

PLANNING & ZONING COMMISSION MEETING

Monday, September 19, 2022 at 5:30 PM

Glen Rose City Hall, Council Chambers,
201 NE Vernon, Glen Rose, TX 76043



AGENDA

City Hall will be open to the public.

Citizens can view or listen live by tuning in to the following Zoom.com webinar:

Meeting ID: 895 9033 1011 • Passcode 695637 • or dial 1-346-248-7799

CALL TO ORDER

Pledge of Allegiance, Roll Call

CONSENT AGENDA

PUBLIC HEARING

1. Public hearing regarding a request to amend the Holden Street Cottages Planned Development Zoning, which includes the lots at 995, 997, 999, 1001, 1003 and 1005 Holden Street to allow for Short Term Rentals.

INDIVIDUAL ITEMS FOR CONSIDERATION

2. Discussion, consideration and possible action regarding a request to *amend the Holden Street Cottages Planned Development Zoning, which includes the lots at 995, 997, 999, 1001, 1003 and 1005 Holden Street to allow for Short Term Rentals.*
3. Discussion, consideration and possible recommendation to City Council regarding Final Plat for Squaw Valley Estates

WORKSHOP

4. Review and discussion of Trash Rates

ADJOURNMENT

CERTIFICATION

I, the undersigned authority, do hereby certify that this NOTICE OF MEETING was posted in accordance with the regulations of the Texas Open Meetings Act on the bulletin board located at the entrance of the City of Glen Rose City Hall, a place convenient and readily accessible to the general public, as well as to the City's website at www.glenrosetexas.org and said notice was posted on the following date and time: **Friday, September 16, 2022, by 4:20 PM** and remained posted for at least two hours after said meeting was convened.

This building is wheelchair accessible. Any request for sign interpretation or other services should be made 48 hours in advance of the meeting. To make arrangements, call the City Secretary's office at (254) 897-2272 x 102.

Jodi Holthe

Jodi Holthe
Building, Planning Code Enforcement Department

Certification of NOTICE OF MEETING was removed on: _____ at _____ am/pm
by _____ . _____



CITY COUNCIL AGENDA ACTION FORM

AGENDA DATE:	Monday, September 19, 2022		
AGENDA SUBJECT:	Public hearing regarding a request to amend the Holden Street Cottages Planned Development Zoning, which includes the lots at 995, 997, 999, 1001, 1003 and 1005 Holden Street to allow for Short Term Rentals.		
PREPARED BY:	Building/Planning/Code Enforcement Assistant Holthe	DATE SUBMITTED:	8/30/22
EXHIBITS:			
BUDGETARY IMPACT:	Required Expenditure:	\$00.00	
	Amount Budgeted:	\$00.00	
	Appropriation Required:	\$00.00	
CITY ADMINISTRATOR APPROVAL:			
SUMMARY:			
RECOMMENDED ACTION:			



CITY COUNCIL AGENDA ACTION FORM

AGENDA DATE:	Monday, September 19, 2022		
AGENDA SUBJECT:	Discussion, consideration and possible action regarding a request to amend the Holden Street Cottages Planned Development Zoning, which includes the lots at 995, 997, 999, 1001, 1003 and 1005 Holden Street to allow for Short Term Rentals.		
PREPARED BY:	Building/Planning/Code Enforcement Assistant Holthe	DATE SUBMITTED:	8/30/22
EXHIBITS:	1. Request for Amending Zoning Application 2. Property Notification Letter 3. Property Return Letter 4. 200' Surrounding Property map 5. Current Zoning Map 6. Future Land Use Map 7. PD Planned Development District		
BUDGETARY IMPACT:	Required Expenditure:	\$00.00	
	Amount Budgeted:	\$00.00	
	Appropriation Required:	\$00.00	
CITY ADMINISTRATOR APPROVAL:			
SUMMARY: 08/30/2022 – Request for Amending Zoning Application for PD Development was received 09/02/2022 - Notice of Public Hearing was posted in the local newspaper 09/01/2022 - 20 Property owner letters were sent representing 23 properties. 17 Letters have been confirmed as received 03 Letters unconfirmed as received 00 Letters were returned 00 Favorable response has been returned 09 Opposition responses have been returned			
RECOMMENDED ACTION:			
Move to approve or deny as presented.			



Building, Planning and Code Enforcement Department
201 NE Vernon Street, PO Box 1949, Glen Rose, Texas 76043
(254) 897-2272 Fax: (254) 897-7989

NOTIFICATION

September 1, 2022

NOTICE OF PUBLIC HEARING ON HOLDEN STREET COTTAGES LOCATED ON HOLDEN STREET

Public hearings will be held at 5:30 p.m. at City Hall (201 NE Vernon Street, Glen Rose, Texas) on September 19, 2022 before the Planning and Zoning Commission and on September 27, 2022 before the City Council on a request by an owner Michael Stephens, to request to amend the Holden Street Cottages Planned Development Zoning, which includes the lots at 995, 997, 999, 1001, 1003 and 1005 Holden Street to allow for Short Term Rentals.

Dear Property Owner:

You are receiving this notice because our records indicate you own property within 200' of the property located referenced above. That is the subject of these hearings. Included with this letter is a Property Owner Response Form, the application for rezoning which is under consideration, and a map showing all the properties within 200' of the property referenced above. If you would like to register your opinion in favor or in opposition to granting the rezoning request, please complete the form and either mail or email it to us, or deposit it in one of the drop boxes at City Hall.

If the owners of 20% or more of the land within 200' of property referenced above provide written notice of their objection to the issuance of the rezoning request, instead of a simple majority it will require a vote of $\frac{3}{4}$ of the City Council members present to approve the request.

You are welcome to attend and participate in either or both of the Public Hearings. If you are unable to attend, but would like to listen to the hearings, generally, those proceedings are broadcast via Zoom. Instructions for accessing those broadcasts are available in the "Latest Events" section at the bottom of the City's website at www.glenrosetexas.org.

Should you have any questions, please contact us at jodi.holthe@glenrosetexas.org or at (254) 897-2272 ext. 109.

Sincerely,

Building, Planning, and Code Compliance Department

NOTICE OF PUBLIC HEARING

Item 2.



City of Glen Rose, Texas

Building, Planning, Code Enforcement Department

P.O. Box 1949, Glen Rose, TX 76043

Ph: (254) 897-2272

Fax: (254) 897-7989

Email: buildingofficial@glenrosetexas.org

Re: Michael Stephens request to amend the Holden Street Cottages Planned Development Zoning, which includes the lots at 995, 997, 999, 1001, 1003 and 1005 Holden Street to allow for Short Term Rentals.

This letter may be deposited in either of the two drop boxes located at City Hall, 201 NE Vernon Street, Glen Rose, Texas or mailed to City Hall, Attention: Planning and Zoning Department, PO Box 1949, Glen Rose, Texas 76043.

NAME: _____ DATE: _____

ADDRESS: _____

I AM () IN FAVOR () IN OPPOSITION TO THIS REQUEST.

Reasons/Comments:

Jodi Holthe,
Planning and Zoning (P&Z)

City of Glen Rose



Dinosaur Capital
of Texas

Building, Planning & Code Enforcement
City of Glen Rose, Texas 76043

Tel: (254) 897-9373 Fax: (254) 897-7989

Staff use only

Date Received: 8/30/22

Item 2.

Amended Zoning Application for PD Development

Address of property: 1005 Holden Street Glen Rose, TX 76043

Applicant's Name: Michael + Heidi Stephens Date: 30 AUG 2022

Property Owner Information

Full Name: Michael a Heidi Stephens

Address: 1005 Holden Street, Glen Rose, Texas 76043

Telephone No: _____ Email: u

Applicant/Owner's Representative (if not the owner)

Full Name: _____

Address: _____

Telephone No: _____ Email: _____

Present zoning at site: PD Requested new zoning use: _____

Form of Ownership of the property: ☒ Individual ☐ Partnership ☐ Corporation

Intended use of property (must be specific):

We would like to request approval to operate
a short term rental at the above address.
We would utilize Air BnB or Urban and will pay
Hotel taxes which would in turn be paid to the city, along
with our property tax & insurance which is maintained for
short term rentals.

I/We, am/are the owner(s) of the property. I/We hereby certify that all the information
provided is true and correct.

Owner(s) Signature:

Michael Stephens

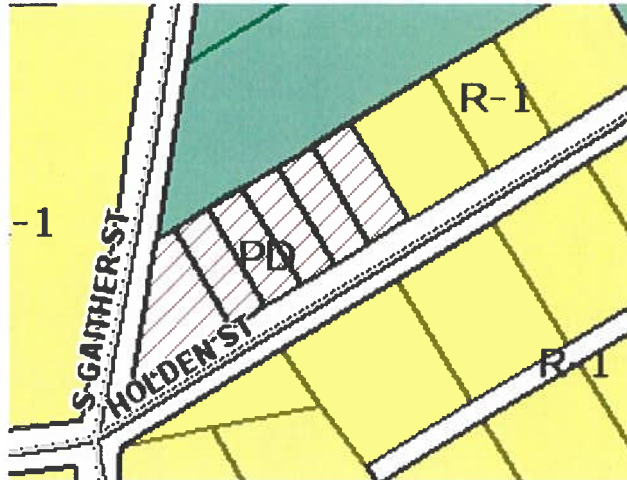
Date: 30 Aug-2022

Fee's →

1005 Holden St

Zoning Request

Current Zoning



Future Zoning



Future Zoning Legend

LEGEND

Zone	Map Section/Area	Color	Color Name
R-1	Single Family		Golden Yellow
R-2M	Single Family/Duplex/Cabin		Pink
R-3	Single/Two-Four/MH		Tan
R-4	Multi-Family		Gray
B-1	Restricted Commercial		Orange
B-2	General Commercial		Aqua Green
I	Industrial		Brown
OSP	Open Space Parks		Yellow Green
PD	Planned Development		Mahogany Overlay
PF	Public Facilities		Violet Purple Overlay
H	Historic District		Black Overlay

1005 Holden St

200 ft Radius



14.02.051 PD Planned Development District

1. **Purpose and scope.** The PD Planned Development District is established to provide a greater flexibility in development planning and the opportunity of the application of modern planning concepts than is permitted under conventional regulations. PD districts may combine a variety of land uses and/or housing types. Mixed uses may include any combination of residential, commercial or industrial uses as long as the uses are compatible with each other and with potential and existing uses surrounding the district. PD districts may be established on parcels of land which are suitable for and of sufficient size to be planned and developed in a manner consistent with the purposes and objectives of this article. PD Districts shall be established by means of an amendment to the this Zoning Ordinance.
2. **Permitted uses.** The following uses may be permitted in a designated PD district. These uses shall not be considered to be all-inclusive.
 1. Residential uses, including detached, attached or semi-attached single-family dwellings, townhouses, condominiums, patio homes, two-family dwellings and multifamily dwellings. No manufactured homes or manufactured home parks shall be allowed;
 2. Business park;
 3. Office building;
 4. Shopping center;
 5. Hotel; motel;
 6. Medical clinic; hospital;
 7. Industrial park;
 8. Library; museum; art gallery;
 9. Community, recreation or civic center;
 10. Park; playground; golf course;
 11. Church;
 12. RV Park and campground;
 13. Public or private school; college; university;
 14. Police; fire station;
 15. Governmental building;
 16. Water pumping station; water reservoir; water tower; artesian well; sewage; lift station; septic tank;
 17. Telephone exchange;
 18. Satellite dish; and/or
 19. Radio and television transmitter;
3. In rendering a decision on an application for a PD district, the City's future land use plan and any other comprehensive plan of the city shall be taken into consideration by the planning and zoning commission and the city council.
4. **Application for PD district.** Application for a PD district or development in a PD district shall be made in the same manner as an application for any amendment to this article and shall include the following additional information:
 1. **Proposed uses.** An application for a PD district or development in a PD district shall specify and describe the category or type of use or the combination of uses proposed. The permitted uses under PD district zoning shall be specified in each PD district ordinance and shall be limited to only these uses. If the ordinance specifies permitted uses by reference to a conventional zoning district, the permitted uses shall mean those uses permitted in the referenced district.
 2. **Development requirements.**
 1. An application for a PD district or development in a PD district shall include a list of proposed development standards which may be incorporated into the PD district ordinance. Development standards shall include but not be limited to density; lot

size; setbacks; building sizes; height and exterior requirements; lot coverage; parking ratios; screening; landscaping; and any other requirements the council may deem appropriate.

3. Concept plan required.

1. An application for a PD district or development in a PD district shall include a conceptual plan showing a preliminary layout of proposed uses, access, buildings, parking, open space and the relationship to existing natural features and adjacent properties and uses.
2. Upon submission of the application for a PD district or development in a PD district and after proper notice has been given to all affected parties and public hearings have been held, the planning and zoning commission and the city council shall review the application and may either give approval, with or without modifications, or reject it. In approving the application, the city council may impose conditions and these conditions shall be complied with before a certificate of occupancy is issued for the use of land or any structure which is part of the PD district. Ten copies of the concept plan shall be required to be submitted to the city at the time of application.

5. Site plan.

1. Approval required.

1. In establishing a PD district, a comprehensive site plan of the development is required. However, this site plan requirement may be waived by the planning and zoning commission if it determines the proposed development does not significantly alter or impact the surrounding development. This site plan shall be approved and filed as part of the PD ordinance. The approval of the development site plan may also serve as preliminary plat approval, provided that all requirements of the city's subdivision regulations are satisfied. Six copies of the development site plan will be required to be submitted to the city prior to the approval of the PD ordinance.
2. Upon approval of the development site plan and approval of the final plat, if required, application may be made for the permits and certificates necessary for construction and occupancy. Subsequent to this approval, minor changes to the site plan may be authorized by the city administrator, when the changes will not cause any of the following circumstances to occur:
 1. A change in the character of the development;
 2. An increase in the ratio of the gross floor area in structures to the area of any lot;
 3. An increase in the intensity of use;
 4. A reduction in the originally approved separations between building or setbacks;
 5. An increase in the problems of traffic circulation, safety and utilities;
 6. An increase in the external effects on adjacent property;
 7. An increase in ground coverage by structures;
 8. A reduction in the ratio of off-street parking and loading space; or
 9. A change in the locations, lighting or orientation of approved signs.

2. **Compliance with approvals of site plan.** The development site plan must comply with all provisions of the PD ordinance specifying development standards and substantially reflect the precepts and layout set forth in the concept plan. If, in the judgment of the planning and zoning commission or the city council, a development site plan does not comply with the provisions of the PD ordinance and the concept plan, the planning and zoning commission or the city council may reject the site plan, in which case a new site plan may be resubmitted or application must be resubmitted to amend the PD ordinance. If

a PD ordinance does not specify development standards or has not incorporated a concept plan, the development site plan approval must specify the standards. Development requirements on this site plan may be revised under the same review, notice and approval procedures as applied to the original approval of the site plan.

3. Site plan information.

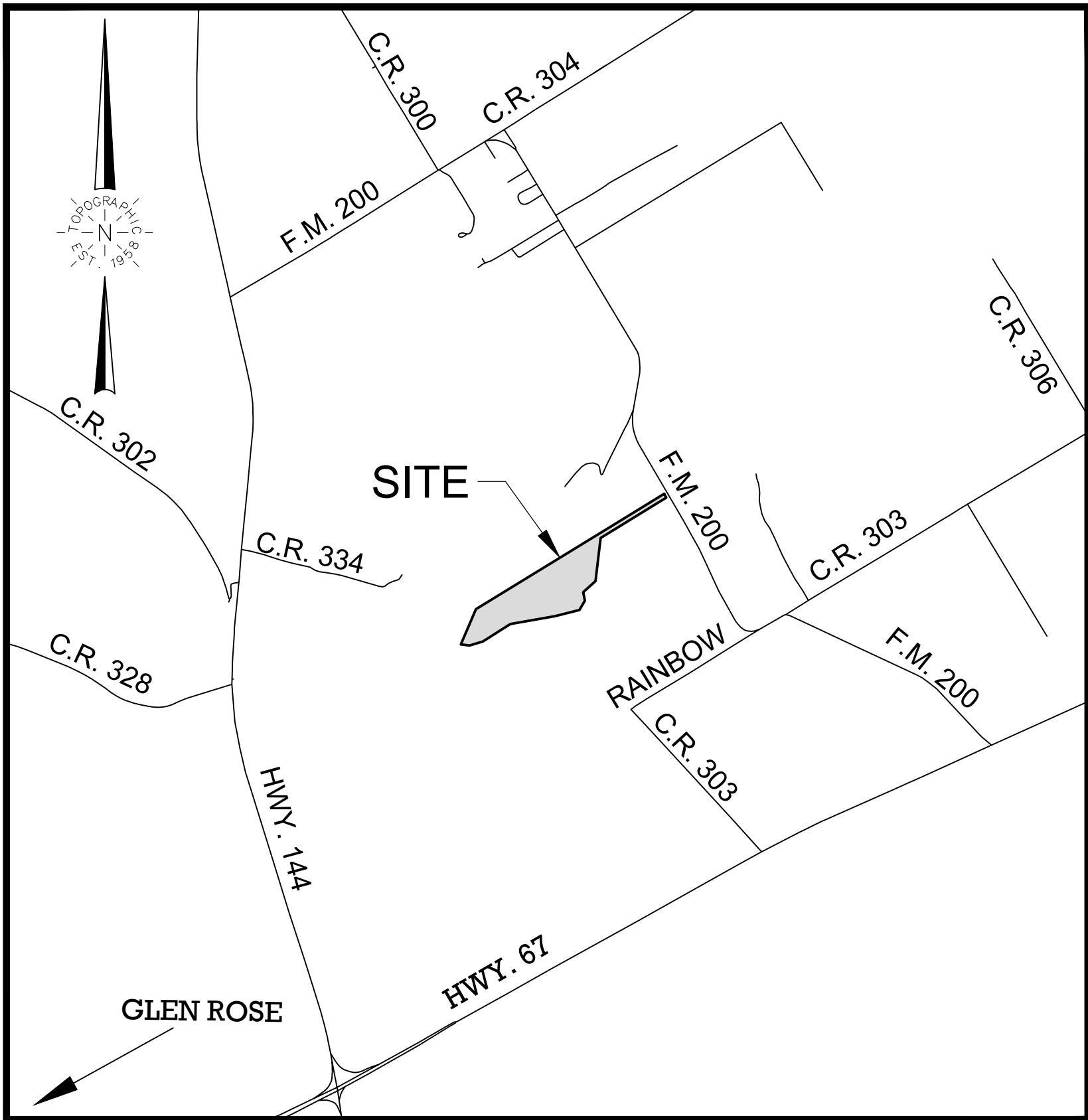
1. Every application for approval of a site plan under the terms of this section shall contain sufficient information delineating:
 1. The characteristics of the site, changes in those characteristics as may be proposed by the development;
 2. How the development will relate to public services and facilities; and
 3. What protection features are included to ensure that the development will be compatible with existing and allowable development on adjacent property.
2. The site plan shall show at least the following items of information:
 1. **Site/adjacent property information.** The land area included within the site; the land area of all abutting sites and zoning classification; all public and private rights-of-way and easements bounding and intersecting the site and the abutting sites which are proposed to be continued, created, relocated and/or abandoned; and the north arrow, date and scale;
 2. **Building layout.**
 1. The location of each existing and each proposed structure on the site; the **general** category of use or uses to be contained therein; the number of stories, gross floor area and the location of entrances and exits to buildings; front, side and rear building setback lines; and elevation views or renderings indicating architectural design and building materials proposed; and
 2. A table showing the type of units by size, number of bedrooms and number and type for all residential dwellings, including floor plans, will also be required;
 3. **Traffic circulation and parking.** The location, dimensions and proposed construction of all streets, private drives, alleys, parking areas and drive approaches, as well as their alignment with existing thoroughfares; location and dimensions of sidewalks, off-street parking areas, fire lanes and loading zones;
 4. **Drainage and utilities.** Existing and proposed finished grade of the site, shown to contour intervals not exceeding 2 feet, proposed handling of on-site surface drainage, location of any floodway or flood prone area as shown on current FIA mapping; existing and proposed water and sanitary sewer layout; and existing and proposed fire hydrants; and
 5. **Screening, landscaping and recreational facilities.** The location, height and building materials for any proposed or required walls or fences; height, location and type of any proposed berms or living screens; proposed landscaping plan; location and size of any proposed recreational facilities such as swimming pools, tennis courts and playgrounds.



