Planning Commission Meeting

Wednesday, November 20, 2024 at 6:00 PM

Theodore D. Washington Municipal Building, Henry "Emmett" McCracken Jr. Council Chambers, 20 Bridge Street, Bluffton, SC

AGENDA

This meeting can be viewed live on BCTV, on Hargray Channel 9 and 113 or on Spectrum Channel 1304.

I. CALL TO ORDER

II. ROLL CALL

III. NOTICE REGARDING ADJOURNMENT

The Planning Commission will not hear new items after 9:30 p.m. unless authorized by a majority vote of the Commission Members present. Items which have not been heard before 9:30 p.m. may be continued to the next regular meeting or a special meeting date as determined by the Commission Members.

IV. ADOPTION OF MINUTES

1. October 23, 2024 Minutes

V. PUBLIC COMMENT

VI. OLD BUSINESS

VII. NEW BUSINESS

1. **Venture at Okatie Bluff (Certificate of Appropriateness-Highway Corridor Overlay District):** A request by Witmer Jones Keefer, on behalf of Parcel 8A, LLC for approval of a COFA-HCO for the architecture, landscaping and lighting for an apartment complex to include six (6) multi-family residential buildings with approximately 150 dwelling units, four (4) garage buildings, a clubhouse, amenities and associated infrastructure. The subject property consists of approximately 22.0 acres identified as Parcel R610 028 000 5419 0000, located approximately at the northeast corner of the intersection of SC Highway 170 and Gibbet Road, zoned Buckwalter PUD within the Parcel B-1 Master Plan of the Buckwalter Planned Unit Development. (COFA-09-24-019322) (Staff – Charlotte Moore)
2. **Adoption of 2025 Planning Commission Meeting Dates:** (Staff - Dan Frazier)
3. **Adoption of 2025 Development Review Committee Meeting Dates:** (Staff - Dan Frazier)

VIII. DISCUSSION

1. **Discussion of Amendments to the Town of Bluffton's Southern Lowcountry Stormwater Design Manual and Post-Construction Stormwater Ordinance:** (Staff - Andrea Moreno)

IX. ADJOURNMENT

NEXT MEETING DATE: Wednesday, December 18, 2024

"FOIA Compliance – Public notification of this meeting has been published and posted in compliance with the Freedom of Information Act and the Town of Bluffton policies."

In accordance with the requirements of Title II of the Americans with Disabilities Act of 1990 ("ADA"), the Town of Bluffton will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs, or activities. The Town of Bluffton Council Chambers are ADA compatible. Auditory accommodations are available. Any person requiring further accommodation should contact the Town of Bluffton ADA Coordinator at 843.706.4500 or adacoordinator@townofbluffton.com as soon as possible but no later than 48 hours before the scheduled event.

Executive Session – The public body may vote to go into executive session for any item identified for action on the agenda.

**Please note that each member of the public may speak at one public comment session and a form must be filled out and given to the Town Clerk. To submit a public comment online, please click here: https://www.townofbluffton.sc.gov/FormCenter/Town-15/Public-Comment-60*
Public comment is limited to 3 minutes per speaker.

Planning Commission Meeting

Theodore D. Washington Municipal Building, Henry "Emmett" McCracken Jr. Council Chambers, 20 Bridge Street, Bluffton, SC

October 23, 2024

I. CALL TO ORDER

Vice Chairman Wetmore called the meeting to order at 6pm.

II. ROLL CALL

PRESENT
Vice Chairman Charlie Wetmore
Commissioner Michael Brock
Commissioner Rich Delcore
Commissioner Lydia DePauw

ABSENT
Chairwoman Amanda Jackson Denmark
Commissioner Jim Flynn
Commissioner Daniel Grove

III. ADOPTION OF MINUTES

1. September 25, 2024 Minutes

   Commissioner Brock made the motion to adopt the minutes as written.

   Seconded by Commissioner DePauw.
   Voting Yea: Vice Chairman Wetmore, Commissioner Brock, Commissioner Delcore, Commissioner DePauw

   All were in favor and the motion passed.

IV. PUBLIC COMMENT

V. OLD BUSINESS

VI. NEW BUSINESS

1. **Magnolia Square (Street Naming):** A request by Willy Powell of Ward Edwards, Inc., on behalf of Ed Goas of ERB Enterprises for LLC for approval of a Street Naming Application. The project consists of three internal streets for the Magnolia Square mixed-use development. The property contains three lots zoned Neighborhood General-HD (NG-HD), one lot zoned Neighborhood Core (NC), and two lots zoned Residential General (RG) and consists of approximately 3.43 acres identified by tax map numbers R610 039 000 0114 0000, R610 039 000 0093 0000, R610 039 000 0094 0000, R610 039 000 0095 0000, R610 039 000 0096 0000, R610 039 000 0107 0000 located at 1203-1217 May River Road and 15-19 Jason Street. (STR-07-24-019249) (Staff-Angie Castrillon)

   Staff presented. The applicant was present. The commissioners discussed why the street name "Stock Farm Rd" was denied by one of the reviewing entities.

Vice Chairman Wetmore made the motion to approve the following street names for the Magnolia Square development:

1. Apollo's Way

2. Lowden Lane

3. Soba Street

4. Pluff Street

With the addition of:

5. Stock Farm Rd (If Town Staff is able to verify with other entities that the road name can be used).

Seconded by Commissioner Brock.
Voting Yea: Vice Chairman Wetmore, Commissioner Brock, Commissioner Delcore, Commissioner DePauw

All were in favor and the motion passed.

VII. DISCUSSION

1. **Workshop Regarding Request to Allow Carports in Old Town Bluffton Historic District -** (Staff - Charlotte Moore)

Staff discussed the request to allow carports in the Old Town Bluffton Historic District and what the process would be for an amendment to the Unified Development Ordinance (UDO). The commissioners discussed how there was no verbiage to specify if a structure has to be enclosed or not to qualify as a Carriage House and the current requirements for Carports to be allowed in the Historic District. The Commission went over possible guidelines that would need to be specified if there is an amendment to the UDO.

Keith Fisher, 41 Thomas Heyward St, Bluffton - Mr. Fisher explained why he needed the carport. He spoke in favor of being able to add a Carport when there is Carriage House already on the property.

This was a workshop and no action was taken.

VIII. ADJOURNMENT

Commissioner Delcore made the motion to adjourn.

Seconded by Commissioner DePauw.
Voting Yea: Vice Chairman Wetmore, Commissioner Brock, Commissioner Delcore, Commissioner DePauw

All were in favor and the motion passed. The meeting adjourned at 6:42pm.

DRAFT

TOWN OF BLUFFTON

STAFF REPORT
Growth Management Department

MEETING DATE:	November 20, 2024
PROJECT:	Venture at Okatie Bluff Apartments: Architecture, Landscaping, Lighting Certificate of Appropriateness-Highway Corridor Overlay (COFA-HCO) NE Corner of SC Hwy 170 and Gibbet Road (Street Name TBD)
PROJECT MANAGER:	Charlotte Moore, AICP Principal Planner

APPLICATION REQUEST: The Applicant, Witmer Jones Keefer, on behalf of the property owner, Parcel 8A, LLC, requests that the Planning Commission approve the following application:

> **COFA-09-24-019322.** A Certificate of Appropriateness-Highway Corridor Overlay (COFA-HCO) to allow the architecture, landscaping, and lighting for an apartment complex to include six (6) multi-family residential buildings with approximately 150 dwelling units, four (4) garage buildings, a clubhouse, amenities and associated infrastructure. The subject property consists of approximately 22.0 acres identified as Parcel R610 028 000 5419 0000, located approximately at the northeast corner of the intersection of SC Highway 170 and Gibbet Road, zoned Buckwalter PUD within the Parcel B-1 Master Plan of the Buckwalter Planned Unit Development. See Attachment 1 for Vicinity Map.

INTRODUCTION: The Concept Plan for the Buckwalter PUD was initially approved by Bluffton Town Council on April 19, 2000. As approved, the plan organized the PUD into planning areas or tracts to provide for the arrangement and regulation of land uses, as well as the allocation of residential densities. The subject parcel is in the Buckwalter Commons Planning Area. The Concept Plan and associated Development Agreement identify the allowed land uses within this area. The documents also prescribe the standards that govern all development within the Concept Plan, including the subject parcel. Such land uses and development standards are binding upon the Town and the Applicant.

The Final Development Plan (DP-10-23-018564) has been approved. Consistency between the COFA-HCO and Final Development Plan is required.

The Applicant is requesting approval of a Certificate of Appropriateness – Highway Corridor Overlay (COFA-HCO) application for a multi-family residential development (Attachment 2). The development plan was reviewed by the Development Review Committee on October 9, 2024 and comments are provided as Attachment 4. The COFA-HCO application is subject to review by the Planning Commission providing authority over the architectural, landscaping, and lighting elements only.

REVIEW CRITERIA & ANALYSIS: Town Staff and the Planning Commission are required to consider the criteria set forth in Section 3.17.3 of the Unified Development Ordinance in assessing an application for a COFA-HCO. These criteria are provided below followed by a Staff Finding based upon review of the application submittals to date.

1. **<u>Section 3.17.3.A.</u> The proposed development must be in conformance with applicable landscaping, lighting, and architectural provisions provided in Unified Development Ordinance Article 5, Design Standards.**

    a) *Finding.* The design standards to be applied in the review were established by the PUD via the Beaufort County 1990/3 Zoning and Highway Corridor Overlay District (HCOD) within of the Town of Bluffton Zoning and Development Standards Ordinance (BZDSO), approved September 1999 and modified June 2000. Therefore, the design criteria of Article 5 of the Unified Development Ordinance (UDO) does not apply to this proposal with the exception of Section 5.3.3 (Tree Conservation) as a result of changes adopted by Town Council to UDO Section 5.10 (Stormwater) that affect existing PUDs.

2. **<u>Section 3.17.3.B.</u> The proposed development shall be in conformance with any approved Development Agreement, PUD Concept Plan, PUD Master Plan, Final Development Plan, Subdivision Plan, or any other agreements or plans that are applicable.**

The property is in the Buckwalter PUD and is in the Buckwalter Commons planning area. The property is subject to the Beaufort County 1990/3 Zoning and Highway Corridor Overlay District (HCOD) within the Town of Bluffton Zoning and Development Standards Ordinance (BZDSO) and Design Guidelines which contain architectural, landscaping, and lighting standards for properties located in the HCOD.

A. **Buckwalter PUD/PUD Concept Plan**

The Buckwalter PUD refers to the Beaufort County 1990/3 Zoning and Development Standards Ordinance (ZDSO) and The Town of Bluffton Zoning and Development Standards Ordinance (BZDSO) Highway Corridor Overlay District (HCOD) for development standards. The application complies with the Buckwalter PUD/PUD Concept Plan except for the below items, which also includes applicable Unified Development Ordinance (UDO) requirements.

<u>Architecture</u> *(See Attachment 5 for Architectural Plan)*

The Planning Commission reviews elements of design, including form, mass, scale, proportion, height, texture, color, architectural style, individual architectural elements, [and] orientation or specific location upon the site. The Commission may require adjustments, and reasonable conditions may be attached to the approval. In the Applicant's narrative, the architecture is described as follows:

> "Establishing a look that is consistent with the HCO and other nearby surrounding areas was taken in account when the project moved from a conceptual to design stage. The six apartment buildings, clubhouse and accessory buildings all use materials, such as, brick, fiber cement trim, fiber cement horizontal siding, fiber cement board and batten siding and metal rails to help achieve an innovative blend of what other structures provide in the HCO. Colors, roof types, overhang and balconies similar to the Lowcountry historic look and feel, but also the neighboring architecture, were all taken into account in designing the high quality structures."

Applying Sec. 4.24.3.A. (S.C. Highway 170/U.S. Highway 278 Corridor Overlay District, Architectural), findings include:

1) ***Finding – Exterior Siding.*** As stated in the DRC meeting comments regarding the ground floor, brick siding is to be extended to the second floor on all apartment building elevations where a combination of brick and cementitious board were shown. Previously, only the front elevation showed brick cladding for the ground floor. The response of the Applicant was to lower the brick on the front elevation. The combination of two siding materials for the ground floor is incongruous and creates a two and one-half story expanse of vertical panel siding that prevents a clear division between the first and second floors. Further, the ground floor use of brick will help to reduce the perceived height of each building. (Sec. 4.24.3.A.3.d.)

2) ***Finding – Long Facades.*** Long, unarticulated or blank facades are inappropriate exterior elements (Sec. 4.24.3.A.3.c.). The Commission may wish to consider whether the rear façades of the apartment buildings (A1, A2 and B and C) are sufficiently articulated to reduce the perceived mass. While there is variation in the roof line, the rear elevations are lacking dimensional elements except for a minimal wall projection. Perceptible offsets, recesses, and/or awnings can create visual interest to break up the flatness of these elevations. All apartment building elevations can be seen in Attachment 3.

3) ***Finding – Screening Mechanical Equipment.*** All trash receptacles, dumpsters, ductwork, fixed operating machinery, and other such utility equipment shall either be screened from view or located so that they are not visible from the highway (Sec. 4.24.4.A. Further, Sec. 4.24.3.A.3. states that architectural details resulting in a clearly disturbing appearance are inappropriate. The mechanical equipment proposed on the roof cannot exceed the parapet height and be visible. Confirmation is needed that they will not be visible beyond the parapet. If visible, it will result in the failure of HCOD inspections and could potentially halt construction until such time as corrective action is taken.

Lighting *(See Attachment 7 for Lighting Plan)*

Applying Sec. 4.24.3.C. (S.C. Highway 170/U.S. Highway 278 Corridor Overlay District, Lighting), findings include:

1) ***Finding – Light Locations****.* All exterior architectural lighting, display and decorative lighting visible from the Highway 170 corridor shall be generated from concealed light source, low level light fixtures. The only lighting fixtures identified are pole lights, which comply except for the light source (see #2 below). Lighting details for all other proposed lights must be provided.

2) ***Finding – Light Source (Lamp).*** Per Section 4.24.3.C.2.(a)(ii). of the BZDSO, only incandescent, fluorescent, metal halide, mercury vapor or color corrected high-pressure sodium light may be used. The same type must be used for the same or similar type of lighting on any site. The Applicant proposes the use of LED luminaries in the parking area. As such, the Planning Commission must

determine the appropriateness of the use of LED lighting as a substitute for those listed in this section.

Other Items

1) ***Finding – Signage.*** Signage is reviewed through a separate Sign Permit process for review and approval by the Town of Bluffton.

2) ***Finding*** **– Development Name.** The development name has been identified as both "Venture at Okatie Bluff" and "Venture and Okatie Bluffs." Confirmation of the correct name is needed.

B. **PUD MASTER PLAN**

The Buckwalter Master Plan document refers to the Buckwalter PUD for design standards.

1) ***Finding – Buckwalter Master Plan****.* The application is in compliance with the Buckwalter Master Plan.

C. **DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS (CC&Rs)**
The Declaration of Covenants, Conditions, and Restrictions for the New Riverside Village Master Plan.

1) ***Finding – Declaration of CC&Rs.*** A letter from the Declarant for Buckwalter PUD must be provided indicating that the application is in compliance with the Covenants, Conditions and Restrictions for Buckwalter PUD.

3. **Section 3.17.3.C. The application must comply with applicable requirements in the Application Manual.**

a. ***Finding****.* The application has been reviewed by Town Staff and has been determined to be complete and it meets all requirements of the Applications Manual.

RECOMMENDATION: Should the Planning Commission choose to approve the application with conditions, Town staff finds that the following conditions should be met to be in accordance with the requirements of Section 3.10.3.A:

1. Architecture

a. For the ground floor of each apartment building, extend brick cladding to the second floor.

b. **Planning Commission Determination Needed:** Determine whether the long rear elevations of each apartment building are sufficiently articulated to comply with Sec. 4.24.3.A.3.c.

c. Confirmation that the rooftop mechanical equipment will not extend beyond the parapet and acknowledgment that should they be installed during construction and be

visible, it will result in the failure of HCOD inspections and potentially halt construction until corrected.

2. Lighting

    a. If additional future lighting is proposed, including exterior building lighting, details must be provided to show compliance with Sec. 4.24.3.C.

    b. **Planning Commission Determination Needed:** Per Sec. 4.24.3.C.2.(a)(ii), the Planning Commission must determine the appropriateness of the use of LED lighting as a substitute for those types listed within this section.

3. Other Items

    a. Confirm if development name is “Venture at Okatie Bluff” or “Venture at Okatie Bluffs.”

    b. Provide a letter from the Declarant for Buckwalter indicating that the application complies with the Covenants, Conditions and Restrictions for Buckwalter.

    c. Submit signage via the Sign Permit process.

PLANNING COMMISSION ACTIONS: As granted by the powers and duties set forth in Section 2.2.6.C.6. of the Unified Development Ordinance, the Planning Commission has the authority to take the following actions with respect to this application:

1. Approve the application as submitted by the Applicant;
2. Approve the application with conditions; or
3. Deny the application as submitted by the Applicant.

ATTACHMENTS:

1. Vicinity Map
2. Application and Narrative
3. Partial Plan Set
4. DRC Comments (10.09.2024)
5. Architectural
6. Landscape Plan
7. Lighting Plan

LOCATION & ZONING MAP

Venture at Okatie Bluff Parcel

Buckwalter Planned Unit Development

ATTACHMENT 2

TOWN OF BLUFFTON
CERTIFICATE OF APPROPRIATENESS
HIGHWAY CORRIDOR OVERLAY APPLICATION

Growth Management Custom
20 Bridge Street
Bluffton, SC 29910
(843)706-4500
www.townofbluffton.sc.gov
applicationfeedback@townofbluffton.com

Applicant	Property Owner
Name: Witmer Jones Keefer Ltd.	Name: Parcel 8A LLC
Phone: 843-757-7411	Phone: 843-705-9400
Mailing Address: 23 Promenade St, Suite 201, Bluffton, SC, 29910	Mailing Address: P.O. BOx 1726, Bluffton, SC, 29910
E-mail: caleb@wjkltd.com	E-mail:
Town Business License # (if applicable):	

Project Information

Project Name: Venture at Okatie Bluff	Acreage: 21.9
Project Address:	
Zoning District: Buckwalter PUD	
Tax Map Number(s): R610 028 000 0921 0000	
Project Description: A 150 unit apartment complex consisting of 6 residential buildings & a clubhouse	

Minimum Requirements for Submittal

- ☑ 1. Mandatory Application Check-In meeting scheduled.
- ☑ 2. Digital files drawn to scale of the Site Plan(s).
- ☑ 3. Digital files drawn to scale of the Architectural Plan(s).
- ☑ 4. Recorded deed and plat showing proof of property ownership.
- ☑ 5. Project Narrative describing reason for application and compliance with the criteria in Article 3 of the UDO.
- ☑ 6. Material samples and color swatches for all proposed materials.
- ☑ 7. An Application Review Fee as determined by the Town of Bluffton Master Fee Schedule. Checks made payable to the Town of Bluffton.

Note: **A Pre-Application Meeting is required prior to Application submittal.**

Disclaimer: **The Town of Bluffton assumes no legal or financial liability to the applicant or any third party whatsoever by approving the plans associated with this application.**

I hereby acknowledge by my signature below that the foregoing application is complete and accurate and that I am the owner of the subject property. As applicable, I authorize the subject property to be posted and inspected.

Property Owner Signature: Adrien Dannmiller Date: 7/29/24

Applicant Signature: C. Caleb King Date: 9/04/24

For Office Use

Application Number:	*Date Received:*
Received By:	*Date Approved:*

Witmer Jones Keefer Ltd.
landscape architecture
land planning

PROJECT NARRATIVE

Venture at Okatie Bluff is a 150 unit apartment complex, designed to meet the requirements set forth by the Town of Bluffton UDO. Establishing a look that is consistent with the HCO and other nearby surrounding areas was taken in account when the project moved from a conceptual to design stage. The six apartment buildings, clubhouse and accessory buildings all use materials, such as, brick, fiber cement trim, fiber cement horizontal siding, fiber cement board and batten siding and metal rails to help achieve an innovative blend of what other structures provide in the HCO. Colors, roof types, overhang and balconies similar to the Lowcountry historic look and feel, but also the neighboring architecture, were all taken into account in designing the high quality structures.

23 Promenade St., Suite 201
Bluffton, SC 29910
Tel: 843.757.7411

VENTURE AT OKATIE BLUFFS
APARTMENTS

BLUFFTON, SOUTH CAROLINA

APPLICABLE CODES

2021 INTL BLDG CODE W/ SC MODS
2021 INTL MECH CODE W/ SC MODS
2021 INTL PLUMB CODE W/ SC MODS
2021 INTL FIRE CODE W/ SC MODS
2020 NATIONAL ELECTRICAL CODE W/ SC MODS
2009 INTL ENERGY CONSERVATION CODE
ICC / ANSI 117.1 - 2017

DESIGNER OF RECORD

DESIGNER	NAME	LICENSE NUMBER	TELEPHONE NUMBER
ARCHITECT	PARKS - PLAYER ARCH. & PLANNING, LLC	100975	(864) 382-5000
ELECTRICAL	VP ENGINEERING	22658	(704) 372-7755
MECHANICAL	VP ENGINEERING	22725	(704) 372-7755
PLUMBING	VP ENGINEERING	22725	(704) 372-7755
STRUCTURAL	JASON R. MILLIGAN, P.E.	23582	(205) 337-9500

BUILDING DATA

OCCUPANCY: RESIDENTIAL (R-2)
CONSTRUCTION TYPE: V-A
MIXED OCCUPANCY: NO
SPRINKLERED: YES - 13R SYSTEM

BUILDING HEIGHT: 43'-0"
NUMBER OF STORIES
ALLOWABLE: 3
ACTUAL: 3 STORY

HEIGHT MOD: NO

NOTE: SEE LS-1.00, LS-2.00, & LS-3.00 FOR ALLOWABLE AREA AND LIFE SAFETY

BUILDING AREA (UNDER ROOF - GROUND FLOOR)
BLDG TYPE 'A1' = 10,241 SF
BLDG TYPE 'A2' = 10,396 SF
BLDG TYPE 'B' = 11,805 SF
BLDG TYPE 'C' = 15,339 SF

CLUBHOUSE - OCCUPANCY: A-3 (PRIMARY)
CONSTRUCTION TYPE: V-A
MIXED OCCUPANCY: YES
SPRINKLERED: YES
BUILDING AREA (UNDER ROOF): 7,906 S.F.
ALLOWABLE AREA = 6,000 S.F.
AREA INCREASE: YES

ALLOWABLE: 12,000
AREA INCREASE: BLDG TYPE A & D

FIRE RESISTANCE RATINGS

BUILDING ELEMENT	REQUIRED HOURLY RATING	DETAIL NUM.	DESIGN NUM.
FIREWALL	N/A		
TENANT SEPERATION	1 HR	7, 8, 13 & 14/A-18	UL # U341
MIXED OCCUPANCY SEPARATION	N/A		
INCIDENTIAL USE SEPARATION	N/A		
VERTICAL EXIT ENCLOSURE	1 HR	1/A-17	UL # U032 & UL # U338
BEAMS	N/A		
COLUMNS	N/A		
FLOOR, FLOOR / CEILING ASSEMBLY	1 HR	2 & 3/A-18	UL # L528
ROOF, ROOF / CEILING ASSEMBLY	1 HR	1, 6 & 12/A-18	UL # P522
VERTICAL SHAFT	N/A		
CHASE (M.E.P.)	N/A		
PENETRATIONS	1 HR		UL # W-L-2088
EXTERIOR LOAD BEARING	1 HR	1, 2, 3 & 4/A-18	UL# U356
EXTERIOR NON LOAD BEARING	0		
INTERIOR LOAD BEARING	1 HR	10/A-18	UL #U305
INTERIOR NON LOAD BEARING	0		

KEY

N/A = NOT APPLICABLE NC = NON-COMBUSTIBLE NL = NO LIMIT E = EXISTING

LIFE SAFETY SYSTEM

EXIT REQUIREMENTS

EMERGENCY LIGHTING AND EXIT SIGNS:.....YES
SPRINKLER ALARM AND SMOKE DETECTIONS SYSTEM:....YES
SMOKE DETECTORS IN SLEEPING ROOMS:.....YES
PANIC HARDWARE:.....NO IN APARTMENTS, YES IN CLUBHOUSE
SPRINKLER SYSTEM:.....13R SYSTEM IN APART., 13 SYSTEM IN CLUBHOUSE
STANDPIPE SYSTEM:.....NO
DRAFTSTOPPING (ATTIC):.....YES
DRAFTSTOPPING (FLOOR):.....EVERY TENANT SPACE
SMOKE BARRIERS:.....NO

BUILDING BREAKDOWN

BUILDING #	BLDG. TYPE	1 BR	1 BR A2	1 BR DX.	1 BR H.C.	2 BR	2 BR END	2 BR 2X8	2 BR DX.	2 BR H.C.	2 BR ELEV.	3 BR	3 BR H.C.	TOTAL
BLDG. #1	A1	6		6			6		6					24
BLDG. #2	A1	6		6			6		6					24
BLDG. #3	C						12	11		1	6			30
BLDG. #4	A2	6	2	4			8		4					24
BLDG. #5	A2	5	2	4	1		8		4					24
BLDG. #6	B					12						11	1	24
TOTAL		23	4	20	1	12	40	11	20	1	6	11	1	150

SQUARE FOOTAGES

UNIT TYPE	QUANITY	GROSS HEATED	NET HEATED	TOTAL GROSS HEATED	TOTAL NET HEATED
1 BR	23	873	831	20,079	19,113
1 BR-A2	4	949	903	3,796	3,612
1 BR DELUXE	20	1,020	973	20,400	19,460
1 BR HC	1	873	831	873	831
2 BR	12	1,080	1,030	12,960	12,360
2 BR END	40	1,080	1,030	43,200	41,200
2 BR - 2X8	11	1,092	1,025	12,012	11,275
2 BR DELUXE	20	1,212	1,157	24,240	23,140
2 BR HC	1	1,092	1,025	1,092	1,025
2 BR ELEV	6	1,146	1,073	7,950	6,438
3 BR	11	1,258	1,200	14,421	13,200
3 BR HC	1	1,258	1,200	1,258	1,200
TOTAL # UNITS	150				
CLUBHOUSE		5,120			
TOTAL UNIT SQUARE FOOTAGE				162,281	152,854

DESIGN LOADS

LIVE LOADS
LIVE LOAD:
FLOORS (UNITS):.....40 PSF
CORRIDORS:.....100 PSF
PUBLIC ROOMS:.....100 PSF
BALCONIES:.....60 PSF
ROOF:.....20 PSF

WIND LOADS
WIND SPEED (ULTIMATE):....138 MPH
WIND EXPOSURE CLASS:.....D

SEE STRUCTURAL DRAWINGS FOR ADDITIONAL LOAD INFORMATION.

SEISMIC LOADS
SEISMIC DESIGN CATEOGRY :.....C
SPECTRAL RESPONSE - SDS:.....0.214g
SPECTRAL RESPONSE - SD1:.....0.149g

VERIFY W/ STRUCTURAL DRAWINGS

ARCHITECTURAL

PARKS - PLAYER
ARCHITECTURE & PLANNERS, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, SOUTH CAROLINA 29601
PHONE: (864) 382-5000

MECHANICAL/ELECTRICAL/PLUMBING

VP ENGINEERING
2108 SOUTH BLVD., SUITE 112
CHARLOTTE, NC 28203
704-372-7755

STRUCTURAL

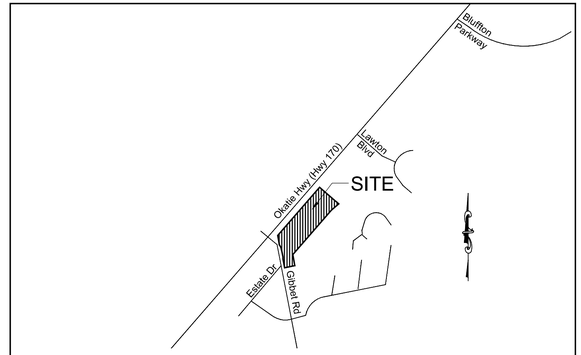
Jason R. Milligan, P.E.
2111 Parkway Office Circle, Suite 230
Hoover, AL
Ph: (205) 337-9500
Fax: (205) 267-4200

H.C. UNIT SCHEDULE				
H.C. : DENOTES HANDICAP UNITS (GROUND FLOOR UNITS ONLY)				
BLDG.	1BR	2BR	3BR	TOTAL
BLDG. #1				
BLDG. #2				
BLDG. #3		1		1
BLDG. #4				
BLDG. #5	1			1
BLDG. #6			1	1
TOTAL	1	1	1	3

150 UNITS x 2% = 3 H.C. UNITS

SEE SHEET A-1.00 FOR 1 BR H.C. UNITS
SEE SHEET A-2.00 FOR 2BR H.C. UNITS
SEE SHEET A-3.00 FOR 3BR H.C. UNITS

PARKING
269 STANDARD PARKING SPACES
12 H.C. PARKING SPACES
36 GARAGE PARKING SPACES
2 H.C. GARAGE PARKING SPACES
319 PARKING SPACES TOTAL
319 / 150 = 2.12 SPACES PER UNIT



VICINITY MAP
N.T.S.

