fragments from gravel to small boulder size. Laboratory tests show that the colluvium has a moderate swell potential.

Stream and Fan Alluvium: The valley floors along the two tributary drainages are underlain by stream alluvium (Qal). Two ages of alluvial fans are present in places along the lower tributary valley sides. The younger fans (Qafy) are graded to the modern streams. The older fans (Qafo) were graded to a higher base level when they were deposited. The fan at Boring 8 is 17 feet thick. It consists of a low plasticity clay with scattered rock fragments from gravel to small boulder size.

Colorado River Outwash: Remnants of two, high level Colorado River terraces are present in the southern part of the project area. The higher terrace (Qto2) lies about 170 feet above the modern river channel and the terrace alluvium is glacial outwash tentatively correlated with a middle or early Pleistocene pre-Bull Lake glaciation (Scott

and Shroba, 1997). The lower terrace (Qto1) lies about 150 feet above the river and the terrace alluvium is glacial outwash tentatively correlated with the middle Pleistocene Bull Lake glaciation (Scott and Shroba, 1997). The outwash in Boring 19 is greater than 6 feet thick. It consists of rounded, gravel, cobbles and boulders in a clean to silty sand matrix.

FIELD EXPLORATION

The field exploration for the project was conducted on August 10 and 13, 2001. Nineteen exploratory borings were drilled at the locations shown on Figs. 1, 2 and 3 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight auger powered by a track-mounted CME-45 and a truck-mounted Longyear BK-51HD drill rigs. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1 $\frac{3}{8}$ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils and hardness of the bedrock. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figs. 4 through 7. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface conditions encountered at the site are shown on Figs. 4 through 7. The subsoils generally consist of up to about 2 $\frac{1}{2}$ feet of topsoil overlying stiff to hard sandy silty clay. Relatively dense, slightly clayey silty sand and gravel with cobbles and boulders comprised of siltstone/sandstone fragments was encountered beneath the topsoil in Borings 3 and 5 and beneath the clay in Borings 4, 6 and 9. Dense river gravel alluvium was encountered below the topsoil in Boring 19.

- 0 -

Weathered and medium hard to very hard claystone bedrock of the Mancos Shale Formation was encountered in several of the borings beneath the topsoil, clay or sand and gravel at depths between ½ and 26½ feet. Drilling in the dense gravel with auger equipment was difficult due to the cobbles and boulders and drilling refusal was encountered in the deposit. Cemented layers could also be present in the bedrock.

Laboratory testing performed on samples obtained from the borings included natural moisture content and density, Atterberg limits and finer than sand size gradation analyses. Results of swell-consolidation testing performed on relatively undisturbed drive samples of mainly clay and weathered claystone bedrock, presented on Figs. 9 through 13, generally indicate low compressibility under existing moisture conditions and light loading and a low to high expansion potential when wetted under a constant light surcharge. Swelling pressures were measured typically between about 4,000 to 7,000 psf in the clays and 10,000 to 15,000 in the claystone. The laboratory testing is summarized in Table I.

No free water was encountered in the borings at the time of drilling and the subsoils were slightly moist to moist. The bedrock materials were slightly moist.

GEOLOGIC ASSESSMENT

There are several conditions of a geologic nature that should be considered in project planning and design. These conditions should not require major modifications to the proposed development plan, but engineered mitigation should be considered for some. The geologic conditions and their anticipated influence on the project are described below.

POTENTIALLY EXPANSIVE FOUNDATION CONDITIONS

Our laboratory testing shows that most of the clay soil deposits and the Mancos Shale have low field moisture contents and are expansive if they become wet. The preliminary tests indicate that the colluvium, loess and alluvial fan clays are typically have low to moderate expansion potential. The Mancos claystone is moderately to highly expansive. Preliminary recommendations to mitigate the expansion potential for

building foundations are discussed in the *Preliminary Design Recommendations - Foundations* section of this report.

FLOODING AND STORM WATER MANAGEMENT

The stream alluvium (Qal) along the tributary valley floors is subject to flooding associated with runoff from heavy rainfall. Also, flooding should be expected on the alluvial fans (Qafy and Qafo) and on the lower parts of the colluvial slopes (Qc). In some areas the existing channels on the valley floors, the alluvial fans and valley sides are shallow and poorly defined. A hydrologist should assess the flood potential in these areas so that appropriate flood mitigation is included in the project storm water management plan. The flood analysis should evaluate the potential for high sediment concentration flash floods associated with intense thunderstorms as well as long duration general storms.

CONSTRUCTION RELATED SLOPE INSTABILITY

There is a potential for construction related slope instability in areas of extensive grading on steep slopes. Building sites should not be considered on slopes steeper than about 30% unless site specific geotechnical studies are performed to evaluate the feasibility of the proposed grading. In addition to the general site grading considerations presented in the *Preliminary Design Recommendations - Site Grading* section of this report, there is a potential for bedding plane failures in deep cuts in the Mancos where: (1) the cut slope proposed is within about 20° of the bedding strike, (2) the bedding daylights in the cut slope and (3) the bedding dip is steeper than about 15° from the horizontal. If these conditions are encountered, the slope should be cut at the bedding angle or mechanically reinforced. This condition is likely to be encountered on the north side of deep cuts that trend in an east-west direction.

EARTHQUAKE CONSIDERATIONS

The project area could experience moderately strong earthquake related ground shaking. Modified Mercalli Intensity VI ground shaking should be expected during a reasonable service life for the development, but the probability for stronger ground

shaking is low. Intensity VI ground shaking is felt by most people and causes general alarm, but results in negligible damage to structures of good design and construction. Occupied structures should be designed to withstand moderately strong ground shaking with little or no damage and not to collapse under stronger ground shaking. The region is in the Uniform Building Code, Seismic Risk Zone 1. Based on our current understanding of the earthquake hazard in this part of Colorado, we see no reason to increase the commonly accepted seismic risk zone for the area.

PRELIMINARY DESIGN RECOMMENDATIONS

The conclusions and recommendations presented below are based on the proposed development, subsurface conditions encountered in the exploratory borings, and our experience in the area. The recommendations are suitable for planning and preliminary design but site specific studies should be conducted for individual lot development.

FOUNDATIONS

Bearing conditions will vary depending on the specific location of the building on the property. Based on the nature of the general proposed construction, spread footings bearing on the natural clay and granular soils should be suitable for building support. We expect the footings can be sized for an allowable bearing pressure in the range of 2,000 psf to 4,000 psf. Expansive clays encountered in building areas may need to be removed or the footings designed to impose a minimum dead load pressure to limit potential heave. The claystone bedrock appears to be expansive in most areas and drilled piers may be needed where the expansion potential is moderate to high. Boulders encountered in the excavation could result in irregular bearing conditions. Foundation walls should be designed to span local anomalies and to resist lateral earth loadings when acting as retaining structures. Below grade areas and retaining walls should be protected from wetting and hydrostatic pressure by use of an underdrain system. The footings should have a minimum depth of 36 inches for frost protection.

FLOOR SLABS

Slab-on-grade construction should be feasible for bearing on the natural soils with low to no expansion potential. There could be some post construction slab movement at sites with collapsible matrix or expansive clays and weathered claystone. Crawlspace construction could be needed in moderately to highly expansive soil and claystone areas. To reduce the effects of some differential movement, floor slabs should be separated from all bearing walls and columns with expansion joints. Floor slab control joints should be used to reduce damage due to shrinkage cracking. A minimum 4 inch thick layer of free-draining gravel should underlie basement level slabs to facilitate drainage.

UNDERDRAIN SYSTEM

Although free water was not encountered in the exploratory borings, it has been our experience in the area and where clay soils and shallow bedrock are present that local perched groundwater can develop during times of heavy precipitation or seasonal runoff. An underdrain system should be provided to protect below-grade construction, such as retaining walls, crawlspace and basement areas from wetting and hydrostatic pressure buildup. The drains should consist of drainpipe surrounded above the invert level with free-draining granular material. The drain should be placed at each level of excavation and at least 1 foot below lowest adjacent finish grade and sloped at a minimum 1% to a suitable gravity outlet.

SITE GRADING

The risk of construction-induced slope instability at the site appears low provided the buildings are located in the less steep parts of the property and cut and fill depths are limited. Cut depths for the building pads and driveway access should not exceed about 10 feet. Fills should be limited to about 10 feet deep, especially where they encroach steep downhill sloping areas. Structural fills should be compacted to at least 95% of the maximum standard Proctor density within 2% of optimum moisture content. Prior to fill placement, the subgrade should be carefully prepared by removing all vegetation and topsoil. The fill should be benched into the portions of the hillside

exceeding 20% grade. The on-site soils excluding oversized rock and topsoil should be suitable for use in embankment fills. The claystone material should not be used as structural fill beneath building and pavements.

Permanent unretained cut and fill slopes should be graded at 2 horizontal to 1 vertical or flatter and protected against erosion by revegetation, rock riprap or other means. This office should review site grading plans for the project prior to construction.

SURFACE DRAINAGE

The grading plan for the subdivision should consider runoff from steep uphill slopes through the project and at individual sites. Water should not be allowed to pond which could impact slope stability and foundations. To limit infiltration into the bearing soils next to buildings, exterior backfill should be well compacted and have a positive slope away from the building for a distance of 10 feet. Roof downspouts and drains should discharge well beyond the limits of all backfill and landscape irrigation should be restricted.

LIMITATIONS

This study has been conducted according to generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either expressed or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the field reconnaissance, review of published geologic reports, the exploratory borings located as shown on Figs. 1, 2 and 3, the proposed type of construction and our experience in the area. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions encountered during construction appear different from those described in this report, we should be notified so that re-evaluation of the recommendations may be made.

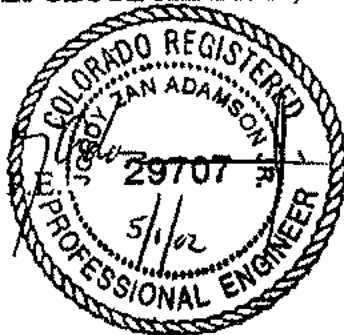
This report has been prepared for the exclusive use by our client for planning and preliminary design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation, conduct additional evaluations and review and monitor the implementation of our recommendations. Significant design changes may require additional analysis or modifications to the recommendations presented herein. We recommend on-site observation of excavations and foundation bearing strata and testing of structural fill by a representative of the geotechnical engineer.

Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

Jordy Z. Adamson, Jr.,

Reviewed by:



Steven L. Pawlak

Steven L. Pawlak, P.E.

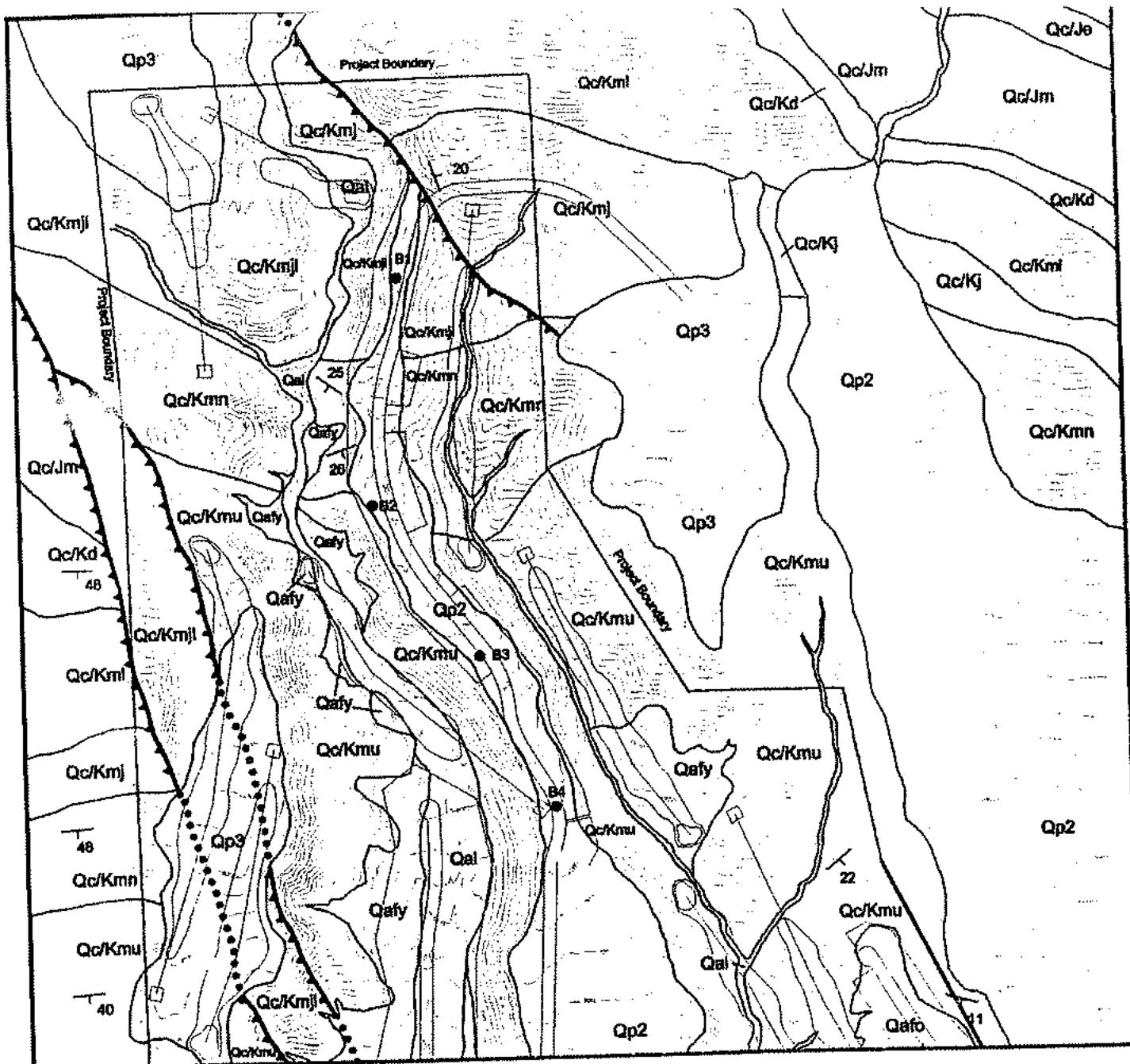
JZA/ksw

cc: Enartech, Inc. - Attn: Chris Hale

REFERENCES

Scott, R. B. and Shiroba, R. R., 1997, *Revised Preliminary Geology Map of the New Castle Quadrangle, Garfield County, Colorado*: U.S. Geological Survey Open-File Report 97-737.

Widmann B. L. and Others, 1998, *Preliminary Quaternary Fault and Fold Map and Data Base of Colorado*: Colorado Geological Survey Open File Report 98-8.

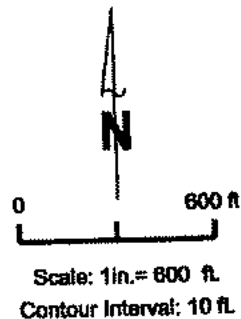


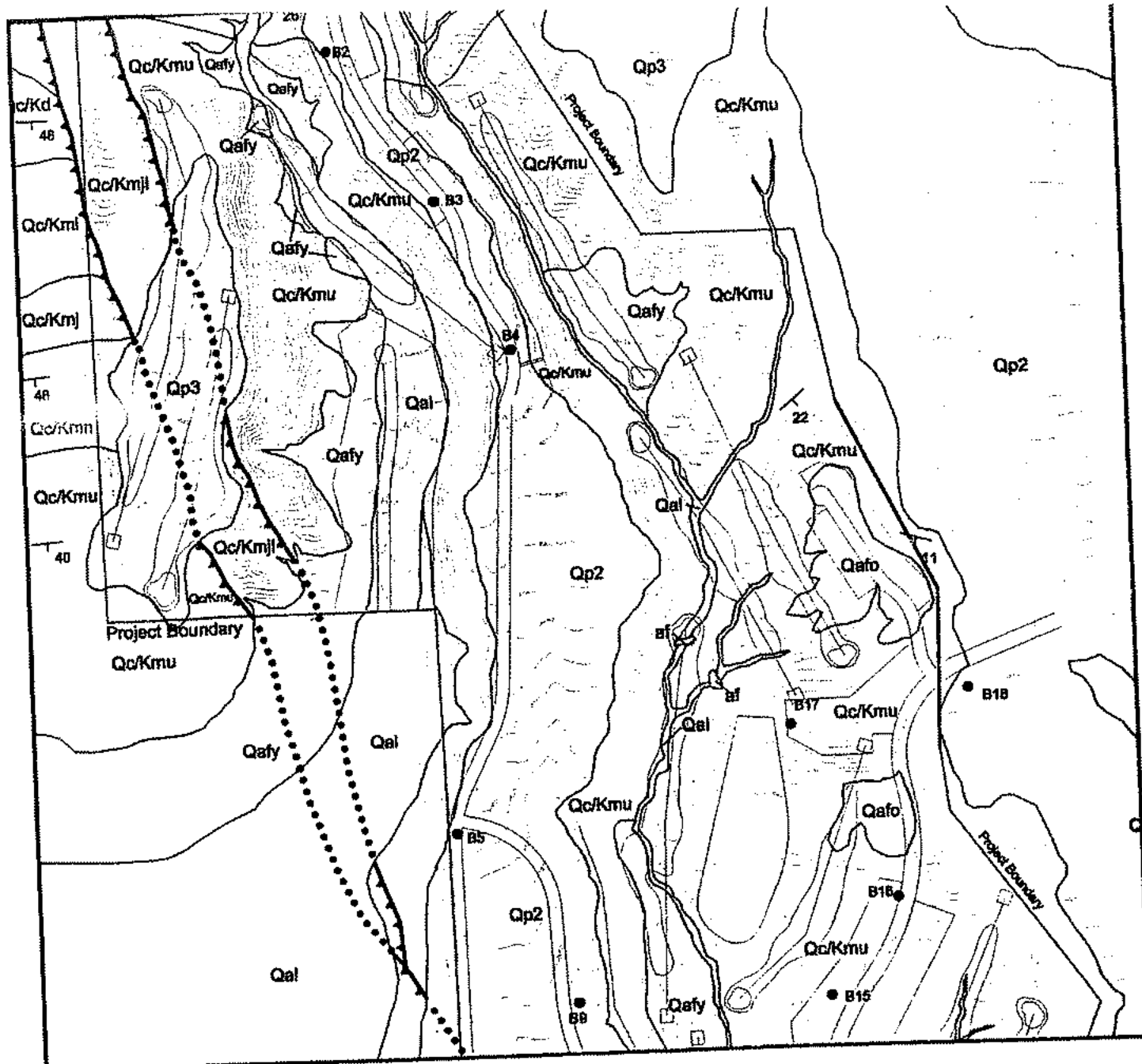
Explanation:

- af Man-Placed Fill
- Qc Colluvium
- Qal Stream Alluvium
- Qafy Younger Alluvial Fan
- Qafo Older Alluvial Fan
- Qp1 Pediment Alluvium and Loess:
1 is lowest level, 2 is middle level and 3 is highest level.
- Qto1 Old River Terrace:
1 is lowest level and 2 is highest level.
- Kmu Upper Member of Mancos Shale
- Kmn Niobrara Member of Mancos Shale
- Kmj Juana Lopez Member of Mancos Shale

- Kml Lower Member of Mancos Shale
- Kd Dakota Sandstone
- Jm Morrison Formation
- Je Entrada Sandstone

- Contact:
Approximate boundary of map units.
- ▲▲▲●●● Thrust Fault:
Approximate location, dotted where concealed, sawteeth on upper plate.
- 80 / Strike and Dip:
Strike and dip of bedding in degrees.
- 81 ● Exploratory Boring:
Approximate location.



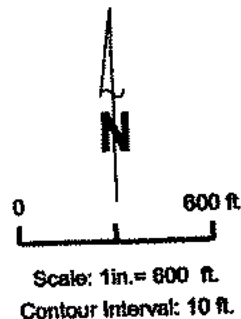


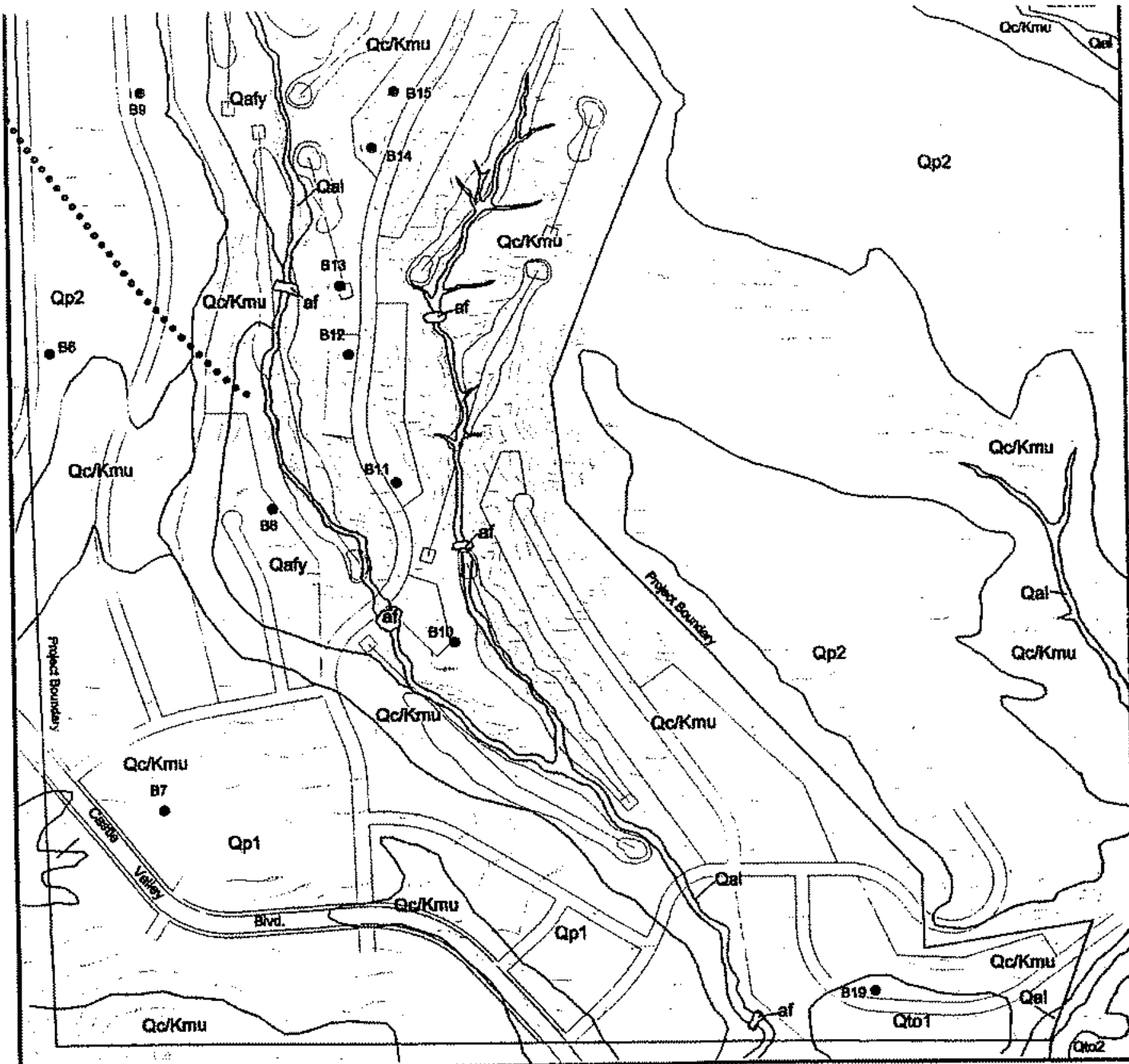
Explanation:

- af Man-Placed Fill
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- Qal Stream Alluvium
- Qafy Younger Alluvial Fan
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- Je Entrada Sandstone

- Contact:**
Approximate boundary of map units.
- Thrust Fault:**
Approximate location, dotted where concealed, sawteeth on upper plate.
- Strike and Dip:**
Strike and dip of bedding in degrees.
- Exploratory Boring:**
Approximate location.



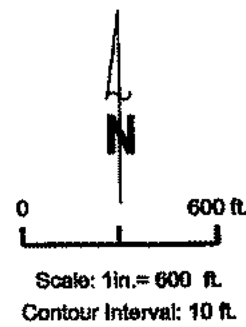


Explanation:

- af Man-Placed Fill
- Qc Colluvium
- Qal Stream Alluvium
- Qafy Younger Alluvial Fan
- Qaf0 Older Alluvial Fan
- Qp1 Pediment Alluvium and Loess:
1 is lowest level, 2 is middle level and 3 is highest level.
- Qto1 Old River Terrace:
1 is lowest level and 2 is highest level.
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- Kmn Niobrara Member of Mancos Shale
- Kmj Juana Lopez Member of Mancos Shale

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- Contact:
Approximate boundary of map units.
- Thrust Fault:
Approximate location, dotted where concealed, sawteeth on upper plate.
- ↘ Strike and Dip:
Strike and dip of bedding in degrees.
- Exploratory Boring:
Approximate location.



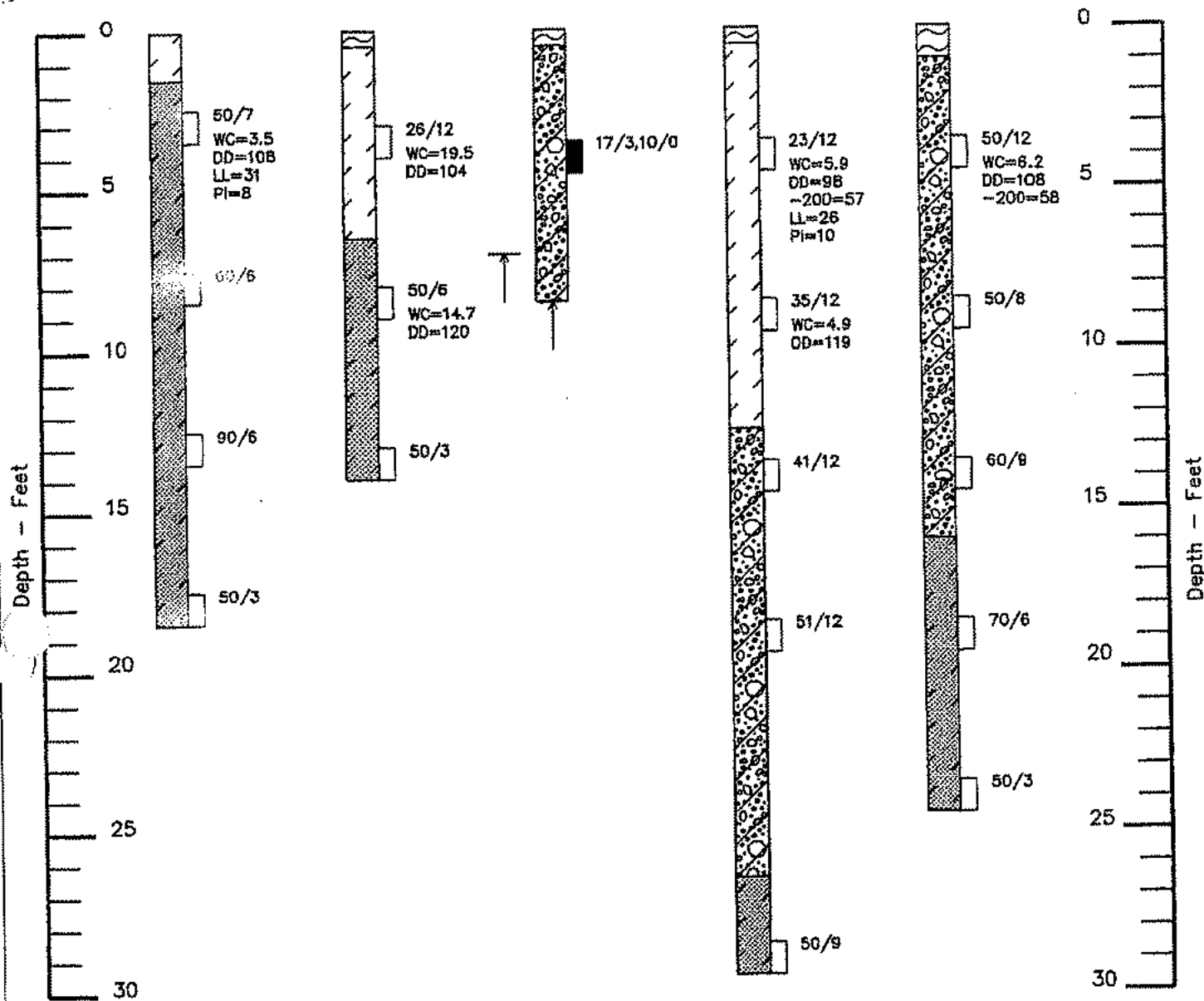
BORING 1
ELEV.= 6273'

BORING 2
ELEV.= 6183'

BORING 3
ELEV.= 6133'

BORING 4
ELEV.= 6089'

BORING 5
ELEV.= 5998'



Note: Explanation of symbols is shown on Fig. 8.