CITY COUNCIL AGENDA ACTION FORM

AGENDA DATE:	Monday, September 19, 2022		
AGENDA SUBJECT:	Discussion, consideration and possible recommendation to City Council regarding Final Plat for Squaw Valley Estates		
PREPARED BY:	Building/Planning/Code Enforcement Assistant Holthe	DATE SUBMITTED:	8/30/22
EXHIBITS:	1. Squaw Valley Construction Plans 2. Geotechnical Engineering Proposed plans		
BUDGETARY IMPACT:		Required Expenditure:	\$00.00
		Amount Budgeted:	\$00.00
		Appropriation Required:	\$00.00
CITY ADMINISTRATOR APPROVAL:			
SUMMARY:			
RECOMMENDED ACTION:			
Move to approve or deny as presented.			

CIVIL CONSTRUCTION PLANS
FOR
SQUAW VALLEY ADDITION



VICINITY MAP
NOT TO SCALE

DRAWING SHEET INDEX

Sheet Number	Sheet Title
C0.1	COVER SHEET
C1.1	OVERALL LAYOUT - GENERAL NOTES
C2.1	PAVING PLAN & PROFILE - EAGLE COURT
C2.2	PAVING PLAN & PROFILE - EAGLE COURT
C2.3	PAVING PLAN & PROFILE - EAGLE COURT
C3.1	GRADING PLAN
C3.2	GRADING PLAN
C3.3	GRADING PLAN
C4.1	PRE-DEVELOPMENT DRAINAGE MAP
C4.2	POST-DEVELOPMENT DRAINAGE MAP
C5.1	WATER PLAN
C5.2	WATER PLAN
C5.3	WATER PLAN
C6.1	EROSION CONTROL PLAN & DETAILS
C7.1	STREET LIGHT PLAN
C7.2	STREET LIGHT PLAN
C7.3	STREET LIGHT PLAN
C8.1	PAVING DETAILS
C8.2	WATER DETAILS

IN
GLEN ROSE, TEXAS
SOMERVELLE COUNTY

ENGINEER/SURVEYOR:

TOPOGRAPHIC, CO.
1400 EVERMAN PARKWAY, STE. 146
FORT WORTH, TEXAS 76140
CONTACT: COURTNEY COATES, P.E.
PHONE: 817-744-7512

OWNER:

OAKTREE ASSETS, LLC
P.O. BOX 1671
DESOTO, DALLAS COUNTY TEXAS 75123

PREPARED BY:



1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7548
TEXAS FIRM REGISTRATION NO. 18409
WWW.TOPOGRAPHIC.COM

PERMIT SET
AUGUST 2022

SQUAW VALLEY ADDITION
GLEN ROSE, TEXAS
COVER SHEET

NO.	DATE	REVISION DESCRIPTION

PRELIMINARY, THIS DRAWING
SHALL NOT BE RECORDED
FOR ANY PURPOSE AND SHALL
NOT BE USED OR VIEWED OR
RELIED UPON AS FINAL
CONSTRUCTION DRAWINGS.

PLANS PREPARED UNDER
THE DIRECT SUPERVISION OF
COURTNEY C. COATES, P.E.
TEXAS REGISTRATION NO.
103181

SHEET NO.

C0.1

Item 3.

T

TOPOGRAPHIC

LOYALTY INNOVATION LEGACY

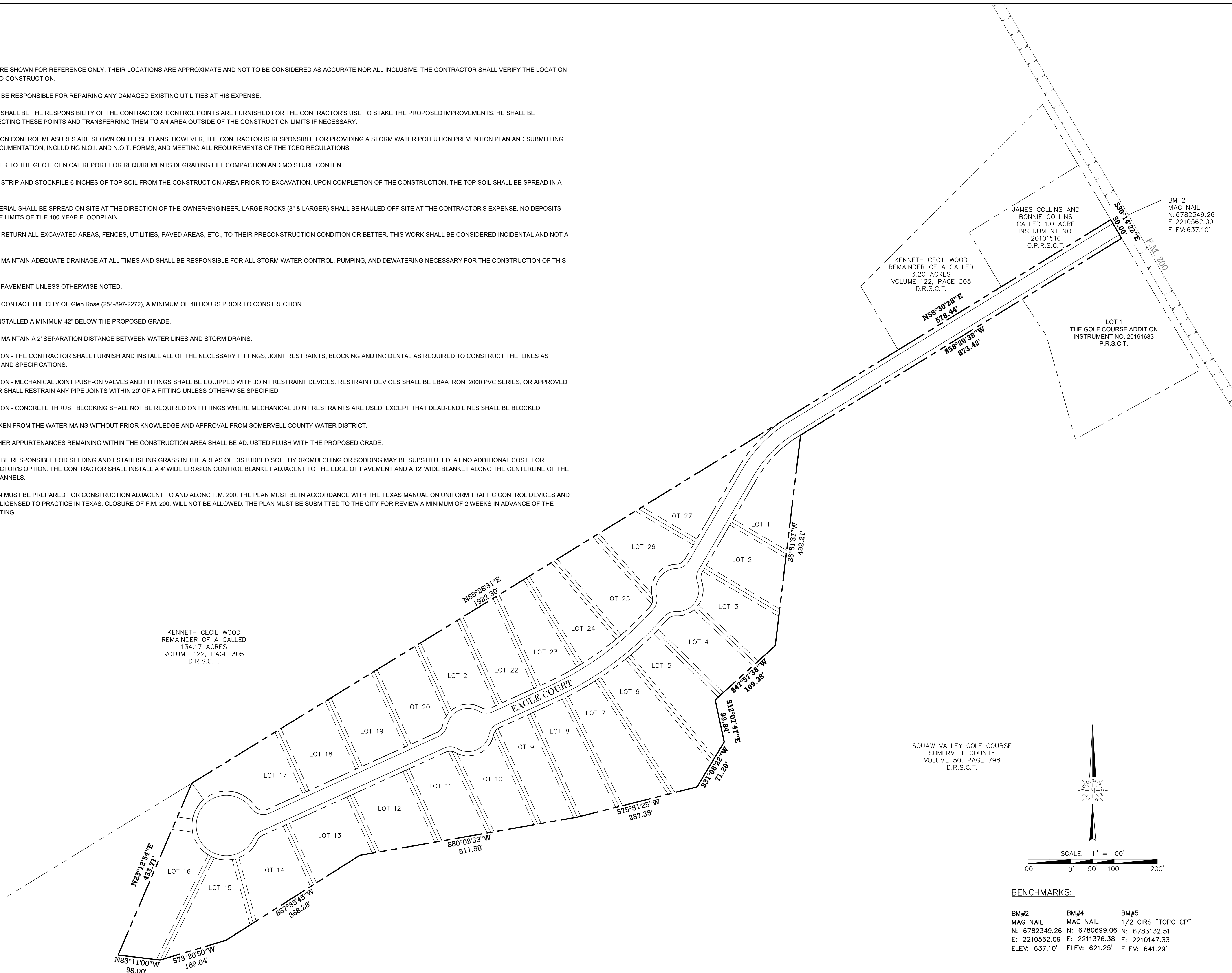
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140

TELEPHONE: (817) 744-7512 • FAX (817) 744-7554

TEXAS FIRM REGISTRATION NO. 10042504

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- THE EXISTING UTILITIES ARE SHOWN FOR REFERENCE ONLY. THEIR LOCATIONS ARE APPROXIMATE AND NOT TO BE CONSIDERED AS ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGED EXISTING UTILITIES AT HIS EXPENSE.
- CONSTRUCTION STAKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTROL POINTS ARE FURNISHED FOR THE CONTRACTOR'S USE TO STAKE THE PROPOSED IMPROVEMENTS. HE SHALL BE RESPONSIBLE FOR PROTECTING THESE POINTS AND TRANSFERRING THEM TO AN AREA OUTSIDE OF THE CONSTRUCTION LIMITS IF NECESSARY.
- SOME SUGGESTED EROSION CONTROL MEASURES ARE SHOWN ON THESE PLANS. HOWEVER, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A STORM WATER POLLUTION PREVENTION PLAN AND SUBMITTING ALL REQUIRED TDES DOCUMENTATION, INCLUDING N.O.I. AND N.O.T. FORMS, AND MEETING ALL REQUIREMENTS OF THE TCEQ REGULATIONS.
- CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR REQUIREMENTS DEGRADING FILL COMPACTION AND MOISTURE CONTENT.
- THE CONTRACTOR SHALL STRIP AND STOCKPILE 6 INCHES OF TOP SOIL FROM THE CONSTRUCTION AREA PRIOR TO EXCAVATION. UPON COMPLETION OF THE CONSTRUCTION, THE TOP SOIL SHALL BE SPREAD IN A WORKMANLIKE MANNER.
- EXCESS EXCAVATED MATERIAL SHALL BE SPREAD ON SITE AT THE DIRECTION OF THE OWNER/ENGINEER. LARGE ROCKS (3" & LARGER) SHALL BE HAULED OFF SITE AT THE CONTRACTOR'S EXPENSE. NO DEPOSITS ARE ALLOWED WITHIN THE LIMITS OF THE 100-YEAR FLOODPLAIN.
- THE CONTRACTOR SHALL RETURN ALL EXCAVATED AREAS, FENCES, UTILITIES, PAVED AREAS, ETC., TO THEIR PRECONSTRUCTION CONDITION OR BETTER. THIS WORK SHALL BE CONSIDERED INCIDENTAL AND NOT A SEPARATE ITEM.
- THE CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES AND SHALL BE RESPONSIBLE FOR ALL STORM WATER CONTROL, PUMPING, AND DEWATERING NECESSARY FOR THE CONSTRUCTION OF THIS PROJECT.
- ALL DIMENSIONS ARE TO PAVEMENT UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL CONTACT THE CITY OF Glen Rose (254-897-2272), A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION.
- WATER LINES SHALL BE INSTALLED A MINIMUM 42" BELOW THE PROPOSED GRADE.
- THE CONTRACTOR SHALL MAINTAIN A 2' SEPARATION DISTANCE BETWEEN WATER LINES AND STORM DRAINS.
- WATER LINE CONSTRUCTION - THE CONTRACTOR SHALL FURNISH AND INSTALL ALL OF THE NECESSARY FITTINGS, JOINT RESTRAINTS, BLOCKING AND INCIDENTAL AS REQUIRED TO CONSTRUCT THE LINES AS SHOWN ON THESE PLANS AND SPECIFICATIONS.
- WATER LINE CONSTRUCTION - MECHANICAL JOINT PUSH-ON VALVES AND FITTINGS SHALL BE EQUIPPED WITH JOINT RESTRAINT DEVICES. RESTRAINT DEVICES SHALL BE EBAA IRON, 2000 PVC SERIES, OR APPROVED EQUAL. THE CONTRACTOR SHALL RESTRAIN ANY PIPE JOINTS WITHIN 20' OF A FITTING UNLESS OTHERWISE SPECIFIED.
- WATER LINE CONSTRUCTION - CONCRETE THRUST BLOCKING SHALL NOT BE REQUIRED ON FITTINGS WHERE MECHANICAL JOINT RESTRAINTS ARE USED, EXCEPT THAT DEAD-END LINES SHALL BE BLOCKED.
- WATER SHALL NOT BE TAKEN FROM THE WATER MAINS WITHOUT PRIOR KNOWLEDGE AND APPROVAL FROM SOMERVELL COUNTY WATER DISTRICT.
- ALL VALVE BOXES OR OTHER APPURTENANCES REMAINING WITHIN THE CONSTRUCTION AREA SHALL BE ADJUSTED FLUSH WITH THE PROPOSED GRADE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEDING AND ESTABLISHING GRASS IN THE AREAS OF DISTURBED SOIL. HYDROMULCHING OR SODDING MAY BE SUBSTITUTED, AT NO ADDITIONAL COST, FOR SEEDING AT THE CONTRACTOR'S OPTION. THE CONTRACTOR SHALL INSTALL A 4' WIDE EROSION CONTROL BLANKET ADJACENT TO THE EDGE OF PAVEMENT AND A 12' WIDE BLANKET ALONG THE CENTERLINE OF THE PROPOSED DRAINAGE CHANNELS.
- A TRAFFIC CONTROL PLAN MUST BE PREPARED FOR CONSTRUCTION ADJACENT TO AND ALONG F.M. 200. THE PLAN MUST BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND SIGNED BY AN ENGINEER LICENSED TO PRACTICE IN TEXAS. CLOSURE OF F.M. 200. WILL NOT BE ALLOWED. THE PLAN MUST BE SUBMITTED TO THE CITY FOR REVIEW A MINIMUM OF 2 WEEKS IN ADVANCE OF THE PRE-CONSTRUCTION MEETING.

[illegible]

PRELIMINARY, THIS DRAWING
SHALL NOT BE RECORDED
FOR ANY PURPOSE AND SHALL
NOT BE USED OR VIEWED OR
RELIED UPON AS FINAL
CONSTRUCTION DRAWINGS.

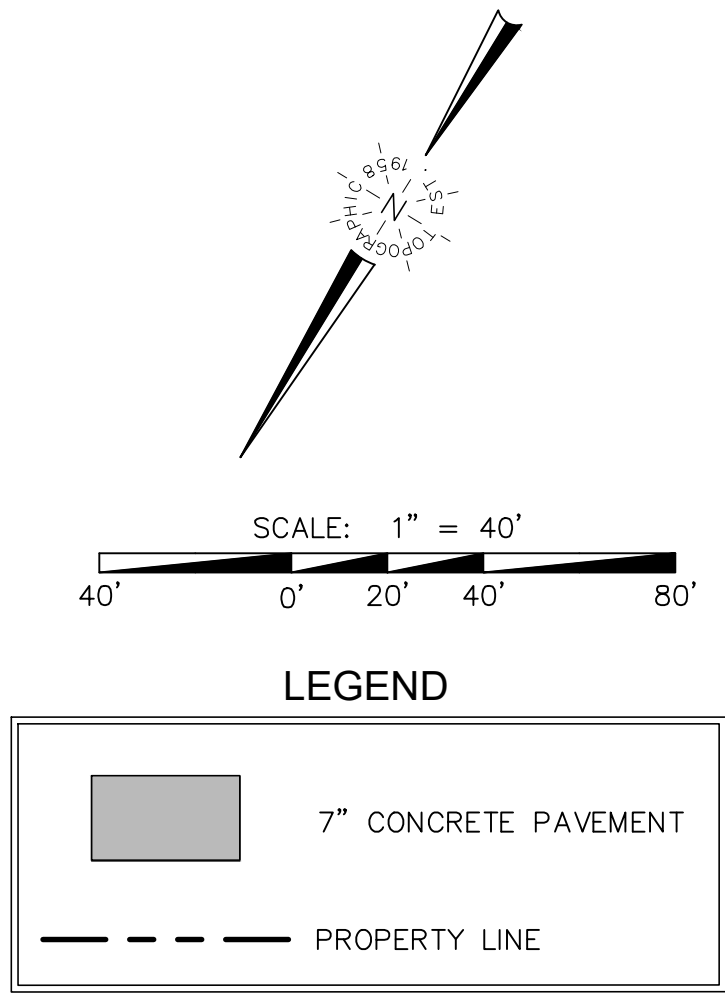
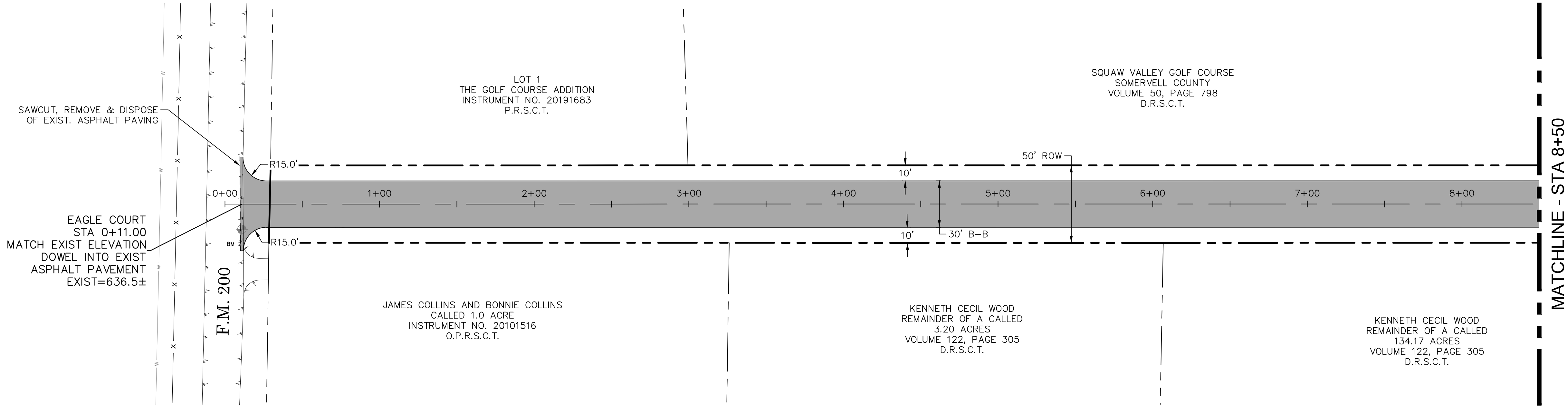
PLANS PREPARED UNDER
THE DIRECT SUPERVISION OF
COURTNEY C. COATES, P.E.
TEXAS REGISTRATION NO.
103181

SHEET NO.