SHEET INDEX

DRAWING NUMBER	ISSUE FOR PERMIT DATE	CURRENT ISSUE DATE	DRAWING DESCRIPTION
A-0.00	7.10.24	10.18.24	COVER SHEET
SL-1.00	7.10.24	8.21.24	ARCHITECTURAL SITE PLAN
LS-1.00	7.10.24	8.21.24	LIFE SAFETY CODE ANALYSIS
LS-2.00	7.10.24	8.21.24	LIFE SAFETY CODE ANALYSIS
LS-3.00	7.10.24	8.21.24	LIFE SAFETY CODE ANALYSIS
ACC-1.00	7.10.24	8.21.24	ACCESSIBILITY UNIT FLOOR PLANS
ACC-2.00	7.10.24	8.21.24	ACCESSIBILITY CLUBHOUSE FLOOR PLAN
A-0.0	7.10.24	8.21.24	UL DESIGN ASSEMBLIES
A-0.1	7.10.24	8.21.24	UL DESIGN ASSEMBLIES
A-0.11	7.10.24	8.21.24	UL DESIGN ASSEMBLIES
A-0.12	7.10.24	8.21.24	UL DESIGN ASSEMBLIES
A-0.13	7.10.24	8.21.24	UL DESIGN ASSEMBLIES
A-1.00	7.10.24	10.18.24	UNIT SCHEDULES
A-2.00	7.10.24	10.18.24	1 BEDROOM UNIT FLOOR PLANS
A-3.00	7.10.24	10.18.24	2 BEDROOM UNIT FLOOR PLANS
A-4.00	7.10.24	10.18.24	2 BD PARTIAL & 3 BEDROOM UNIT FLOOR PLANS
A-5.00	7.10.24	8.21.24	INTERIOR ELEVATIONS
A-6.00	7.10.24	8.21.24	INTERIOR ELEVATIONS
A-7.00	7.10.24	10.18.24	BUILDING TYPE 'A1' FLOOR PLANS
A-7.10	7.10.24	10.18.24	BUILDING TYPE 'A2' FIRST FLOOR PLAN & REAR ELEV.
A-8.00	7.10.24	10.18.24	BUILDING TYPE 'A' ELEVATIONS
A-9.00	7.10.24	10.18.24	BUILDING TYPE 'B' FLOOR PLANS
A-10.00	7.10.24	10.18.24	BUILDING TYPE 'B' ELEVATIONS
A-11.00	7.10.24	10.18.24	BUILDING TYPE 'C' FLOOR PLANS
A-12.00	7.10.24	10.18.24	BUILDING TYPE 'C' ELEVATIONS
A-12.10	7.10.24	8.21.24	BUILDING TYPE 'C' ROOF PLANS
A-13.00	7.10.24	10.18.24	STAIR SECTIONS AND DETAILS
A-14.00	7.10.24	10.18.24	STAIR SECTIONS AND DETAILS
A-15.00	7.10.24	10.18.24	STAIR SECTIONS AND DETAILS
A-16.00	7.10.24	10.18.24	STAIR SECTIONS AND DETAILS
A-17.00	7.10.24	8.21.24	STAIR SECTIONS AND DETAILS
A-17.10	7.10.24	8.21.24	STAIR DETAILS
A-18.00	7.10.24	10.18.24	WALL SECTIONS AND DETAILS
A-19.00	7.10.24	10.18.24	DETAILS
A-20.00	7.10.24	10.18.24	UNIT DECK FRAMING PLANS
A-21.00	7.10.24	10.18.24	UNIT DECK SECTIONS
A-22.00	7.10.24	8.21.24	UNIT DECK SECTIONS
A-23.00	7.10.24	10.18.24	GARAGE FLOOR PLAN, ELEVATIONS & DETAILS
A-24.00	7.10.24	10.18.24	GARAGE FLOOR PLANS & ELEVATIONS
A-25.00	7.10.24	8.21.24	BUILDING WRAP DETAILS
~~A-26.00~~	~~7.10.24~~	~~8.21.24~~	~~MAIL STATION~~ - DRAWING DELETED FROM SET
A-27.00	7.10.24	8.21.24	COMPACTOR
A-28.00	7.10.24	8.21.24	BUILDING SECTION
A-29.00	7.10.24	8.21.24	BUILDING SECTION
CH-1.00	7.10.24	8.21.24	POOL LAYOUT PLAN
CH-2.00	7.10.24	8.21.24	CLUBHOUSE GROUND FLOOR PLAN
CH-3.00	7.10.24	8.21.24	CLUBHOUSE UPPER FLOOR PLAN
CH-4.00	7.10.24	8.21.24	CLUBHOUSE SCHEDULES & INTERIOR ELEVATIONS
CH-5.00	7.10.24	10.18.24	CLUBHOUSE ELEVATIONS
CH-6.00	7.10.24	8.21.24	CLUBHOUSE BUILDING SECTIONS
CH-7.00	7.10.24	8.21.24	CLUBHOUSE WALL SECTIONS

DRAWING NUMBER	ISSUE FOR PERMIT DATE	CURRENT ISSUE DATE	DRAWING DESCRIPTION
S1.0	7.10.24	8.21.24	GENERAL NOTES & SCHEDULES
S1.1	7.10.24	8.21.24	GENERAL NOTES & SCHEDULES
S1.2	7.10.24	8.21.24	GENERAL NOTES & SCHEDULES
S2.0	7.10.24	8.21.24	BLDG TYPE A1 FOUNDATION & 2ND FLR PLAN (BLDG 1 & 2)
S2.1	7.10.24	8.21.24	BLDG TYPE A1 3RD FLOOR & ROOF FRAMING (BLDG 1 & 2)
S2.2	7.10.24	8.21.24	BLDG TYPE A2 FOUNDATION & 2ND FLR PLAN (BLDG 4 & 5)
S2.3	7.10.24	8.21.24	BLDG TYPE A2 3RD FLOOR & ROOF FRAMING (BLDG 4 & 5)
S2.4	7.10.24	8.21.24	BLDG TYPE B FOUNDATION & 2ND FLR PLAN (BLDG 6)
S2.5	7.10.24	8.21.24	BLDG TYPE B 3RD FLOOR & ROOF FRAMING (BLDG 6)
S2.6	7.10.24	8.21.24	BLDG TYPE C FOUNDATION & 2ND FLR PLAN (BLDG 3)
S2.7	7.10.24	8.21.24	BLDG TYPE C 3RD FLOOR & ROOF FRAMING (BLDG 3)
S3.0	7.10.24	8.21.24	CLUBHOUSE FOUND & ROOF FRAMING PLANS
S3.1	7.10.24	8.21.24	ACCESSIBLE GARAGE FOUND & ROOF FRAMING PLANS
S3.2	7.10.24	8.21.24	10-BAY & 8-BAY GARAGE FOUND & ROOF FRAMING PLANS
S4.0	7.10.24	8.21.24	SHEARWALL & UPLIFT DETAILS
S4.1	7.10.24	8.21.24	BUILDING A1 SHEARWALL & UPLIFT LAYOUT
S4.2	7.10.24	8.21.24	BUILDING A2 SHEARWALL & UPLIFT LAYOUT
S4.3	7.10.24	8.21.24	BUILDING B SHEARWALL & UPLIFT LAYOUT
S4.4	7.10.24	8.21.24	BUILDING C SHEARWALL & UPLIFT LAYOUT
S4.5	7.10.24	8.21.24	CLUBHOUSE SHEARWALL & UPLIFT LAYOUT
S4.6	7.10.24	8.21.24	GARAGES SHEARWALL & UPLIFT LAYOUT
S5.0	7.10.24	8.21.24	FOUNDATION DETAILS
S5.1	7.10.24	8.21.24	FOUNDATION DETAILS
S5.2	7.10.24	8.21.24	FRAMING DETAILS
S5.3	7.10.24	8.21.24	FRAMING DETAILS
M-1.00	7.10.24	8.21.24	MECHANICAL NOTES & LEGENDS
M-1.01	7.10.24	8.21.24	MECHANICAL CALCULATIONS AND VENTILATION TABLES
M-2.00	7.10.24	8.21.24	MECHANICAL UNIT PLANS
M-2.01	7.10.24	8.21.24	MECHANICAL UNIT PLANS
M-2.02	7.10.24	8.21.24	MECHANICAL UNIT PLANS
M-2.03	7.10.24	8.21.24	MECHANICAL UNIT PLANS
M-3.00	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A GROUND FLOOR MECHANICAL PLANS
M-3.01	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A 2ND & 3RD FLOOR MECHANICAL PLANS
M-3.02	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A & A2 ROOF MECHANICAL PLANS
M-3.03	7.10.24	8.21.24	BUILDING 6 TYPE B GROUND FLOOR MECHANICAL PLAN
M-3.04	7.10.24	8.21.24	BUILDING 6 TYPE B 2ND & 3RD FLOOR MECHANICAL PLANS
M-3.05	7.10.24	8.21.24	BUILDING 6 TYPE B ROOF MECHANICAL PLAN
M-3.06	7.10.24	8.21.24	BUILDING 3 TYPE C GROUND FLOOR MECHANICAL PLAN
M-3.07	7.10.24	8.21.24	BUILDING 3 TYPE C 2ND FLOOR MECHANICAL PLAN
M-3.08	7.10.24	8.21.24	BUILDING 3 TYPE C 3RD FLOOR MECHANICAL PLAN
M-3.09	7.10.24	8.21.24	BUILDING 3 TYPE C ROOF MECHANICAL PLAN
M-4.00	7.10.24	8.21.24	CLUBHOUSE - FIRST FLOOR MECHANICAL PLAN
M-4.01	7.10.24	8.21.24	CLUBHOUSE - SECOND FLOOR MECHANICAL PLAN
M-5.00	7.10.24	8.21.24	MECHANICAL SCHEDULES
M-6.00	7.10.24	8.21.24	MECHANICAL DETAILS
M-6.01	7.10.24	8.21.24	MECHANICAL DETAILS
E-1.00	7.10.24	8.21.24	ELECTRICAL SYMBOL LEGEND, NOTES & INDEX
E-1.01	7.10.24	8.21.24	LIGHTING FIXTURE SCHEDULE & NOTES
E-2.00	7.10.24	8.21.24	ELECTRICAL UNIT PLANS
E-2.01	7.10.24	8.21.24	ELECTRICAL UNIT PLANS
E-2.02	7.10.24	8.21.24	ELECTRICAL UNIT PLANS
E-2.03	7.10.24	8.21.24	ELECTRICAL UNIT PLANS
E-3.00	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A1 & A2 - GROUND FLOOR ELECTRICAL PLANS
E-3.01	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A1 & A2 - SECOND AND THIRD FLOOR ELECTRICAL PLANS
E-3.02	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A1 & A2 - ROOF ELECTRICAL PLANS
E-3.03	7.10.24	8.21.24	BUILDING 6 TYPE B - GROUND & SECOND FLOOR ELECTRICAL PLANS
E-3.04	7.10.24	8.21.24	BUILDING 6 TYPE B - THIRD FLOOR & ROOF ELECTRICAL PLANS
E-3.05	7.10.24	8.21.24	BUILDING 3 TYPE C - GROUND & SECOND FLOOR ELECTRICAL PLANS
E-3.06	7.10.24	8.21.24	BUILDING 3 TYPE C - THIRD FLOOR & ROOF ELECTRICAL PLANS

DRAWING NUMBER	ISSUE FOR PERMIT DATE	CURRENT ISSUE DATE	DRAWING DESCRIPTION
E-4.00	7.10.24	8.21.24	CLUBHOUSE - FIRST FLOOR POWER PLAN
E-4.01	7.10.24	8.21.24	CLUBHOUSE - SECOND FLOOR POWER PLAN
E-4.02	7.10.24	8.21.24	CLUBHOUSE - FIRST FLOOR LIGHTING PLAN
E-4.03	7.10.24	8.21.24	CLUBHOUSE - SECOND FLOOR LIGHTING PLAN
E-4.04	7.10.24	8.21.24	GARAGE, MAIL AND TRASH ELECTRICAL PLAN
E-5.00	7.10.24	8.21.24	ELECTRICAL RISER DIAGRAMS
E-5.01	7.10.24	8.21.24	ELECTRICAL RISER DIAGRAMS
E-5.02	7.10.24	8.21.24	ELECTRICAL PANEL SCHEDULES
E-5.03	7.10.24	8.21.24	ELECTRICAL DETAILS
E-6.00	7.10.24	8.21.24	ELECTRICAL SITE PLAN
P-1.00	7.10.24	8.21.24	PLUMBING NOTES, INDEX AND LEGEND
P-1.01	7.10.24	8.21.24	PLUMBING SCHEDULES
P-1.02	7.10.24	8.21.24	FIRE SPRINKLER SYSTEM SPECIFICATION SHEETS
P-1.03	7.10.24	8.21.24	FIRE SPRINKLER SYSTEM SPECIFICATION SHEETS
P-2.00	7.10.24	8.21.24	SANITARY WASTE UNIT PLANS
P-2.01	7.10.24	8.21.24	SANITARY WASTE UNIT PLANS
P-2.02	7.10.24	8.21.24	SANITARY WASTE UNIT PLANS
P-2.03	7.10.24	8.21.24	SANITARY WASTE UNIT PLANS
P-2.04	7.10.24	8.21.24	WATER PIPING UNIT PLANS
P-2.05	7.10.24	8.21.24	WATER PIPING UNIT PLANS
P-2.06	7.10.24	8.21.24	WATER PIPING UNIT PLANS
P-2.07	7.10.24	8.21.24	WATER PIPING UNIT PLANS
P-3.00	7.10.24	8.21.24	BUILDINGS 1 & 2 TYPE A1 - GROUND FLOOR SANITARY WASTE PLANS
P-3.01	7.10.24	8.21.24	BUILDINGS 1 & 2 TYPE A1 - SECOND AND THIRD FLOOR SANITARY WASTE PLANS
P-3.02	7.10.24	8.21.24	BUILDINGS 4 & 5 TYPE A2 - GROUND FLOOR SANITARY WASTE PLANS
P-3.03	7.10.24	8.21.24	BUILDINGS 4 & 5 TYPE A2 - SECOND FLOOR SANITARY WASTE PLANS
P-3.04	7.10.24	8.21.24	BUILDINGS 4 & 5 TYPE A2 - THIRD FLOOR SANITARY WASTE PLANS
P-3.05	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A - ROOF STORM DRAINAGE PLANS
P-3.06	7.10.24	8.21.24	BUILDINGS 6 TYPE B - GROUND FLOOR SANITARY WASTE PLANS
P-3.07	7.10.24	8.21.24	BUILDINGS 6 TYPE B - SECOND AND THIRD FLOOR SANITARY WASTE PLANS
P-3.08	7.10.24	8.21.24	BUILDINGS 6 TYPE B - ROOF STORM DRAINAGE PLANS
P-3.09	7.10.24	8.21.24	BUILDINGS 3 TYPE C - GROUND FLOOR SANITARY WASTE PLANS
P-3.10	7.10.24	8.21.24	BUILDINGS 3 TYPE C - SECOND FLOOR SANITARY WASTE PLANS
P-3.11	7.10.24	8.21.24	BUILDINGS 3 TYPE C - THIRD FLOOR SANITARY WASTE PLANS
P-3.12	7.10.24	8.21.24	BUILDINGS 3 TYPE C - ROOF STORM DRAINAGE PLANS
P-3.13	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A - GROUND FLOOR WATER PIPING PLANS
P-3.14	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A - SECOND FLOOR WATER PIPING PLANS
P-3.15	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A - THIRD FLOOR WATER PIPING PLANS
P-3.16	7.10.24	8.21.24	BUILDINGS 1, 2, 4 & 5 TYPE A - ROOF WATER PIPING PLANS
P-3.17	7.10.24	8.21.24	BUILDING 6 TYPE B - GROUND AND SECOND FLOOR WATER PIPING PLANS
P-3.18	7.10.24	8.21.24	BUILDING 6 TYPE B - THIRD FLOOR AND ROOF WATER PIPING PLANS
P-3.19	7.10.24	8.21.24	BUILDING 3 TYPE C - GROUND FLOOR WATER PIPING PLANS
P-3.20	7.10.24	8.21.24	BUILDING 3 TYPE C - SECOND FLOOR WATER PIPING PLANS
P-3.21	7.10.24	8.21.24	BUILDING 3 TYPE C - THIRD FLOOR WATER PIPING PLANS
P-3.22	7.10.24	8.21.24	BUILDING 3 TYPE C - ROOF WATER PIPING PLANS
P-4.00	7.10.24	8.21.24	CLUBHOUSE - FIRST FLOOR SANITARY WASTE PLAN
P-4.01	7.10.24	8.21.24	CLUBHOUSE - SECOND FLOOR SANITARY WASTE PLAN
P-4.02	7.10.24	8.21.24	CLUBHOUSE - FIRST FLOOR WATER PIPING PLAN
P-4.03	7.10.24	8.21.24	CLUBHOUSE - SECOND FLOOR WATER PIPING PLAN
P-4.04	7.10.24	8.21.24	TRASH COMPACTOR WATER PIPING PLAN
P-4.05	7.10.24	8.21.24	SITE PLUMBING PLAN
P-5.00	7.10.24	8.21.24	SANITARY WASTE RISER DIAGRAMS
P-5.01	7.10.24	8.21.24	SANITARY WASTE RISER DIAGRAMS
P-5.02	7.10.24	8.21.24	CLUBHOUSE - ISOMETRIC SANITARY WASTE RISER DIAGRAM
P-5.03	7.10.24	8.21.24	WATER PIPING RISER DIAGRAMS
P-6.00	7.10.24	8.21.24	PLUMBING DETAILS
P-6.01	7.10.24	8.21.24	PLUMBING DETAILS
P-6.02	7.10.24	8.21.24	PLUMBING DETAILS
P-6.03	7.10.24	8.21.24	PIPE PENETRATION DETAILS
P-6.04	7.10.24	8.21.24	PIPE PENETRATION DETAILS

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09
File Reference:
Scale:

STATE OF SOUTH CAROLINA
Parks - Player Architecture & Planning
Greenville, SC
100975
REGISTERED ARCHITECTS

CURF SEAL

STATE OF SOUTH CAROLINA
ORVILLE VAN PLAYER III
GREENVILLE, SC
15961
REGISTERED ARCHITECT

SEAL

VENTURE AT OKATIE BLUFF
APARTMENTS
BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, SC 29601
(864) 382-5000

COVER SHEET

Sheet Number:
A-0.0

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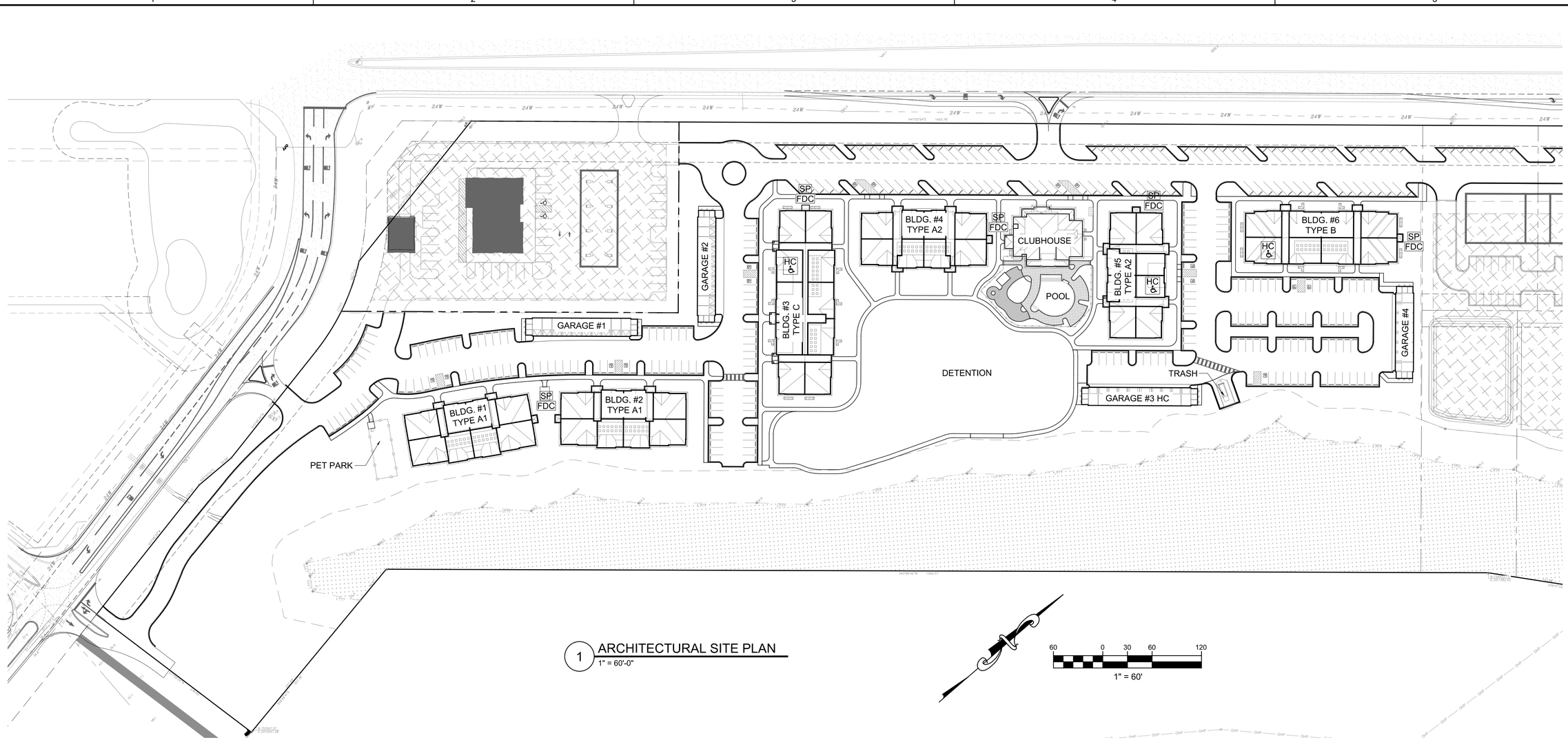

1 ARCHITECTURAL SITE PLAN
1" = 60'-0"

BUILDING BREAKDOWN

BUILDING #	BLDG. TYPE	1 BR	1 BR A2	1 BR DX.	1 BR H.C.	2 BR	2 BR DX.	2 BR H.C.	2 BR ELEV.	3 BR	3 BR H.C.	TOTAL
BLDG. #1	A1	6		6		6	6					24
BLDG. #2	A1	6		6		6	6					24
BLDG. #3	C					23		1	6			30
BLDG. #4	A2	6	2	4		6	6					24
BLDG. #5	A2	5	2	4	1	6	6					24
BLDG. #6	B					12				11	1	24
TOTAL		23	4	20	1	59	24	1	6	11	1	150

PARKING
290 STANDARD PARKING SPACES
15 H.C. PARKING SPACES ♿
36 GARAGE PARKING SPACES
2 H.C. GARAGE PARKING SPACES
343 PARKING SPACES TOTAL
319 / 150 = 2.28 SPACES PER UNIT

HANDICAP UNITS DESIGNATED BY HC ♿
HANDICAP UNIT DISTRIBUTION:
MOBILITY DISABLED UNITS = 2% =3 HC UNITS

LAMP POLES (VERIFY LOCATIONS WITH OWNER) : ⊗

SPRINKLER CLOSET LOCATIONS : FDC

FDC DESIGNATED BY : SP

CONTRACTOR TO COORDINATE SPRINKLER CLOSET, FDC AND ELECTRICAL METER LOCATIONS.

NOTE: WATER & SEWER TO BE APPROVED BY LOCAL AUTHORITY

CONTRACTOR TO VERIFY DUMPSTER DIMENSIONS PRIOR TO CONSTRUCTION

2-4" PVC CONDUIT UNDER PAVEMENT - DESIGNATED BY: —— · —— · ——

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

Scale: 1" = 60'

STATE OF SOUTH CAROLINA
Parks - Player Architecture & Planning
Greenville, SC
100975
REGISTERED ARCHITECTS

CORP. SEAL

STATE OF SOUTH CAROLINA
ORVILLE VAN PLAYER III
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VENTURE AT OKATIE BLUFF
APARTMENTS
BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, SC. 29601
(864) 382-5000

ARCHITECTURAL SITE PLAN

Sheet Number: SL-1.0

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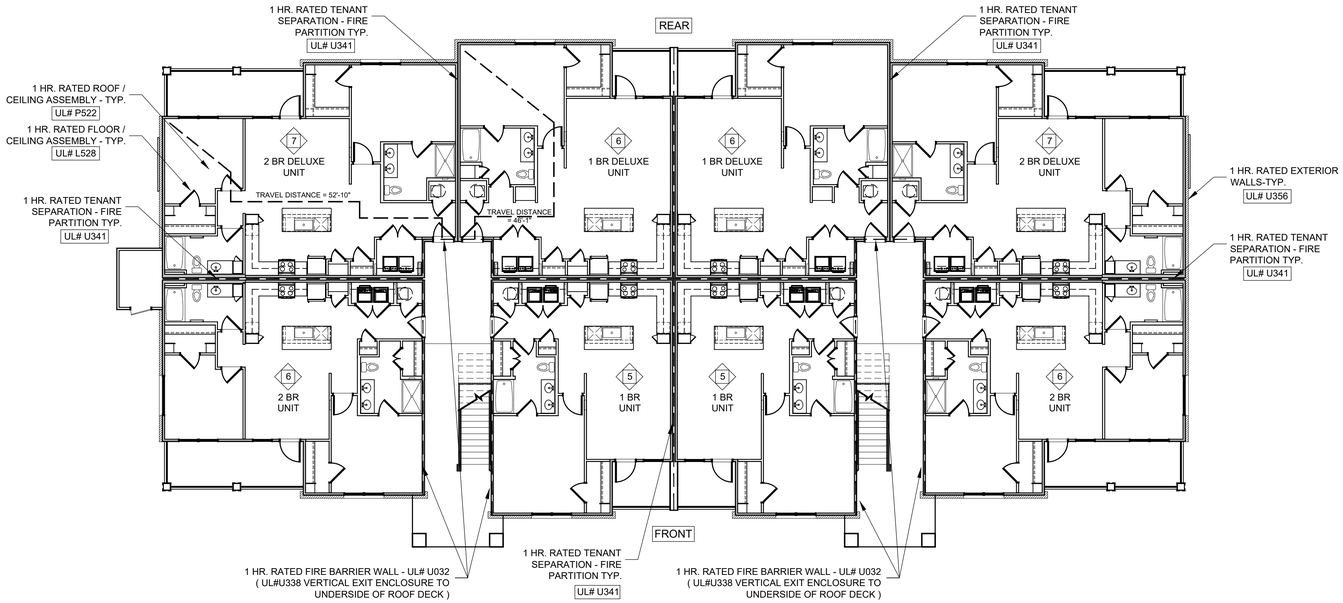
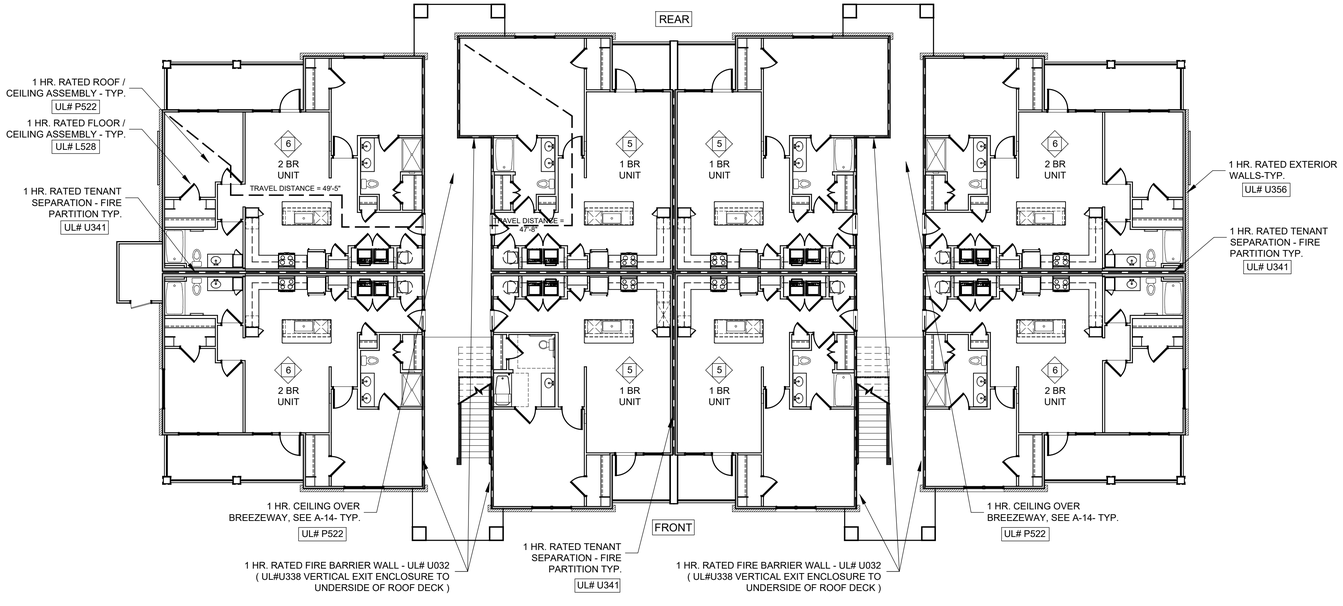


1 BUILDING TYPE "A1" GROUND FLOOR PLAN
3/32" = 1'-0"



2 BUILDING TYPE "A2" GROUND FLOOR PLAN
3/32" = 1'-0"
UPPER FLOOR SIMILAR TO 1/LS-1

# OCCUPANT LOAD	NOTE: SEE A-18 FOR WALL SECTIONS
UL# U356	NOTE: SEE A-7, A-7.1, A-9 & A-11 FOR FIRE EXTINGUISHER LOCATIONS - VERIFY LOCATIONS WITH FIRE MARSHAL - INSTALL 48" AFF MAX. TO OPERABLE PARTS ON GROUND FLOORS & ALL FLOORS OF BLDG C
UL# U032	
UL# U341	
UL# U305	VERIFY INTERIOR LOAD BEARING LOCATIONS WITH OWNER / STRUCTURAL / SHOP DRAWINGS

NOTE: VERIFY EXIT SIGN LOCATIONS W/ FIRE MARSHAL

ALLOWABLE AREA - BUILDING A

Story No.	Description and Use	Bldg. Area Per Story (Actual)	Table 506.2 A_t	NS	Table 506.3 Frontage Increse I_f	Maximum Building Area
1	R2	10,241	12,000	n/a	n/a	12,000
2	R2	10,055	12,000	n/a	n/a	12,000
3	R2	10,055	12,000	n/a	n/a	12,000
	TOTAL =	30,351				36,000

EQUATION 5-1: Aa = At + (NS X If)

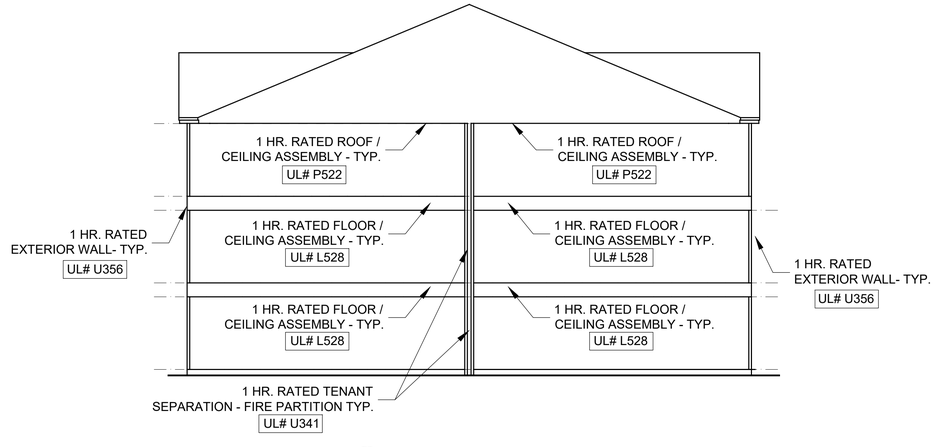
Aa = ALLOWABLE AREA
At = 12,000
NS = N/A
If = N/A