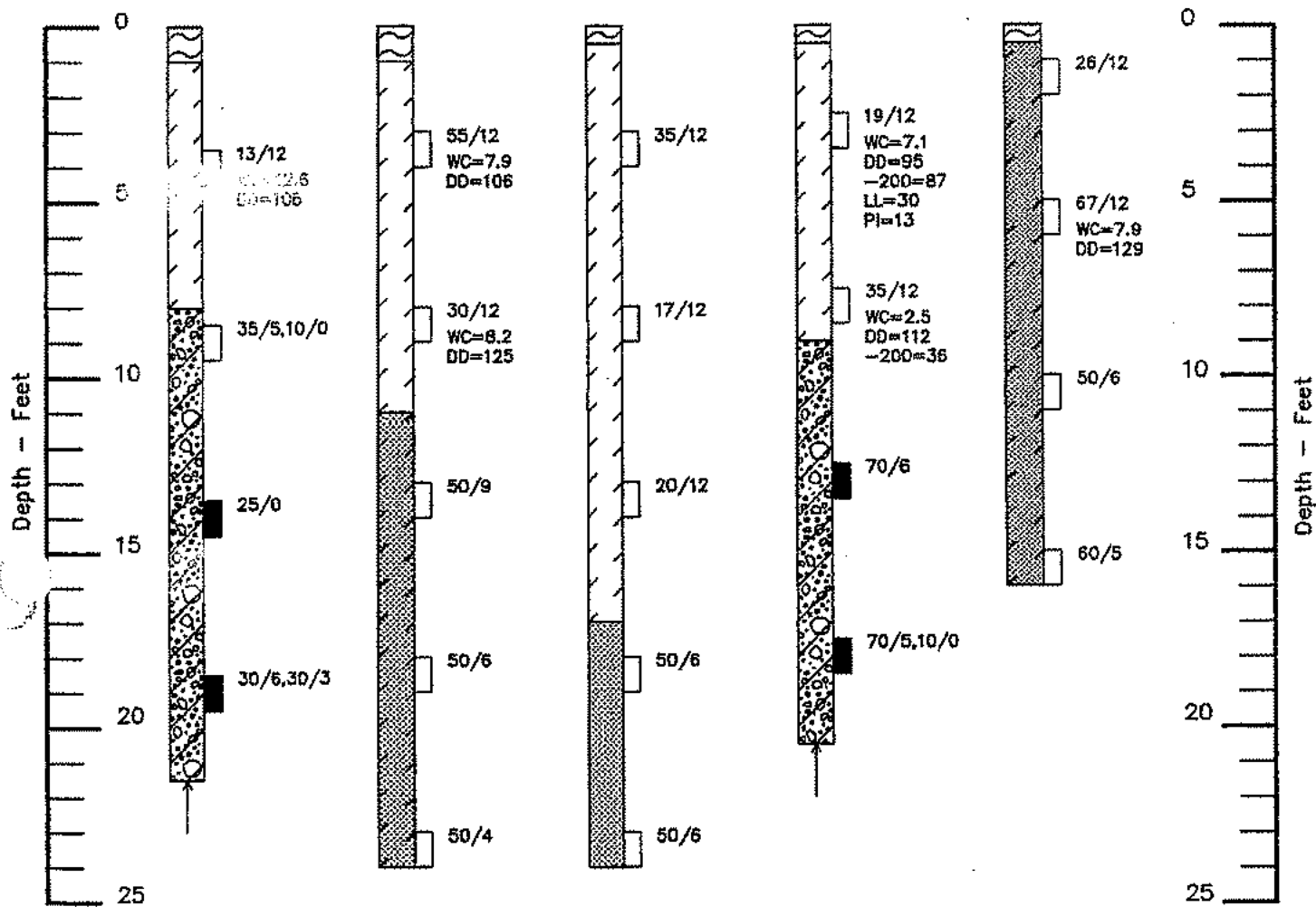
BORING 6
ELEV.= 5888'

BORING 7
ELEV.= 5784'

BORING 8
ELEV.= 5795'

BORING 9
ELEV.= 5935'

BORING 10
ELEV.= 5762'



Note: Explanation of symbols is shown on Fig. 8.

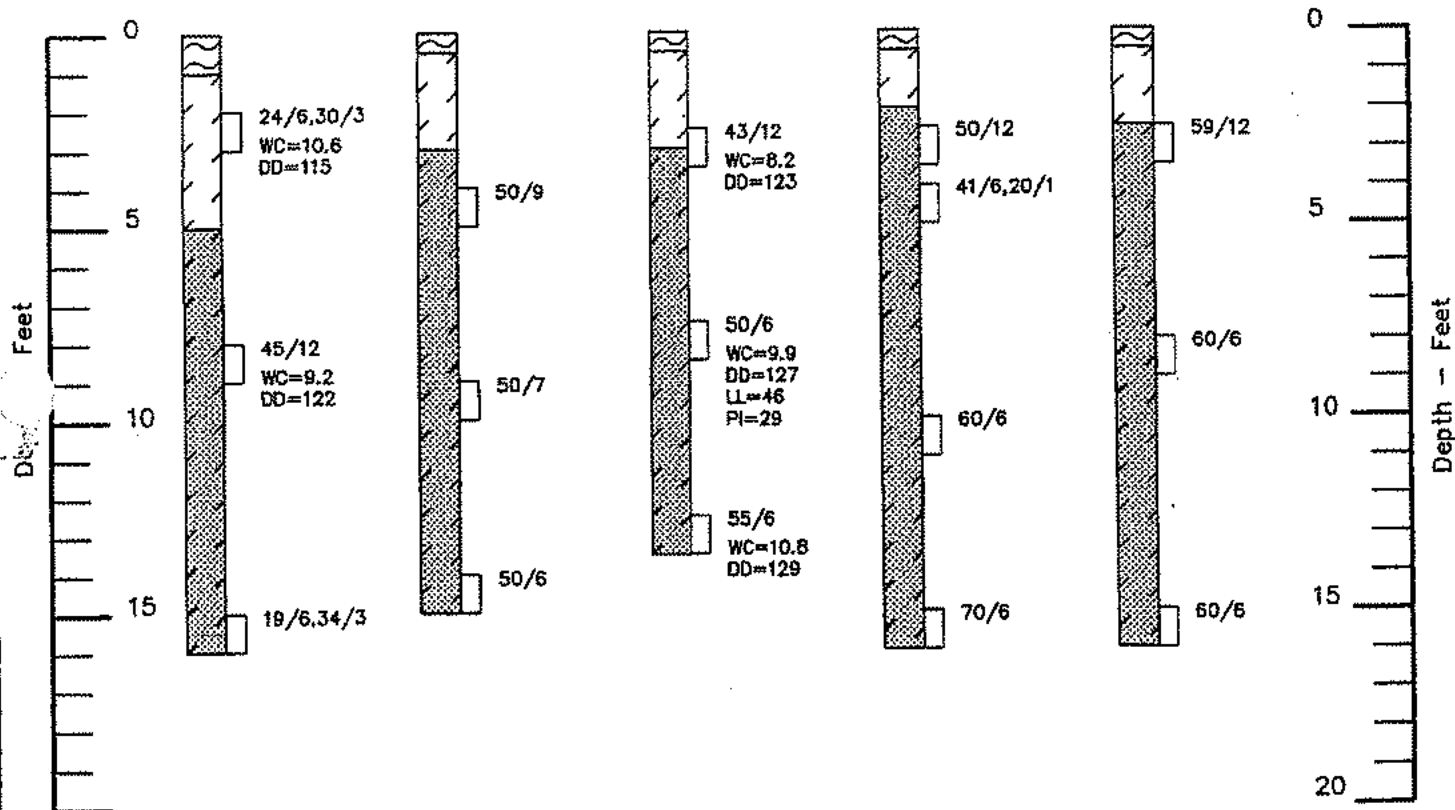
BORING 11
ELEV.= 5811'

BORING 12
ELEV.= 5836'

BORING 13
ELEV.= 5850'

BORING 14
ELEV.= 5890'

BORING 15
ELEV.= 5880'



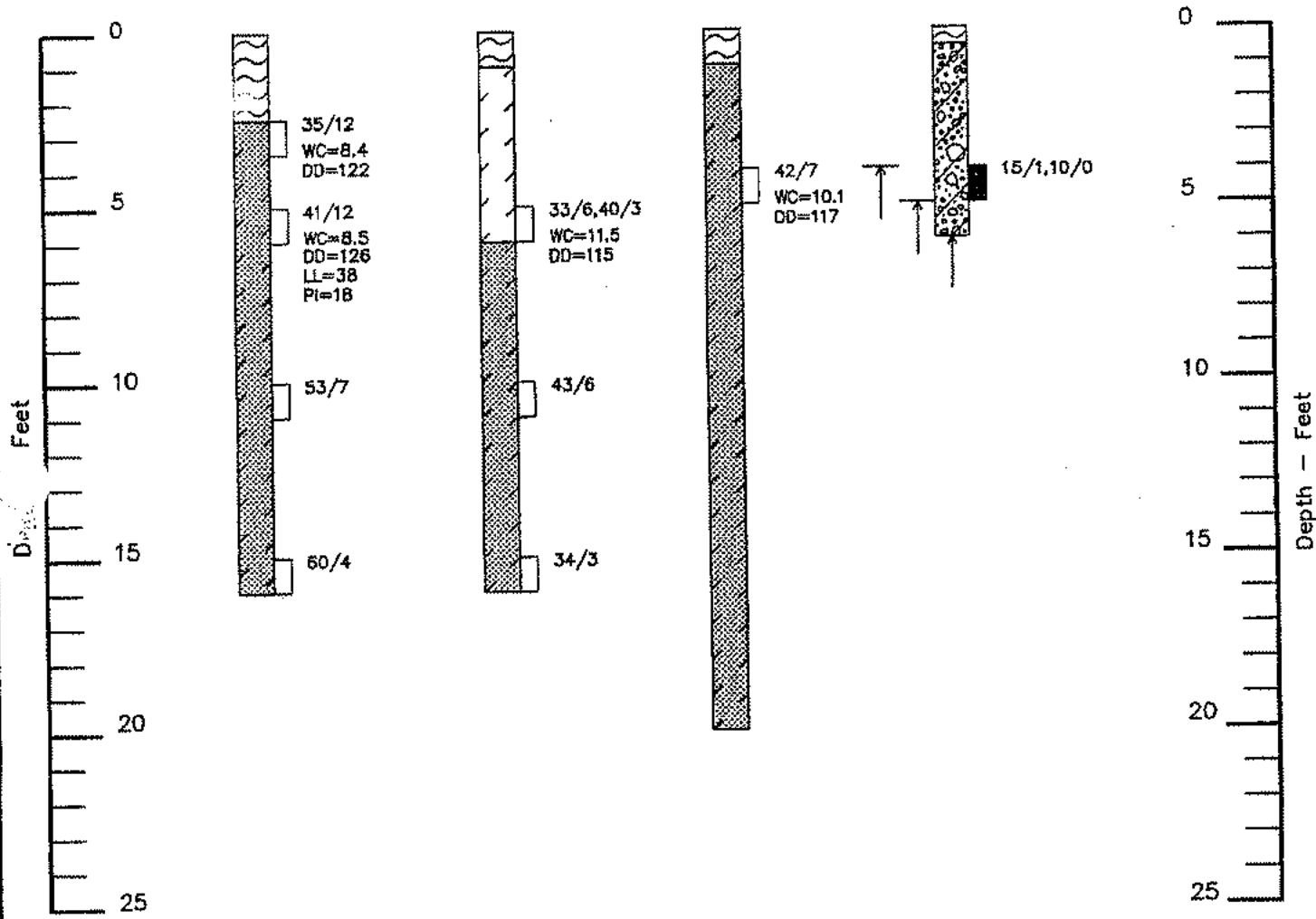
Note: Explanation of symbols is shown on Fig. 8.

BORING 16
ELEV.= 5934'

BORING 17
ELEV.= 6003'








BORING 18
ELEV.= 6045'

BORING 19
ELEV.= 5741'



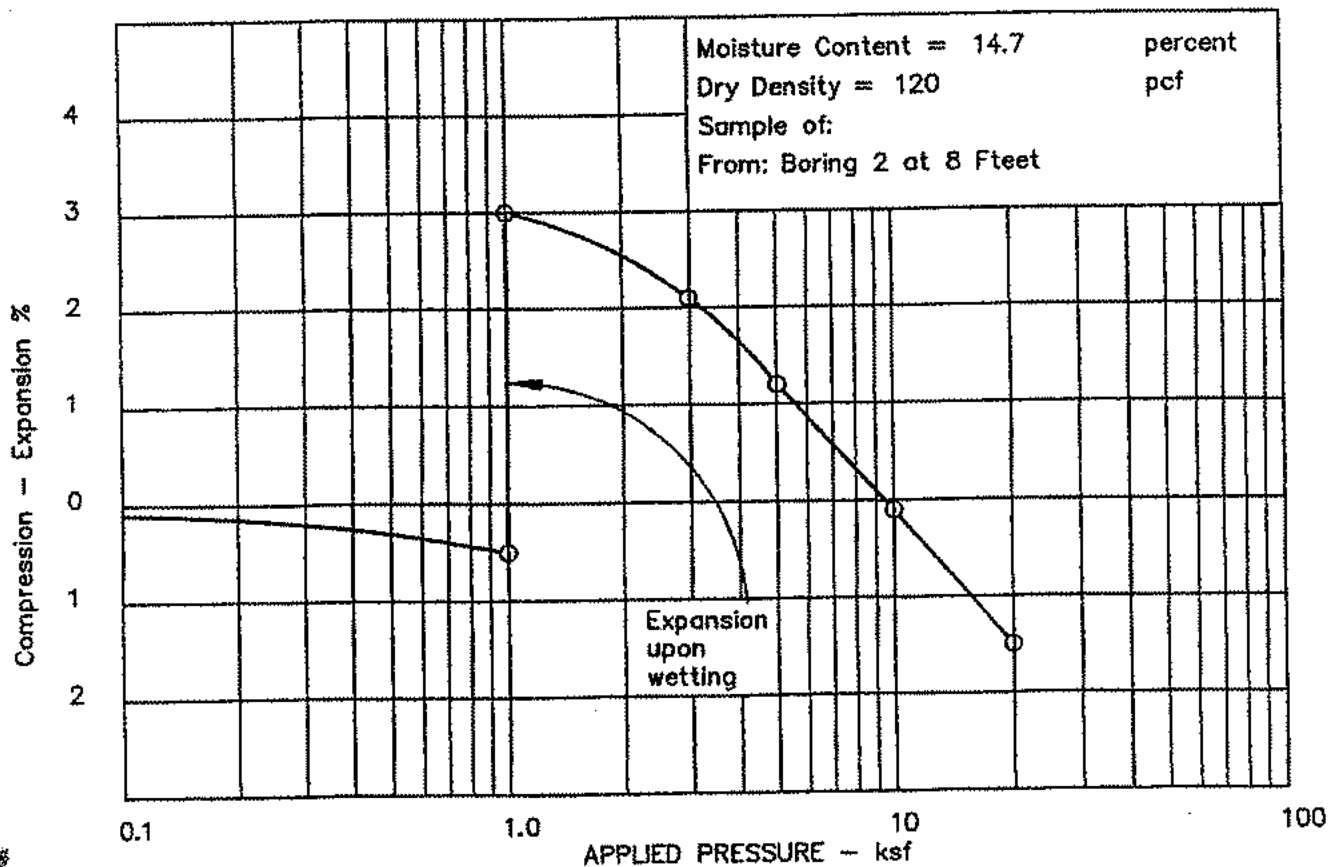
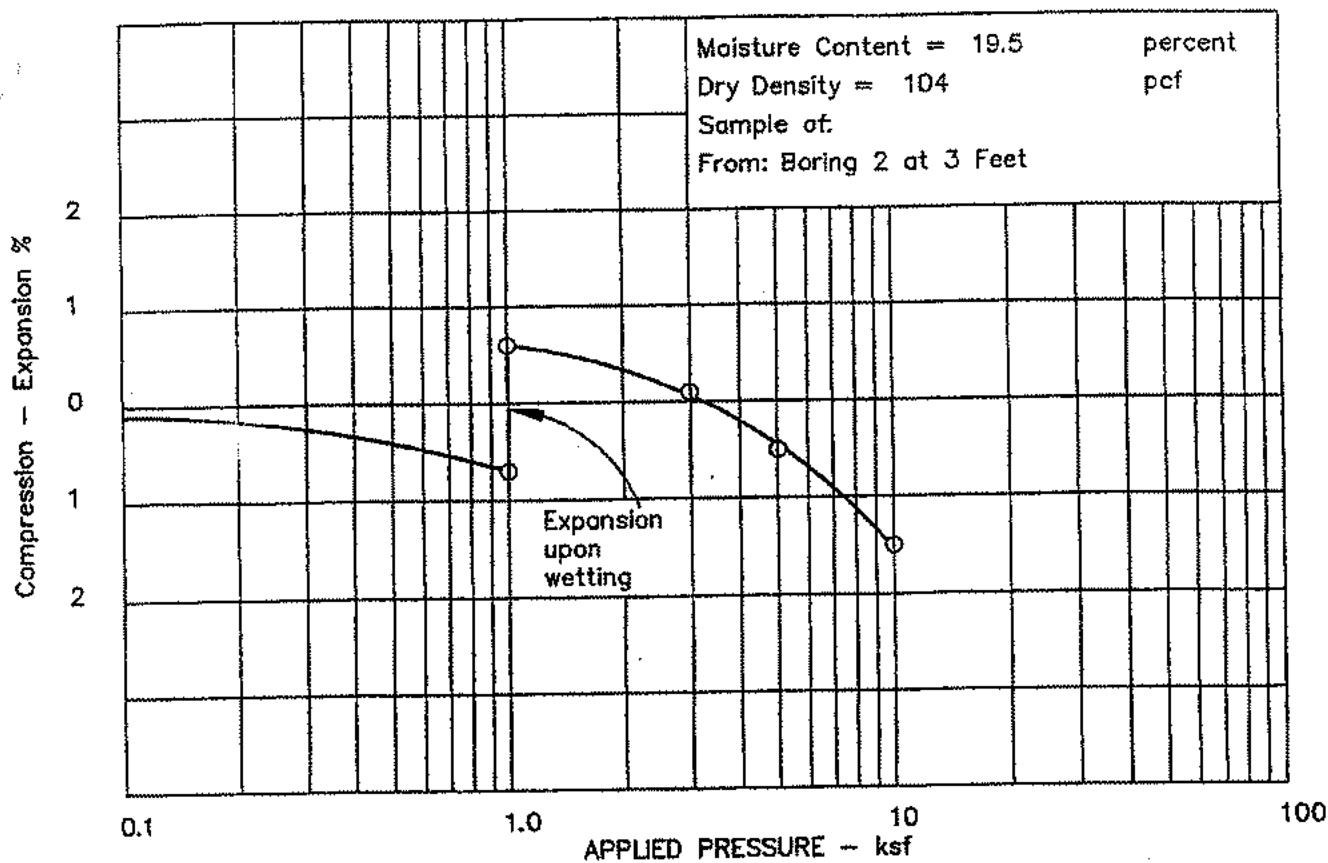
Note: Explanation of symbols is shown on Fig. 8.

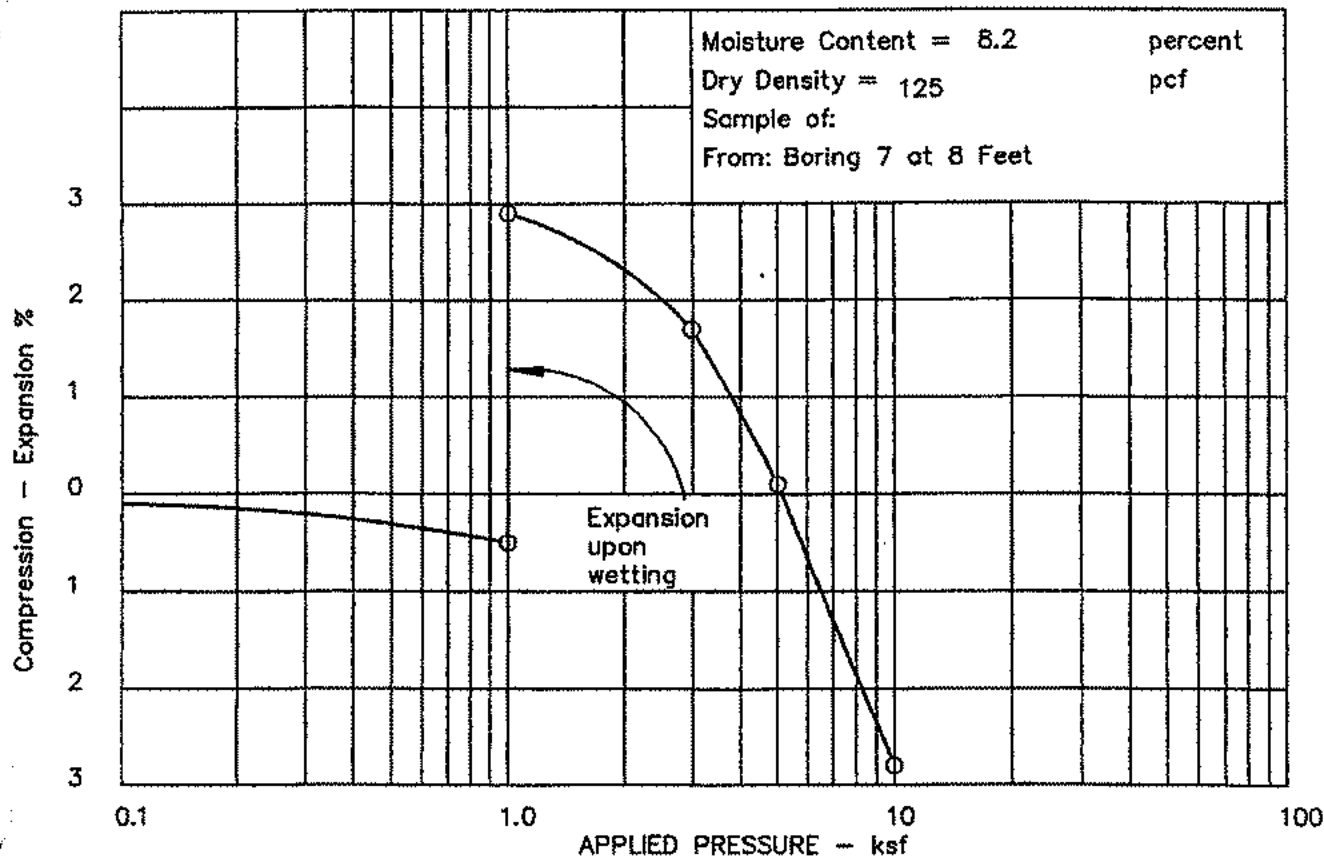
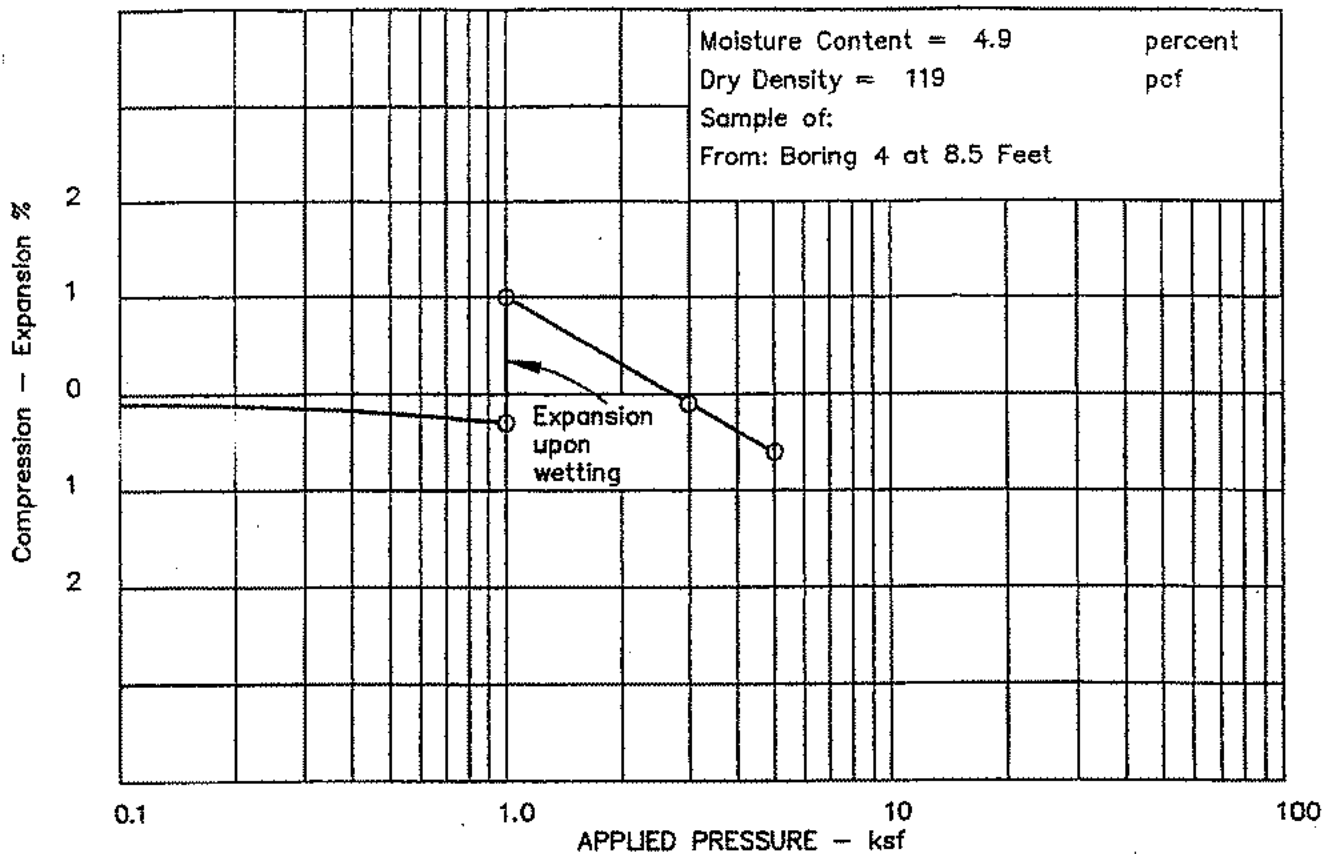
LEGEND:

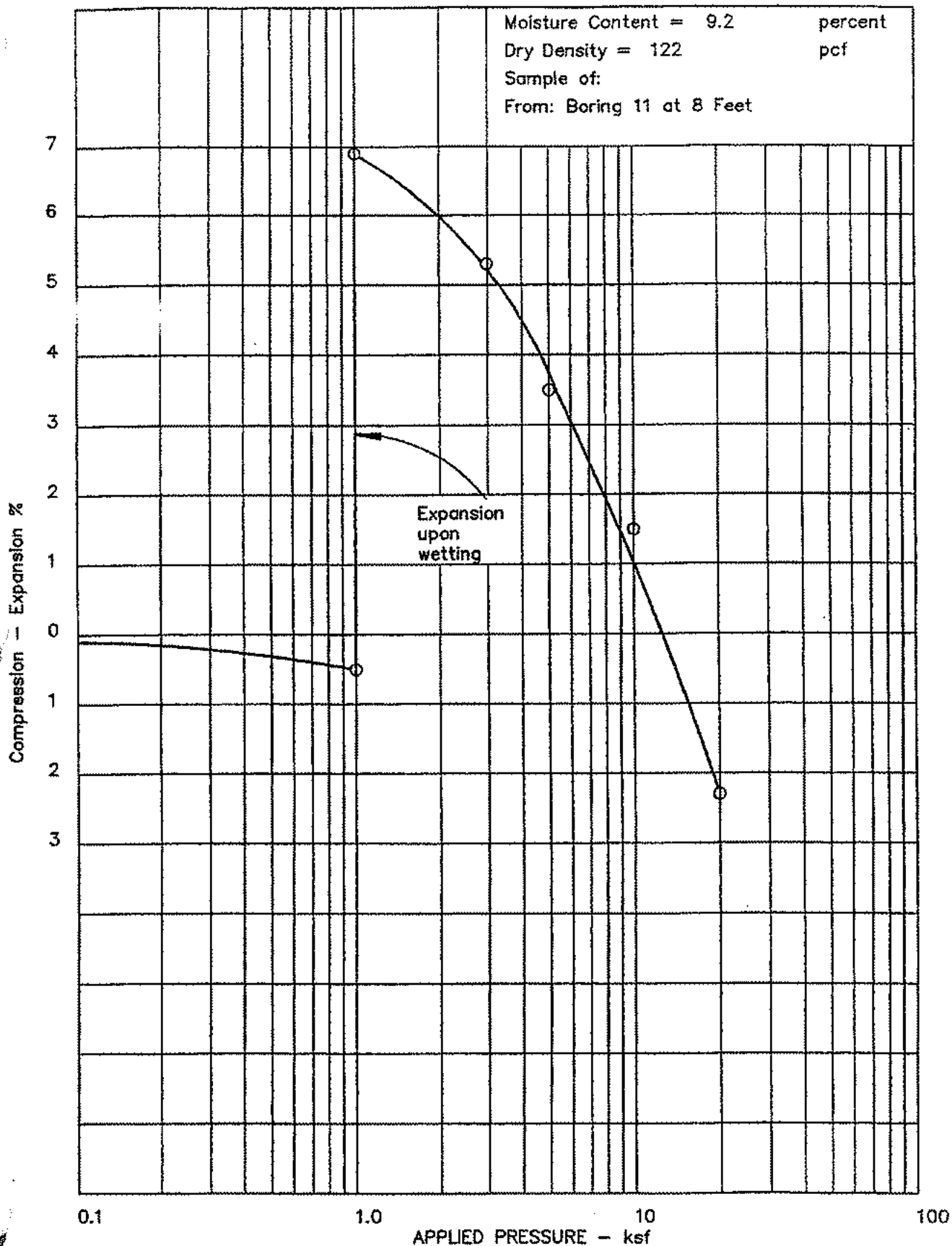
-  TOPSOIL; sandy silty clay, organic, loose to firm, slightly moist, brown.
-  CLAY (CL); silty, sandy to very sandy, stiff to hard, slightly moist to moist, brown, low to medium plasticity.
-  SAND AND GRAVEL (SM-GM); silty, slightly clayey, with cobbles and boulders, dense, slightly moist, reddish brown, fragments of siltstone/sandstone. Boring 19 is dense river gravel.
-  CLAYSTONE BEDROCK; weathered and medium hard to very hard, slightly moist, gray. Mancos Shale.
-  Relatively undisturbed drive sample; 2-inch I.D. California liner sample.
-  Drive sample; standard penetration test (SPT), 1 3/8 inch I.D. split spoon sample, ASTM D-1586.
- 50/7 Drive sample blow count; indicates that 50 blows of a 140 pound hammer falling 30 inches were required to drive the California or SPT sampler 7 inches.
-  Practical drilling refusal. Where shown above bottom of log, multiple attempts were made to advance the boring.