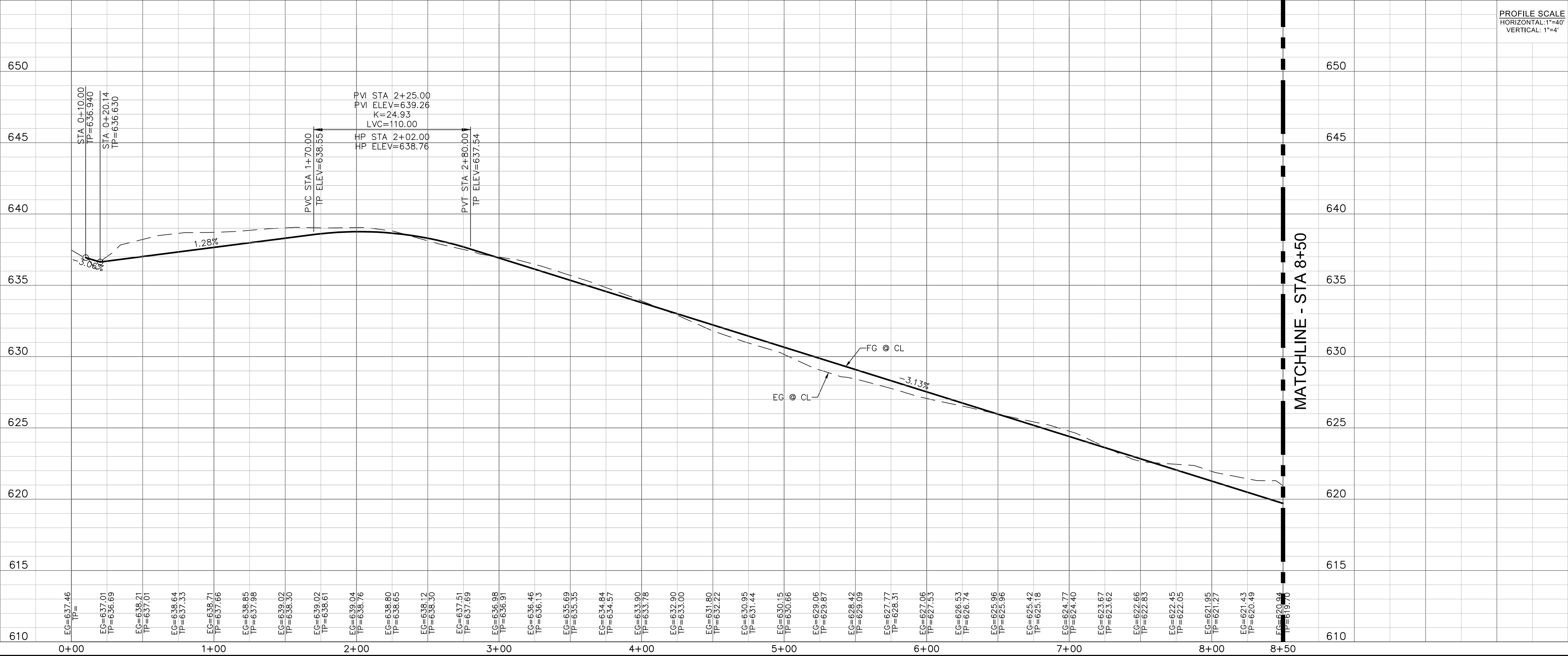
C1.1

BENCHMARKS:

BM#2	BM#4	BM#5
MAG NAIL	MAG NAIL	1/2 CIRS "TOPO CP"
N: 6782349.26	N: 6780699.06	N: 6783132.51
E: 2210562.09	E: 2211376.38	E: 2210147.33
ELEV: 637.10'	ELEV: 621.25'	ELEV: 641.29'



EAGLE COURT



SQUAW VALLEY ADDITION
GLEN ROSE, TEXAS

PAVING PLAN & PROFILE - EAGLE COURT

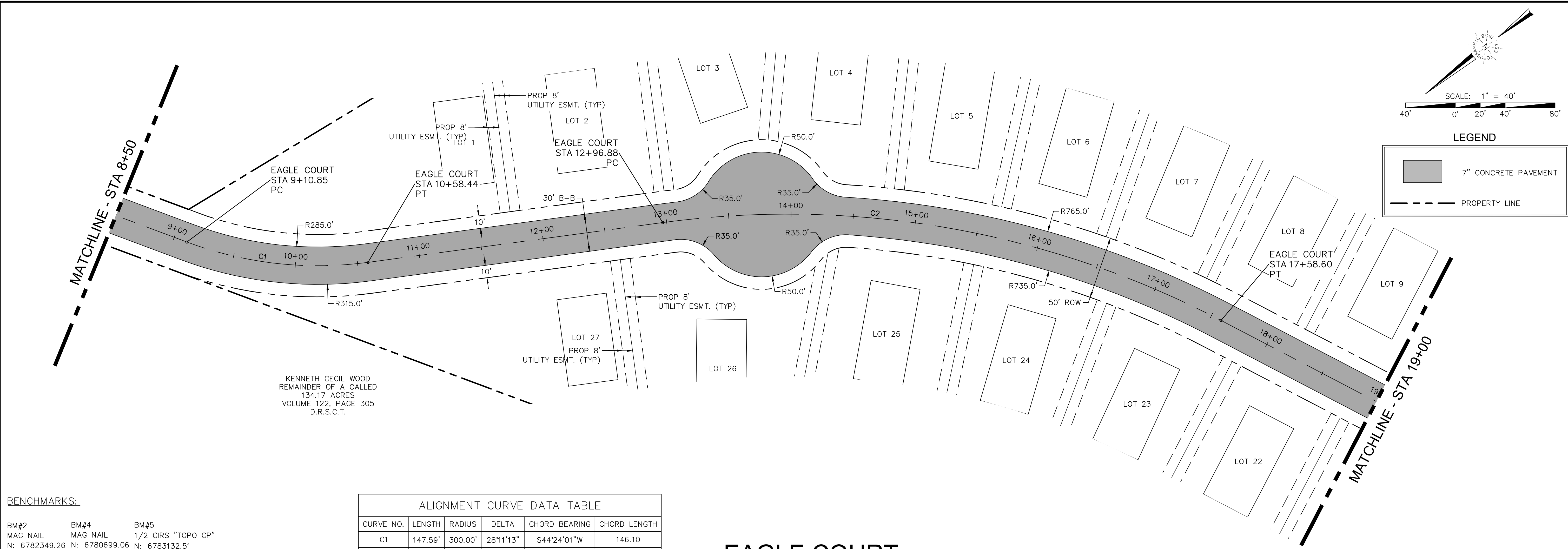
NO. DATE REVISION DESCRIPTION

PRELIMINARY, THIS DRAWING
SHALL NOT BE RECORDED/
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PLANS PREPARED UNDER
THE DIRECT SUPERVISION OF
COURTNEY C. COATES, P.E.
TEXAS REGISTRATION NO.
103181

SHEET NO.

C2.1

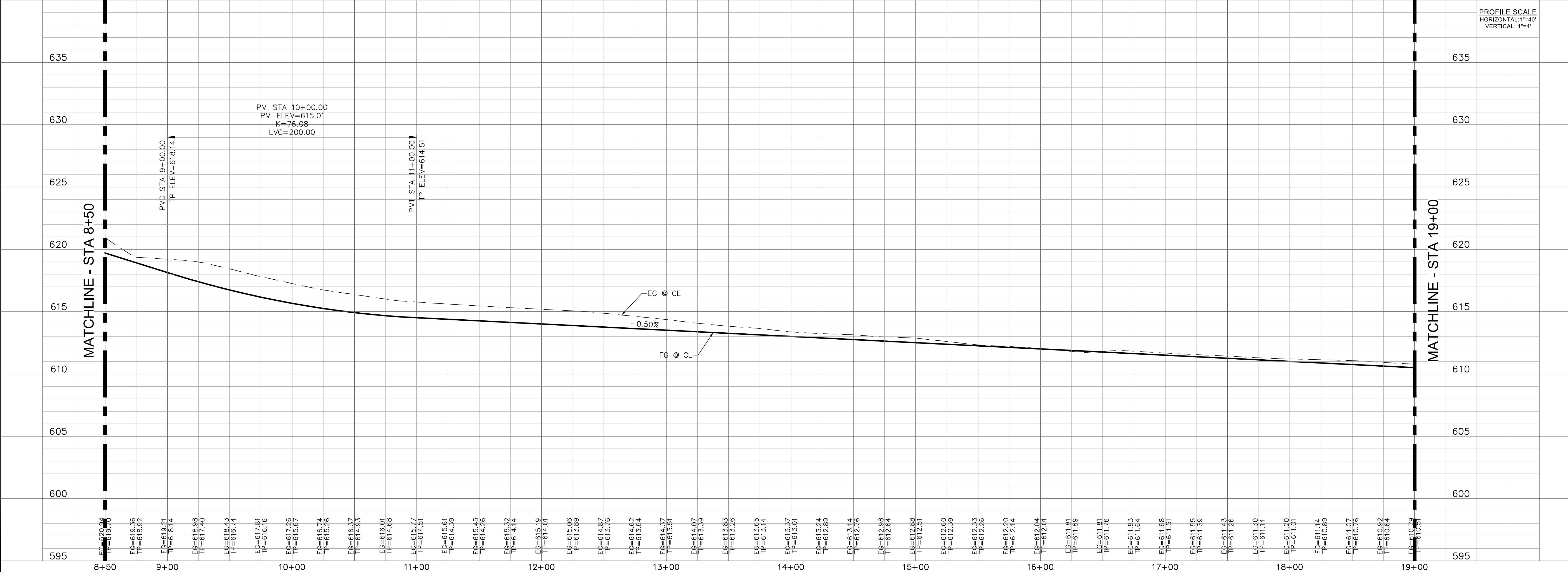


BENCHMARKS:

BM#2	BM#4	BM#5
MAG NAIL	MAG NAIL	1/2 CIRS "TOPO CP"
N: 6782349.26	N: 6780699.06	N: 6783132.51
E: 2210562.09	E: 2211376.38	E: 2210147.33
ELEV: 637.10'	ELEV: 621.25'	ELEV: 641.29'

ALIGNMENT CURVE DATA TABLE					
CURVE NO.	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	147.59'	300.00'	28°11'13"	S44°24'01"W	146.10
C2	461.72'	750.00'	35°16'22"	S47°56'35"W	454.46

EAGLE COURT



Item 3.

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TOPOGRAPHIC

LOYALTY

INNOVATION

LEGACY

1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140

TELEPHONE: (817) 744-7512 • FAX: (817) 744-7554

TEXAS FIRM REGISTRATION NO. 10042504

WWW.TOPOGRAPHIC.COM

SQUAW VALLEY ADDITION

GLEN ROSE, TEXAS

PAVING PLAN & PROFILE - EAGLE COURT

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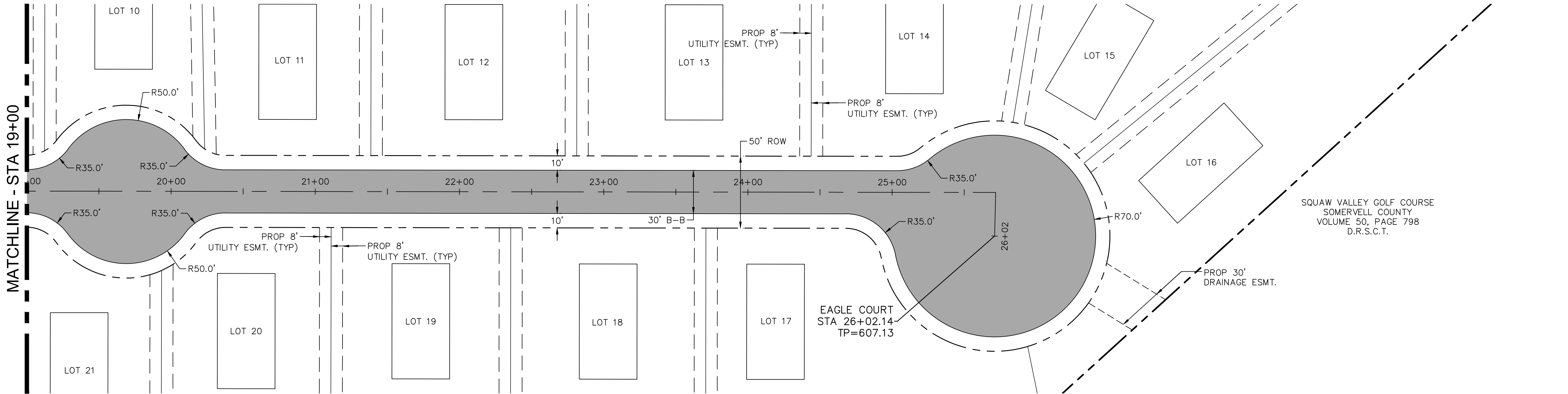
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C2.2

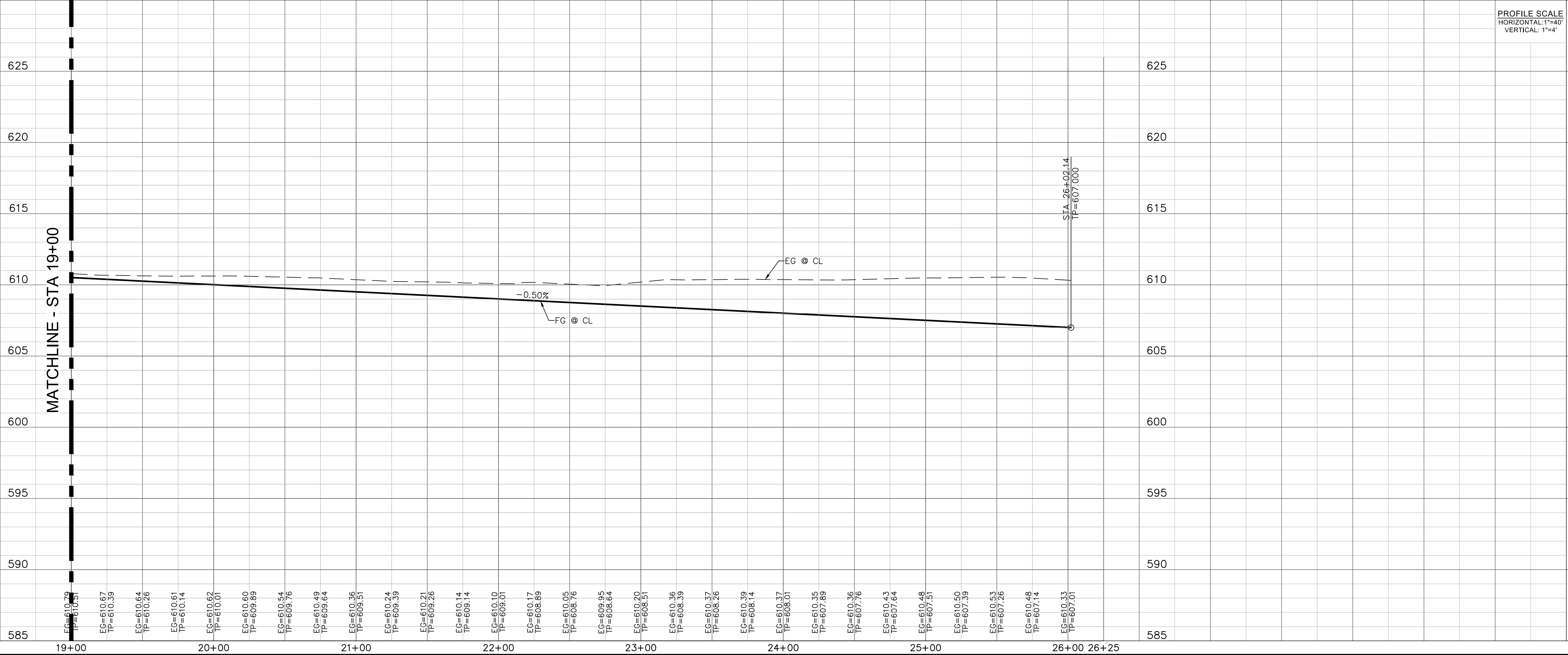
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BENCHMARKS:

BM#2	BM#4	BM#5
MAG NAIL	MAG NAIL	1/2 CIRS "TOPO CP"
N: 6782349.26	N: 6780699.06	N: 6783132.51
E: 2210562.09	E: 2211376.38	E: 2210147.33
ELEV: 637.10'	ELEV: 621.25'	ELEV: 641.29'



EAGLE COURT



SQUAW VALLEY ADDITION
GLEN ROSE, TEXAS

PAVING PLAN & PROFILE - EAGLE COURT

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C2.3

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GRADING PLAN

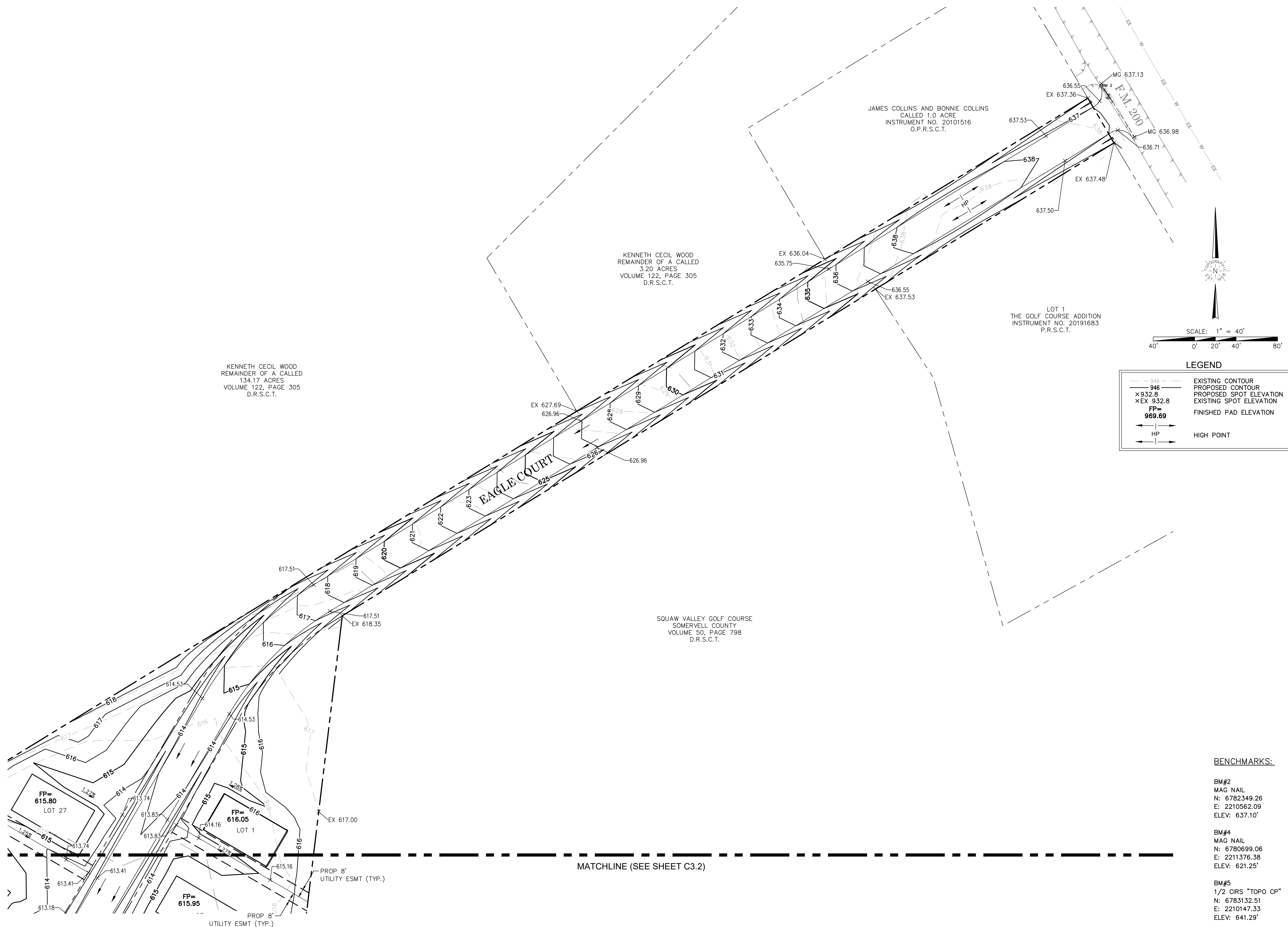
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SHEET NO.