ALLOWABLE AREA - BUILDING A2

Story No.	Description and Use	Bldg. Area Per Story (Actual)	Table 506.2 A_t	NS	Table 506.3 Frontage Increse I_f	Maximum Building Area
1	R2	10,396	12,000	n/a	n/a	12,000
2	R2	10,055	12,000	n/a	n/a	12,000
3	R2	10,055	12,000	n/a	n/a	12,000
	TOTAL =	30,506				36,000

EQUATION 5-1: Aa = At + (NS X If)

Aa = ALLOWABLE AREA
At = 12,000
NS = N/A
If = N/A



3 FIRE RATING DIAGRAM
1/8" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

Scale: AS SHOWN

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ORVILLE VAN PLAYER, III
GREENVILLE, SC
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REGISTERED ARCHITECT

VENTURE AT OKATIE BLUFF
APARTMENTS

BLUFFTON, SOUTH CAROLINA

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LIFE SAFETY CODE ANALYSIS

Sheet Number: LS-1.00

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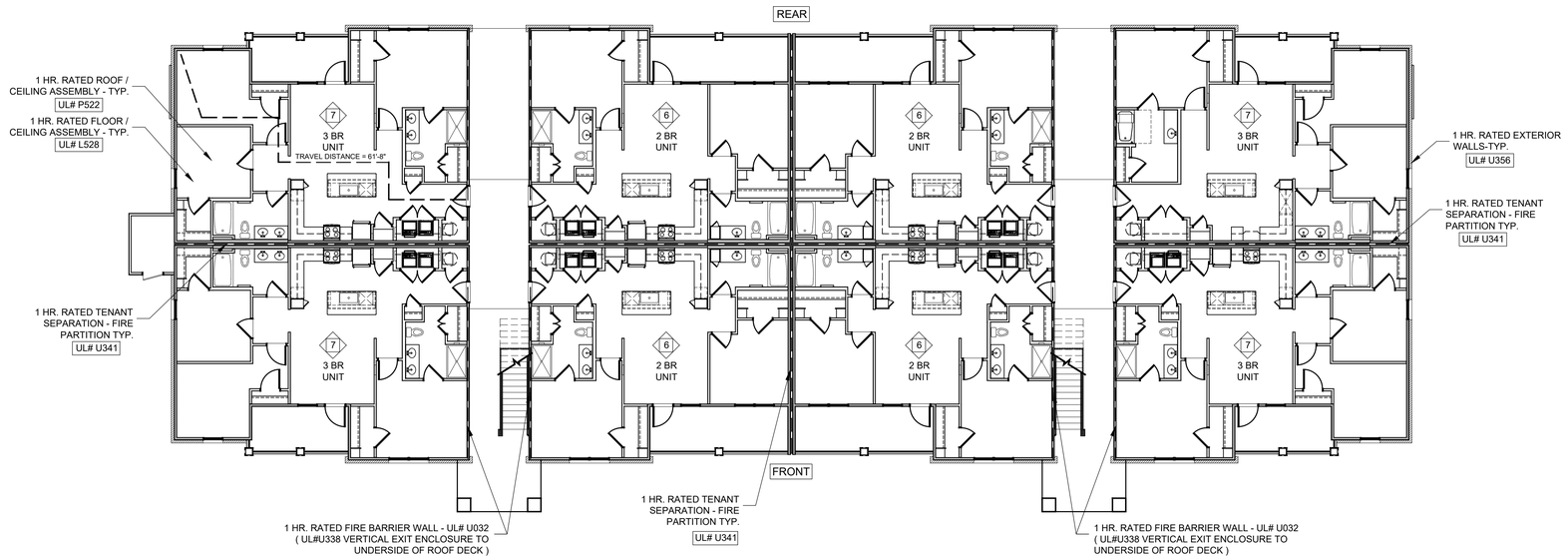
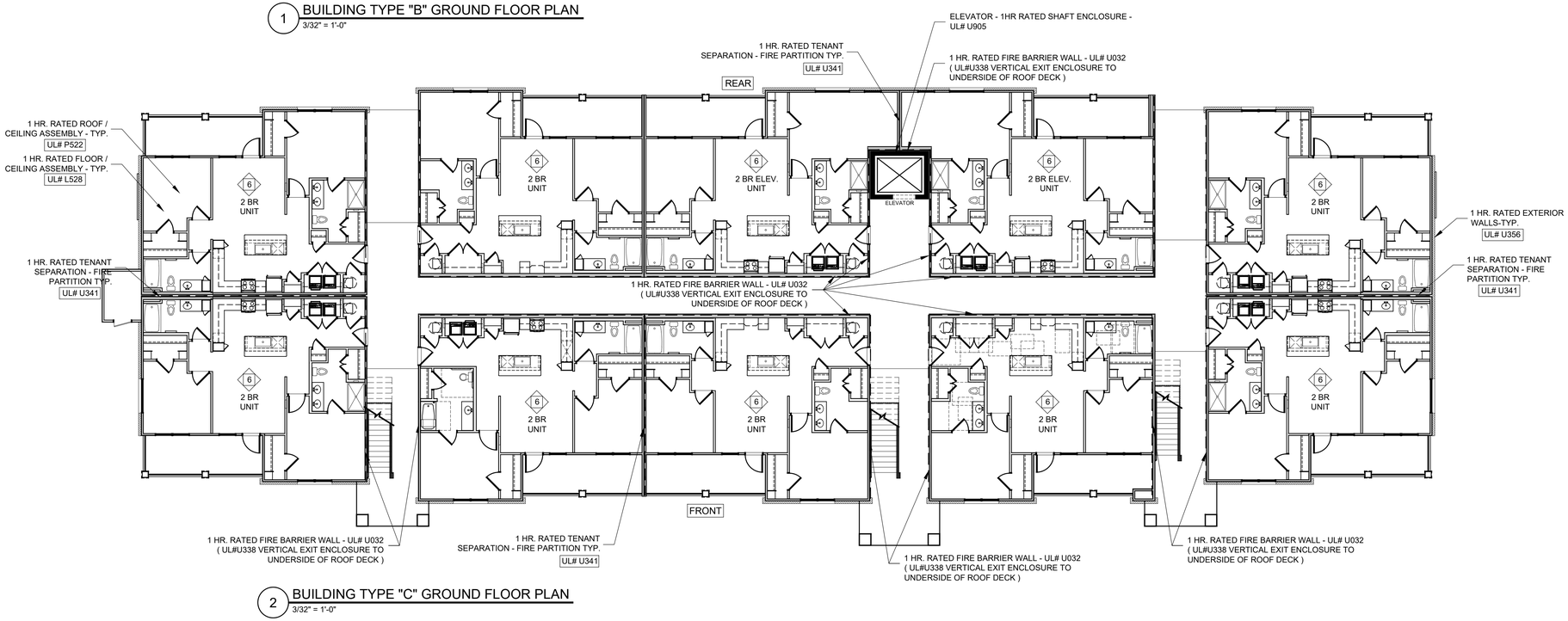


1 BUILDING TYPE "B" GROUND FLOOR PLAN
3/32" = 1'-0"



2 BUILDING TYPE "C" GROUND FLOOR PLAN
3/32" = 1'-0"

OCCUPANT LOAD

UL# U356

UL# U032

UL# U341

UL# U305

NOTE: SEE A-18 FOR WALL SECTIONS

NOTE: SEE A-7, A-7.1, A-9 & A-11 FOR FIRE EXTINGUISHER LOCATIONS - VERIFY LOCATIONS WITH FIRE MARSHAL - INSTALL 48" AFF MAX. TO OPERABLE PARTS ON GROUND FLOORS & ALL FLOORS OF BLDG C

VERIFY INTERIOR LOAD BEARING LOCATIONS WITH OWNER / STRUCTURAL / SHOP DRAWINGS

NOTE: VERIFY EXIT SIGN LOCATIONS W/ FIRE MARSHAL

ALLOWABLE AREA - BUILDING B

Story No.	Description and Use	Bldg. Area Per Story (Actual)	Table 506.2 A_t	NS	Table 506.3 Frontage Increse I_f	Maximum Building Area
1	R2	11,805	12,000	n/a	n/a	12,000
2	R2	11,625	12,000	n/a	n/a	12,000
3	R2	11,625	12,000	n/a	n/a	12,000
	TOTAL =	35,055				36,000

EQUATION 5-1: Aa = At + (NS X If)

Aa = ALLOWABLE AREA
At = 12,000
NS = N/A
If = N/A

ALLOWABLE AREA - BUILDING C

Story No.	Description and Use	Bldg. Area Per Story (Actual)	Table 506.2 A_t	NS	Table 506.3 Frontage Increse I_f	Maximum Building Area
1	R2	15,339	12,000	n/a	0.50	18,000
2	R2	15,067	12,000	n/a	0.50	18,000
3	R2	15,067	12,000	n/a	0.50	18,000
	TOTAL =	45,473				54,000

EQUATION 5-1: Aa = At + (NS X If)

Aa = ALLOWABLE AREA
At = 12,000
NS = N/A
If = 0.50

If = Table 506.3
30' or greater provided
50 to less than 75% of building perimeter provided

15,000 = 12,000 + 3,000

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

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Sheet Number:
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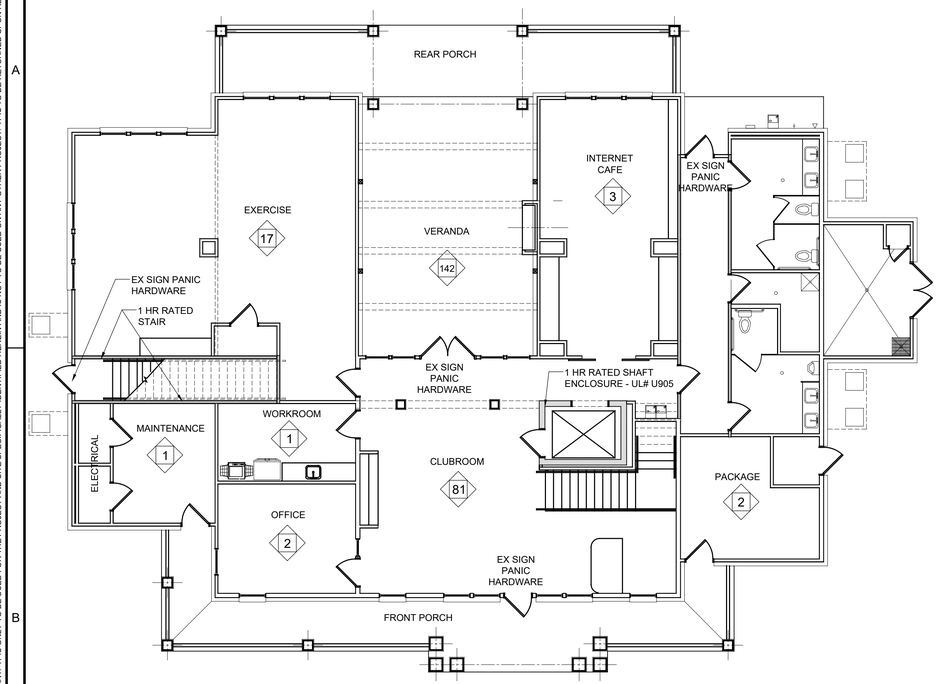
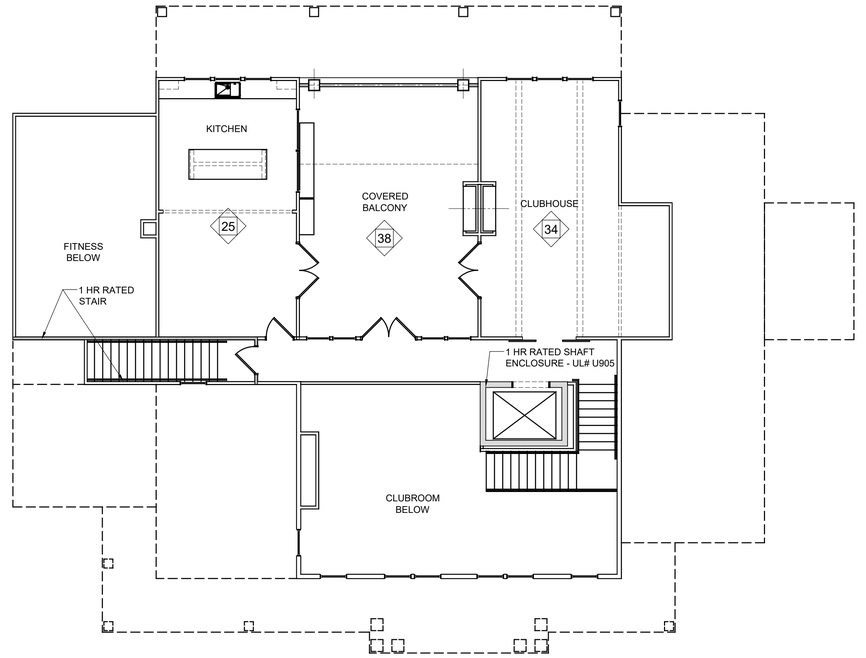


EX SIGN - EXIT SIGN REQUIRED

NOTE: VERIFY PANIC HARDWARE REQUIREMENTS, IF ANY, W/ FIRE MARSHAL

1 CLUBHOUSE GROUND FLOOR
1/8" = 1'-0"



2 CLUBHOUSE UPPER FLOOR
1/8" = 1'-0"

ALLOWABLE AREA - CLUBHOUSE

Story No.	Description and Use	Bldg. Area Per Story (Actual)	Table 506.2 A_t	NS	Table 506.3 Frontage Increse I_f	Maximum Building Area
1	A3	5,441	18,000	n/a	n/a	18,000
2	A3	1,910	18,000	n/a	n/a	18,000
	TOTAL =	7,351				36,000

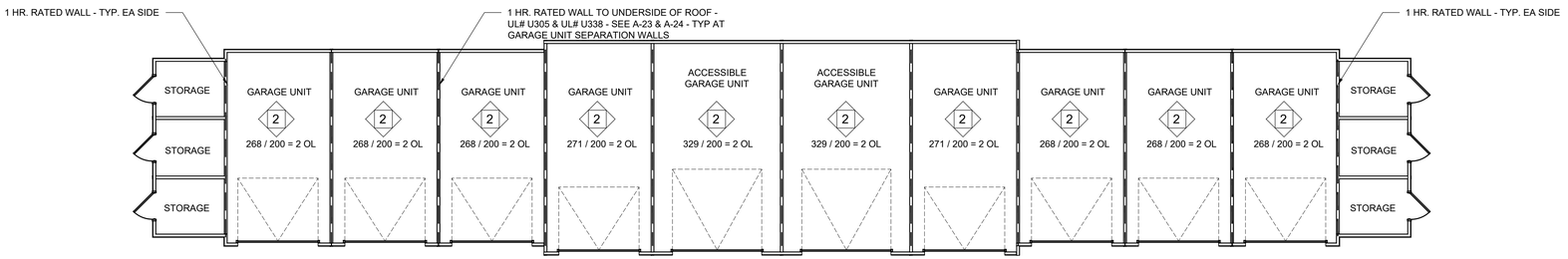
EQUATION 5-1: Aa = At + (NS X If)

Aa = ALLOWABLE AREA
At = 18,000
NS = N/A
If = N/A

OCCUPANT LOAD

UL# U305 VERIFY INTERIOR LOAD BEARING LOCATIONS WITH OWNER / STRUCTURAL / SHOP DRAWINGS

CLUBHOUSE
OCCUPANCY: A-3 (PRIMARY)
CONSTRUCTION TYPE: V-B
SPRINKLED: YES - NFPA 13
MIXED OCCUPANCY: NO



3 GARAGE-FLOOR PLAN-ACCESSIBLE
1/8" = 1'-0"

NOTE: GARAGE = GROUP U OCCUPANCIES (406.3.1)
1 HR RATED SEPARATION BETWEEN EACH GARAGE UNIT

BUILDING DATA

OCCUPANCY: MIXED (S-1 & U)
CONSTRUCTION TYPE: V-B
MIXED OCCUPANCY: NO
SPRINKLERED: NO

BUILDING HEIGHT: 15'-0"
NUMBER OF STORIES
ALLOWABLE: 1
ACTUAL: 1 STORY BLDGS
HEIGHT MOD: NO

BUILDING AREA (UNDER ROOF)
GARAGE 1 = 3,176 SF
GARAGE 2 & 3 = 3,056 SF
GARAGE 4 = 2,528 SF

ALLOWABLE: 5,500
AREA INCREASE: NO

TOTAL OCCUPANT LOAD = 10 PER GARAGE #1, 2, & 3
8 PER GARAGE #4

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

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LIFE SAFETY CODE ANALYSIS

Sheet Number:
LS-3.00

DOOR SCHEDULE

NO.	TYPE	SIZE	TYPE	REMARKS
1	A	3'-0"x6'-8"x1 3/4"	METAL INSUL. - 2 PANELED 1 HR. LABELED DOOR AND FRAME U=0,61	H.C. THRESHOLDS @ 1st LEVEL H.C. THRESHOLDS AT ALL FLOORS BLDG C
2	D	3'-0"x6'-8"x1 3/4"	METAL INSUL. - FULL LITE TEMPERED W/ SURFACE MOUNTED BLINDS	H.C. THRESHOLDS @ 1st LEVEL H.C. THRESHOLDS AT ALL FLOORS BLDG C
3	B	3'-0"x6'-8"x1 3/8"	METAL INSUL. - 2 PANELED	SPRINKLER RISER ROOM
4	B	3'-0"x6'-8"x1 3/8"	HARD BOARD INTERIOR, 2 PANELED PRESSED	32" CLEAR OPENING REQUIRED
5	B	2'-10"x6'-8"x1 3/8"	HARD BOARD INTERIOR, 2 PANELED PRESSED	31 3/4" CLEAR OPENING REQUIRED
6	B	2'-6"x6'-8"x1 3/8"	HARD BOARD INTERIOR, 2 PANELED PRESSED	
7	B	2'-0"x6'-8"x1 3/8"	HARD BOARD INTERIOR, 2 PANELED PRESSED	
8	C	(PR) 2'-6"x6'-8"x1 3/8"	HARD BOARD INTERIOR, 2 PANELED PRESSED	
9	C	(PR) 1'-6"x6'-8"x1 3/8"	HARD BOARD INTERIOR, 2 PANELED PRESSED	
10	B	1'-6"x6'-8"x1 3/8"	HARD BOARD INTERIOR, 2 PANELED PRESSED	

1. H.C. THRESHOLD AT DOOR #1 & #2 OF ALL ACCESSIBLE AND H.C. UNITS (GROUND FLOOR UNITS OF BLDG'S A & B & ALL FLOORS OF BLDG C)
2. LEVER HANDLE HARDWARE AT ENTRY DOORS OF ACCESSIBLE AND H.C. UNITS. LEVER HANDLE THROUGHOUT H.C. UNIT.
3. DEADBOLT LOCKS AND PEEPHOLES REQUIRED IN ENTRY DOORS. THUMB LATCH ON INTERIOR OF ENTRY DOOR REQUIRED. PEEP HOLE 48" MAX A.F.F FOR ALL DOOR #1 LISTED UNDER NOTE #1 ABOVE.
4. UNIT SIGNAGE MUST INCLUDE BRAILLE & MEET ANSI STANDARDS.
5. DOORS TO MEET ENERGY CODE REQUIREMENTS.
6. ALL DOORS MUST BE SIDE HINGED.
7. UNDERCUT ALL INTERIOR DOORS 3/4" MIN.
8. EXTERIOR DOORS FOR ALL UNITS MUST HAVE SPRING HINGES.
9. ENTRY DOOR AT 1BR-A2 AND AT 2 BD END GROUND FLOOR REAR UNITS IN BLDG A2 IN 2X6 WALL. SEE UNIT PLANS FOR OTHER 2X6 ENTRY DOOR UNITS.
10. FINER JOINT DOOR JAMBS AT INTERIOR DOORS
11. RATED WOOD JAMBS AT DOOR #1
12. DOOR HARDWARE - KWIKSET OR PAMEX IN BLACK OR EQUAL - SEE ID
13. ENTRY DOOR DEADBOLT W/ PASSAGE LEVER
14. ELECTRONIC / WIFI SMART LOCKS W/ KEYPAD AT ENTRY
15. PATIO DOOR PASSAGE LEVER WITH INTERIOR DEADBOLT, THUMB TURN
16. ALL DOORS TO RECIEVE DOOR STOPS. PROVIDE RUBBER DOME WALL MOUNTED DOOR STOP AT PATIO DOOR. FLOOR MOUNTED DOOR STOP ONLY IF REQUIRED

WINDOW SCHEDULE

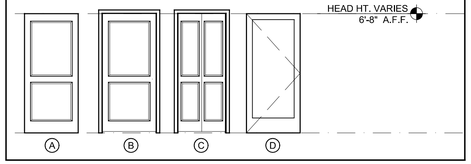
MARK	SIZE	TYPE	REMARKS
A	3'-0"X6'-0"	VINYL SINGLE-HUNG - U=0.35, SHGC=0.25, Low-E	COLOR = WHITE
B	(2) 3'-0"X6'-0"	VINYL SINGLE-HUNG - U=0.35, SHGC=0.25, Low-E	COLOR = WHITE
C	1'-6"X1'-6" TRANSOM	VINYL - U=0.35, SHGC=0.25, Low-E	COLOR = WHITE
D ⚠	3'-0"X5'-0"	VINYL SINGLE-HUNG - U=0.35, SHGC=0.25, Low-E	COLOR = WHITE (HEAD HEIGHT)
E	(2) 3'-0"X5'-0"	VINYL SINGLE-HUNG - U=0.35, SHGC=0.25, Low-E	COLOR = WHITE (HEAD HEIGHT)

NOTES :
1. BEDROOM WINDOWS TO MEET EMERGENCY ESCAPE AND RESCUE SIZE REQUIREMENTS:
   NET CLEAR OPENING GROUND FLOOR = 5,0 SQUARE FEET
   NET CLEAR OPENING UPPER FLOORS = 5,7 SQUARE FEET
   WINDOW SILL HT. NOT TO EXCEED 44" AFF
2. WINDOWS TO MEET REQUIREMENTS OF 2009 IECC
3. ALL WINDOWS TO HAVE LOCKS TO LIMIT OPENING HEIGHT
4. ALL WINDOWS TO BE INSULATED, DOUBLE PANE, VINYL
5. INSTALL CONTINUOUS BEAD OF SILICONE CAULK BEHIND ALL NAIL FINS BEFORE INSTALLING WINDOWS.
6. PROVIDE ACCESSIBLE WINDOW CONTROLS FOR ALL WINDOWS IN TYPE 'A' UNITS.
7. SCREENS REQUIRED FOR OPERABLE WINDOWS - INSTALL AS PER MANUFACTURERS INSTALLATION INSTRUCTIONS.

(T) = TEMPERED WINDOWS - SEE A-2, A-3 AND A-4 FOR LOCATIONS

ALL UNIT DECK WINDOWS HEAD HT. TO BE 6'-8" A.F.F. OR EVEN WITH ⚠ THE DECK DOOR HEIGHT

DOOR ELEVATIONS

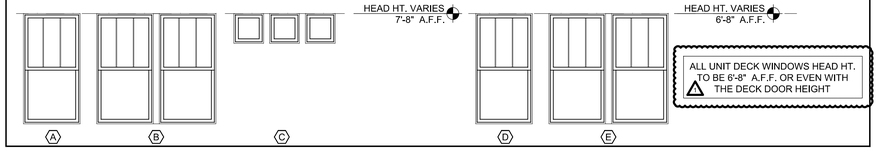


NOTE:
PROVIDE SOLID BLOCKING BEHIND SHELVING AND CABINET WALL AREAS.

NOTE:
PROVIDE SOLID BLOCKING IN ACCESSIBLE UNITS AT ALL GRAB BAR LOCATIONS (ALL TUBS & W.C.) SEE INTERIOR ELEVATIONS FOR H.C. UNITS. PROVIDE VERTICAL BLOCKING WHERE W.C. IS NEXT TO TUB.

NOTE:
INSTALL 5/8" TYPE X GYP BD AS PER UL ASSEMBLY WHEN TUB/SHOWERS ARE LOCATED ON RATED WALL.

WINDOW ELEVATIONS



ALL UNIT DECK WINDOWS HEAD HT. TO BE 6'-8" A.F.F. OR EVEN WITH ⚠ THE DECK DOOR HEIGHT

NOTES

NOTES:
1, SEE SHELVING NOTES ON A-6.0
2. VERIFY WITH OWNER IF SOUND BATT INSULATION TO BE USED IN BATHROOM WALLS

FINISH SCHEDULE

SEE INTERIOR DECORATOR DRAWINGS FOR ADDITIONAL INFORMATION

ROOM	FLOOR	BASE	WALL A	WALL B	WALL C	WALL D	CEILING	REMARKS
ENTRY	VINYL PLANK FLOORING	FINGER JOINT	GYP. BD. - PAINTED	GYP. BD. - PAINTED	GYP. BD. - PAINTED	GYP. BD. - PAINTED	GYP. BD. - PAINTED	
LIVING ROOM / HALL								
KITCHEN								
DINING								
LAUNDRY								
BEDROOMS								
BATHS								
BR CLOSETS								
UTILITY CLOSETS	↓	↓	↓	↓	↓	↓	↓	
DECK	CONCRETE	--	SIDING	SIDING	SIDING	SIDING	5/8" TYPE 'C' SHEATHING ON 24" O.C. FURRING AT UPPER LEVEL. PERFORATED FIBER CEMENT SOFFIT @ 1ST & 2ND LEVEL	
BREEZEWAY	CONCRETE	--	SIDING	SIDING	SIDING	SIDING	5/8" TYPE 'C' SHEATHING ON 24" O.C. FURRING AT UPPER LEVEL. PERFORATED FIBER CEMENT SOFFIT @ 1ST & 2ND LEVEL	

NOTES:
1. PROVIDE VINYL STRIP AT TUB BASE.
2. PROVIDE SOUND MAT AT VINYL FLOORING ALL FLOORS NOT ON CONCRETE SLAB, SEE DTL. 20/A-18.0
3. PROVIDE MOISTURE RESISTANT DRYWALL IN WALLS & CEILING AT ALL BATHROOMS, LAUNDRY ROOMS, MECHANICAL CLOSETS, EXTERIOR STORAGE AND BEHIND KITCHEN SINK BASES.
4. GYP CRETE TO BE INSTALLED UNDER TUBS AND ALL CHASES
5. TILE BACKER BOARD TO BE INSTALLED AT SHOWER TUBS AS REQUIRED (VERIFY WITH OWNER)
6. UNIT TEXTURE TO BE ORANGE PEEL ON WALLS AND KNCOKDOWN ON CEILINGS

DOOR TRIM - 1X4 MFD WITH FLAT STOCK
BASE - 1X6 MDF WITH FLAT STOCK
APRON - UPSIDE DOWN CASING
COUNTERTOPS (TBD BY INT, DESIGNER) - 3CM QUARTZ IN KITCHEN / 2CM QUARTZ IN BATHROOMS
SHELVING - PAINTED MDF SHELVING

OWNER ALTERNATES - VERIFY WITH OWNER
ALTERNATE #1 = GRANITE COUNTERTOPS: 3 CM GRANITE PROVIDED AT BATHROOM VANITY COUNTERTOPS AND KITCHEN COUNTERTOPS IN LIEU OF 3CM/2CM QUARTZ. BASE BID AS PER ID DRAWINGS
ALTERNATE #2 = WIRE SHELVING: PROVIDE WIRE MESH SHELVING SYSTEM THROUGHOUT ALL UNIT CLOSETS AND PANTRIES, EXPOSED DECORATIVE SHELVING WITHIN LIVING SPACES TO REMAIN AS PAINTED WOOD / MDF SHELVING AS PER A-6 NOTES. BASE BID PROVIDE PAINTED WOOD / MDF SHELVING THROUGHOUT ALL UNIT CLOSETS AND PANTRIES.
ALTERNATE #3: UNIT FAN LOCATIONS - STANDARD IS FOR FANS IN ALL BEDROOMS. PROVIDE SPECIFIED FAN/LIGHT AT PRIMARY BEDROOM ONLY WITH DISC LIGHTS PROVIDED AT LIVING ROOM. BASE BID PROVIDE SPECIFIED FAN/LIGHT AT BEDROOM AND LIVING ROOM ONLY (NO FANS SHOULD COME WITH THEIR OWN SWITCH)
ALTERNATE #4: UNIT WIFI THERMOSTATS - PROVIDE WIFI NEXT THERMOSTAT IN LIEU OF STANDARD THERMOSTAT WITHIN UNITS. BASE BID PROVIDE STANDARD SPECIFIED THERMOSTATS IN UNITS