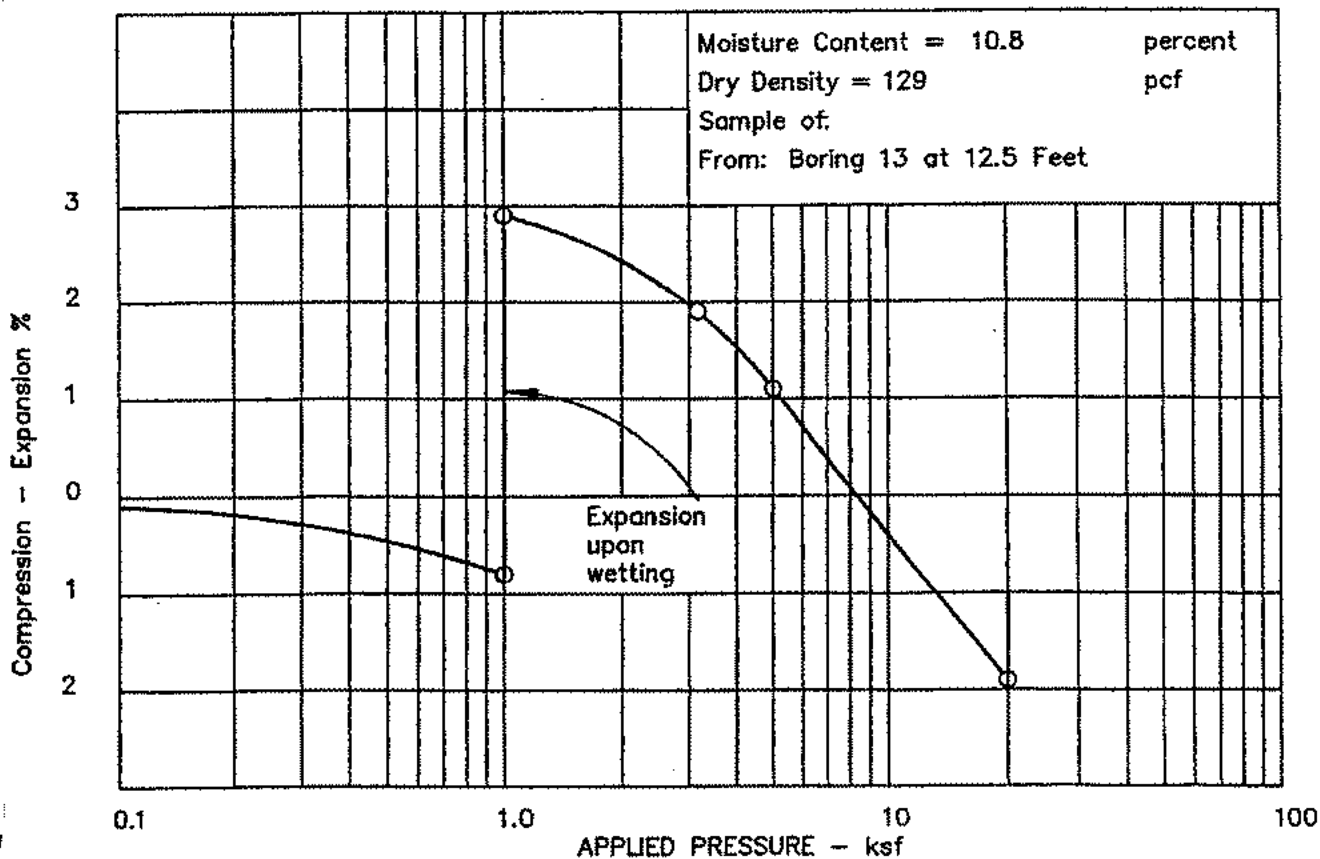
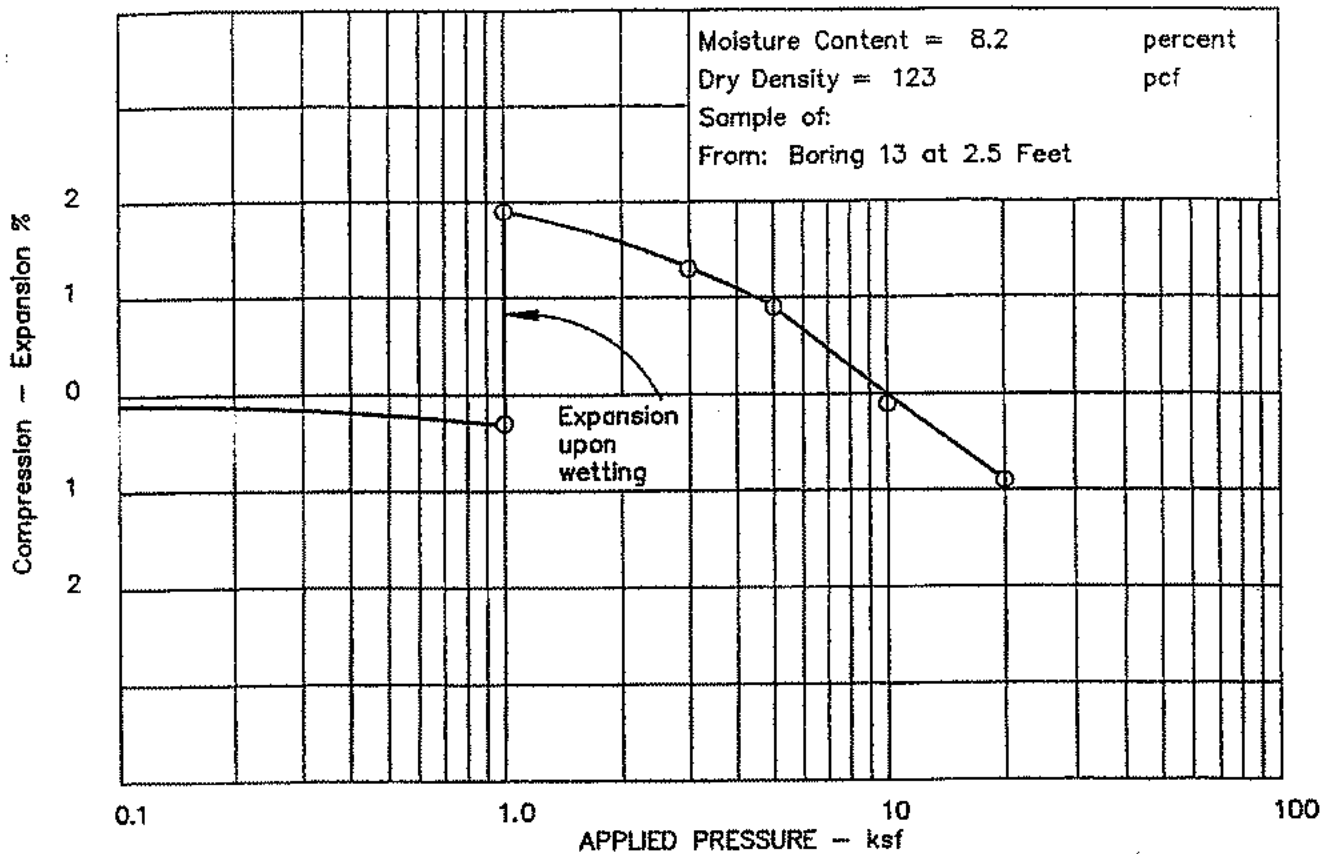
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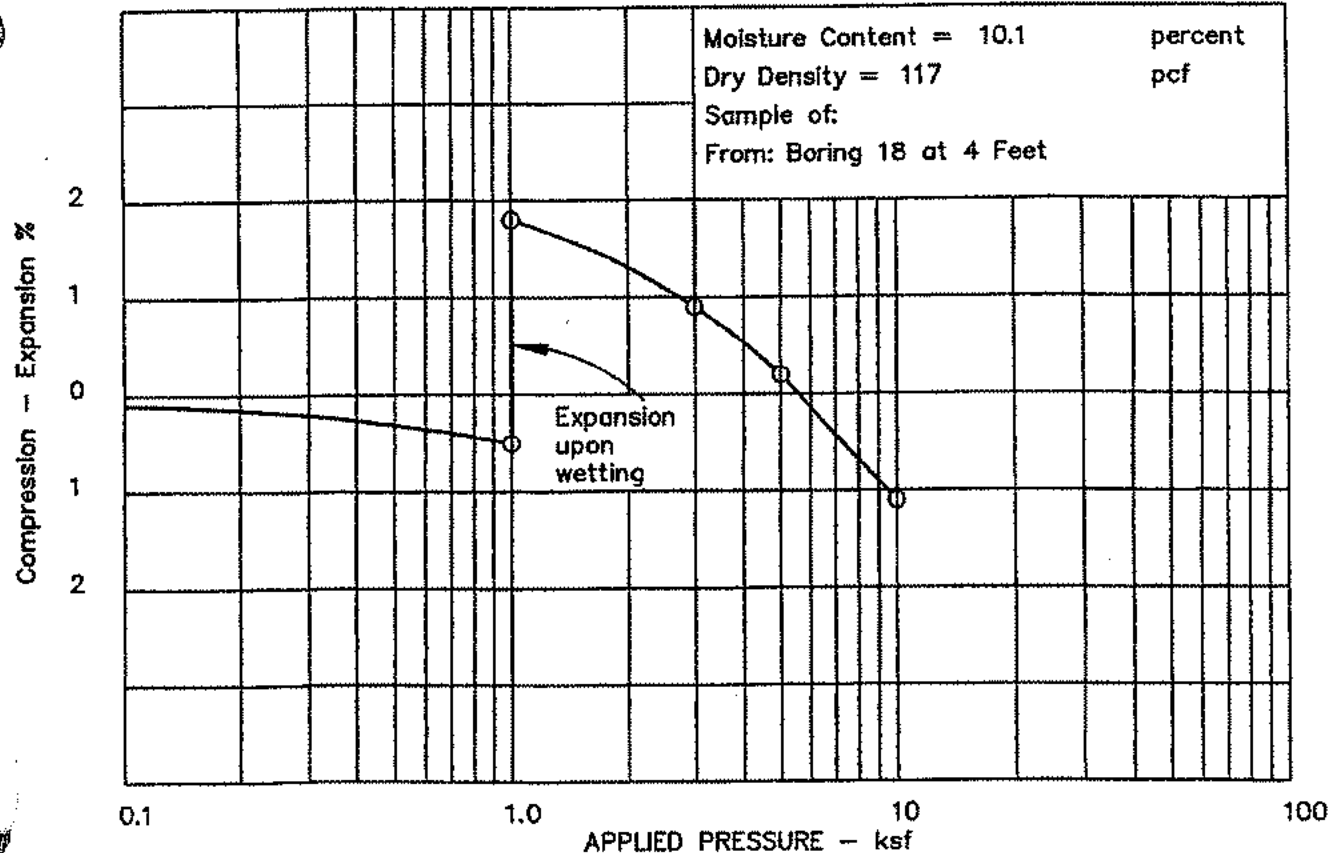
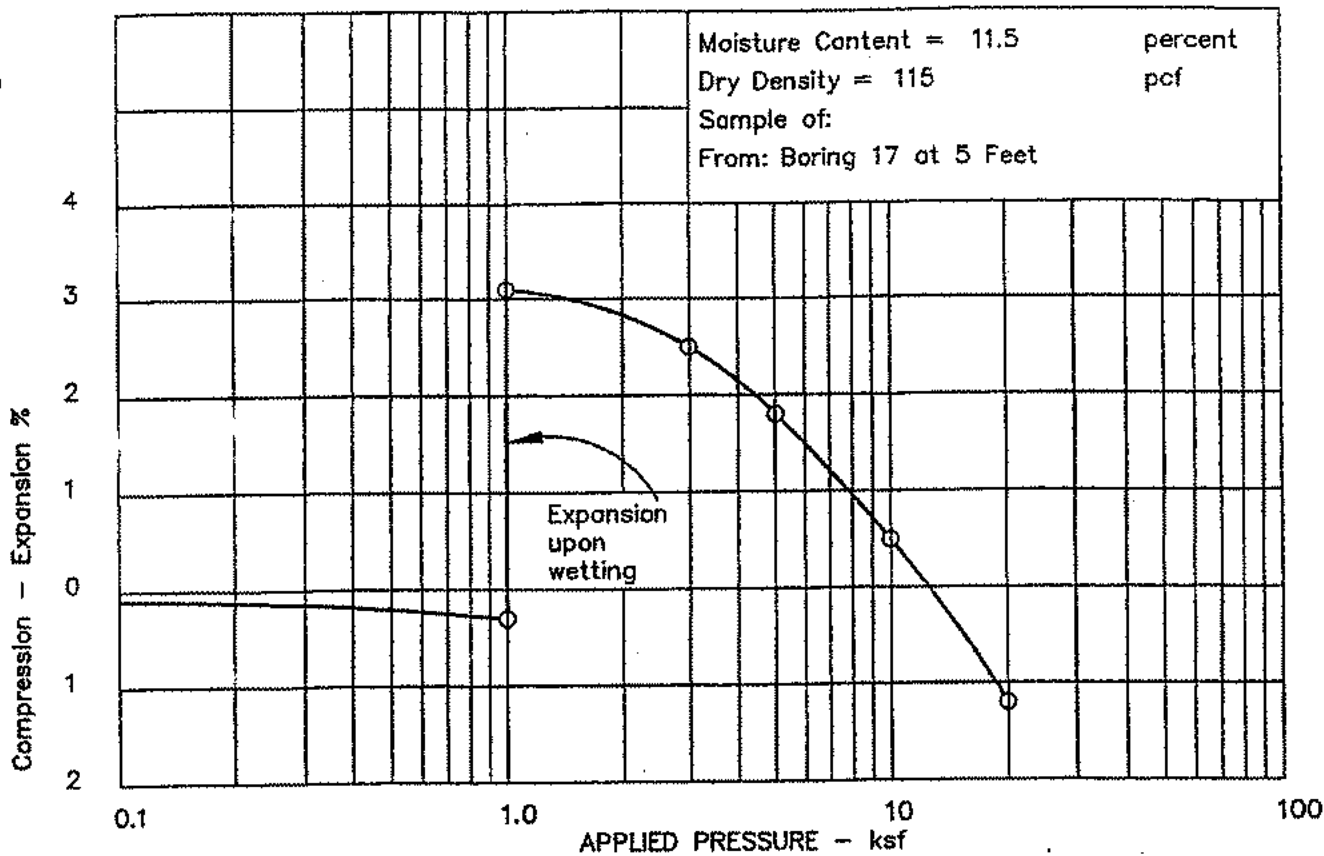
- Exploratory borings were drilled on August 10 and 13, 2001 with a 4-inch diameter continuous flight power auger.
- Locations of exploratory borings were measured approximately by pacing from features shown on the site plan provided.
 - Elevations of exploratory borings were obtained by interpolation between contours on the site plan provided. Logs are drawn to depth.
 - The exploratory boring locations and elevations should be considered accurate only to the degree implied by the method used.
 - The lines between materials shown on the exploratory boring logs represent the approximate boundaries between material types and transitions may be gradual.
 - No free water was encountered in the borings at the time of drilling. Fluctuation in water level may occur with time.
 - Laboratory Testing Results:
 - WC = Water Content (%)
 - DD = Dry Density (pcf)
 - 200 = Percent passing No. 200 sieve.
 - LL = Liquid Limit (%)
 - PI = Plasticity Index (%)











HEPWORTH-PAWLAK GEOTECHNICAL, INC.

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TABLE I
SUMMARY OF LABORATORY TEST RESULTS

BORING	SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	SOIL OR BEDROCK TYPE
	DEPTH (feet)				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
1	2 1/2		3.5	108				31	8		weathered claystone
2	3		19.5	104							sandy clay
	8		14.7	120							weathered claystone
4	3 1/2		5.9	98			57	26	10		very sandy clay
	8 1/2		4.9	119							sandy clay
5	3 1/2		6.2	108			58				sandy clay with gravel
6	3 1/2		12.6	106							sandy clay
7	3		7.9	106							sandy clay
	8		8.2	125							sandy clay
9	2 1/2		7.1	95			87	30	13		sandy clay
	7 1/2		2.5	112			37				clayey sand
10	5		7.9	129							claystone bedrock

Eagles Ridge Ranch
Application for Preliminary Development Approvals

List of Attached Drawings

Attachment F	Sheets	1-2	Preliminary PUD Development Plan - Phase 1
Attachment G	Sheets	1-6	Preliminary Subdivision Plat - Phase 1
Attachment H	Sheets	1-2	Preliminary Subdivision Plan - Phase 1
Attachment I	Sheet	1	Utility Plan - Phase 1
Attachment J	Sheets	1-30	Street Plans, Profiles and Cross-Sections
Attachment K	Sheet	1	Drainage Plan - Phase 1
Attachment L	Sheets	1-2	P.U.D. Master Plan for the Entire Site
Attachment M	Sheet	1	P.U.D. Zone Districts Plan



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Glenwood Springs, Colorado 81601
Phone: 970-945-7988

Fax: 970-945-8454
email: hpgeo@hpgeotech.com

**SUPPLEMENTAL SUBSOIL STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
BLACKHAWK 2, LAKOTA CANYON RANCH
NEW CASTLE, COLORADO**

JOB NO. 101 441-8

OCTOBER 21, 2004

PREPARED FOR:

**LAKOTA CANYON RANCH, LLC
ATTN: JIM COLOMBO
P.O. BOX 230
NEW CASTLE, COLORADO 81647**

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PRELIMINARY DESIGN RECOMMENDATIONS - 4 -

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 DEEP FOUNDATION ALTERNATIVE – DRILLED PIERS - 5 -

 FLOOR SLABS - 7 -

 SURFACE DRAINAGE - 8 -

 PAVEMENT SECTION - 8 -

LIMITATIONS - 9 -

FIGURE 1 - LOCATION OF EXPLORATORY BORINGS

FIGURES 2 and 3 - LOGS OF EXPLORATORY BORINGS

FIGURE 4 - LEGEND AND NOTES

FIGURES 5 through 13 - SWELL-CONSOLIDATION TEST RESULTS

FIGURE 14 – GRADATION TEST RESULTS

TABLE 1- SUMMARY OF LABORATORY TEST RESULTS

PURPOSE AND SCOPE OF STUDY

This report presents the results of a supplemental subsoil study for Blackhawk 2, a proposed residential development to be located in the southwest portion of Lakota Canyon Ranch, New Castle, Colorado. The project site is shown on Figure 1. The purpose of the study was to develop recommendations for foundation design. The study was conducted in accordance with our agreement for geotechnical engineering services to Lakota Canyon Ranch, LLC, dated August 10, 2004. Hepworth-Pawlak Geotechnical, Inc. previously conducted a preliminary geotechnical study for Lakota Canyon Ranch (formerly Eagle Ridge Ranch) and presented our findings in a report dated April 26, 2002, Job No. 101 441.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils and bedrock obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for preliminary design. This report summarizes the data obtained during this study and presents our conclusions and recommendations based on the proposed development and the subsurface conditions encountered.

PROPOSED CONSTRUCTION

The proposed Blackhawk 2 housing development is located in the southwestern portion of the subdivision just north of Castle Valley Boulevard. This portion of the development will consist of 22 single family residences as shown on Figure 1. An extension of Blackhawk Road to the south will provide access to this portion of the subdivision. We assume the residences will be typical of the area and will consist of one to two stories of wood frame construction over crawlspace or basement levels. The development will be serviced with municipal water and sewer systems. For the purpose of our analysis, foundation loadings for the structures were assumed to be relatively light and typical of the proposed type of construction.

- 2 -

If development plans change significantly from those described above, we should be notified to re-evaluate the recommendations contained in this report.

SITE CONDITIONS

The site was a previously irrigated pasture that was vacant at the time of our field exploration. Some grading has occurred on the property and piles of fill were observed on the northeast portion of the site. The property is located near the top of southeast trending ridge and the ground surface slopes moderately to strongly down to the southeast at grades up to about 14%. Vegetation consists of scattered grass and weeds. Scattered cobbles and boulders were exposed on the ground surface. Placement of fill was being performed on Lots 16 and 17 at the time of our field exploration.

FIELD EXPLORATION

The field exploration for the project was conducted on August 27 and 30, 2004. Thirteen exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight auger powered by a truck-mounted Longyear BK-51HD drill rig. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1½ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils and hardness of the bedrock. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figures 2 and 3. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface profiles encountered at the site are shown on Figures 2 and 3. The subsoils generally consist of medium stiff to hard, slightly sandy to sandy, silty clay. Weathered and medium hard to very hard claystone bedrock was encountered

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below the clay soils in Borings 3, 5, 7, 11 and 12 at depths between 1 and 12½ feet. Slightly clayey, silty sand and gravel was encountered between the clay and claystone in Borings 4, 8, 9, 10 and 13. About 3 to 5 feet of on-site clay with gravel fill soils were encountered above the clays in Borings 1 and 2. The materials encountered in the borings are similar to the soils encountered at other areas of the subdivision. The clay soils and weathered claystone can possess an expansion potential when wetted.

Laboratory testing performed on samples obtained during the field exploration included natural moisture content, density, Atterberg limits and gradation analyses. Swell-consolidation testing was performed on relatively undisturbed drive samples of the clay subsoils and weathered claystone. The swell-consolidation test results, presented on Figures 5 through 13, indicate low compressibility under relatively light surcharge loading and a low to very high expansion potential when wetted under a constant light surcharge. Swelling pressures between 1,500 and 18,000 psf were indicated for the clay soils and between 8,000 and over 20,000 psf for the weathered claystone bedrock. Atterberg limits testing indicated medium plasticity for the clay soils. The laboratory testing is summarized in Table 1.

No free water was encountered in the borings at time of drilling and the subsoils were slightly moist to moist. The claystone bedrock was slightly moist.

FOUNDATION BEARING CONDITIONS

Bearing conditions are variable but typically are expected to consist of potentially expansive clays and claystone bedrock. The subsurface materials have a variable expansion potential when wetted and mitigation will likely be needed. The granular soils encountered in several of the borings should not be expansive. Surface runoff, landscape irrigation, and utility leakage are possible sources of water which could cause wetting below buildings. The recommendations presented below are suitable for planning and preliminary design, but site specific studies should be conducted at the time of individual lot development.

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PRELIMINARY DESIGN RECOMMENDATIONS

FOUNDATIONS

Possible foundation designs consist of spread footings placed on the natural subsoils or bedrock materials with a minimum dead load pressure in low expansion potential areas (generally east of Blackhawk Road) and footings placed on a minimum 3 foot depth of compacted road base in moderate expansion potential areas. In areas where the clays or claystone bedrock has a high expansion potential (generally west of Blackhawk Road), a deep foundation system, such as drilled or helical piers will be needed to mitigate the expansion potential.

The following design and construction criteria are presented for a spread footing foundation system.

- 1) Footings placed on the undisturbed natural soils or bedrock with low to no expansion potential can be designed for an allowable bearing pressure in the range of 2,000 psf to 3,000 psf. The footings should also be designed for a minimum dead load pressure of 600 to 1,000 psf if the soils have a low expansion potential. In order to satisfy the minimum dead load pressure under lightly loaded areas, it may be necessary to concentrate loads by using a pad and grade beam system. Wall-on-grade construction is not recommended to achieve the minimum dead load.
- 2) In moderate expansion potential soils, spread footings should be placed on a minimum depth of 3 feet of road base and designed for an allowable soil bearing pressure of 2,500 psf. The road base should be compacted to at least 98% of standard Proctor density at near optimum moisture content. The fill should extend to at least 3 feet beyond the edges of the footing. It appears that structural fill to mitigate moderate expansive soils will be needed in most of the development.
- 3) Based on experience, we expect settlement/heave of footings designed and constructed as discussed below will be up to 1 inch. There could be some additional movement on the order of 1 to 1½ inches if the bearing materials were to become wet.

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- 4) The footings should typically have a minimum width of 16 inches for continuous footings and 24 inches for isolated pads.
- 5) Continuous foundation walls should be reinforced top and bottom to span local anomalies and limit the risk of differential movement. One method of analysis is to design the foundation wall to span an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist a lateral earth pressure corresponding to an equivalent fluid unit weight of 65 pcf for the on-site clay soils and 50 pcf for imported granular fill.
- 6) Exterior footings and footings beneath unheated areas should be provided with adequate soil cover above their bearing elevation for frost protection. Placement of foundations at least 36 inches below the exterior grade is typically used in this area.
- 6) Prior to the footing construction, existing fill and any loose or disturbed soils and rock should be removed and the footing bearing level extended down to competent bearing materials.
- 7) A representative of the geotechnical engineer should observe all footing excavations prior to concrete placement to evaluate bearing conditions.