C3.1



BENCHMARKS:

BM#2
MAG NAIL
N: 6782349.26
E: 2210562.09
ELEV: 637.10'

BM#4
MAG NAIL
N: 6780699.06
E: 2211376.38
ELEV: 621.25'

BM#5
1/2 CIRS "TOPO CP"
N: 6783132.51
E: 2210147.33
ELEV: 641.29'

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GLEN ROSE, TEXAS**

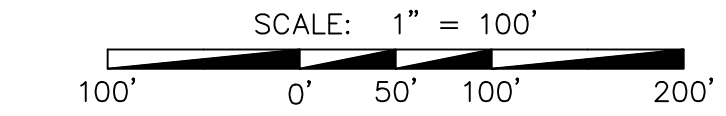
GRADING PLAN

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SHEET NO.

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GLEN ROSE, TEXAS**

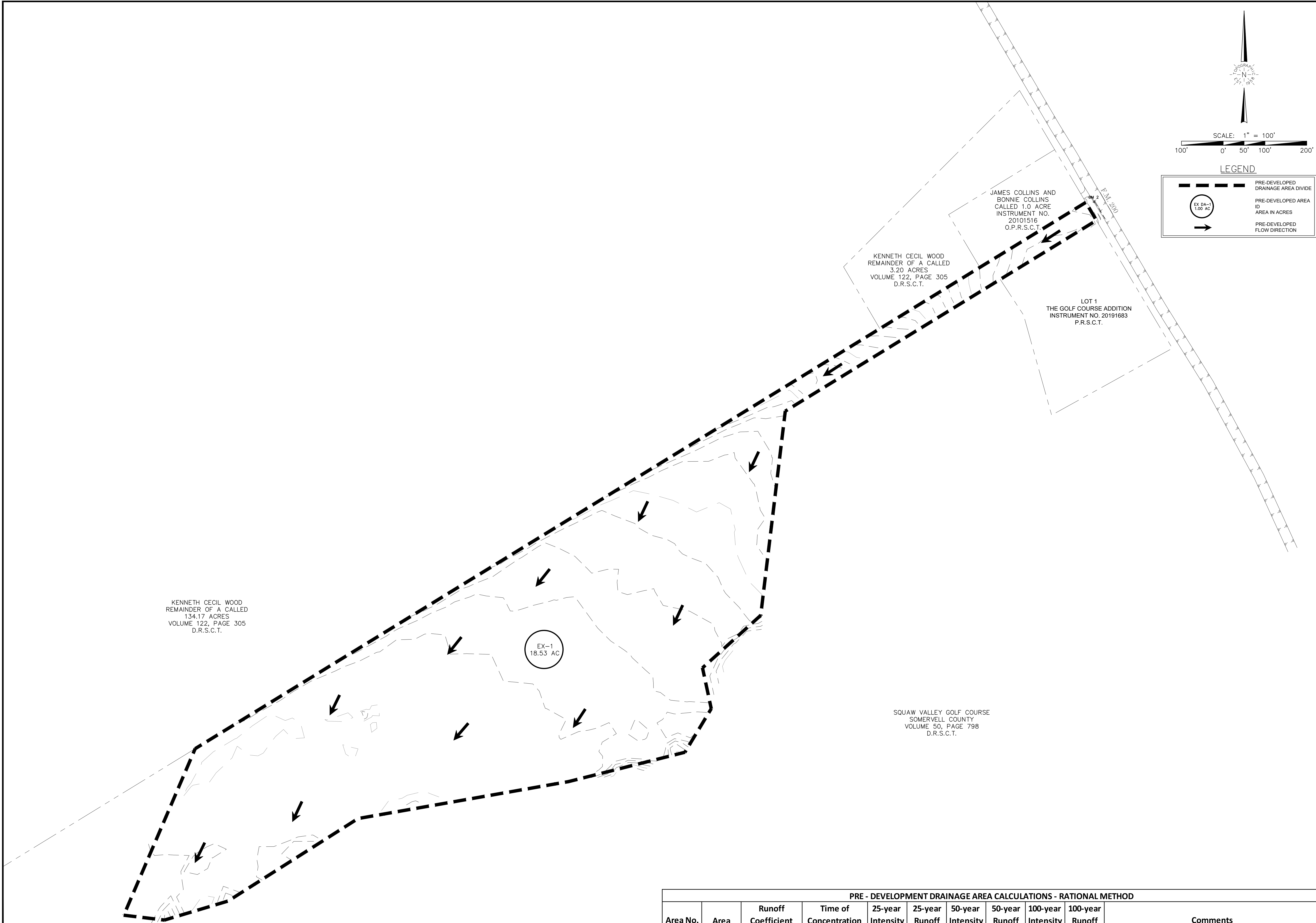
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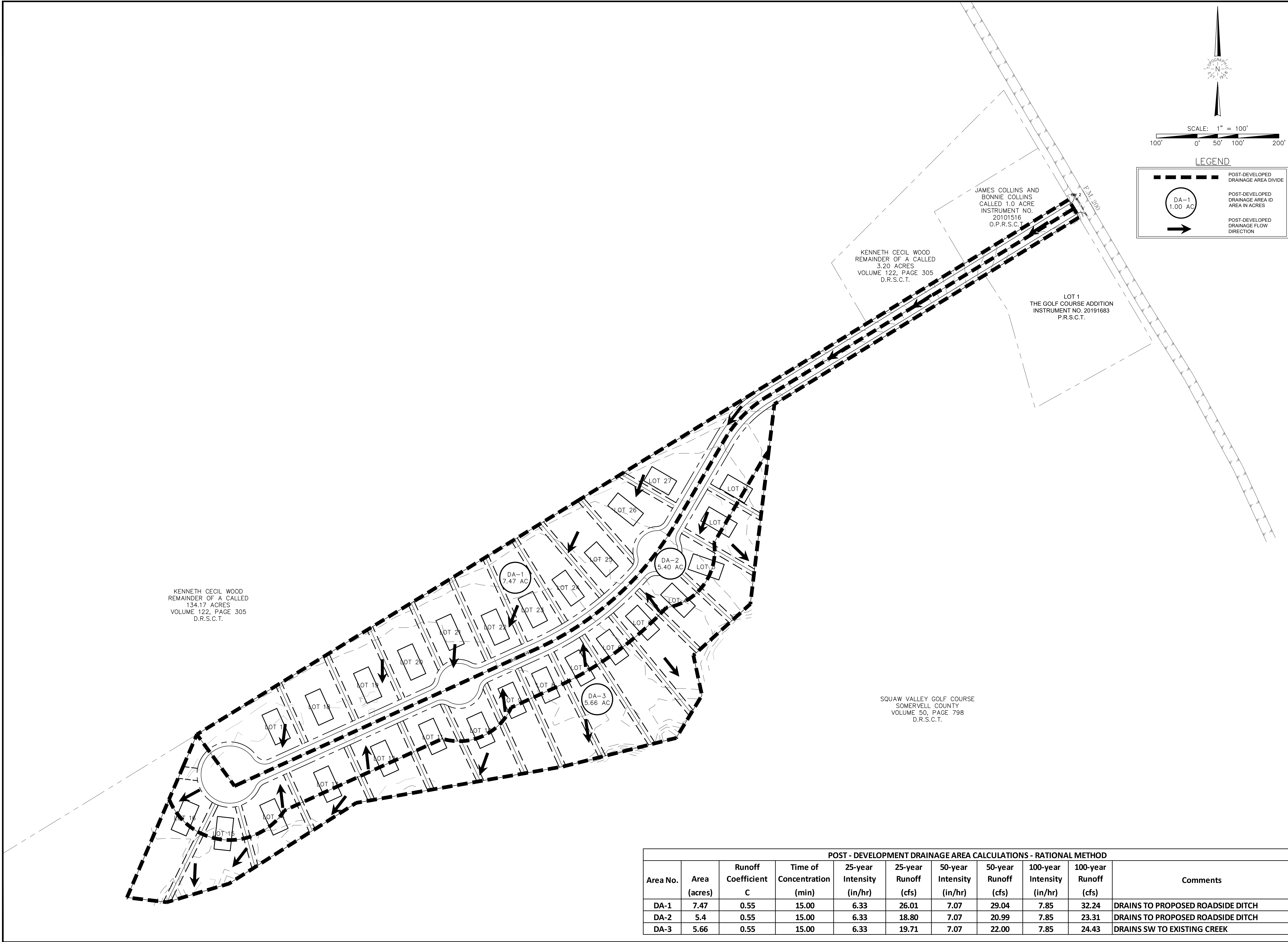
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SHEET NO

C4.1



PRE - DEVELOPMENT DRAINAGE AREA CALCULATIONS - RATIONAL METHOD										
Area No.	Area (acres)	Runoff Coefficient C	Time of Concentration (min)	25-year Intensity (in/hr)	25-year Runoff (cfs)	50-year Intensity (in/hr)	50-year Runoff (cfs)	100-year Intensity (in/hr)	100-year Runoff (cfs)	Comments
EX-1	18.53	0.35	15.00	6.33	41.06	7.07	45.84	7.85	50.89	DRAINS SW TO EXISTING CREEK



POST - DEVELOPMENT DRAINAGE AREA CALCULATIONS - RATIONAL METHOD											
Area No.	Area (acres)	Runoff Coefficient C	Time of Concentration (min)	25-year Intensity (in/hr)	25-year Runoff (cfs)	50-year Intensity (in/hr)	50-year Runoff (cfs)	100-year Intensity (in/hr)	100-year Runoff (cfs)	Comments	
DA-1	7.47	0.55	15.00	6.33	26.01	7.07	29.04	7.85	32.24	DRAINS TO PROPOSED ROADSIDE DITCH	
DA-2	5.4	0.55	15.00	6.33	18.80	7.07	20.99	7.85	23.31	DRAINS TO PROPOSED ROADSIDE DITCH	
DA-3	5.66	0.55	15.00	6.33	19.71	7.07	22.00	7.85	24.43	DRAINS SW TO EXISTING CREEK	

100'0'50'100'200'

SCALE: 1" = 100'

LEGEND

DA-1
1.00 AC

→

POST-DEVELOPED
DRAINAGE AREA DIVIDE

POST-DEVELOPED
DRAINAGE AREA ID
AREA IN ACRES

POST-DEVELOPED
DRAINAGE FLOW
DIRECTION

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POST-DEVELOPMENT DRAINAGE MAP

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SHEET NO.

C4.2

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**SQUAW VALLEY ADDITION
GLEN ROSE, TEXAS**

WATER PLAN

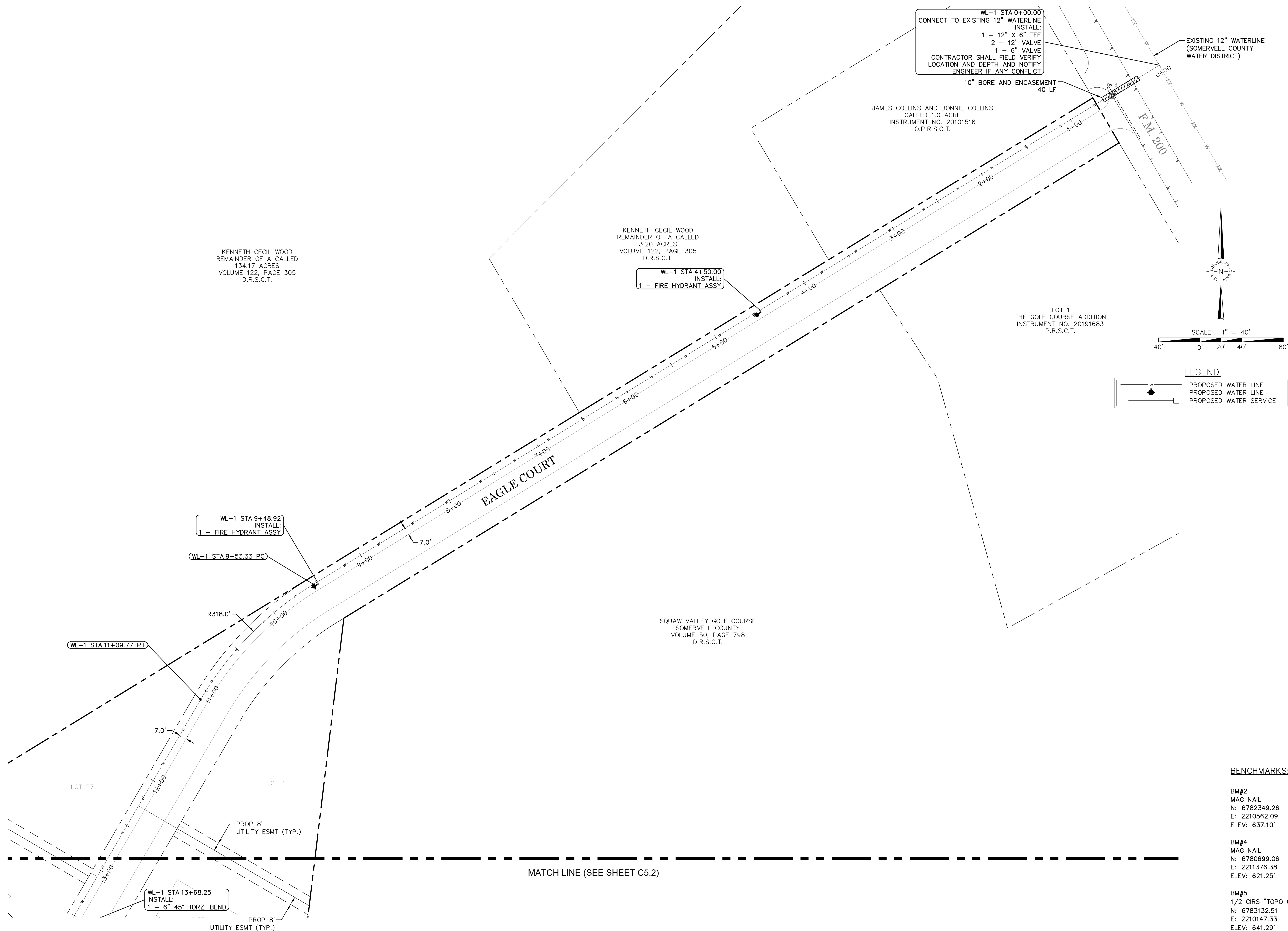
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SHEET NO.