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

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UNIT SCHEDULES

Sheet Number:
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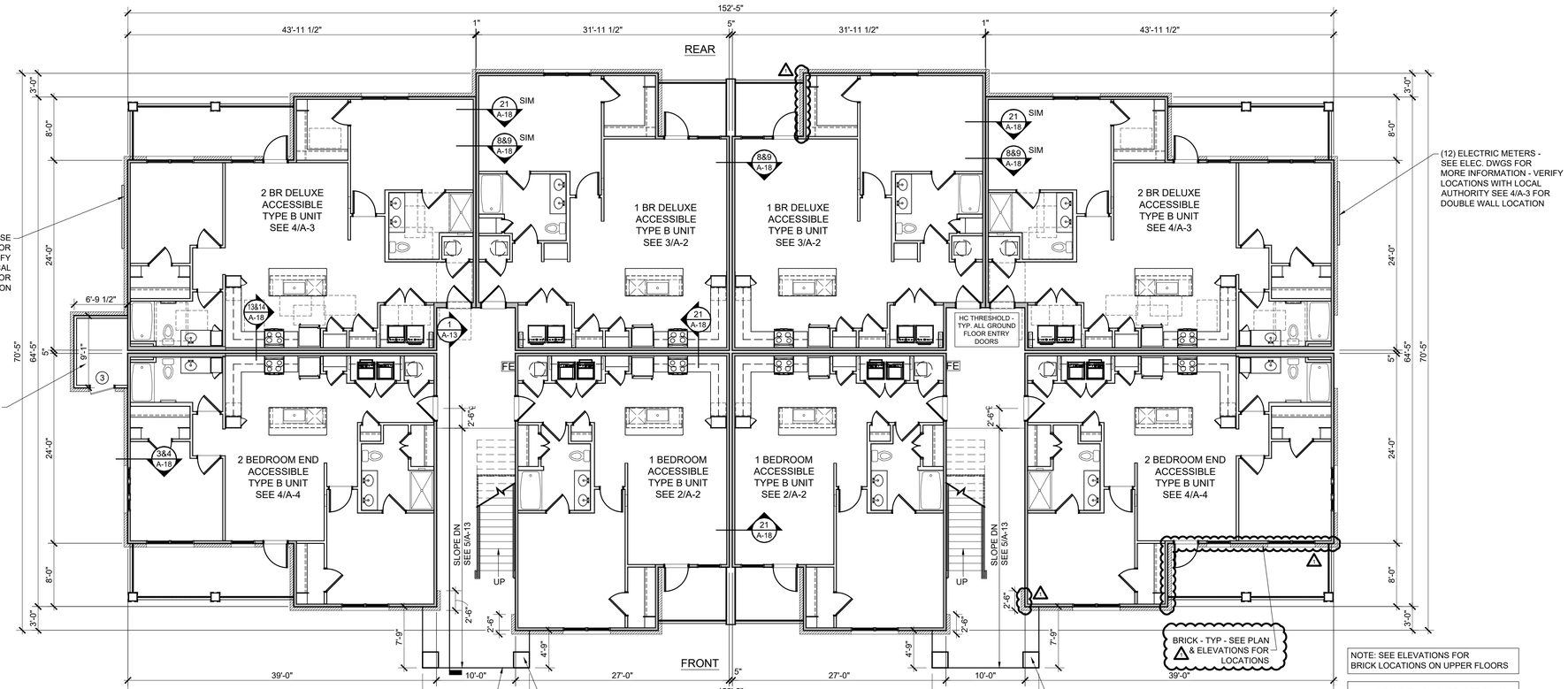
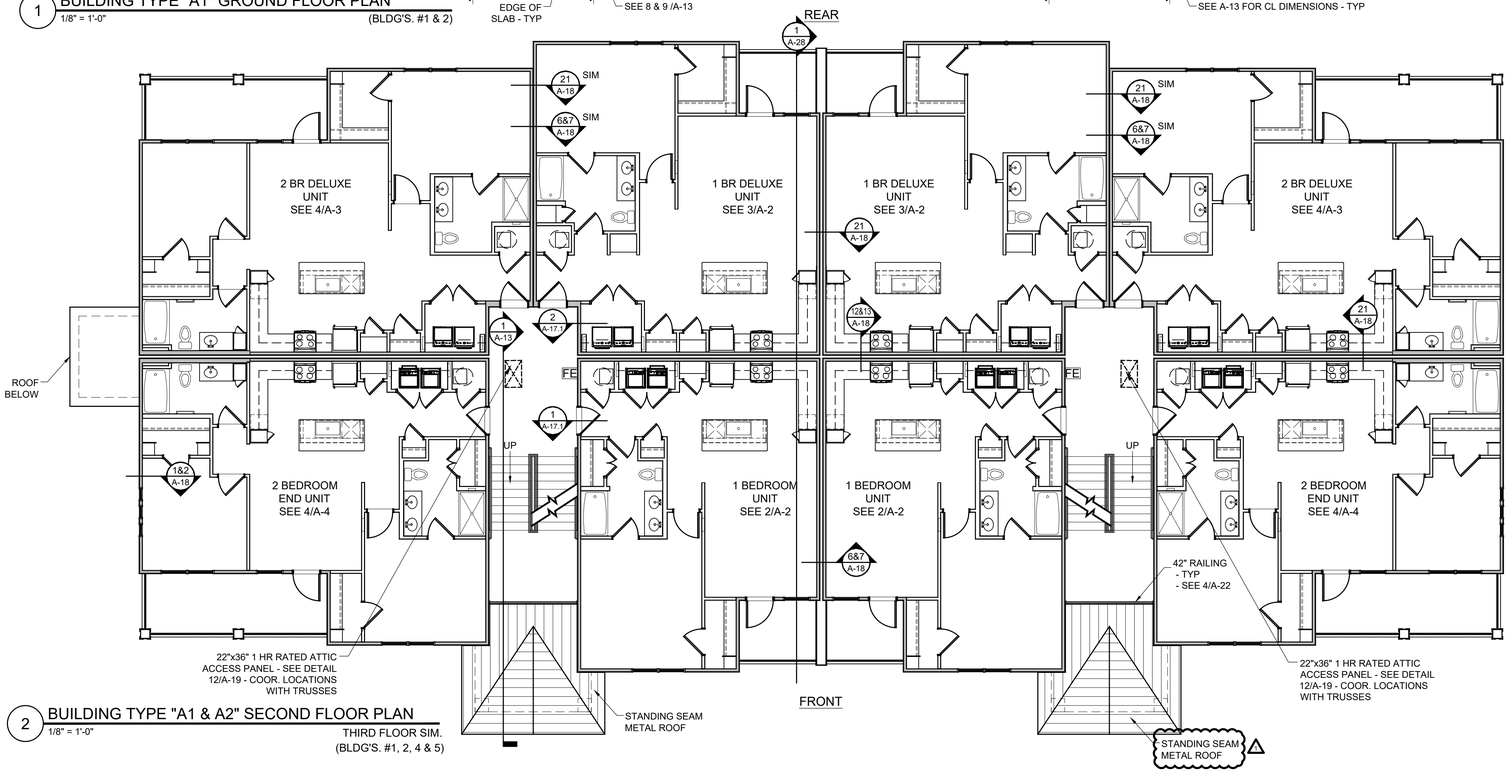


1 BUILDING TYPE "A1" GROUND FLOOR PLAN
1/8" = 1'-0" (BLDG'S. #1 & 2)

NOTE: SEE ELEVATIONS FOR BRICK LOCATIONS ON UPPER FLOORS

FE FIRE EXTINGUISHER, SEE 8/A-19 - VERIFY LOCATIONS WITH FIRE MARSHAL PRIOR TO INSTALL

NOTE: HC THRESHOLD - TYP. ALL GROUND FLOOR ENTRY DOORS



2 BUILDING TYPE "A1 & A2" SECOND FLOOR PLAN
1/8" = 1'-0" THIRD FLOOR SIM. (BLDG'S. #1, 2, 4 & 5)

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: 1/8" = 1'

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BUILDING TYPE 'A1' FLOOR PLANS

Sheet Number: A-7.0

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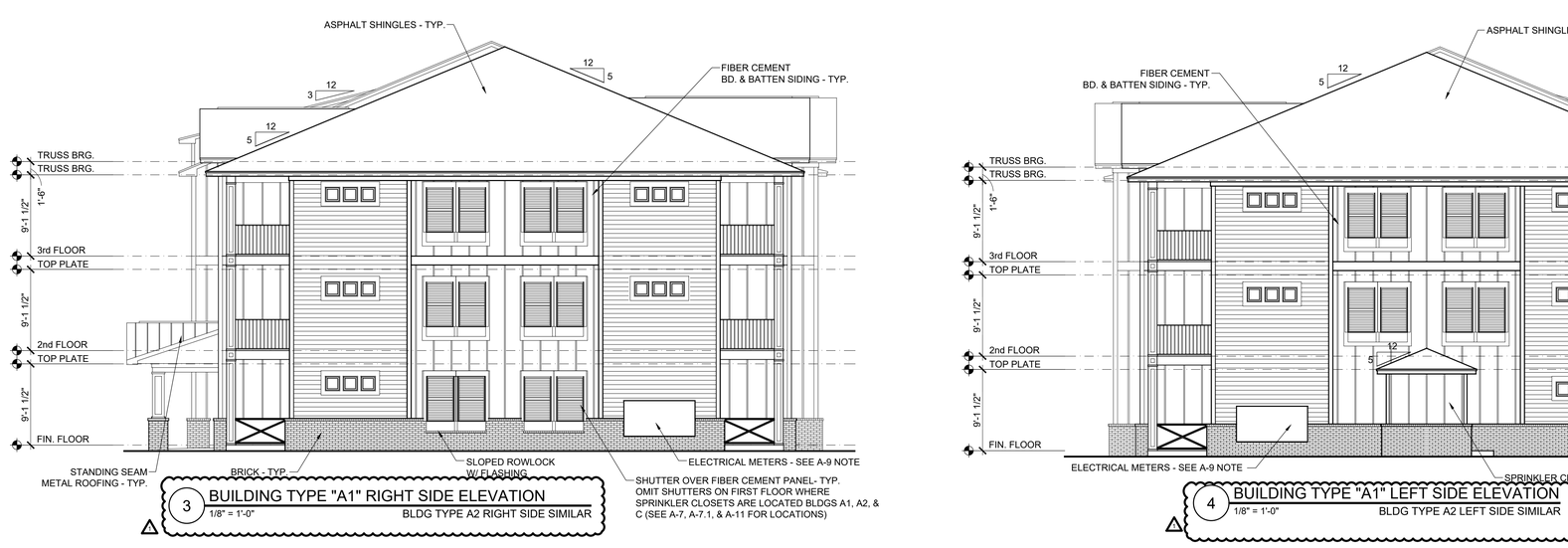
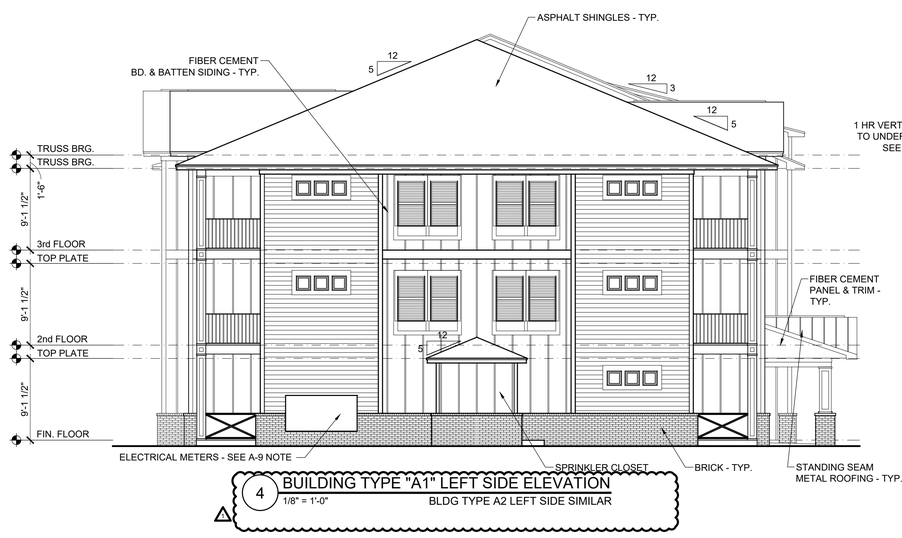
1 BUILDING TYPE "A1" FRONT ELEVATION
1/8" = 1'-0"



2 BUILDING TYPE "A1" REAR ELEVATION
1/8" = 1'-0"

3 BUILDING TYPE "A1" RIGHT SIDE ELEVATION
1/8" = 1'-0" BLDG TYPE A2 RIGHT SIDE SIMILAR

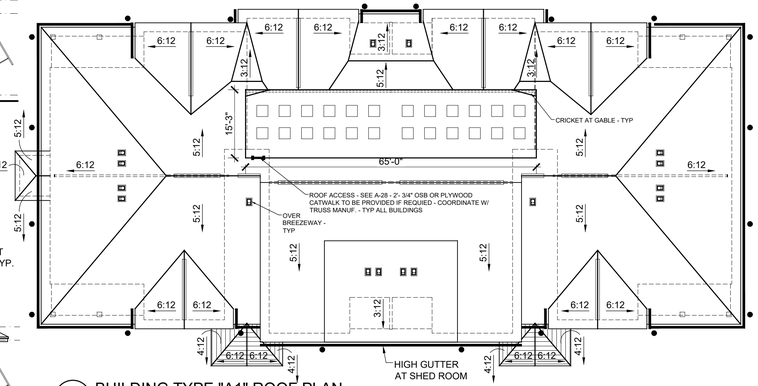


4 BUILDING TYPE "A1" LEFT SIDE ELEVATION
1/8" = 1'-0" BLDG TYPE A2 LEFT SIDE SIMILAR

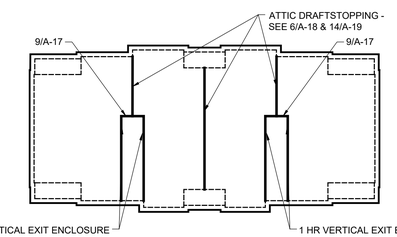
- DENOTES 6" SEAMLESS GUTTERS
- DENOTES 6" DOWNSPOUTS TIED IN TO UNDERGROUND STORM DRAINAGE SYSTEM - VERIFY W/ OWNER OR SPLASH BLOCKS TO BE PROVIDED
- DENOTES SLANT BACK ROOF VENT w/ 60 s.i. NET FREE AREA
- DENOTES ROOF RIDGE VENT w/ 18 s.i. NET FREE AREA /l.f.

NOTE: VERIFY D.S. LOCATIONS W/ OWNER

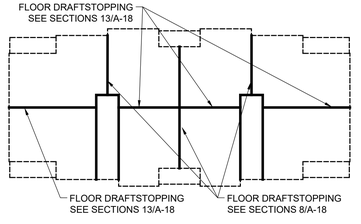
NOTE: VENTILATION OPENINGS LARGER THAN 1/4" SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARD CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF NOT LESS THAN 1/16" AND NOT MORE THAN 1/4".



5 BUILDING TYPE "A1" ROOF PLAN
1/16" = 1'-0"



6 ATTIC DRAFTSTOPPING PLAN
1/32" = 1'-0"



7 FLOOR DRAFTSTOPPING PLAN
1/32" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: AS NOTED

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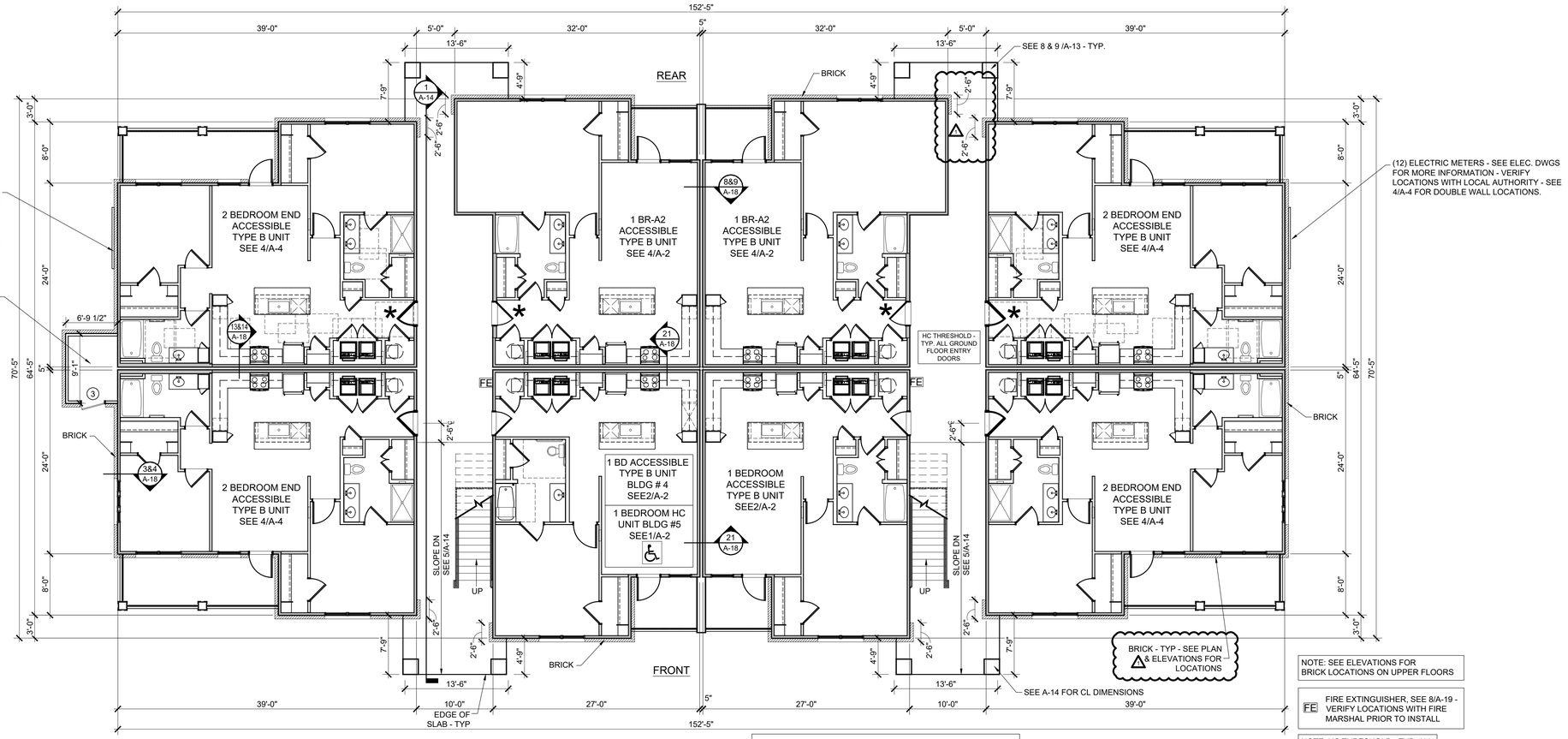
BUILDING TYPE 'A1' ELEVATIONS

Sheet Number: A-8.0



1 BUILDING TYPE "A2" GROUND FLOOR PLAN
1/8" = 1'-0" (BLDG'S. #4 & 5)

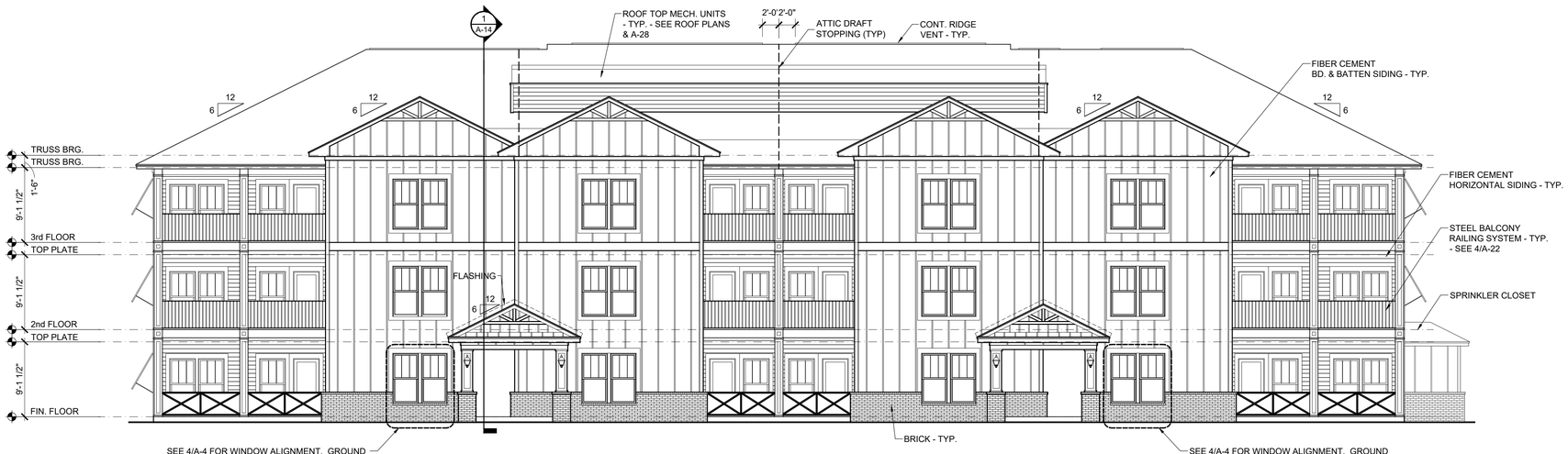
NOTE: SEE ELEVATIONS FOR BRICK LOCATIONS ON UPPER FLOORS

FE FIRE EXTINGUISHER, SEE 8/A-19 - VERIFY LOCATIONS WITH FIRE MARSHAL PRIOR TO INSTALL

NOTE: HC THRESHOLD - TYP. ALL GROUND FLOOR ENTRY DOORS

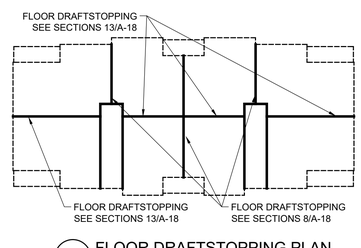
* ENTRY DOOR IN 2X6 WALL - SEE 4/A-2 - 2BD END UNIT SIMILAR (PROVIDE AT A TOTAL OF 4 UNITS PER A2 BLDG)

NOTE: SEE A-7 FOR A2 UPPER FLOORS & A-8 FOR A2 FRONT AND SIDE ELEVATIONS



2 BUILDING TYPE "A2" REAR ELEVATION
1/8" = 1'-0" (BLDG'S. #4 & 5)
SEE A-8 FOR FRONT ELEVATION

NOTE: ALLURA SIDING PANELS AS PER OWNER



3 FLOOR DRAFTSTOPPING PLAN
1/32" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: 1/8" = 1'

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BUILDING TYPE 'A2'
FIRST FLOOR PLAN
& REAR ELEVATION

Sheet Number:
A-7.1

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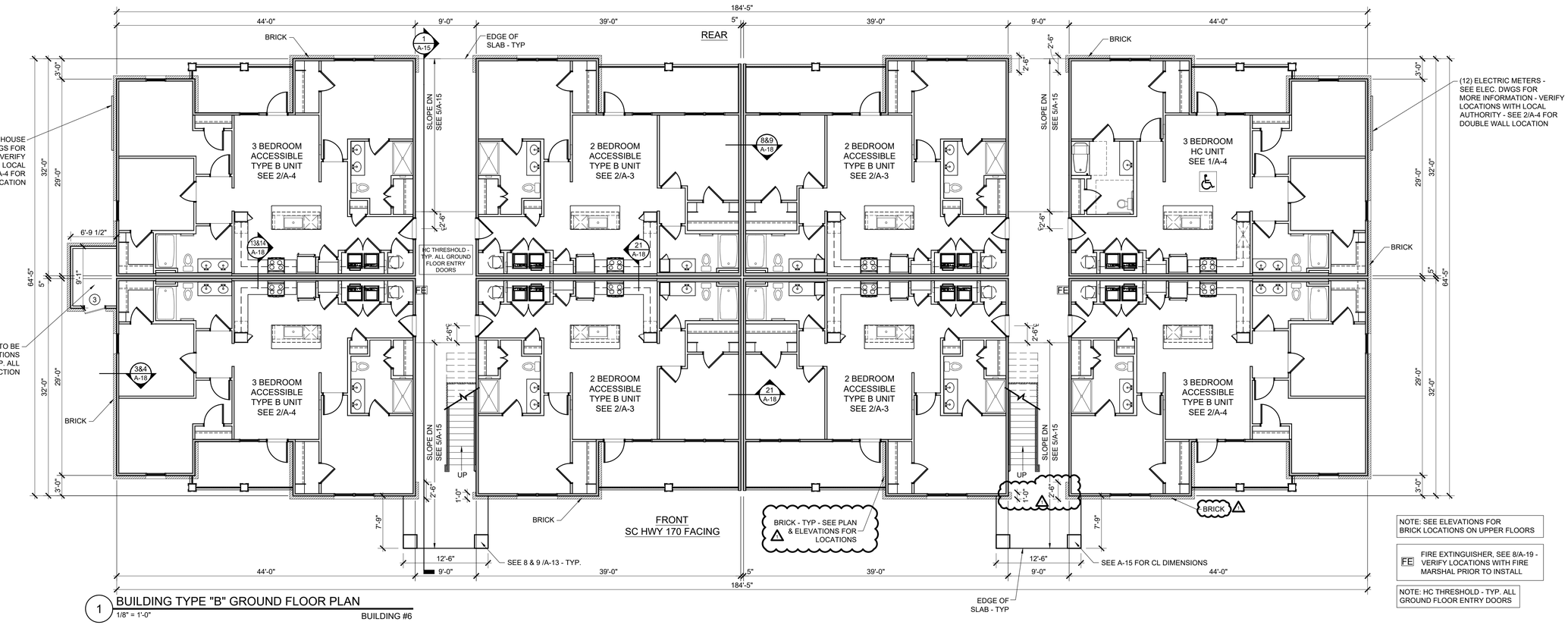
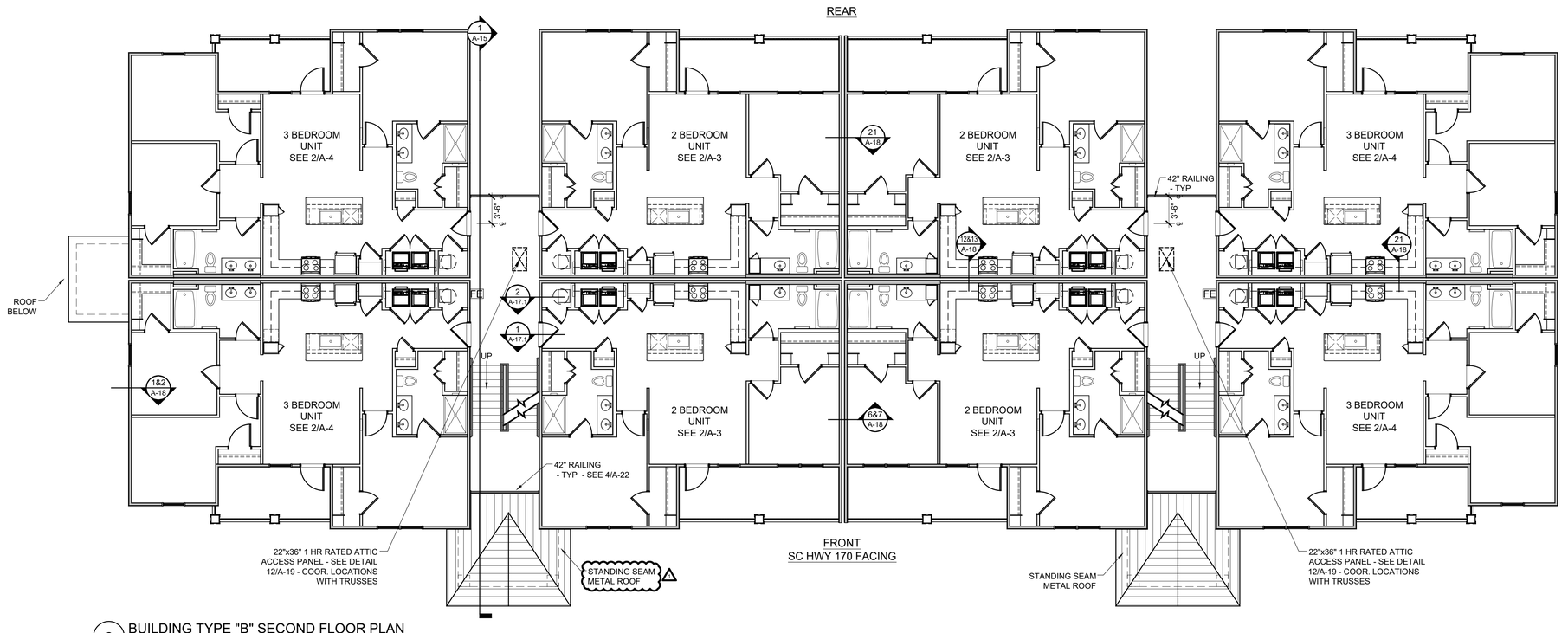


1 BUILDING TYPE "B" GROUND FLOOR PLAN
1/8" = 1'-0" BUILDING #6



2 BUILDING TYPE "B" SECOND FLOOR PLAN
1/8" = 1'-0" BUILDING #6 THIRD FLOOR SIM.

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: 1/8" = 1'

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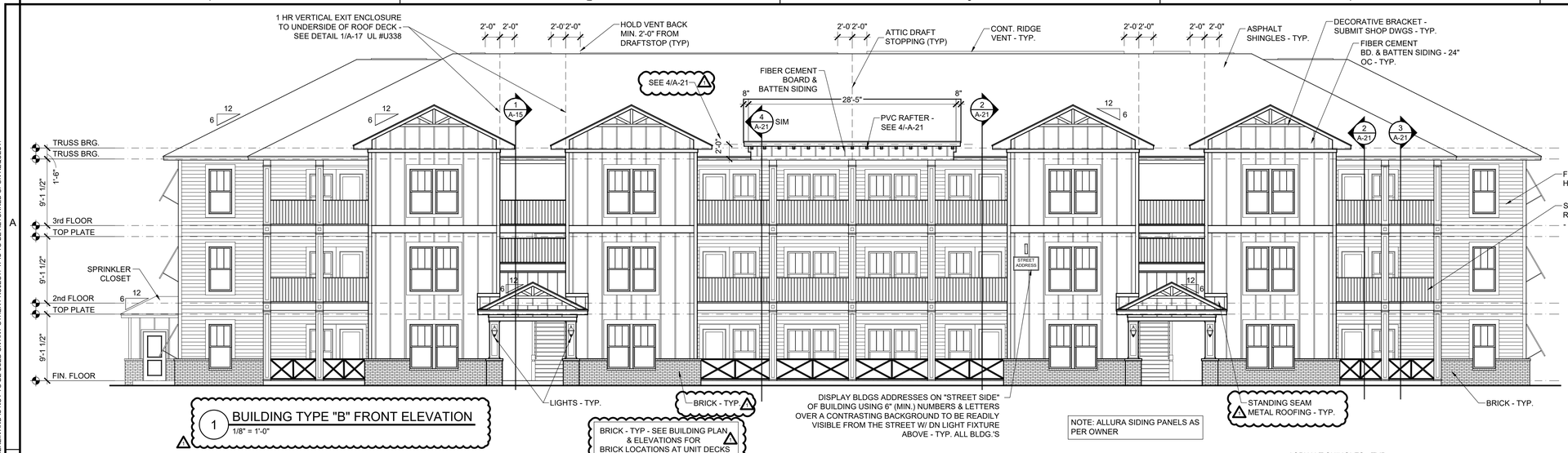
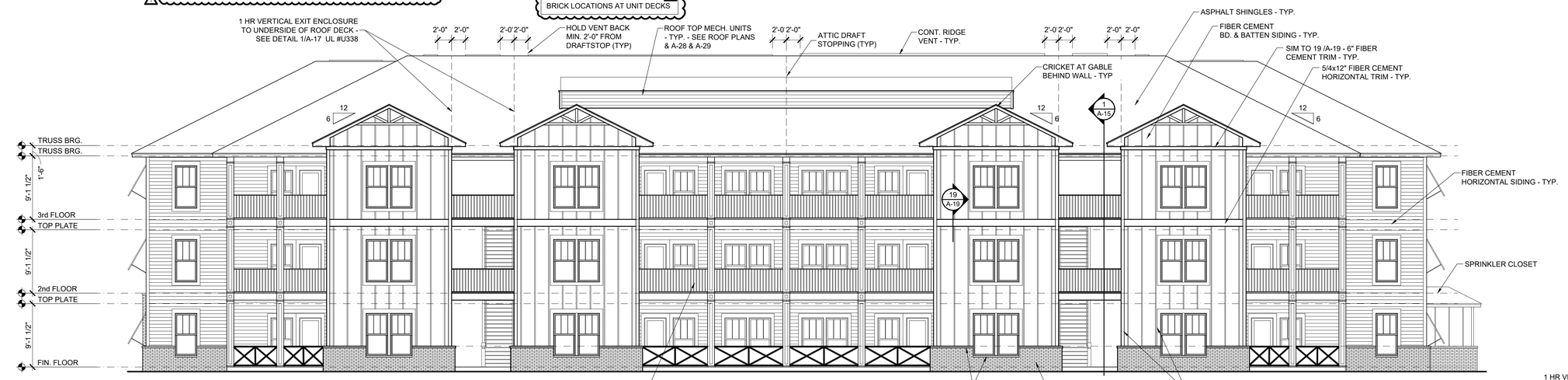
BUILDING TYPE 'B' FLOOR PLANS