DEEP FOUNDATION ALTERNATIVE - DRILLED PIERS

We recommend straight-shaft piers drilled into the claystone bedrock be used to support foundations in the highly expansive clay and bedrock areas, generally west of Blackhawk Road. The design and construction criteria presented below should be observed for a straight-shaft pier foundation system:

- 1) The piers should be designed for an allowable end bearing pressure of 25,000 psf and an allowable skin friction value of 2,500 psf for that portion of the pier in bedrock.
- 2) Piers should also be designed for a minimum dead load pressure of 15,000 psf based on pier end area only. If the minimum dead load requirement cannot be achieved, the pier length should be extended beyond the minimum penetration to make up the dead load deficit. This can be

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- accomplished by assuming one-half the allowable skin friction value given above acts in the direction to resist uplift.
- 3) Uplift on the piers from structural loading can be resisted by utilizing 75% of the allowable skin friction value plus an allowance for the weight of the pier.
 - 4) Piers should penetrate at least three pier diameters into the bedrock. A minimum penetration of 5 feet into the bedrock and a minimum pier length of 20 feet are recommended.
 - 5) Piers should be designed to resist lateral loads assuming a modulus of horizontal subgrade reaction of 25 tcf in the clay soils and a modulus of horizontal subgrade reaction of 50 tcf in the bedrock. The modulus values given are for a long, 1 foot wide pier and must be corrected for pier size.
 - 6) Piers should be reinforced their full length with one #5 reinforcing rod for each 16 inches of pier perimeter to resist tension created by the swelling materials.
 - 7) A 4-inch void form should be provided beneath grade beams to prevent the swelling soil and rock from exerting uplift forces on the grade beams and to concentrate pier loadings. A void form should also be provided beneath pier caps.
 - 8) Concrete utilized in the piers should be a fluid mix with sufficient slump so that concrete will fill the void between the reinforcing steel and the pier hole. We recommend a slump in the range of 7 to 9 inches.
 - 9) Pier holes should be properly cleaned prior to the placement of concrete. Cobbles were encountered in the soil above bedrock in some of the borings which could cause caving and difficult drilling. The drilling contractor should mobilize equipment of sufficient size to effectively drill through possible coarse soils and cemented bedrock zones.
 - 10) Although free water was not encountered in the borings drilled at the site, some seepage in the pier holes may be encountered during drilling. Dewatering equipment may be required to reduce water infiltration into the pier holes. If water cannot be removed prior to placement of concrete, the tremie method should be used after the hole has been cleaned of spoil. In no case should concrete be placed in more than 3 inches of water.

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- 11) Care should be taken to prevent the forming of mushroom-shaped tops of the piers which can increase uplift force on the piers from swelling soils.
- 12) A representative of the geotechnical engineer should observe pier drilling operations on a full-time basis.

FLOOR SLABS

The clay soils and weathered claystone typically possess an expansion potential and slab heave could occur if the subgrade materials were to become wet. The expansion potential may be less in areas with gravels. Garage slab-on-grade construction may be used provided precautions are taken to limit potential movement and the risk of distress to the building is accepted by the owner. A positive way to reduce the risk of slab movement, which is commonly used in the area, is to construct structurally supported floors over crawlspace. Subexcavation of the clay soils to at least 3 feet and replacement with compacted road base may also be used to help reduce the heave potential.

To reduce the effects of some differential movement, nonstructural floor slabs should be separated from all bearing walls and columns with expansion joints which allow unrestrained vertical movement. Interior non-bearing partitions resting on floor slabs should be provided with a slip joint at the bottom of the wall so that, if the slab moves, the movement cannot be transmitted to the upper structure. This detail is also important for wallboards, stairways and door frames. Slip joints which will allow at least 1½ inches of vertical movement are recommended. Floor slab control joints should be used to reduce damage due to shrinkage cracking. Slab reinforcement and control joints should be established by the designer based on experience and the intended slab use.

Required fill beneath slabs can consist of the on-site silty sand and gravel soils or a suitable imported granular material (rock as ¾-inch road base), excluding topsoil and oversized rocks. The fill should be spread in thin horizontal lifts, adjusted to at or above optimum moisture content, and compacted to at least 95% of the maximum standard Proctor density. All vegetation, topsoil and loose or disturbed soil should be removed prior to fill placement.

The above recommendations will not prevent slab heave if the expansive soils underlying slabs-on-grade become wet. However, the recommendations will reduce the effects if

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slab heave occurs. All plumbing lines should be pressure tested before backfilling to help reduce the potential for wetting.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the individual residences have been completed:

- 1) Excessive wetting or drying of the foundation excavations and underslab areas should be avoided during construction. Drying could increase the expansion potential of the clay soils.
- 2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement areas and to at least 90% of the maximum standard Proctor density in landscape areas. Free-draining wall backfill should be capped with about 2 to 3 feet of the on-site finer graded soils to reduce surface water infiltration.
- 3) The ground surface surrounding the exterior of the building should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 12 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas.
- 4) Roof downspouts and drains should discharge well beyond the limits of all backfill.
- 5) Irrigation sprinkler heads and landscaping which requires regular heavy irrigation, such as sod, should be located at least 5 feet from foundation walls.

PAVEMENT SECTION

The subsoils encountered at the site consist mainly of medium plasticity sandy silty clay. These soils are considered relatively poor subgrade for support of pavement and will be frost susceptible. Based on the soil conditions encountered in the borings and laboratory test result, a subgrade Hveem 'R' value of 10 was used in the pavement design. Based on traffic volumes previously provided for the subdivision, an 18 kip equivalent daily load application (EDLA) of 10 was used in the design. Based on our experience, a Regional Factor of 1.75 and a serviceability index of 2.0, we recommend the minimum pavement

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section thickness consist of 3 inches of asphalt on 9 inches of base course. As an alternative, with at least 8 inches of subbase, the pavement section can consist of 3 inches of asphalt on 4 inches of base course. The civil engineer should review our traffic loading conditions.

The asphalt should be a batched hot mix, approved by the engineer and placed and compacted to project specifications. The base course should meet CDOT Class 6 specifications and the subbase should meet Class 2 specifications. All base course and required subgrade fill should be compacted to at least 95% of the maximum standard Proctor density at a moisture content at to slightly above optimum.

Required fill to establish design subgrade level can consist of the on-site granular soils or suitable imported granular soils approved by the geotechnical engineer. Prior to fill placement, the subgrade should be scarified to a depth of 8 inches, adjusted to slightly above optimum moisture content and compacted to at least 95% of standard Proctor density. The subgrade should be proofrolled with a heavily loaded rubber tired vehicle prior to construction of the pavement section. Areas that deflect excessively should be corrected as needed to provide a stable subgrade for pavement materials. The subgrade improvements and placement and compaction of base and asphalt should be monitored on a regular basis by a representative of the geotechnical engineer.

LIMITATIONS

This study has been conducted in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on Figure 1, the proposed type of construction and our experience in the area. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions

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encountered during construction appear to be different from those described in this report, we should be notified at once so re-evaluation of the recommendations may be made.

This report has been prepared for the exclusive use by our client for planning and preliminary design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation, conduct additional evaluations and review and monitor the implementation of our recommendations. Significant design changes may require additional analysis or modifications of the recommendations presented herein. We recommend site specific subsoil studies and testing of structural fill be conducted by a geotechnical engineer.

Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

Jordy Z. Adamson, Jr.
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Reviewed by:

D

Daniel E. Hardin, P.E.



JZA/ksw

cc: Colorado River Engineering, Inc. - Attn: Brian Brown

**SUBSOIL STUDY
FOR FOUNDATION DESIGN
PROPOSED RECREATION CENTER
LAKOTA CANYON RANCH
CLUBHOUSE DRIVE
NEW CASTLE, COLORADO**

JOB NO. 101 441-9

SEPTEMBER 16, 2005

PREPARED FOR:

**LAKOTA CANYON RANCH, LLC
ATTN: JIM COLOMBO
151 CLUBHOUSE DRIVE
NEW CASTLE, COLORADO 81647**

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PURPOSE AND SCOPE OF STUDY

This report presents the results of a subsoil study for a proposed recreation center to be located on the west side of Clubhouse Drive near the main entrance to Lakota Canyon Ranch, New Castle, Colorado. The project site is shown on Figure 1. The purpose of the study was to develop recommendations for the foundation design. The study was conducted in accordance with our agreement for geotechnical engineering services to Lakota Canyon Ranch, LLC dated March 23, 2005. Hepworth-Pawlak Geotechnical, Inc. previously conducted a preliminary geotechnical study for development of Lakota Canyon Ranch (formerly Eagles Ridge Ranch) and presented our findings in a report dated April 26, 2002, Job No. 101 441.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for foundation types, depths and allowable pressures for the proposed building foundation. This report summarizes the data obtained during this study and presents our conclusions, design recommendations and other geotechnical engineering considerations based on the proposed construction and the subsurface conditions encountered.

PROPOSED CONSTRUCTION

The proposed recreation building will be a single story log structure with vaulted ceilings. There will be a 1,500 square foot mechanical room beneath the western portion of the building. Ground floor is proposed to be slab-on-grade. A below grade swimming pool will be located to the north of the recreation building. Grading for the structures is assumed to be relatively minor with cut depths between about 3 to 12 feet. An access driveway to the recreation building will be located to the south of the building. There will be parking area further to the south. We assume relatively light foundation loadings, typical of the proposed type of construction.

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If building loadings, location or grading plans change significantly from those described above, we should be notified to re-evaluate the recommendations contained in this report.

SITE CONDITIONS

The site is occupied by existing trailers (Sales Office) on the south side of the site. There is fill on the lot from overlot grading as part of the subdivision development. The ground surface on the site generally slopes strongly down to the south at grades of about 12% to 14%. There is about 8 to 10 feet of elevation difference across the area of the proposed recreation building. Vegetation generally consists of grass and weeds. Scattered cobbles and boulders are exposed on the ground surface.

FIELD EXPLORATION

The field exploration for the project was conducted on March 24 and 25, 2005. Ten exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight augers powered by a truck-mounted CME-45B drill rig. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1½ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figure 2. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface conditions encountered at the site are shown on Figure 2. The subsoils consist of about 2½ to 5½ feet of sandy clayey gravel fill overlying medium

stiff to hard, sandy silty clay with scattered gravel. Relatively dense, slightly clayey silty sand and gravel with cobbles and boulders was encountered beneath the clays at depths between 2½ and 17½ feet. Drilling in the dense granular soils with auger equipment was difficult due to the cobbles and boulders and drilling refusal was encountered in the deposit.

Laboratory testing performed on samples obtained from the borings included natural moisture content and density, Atterberg limits and finer than sand size gradation analyses. Results of swell-consolidation testing performed on relatively undisturbed drive samples, presented on Figures 4 through 6, generally indicate low to moderate compressibility under conditions of loading and wetting. The sample from Boring 2 at 10 feet showed a low expansion potential when wetted under a constant light surcharge. The laboratory testing is summarized in Table 1.

No free water was encountered in the borings at the time of drilling or when checked 1 day later and the subsoils were slightly moist to moist.

FOUNDATION BEARING CONDITIONS

The natural clay soils encountered in the area typically have variable settlement/heave potential when wetted. In general, the heave potential appears to be minor and does not warrant mitigation. Conventional spread footings should be adequate for support of the proposed building. The settlement/heave potential of the subgrade should be further evaluated at the time of construction.

DESIGN RECOMMENDATIONS

FOUNDATIONS

Considering the subsurface conditions encountered in the exploratory borings and the nature of the proposed construction, we recommend the building be founded with spread footings bearing on the natural subsoils.

The design and construction criteria presented below should be observed for a spread footing foundation system.

- 1) Footings placed on the undisturbed natural subsoils should be designed for an allowable bearing pressure of 2,000 psf. Based on experience, we expect settlement of footings designed and constructed as discussed in this section will be about 1 inch or less. There could be some additional movement up to about 1 inch if the bearing soils become wetted. The additional movement would likely be differential between wetted and non-wetted areas.
- 2) The footings should have a minimum width of 16 inches for continuous walls and 2 feet for isolated pads.
- 3) Exterior footings and footings beneath unheated areas should be provided with adequate soil cover above their bearing elevation for frost protection. Placement of foundations at least 36 inches below exterior grade is typically used in this area.
- 4) Continuous foundation walls should be reinforced top and bottom to span local anomalies such as by assuming an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist lateral earth pressures as discussed in the "Foundation and Retaining Walls" section of this report.
- 5) All existing fill, topsoil and any loose or disturbed soils should be removed and the footing bearing level extended down to competent bearing soils.
- 6) A representative of the geotechnical engineer should observe all footing excavations prior to concrete placement to evaluate bearing conditions.

FOUNDATION AND RETAINING WALLS

Foundation walls and retaining structures which are laterally supported and can be expected to undergo only a slight amount of deflection should be designed for a lateral earth pressure computed on the basis of an equivalent fluid unit weight of at least 55 pcf for backfill consisting of the on-site soils. Cantilevered retaining structures which are separate from the building and can be expected to deflect sufficiently to mobilize the full active earth pressure condition should be designed for a lateral earth pressure computed

on the basis of an equivalent fluid unit weight of at least 45 pcf for backfill consisting of the on-site soils. Backfill should not contain vegetation, topsoil or oversized rock.

All foundation and retaining structures should be designed for appropriate hydrostatic and surcharge pressures such as adjacent footings, traffic, construction materials and equipment. The pressures recommended above assume drained conditions behind the walls and a horizontal backfill surface. The buildup of water behind a wall or an upward sloping backfill surface will increase the lateral pressure imposed on a foundation wall or retaining structure. An underdrain should be provided to prevent hydrostatic pressure buildup behind walls.

Backfill should be placed in uniform lifts and compacted to at least 90% of the maximum standard Proctor density at a moisture content near optimum. Backfill in pavement and walkway areas should be compacted to at least 95% of the maximum standard Proctor density. Care should be taken not to overcompact the backfill or use large equipment near the wall, since this could cause excessive lateral pressure on the wall. Some settlement of deep foundation wall backfill should be expected, even if the material is placed correctly, and could result in distress to facilities constructed on the backfill.

The lateral resistance of foundation or retaining wall footings will be a combination of the sliding resistance of the footing on the foundation materials and passive earth pressure against the side of the footing. Resistance to sliding at the bottoms of the footings can be calculated based on a coefficient of friction of 0.40. Passive pressure of compacted backfill against the sides of the footings can be calculated using an equivalent fluid unit weight of 350 pcf. The coefficient of friction and passive pressure values recommended above assume ultimate soil strength. Suitable factors of safety should be included in the design to limit the strain which will occur at the ultimate strength, particularly in the case of passive resistance. Fill placed against the sides of the footings to resist lateral loads should be compacted to at least 95% of the maximum standard Proctor density at a moisture content near optimum.

FLOOR SLABS

The natural on-site soils, exclusive of topsoil, are suitable to support lightly loaded slab-on-grade construction. The clay soils have variable settlement/heave potential which should be further evaluated at the time of construction. To reduce the effects of some differential movement, floor slabs should be separated from all bearing walls and columns with expansion joints which allow unrestrained vertical movement. Floor slab control joints should be used to reduce damage due to shrinkage cracking. The requirements for joint spacing and slab reinforcement should be established by the designer based on experience and the intended slab use. A minimum 4 inch layer of free-draining gravel should be placed beneath basement level slabs to facilitate drainage. This material should consist of minus 2 inch aggregate with at least 50% retained on the No. 4 sieve and less than 2% passing the No. 200 sieve.

All fill materials for support of floor slabs should be compacted to at least 95% of maximum standard Proctor density at a moisture content near optimum. Required fill can consist of the on-site soils or suitable imported granular fill devoid of vegetation, topsoil and oversized rock.

UNDERDRAIN SYSTEM

Although free water was not encountered during our exploration, it has been our experience in the area and where clay soils are present that local perched groundwater can develop during times of heavy precipitation or seasonal runoff. Frozen ground during spring runoff can create a perched condition. We recommend below-grade construction, such as retaining walls, crawlspace and basement areas, be protected from wetting and hydrostatic pressure buildup by an underdrain system.

The drains should consist of drainpipe placed in the bottom of the wall backfill surrounded above the invert level with free-draining granular material. The drain should be placed at each level of excavation and at least 1 foot below lowest adjacent finish grade and sloped at a minimum 1% to a suitable gravity outlet. Free-draining granular material used in the underdrain system should contain less than 2% passing the No. 200

sieve, less than 50% passing the No. 4 sieve and have a maximum size of 2 inches. The drain gravel backfill should be at least 1½ feet deep.

SWIMMING POOL

Proper design and construction of below ground pool structures is critical to their satisfactory performance. All swimming pools have a tendency to leak. A small amount of leakage can cause the subsurface materials to become wet and result in pool or slab movement which widens existing cracks and introduces more water into the subsurface materials, thereby compounding the problem.

Based on these considerations and the subsurface conditions encountered, we suggest the following precautions be taken in the design and construction of the proposed reinforced concrete pool:

- 1) The pool should be designed and constructed to withstand differential movements without cracking.
- 2) The natural material below the pool should be removed to a depth of at least 3 feet and replaced with a nonexpansive, material with limited permeability such as ¾-inch road base (CDOT Class 6) compacted to at least 95% of the maximum standard Proctor density near optimum moisture content.
- 3) An impervious membrane, such as sprayed on rubberized asphalt or PVC, should be provided on the walls of the excavation and on the top of the compacted fill to help prevent moisture from migrating into the subsurface materials.
- 4) A minimum 4-inch free-draining gravel layer should be placed beneath the pool bottom slab. The drainage layer under the pool should slope to a drain line or collection point from which water can be removed by pumping or gravity outlet. The drains should consist of perforated pipe surrounded by a minimum of 12 inches of free-draining granular material. The free-draining granular material should consist of minus 2-inch aggregate with less than 2% passing the No. 200 sieve and less than 50% passing the No. 4 sieve.

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- 5) A tight joint should be provided between the pool and deck so water splashed from the pool will not infiltrate the subsurface materials. Cracks which develop on the deck while the pool is in service should be caulked to prevent water infiltration.
- 6) The pool deck and adjoining area should be sloped to minimize ponding and infiltration of moisture into the subsurface materials. Lawn irrigation should be kept to a minimum adjacent the pool. Landscape not requiring irrigation should be considered as an alternative to lawn in areas surrounding the pool.

These precautions will not eliminate the risk of damage to the pool and deck due to wetting of the subgrade materials, but should reduce the chances of the subsurface materials becoming wetted and subsequent movement due to changes in moisture content.

SITE GRADING

The risk of construction-induced slope instability at the site appears low provided cut and fill depths are limited. We assume the cut depths for the basement level will not exceed one level, about 10 to 12 feet. Fills should be limited to about 8 to 10 feet deep. Embankment fills should be compacted to at least 95% of the maximum standard Proctor density near optimum moisture content. Prior to fill placement, the subgrade should be carefully prepared by removing all vegetation and topsoil and compacting to at least 95% of the maximum standard Proctor density. Permanent unretained cut and fill slopes should be graded at 2 horizontal to 1 vertical or flatter and protected against erosion by revegetation or other means. The risk of slope instability will be increased if seepage is encountered in cuts and flatter slopes may be necessary. If seepage is encountered in permanent cuts, an investigation should be conducted to determine if the seepage will adversely affect the cut stability.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the building has been completed:

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- 1) Inundation of the foundation excavations and underslab areas should be avoided during construction.
- 2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement and slab areas and to at least 90% of the maximum standard Proctor density in landscape areas.
- 3) The ground surface surrounding the exterior of the building should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 6 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas. Free-draining wall backfill should be capped with about 2 feet of the on-site finer graded soils to reduce surface water infiltration.
- 4) Roof downspouts and drains should discharge well beyond the limits of all backfill.
- 5) Irrigation sprinkler heads and landscaping which requires regular heavy irrigation, such as sod, should be located at least 5 feet from foundation walls.

PAVEMENT DESIGN

The subsoils encountered at the site consist mainly of medium plasticity sandy silty clay. These soils are considered relatively poor subgrade for support of pavement and will be frost susceptible. Based on the soil conditions encountered in the borings and laboratory test result, a subgrade Hveem 'R' value of 10 was used in the pavement design. Based on traffic volumes previously provided for the subdivision, an 18 kip equivalent daily load application (EDLA) of 10 was used in the design. Based on our experience, a Regional Factor of 1.75 and a serviceability index of 2.0, we recommend the minimum pavement section thickness consist of 3 inches of asphalt on 9 inches of base course. As an alternative, with at least 8 inches of subbase, the pavement section can consist of 3 inches of asphalt on 4 inches of base course. The civil engineer should review our assumed traffic loading conditions.

The asphalt should be a batched hot mix, approved by the engineer and placed and compacted to project specifications. The base course should meet CDOT Class 6

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specifications and the subbase should meet Class 2 specifications. All base course and required subgrade fill should be compacted to at least 95% of the maximum standard Proctor density at a moisture content at to slightly above optimum.

Required fill to establish design subgrade level can consist of the on-site granular soils or suitable imported granular soils approved by the geotechnical engineer. Prior to fill placement, the subgrade should be scarified to a depth of 8 inches, adjusted to slightly above optimum moisture content and compacted to at least 95% of standard Proctor density. The subgrade should be proofrolled with a heavily loaded rubber tired vehicle prior to construction of the pavement section. Areas that deflect excessively should be corrected as needed to provide a stable subgrade for pavement materials. The subgrade improvements and placement and compaction of base and asphalt should be monitored on a regular basis by a representative of the geotechnical engineer.

LIMITATIONS

This study has been conducted in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on Figure 1, the proposed type of construction and our experience in the area. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions encountered during construction appear different from those described in this report, we should be notified so that re-evaluation of the recommendations may be made.

This report has been prepared for the exclusive use by our client for design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation and field services during construction to review and monitor the implementation of our recommendations, and to

- 11 -

verify that the recommendations have been appropriately interpreted. Significant design changes may require additional analysis or modifications to the recommendations presented herein. We recommend on-site observation of excavations and foundation bearing strata and testing of structural fill by a representative of the geotechnical engineer.

Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.

Jordy Z. Adamson, Jr., P.E.



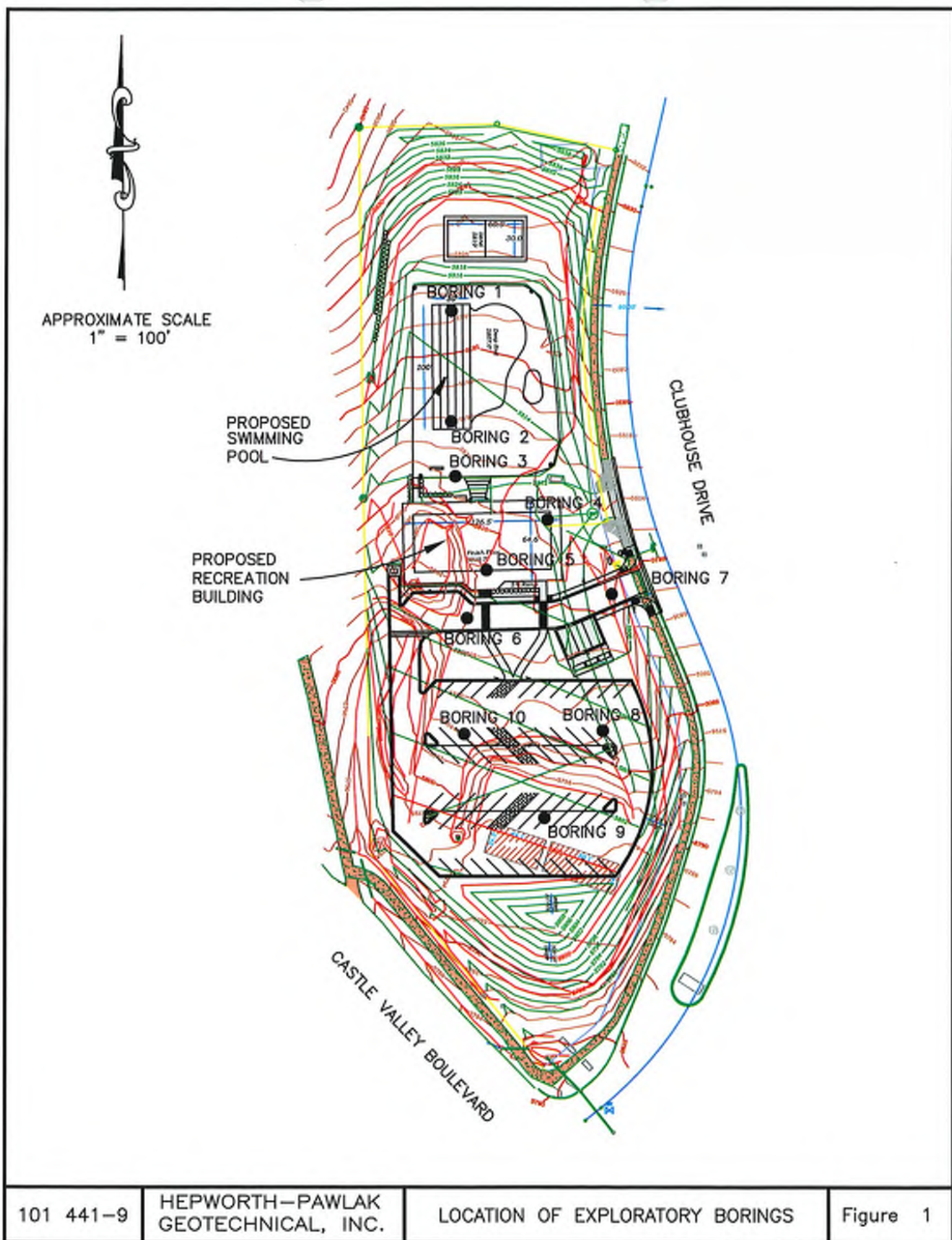
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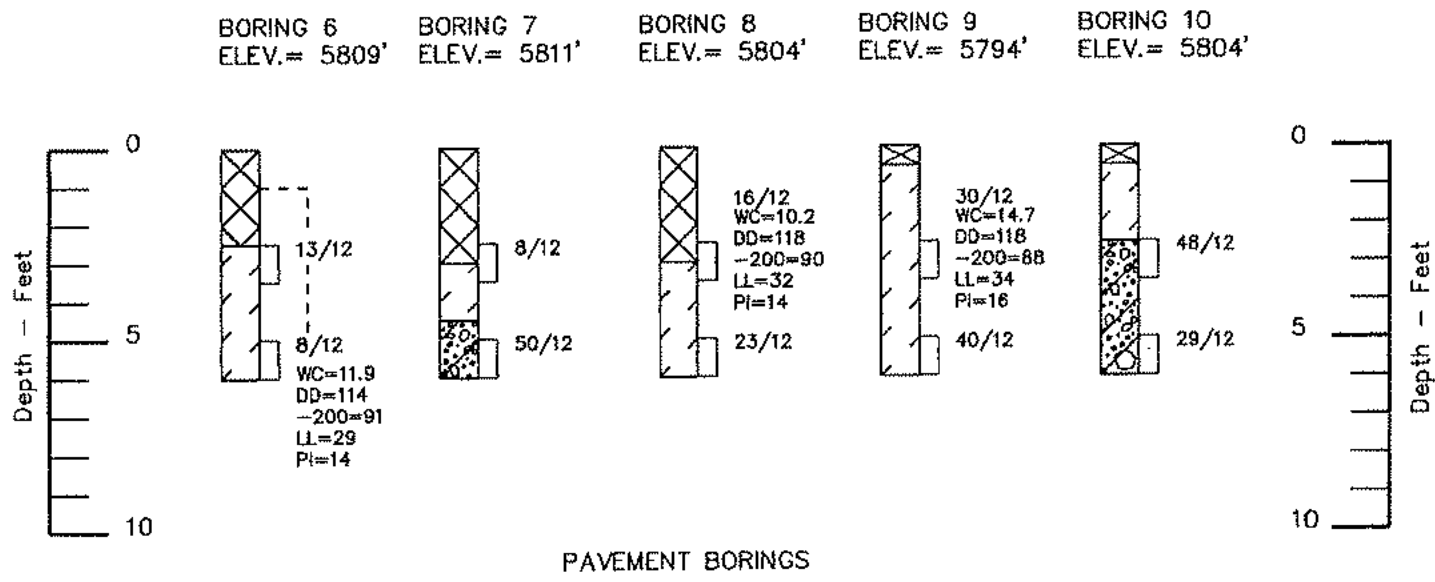
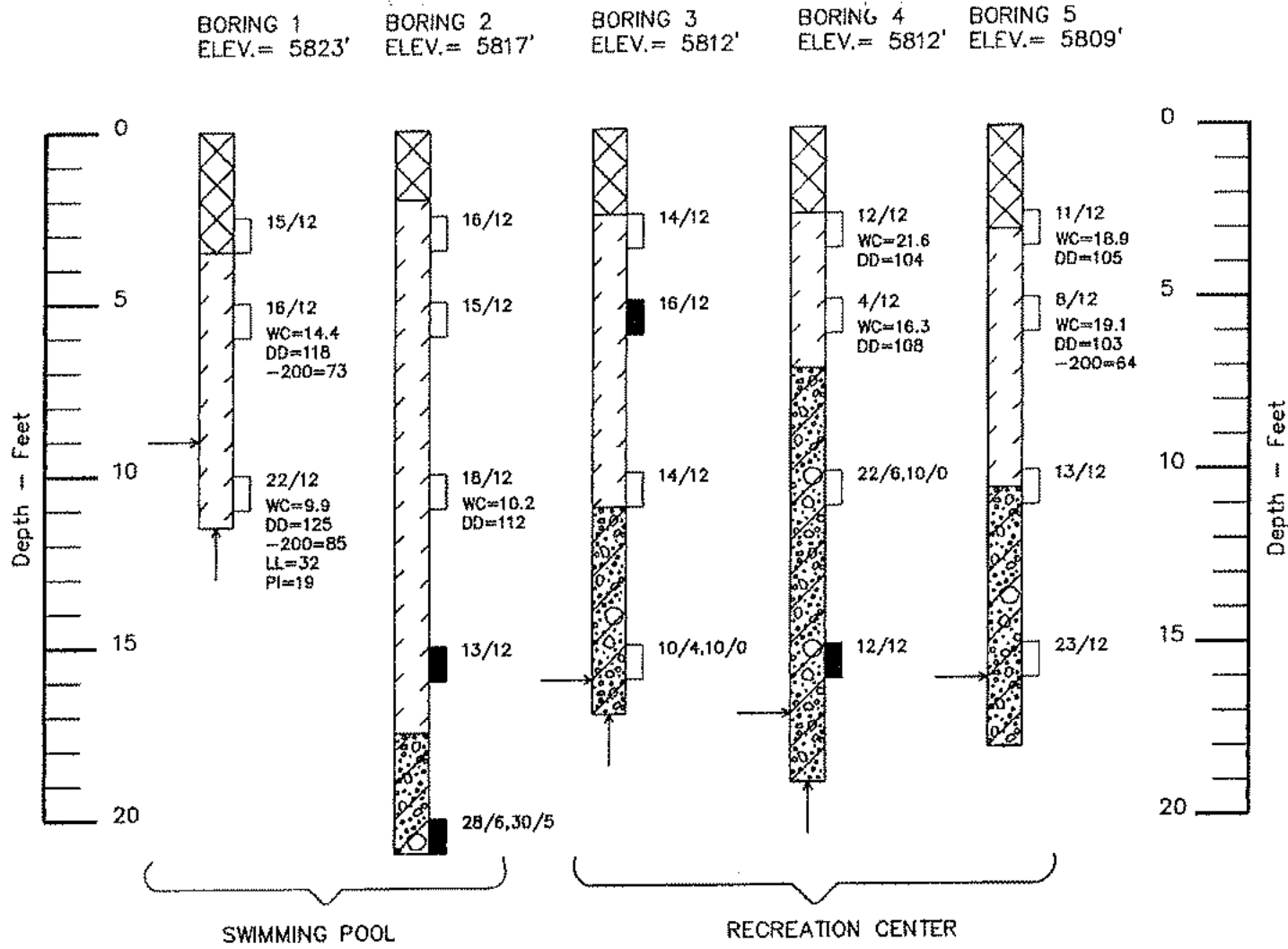
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Daniel E. Hardin, P.E.