C5.1



BENCHMARKS:

BM#2
MAG NAIL
N: 6782349.26
E: 2210562.09
ELEV: 637.10'

BM#4
MAG NAIL
N: 6780699.06
E: 2211376.38
ELEV: 621.25'

BM#5
1/2 CIRS "TOPO CP"
N: 6783132.51
E: 2210147.33
ELEV: 641.29'

WATER PLAN

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SHEET NO

26



SQUAW VALLEY ADDITION
GLEN ROSE, TEXAS

WATER PLAN

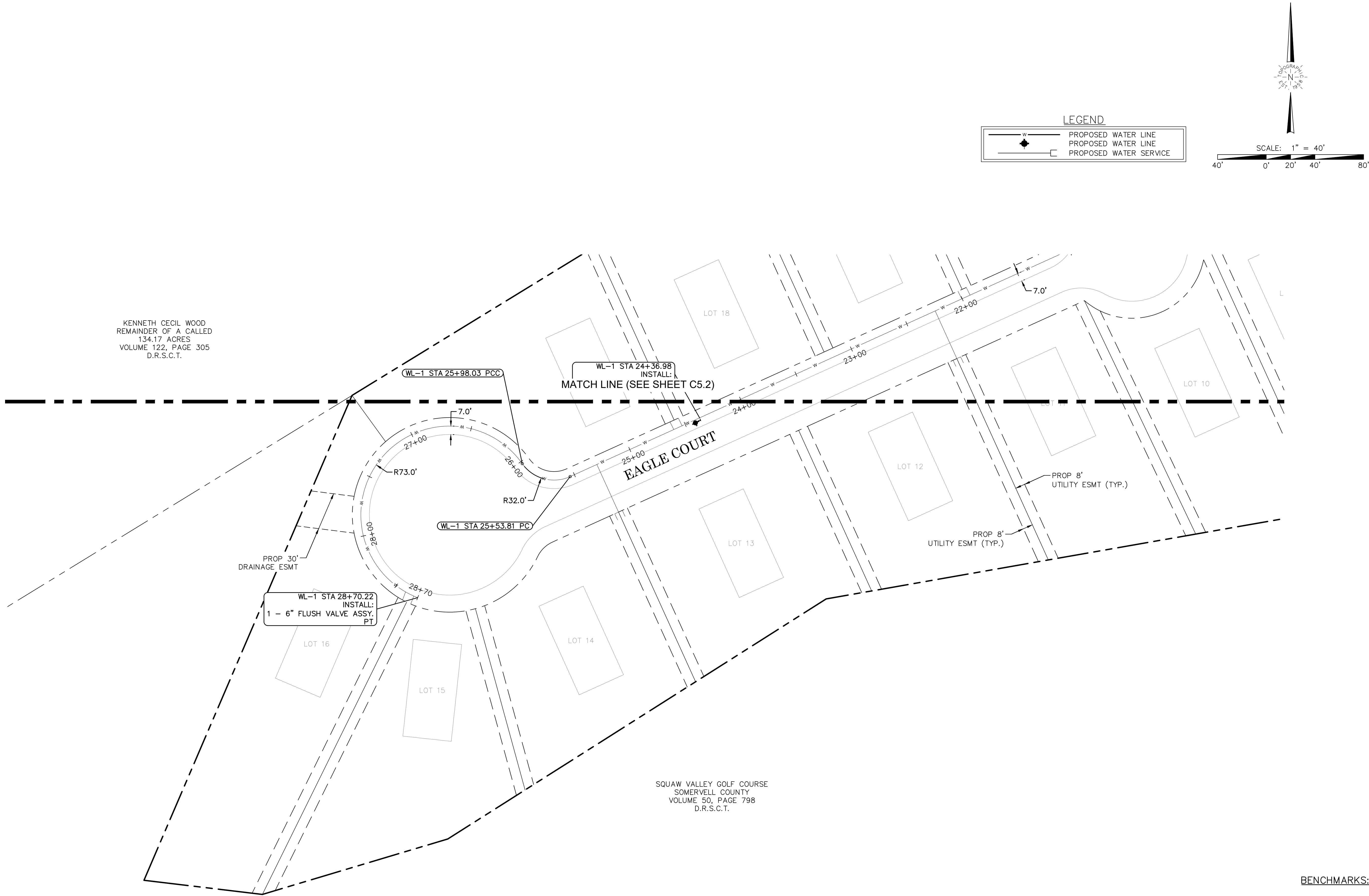
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SHEET NO.

C5.3



LEGEND

—w—

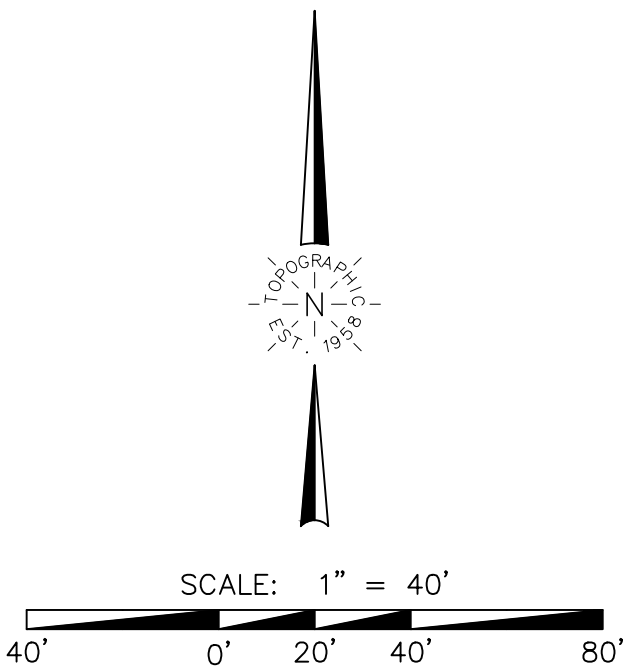
PROPOSED WATER LINE

—w—

PROPOSED WATER LINE

—w—

PROPOSED WATER SERVICE



BENCHMARKS:

- BM#2

MAG NAIL

N: 6782349.26

E: 2210562.09

ELEV: 637.10'
- BM#4

MAG NAIL

N: 6780699.06

E: 2211376.38

ELEV: 621.25'
- BM#5

1/2 CIRS "TOPO CP"

N: 6783132.51

E: 2210147.33

ELEV: 641.29'



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STREET LIGHT PLAN

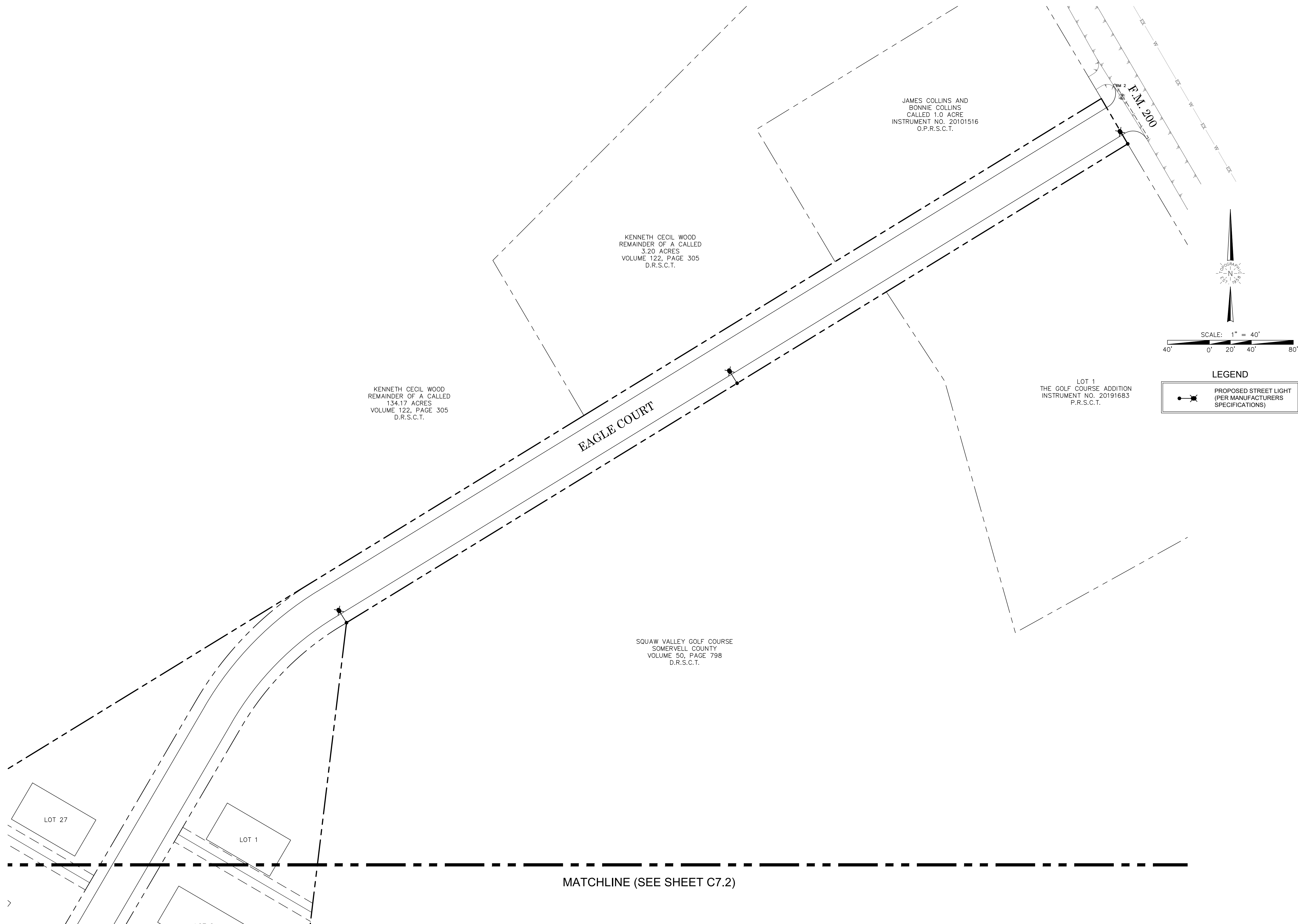
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SHEET NO.

C7.1



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STREET LIGHT PLAN

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INNOVATION

LEGACY

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SCALE: 1" = 40'

40' 0' 20' 40' 80'

LEGEND

PROPOSED STREET LIGHT
(PER MANUFACTURERS SPECIFICATIONS)

The diagram is a detailed site plan for a residential development. A central road, 'EAGLE COURT', runs diagonally from the bottom left towards the top right. Along both sides of Eagle Court, there are rectangular lots numbered 1 through 12. Lots 1-6 are on the right side of the road, and lots 7-12 are on the left. Each lot is outlined with a solid line and labeled with its lot number. Eagle Court is shown with a centerline and dashed lines indicating the road boundaries. Three proposed street light locations are marked with a star symbol and a dot. One is located at the intersection of Eagle Court and a road running horizontally across the top of the plan. Another is located at the intersection of Eagle Court and a road running horizontally across the bottom of the plan. The third is located at a point on Eagle Court between lot 8 and lot 9. Matchlines are indicated by dashed lines with the text 'MATCHLINE (SEE SHEET C7.1)' at the top and 'MATCHLINE (SEE SHEET C7.3)' at the bottom. A north arrow is located in the top right corner, pointing upwards. A scale bar below the north arrow indicates 1 inch equals 40 feet, with markings for 40, 0, 20, 40, and 80 feet. A legend box in the top right corner shows the symbol for a proposed street light and the text 'PROPOSED STREET LIGHT (PER MANUFACTURERS SPECIFICATIONS)'. Two text blocks provide legal references: 'KENNETH CECIL WOOD REMAINDER OF A CALLED 134.17 ACRES VOLUME 122, PAGE 305 D.R.S.C.T.' on the left and 'SQUAW VALLEY GOLF COURSE SOMERVELL COUNTY VOLUME 50, PAGE 798 D.R.S.C.T.' on the right.

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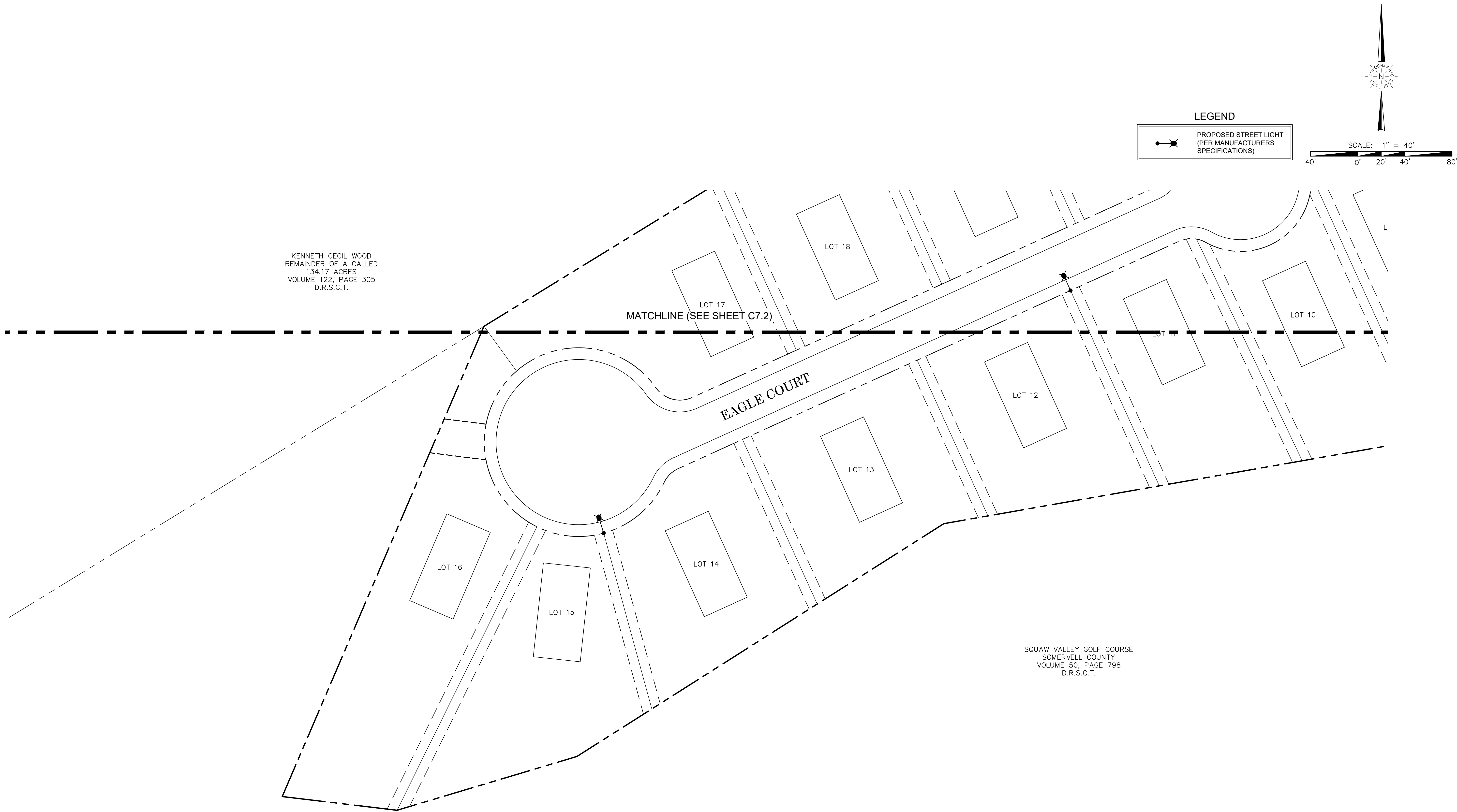
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GLEN ROSE, TEXAS