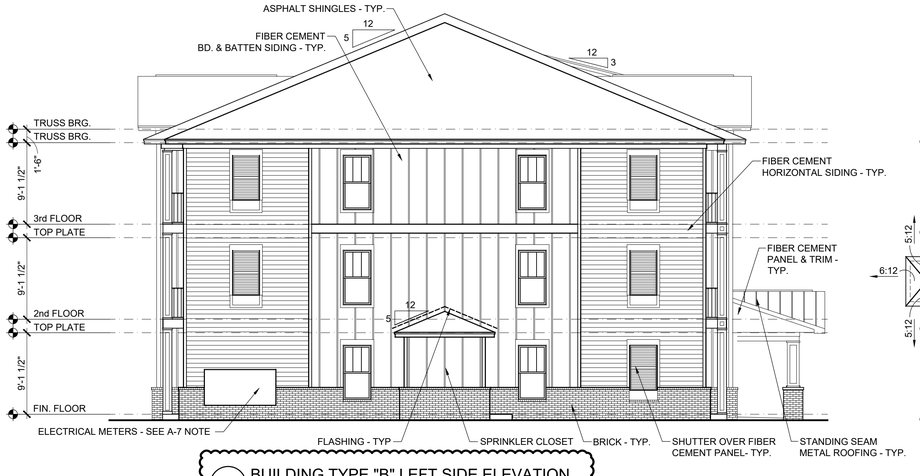
Sheet Number: A-9.0



1 BUILDING TYPE "B" FRONT ELEVATION
1/8" = 1'-0"



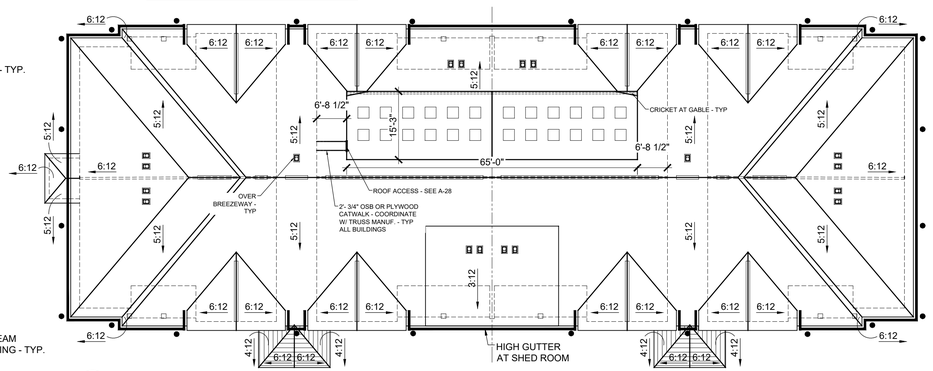
2 BUILDING TYPE "B" REAR ELEVATION
1/8" = 1'-0"



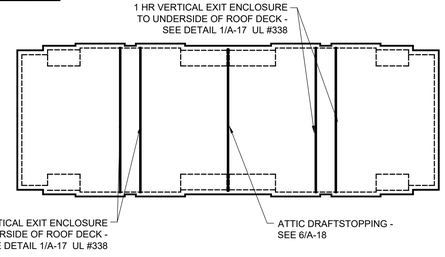
3 BUILDING TYPE "B" LEFT SIDE ELEVATION
1/8" = 1'-0" RIGHT SIDE SIMILAR - NO SPRINKLER CLOSET

DENOTES 6" SEAMLESS GUTTERS
DENOTES 6" DOWNSPOUTS TIED IN TO UNDERGROUND STORM DRAINAGE SYSTEM - VERIFY W/ OWNER OR SPLASH BLOCKS TO BE PROVIDED
DENOTES SLANT BACK ROOF VENT w/ 60 s.i. NET FREE AREA
DENOTES ROOF RIDGE VENT w/ 18 s.i. NET FREE AREA /l.f.
NOTE: VERIFY D.S. LOCATIONS W/ OWNER

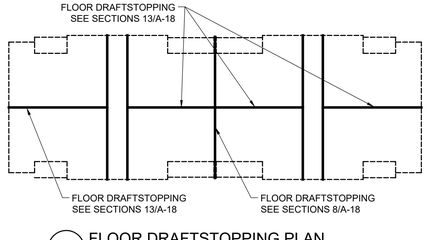
NOTE: VENTILATION OPENINGS LARGER THAN 1/4" SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARD CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF NOT LESS THAN 1/16" AND NOT MORE THAN 1/4".



4 BUILDING TYPE "B" ROOF PLAN
1/16" = 1'-0"



5 ATTIC DRAFTSTOPPING PLAN
1/32" = 1'-0"



6 FLOOR DRAFTSTOPPING PLAN
1/32" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: AS NOTED

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BUILDING TYPE 'B' ELEVATIONS

Sheet Number: A-10.0

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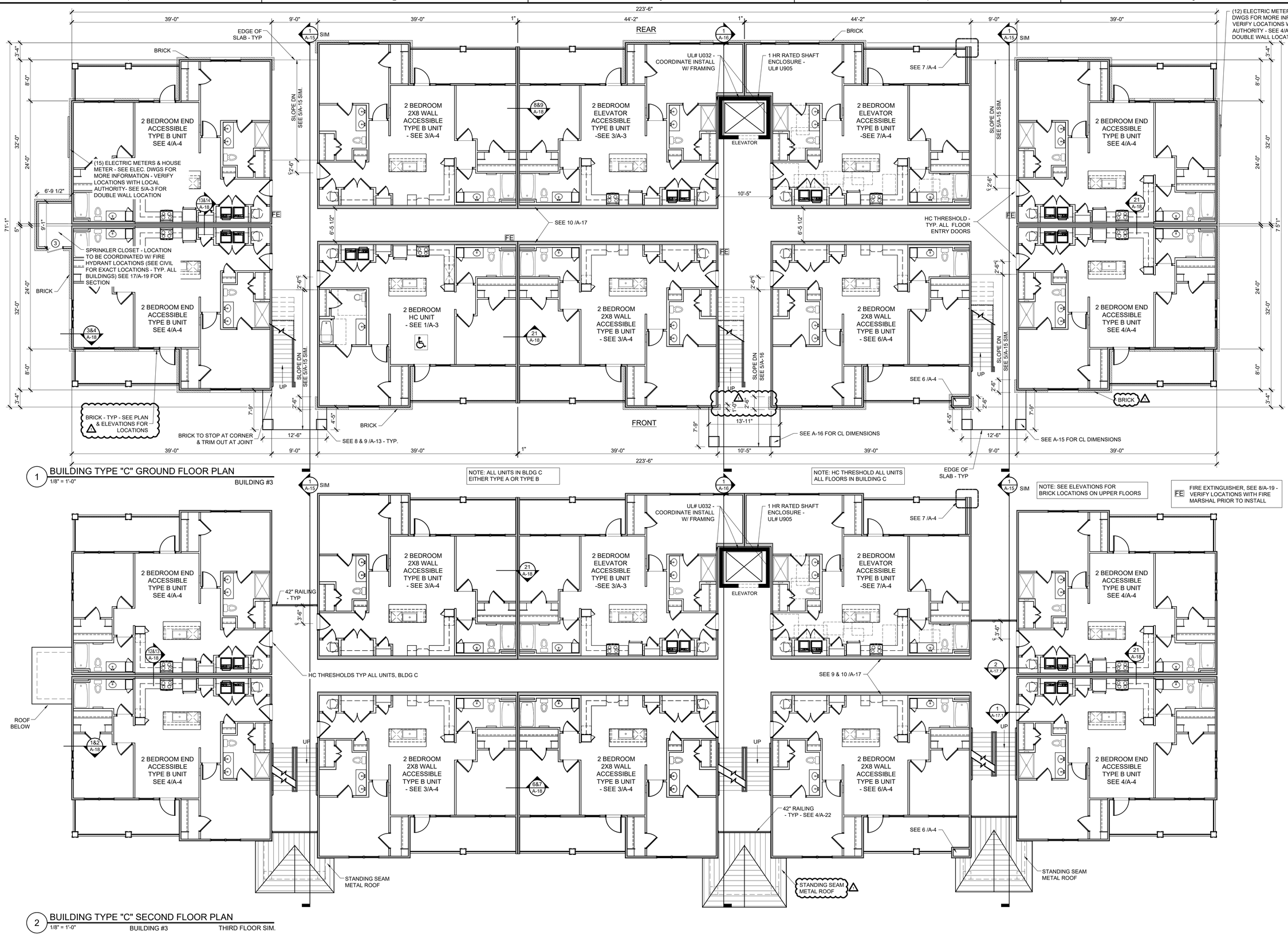

1 BUILDING TYPE "C" GROUND FLOOR PLAN
1/8" = 1'-0" BUILDING #3

NOTE: ALL UNITS IN BLDG C EITHER TYPE A OR TYPE B

NOTE: HC THRESHOLD ALL UNITS ALL FLOORS IN BUILDING C

NOTE: SEE ELEVATIONS FOR BRICK LOCATIONS ON UPPER FLOORS

FE FIRE EXTINGUISHER, SEE 8/A-19 - VERIFY LOCATIONS WITH FIRE MARSHAL PRIOR TO INSTALL

2 BUILDING TYPE "C" SECOND FLOOR PLAN
1/8" = 1'-0" BUILDING #3 THIRD FLOOR SIM.

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: 1/8" = 1'

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BUILDING TYPE 'C' FLOOR PLANS

Sheet Number: A-11.0

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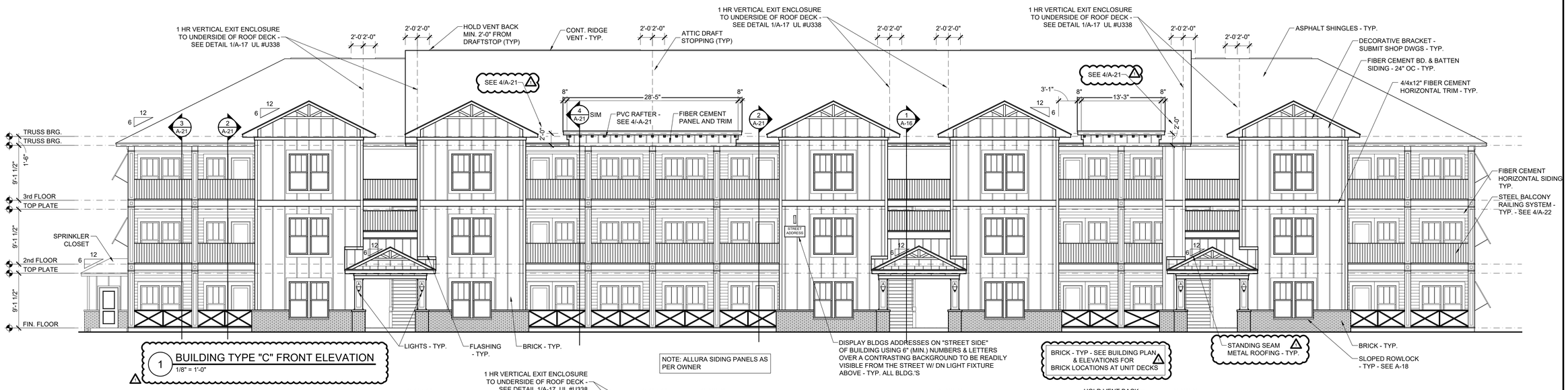
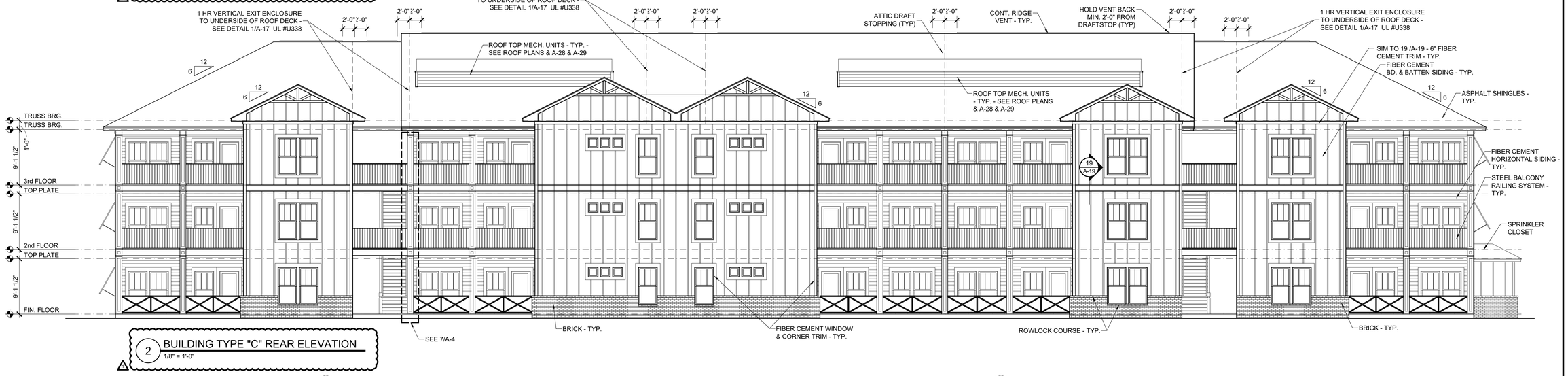


1 BUILDING TYPE "C" FRONT ELEVATION
1/8" = 1'-0"

NOTE: ALLURA SIDING PANELS AS PER OWNER



2 BUILDING TYPE "C" REAR ELEVATION
1/8" = 1'-0"

3 BUILDING TYPE "C" RIGHT SIDE ELEVATION
1/8" = 1'-0"

4 BUILDING TYPE "C" LEFT SIDE ELEVATION
1/8" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: AS NOTED

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BUILDING TYPE 'C' ELEVATIONS

Sheet Number:
A-12.0

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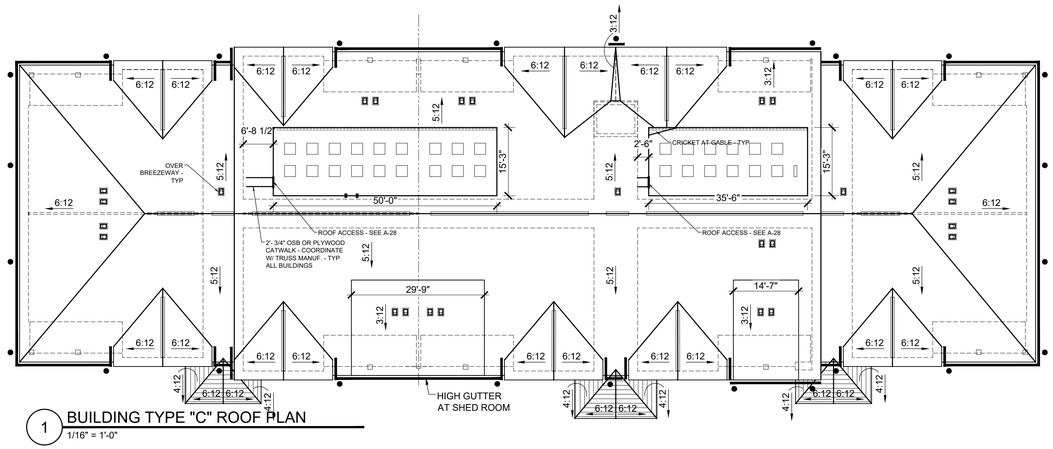
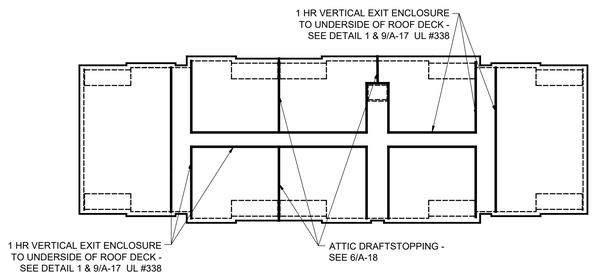


1 BUILDING TYPE "C" ROOF PLAN
1/16" = 1'-0"

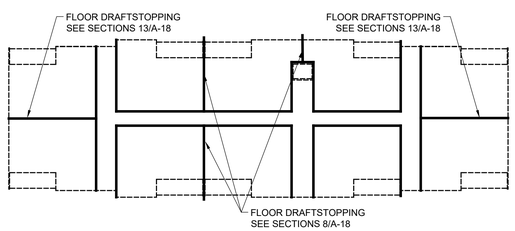
- DENOTES 6" SEAMLESS GUTTERS
- DENOTES 6" DOWNSPOUTS TIED IN TO UNDERGROUND STORM DRAINAGE SYSTEM - VERIFY W/ OWNER OR SPLASH BLOCKS TO BE PROVIDED
- DENOTES SLANT BACK ROOF VENT w/ 60 s.i. NET FREE AREA
- DENOTES ROOF RIDGE VENT w/ 18 s.i. NET FREE AREA /l.f.

NOTE: VERIFY D.S. LOCATIONS W/ OWNER

NOTE: VENTILATION OPENINGS LARGER THAN 1/4" SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARD CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF NOT LESS THAN 1/16" AND NOT MORE THAN 1/4".



2 ATTIC DRAFTSTOPPING PLAN
1/32" = 1'-0"



3 FLOOR DRAFTSTOPPING PLAN
1/32" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

Scale: AS NOTED

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BUILDING TYPE 'C' ROOF PLANS

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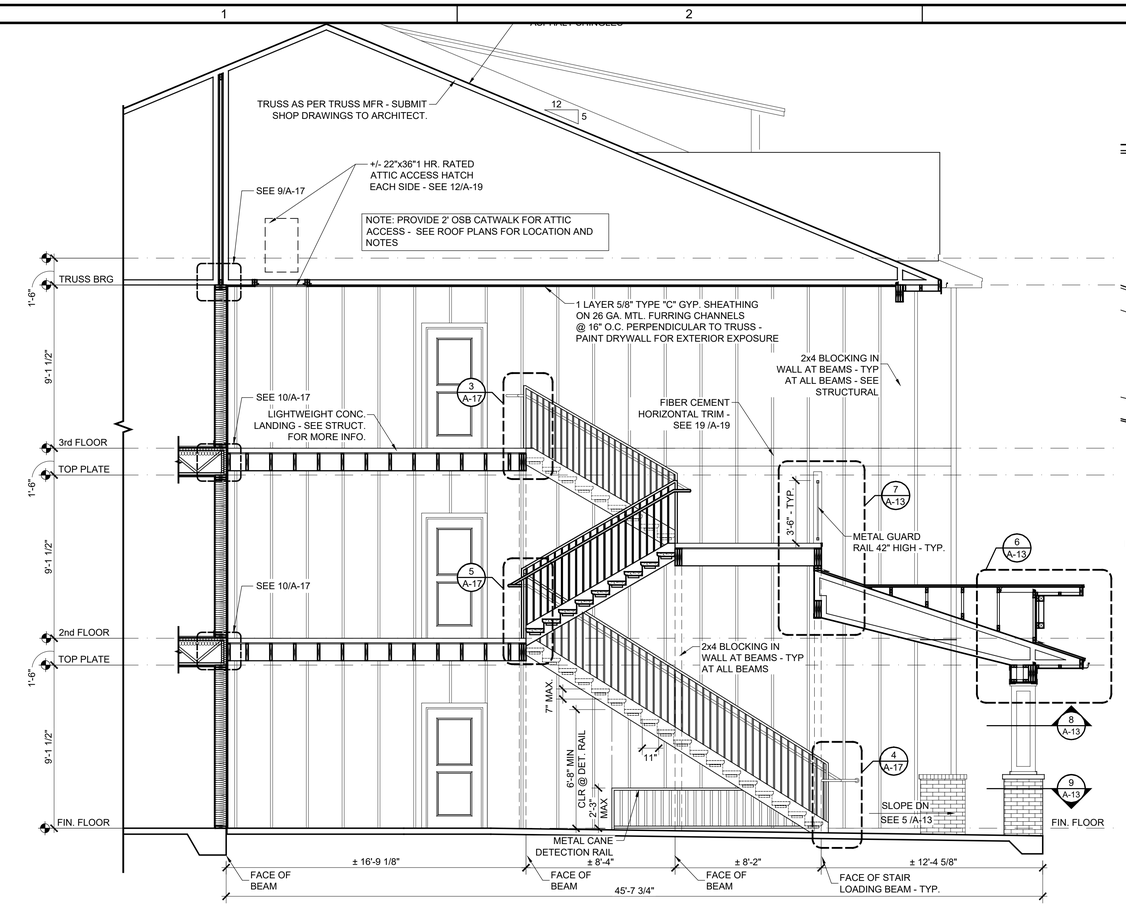
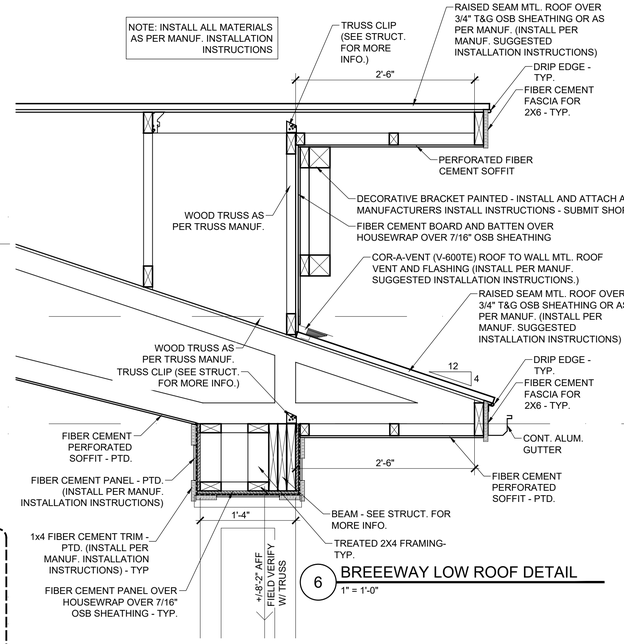
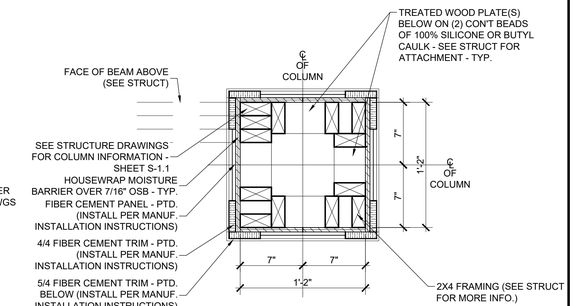


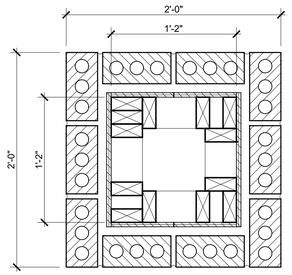
1 BREEZEWAY SECTION - BLDG TYPE "A1"
1/4" = 1'-0" VERTICAL EXIT ENCLOSURE : 1HR WALL ASSEMBLY - UL #U032 & UL #U338



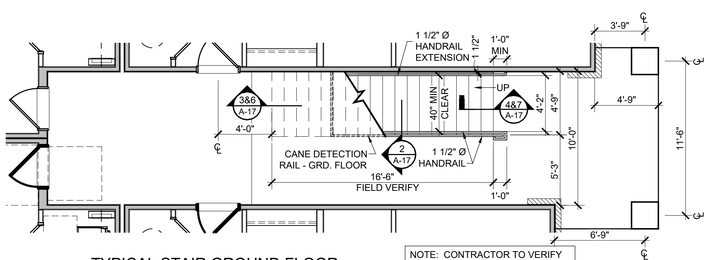
6 BREEEWAY LOW ROOF DETAIL
1" = 1'-0"



8 COLUMN DETAIL @ BREEZEWAY
1-1/2" = 1'-0"



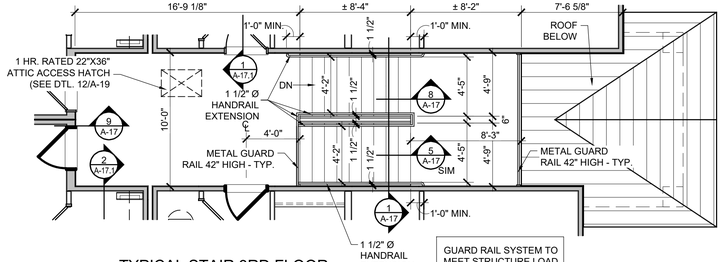
9 COLUMN DETAIL @ BREEZEWAY
1-1/2" = 1'-0"



2 TYPICAL STAIR GROUND FLOOR BLDG TYPE "A1"
3/16" = 1'-0"

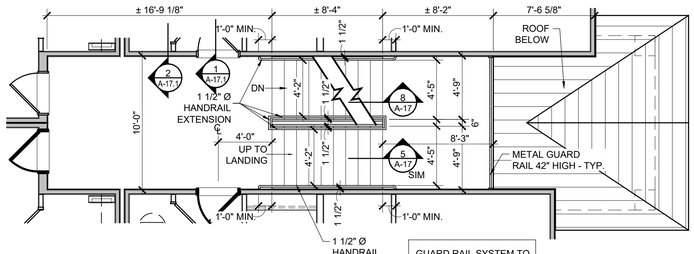
NOTE: CONTRACTOR TO VERIFY STAIR FRAMING DIMENSIONS - TREAD 11" MIN AND RISER 7" MAX

NOTE: SUBMIT STAIR SHOP DRAWINGS TO ARCHITECT



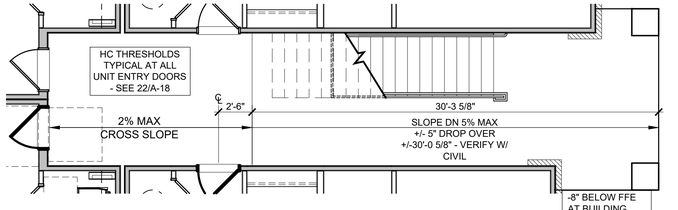
4 TYPICAL STAIR 3RD FLOOR BLDG TYPE "A1"
3/16" = 1'-0"

GUARD RAIL SYSTEM TO MEET STRUCTURE LOAD REQUIREMENTS OF BUILDING CODE



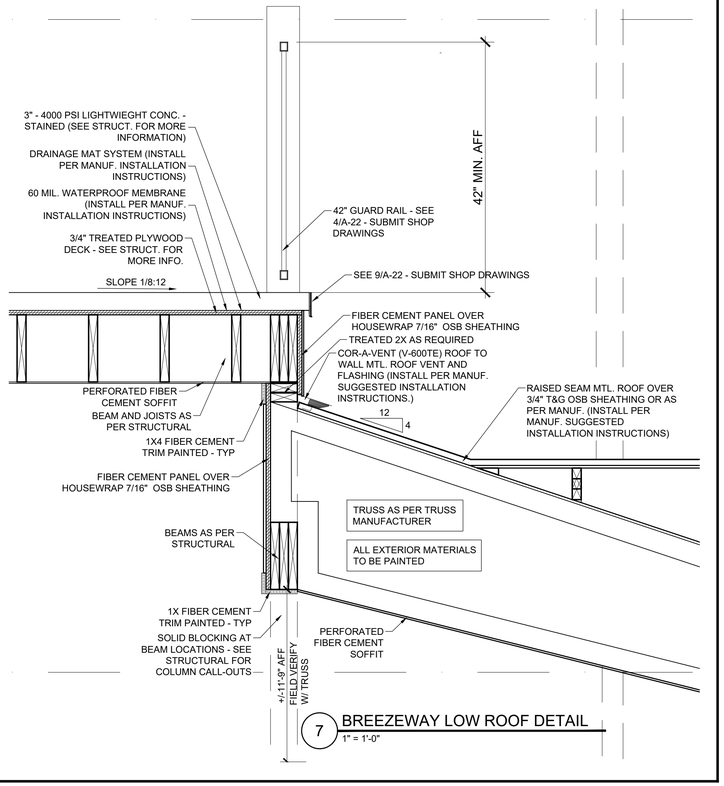
3 TYPICAL STAIR 2ND FLOOR BLDG TYPE "A1"
3/16" = 1'-0"

GUARD RAIL SYSTEM TO MEET STRUCTURE LOAD REQUIREMENTS OF BUILDING CODE



5 TYPICAL BREEZEWAY SLOPE BLDG TYPE "A1"
3/16" = 1'-0"

CIVIL TO PROVIDE POSITIVE DRAINAGE A MINIMUM OF 10' AWAY FROM BUILDING PERIMETER ON ALL SIDES



7 BREEZEWAY LOW ROOF DETAIL
1" = 1'-0"

No.	Date	Section VII. Item #1.
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	Materials

Job Number: 22-09

File Reference:

Scale: AS NOTED

CORP. SEAL

STATE OF SOUTH CAROLINA
Parks - Player Architecture & Planning
Greenville, SC
100975
REGISTERED ARCHITECTS

SEAL

STATE OF SOUTH CAROLINA
ORVILLE VAN PLAYER, III
GREENVILLE, SC
1596
REGISTERED ARCHITECT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, SC 29601
(864) 382-5000

STAIR SECTIONS AND DETAILS

Sheet Number:
A-13.0

No.	Date	
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	Materials

Job Number: 22-09

File Reference:

Scale: AS NOTED

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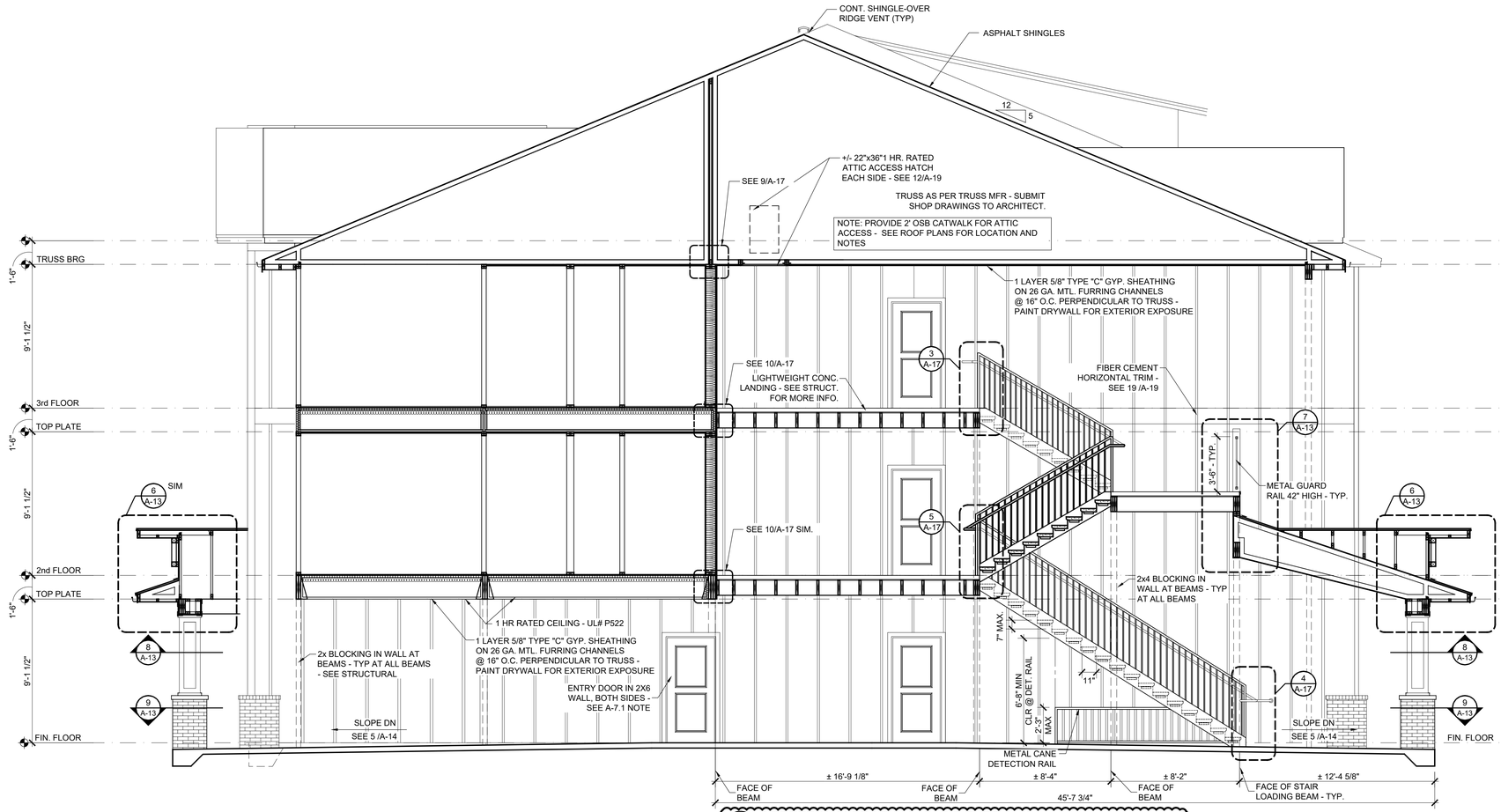
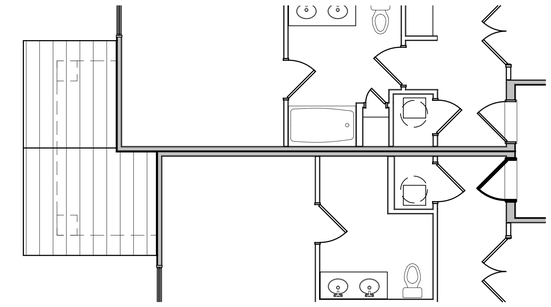
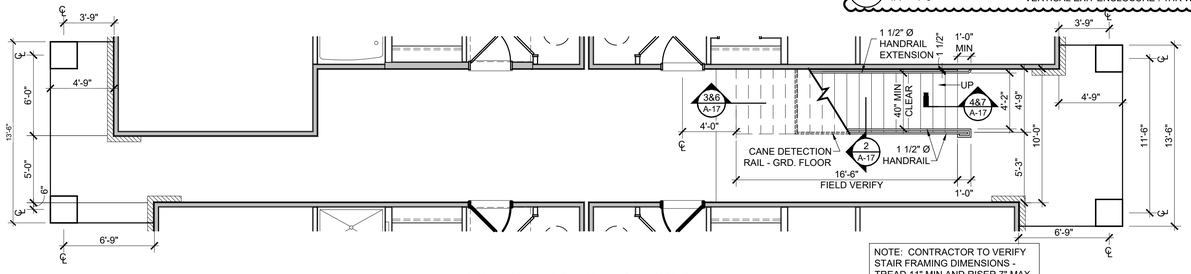


1 BREEZEWAY SECTION - BLDG TYPE "A2"
1/4" = 1'-0"
VERTICAL EXIT ENCLOSURE : 1HR WALL ASSEMBLY - UL #U032 & UL #U338



6 REAR LOW ROOF PLAN BLDG TYPE "A2"
3/16" = 1'-0"

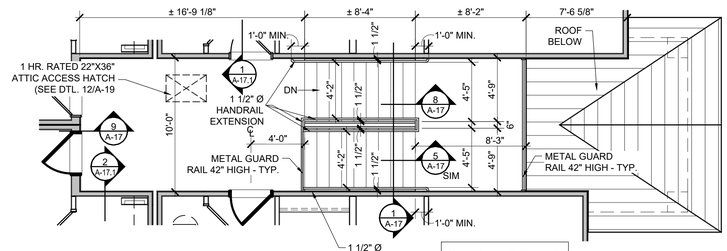


NOTE: CONTRACTOR TO VERIFY STAIR FRAMING DIMENSIONS - TREAD 11" MIN AND RISER 7" MAX

NOTE: SUBMIT STAIR SHOP DRAWINGS TO ARCHITECT

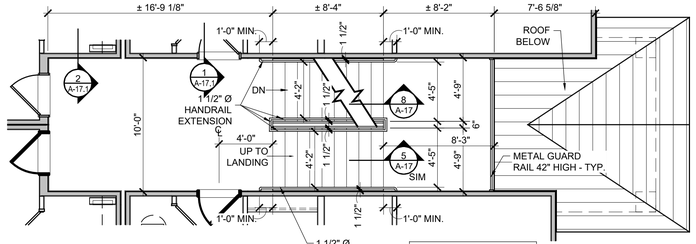
NOTE: FIELD VERIFY ALL DIMENSIONS

2 TYPICAL STAIR GROUND FLOOR BLDG TYPE "A2"
3/16" = 1'-0"



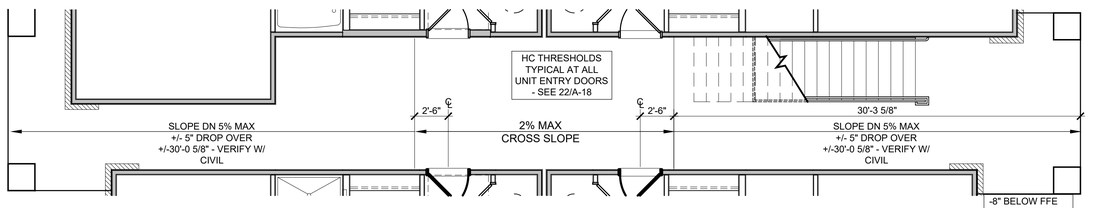
GUARD RAIL SYSTEM TO MEET STRUCTURE LOAD REQUIREMENTS OF BUILDING CODE

4 TYPICAL STAIR 3RD FLOOR BLDG TYPE "A2"
3/16" = 1'-0"



GUARD RAIL SYSTEM TO MEET STRUCTURE LOAD REQUIREMENTS OF BUILDING CODE

3 TYPICAL STAIR 2ND FLOOR BLDG TYPE "A2"
3/16" = 1'-0"



CIVIL TO PROVIDE POSITIVE DRAINAGE A MINIMUM OF 10' AWAY FROM BUILDING PERIMETER ON ALL SIDES

5 TYPICAL BREEZEWAY SLOPE BLDG TYPE "A2"
3/16" = 1'-0"

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
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STAIR SECTIONS AND DETAILS

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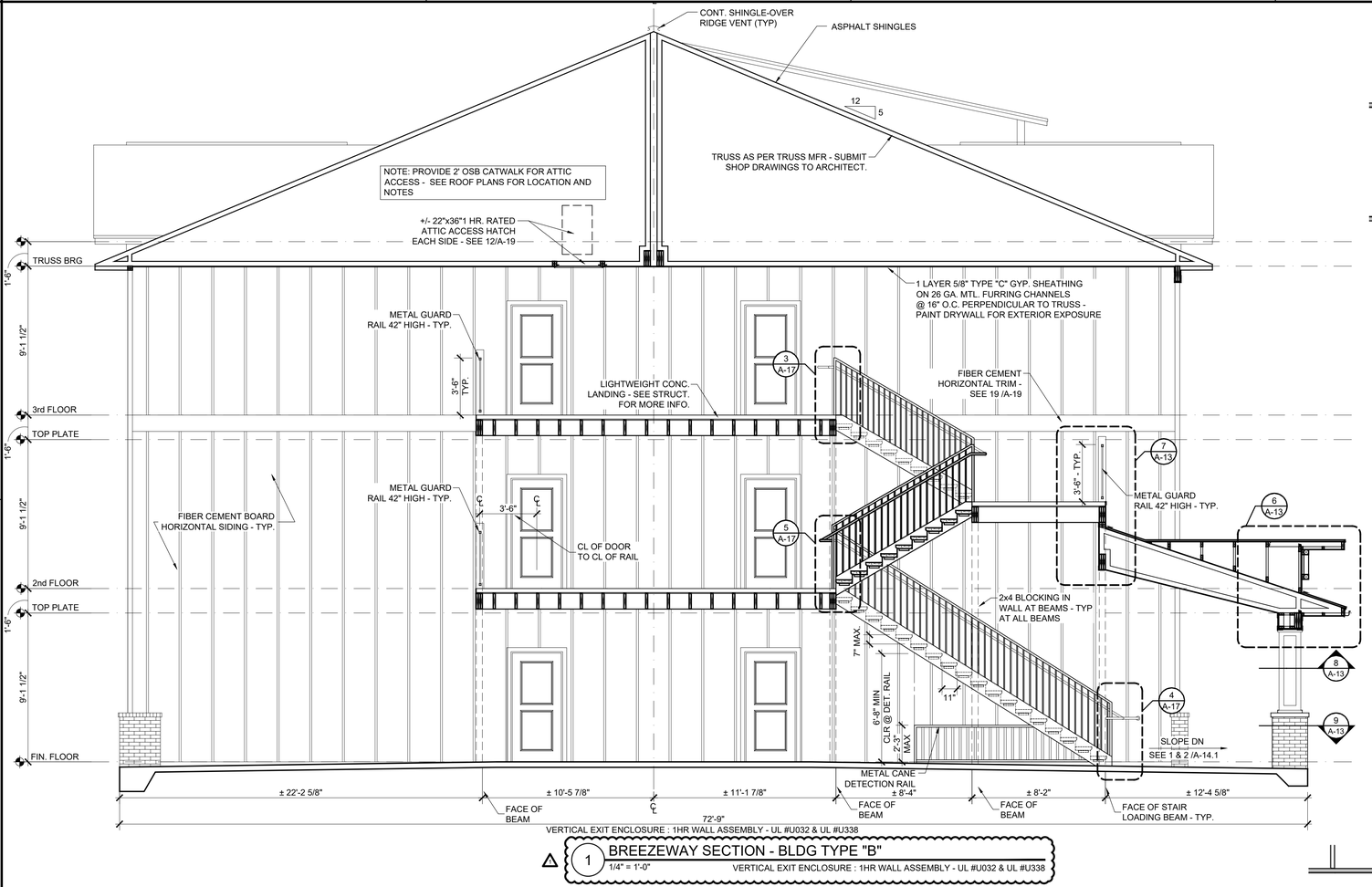
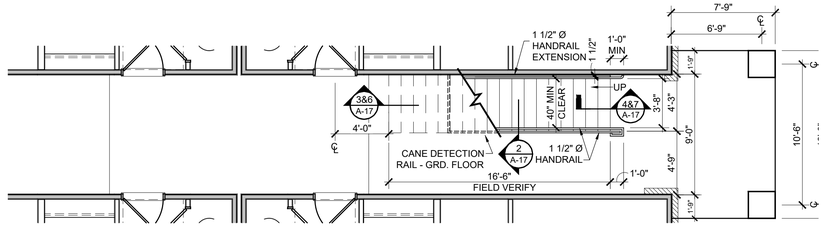
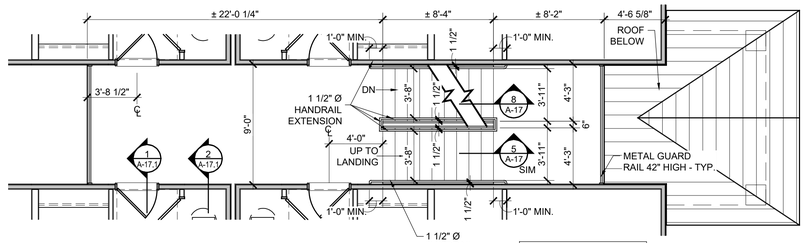


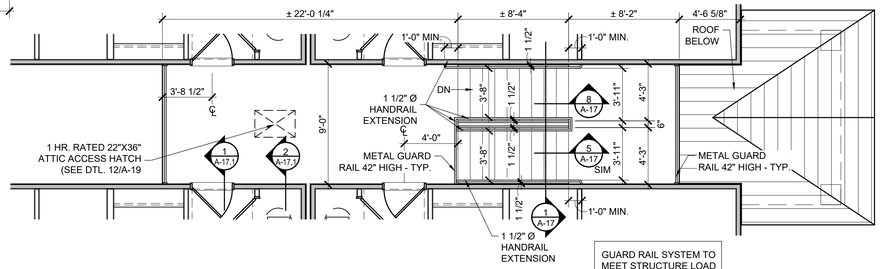
1 BREEZEWAY SECTION - BLDG TYPE "B"
1/4" = 1'-0"
VERTICAL EXIT ENCLOSURE : 1HR WALL ASSEMBLY - UL #U032 & UL #U338



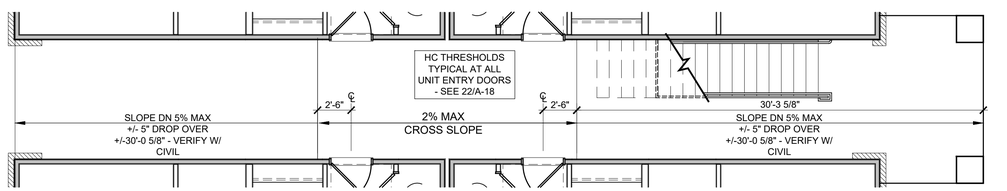
2 TYPICAL STAIR GROUND FLOOR BLDG TYPE "B"
3/16" = 1'-0"



3 TYPICAL STAIR 2ND FLOOR BLDG TYPE "B"
3/16" = 1'-0"



4 TYPICAL STAIR 3RD FLOOR BLDG TYPE "B"
3/16" = 1'-0"



5 TYPICAL BREEZEWAY SLOPE BLDG TYPE "B"
3/16" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	Materials

Job Number: 22-09

File Reference:

Scale: AS NOTED

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Parks - Player Architecture & Planning
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STAIR SECTIONS AND DETAILS

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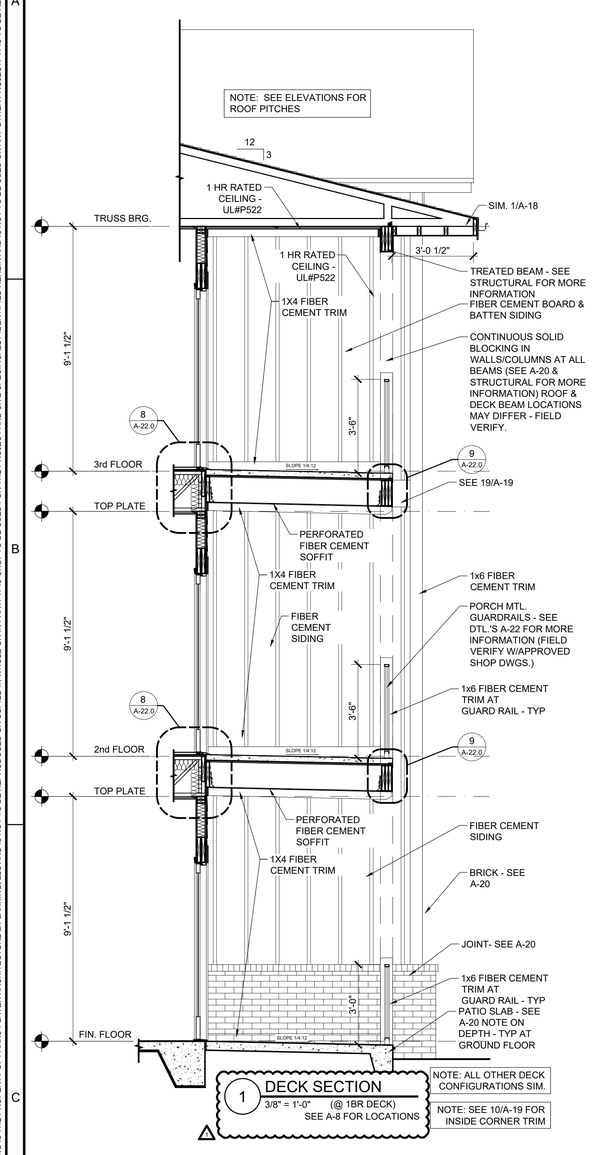

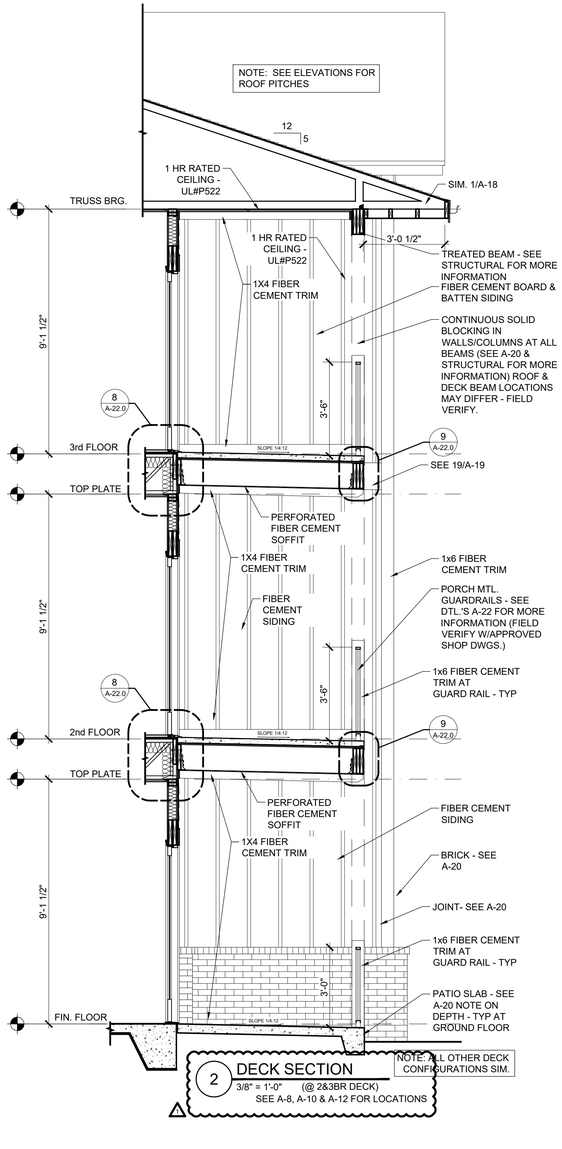

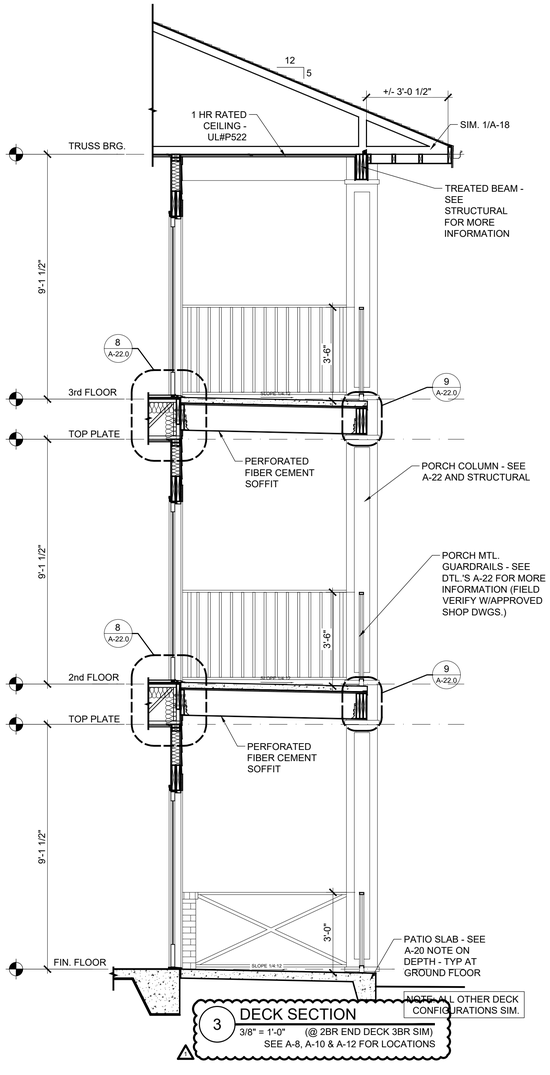

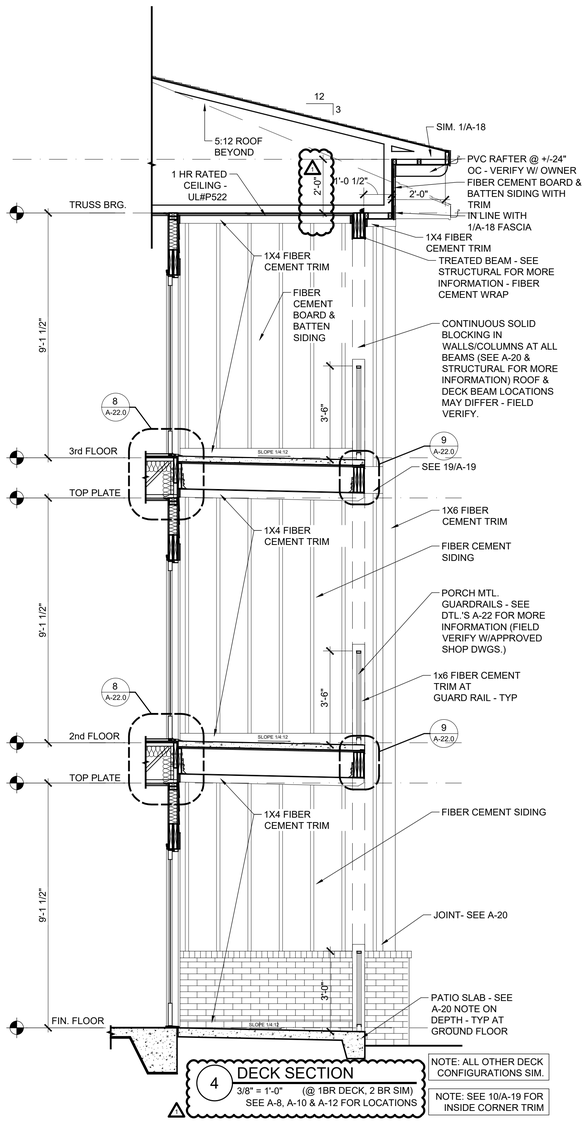

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: AS NOTED

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Parks - Player Architecture & Planning
Greenville, SC
100975
REGISTERED ARCHITECTS

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ORVILLE VAN PLAYER III
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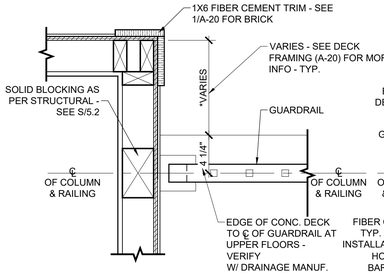
GREENVILLE, SC. 29601
(864) 382-5000

UNIT DECK SECTIONS

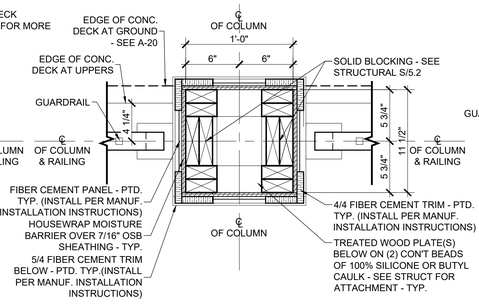
Sheet Number:
A-21.0



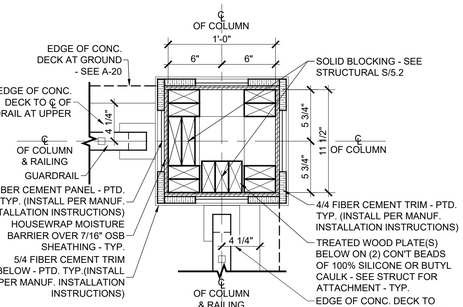
NOTE: HOUSEWRAP TO BE TYVEK DRAINWRAP OR APPROVED ALT. - TYP.

NOTE: SEE RAILING SHOP DWGS. FOR MORE INFORMATION

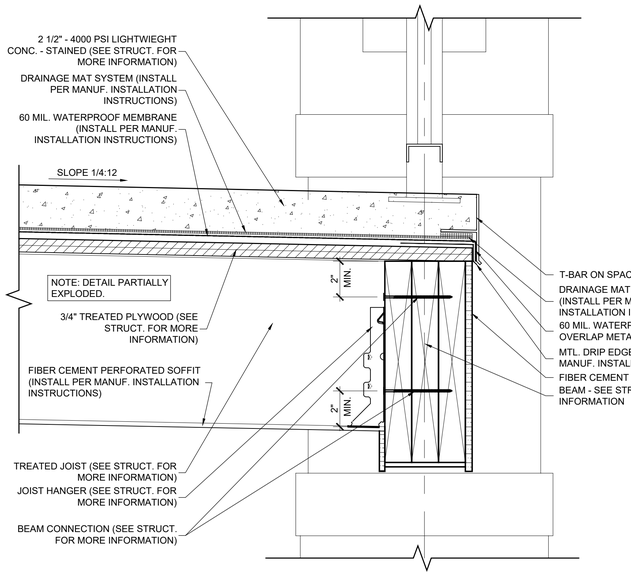
1 CORNER DETAIL
1-1/2" = 1'-0"



2 COLUMN DETAIL
1-1/2" = 1'-0"

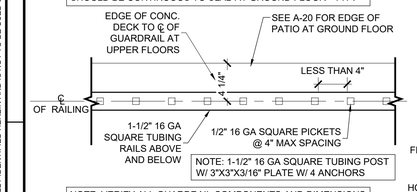


3 COLUMN DETAIL
1-1/2" = 1'-0"



9 CONCRETE DECK DETAIL
3" = 1'-0" (THROUGH EDGE BEAM)

NOTE: ALL SOLID BLOCKING AT BEAM/HANGER ATTACHMENTS SHOULD BE CONTINUOUS TO SLAB AT GROUND FLOOR - TYP.



NOTE: 1-1/2" 16 GA SQUARE TUBING POST W/ 3"X3"X3/16" PLATE W/ 4 ANCHORS

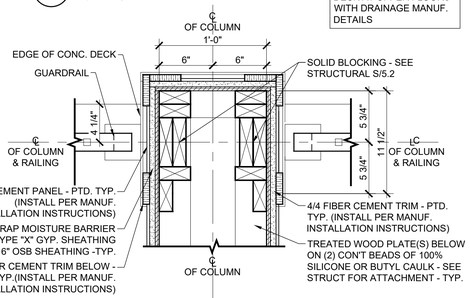
NOTE: VERIFY ALL GUARDRAIL COMPONENTS AND DIMENSIONS W/ GUARDRAIL SHOP DWGS AND INSTALL AS PER MANUF. SUGGESTED INSTALLATION INSTRUCTIONS - TYP. ALL RAILINGS

NOTE: METAL RAILING - PRIMED STEEL

NOTE: PRE-FINISHED ALUMINUM RAILING AS ALTERNATE

4 GUARDRAIL DETAIL @ BREEZEWAYS & DECKS
1-1/2" = 1'-0"

NOTE: VERIFY EDGE OF DECK AT UPPER FLOORS WITH DRAINAGE MANUF. DETAILS

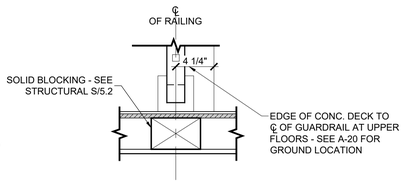


5 COLUMN DETAIL
1-1/2" = 1'-0"

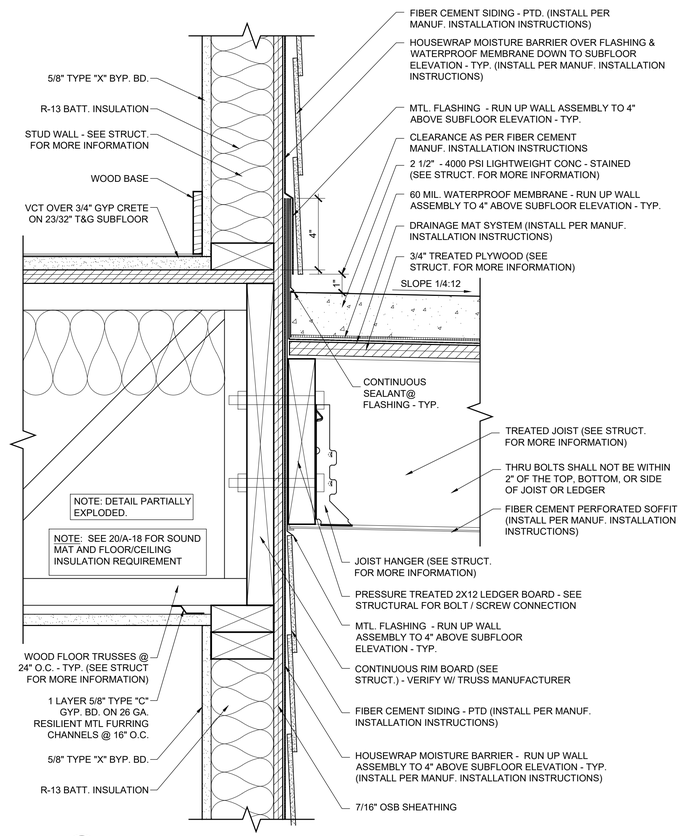
NOTE: HOUSEWRAP TO BE TYVEK DRAINWRAP OR APPROVED ALT. - TYP.