JZA/ksw

cc: Colorado River Engineering - Attn: Chris Manera





Note: Explanation of symbols is shown on Figure 3.

LEGEND:



FILL; sandy clayey gravel with scattered cobbles, medium dense, slightly moist to moist, brown, roadway gravel in Borings 9 and 10.



CLAY (CL); silty, sandy to very sandy, scattered gravel, medium stiff to hard, slightly moist to moist, brown, low to medium plasticity.



SAND AND GRAVEL (SM-GM); silty, slightly clayey, with cobbles and boulders, medium dense to dense, slightly moist, reddish brown, fragments of siltstone/sandstone.



Relatively undisturbed drive sample; 2-inch I.D. California liner sample.



Drive sample; standard penetration test (SPT), 1 3/8 inch I.D. split spoon sample, ASTM D-1586.

15/12

Drive sample blow count; indicates that 15 blows of a 140 pound hammer falling 30 inches were required to drive the California or SPT sampler 12 inches.



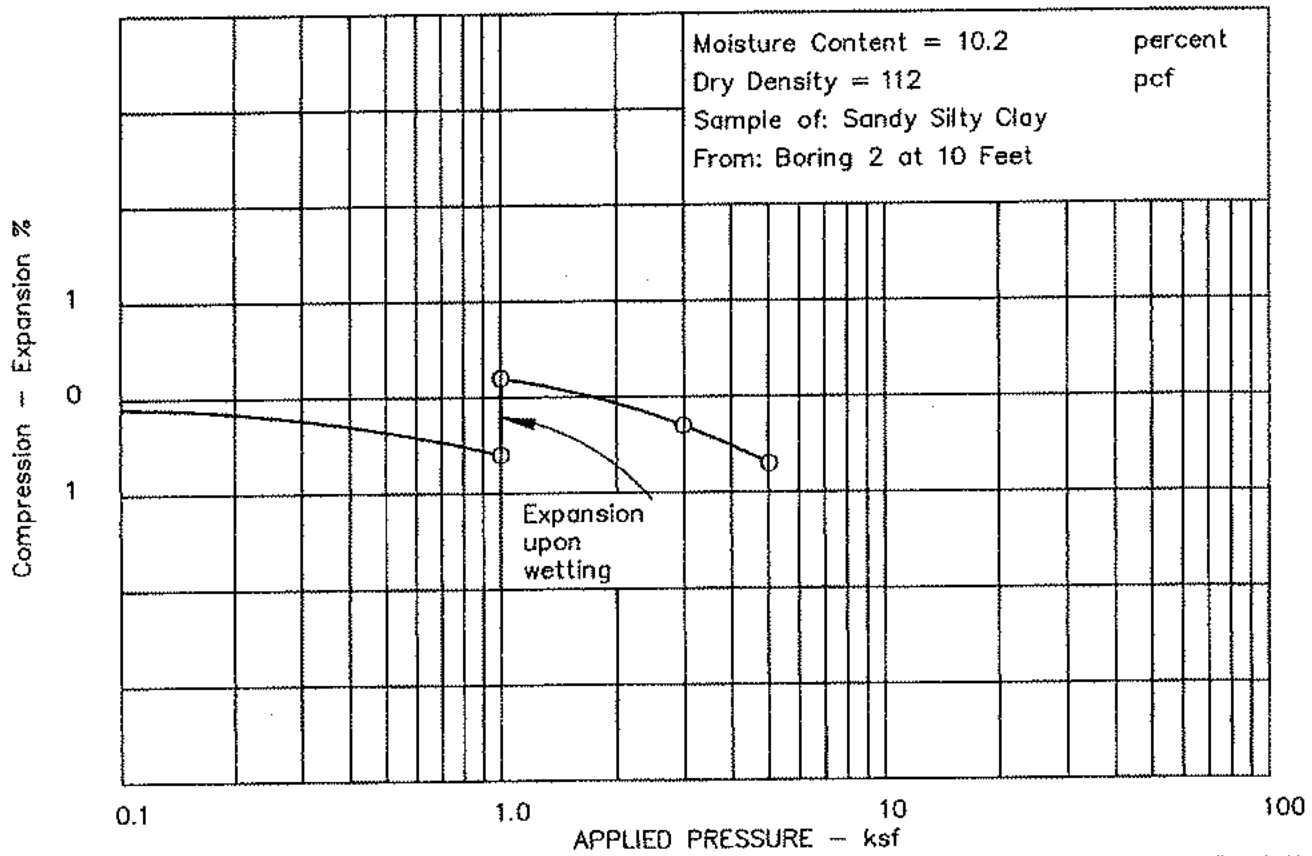
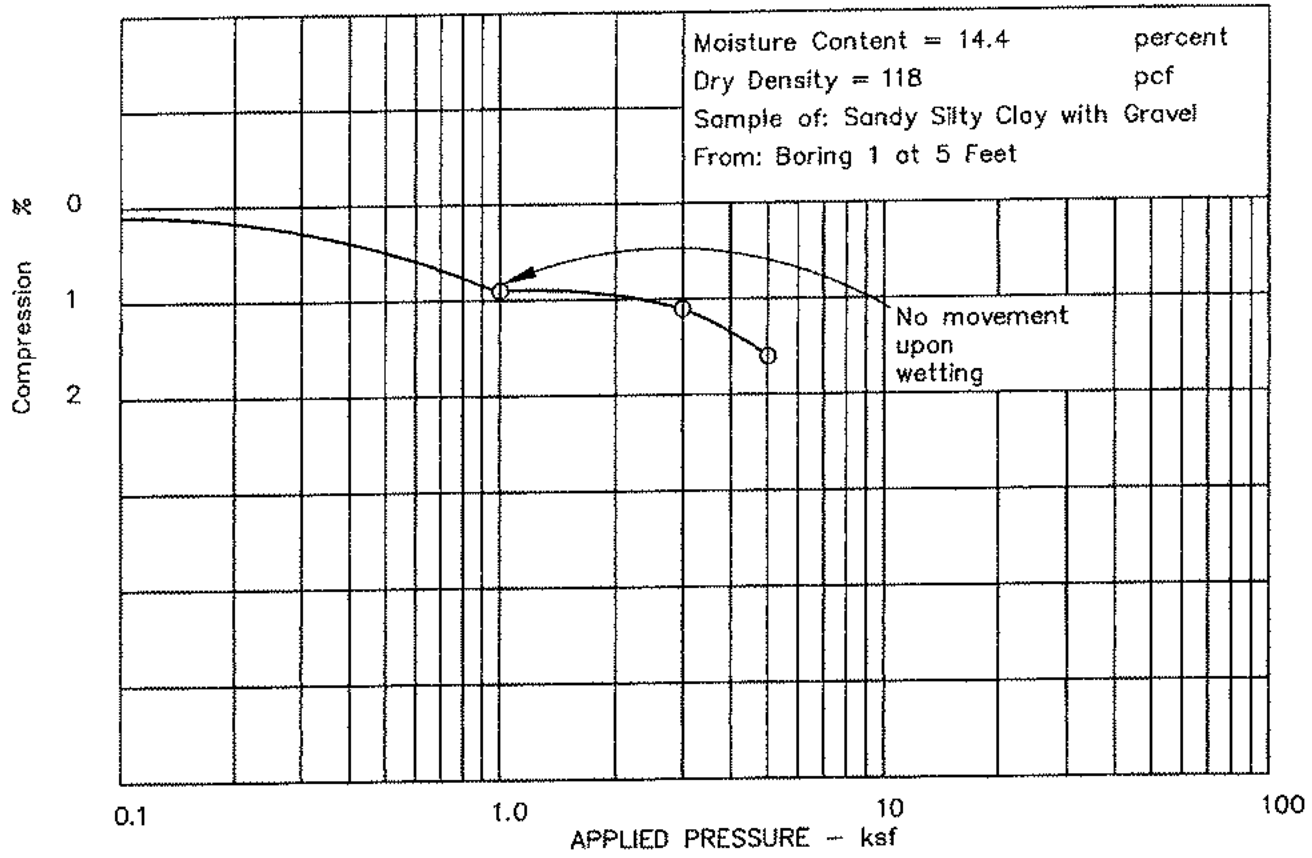
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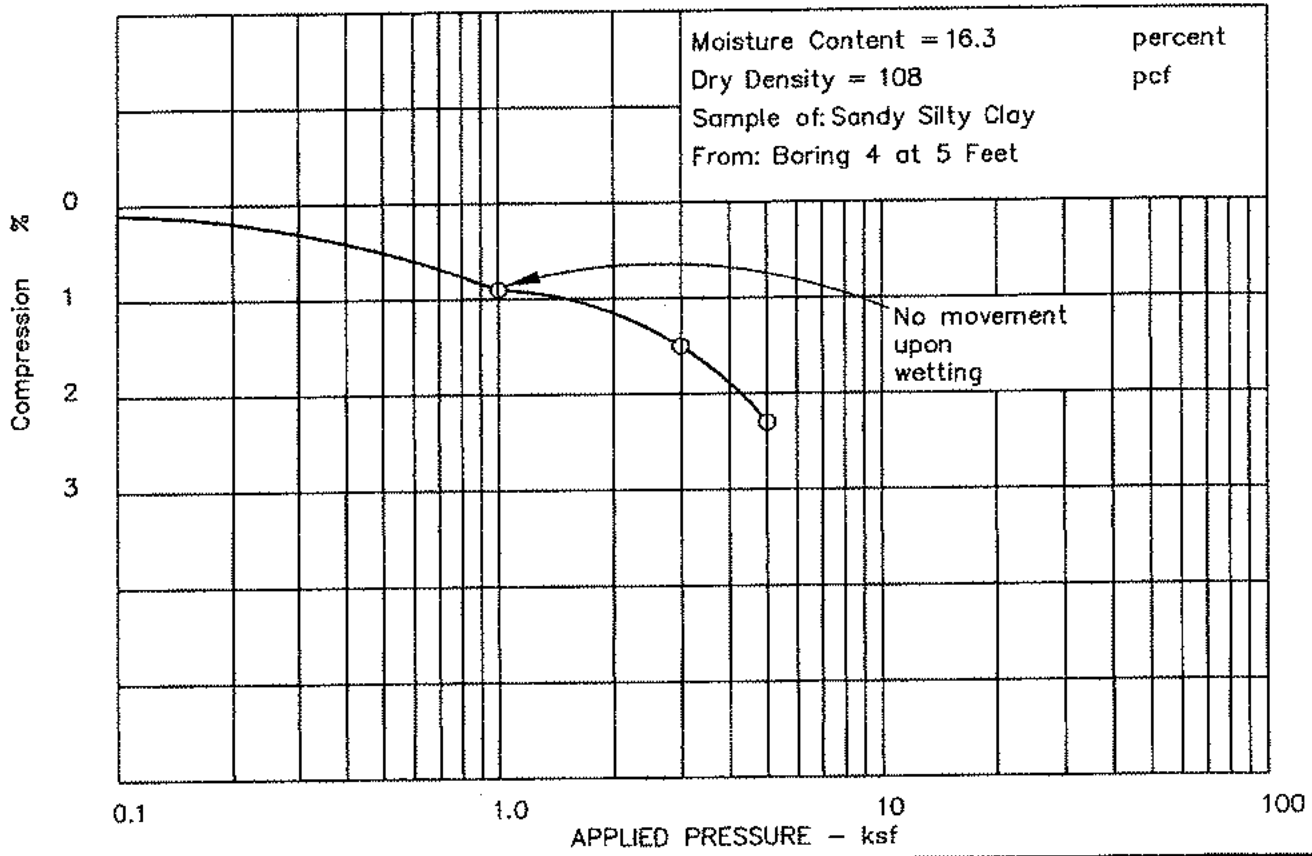
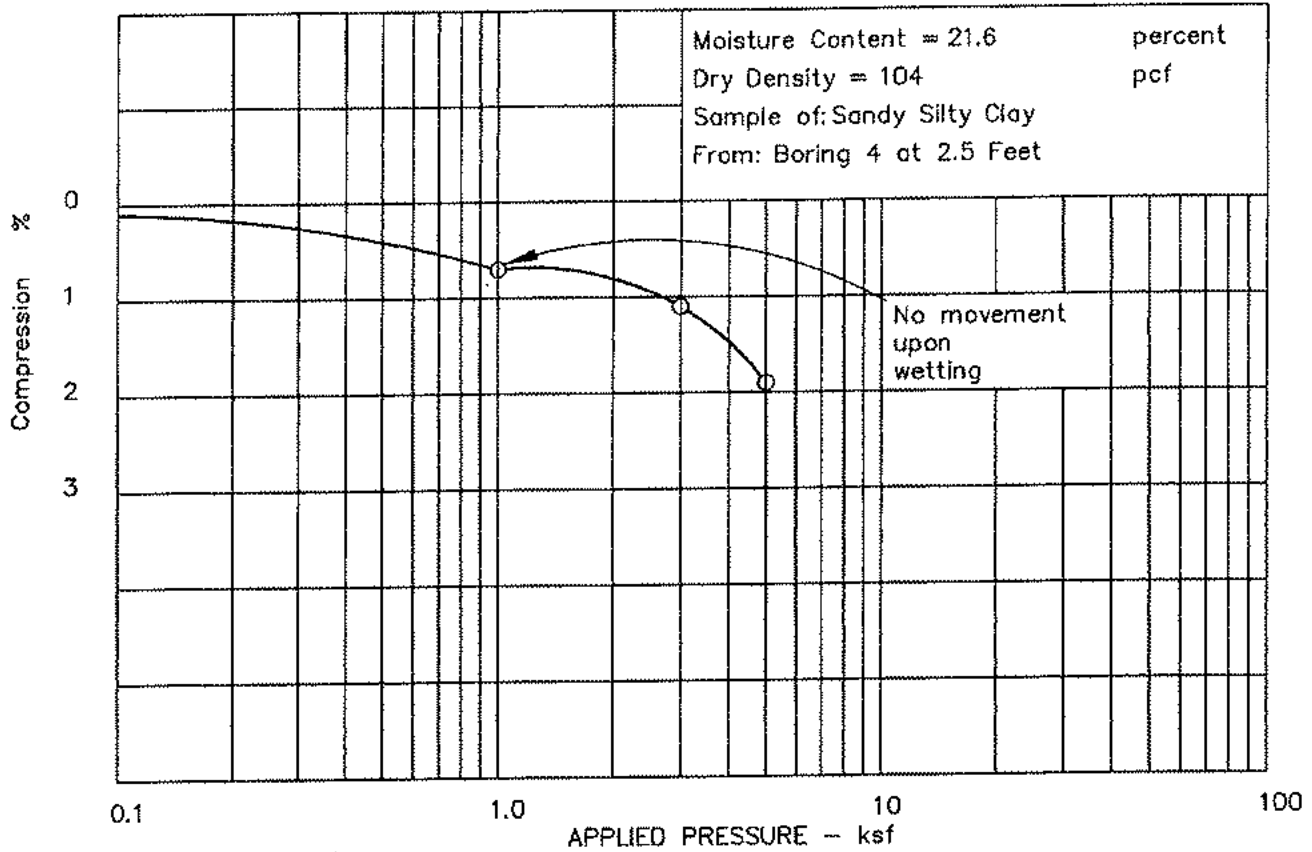


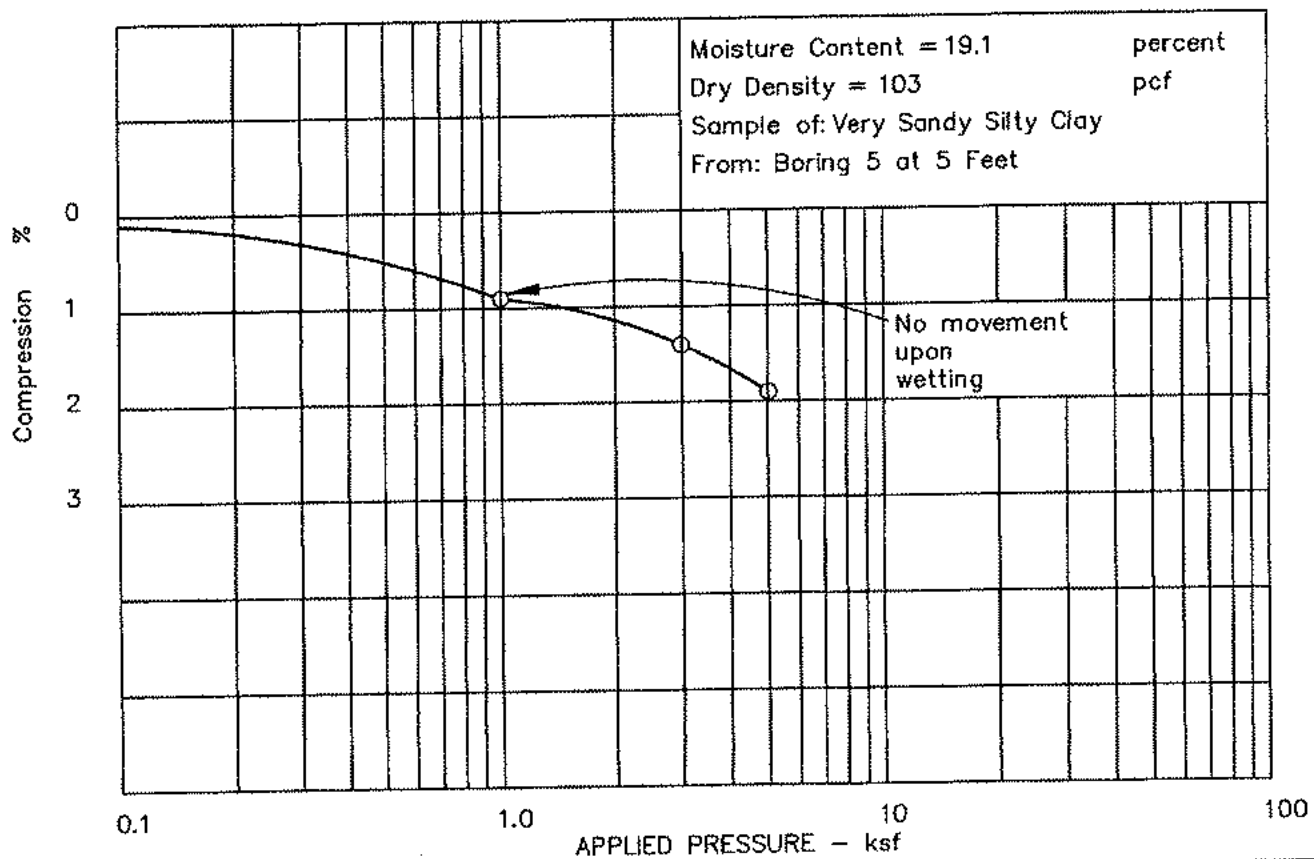
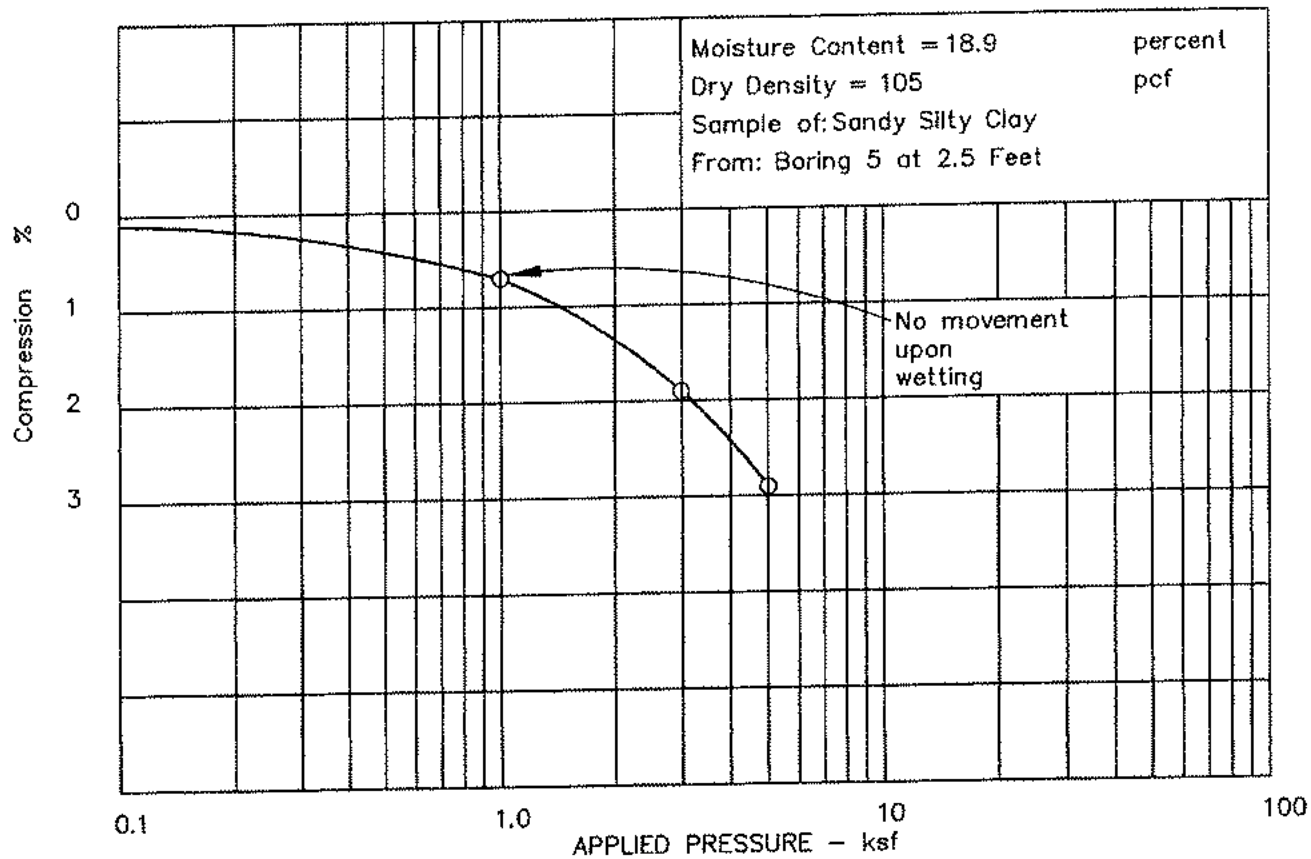
Depth at which boring had caved when measured on March 25, 2005.

NOTES:

1. Exploratory borings were drilled on March 24 and 25, 2005 with 4-inch diameter continuous flight power auger.
2. Locations of exploratory borings were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of exploratory borings were obtained by interpolation between contours shown on the site plan provided. Logs are drawn to depth.
4. The exploratory boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between materials shown on the exploratory boring logs represent the approximate boundaries between material types and transitions may be gradual.
6. No free water was encountered in the borings at the time of drilling or when checked 1 day later. Fluctuation in water level may occur with time.
7. Laboratory Testing Results:
 - WC = Water Content (%)
 - DD = Dry Density (pcf)
 - +4 = Percent retained on the No. 4 sieve
 - 200 = Percent passing No. 200 sieve
 - LL = Liquid Limit (%)
 - PI = Plasticity Index (%)







HEPWORTH-PAWLAK GEOTECHNICAL, INC.
 TABLE 1
 SUMMARY OF LABORATORY TEST RESULTS

Job No. 101 441-9

BORING	SAMPLE LOCATION DEPTH (ft)	NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	SOIL OR BEDROCK TYPE
				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
1	5	14.4	118			73				Sandy Silty Clay with Gravel
	10	9.9	125			85	32	19		Sandy Silty Clay
2	10	10.2	112							Sandy Silty Clay
4	2½	21.6	104							Sandy Silty Clay
	5	16.3	108							Sandy Silty Clay
5	2½	18.9	105							Sandy Silty Clay
	5	19.1	103			64				Very Sandy Silty Clay
6	5	11.9	114			91	29	14		Slightly Sandy Silty Clay
8	2½	10.2	118			90	32	14		Slightly Sandy Silty Clay
9	2½	14.7	118			88	34	16		Sandy Silty Clay



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**SUPPLEMENTAL SUBSOIL STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
BLACKHAWK 2, LAKOTA CANYON RANCH
NEW CASTLE, COLORADO**

JOB NO. 101 441-8

OCTOBER 21, 2004

PREPARED FOR:

**LAKOTA CANYON RANCH, LLC
ATTN: JIM COLOMBO
P.O. BOX 230
NEW CASTLE, COLORADO 81647**

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PURPOSE AND SCOPE OF STUDY

This report presents the results of a supplemental subsoil study for Blackhawk 2, a proposed residential development to be located in the southwest portion of Lakota Canyon Ranch, New Castle, Colorado. The project site is shown on Figure 1. The purpose of the study was to develop recommendations for foundation design. The study was conducted in accordance with our agreement for geotechnical engineering services to Lakota Canyon Ranch, LLC, dated August 10, 2004. Hepworth-Pawlak Geotechnical, Inc. previously conducted a preliminary geotechnical study for Lakota Canyon Ranch (formerly Eagle Ridge Ranch) and presented our findings in a report dated April 26, 2002, Job No. 101 441.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils and bedrock obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for preliminary design. This report summarizes the data obtained during this study and presents our conclusions and recommendations based on the proposed development and the subsurface conditions encountered.

PROPOSED CONSTRUCTION

The proposed Blackhawk 2 housing development is located in the southwestern portion of the subdivision just north of Castle Valley Boulevard. This portion of the development will consist of 22 single family residences as shown on Figure 1. An extension of Blackhawk Road to the south will provide access to this portion of the subdivision. We assume the residences will be typical of the area and will consist of one to two stories of wood frame construction over crawlspace or basement levels. The development will be serviced with municipal water and sewer systems. For the purpose of our analysis, foundation loadings for the structures were assumed to be relatively light and typical of the proposed type of construction.

- 2 -

If development plans change significantly from those described above, we should be notified to re-evaluate the recommendations contained in this report.