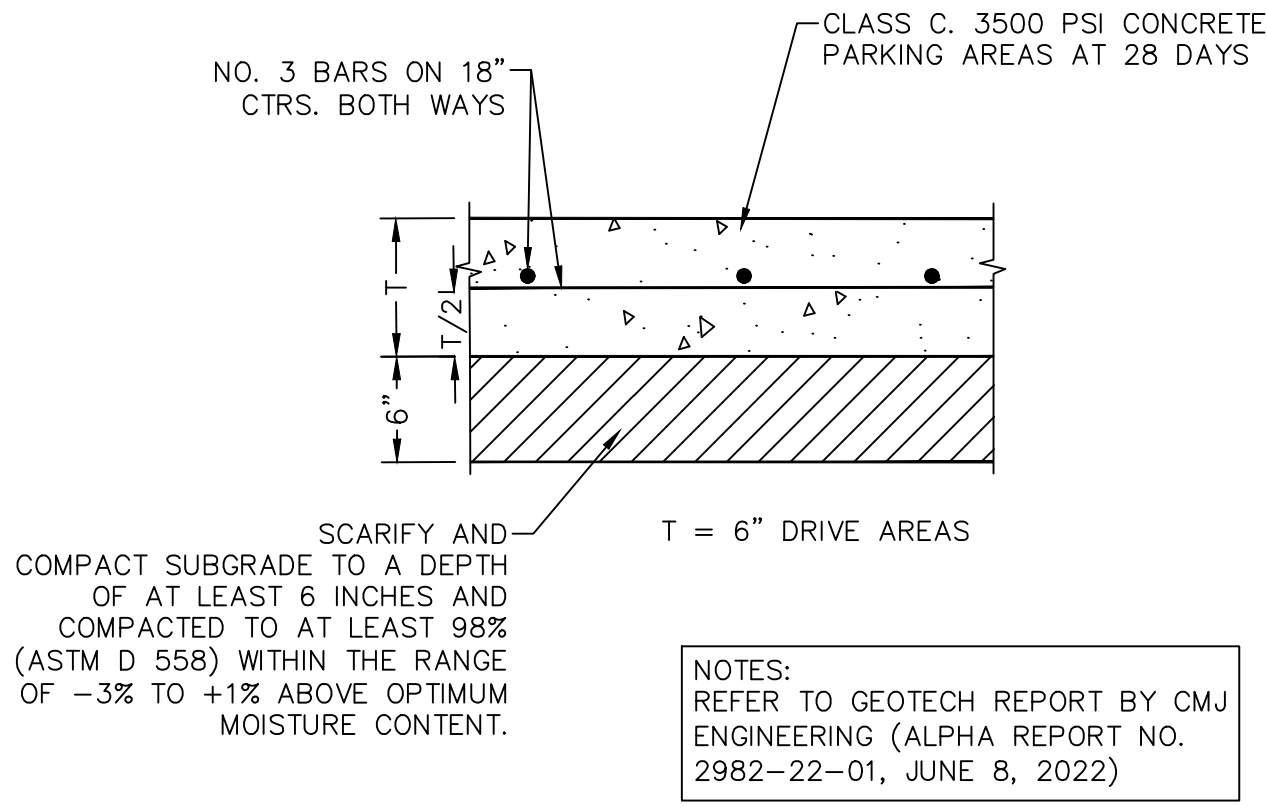
STREET LIGHT PLAN

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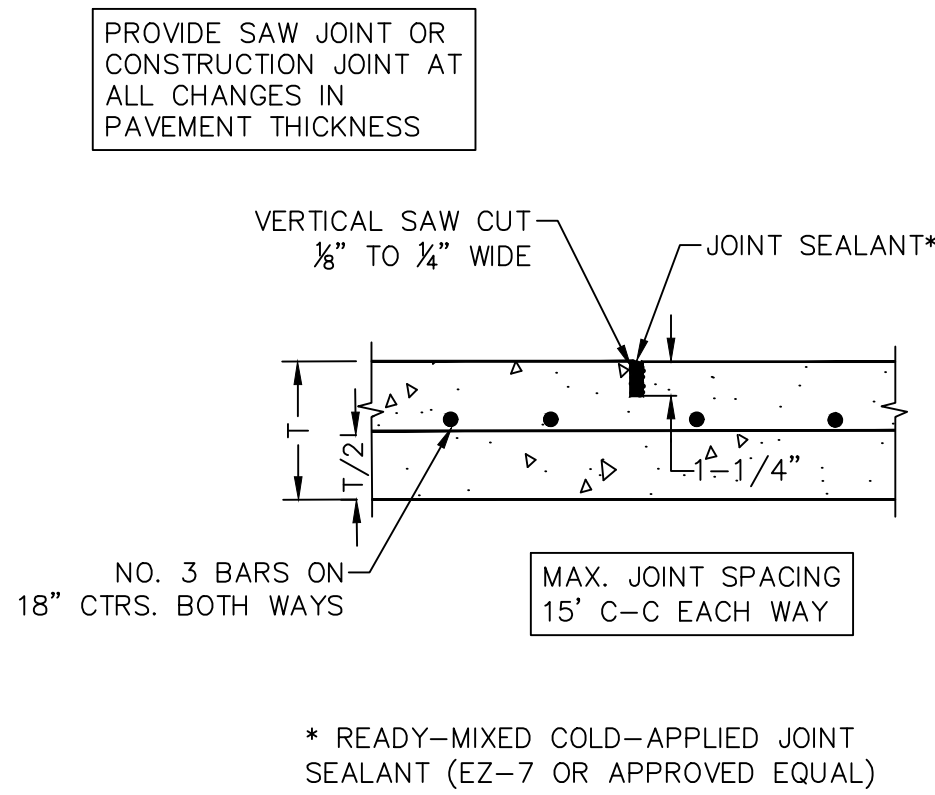
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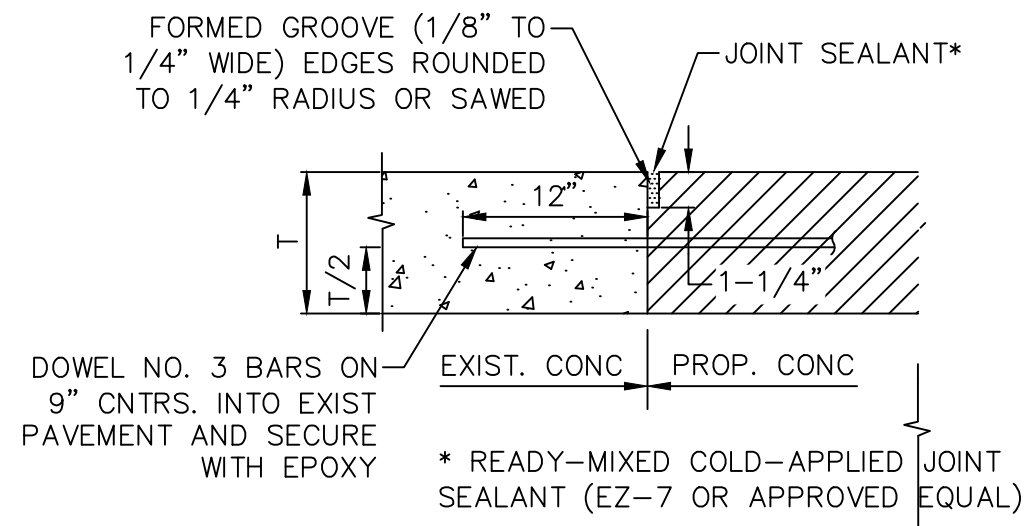
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PAVEMENT SECTION

NOT TO SCALE



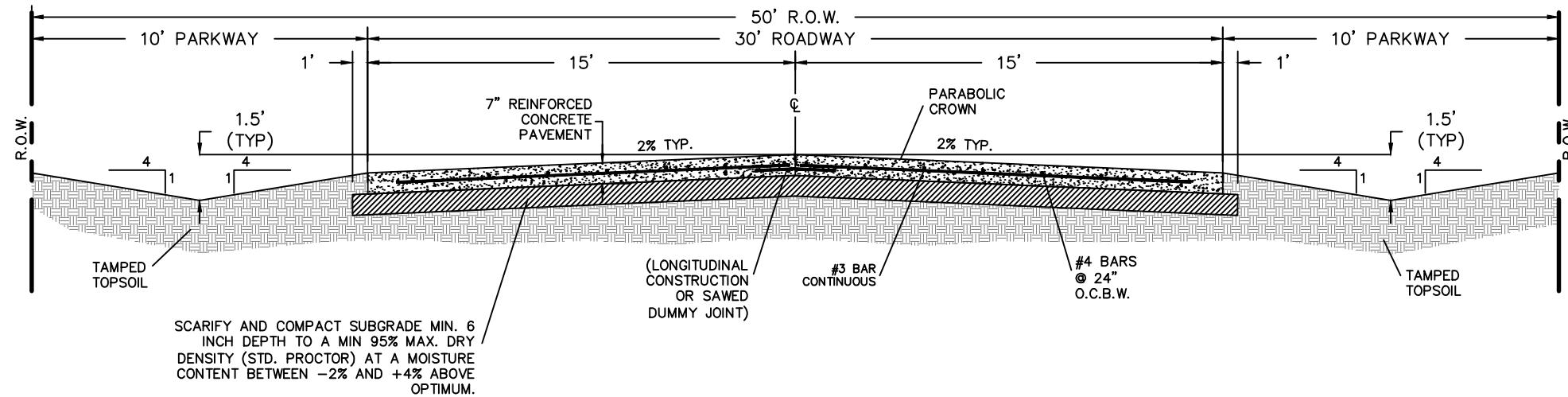
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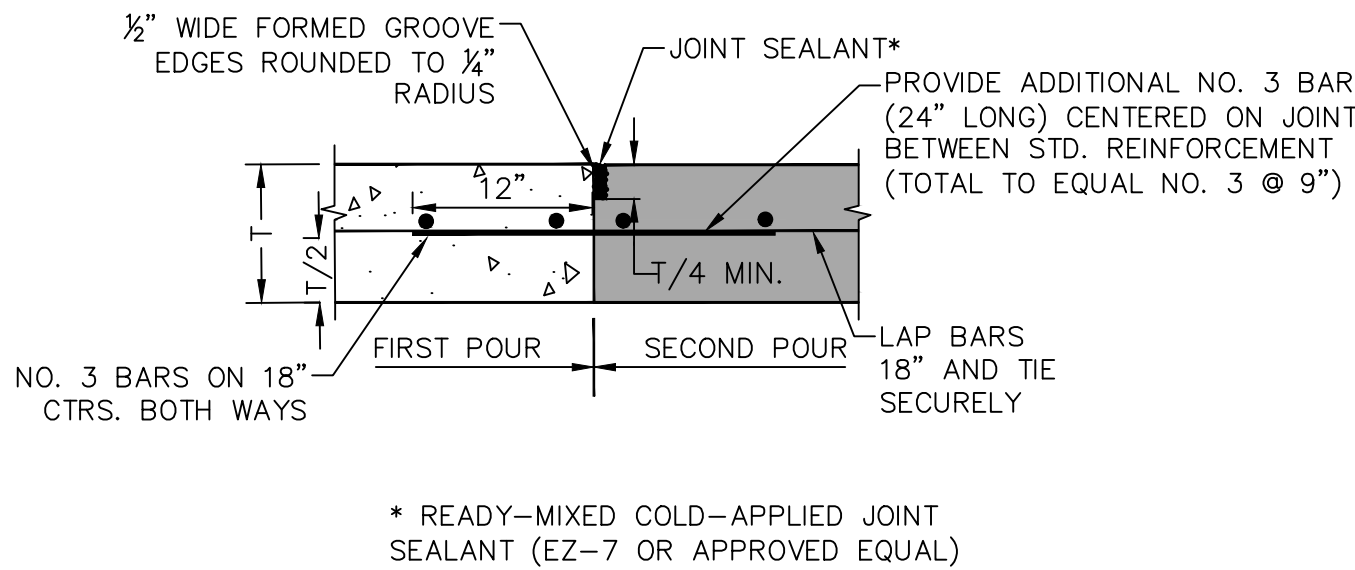
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CONNECTION

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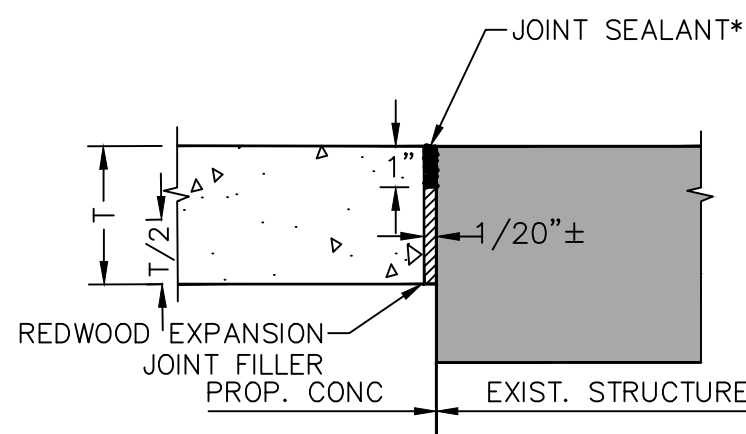
RESIDENTIAL CONCRETE
STREET SECTION

NOT TO SCALE



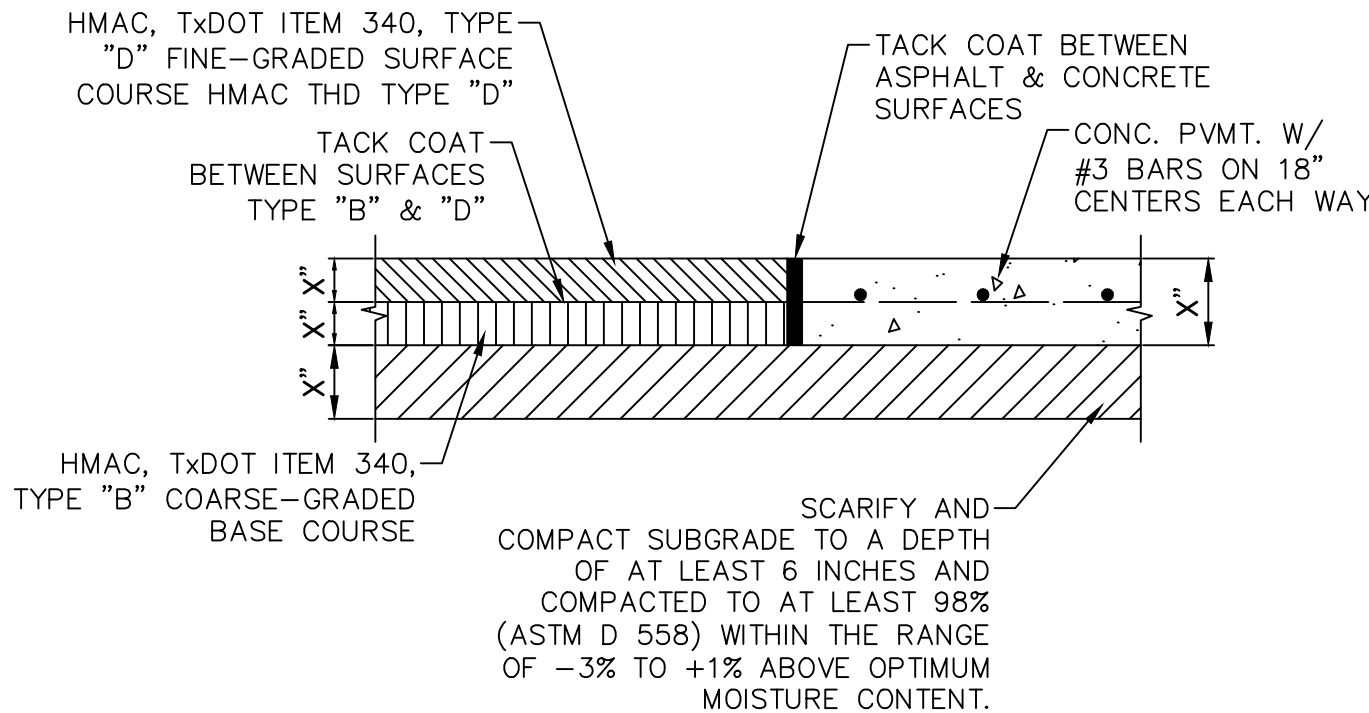
CONSTRUCTION JOINT

NOT TO SCALE



ISOLATION JOINT

NOT TO SCALE



ASPHALT/CONCRETE
TRANSITION

NOT TO SCALE

SQUAW VALLEY ADDITION
GLEN ROSE, TEXAS

PAVING DETAILS

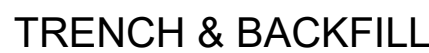
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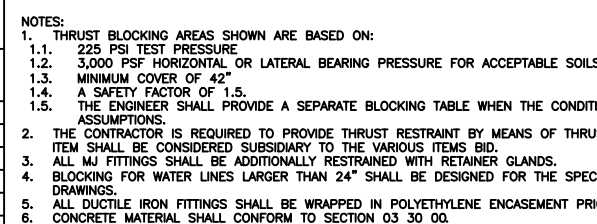
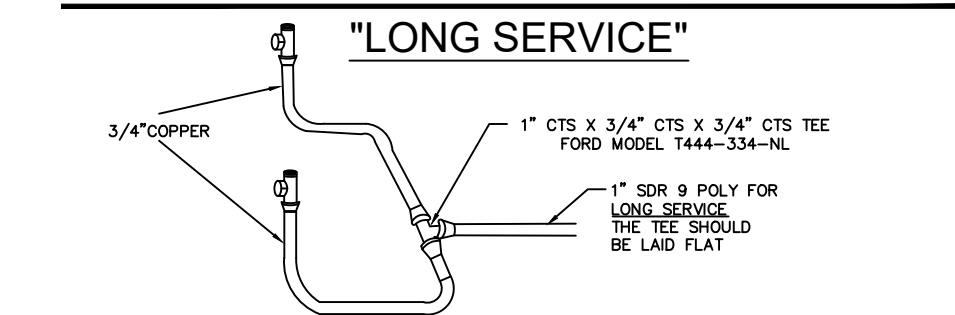
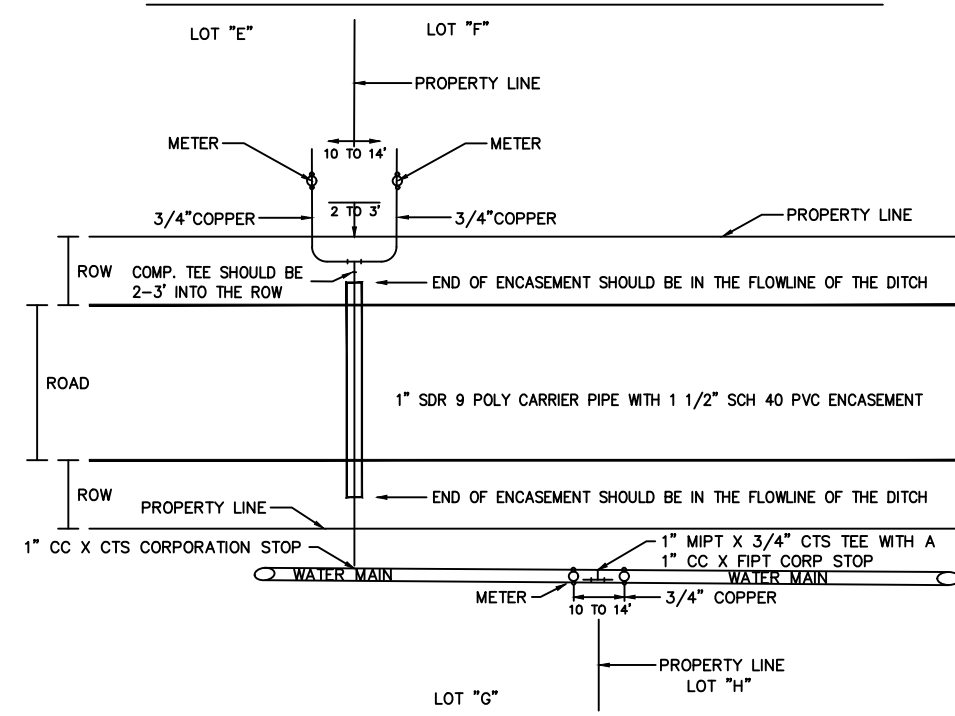
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SHEET NO.

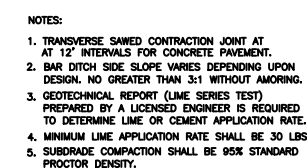
C8.1



TRENCH & BACKFILL



HORIZONTAL THRUST BLOCKING



RURAL RESIDENTIAL STREET



**GEOTECHNICAL ENGINEERING SERVICES
PROPOSED RESIDENTIAL ROADWAY
SQUAW VALLEY SUBDIVISION
GLEN ROSE, TEXAS**

Presented to:

Oaktree Assets, LLC

August 2022

August 4, 2022
Report No. 2982-22-01 (Revised)

Oaktree Assets, LLC
P.O. Box 1726
Glen Rose, Texas 76043

Attn: Mr. Ron Hampton

**GEOTECHNICAL ENGINEERING SERVICES
PROPOSED RESIDENTIAL ROADWAY
SQUAW VALLEY SUBDIVISION
GLEN ROSE, TEXAS**

Dear Mr. Hampton:

Submitted here are the results of a geotechnical engineering study for the referenced project. This study was performed in general accordance with our Proposal No. 22-8614 dated April 20, 2022. The geotechnical services were authorized on April 22, 2022.

Engineering analyses and recommendations are contained in the text section of the report. Results of our field and laboratory services are included in the appendix of the report. We would appreciate the opportunity to be considered for providing the construction consultation services during the construction phase of this project.

We appreciate the opportunity to be of service. Please contact us if you have any questions or if we may be of further service at this time.

Respectfully submitted,
CMJ ENGINEERING, INC.
TEXAS FIRM REGISTRATION NO. F-9177



Matthew W. Kammerdiener, P.E.
Project Engineer
Texas No. 127818



copies submitted: (2) Mr. Ron Hampton; Oaktree Assets, LLC (email & mail)

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION -----	1
2.0	FIELD EXPLORATION AND LABORATORY TESTING-----	2
3.0	SUBSURFACE CONDITIONS -----	3
4.0	PAVEMENT DESIGN -----	4
5.0	EARTHWORK-----	10
6.0	CONSTRUCTION OBSERVATIONS-----	14
7.0	REPORT CLOSURE -----	14

APPENDIX A

Plan of Borings -----		A.1
Unified Soil Classification System -----		A.2
Key to Classification and Symbols -----		A.3
Logs of Borings -----		A.4 – A.8
Lime Series Test Results -----		A.9

1.0 INTRODUCTION

1.1 Project Description

The project site is located on the west side of Farm to Market 200, approximately 1,800 feet north of US Highway 67 in Glen Rose, Texas. The project, as currently planned will consist of approximately 2,500 linear feet of new residential roadway to serve a proposed 27 lot single-family development. This geotechnical study is for the pavement design for the proposed street only. This investigation is not intended to address residential foundations. Plate A.1, Plan of Borings, depicts the project vicinity and location of exploration borings.