NOTE: SEE RAILING SHOP DWGS. FOR MORE INFORMATION

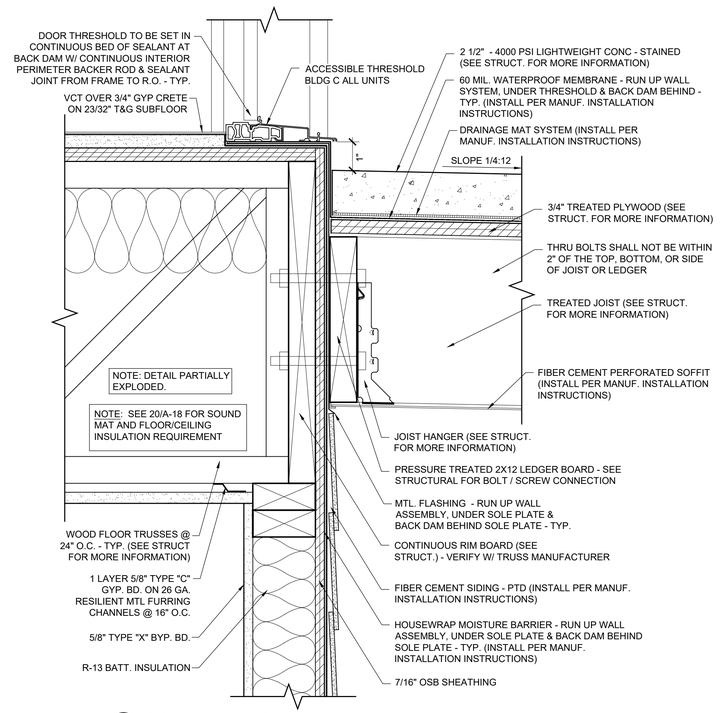
NOTE: ALL SOLID BLOCKING AT BEAM/HANGER ATTACHMENTS SHOULD BE CONTINUOUS TO SLAB AT GROUND FLOOR - TYP.



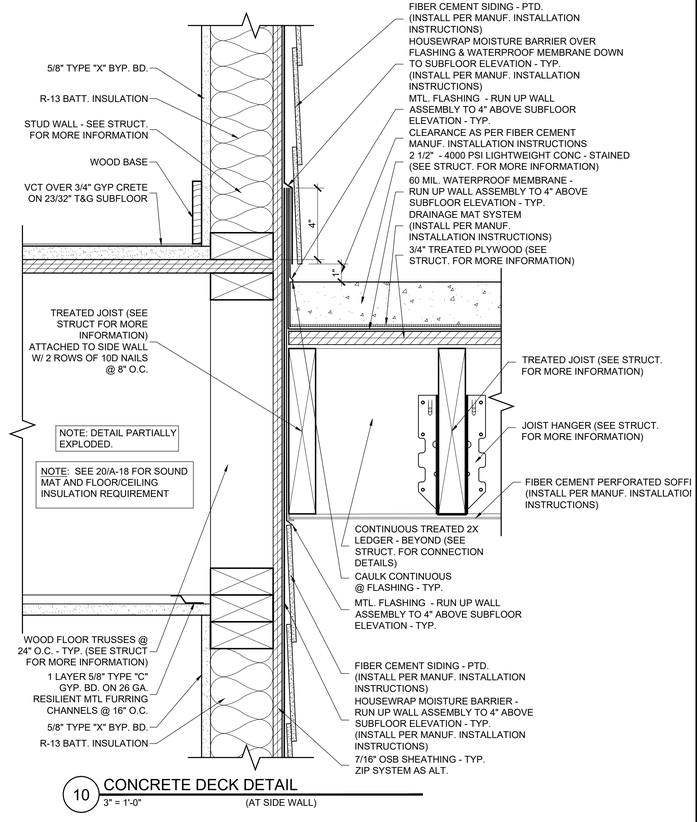
6 GUARD RAIL DETAIL
1-1/2" = 1'-0"



7 CONCRETE DECK DETAIL
3" = 1'-0" (AT WALL)



8 CONCRETE DECK DETAIL
3" = 1'-0" (AT DECK DOOR)



10 CONCRETE DECK DETAIL
3" = 1'-0" (AT SIDE WALL)

No.	Date	Description
	5.20.24	30% Set
1	6.28.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

Scale: AS NOTED

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STATE OF SOUTH CAROLINA
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UNIT DECK SECTIONS

Sheet Number:
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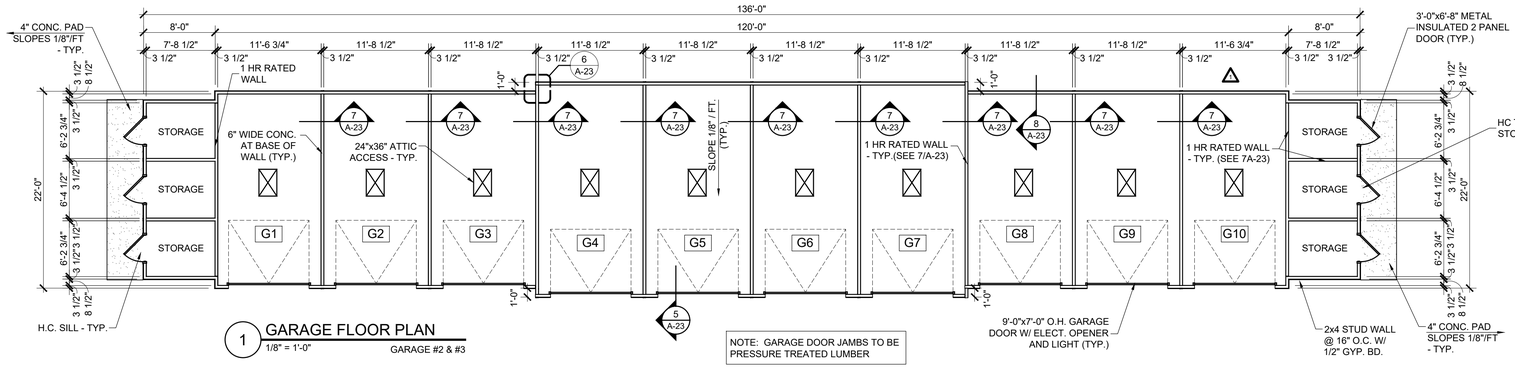


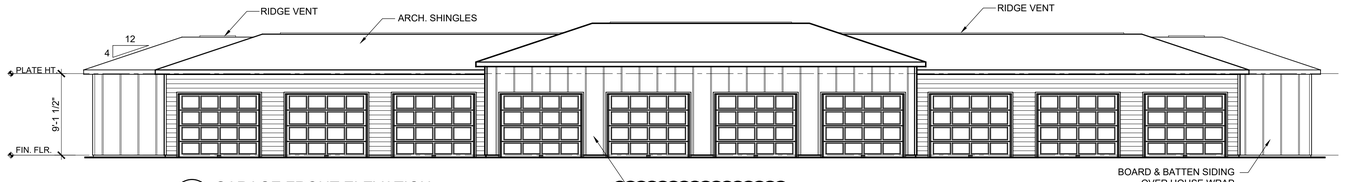
1 GARAGE FLOOR PLAN
1/8" = 1'-0" — GARAGE #2 & #3

NOTE: GARAGE DOOR JAMBS TO BE PRESSURE TREATED LUMBER

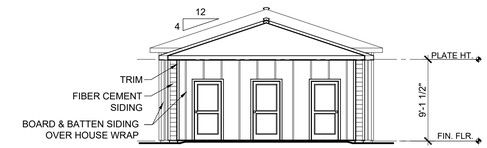
GARAGE ADDRESSING:

GARAGE #1=
GARAGE #2=
GARAGE #3=
GARAGE #4=

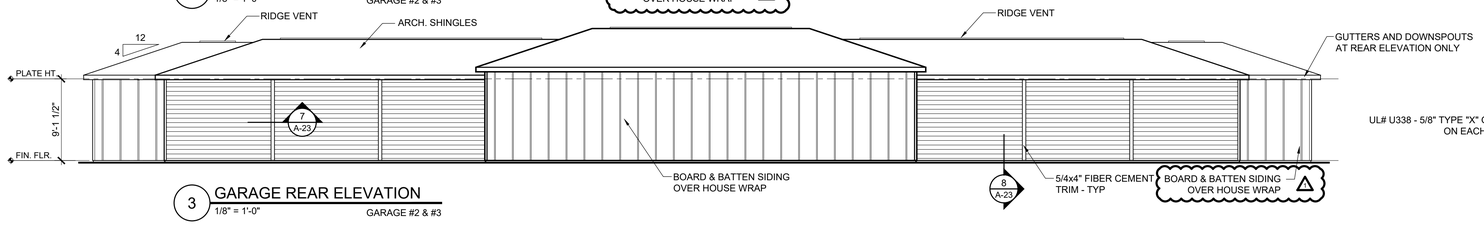
G1 UNIT ADDRESS



2 GARAGE FRONT ELEVATION
1/8" = 1'-0" — GARAGE #2 & #3



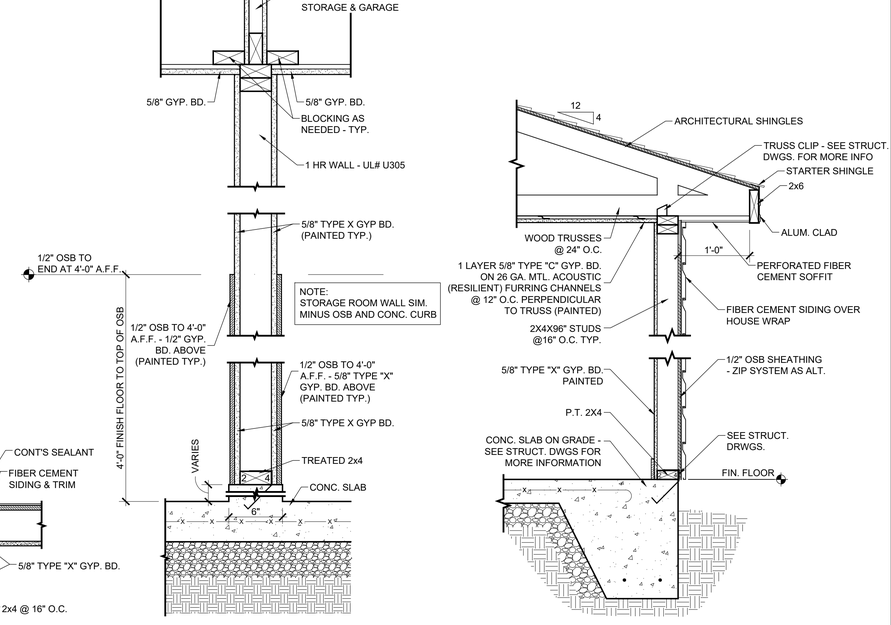
4 GARAGE SIDE ELEVATION
1/8" = 1'-0" — GARAGE #2 & #3



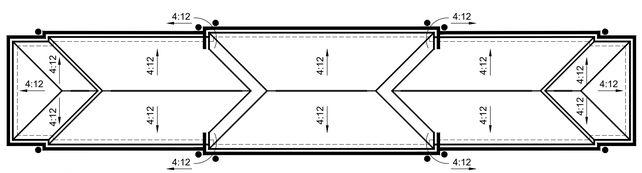
3 GARAGE REAR ELEVATION
1/8" = 1'-0" — GARAGE #2 & #3

NOTE: PREFINSHED GARAGE DOORS. COLOR BY OWNER. KEYLESS ENTRY PAD ON LEFT SIDE JAMB OF OVERHEAD DOOR. CHAIN DRIVE OPENER W/ OUTLET IN CEILING.EMERGENCY KEY RELEASE ON EACH OVERHEAD DOOR

GARAGE = GROUP U OCCUPANCIES (406.3.1) 1-HR RATED SEPARATION BETWEEN EACH GARAGE UNIT



7 TYP. PARTITION WALL
1 1/2" = 1'-0"



5 GARAGE ROOF PLAN
1/16" = 1'-0" — GARAGE #2 & #3

NOTE: IF DOWNSPOUTS NOT PIPED UNDERGROUND THEY SHOULD BE DISCHARGED NO LESS THAN 6' FROM BUILDING FOUNDATION WITHCONCRETE SPLASH BLOCK WITH POSITIVE DRAINAGE

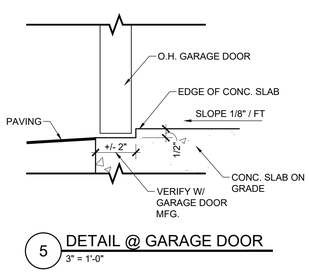
NOTE: VENTILATION OPENINGS LARGER THAN 1/4" SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARD CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF NOT LESS THAN 1/16" AND NOT MORE THAN 1/4".

DENOTES ALUMINUM SEAMLESS GUTTERS

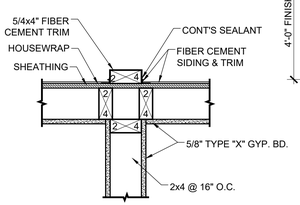
DENOTES DOWNSPOUTS TIED IN TO UNDERGROUND STORM DRAINAGE SYSTEM - VERIFY W/ OWNER

DENOTES ROOF RIDGE VENT w/ 18 s.i. NET FREE AREA /l.f.

NOTE: VERIFY D.S. LOCATIONS W/ OWNER



5 DETAIL @ GARAGE DOOR
3" = 1'-0"



6 PLAN DETAIL
1 1/2" = 1'-0"

8 TYP. WALL SECTION
1" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

File Reference:

Scale: AS NOTED

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SEAL

STATE OF SOUTH CAROLINA — ORVILLE -VAN PLAYER III — GREENVILLE, SC — 15961 — REGISTERED ARCHITECT

VENTURE AT OKATIE BLUFF
APARTMENTS

BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
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GARAGE FLOOR PLAN, ELEV.S & DETAILS

Sheet Number:
A-23.0

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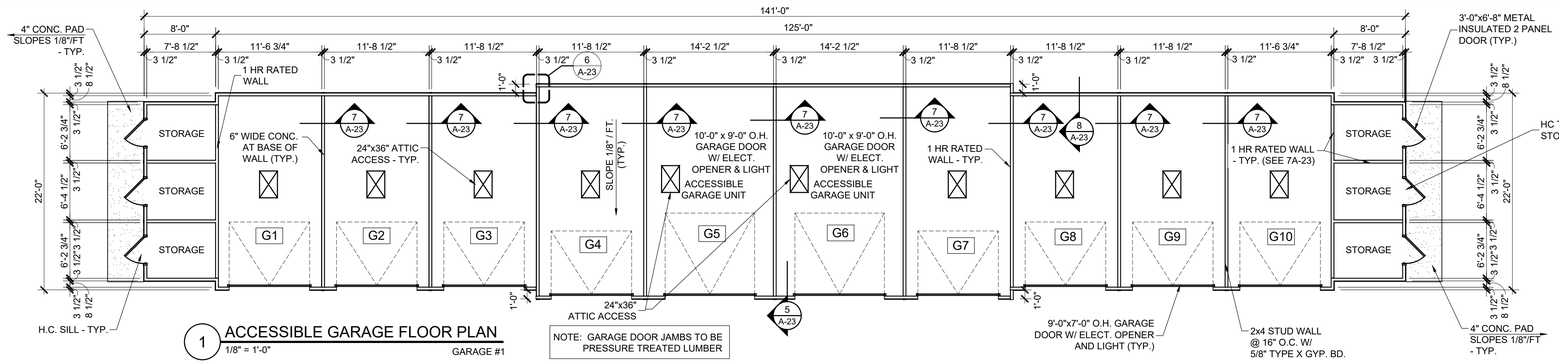
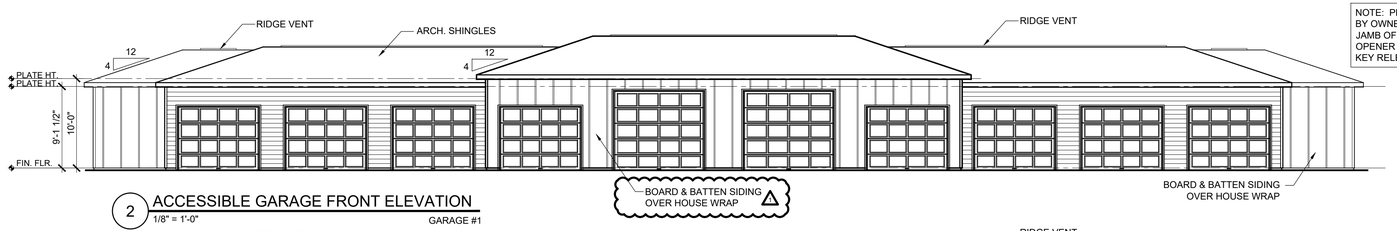


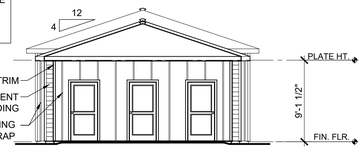
1 ACCESSIBLE GARAGE FLOOR PLAN
1/8" = 1'-0" GARAGE #1

NOTE: GARAGE DOOR JAMBS TO BE PRESSURE TREATED LUMBER

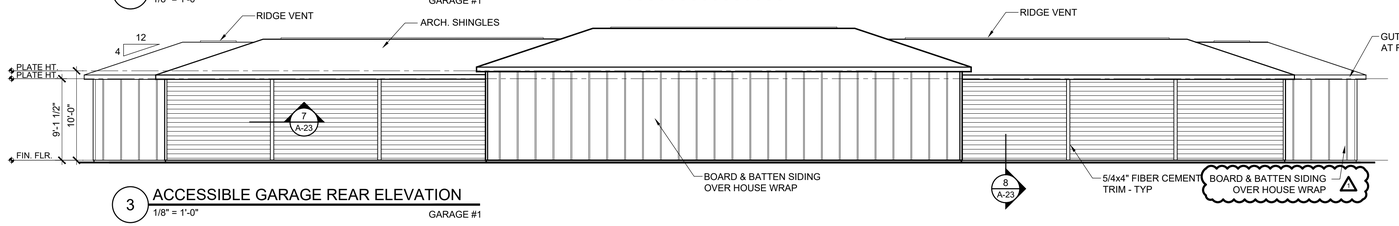


2 ACCESSIBLE GARAGE FRONT ELEVATION
1/8" = 1'-0" GARAGE #1

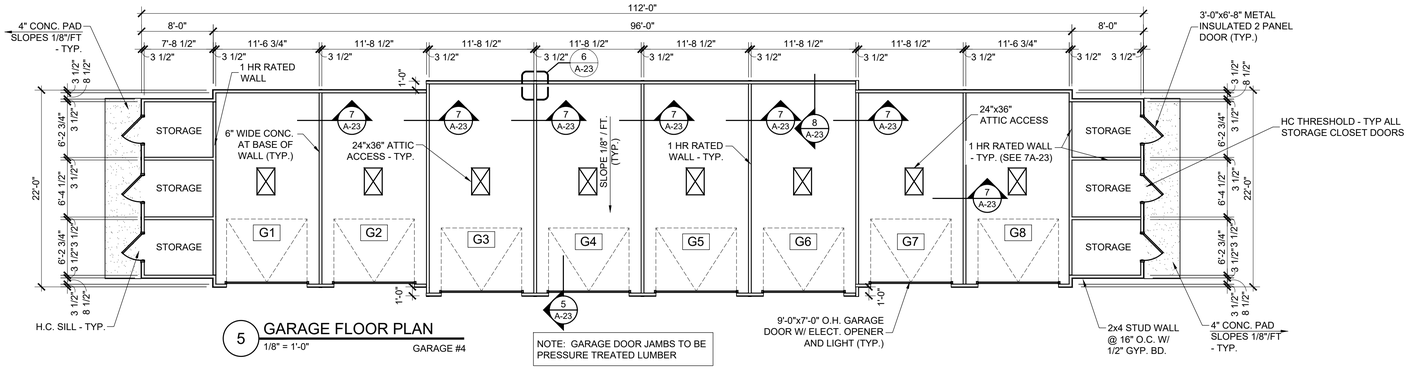
NOTE: PREFINSHED GARAGE DOORS. COLOR BY OWNER. KEYLESS ENTRY PAD ON LEFT SIDE JAMB OF OVERHEAD DOOR. CHAIN DRIVE OPENER W/ OUTLET IN CEILING.EMERGENCY KEY RELEASE ON EACH OVERHEAD DOOR



4 ACCESSIBLE GARAGE REAR ELEVATION
1/8" = 1'-0" GARAGE #1

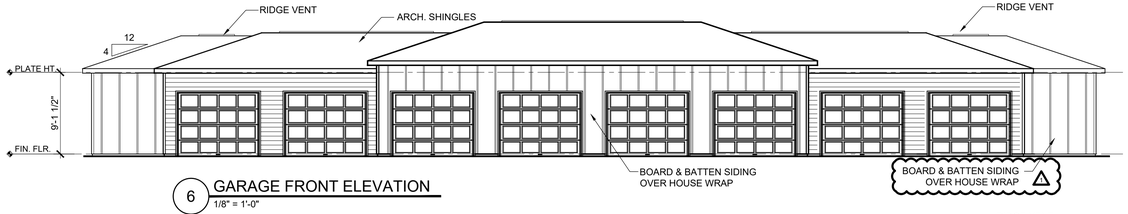


3 ACCESSIBLE GARAGE REAR ELEVATION
1/8" = 1'-0" GARAGE #1

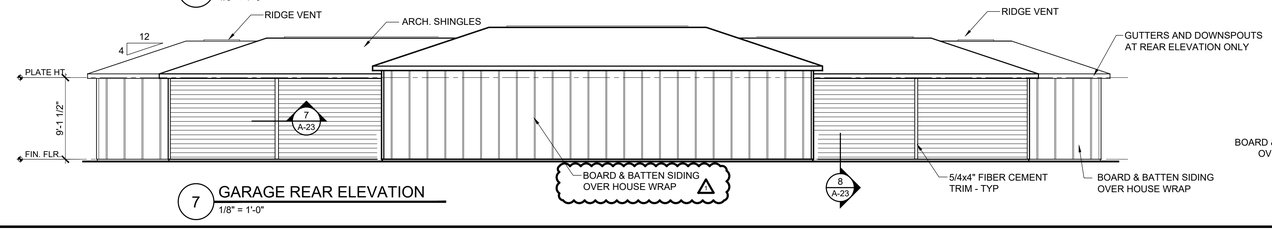


5 GARAGE FLOOR PLAN
1/8" = 1'-0" GARAGE #4

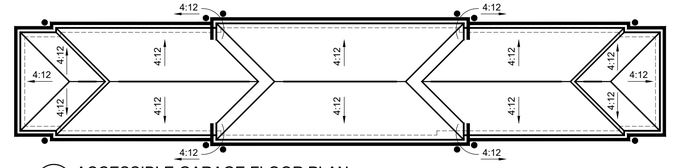
NOTE: GARAGE DOOR JAMBS TO BE PRESSURE TREATED LUMBER



6 GARAGE FRONT ELEVATION
1/8" = 1'-0"



7 GARAGE REAR ELEVATION
1/8" = 1'-0"



9 ACCESSIBLE GARAGE FLOOR PLAN
1/8" = 1'-0" GARAGE #1

NOTE: IF DOWNSPOUTS NOT PIPED UNDERGROUND THEY SHOULD BE DISCHARGED NO LESS THAN 6' FROM BUILDING FOUNDATION WITHCONCRETE SPLASH BLOCK WITH POSITIVE DRAINAGE

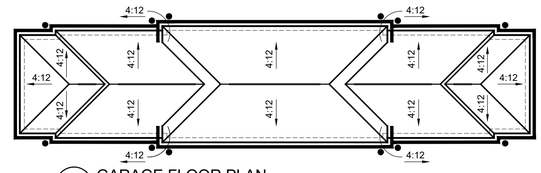
NOTE: VENTILATION OPENINGS LARGER THAN 1/4" SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARD CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF NOT LESS THAN 1/16" AND NOT MORE THAN 1/4".

DENOTES ALUMINUM SEAMLESS GUTTERS

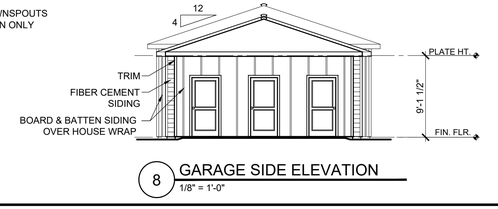
DENOTES DOWNSPOUTS TIED IN TO UNDERGROUND STORM DRAINAGE SYSTEM - VERIFY W/ OWNER

DENOTES ROOF RIDGE VENT w/ 18 s.i. NET FREE AREA /l.f.

NOTE: VERIFY D.S. LOCATIONS W/ OWNER



10 GARAGE FLOOR PLAN
1/16" = 1'-0" GARAGE #4



8 GARAGE SIDE ELEVATION
1/8" = 1'-0"

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	DRC Comments

Job Number: 22-09

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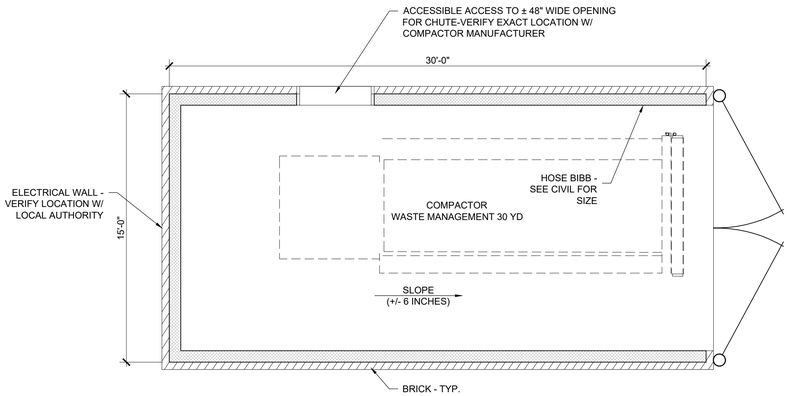
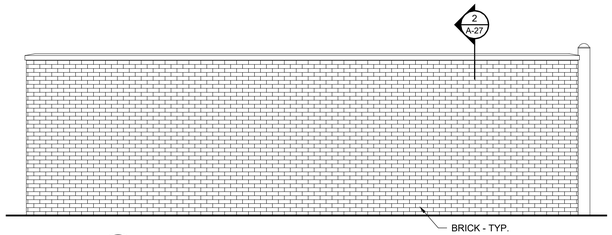
GARAGE FLOOR PLANS & ELEVATIONS

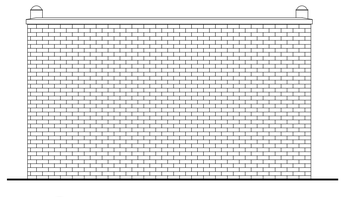
Sheet Number: A-24.0



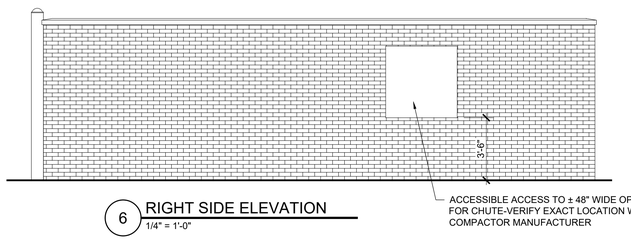
1 COMPACTOR ENCLOSURE
1/4" = 1'-0"



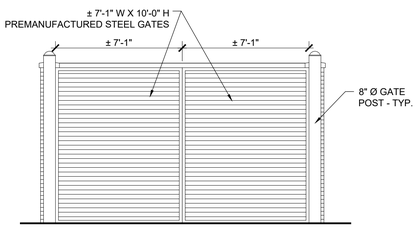
4 LEFT SIDE ELEVATION
1/4" = 1'-0"



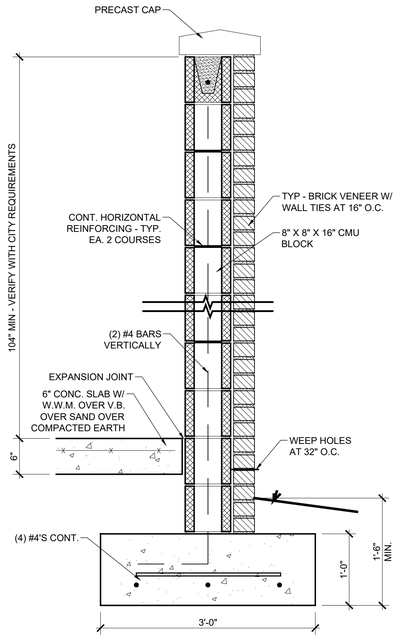
5 REAR ELEVATION
1/4" = 1'-0"



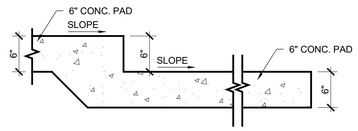
6 RIGHT SIDE ELEVATION
1/4" = 1'-0"



7 FRONT ELEVATION
1/4" = 1'-0"



2 TRASH ENCLOSURE DETAIL
1" = 1'-0"



3 DUMPSTER PAD SECTION
1" = 1'-0"

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No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