SITE CONDITIONS

The site was a previously irrigated pasture that was vacant at the time of our field exploration. Some grading has occurred on the property and piles of fill were observed on the northeast portion of the site. The property is located near the top of southeast trending ridge and the ground surface slopes moderately to strongly down to the southeast at grades up to about 14%. Vegetation consists of scattered grass and weeds. Scattered cobbles and boulders were exposed on the ground surface. Placement of fill was being performed on Lots 16 and 17 at the time of our field exploration.

FIELD EXPLORATION

The field exploration for the project was conducted on August 27 and 30, 2004. Thirteen exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. The borings were advanced with 4 inch diameter continuous flight auger powered by a truck-mounted Longyear BK-51HD drill rig. The borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the subsoils were taken with 1½ inch and 2 inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140 pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils and hardness of the bedrock. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figures 2 and 3. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface profiles encountered at the site are shown on Figures 2 and 3. The subsoils generally consist of medium stiff to hard, slightly sandy to sandy, silty clay. Weathered and medium hard to very hard claystone bedrock was encountered

- 3 -

below the clay soils in Borings 3, 5, 7, 11 and 12 at depths between 1 and 12½ feet. Slightly clayey, silty sand and gravel was encountered between the clay and claystone in Borings 4, 8, 9, 10 and 13. About 3 to 5 feet of on-site clay with gravel fill soils were encountered above the clays in Borings 1 and 2. The materials encountered in the borings are similar to the soils encountered at other areas of the subdivision. The clay soils and weathered claystone can possess an expansion potential when wetted.

Laboratory testing performed on samples obtained during the field exploration included natural moisture content, density, Atterberg limits and gradation analyses. Swell-consolidation testing was performed on relatively undisturbed drive samples of the clay subsoils and weathered claystone. The swell-consolidation test results, presented on Figures 5 through 13, indicate low compressibility under relatively light surcharge loading and a low to very high expansion potential when wetted under a constant light surcharge. Swelling pressures between 1,500 and 18,000 psf were indicated for the clay soils and between 8,000 and over 20,000 psf for the weathered claystone bedrock. Atterberg limits testing indicated medium plasticity for the clay soils. The laboratory testing is summarized in Table 1.

No free water was encountered in the borings at time of drilling and the subsoils were slightly moist to moist. The claystone bedrock was slightly moist.

FOUNDATION BEARING CONDITIONS

Bearing conditions are variable but typically are expected to consist of potentially expansive clays and claystone bedrock. The subsurface materials have a variable expansion potential when wetted and mitigation will likely be needed. The granular soils encountered in several of the borings should not be expansive. Surface runoff, landscape irrigation, and utility leakage are possible sources of water which could cause wetting below buildings. The recommendations presented below are suitable for planning and preliminary design, but site specific studies should be conducted at the time of individual lot development.

PRELIMINARY DESIGN RECOMMENDATIONS

FOUNDATIONS

Possible foundation designs consist of spread footings placed on the natural subsoils or bedrock materials with a minimum dead load pressure in low expansion potential areas (generally east of Blackhawk Road) and footings placed on a minimum 3 foot depth of compacted road base in moderate expansion potential areas. In areas where the clays or claystone bedrock has a high expansion potential (generally west of Blackhawk Road), a deep foundation system, such as drilled or helical piers will be needed to mitigate the expansion potential.

The following design and construction criteria are presented for a spread footing foundation system.

- 1) Footings placed on the undisturbed natural soils or bedrock with low to no expansion potential can be designed for an allowable bearing pressure in the range of 2,000 psf to 3,000 psf. The footings should also be designed for a minimum dead load pressure of 600 to 1,000 psf if the soils have a low expansion potential. In order to satisfy the minimum dead load pressure under lightly loaded areas, it may be necessary to concentrate loads by using a pad and grade beam system. Wall-on-grade construction is not recommended to achieve the minimum dead load.
- 2) In moderate expansion potential soils, spread footings should be placed on a minimum depth of 3 feet of road base and designed for an allowable soil bearing pressure of 2,500 psf. The road base should be compacted to at least 98% of standard Proctor density at near optimum moisture content. The fill should extend to at least 3 feet beyond the edges of the footing. It appears that structural fill to mitigate moderate expansive soils will be needed in most of the development.
- 3) Based on experience, we expect settlement/heave of footings designed and constructed as discussed below will be up to 1 inch. There could be some additional movement on the order of 1 to 1½ inches if the bearing materials were to become wet.

- 5 -

- 4) The footings should typically have a minimum width of 16 inches for continuous footings and 24 inches for isolated pads.
- 5) Continuous foundation walls should be reinforced top and bottom to span local anomalies and limit the risk of differential movement. One method of analysis is to design the foundation wall to span an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist a lateral earth pressure corresponding to an equivalent fluid unit weight of 65 pcf for the on-site clay soils and 50 pcf for imported granular fill.
- 6) Exterior footings and footings beneath unheated areas should be provided with adequate soil cover above their bearing elevation for frost protection. Placement of foundations at least 36 inches below the exterior grade is typically used in this area.
- 6) Prior to the footing construction, existing fill and any loose or disturbed soils and rock should be removed and the footing bearing level extended down to competent bearing materials.
- 7) A representative of the geotechnical engineer should observe all footing excavations prior to concrete placement to evaluate bearing conditions.

DEEP FOUNDATION ALTERNATIVE - DRILLED PIERS

We recommend straight-shaft piers drilled into the claystone bedrock be used to support foundations in the highly expansive clay and bedrock areas, generally west of Blackhawk Road.. The design and construction criteria presented below should be observed for a straight-shaft pier foundation system:

- 1) The piers should be designed for an allowable end bearing pressure of 25,000 psf and an allowable skin friction value of 2,500 psf for that portion of the pier in bedrock.
- 2) Piers should also be designed for a minimum dead load pressure of 15,000 psf based on pier end area only. If the minimum dead load requirement cannot be achieved, the pier length should be extended beyond the minimum penetration to make up the dead load deficit. This can be

- 6 -

- accomplished by assuming one-half the allowable skin friction value given above acts in the direction to resist uplift.
- 3) Uplift on the piers from structural loading can be resisted by utilizing 75% of the allowable skin friction value plus an allowance for the weight of the pier.
 - 4) Piers should penetrate at least three pier diameters into the bedrock. A minimum penetration of 5 feet into the bedrock and a minimum pier length of 20 feet are recommended.
 - 5) Piers should be designed to resist lateral loads assuming a modulus of horizontal subgrade reaction of 25 tcf in the clay soils and a modulus of horizontal subgrade reaction of 50 tcf in the bedrock. The modulus values given are for a long, 1 foot wide pier and must be corrected for pier size.
 - 6) Piers should be reinforced their full length with one #5 reinforcing rod for each 16 inches of pier perimeter to resist tension created by the swelling materials.
 - 7) A 4-inch void form should be provided beneath grade beams to prevent the swelling soil and rock from exerting uplift forces on the grade beams and to concentrate pier loadings. A void form should also be provided beneath pier caps.
 - 8) Concrete utilized in the piers should be a fluid mix with sufficient slump so that concrete will fill the void between the reinforcing steel and the pier hole. We recommend a slump in the range of 7 to 9 inches.
 - 9) Pier holes should be properly cleaned prior to the placement of concrete. Cobbles were encountered in the soil above bedrock in some of the borings which could cause caving and difficult drilling. The drilling contractor should mobilize equipment of sufficient size to effectively drill through possible coarse soils and cemented bedrock zones.
 - 10) Although free water was not encountered in the borings drilled at the site, some seepage in the pier holes may be encountered during drilling. Dewatering equipment may be required to reduce water infiltration into the pier holes. If water cannot be removed prior to placement of concrete, the tremie method should be used after the hole has been cleaned of spoil. In no case should concrete be placed in more than 3 inches of water.

- 7 -

- 11) Care should be taken to prevent the forming of mushroom-shaped tops of the piers which can increase uplift force on the piers from swelling soils.
- 12) A representative of the geotechnical engineer should observe pier drilling operations on a full-time basis.

FLOOR SLABS

The clay soils and weathered claystone typically possess an expansion potential and slab heave could occur if the subgrade materials were to become wet. The expansion potential may be less in areas with gravels. Garage slab-on-grade construction may be used provided precautions are taken to limit potential movement and the risk of distress to the building is accepted by the owner. A positive way to reduce the risk of slab movement, which is commonly used in the area, is to construct structurally supported floors over crawlspace. Subexcavation of the clay soils to at least 3 feet and replacement with compacted road base may also be used to help reduce the heave potential.

To reduce the effects of some differential movement, nonstructural floor slabs should be separated from all bearing walls and columns with expansion joints which allow unrestrained vertical movement. Interior non-bearing partitions resting on floor slabs should be provided with a slip joint at the bottom of the wall so that, if the slab moves, the movement cannot be transmitted to the upper structure. This detail is also important for wallboards, stairways and door frames. Slip joints which will allow at least 1½ inches of vertical movement are recommended. Floor slab control joints should be used to reduce damage due to shrinkage cracking. Slab reinforcement and control joints should be established by the designer based on experience and the intended slab use.

Required fill beneath slabs can consist of the on-site silty sand and gravel soils or a suitable imported granular material (rock as ¾-inch road base), excluding topsoil and oversized rocks. The fill should be spread in thin horizontal lifts, adjusted to at or above optimum moisture content, and compacted to at least 95% of the maximum standard Proctor density. All vegetation, topsoil and loose or disturbed soil should be removed prior to fill placement.

The above recommendations will not prevent slab heave if the expansive soils underlying slabs-on-grade become wet. However, the recommendations will reduce the effects if

- 8 -

slab heave occurs. All plumbing lines should be pressure tested before backfilling to help reduce the potential for wetting.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the individual residences have been completed:

- 1) Excessive wetting or drying of the foundation excavations and underslab areas should be avoided during construction. Drying could increase the expansion potential of the clay soils.
- 2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement areas and to at least 90% of the maximum standard Proctor density in landscape areas. Free-draining wall backfill should be capped with about 2 to 3 feet of the on-site finer graded soils to reduce surface water infiltration.
- 3) The ground surface surrounding the exterior of the building should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 12 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas.
- 4) Roof downspouts and drains should discharge well beyond the limits of all backfill.
- 5) Irrigation sprinkler heads and landscaping which requires regular heavy irrigation, such as sod, should be located at least 5 feet from foundation walls.

PAVEMENT SECTION

The subsoils encountered at the site consist mainly of medium plasticity sandy silty clay. These soils are considered relatively poor subgrade for support of pavement and will be frost susceptible. Based on the soil conditions encountered in the borings and laboratory test result, a subgrade Hveem 'R' value of 10 was used in the pavement design. Based on traffic volumes previously provided for the subdivision, an 18 kip equivalent daily load application (EDLA) of 10 was used in the design. Based on our experience, a Regional Factor of 1.75 and a serviceability index of 2.0, we recommend the minimum pavement

- 9 -

section thickness consist of 3 inches of asphalt on 9 inches of base course. As an alternative, with at least 8 inches of subbase, the pavement section can consist of 3 inches of asphalt on 4 inches of base course. The civil engineer should review our traffic loading conditions.

The asphalt should be a batched hot mix, approved by the engineer and placed and compacted to project specifications. The base course should meet CDOT Class 6 specifications and the subbase should meet Class 2 specifications. All base course and required subgrade fill should be compacted to at least 95% of the maximum standard Proctor density at a moisture content at to slightly above optimum.

Required fill to establish design subgrade level can consist of the on-site granular soils or suitable imported granular soils approved by the geotechnical engineer. Prior to fill placement, the subgrade should be scarified to a depth of 8 inches, adjusted to slightly above optimum moisture content and compacted to at least 95% of standard Proctor density. The subgrade should be proofrolled with a heavily loaded rubber tired vehicle prior to construction of the pavement section. Areas that deflect excessively should be corrected as needed to provide a stable subgrade for pavement materials. The subgrade improvements and placement and compaction of base and asphalt should be monitored on a regular basis by a representative of the geotechnical engineer.

LIMITATIONS

This study has been conducted in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on Figure 1, the proposed type of construction and our experience in the area. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions

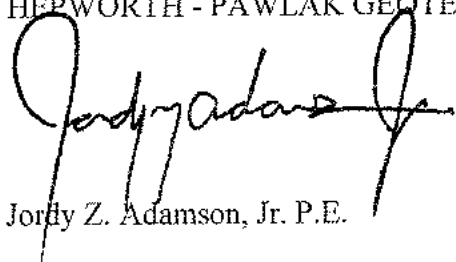
- 10 -

encountered during construction appear to be different from those described in this report, we should be notified at once so re-evaluation of the recommendations may be made.

This report has been prepared for the exclusive use by our client for planning and preliminary design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation, conduct additional evaluations and review and monitor the implementation of our recommendations. Significant design changes may require additional analysis or modifications of the recommendations presented herein. We recommend site specific subsoil studies and testing of structural fill be conducted by a geotechnical engineer.



Respectfully Submitted,

HEPWORTH - PAWLAK GEOTECHNICAL, INC.



Jordy Z. Adamson, Jr. P.E.

Reviewed by:

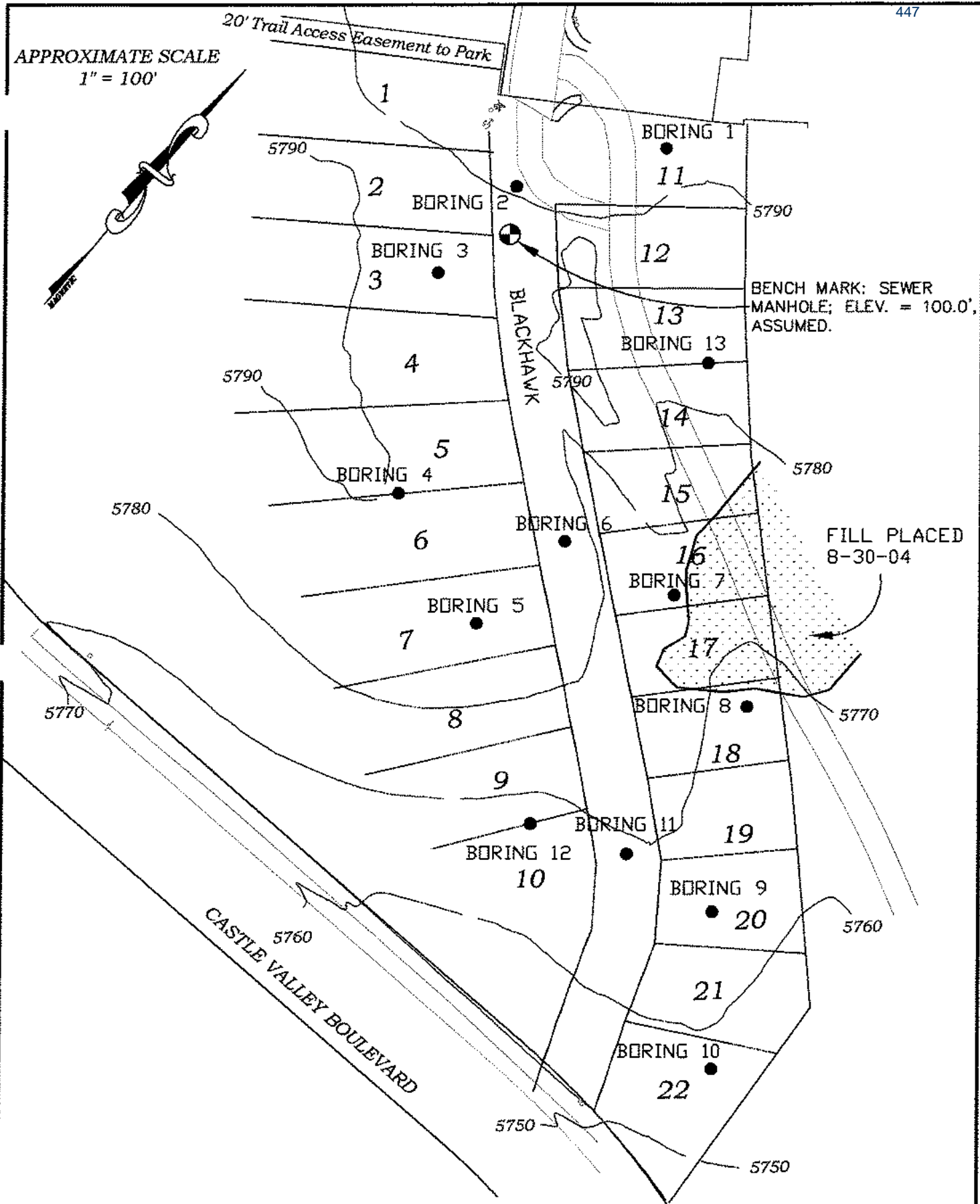
Daniel E. Hardin, P.E.

JZA/ksw

cc: Colorado River Engineering, Inc. – Attn: Brian Brown

APPROXIMATE SCALE
1" = 100'

20' Trail Access Easement to Park



101 441-8

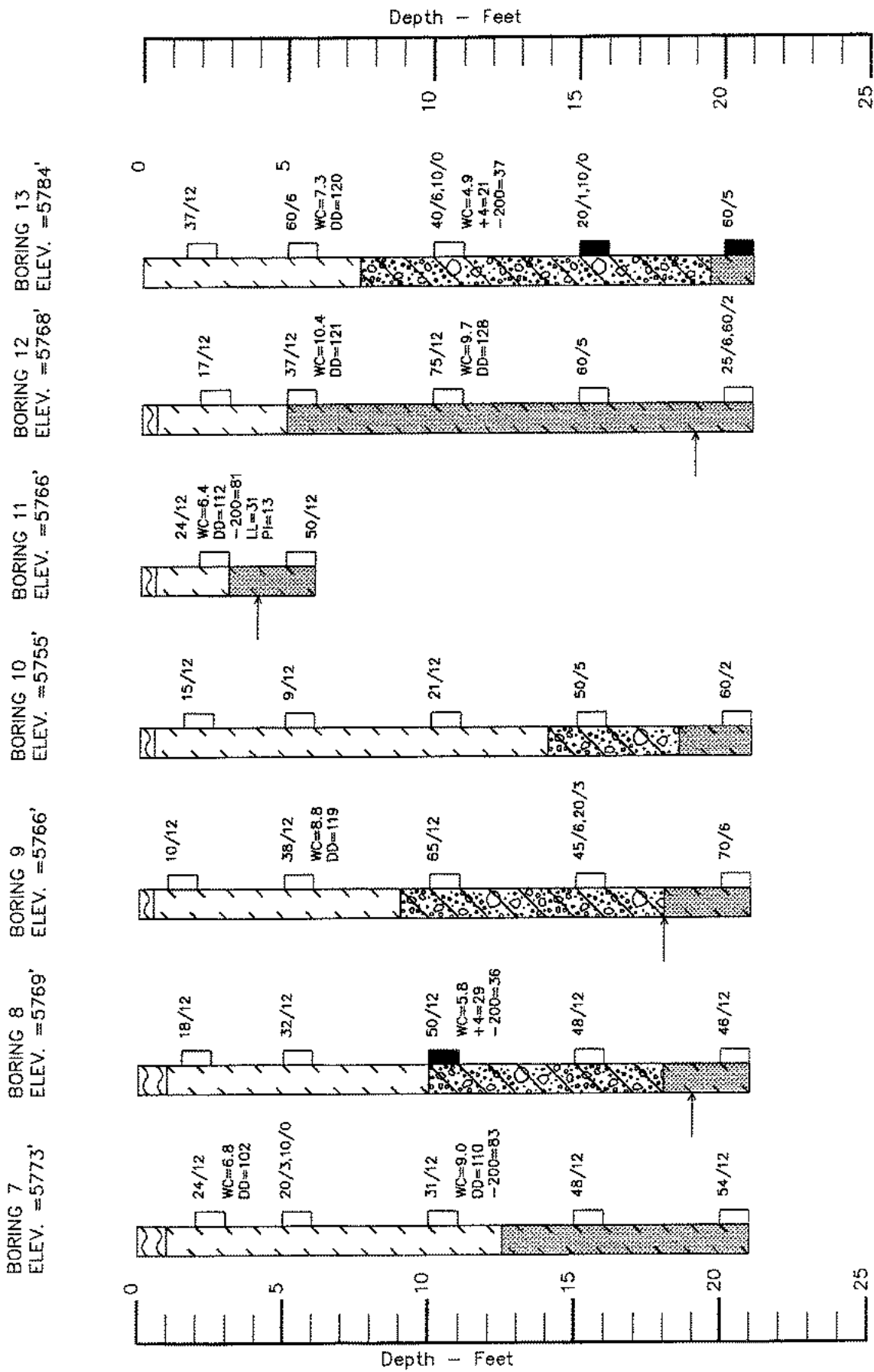
HEPWORTH-PAWLAK
GEOTECHNICAL, INC.

LOCATION OF EXPLORATORY BORINGS

Figure 1



Note: Explanation of symbols is shown on Figure 4.



Note: Explanation of symbols is shown on Figure 4.

LEGEND:



FILL; sandy silty clay with gravel and scattered cobbles, stiff, moist, brown.



TOPSOIL; sandy silty clay, organics, firm, slightly moist, brown.



CLAY (CL); silty, slightly sandy to sandy, occasional gravel layers, medium stiff to hard, slightly moist to moist, brown, medium plasticity.



SAND AND GRAVEL (SM-GM); silty, slightly clayey, with cobbles and possible boulders, dense, slightly moist, brown.



CLAYSTONE BEDROCK; weathered and medium hard to very hard, slightly moist, gray. Mancos Shale.



Relatively undisturbed drive sample; 2-inch I.D. California liner sample.



Drive sample; standard penetration test (SPT), 1 3/8 inch I.D. split spoon sample, ASTM D-1586.

11/12

Drive sample blow count; indicates that 11 blows of a 140 pound hammer falling 30 inches were required to drive the California or SPT sampler 12 inches.

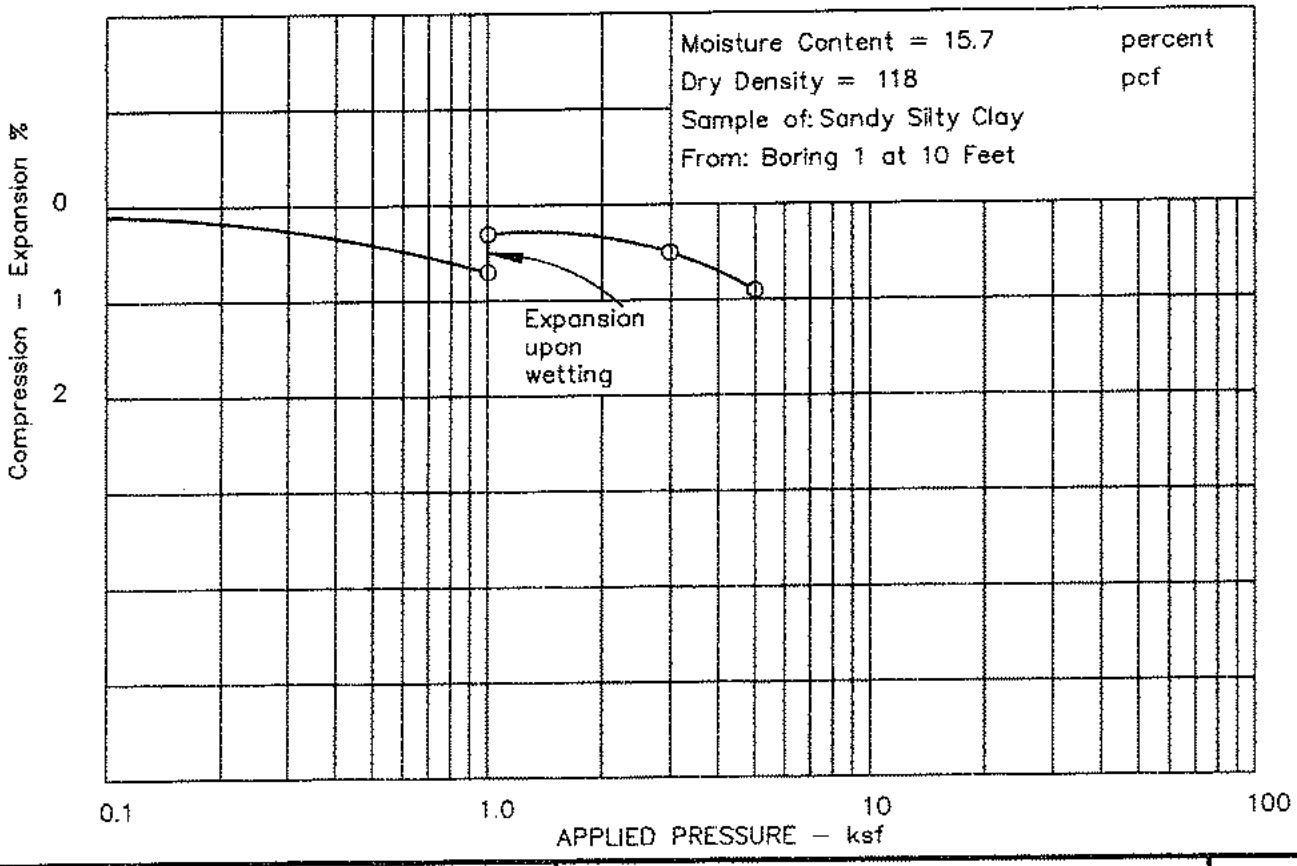
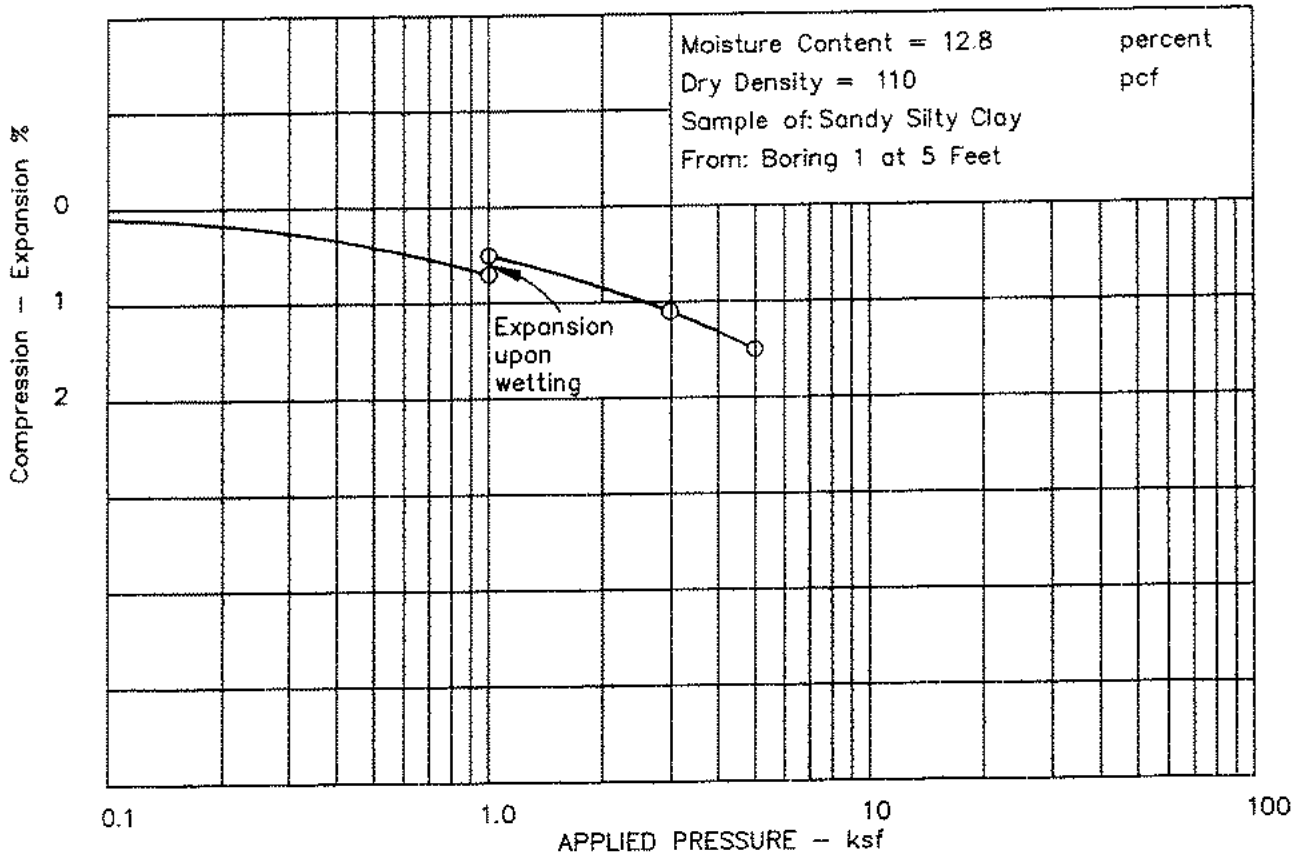


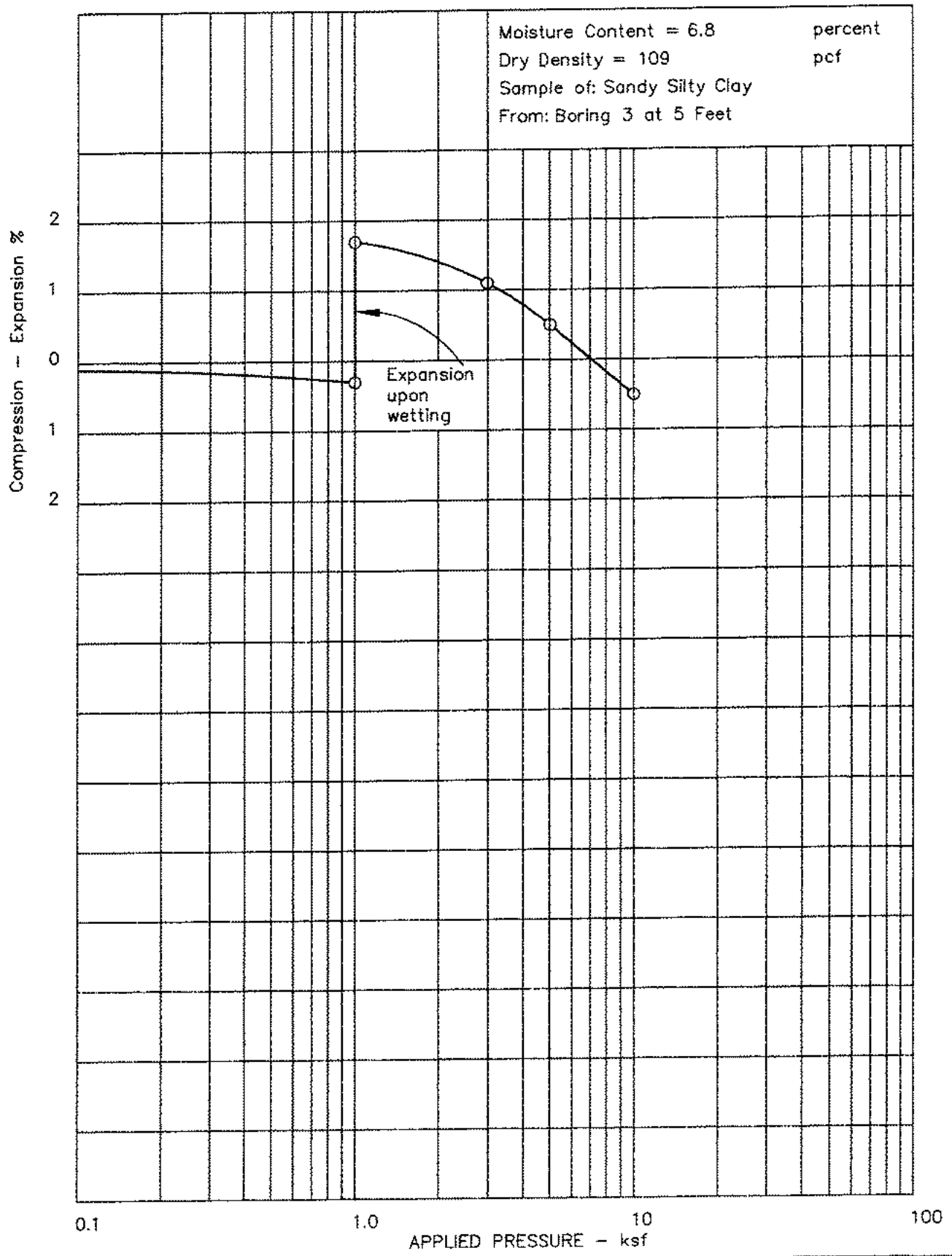
Disturbed bulk sample.