1.2 Purpose and Scope

The purpose of this geotechnical engineering study has been to determine the general subsurface conditions, evaluate the engineering characteristics of the subsurface materials encountered, develop recommendations for the type or types of pavement subgrade preparation and modification, provide pavement design guidelines, and provide earthwork recommendations.

To accomplish its intended purposes, the study has been conducted in the following phases: (1) drilling sample borings to determine the general subsurface conditions and to obtain samples for testing; (2) performing laboratory tests on appropriate samples to determine pertinent engineering properties of the subsurface materials; and (3) performing engineering analyses, using the field and laboratory data to develop geotechnical recommendations for the proposed construction.

The design is currently in progress. Once the final design is near completion (80-percent to 90-percent stage), it is recommended that CMJ Engineering, Inc. be retained to review those portions of the construction documents pertaining to the geotechnical recommendations, as a means to determine that our recommendations have been interpreted as intended.

1.3 Report Format

The text of the report is contained in Sections 1 through 7. All plates and large tables are contained in Appendix A. The alpha-numeric plate and table numbers identify the appendix in which they appear. Small tables of less than one page in length may appear in the body of the text and are numbered according to the section in which they occur.

Units used in the report are based on the English system and may include tons per square foot (tsf), kips (1 kip = 1,000 pounds), kips per square foot (ksf), pounds per square foot (psf), pounds per cubic foot (pcf), and pounds per square inch (psi).

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Exploration

Subsurface materials at the project site were explored by a total of five (5) borings drilled to a depth of 8 feet below existing grade. The borings were drilled using truck-mounted drilling equipment at the approximate locations shown on the Plan of Borings, Plate A.1. The boring logs are included on Plates A.4 through A.8 and keys to classifications and symbols used on the logs are provided on Plates A.2 and A.3.

Undisturbed samples of cohesive soils were obtained with nominal 3-inch diameter thin-walled (Shelby) tube samplers at the locations shown on the logs of borings. The Shelby tube sampler consists of a thin-walled steel tube with a sharp cutting edge connected to a head equipped with a ball valve threaded for rod connection. The tube is pushed into the soil by the hydraulic pulldown of the drilling rig. The soil specimens were extruded from the tube in the field, logged, tested for consistency with a hand penetrometer, sealed, and packaged to limit loss of moisture.

The consistency of cohesive soil samples was evaluated in the field using a calibrated hand penetrometer. In this test a 0.25-inch diameter piston is pushed into the relatively undisturbed sample at a constant rate to a depth of 0.25 inch. The results of these tests, in tsf, are tabulated at respective sample depths on the logs. When the capacity of the penetrometer is exceeded, the value is tabulated as 4.5+.

Ground-water observations during and after completion of the borings are shown on the upper right of the boring logs. Upon completion of the borings, the bore holes were backfilled with soil cuttings and plugged at the surface by hand tamping.

2.2 Laboratory Testing

Laboratory soil tests were performed on selected representative samples recovered from the borings. In addition to the classification tests (liquid limits, plastic limits and percent passing the No.

200 sieve), moisture content, and unit weight tests were performed. Results of the laboratory tests conducted for this project are included on the boring logs.

Eades and Grim Lime Series tests were performed on selected samples to identify the appropriate concentration of lime to add to soils for stabilization purposes. The results of the lime series tests are presented on Plate A.9.

The above laboratory tests were performed in general accordance with applicable ASTM procedures, or generally accepted practice.

3.0 SUBSURFACE CONDITIONS

3.1 Soil Conditions

Specific types and depths of subsurface strata encountered at the boring locations are shown on the boring logs in Appendix A. The generalized subsurface stratigraphies encountered in the borings are discussed below. Note that depths on the borings refer to the depth from the existing grade or ground surface present at the time of the investigation, and the boundaries between the various soil types are approximate.

Soils encountered in the borings consist of dark brown, brown, reddish brown, tan, and gray clays, silty clays, sandy clays, and clayey sands. The various surficial soils occasionally contain ironstone nodules and calcareous nodules. The various soils encountered in the borings had tested Liquid Limits (LL) of 31 to 56 with Plasticity Indices (PI) of 10 to 36 and are classified as SC, CL and CH by the USCS. The various clays were generally stiff to hard (soil basis) in consistency with pocket penetrometer readings of 1.75 to over 4.5 tsf. Tested unit weight values tested ranged from 98 to 106 pcf.

The Atterberg Limits tests indicate the various clays encountered at this site vary from slightly active to highly active with respect to moisture induced volume changes while the clayey sands are stable to slightly active with respect to moisture induced volume changes. Active clays can experience volume changes (expansion or contraction) with fluctuations in their moisture content.

3.2 Ground-Water Observations

The borings were drilled using continuous flight augers in order to observe ground-water seepage during drilling. Ground-water seepage was not encountered during drilling and all borings were dry at completion of drilling operations.

Fluctuations of the ground-water level can occur due to seasonal variations in the amount of rainfall; site topography and runoff; hydraulic conductivity of soil strata; and other factors not evident at the time the borings were performed. The possibility of ground-water level fluctuations should be considered when developing the design and construction plans for the project. During wet periods of the year, seepage can occur in the sandy more granular soils or in joints in the clays, particularly after periods of heavy or extended rainfall.

4.0 PAVEMENT DESIGN

4.1 Pavement Subgrade Considerations

4.1.1 General

Anticipated subgrade soils vary from clayey sands and sandy clays to highly plastic clays present at the surface. Site grading can affect actual subgrade soil types. The success of the pavement subgrade is subgrade soil strength and control of water. Adequate subgrade performance can be achieved by stabilizing existing soils used to construct the pavement subgrade.

The most appropriate stabilization agent and concentration will depend directly on the type of subgrade soil. Sands and clayey sands normally are best stabilized using Portland cement. Clays are normally best stabilized using hydrated lime. Based on the borings, the majority of the surface soils appear to be more moderately to plastic clays, more amenable to lime as the stabilization agent. Although Portland cement also could also be used to stabilize clay soils, such stabilization requires some special techniques in order to pulva mix/cement modify/moisten/compact the pavement subgrade using Portland cement in a short period of time in order to attain the initial set of the cement modified material.

The higher plasticity clays, those with a Plasticity Index (PI) of 20 or greater, are subject to loss in support value with the moisture increases which occur beneath pavement sections. They react with hydrated lime, which serves to improve and maintain their support value. Treatment of these soils with hydrated lime will improve their subgrade characteristics to support area paving.

Due to variable site conditions, observation during construction by qualified geotechnical personnel is recommended to determine pavement subgrade areas containing sufficient quantities of clay to warrant lime stabilization.

In lieu of a lime or cement stabilized subgrade for pavement consisting of Portland cement concrete, the recommended Portland cement concrete (PCC) pavement thicknesses presented in Section 4.3 may be increased by 1 inch (for a total PCC pavement thickness of 7 inches), and placed atop a properly compacted subgrade.

Alternatively, in lieu of cement or lime treatment, consideration can be given to substituting a suitable flexible base on an equal basis and placed atop a properly compacted subgrade. A 6-inch flex base meeting requirements of TxDOT Item 247, Type A, Grade 1 or 2 is recommended. The option of using a flexible base in lieu of stabilizing the subgrade presents a relatively quick, straight forward solution to preparing the subgrade prior to pavement placement.

4.2 Potential Vertical Movements

Estimates of expansive movement potential have been estimated using TxDOT Test Method Tex 124-E. Potential vertical movements ranging from on the order of 2 to 3½ inches are estimated. Movements in excess of these estimates can occur if poor drainage, excessive water collection, leaking pipelines, etc. occur. Any such excessive water conditions should be rectified as soon as possible. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

4.3 Pavement Subgrade Preparation

4.3.1 Lime Stabilization

Prior to lime addition, the subgrade should be proofrolled with heavy pneumatic equipment. Any soft or pumping areas should be undercut to a firm subgrade and properly backfilled as described in Earthwork section. The subgrade should be scarified to a minimum depth of 6 inches and uniformly compacted to a minimum of 95 percent of Standard Proctor density (ASTM D 698), between minus 2 to plus 4 percentage points of the optimum moisture content determined by that test. It should then be protected and maintained in a moist condition until the pavement is placed.

It is recommended a minimum of 6 percent hydrated lime be used to stabilize clay subgrade soils, those with a Plasticity Index (PI) of 20 or greater. The amount of hydrated lime required to stabilize the subgrade should be on the order of 27 pounds per square yard based on a soil dry unit weight of 100 pcf. The hydrated lime should be thoroughly mixed and blended with the upper 6 inches of the clay subgrade (TxDOT Item 260). The hydrated lime should meet the requirements of Item 260 (Type A) in the Texas Department of Transportation (TxDOT) Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition. Lime treatment should extend beyond exposed pavement edges to reduce the effects of shrinkage and associated loss of subgrade support.

4.3.2 Cement Stabilization

As previously discussed, more granular, lower plasticity clayey sands are normally best stabilized using Portland cement. The clayey sands, those with a Plasticity Index (PI) of 20 or less, can be mixed with Portland cement, which serves to improve and maintain their support value. Treatment of these soils with cement will improve their subgrade characteristics to support area paving.

Prior to cement stabilization, the subgrade should be proofrolled with heavy pneumatic equipment. Any soft or pumping areas should be undercut to a firm subgrade and properly backfilled as described in the Earthwork section.

It is recommended a minimum of 5 percent Portland cement be used to modify the subgrade soils. The estimated amount of cement required to stabilize the subgrade should be on the order of 23 pounds per square yard for a 6-inch depth based on a dry unit weight of 100 pcf. The cement should be thoroughly mixed and blended with the upper 6 inches of the subgrade (TxDOT Items 275). The Portland cement should meet the requirements of Item 275 in the Texas Department of Transportation (TxDOT) Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition.

The stabilized subgrade should be scarified to a minimum depth of 6 inches and uniformly compacted to a minimum of 98 percent of ASTM Standard Test Method for Moisture-Density Relations of Soil-Cement Mixtures (ASTM D 558), to minus 3 to plus 1 percentage points of the optimum moisture content determined by that test. It should then be protected and maintained in a moist condition until

the pavement is placed via curing compound or sprinkling. Proper curing of the cement treated base is paramount in order to reduce the potential for undue shrinkage cracking.

The Texas Transportation Institute has performed studies to reduce “block cracks” common to cement-treated base materials. Microcracking is the application of several vibratory roller passes to a treated subgrade after a short curing stage, typically after one to three days, to create a fine network of cracks. Microcracking is one technique to help reduce the risk of shrinkage cracks in the subgrade reflecting through the pavement surfacing. The goal of microcracking is to form a network of fine cracks and prevent the wider, more severe cracks from forming.

After placement and satisfactory compaction of the cement treated subgrade, the base should be moist cured by sprinkling for 48 to 72 hours before microcracking. If performing construction during winter months when average daily temperatures are 60° F or below, moist cure the base at least 96 hours before microcracking. Microcracking should be performed with the same (or equivalent tonnage) steel wheel vibratory roller used for compaction. A minimum 12-ton roller should be used. Typically three full passes (one pass is down and back) with the roller operating at maximum amplitude and traveling approximately 2 to 3 mph will satisfactorily microcrack the section. After satisfactory completion of microcracking, the subgrade should be moist cured by sprinkling to a total cure time of at least 72 hours from the day of placement.

4.3.2 Subgrade Preparation Considerations

It is recommended that subgrade stabilization extend to at least one foot beyond pavement edges to aid in reducing pavement movements and cracking along the curb line due to seasonal moisture variations after construction. Each construction area should be shaped to allow drainage of surface water during earthwork operations, and surface water should be pumped immediately from each construction area after each rain and a firm subgrade condition maintained. Water should not be allowed to pond in order to prevent percolation and subgrade softening, and subgrade treatments should be added to the subgrade after removal of all surface vegetation and debris. Where clays are present as the subgrade materials sands should be specifically prohibited beneath pavement areas, since these more porous soils can allow water inflow, resulting in heave and strength loss of subgrade soils (lime stabilized soil will be allowed for fine grading). After fine grading each area in preparation for paving, the subgrade surface should be lightly moistened, as needed, and recompacted to obtain a tight non-yielding subgrade.

Surface drainage is critical to the performance of this pavement. Water should be allowed to exit the pavement surface quickly.

4.4 Pavement Sections

The project is understood to include the construction of residential drives. At the time of this investigation, vehicle traffic studies were not available. Therefore, rigid and flexible pavement sections are presented for a 20-year design life based on our experience with similar facilities for Residential Drive Areas. In general, these areas are defined as follows:

Residential Drive Areas are those drives subjected to a variety of light-duty vehicles to medium-duty vehicles and an occasional heavy-duty truck including 85 kip fire apparatus or garbage truck (1 to 2 per week).

We recommend that rigid pavements be utilized at this project whenever possible, since they tend to provide better long-term performance when subjected to significant slow moving and turning traffic.

If asphaltic concrete pavement is used, we recommend a full depth asphaltic concrete section having a minimum total thickness of 6 inches for residential drive areas. A minimum surface course thickness of 2 inches is recommended for asphaltic concrete pavements. If Portland cement concrete pavement is used, a minimum thickness of 6 inches is recommended for residential drive areas.

A California Bearing Ratio or other strength tests were not performed because they were not within the scope of our services on this project. A subgrade modulus of 100 psi was considered appropriate for the near-surface soils. If heavier vehicles are planned, the above cross sections can be confirmed by performing strength tests on the subgrade materials once the traffic characteristics are established. Periodic maintenance of pavement structures normally improves the durability of the overall pavement and enhances its expected life.

The above sections should be considered minimum pavement thicknesses and higher traffic volumes and heavy trucks may require thicker pavement sections. Additional recommendations can be provided after traffic volumes and loads are known. Periodic maintenance should be anticipated for minimum pavement thickness. This maintenance should consist of sealing cracks and timely repair of isolated distressed areas.

Proper surface drainage in the shoulders and ditches is also critical to long term performance of the pavement. Water allowed to pond adjacent to the pavement will be detrimental resulting in loss of edge and subgrade support and an increase in post construction heave of the pavement.

4.5 Pavement Material Requirements

Material and process specifications developed by the Texas Department of Transportation (TxDOT) have been utilized. These specifications are outlined in the TxDOT Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition. Specific construction recommendations for flexible pavements are given below.

Reinforced Portland Cement Concrete: Reinforced Portland cement concrete pavement should consist of Portland cement concrete having a 28-day compressive strength of at least 3,500 psi. The mix should be designed in accordance with the ACI Code 318 using 3 to 6 percent air entrainment. The pavement should be adequately reinforced with temperature steel and all construction joints or expansion/contraction joints should be provided with load transfer dowels. The spacing of the joints will depend primarily on the type of steel used in the pavement. We recommend using No. 3 steel rebar spaced at 18 inches on center in both the longitudinal and transverse direction. Control joints formed by sawing are recommended every 12 to 15 feet in both the longitudinal and transverse direction. The cutting of the joints should be performed as soon as the concrete has “set-up” enough to allow for sawing operations.

Hot Mix Asphaltic Concrete Surface Course: Item 340, Type D, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Hot Mix Asphaltic Concrete Base Course: Item 340, Type A or B, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Lime Stabilized Subgrade: Lime treatment for base course (road mix) - Item 260, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Cement Stabilized Subgrade: Cement treatment for base course (road mix) - Item 275, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Flexible Base: Crushed Stone Flexible Base – Item 247, Type A, Grades 1 or 2, Texas Department of Transportation Standard Specifications for Construction of Maintenance of Highways, Streets, and Bridges, 2014 Edition.

4.6 General Pavement Considerations

The design of the pavement drainage and grading should consider the potential for differential ground movement due to future soil swelling of up to 3½ inches. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

Proper surface drainage in the shoulders is also critical to long term performance of the pavement. Water allowed to pond adjacent to the pavement will result in loss of edge and subgrade support and an increase in post construction heave of the pavement.

5.0 EARTHWORK

5.1 Site Preparation

The subgrade should be firm and able to support the construction equipment without displacement. Soft or yielding subgrade should be corrected and made stable before construction proceeds. The subgrade should be proof rolled to detect soft spots, which if exist, should be reworked to provide a firm and otherwise suitable subgrade. Proof rolling should be performed using a heavy pneumatic tired roller, loaded dump truck, or similar piece of equipment. The proof rolling operations should be observed by the project geotechnical engineer or his/her representative. Prior to fill placement, the subgrade should be scarified to a minimum depth of 6 inches, its moisture content adjusted and recompacted to the moisture and density recommended for fill.

Low plasticity clayey sands are present at the surface in selected areas. During periods of inclement weather these surface soils can become saturated and subject to pumping. This may require

undercutting to a firm subgrade and blending saturated soils with more clayey site material or mixing them with Portland cement as described in Section 4.3.2.

5.2 Placement and Compaction

Fill material should be placed in loose lifts not exceeding 8 inches in uncompacted thickness. The uncompacted lift thickness should be reduced to 4 inches for structure backfill zones requiring hand-operated power compactors or small self-propelled compactors. The fill material should be uniform with respect to material type and moisture content. Clods and chunks of material should be broken down and the fill material mixed by disking, blading, or plowing, as necessary, so that a material of uniform moisture and density is obtained for each lift. Water required for sprinkling to bring the fill material to the proper moisture content should be applied evenly through each layer.

The on-site soils are suitable for use in site grading. Imported fill material should be clean soil with a Liquid Limit less than 50 and no rock greater than 4 inches in maximum dimension. The fill materials should be free of vegetation and debris.

The fill material should be compacted to a minimum of 95 percent of the maximum dry density determined by the Standard Proctor test, ASTM D 698. In conjunction with the compacting operation, the fill material should be brought to the proper moisture content. The moisture content for general earth fill should range from 2 percentage points below optimum to 5 percentage points above optimum (-2 to +5). These ranges of moisture contents are given as maximum recommended ranges. For some soils and under some conditions, the contractor may have to maintain a more narrow range of moisture content (within the recommended range) in order to consistently achieve the recommended density.

Field density tests should be taken as each lift of fill material is placed. As a guide, one field density test per lift for each 5,000 square feet of compacted area is recommended. For small areas or critical areas the frequency of testing may need to be increased to one test per 2,500 square feet. A minimum of 2 tests per lift should be required. The earthwork operations should be observed and tested on a continuing basis by an experienced geotechnician working in conjunction with the project geotechnical engineer.

Each lift should be compacted, tested, and approved before another lift is added. The purpose of the field density tests is to provide some indication that uniform and adequate compaction is being

obtained. The actual quality of the fill, as compacted, should be the responsibility of the contractor and satisfactory results from the tests should not be considered as a guarantee of the quality of the contractor's filling operations.

If fill is to be placed on existing slopes that are steeper than five horizontal to one vertical, then the fill materials should be benched into the existing slopes in such a manner as to provide a good contact between the two materials and allow relatively horizontal lift placement.

Permanent slopes at the site should be as flat as practical to reduce creep and occurrence of shallow slides. The following slope angles are recommended as maximums. The presented angles refer to the total height of a slope. Site improvement should be maintained away from the top of the slope to reduce the possibility of damage due to creep or shallow slides.

TABLE 5.2-1 – RECOMMENDED PERMANENT SLOPE ANGLES

Height (ft.)	Horizontal to Vertical
0 – 3	1:1
3 – 6	2:1
6 – 9	3:1
> 9	4:1

5.3 Excavation

The side slopes of excavations through the overburden soils should be made in such a manner to provide for their stability during construction. Existing structures, pipelines or other facilities, which are constructed prior to or during the currently proposed construction and which require excavation, should be protected from loss of end bearing or lateral support.

Seasonal water seeps can occur in the more granular soils or where exposed by cuts. Subsoil drains may be required in some areas to intercept this seepage. This can be evaluated after grading has been performed.

Temporary construction slopes and/or permanent embankment slopes should be protected from surface runoff water. Site grading should be designed to allow drainage at planned areas where erosion protection is provided, instead of allowing surface water to flow down unprotected slopes.

Trench safety recommendations are beyond the scope of this report. The contractor must comply with all applicable safety regulations concerning trench safety and excavations including, but not limited to, OSHA regulations.

5.4 Trench Backfill

Trench backfill for pipelines or other utilities should be properly placed and compacted. Overly dense or dry backfill can swell and create a mound along the completed trench line. Loose or wet backfill can settle and form a depression along the completed trench line. Distress to overlying structures, pavements, etc. is likely if heaving or settlement occurs. On-site soil fill material is recommended for trench backfill. Care should be taken not to use free draining granular material, to prevent the backfilled trench from becoming a french drain and piping surface or subsurface water beneath structures, pipelines, or pavements. If a higher class bedding material is required for the pipelines, a lean concrete bedding will limit water intrusion into the trench and will not require compaction after placement. The soil backfill should be placed in approximately 4- to 6-inch loose lifts. The density and moisture content should be as recommended for fill in Section 5.2, Placement and Compaction, of this report. A minimum of one field density test should be taken per lift for each 150 linear feet of trench, with a minimum of 2 tests per lift.

5.5 Soil Corrosion Potential

Specific testing for soil corrosion potential was not included in the scope of this study. However, based upon past experience on other projects in the vicinity, the soils at this site may be corrosive. Standard construction practices for protecting metal pipe and similar facilities in contact with these soils should be used.

5.6 Utilities

Care should be taken that utility cuts are not left open for extended periods, and that the cuts are properly backfilled. Backfilling should be accomplished with properly compacted on-site soils, rather than granular materials.

Trench excavations should be sloped or braced in the interest of safety. Attention is drawn to OSHA Safety and Health Standards (29 CFR 1926/1910), Subpart P, regarding trench excavations greater than 5 feet in depth.

5.7 Erosion and Sediment Control

All disturbed areas should be protected from erosion and sedimentation during construction, and all permanent slopes and other areas subject to erosion or sedimentation should be provided with permanent erosion and sediment control facilities. All applicable ordinances and codes regarding erosion and sediment control should be followed.

6.0 CONSTRUCTION OBSERVATIONS

In any geotechnical investigation, the design recommendations are based on a limited amount of information about the subsurface conditions. In the analysis, the geotechnical engineer must assume the subsurface conditions are similar to the conditions encountered in the boring. However, quite often during construction anomalies in the subsurface conditions are revealed. Should such anomalies be discovered Oaktree Assets, LLC should immediately notify CMJ Engineering, Inc. before proceeding further with construction to allow CMJ Engineering, Inc. to reconsider its recommendations as necessary. It is also recommended that Oaktree Assets, LLC retain CMJ Engineering, Inc. to observe earthwork and foundation installation and perform materials evaluation during the construction phase of the project. This enables the geotechnical engineer to stay abreast of the project and to be readily available to evaluate unanticipated conditions, to conduct additional tests if required and, when necessary, to recommend alternative solutions to unanticipated conditions. Until these construction phase services are performed by the project geotechnical engineer, the recommendations contained in this report on such items as final foundation bearing elevations, proper soil moisture condition, and other such subsurface related recommendations shall only be considered as preliminary, and not final, recommendations.

It is proposed that construction phase observation and materials testing commence by the project geotechnical engineer at the outset of the project. Experience has shown that the most suitable method for procuring these services is for the owner or the owner's design engineers to contract directly with the project geotechnical engineer. This results in a clear, direct line of communication between the owner and the owner's design engineers and the geotechnical engineer.

7.0 REPORT CLOSURE

The boring log shown in this report contains information related to the types of soil encountered at specific locations and times and show lines delineating the interface between these materials. The

log also contains our field representative's interpretation of conditions that are believed to exist in those depth intervals between the actual samples taken. Therefore, this boring log contains both factual and interpretive information. Laboratory soil classification tests were also performed on samples from selected depths in the boring. The results of these tests, along with visual-manual procedures were used to generally classify each stratum. Therefore, it should be understood that the classification data on the log of boring represent visual estimates of classifications for those portions of each stratum on which the full range of laboratory soil classification tests were not performed. It is not implied that this log is representative of subsurface conditions at other locations and times.

With regard to ground-water conditions, this report presents data on ground water levels as they were observed during the course of the field work. In particular, water level readings have been made in the boring at the times and under conditions stated in the text of the report and on the boring log. It should be noted that fluctuations in the level of the ground-water table can occur with passage of time due to variations in rainfall, temperature and other factors. Also, this report does not include quantitative information on rates of flow of ground water into excavations, on pumping capacities necessary to dewater the excavations, or on methods of dewatering excavations. Unanticipated soil conditions at a construction site are commonly encountered and cannot be fully predicted by mere soil samples, test borings or test pits. Such unexpected conditions frequently require that additional expenditures be made by the owner to attain a properly designed and constructed project. Therefore, provision for some contingency fund is recommended to accommodate such potential extra cost.

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our field investigation and further on the assumption that the exploratory boring is representative of the subsurface conditions throughout the site; that is, the subsurface conditions everywhere are not significantly different from those disclosed by the boring at the time it was completed. If, during construction, different subsurface conditions from those encountered in our boring are observed, or appear to be present in excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between submission of this report and the start of the work at the site (more than twelve months is considered a substantial lapse of time; however, depending on the circumstances, less than six months may be considered a substantial lapse of time), if conditions have changed due either to natural causes or to construction operations at or

adjacent to the site, or if structure locations, structural loads or finish grades are changed, we urge that we be promptly informed and retained to review our report to determine the applicability of the conclusions and recommendations, considering the changed conditions and/or time lapse. In this regard, if (a) construction at the site does not start within twelve months of the date of this report and (b) CMJ Engineering, Inc. is not present at the site when construction starts to confirm that conditions have not changed since the date of this report, the information in this report cannot be relied upon or used for any purpose.

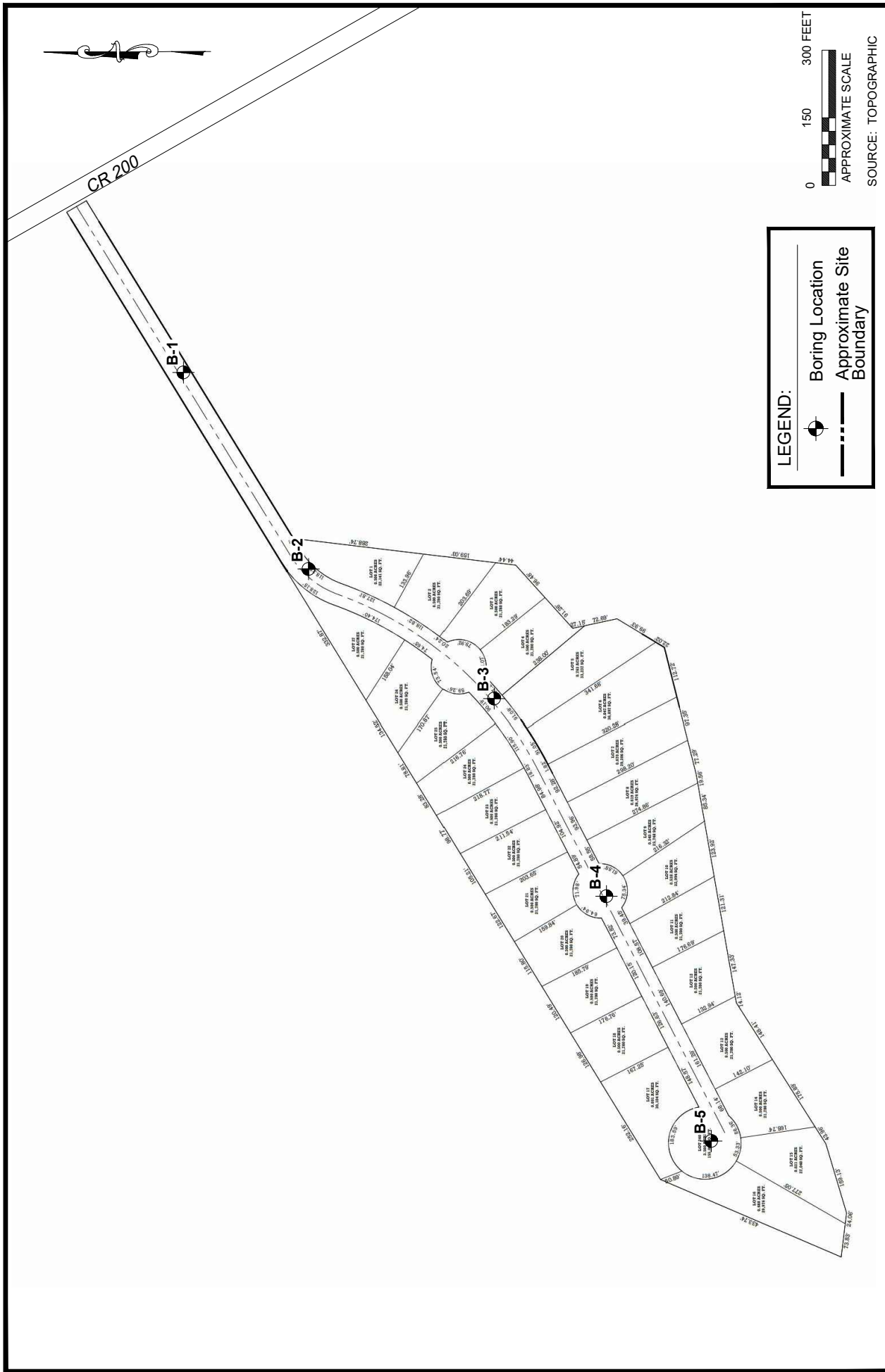
Further, it is urged that CMJ Engineering, Inc. be retained to review those portions of the plans and specifications for this particular project that pertain to earthwork and foundations as a means to determine whether the plans and specifications are consistent with the recommendations contained in this report. In addition, we are available to observe construction, particularly the compaction of structural fill, or backfill and the construction of foundations as recommended in the report, and such other field observations as might be necessary.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, ground water or air, on or below or around the site.

This report has been prepared for use in developing an overall design concept. Paragraphs, statements, test results, boring logs, diagrams, etc. should not be taken out of context, nor utilized without a knowledge and awareness of their intent within the overall concept of this report. The reproduction of this report, or any part thereof, supplied to persons other than the owner, should indicate that this study was made for design purposes only and that verification of the subsurface conditions for purposes of determining difficulty of excavation, trafficability, etc. are responsibilities of the contractor.

This report has been prepared for the exclusive use of Oaktree Assets, LLC and their consultants for specific application to design of this project only, and not for additions or modifications to the project. The only warranty made by us in connection with the services provided is that we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

* * * *



PLAN OF BORINGS
PROPOSED RESIDENTIAL ROADWAYS
GLEN ROSE, TEXAS

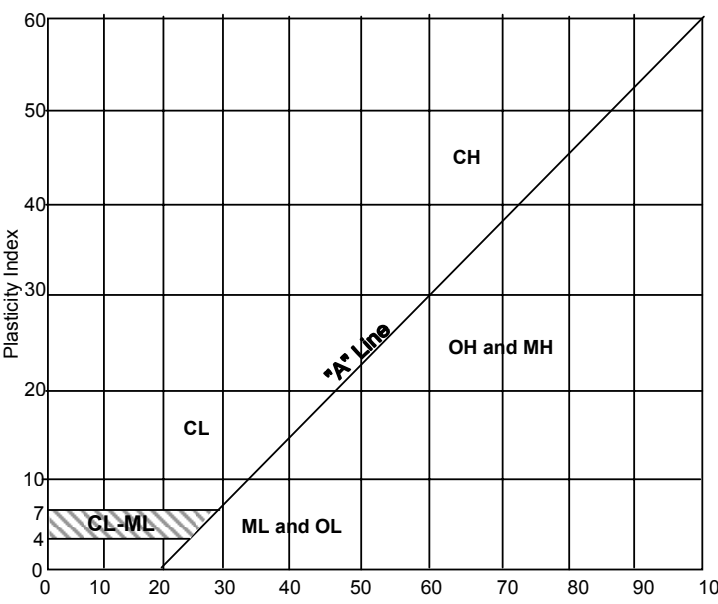
PLATE
A.1

CMJ ENGINEERING, INC.

CMJ PROJECT No. 2982-22-01

Item 3.

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Major Divisions			Grp. Sym.	Typical Names	Laboratory Classification Criteria			Item 3.			
Coarse-grained soils (more than half of the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent.....GW, GP, SW, SP More than 12 percent.....GM, GC, SM, SC 5 to 12 percent.....Borderline cases requiring dual symbols	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3					
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW					
		Gravels with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures		Liquid and Plastic limits below "A" line or P.I. greater than 4	Liquid and plastic limits plotting in hatched zone between 4 and 7 are borderline cases requiring use of dual symbols				
			GC	Clayey gravels, gravel-sand-clay mixtures							
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 6: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3					
			SP	Poorly graded sands; gravelly sands, little or no fines		Not meeting all gradation requirements for SW					
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures		Liquid and Plastic limits below "A" line or P.I. less than 4	Liquid and plastic limits plotting between 4 and 7 are borderline cases requiring use of dual symbols				
			SC	Clayey sands, sand-clay mixtures							
		Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity					
				CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, and lean clays					
OL	Organic silts and organic silty clays of low plasticity										
Silts and clays (Liquid limit greater than 50)	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts								
	CH		Inorganic clays of high plasticity, fat clays								
	OH		Organic clays of medium to high plasticity, organic silts								
	Pt		Peat and other highly organic soils								
Highly Organic soils											

UNIFIED SOIL CLASSIFICATION SYSTEM

PLATE A.2

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SOIL OR ROCK TYPES

	GRAVEL		LEAN CLAY		LIMESTONE						
	SAND		SANDY		SHALE						
	SILT		SILTY		SANDSTONE						
	HIGHLY PLASTIC CLAY		CLAYEY		CONGLOMERATE	Shelby Tube	Auger	Split Spoon	Rock Core	Cone Pen	No Recovery

TERMS DESCRIBING CONSISTENCY, CONDITION, AND STRUCTURE OF SOIL**Fine Grained Soils** (More than 50% Passing No. 200 Sieve)

Descriptive Item	Penetrometer Reading, (tsf)
Soft	0.0 to 1.0
Firm	1.0 to 1.5
Stiff	1.5 to 3.0
Very Stiff	3.0 to 4.5
Hard	4.5+

Coarse Grained Soils (More than 50% Retained on No. 200 Sieve)

Penetration Resistance (blows/foot)	Descriptive Item	Relative Density
0 to 4	Very Loose	0 to 20%
4 to 10	Loose	20 to 40%
10 to 30	Medium Dense	40 to 70%
30 to 50	Dense	70 to 90%
Over 50	Very Dense	90 to 100%

Soil Structure

Calcareous	Contains appreciable deposits of calcium carbonate; generally nodular
Slickensided	Having inclined planes of weakness that are slick and glossy in appearance
Laminated	Composed of thin layers of varying color or texture
Fissured	Containing cracks, sometimes filled with fine sand or silt
Interbedded	Composed of alternate layers of different soil types, usually in approximately equal proportions

TERMS DESCRIBING PHYSICAL PROPERTIES OF ROCK**Hardness and Degree of Cementation**

Very Soft or Plastic	Can be remolded in hand; corresponds in consistency up to very stiff in soils
Soft	Can be scratched with fingernail
Moderately Hard	Can be scratched easily with knife; cannot be scratched with fingernail
Hard	Difficult to scratch with knife
Very Hard	Cannot be scratched with knife
Poorly Cemented or Friable	Easily crumbled
Cemented	Bound together by chemically precipitated material; Quartz, calcite, dolomite, siderite, and iron oxide are common cementing materials.

Degree of Weathering

Unweathered	Rock in its natural state before being exposed to atmospheric agents
Slightly Weathered	Noted predominantly by color change with no disintegrated zones
Weathered	Complete color change with zones of slightly decomposed rock
Extremely Weathered	Complete color change with consistency, texture, and general appearance approaching soil

KEY TO CLASSIFICATION AND SYMBOLS

Project No. 2982-22-01		Boring No. B-5		Project Residential Roadway - Squaw Valley Subdivision Glen Rose, TX		CMJ ENGINEER		Item 3.								
Location See Plate A.1				Water Observations Dry during drilling; dry at completion												
Completion Depth 8.0'		Completion Date 5-5-22														
Depth, Ft.	Symbol	Samples	Surface Elevation		Type B-47 w/ CFA		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			Stratum Description													
5			CLAY , dark brown and brown, w/ calcareous nodules, hard				4.5+	84	51	17	34	14	106			
4.5+											15					
4.5+											15					
4.5+											17					
LOG OF BORING NO. B-5																
PLATE A 60																

LOG OF BORING: 2982-22-01.GPJ CMJ.GDT 6/8/22

LIME SERIES TEST RESULTS

Project: Proposed Residential Roadway
Squaw Valley Subdivision
Glen Rose, Texas

Project No.: 2982-22-01

Boring No.: B-3	Depth: 0' to 2'
Material: Clay	
Percent Lime	pH
0	7.67
2	12.04
4	12.44
6	12.44
8	12.45
10	12.46