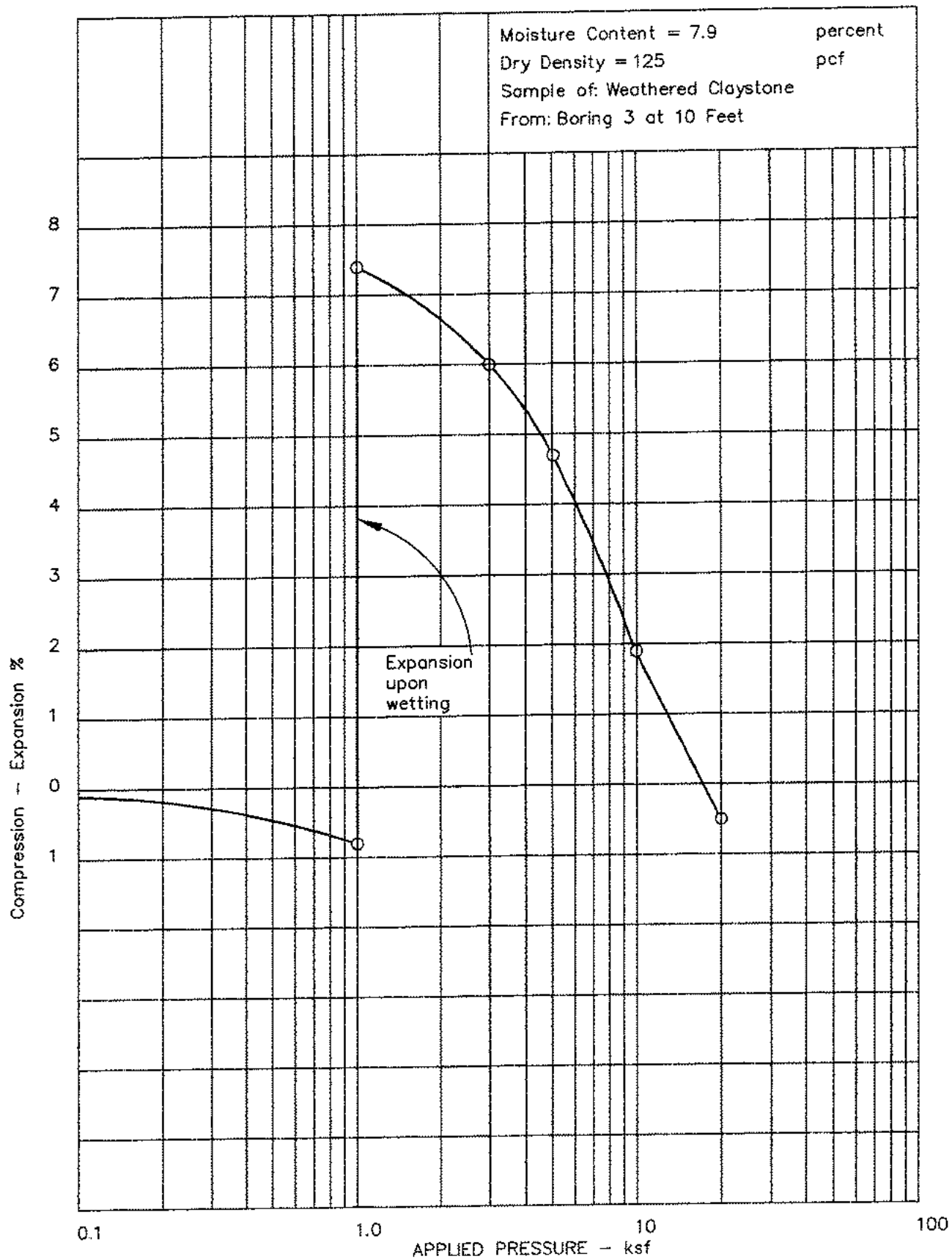
→ Depth at which boring caved following drilling.

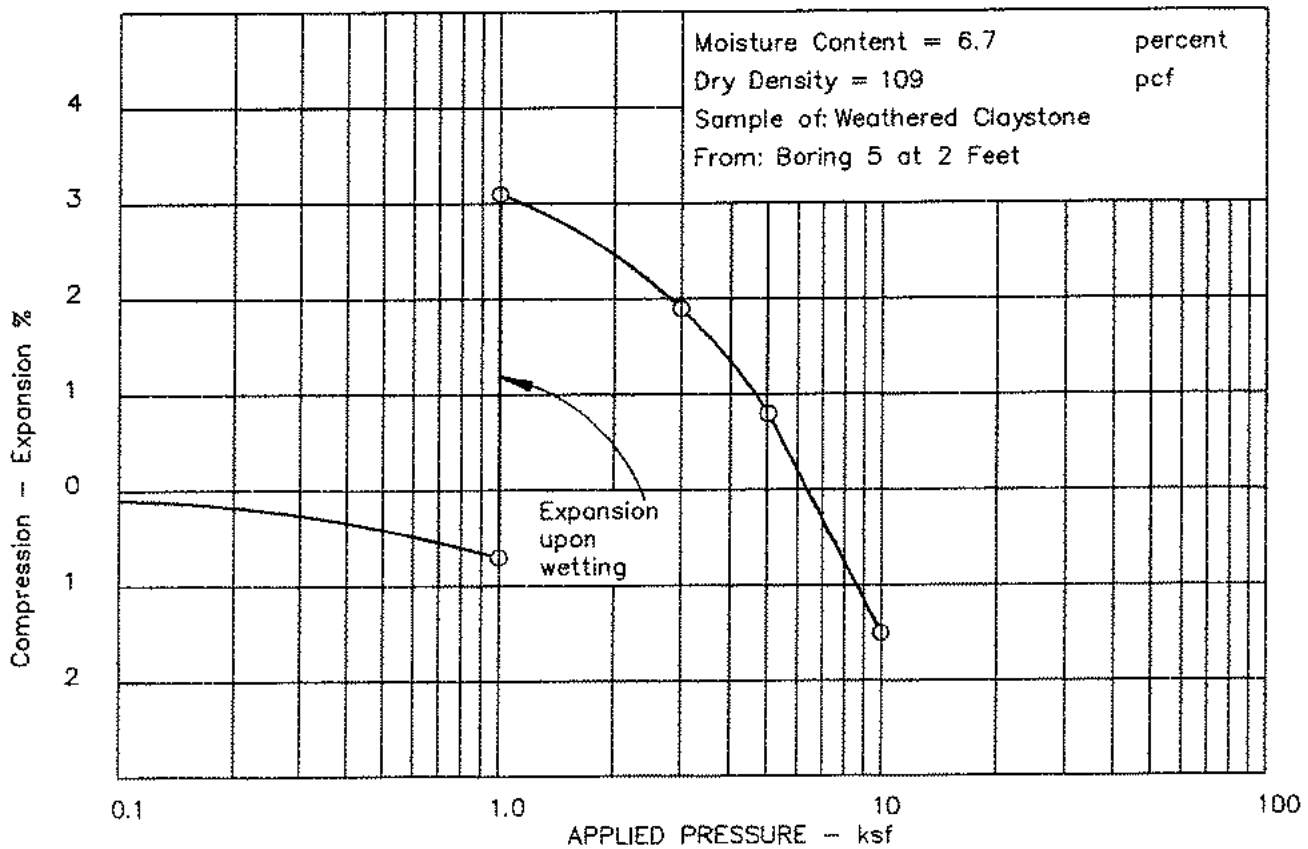
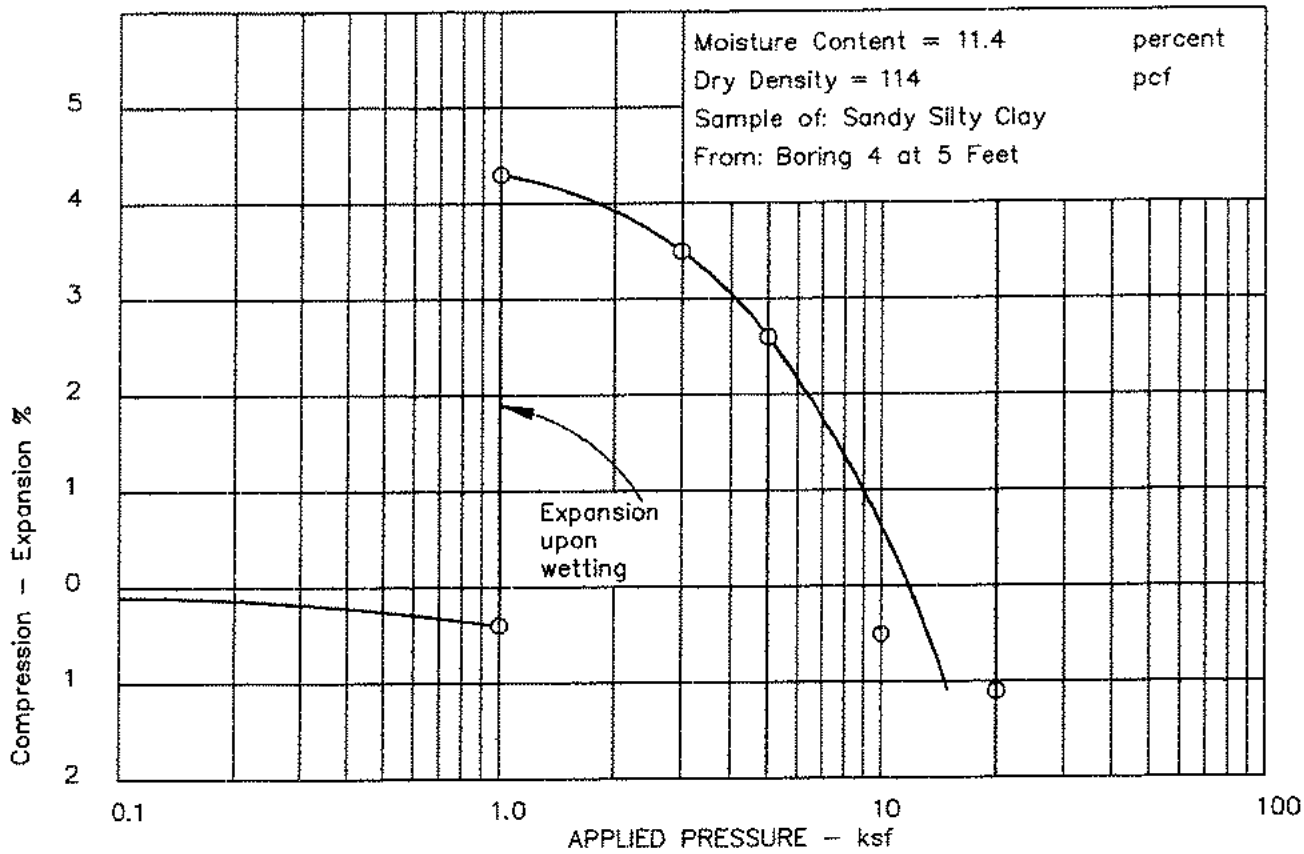
NOTES:

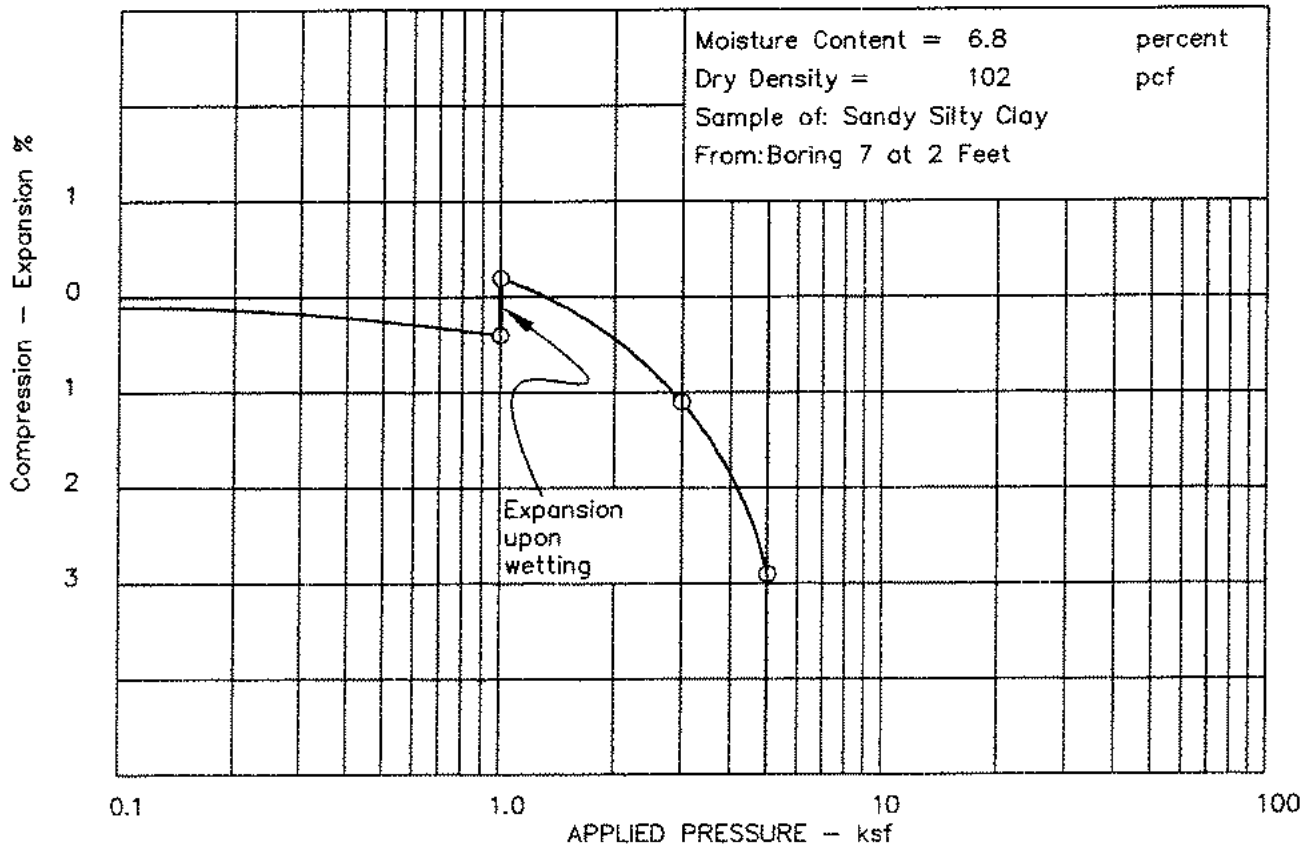
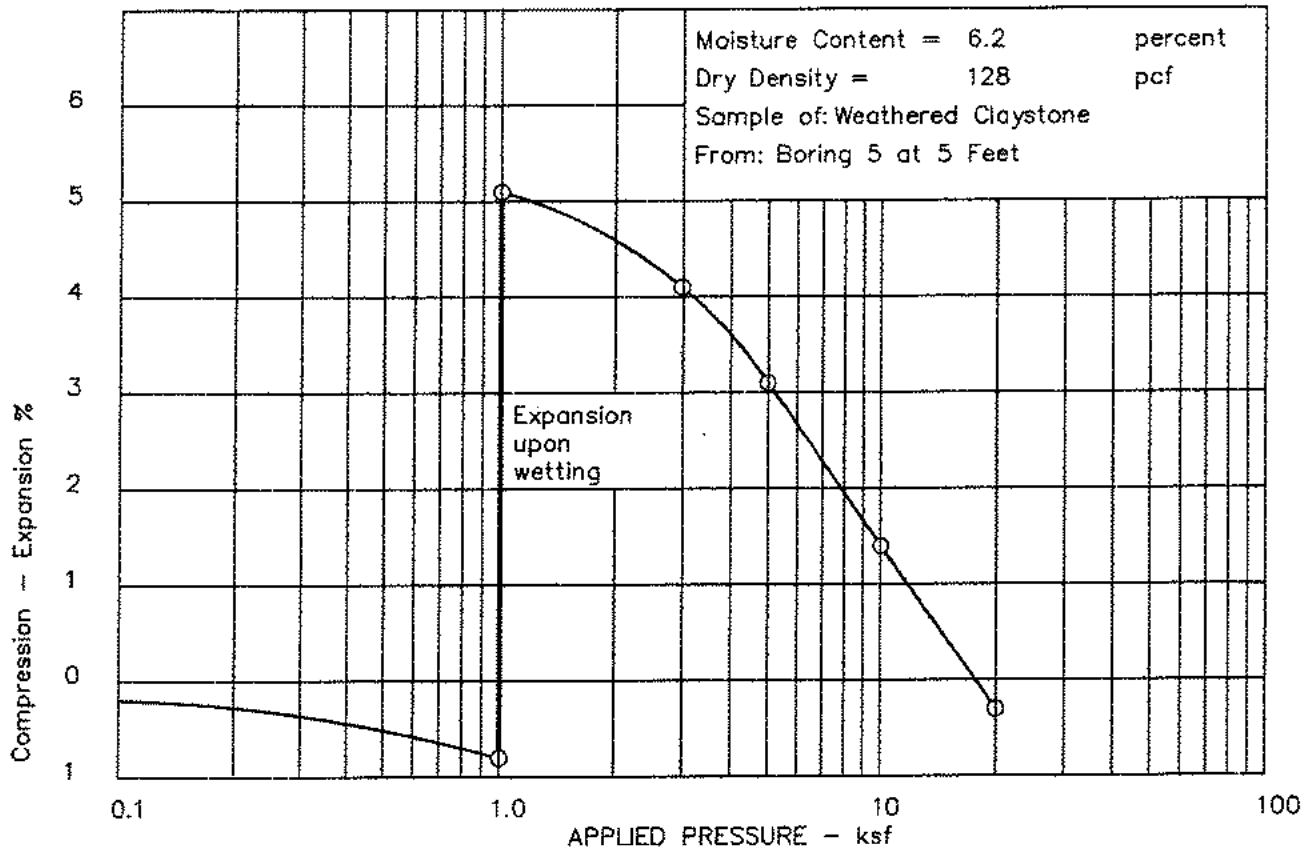
1. Exploratory borings were drilled on August 27 and 30, 2004 with a 4-inch diameter continuous flight power auger.
2. Locations of exploratory borings were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of exploratory borings were obtained by interpolation between contours on the site plan provided and checked by instrument level based on Bench Mark provided. Logs are drawn to depth.
4. The exploratory boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between materials shown on the exploratory boring logs represent the approximate boundaries between material types and transitions may be gradual.
6. No free water was encountered in the borings at the time of drilling. Fluctuation in water level may occur with time.
7. Laboratory Testing Results:
 - WC = Water Content (%)
 - DD = Dry Density (pcf)
 - +4 = Percent retained on the No. 4 sieve
 - 200 = Percent passing No. 200 sieve
 - LL = Liquid Limit (%)
 - PI = Plasticity Index (%)

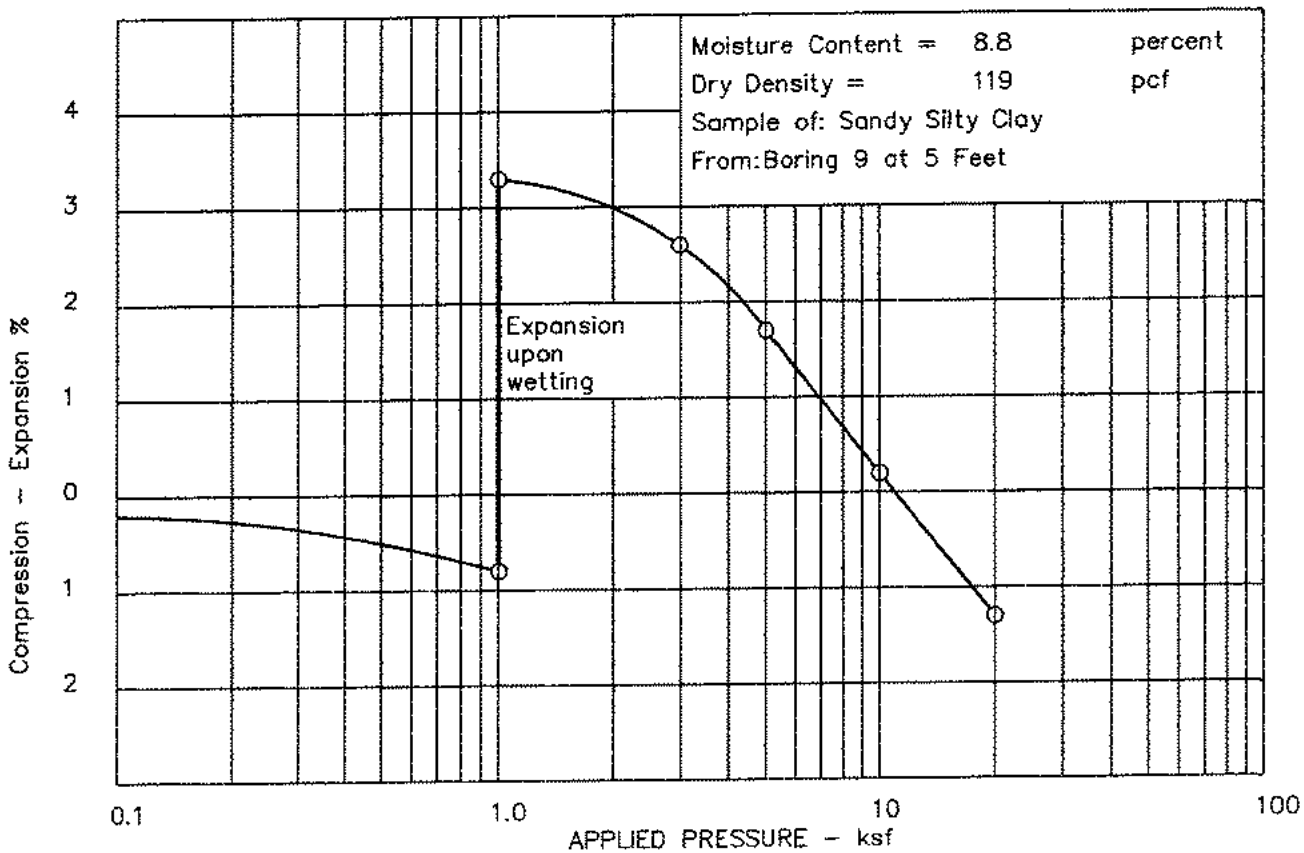
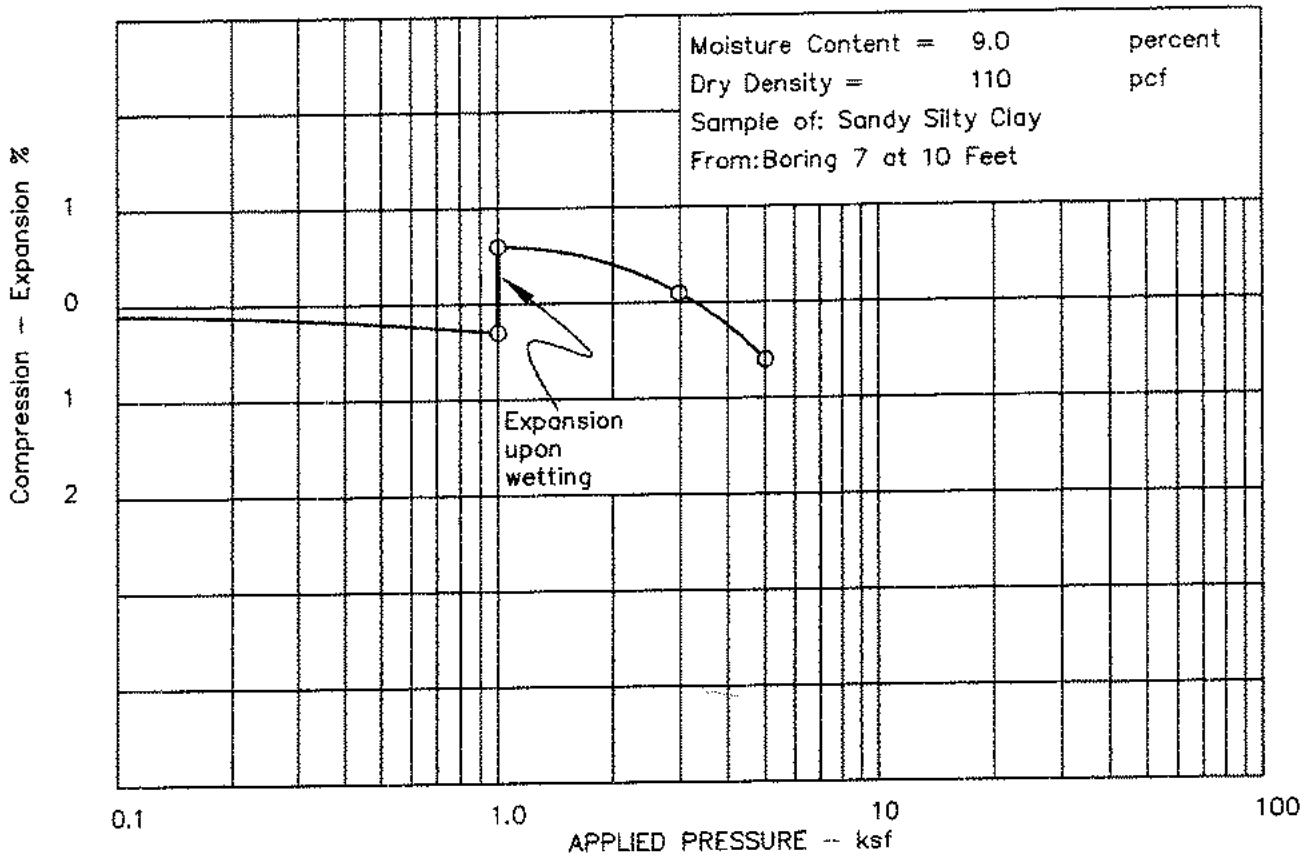


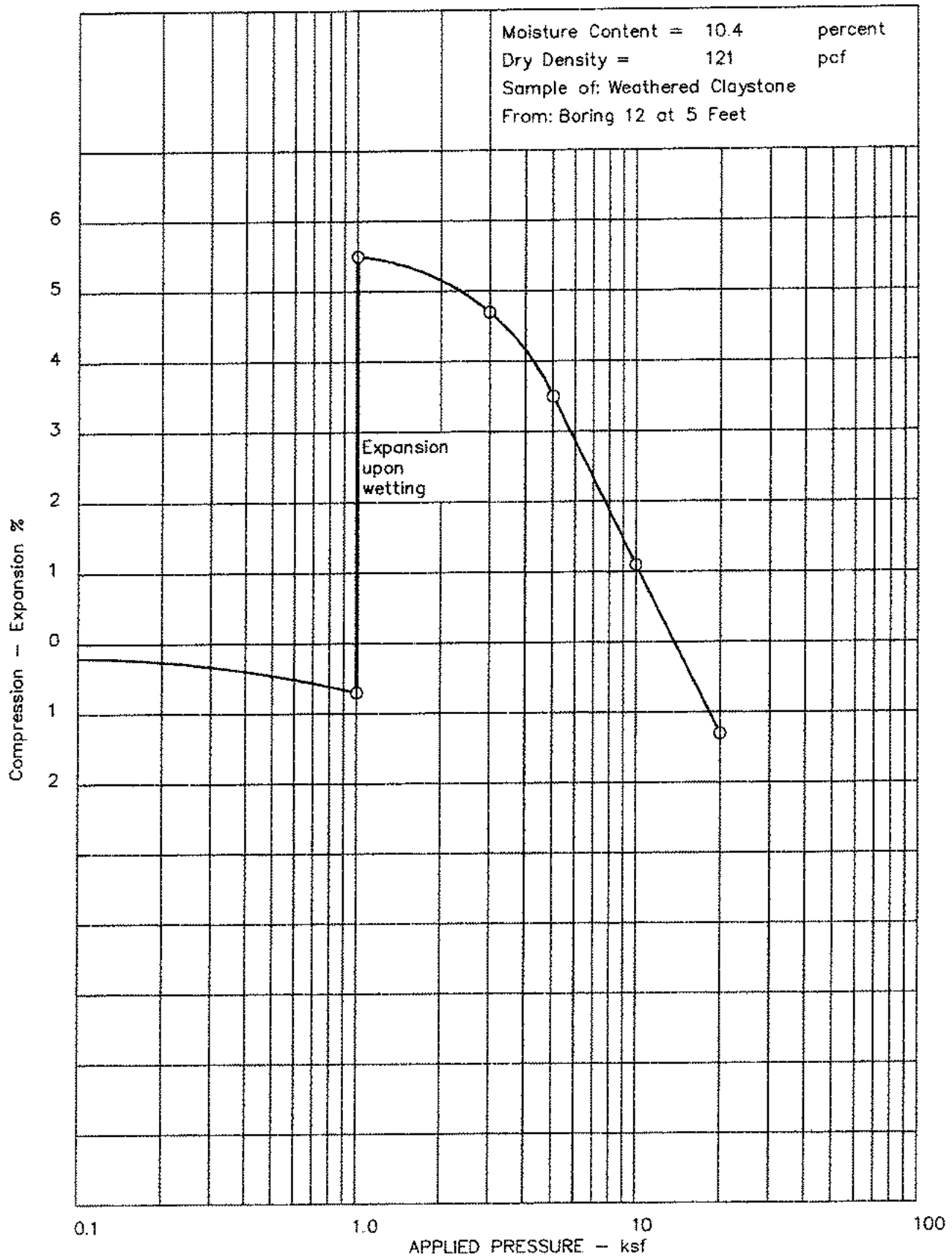


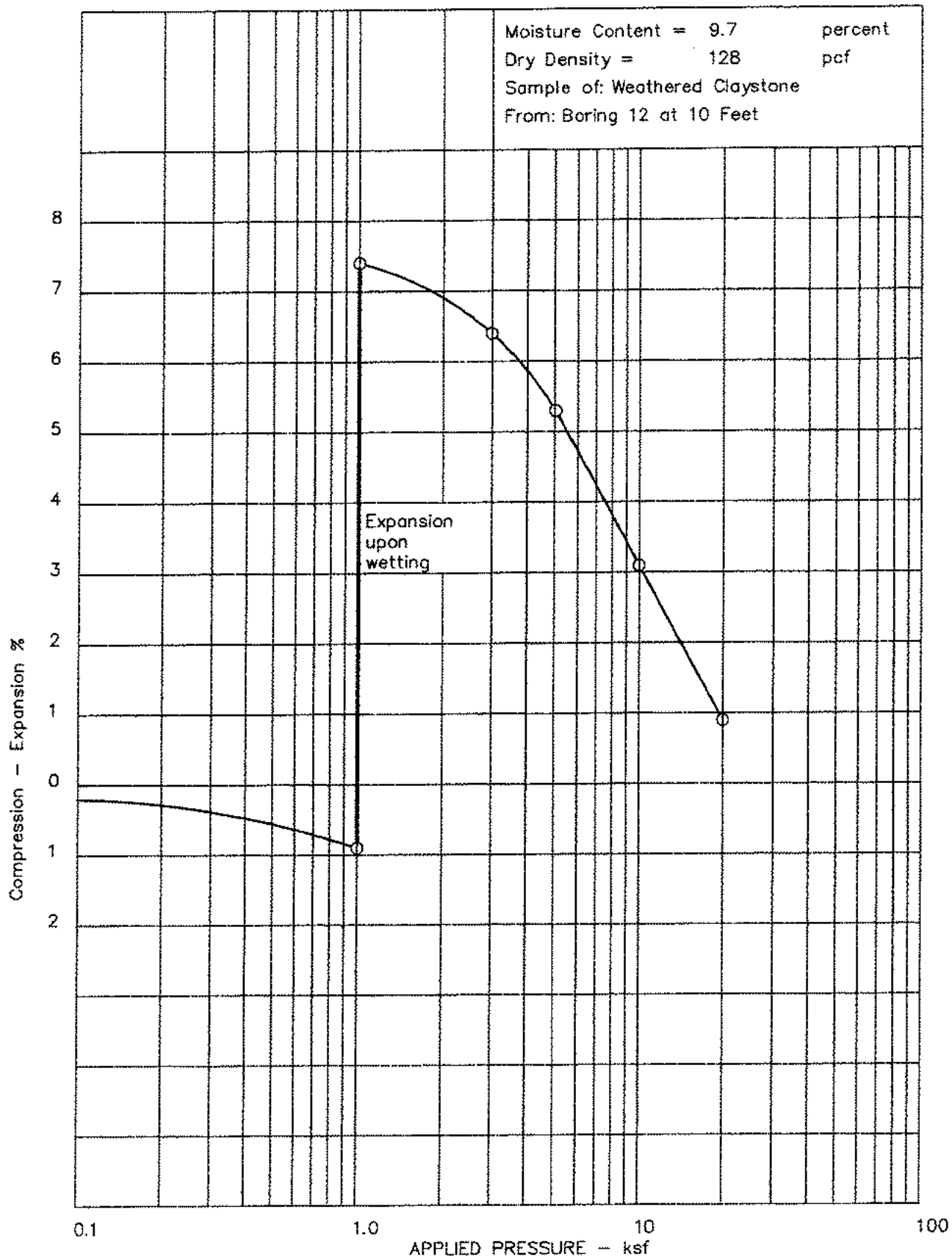


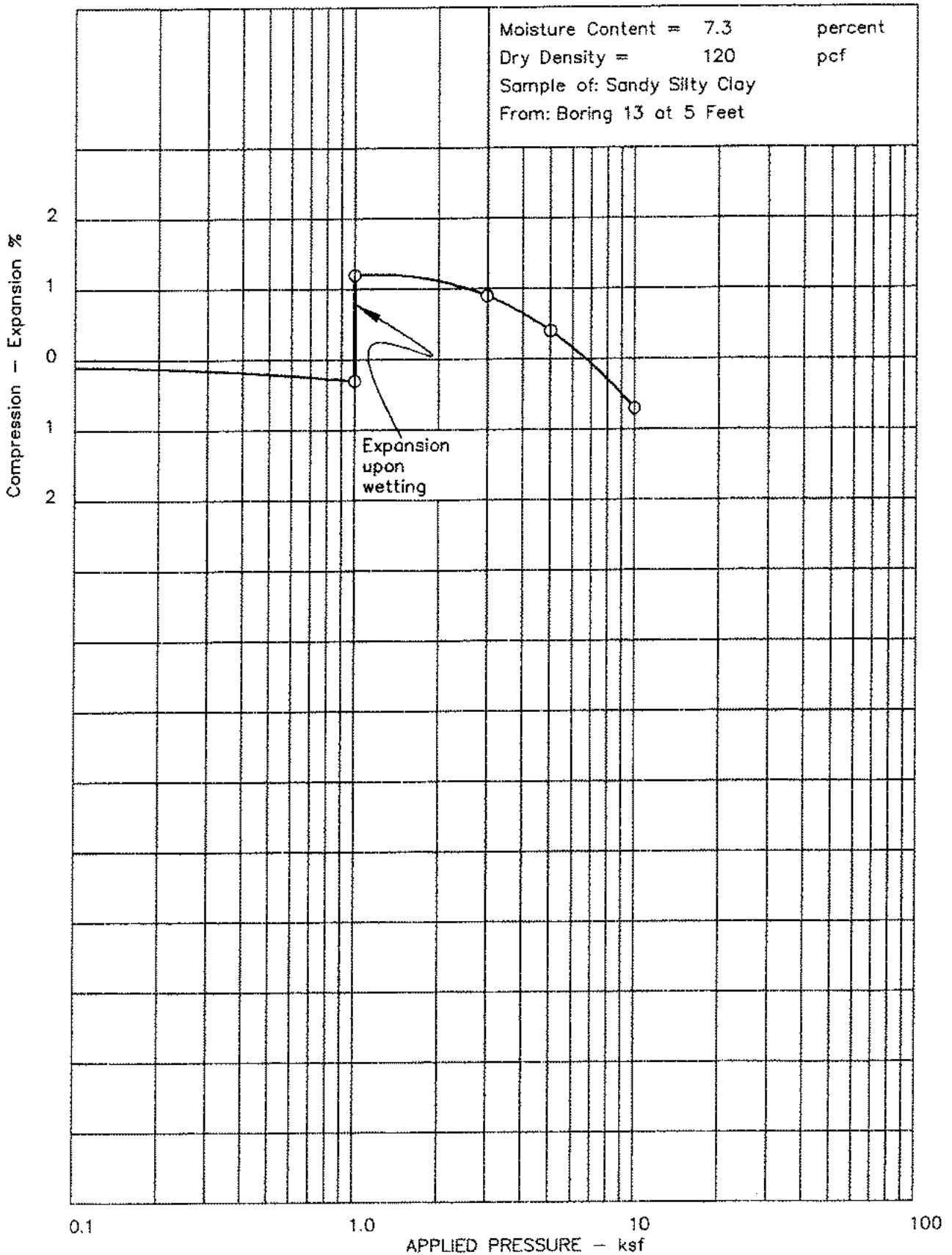


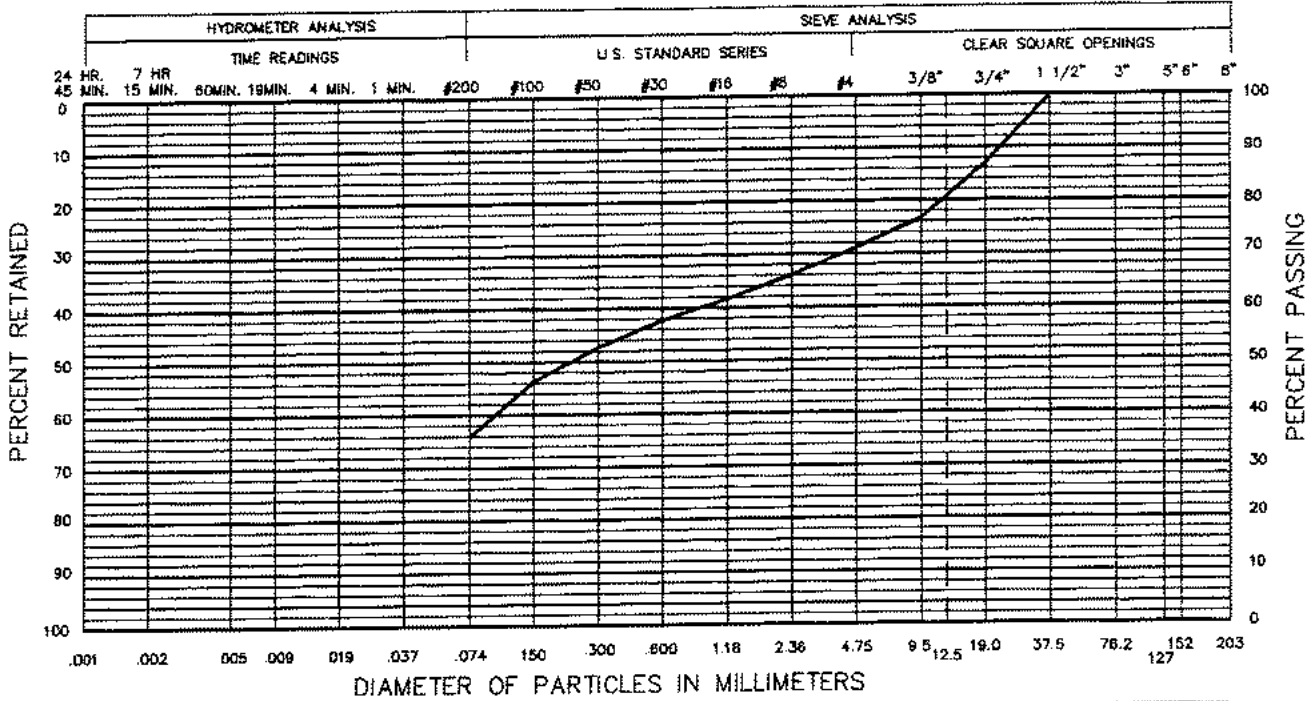




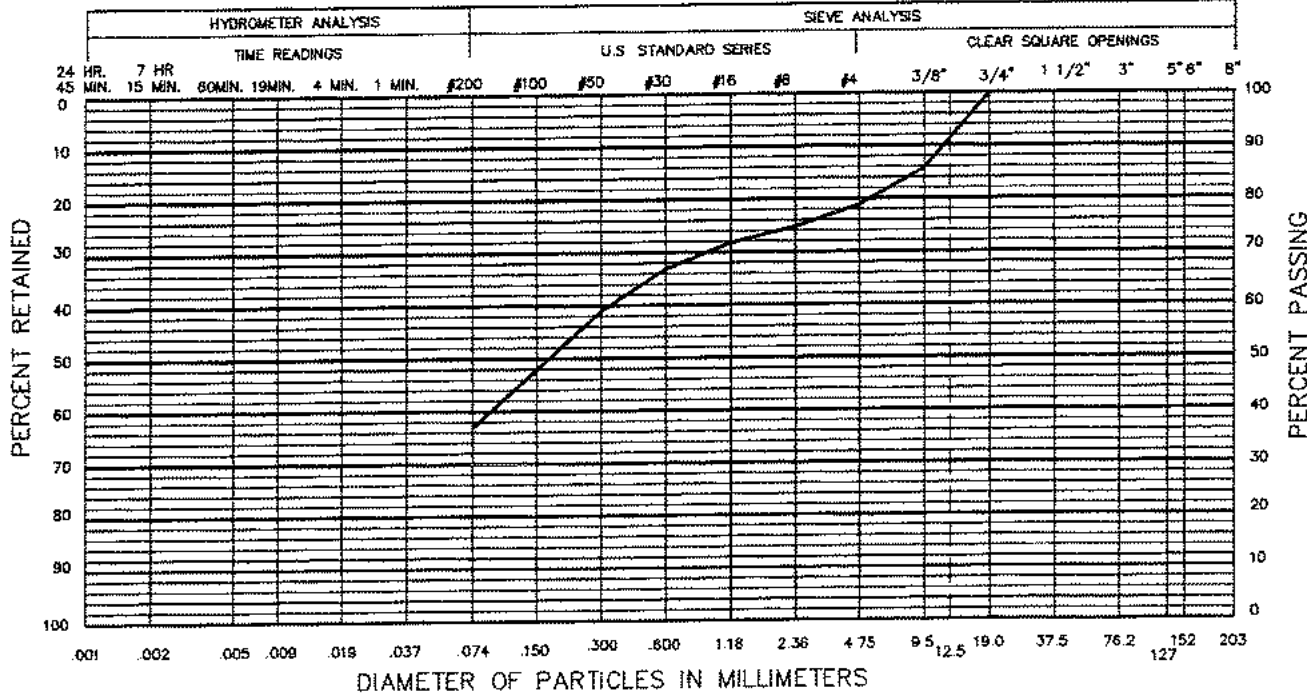








CLAY TO SILT		SAND			GRAVEL		COBBLES
		FINE	MEDIUM	COARSE	FINE	COARSE	
GRAVEL	29 %	SAND 35 %			SILT AND CLAY 36 %		
LIQUID LIMIT	%	PLASTICITY INDEX					%
SAMPLE OF: Silty Sand with Gravel				FROM: Boring 8 at 10 Feet			



CLAY TO SILT		SAND			GRAVEL		COBBLES
		FINE	MEDIUM	COARSE	FINE	COARSE	
GRAVEL	21 %	SAND 42 %			SILT AND CLAY 37 %		
LIQUID LIMIT	%	PLASTICITY INDEX					%
SAMPLE OF: Silty Sand with Gravel				FROM: Boring 13 at 10 Feet			

101 441-8

HEPWORTH-PAWLAK
GEOTECHNICAL, INC.

GRADATION TEST RESULTS

Figure 14

HEPWORTH-PAWLAK GEOTECHNICAL, INC.

Job No. 101 441-8

TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Page 1 of 2

SAMPLE LOCATION BORINGS	DEPTH (ft)	NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	SOIL OR BEDROCK TYPE
				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)		
1	5	12.8	110							Sandy silty clay
	10	15.7	118							Sandy silty clay
2	5	17.4	99			90	50	23		Slightly sand clay
3	5	6.8	109							Sandy silty clay
	10	7.9	125							Weathered claystone
4	5	11.4	114							Sandy silty clay
5	2	6.7	109							Weathered claystone
	5	6.2	128							Weathered claystone
6	5	7.7	92			92	34	16		Slightly sandy silty clay
7	2	6.8	102							Sandy silty clay
	10	9.0	110			83				Sandy silty clay

August 12, 2022

Jennifer Hawley
120 Deer Valley Drive
New Castle, CO 81647

Planning & Zoning Commission
Town of New Castle
450 West Main Street
PO Box 90
New Castle, Colorado 81647

RE: Preliminary PUD and Subdivision application for 185 residential units in Lakota Canyon Ranch

New Castle Planning & Zoning Commission:

Prior to approving further housing development projects in New Castle, the following infrastructure issues must be addressed:

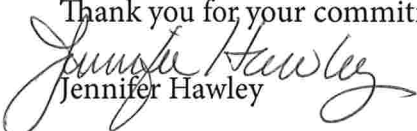
1. Construct the traffic circle at the intersection of Highway 6 and Castle Valley Boulevard
2. Lengthen the east bound merge lane onto Interstate 70
3. Connect C Avenue from downtown to Castle Valley Boulevard. Access from Castle Valley should be one way only headed south (emergency vehicles exempt) and used only for evacuation purposes. This will give us another escape route in case of wildfire and should not negatively impact the C Avenue neighborhood.

Next, water is essential and water scarcity is real and will affect us all. Changing weather patterns and demographic changes are leading to severe water scarcity issues in our region and beyond. Drought and water shortages should limit new development. New regional water studies need to be conducted and bring homeowners, builders, and government authorities together to reduce water demand in residential and commercial buildings.

Also, before developments are approved which will more than double the population of Lakota Ranch, there should be incentives to build up the town core. A downtown revival increasing density and commerce and jobs can help take some pressure off of the roads. Improved sidewalks, bike lanes, more retail shops, a deli, a health food store and office spaces would all be nice to see.

New Castle must promote smart growth. There are so many innovative building materials, construction techniques and improved land planning concepts that are better suited to the climate challenges we face. Help us design water-smart development projects and homes for our area - development is inevitable so let's make it thoughtful and innovative.

Thank you for your commitment to improving New Castle.


Jennifer Hawley

Andrew Hawley
120 Deer Valley Drive
New Castle, CO 81647

08/15/2022

Preliminary PUD for 185 residential units in Lakota Canyon Ranch

My main concern with this and any other development in New Castle is water. Our streams, aquifers and reservoirs are stressed. With climate change happening and the population growing our Town needs to be extra cautious about development. I feel that water use needs to be addressed. We will run out of water in the future if we don't conserve now. It may not be in my lifetime but it will affect the next generation.

The Post Independent just had an article about Colorado's water plan and how the Federal Government can move Colorado water to recharge reservoirs and aquifers outside of our state.

Colorado is leading in the water conservation movement at this time. Wyoming, New Mexico, Utah and Nebraska need to catch up or our resources will dry up.

Along with climate change comes the wildfire problem. If Lakota Canyon Ranch, Eagles Ridge at Lakota Canyon and other developments get built out we will not be able to move traffic up and down Castle Valley Blvd. in an emergency. The traffic already gets backed up in the morning and afternoon when kids come home from school. Just imagine what it would be like to evacuate all of the homes in Lakota with a raging wildfire. That is not a pretty site.

In the last plan the developer had a bottleneck at Faas Ranch Road and Castle Valley Blvd. Was that addressed?

Not only will this development stress our roads, water and stores in New Castle but with all the development down Valley the I-70 corridor will be more dangerous than it already is.

I feel that we need to make sure any development in New Castle addresses climate, water, wildlife corridors, wildfire evacuation and our infrastructure. Our New Castle Comprehensive and Master Plans need to be updated to address our new normal.

Andrew Hawley
970-404-5718

1 **New Castle Planning and Zoning Commission Special Virtual Meeting**
2 **Wednesday, August 10, 2022, 7:00 p.m.,**

3
4 **Virtual Meetings are subject to internet and technical capabilities.**

5
6 To join by computer, smart phone or tablet:
7 <https://us02web.zoom.us/j/7096588400>

8
9 If you prefer to telephone in:
10 **Please call: 1-346-248-7799**
11 **Meeting ID: 709 658 8400**

12
13 **Call to Order**

14 Commission Chair Apostolik called the meeting to order at 7:00 p.m.

15
16 **Roll Call**

17 Present Chair Apostolik
18 Commissioner Bourquin (arrived 7:03pm)
19 Commissioner Martinez
20 Commissioner McDonald
21 Commissioner Riddile
22 Commission Alternate Rittner
23 Commissioner Sass
24 Commissioner Westerlind

25
26 Absent Commission Alternate Parks

27
28 Also present at the meeting were Town Administrator Dave Reynolds, Town
29 Planner Paul Smith, Town Attorney David McConaughy, Deputy Town Clerk Mindy
30 Andis, Deputy Town Clerk Remi Bordelon and members of the public.

31 **Meeting Notice**

32 Deputy Town Clerk Mindy Andis verified that her office gave notice of the meeting
33 in accordance with Resolution TC 2022-1.

34 **Conflicts of Interest**

35 There were no conflicts of interest.

36 **Citizen Comments on Items NOT on the Agenda**

37 There were no citizen comments.

38 **Items for Consideration**

39 **Oaths of Office – Commissioner Mark McDonald, Commission Julie Martinez.**

40
41 Deputy Clerk Andis swore in the newly appointed members of the commission:
42 Commissioner Mark McDonald, Commission Julie Martinez.

43

1 **Prior Meeting Verification from June 8, 2022**

2 Deputy Andis explained the purpose of the verification is to insure the seated
3 voting commissioners have reviewed the audio and/or video recording of the prior
4 meeting and all documents presented at the meeting regarding the land use
5 application.

6
7 Commissioner McDonald verified he had watched the ZOOM meeting.

8
9 Commissioner Martinez verified she had watched the ZOOM meeting.

10
11 Commissioner Westerlind verified he had watched the ZOOM meeting.

12
13 **MOTION: Chair Apostolik made a motion at 7:04 p.m. to go into Executive**
14 **session for a conference with the Town Attorney for the purpose of**
15 **receiving legal advice on specific legal questions under C.R.S. 24-6-**
16 **402(4)(b) regarding litigation filed by CVR Investors, Inc. Commissioner**
17 **Westerlind seconded the motion and it passes unanimously.**

18
19 Executive session concluded.

20
21 At the end of the executive session, Chair Apostolik made the following statement:

22
23 "The time is now 8:06 p.m. and the executive session has been concluded. The
24 participants in the executive session were: Commissioner McDonald, Commissioner
25 Riddile, Commissioner Bourquin, Chair Apostolik, Commissioner Sass,
26 Commissioner Westerlind, Commissioner Martinez, Commission Alternate Rittner,
27 Town Planner Paul Smith, Town Administrator Dave Reynolds, Town Attorney
28 David McConaughy, Deputy Clerk Mindy Andis and Deputy Remi Bordelon; For the
29 record, if any person who participated in the executive session believes that any
30 substantial discussion of any matters not included in the motion to go into the
31 executive session occurred during the executive session, or that any improper
32 action occurred during the executive session in violation of the Open Meetings Law,
33 I would ask that you state your concerns for the record."

34
35 No concerns were stated.

36
37 **Consider Appointing Commissioner to Historic Preservation Commission**
38 **(HPC)**

39 Deputy Andis said she has spoken with Commissioner Parks who is very interested
40 in serving as the P&Z representative on HPC.

41
42 **MOTION: Commissioner Westerlind made a motion to appoint**
43 **Commissioner Parks as P&Z Representative to HPC. Chair Apostolik**
44 **seconded the motion and it passed unanimously.**

1 **Staff Reports**

2 Town Administrator Dave Reynolds thanked the commission for all their hard work,
3 time and dedication they have put into serving on the commission.

4
5 Town Planner Paul Smith said council will be reviewing building permit fee increase
6 next week during the regular council meeting.

7
8 **Items for Next Planning and Zoning Agenda**

9 Planner Smith said Lakota Canyon Ranch Filing 8 (RG Lakota Holdings) will be
10 presenting their Preliminary PUD and Subdivision Application on August 24, 2022
11 P&Z meeting.

12
13 Planner Smith said Eagles Ridge Ranch (Jim Columbo) will be presenting a Minor
14 Amendment Application on September 14, 2022 P&Z meeting.
15 Also at the same meeting the Public Works Manual update will be presented.

16
17 **Commission Comments and Reports**

18 There were no commission comments or reports

19
20 **Review Minutes from Previous Meeting**

21 **MOTION: Chair Apostolik made a motion to approve the June 8, 2022**
22 **meeting minutes as submitted. Commissioner Riddile seconded the motion**
23 **and it passed unanimously.**

24
25 **MOTION: Chair Apostolik made a motion to adjourn the meeting.**
26 **Commissioner Bourquin seconded the motion and it passed unanimously.**

27
28 The meeting adjourned at 8:34 p.m.

29
30 Respectfully Submitted,

31
32
33
34
35
36
37

Chair Chuck Apostolik

38

Deputy Town Clerk Mindy Andis, CMC