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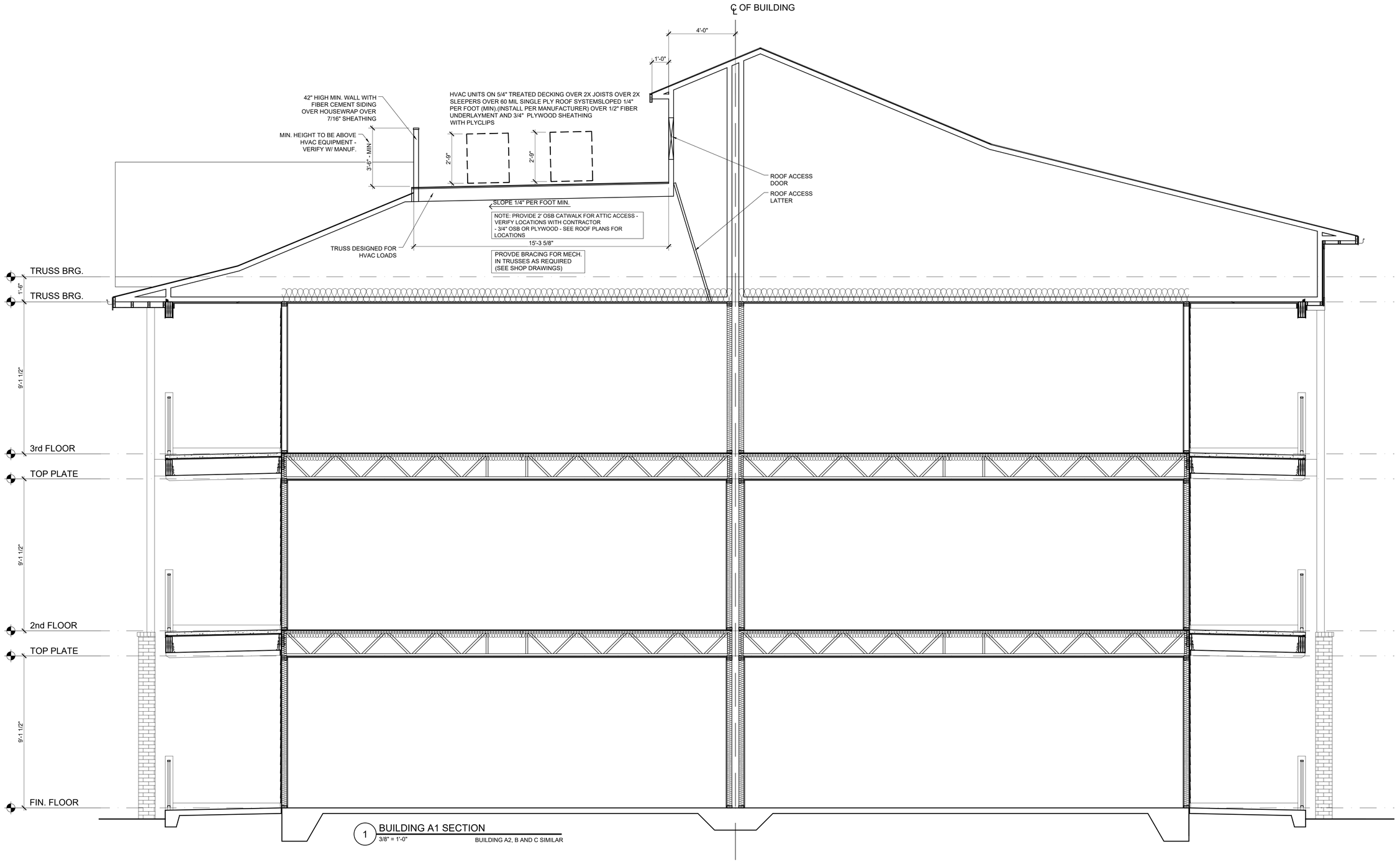
COMPACTOR

Sheet Number:
A-27.0



1 BUILDING A1 SECTION
3/8" = 1'-0"
BUILDING A2, B AND C SIMILAR

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

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BUILDING SECTION

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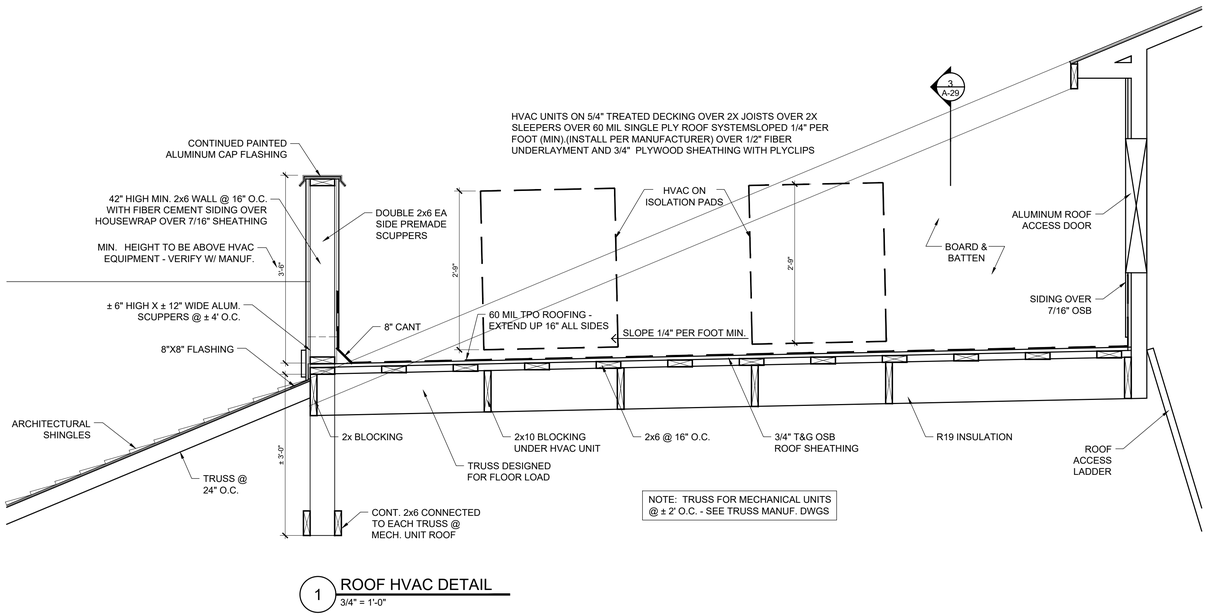

1 ROOF HVAC DETAIL
3/4" = 1'-0"

2 SCUPPER DETAIL
1" = 1'-0"

3 DETAIL
1" = 1'-0"

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	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

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BUILDING SECTION

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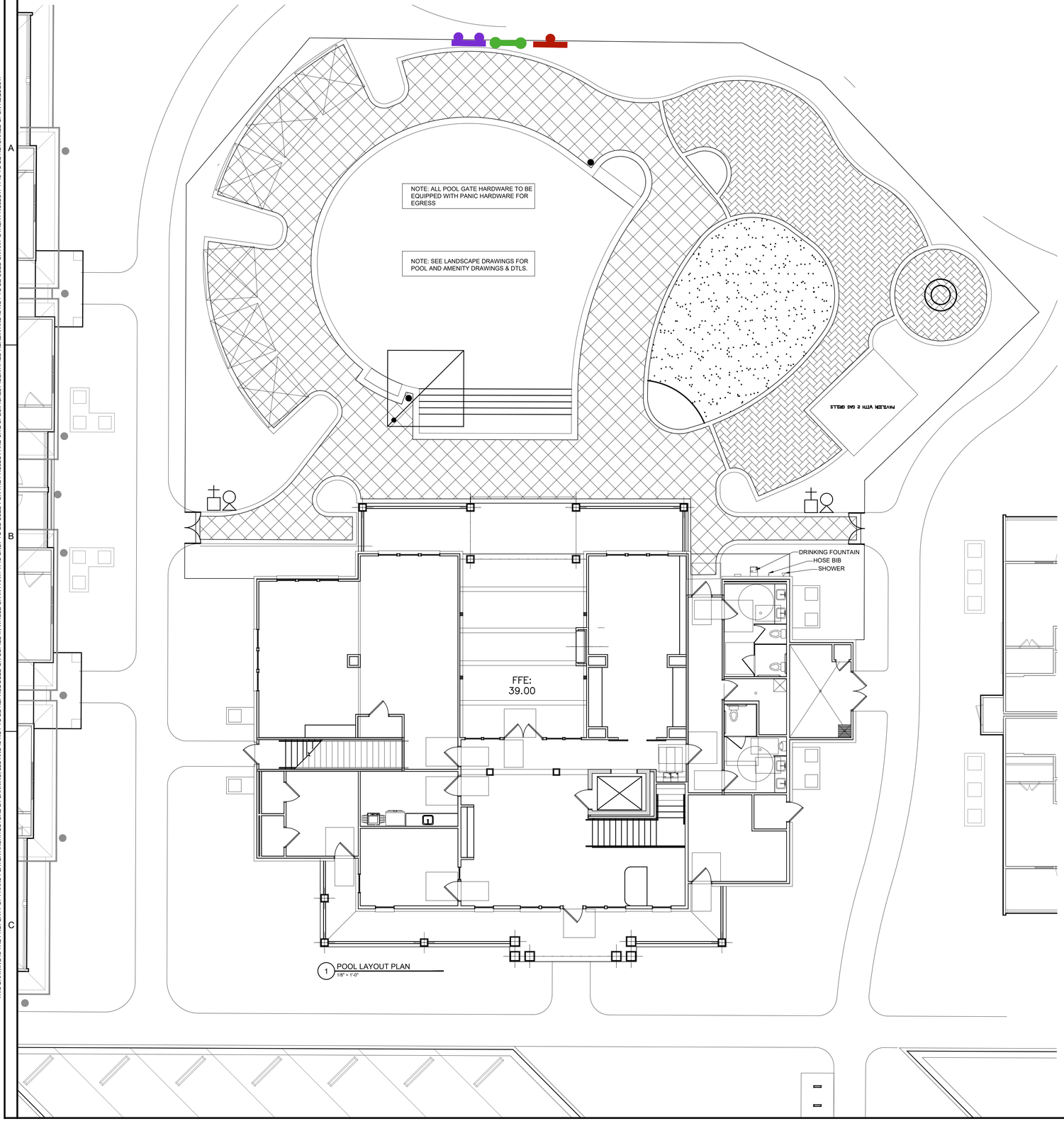

No.	Date	Description
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	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

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CLUBHOUSE POOL PLAN

Sheet Number:
CH-1.0

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No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

Scale:

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GREENVILLE, SC 29601
(864) 382-5000

CLUBHOUSE GROUND FLOOR PLAN

Sheet Number:
CH-2.0

1 CLUBHOUSE FIRST FLOOR PLAN
1/4" = 1'-0"

SQUARE FOOTAGE:
FIRST FLOOR: 3,726 SQ. FT. (HEATED)
SECOND FLOOR: 1,397 SQ. FT. (HEATED)
TOTAL: 5,097 SQ. FT. (HEATED)

NOTE: SEE ACC-2.00 FOR ACCESSIBLE CLEAR FLOOR SPACES

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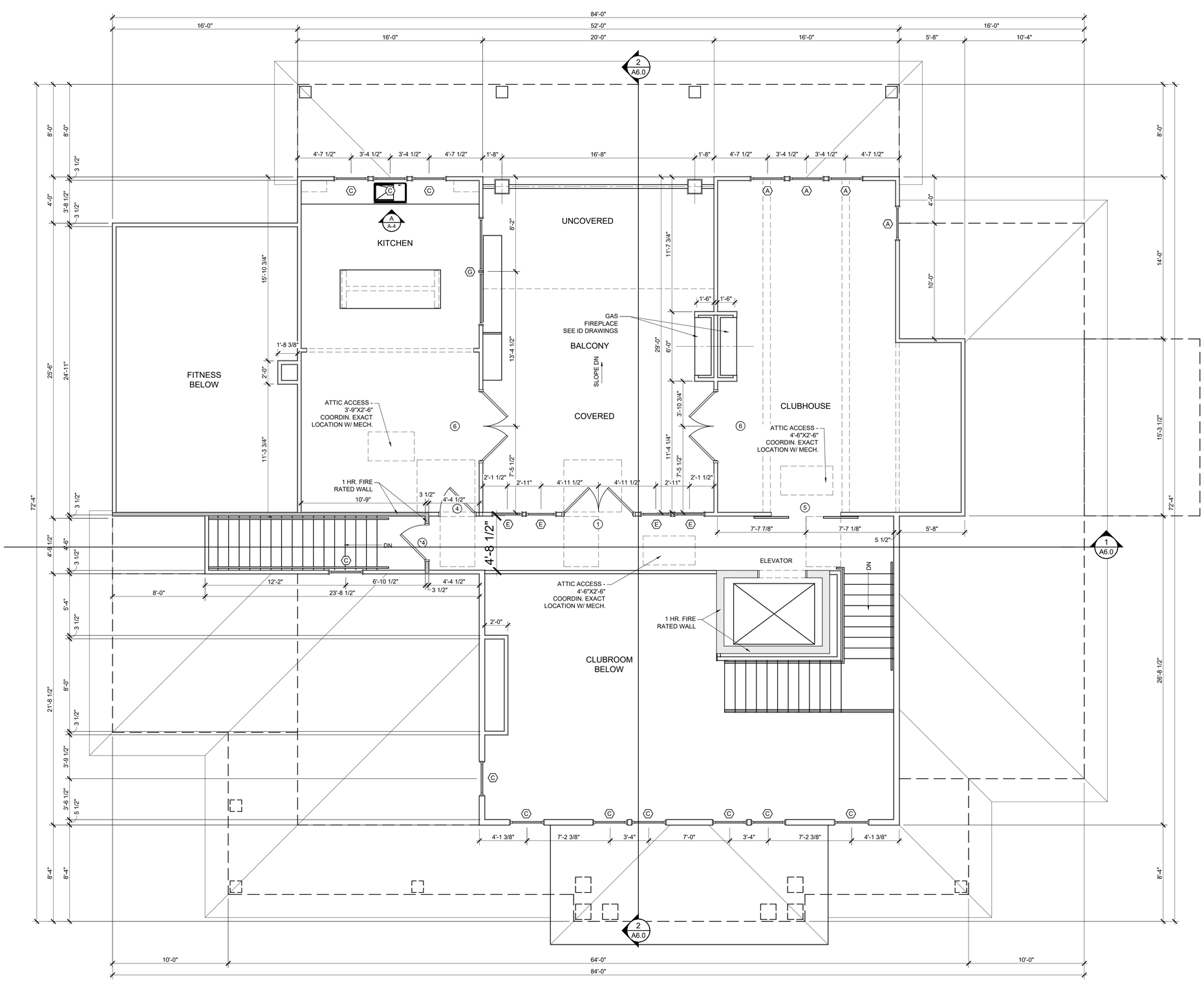

1 CLUBHOUSE SECOND FLOOR PLAN
1/4" = 1'-0"

NOTE: SEE ACC-2.00 FOR ACCESSIBLE CLEAR FLOOR SPACES

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

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CLUBHOUSE UPPER FLOOR PLAN

Sheet Number:
CH-3.0

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit
1	10.18.24	Materials

DENOTES 6" SEAMLESS GUTTERS

DENOTES 6" DOWNSPOUTS TIED IN TO UNDERGROUND STORM DRAINAGE SYSTEM - VERIFY W/ OWNER OR SPLASH BLOCKS TO BE PROVIDED

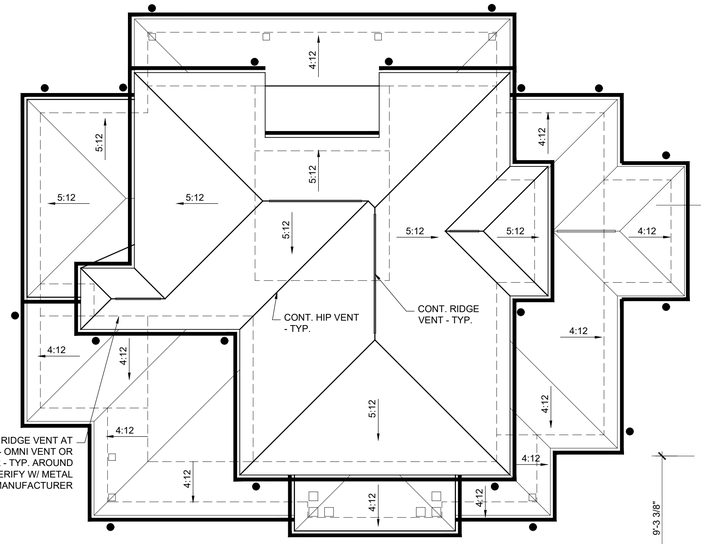
DENOTES SLANT BACK ROOF VENT w/ 60 s.i. NET FREE AREA

DENOTES ROOF RIDGE VENT w/ 18 s.i. NET FREE AREA /l.f.

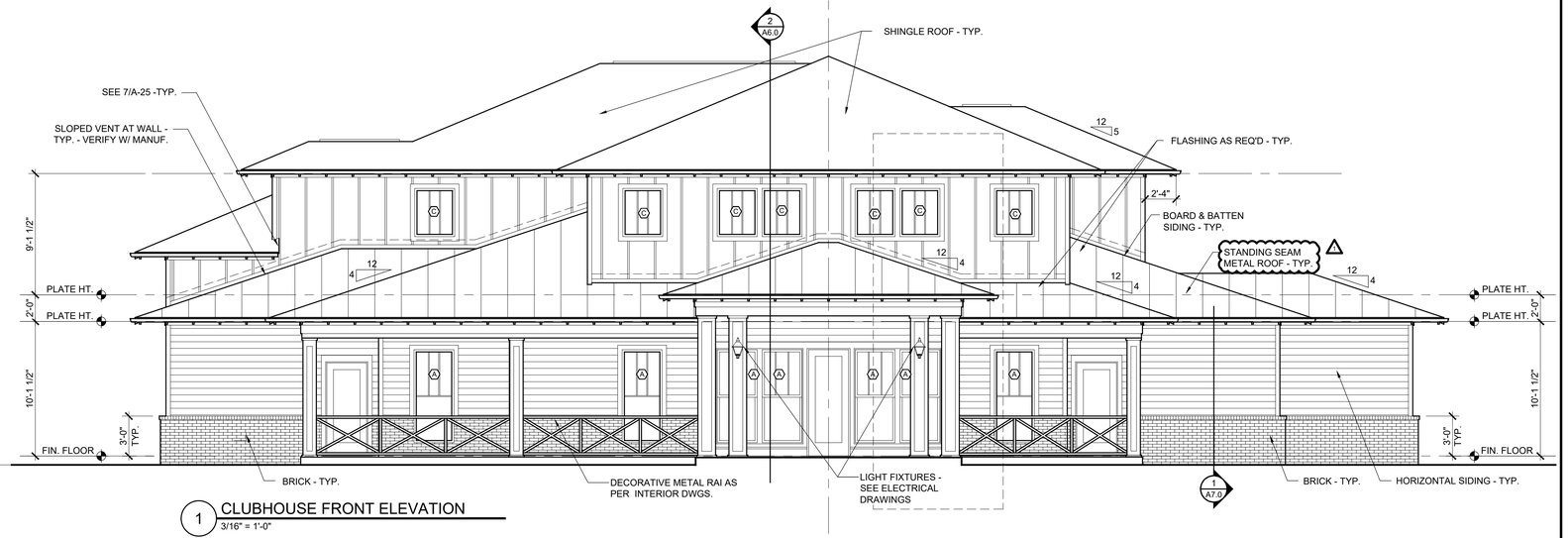
NOTE: VERIFY D.S. LOCATIONS W/ OWNER

NOTE: VENTILATION OPENINGS LARGER THAN 1/4" SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARD CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF NOT LESS THAN 1/16" AND NOT MORE THAN 1/4".

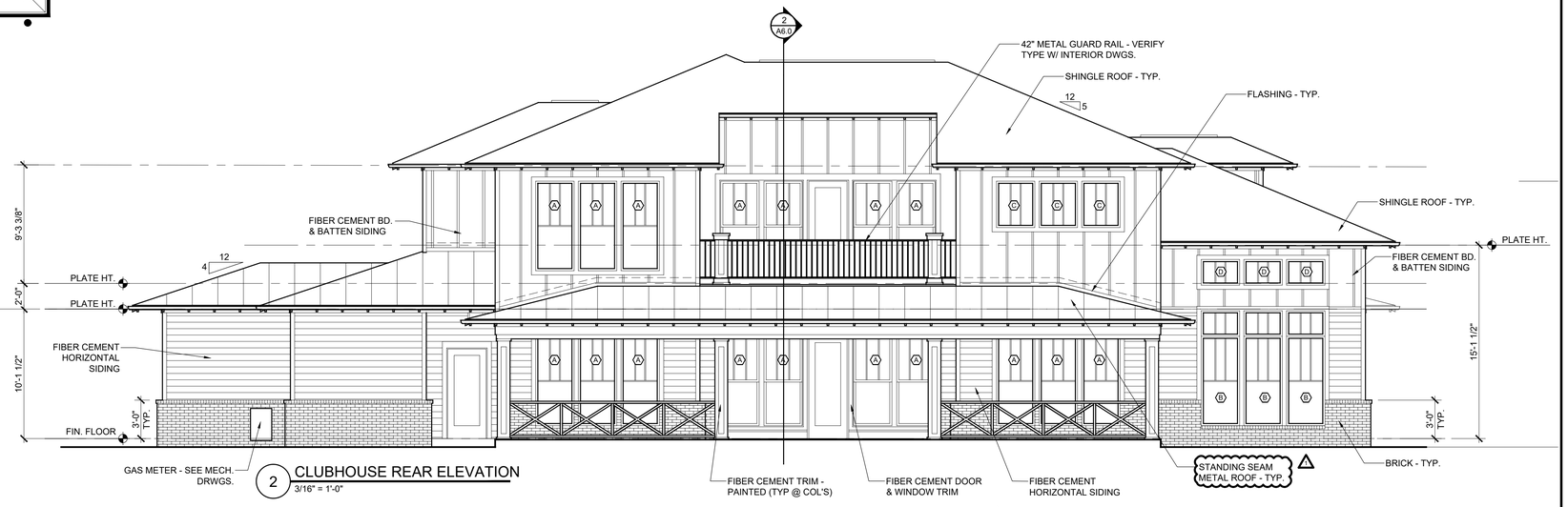
NOTE: METAL ROOF MANUFACTURER TO SUBMIT SHOP DWGS FOR METAL ROOF VENTS.



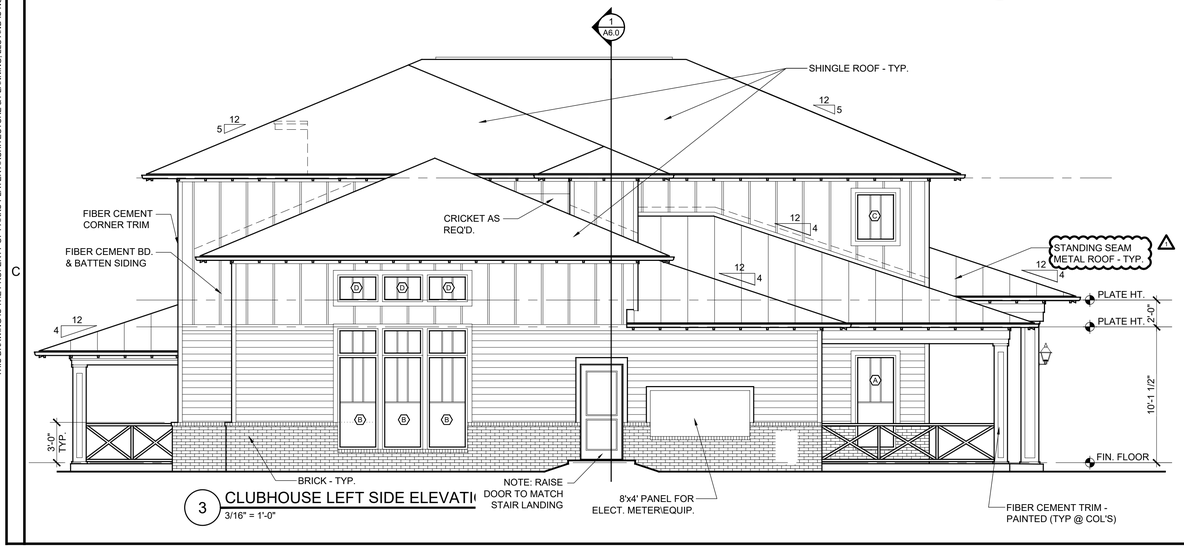
5 CLUBHOUSE ROOF PLAN
3/32" = 1'-0"



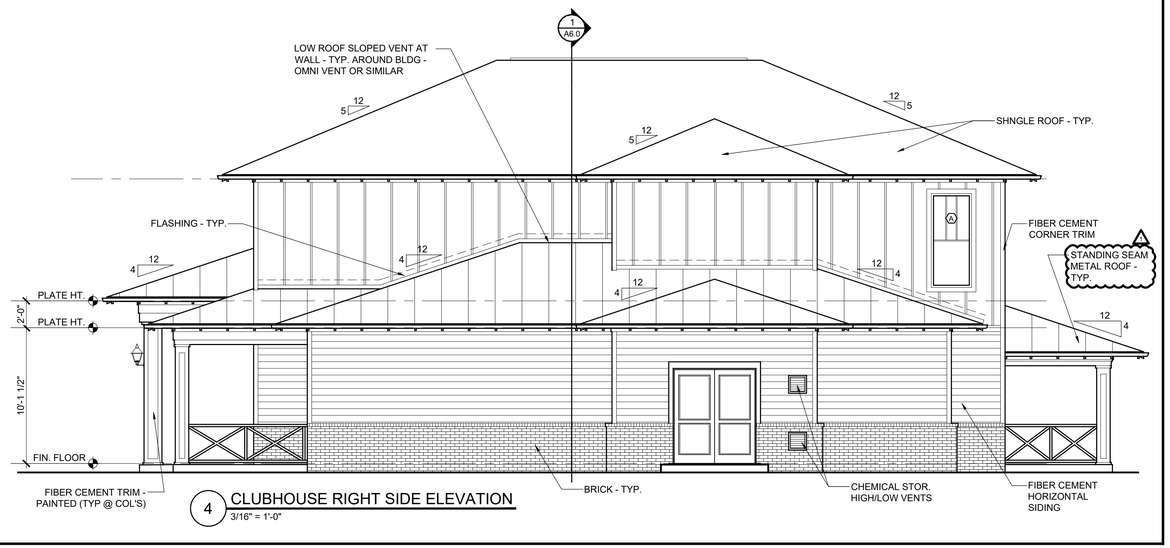
1 CLUBHOUSE FRONT ELEVATION
3/16" = 1'-0"



2 CLUBHOUSE REAR ELEVATION
3/16" = 1'-0"



3 CLUBHOUSE LEFT SIDE ELEVATI
3/16" = 1'-0"



4 CLUBHOUSE RIGHT SIDE ELEVATION
3/16" = 1'-0"

Job Number: 22-09

File Reference:

Scale: AS NOTED

CORP. SEAL

STATE OF SOUTH CAROLINA
Parks - Player Architecture & Planning
Greenville, SC
100975
REGISTERED ARCHITECTS

SEAL

STATE OF SOUTH CAROLINA
ORVILLE VAN PLAYER III
GREENVILLE, SC
15961
REGISTERED ARCHITECT

VENTURE AT OKATIE BLUFF
APARTMENTS

BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, S.C. 29601
(864) 382-5000

CLUBHOUSE ELEVATIONS

Sheet Number:
CH-5.00

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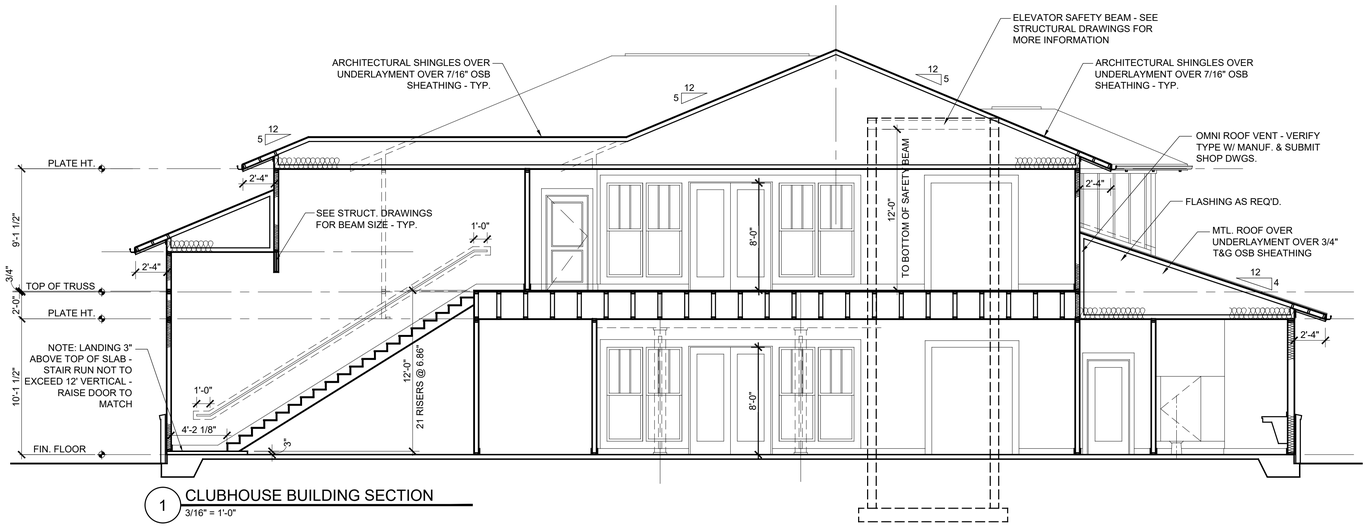
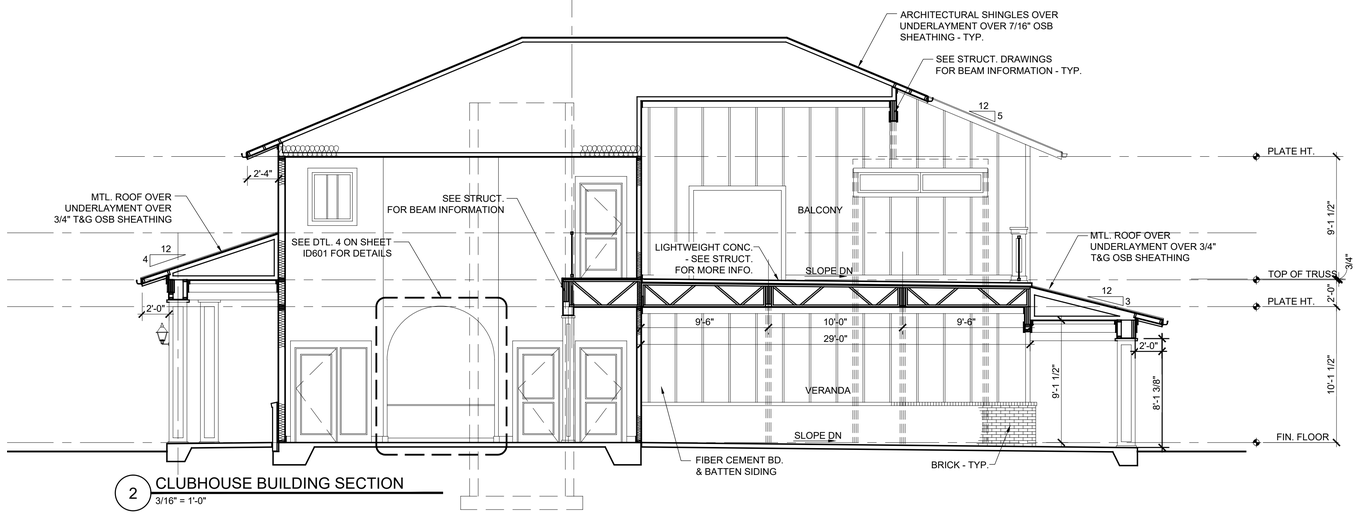


1 CLUBHOUSE BUILDING SECTION
3/16" = 1'-0"



2 CLUBHOUSE BUILDING SECTION
3/16" = 1'-0"

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No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set
	7.10.24	For Permit
	8.21.24	For Permit

Job Number: 22-09

File Reference:

Scale: AS NOTED

CORP. SEAL

STATE OF SOUTH CAROLINA
Parks - Player Architecture & Planning
Greenville, SC
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REGISTERED ARCHITECTS

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VENTURE AT OKATIE BLUFF
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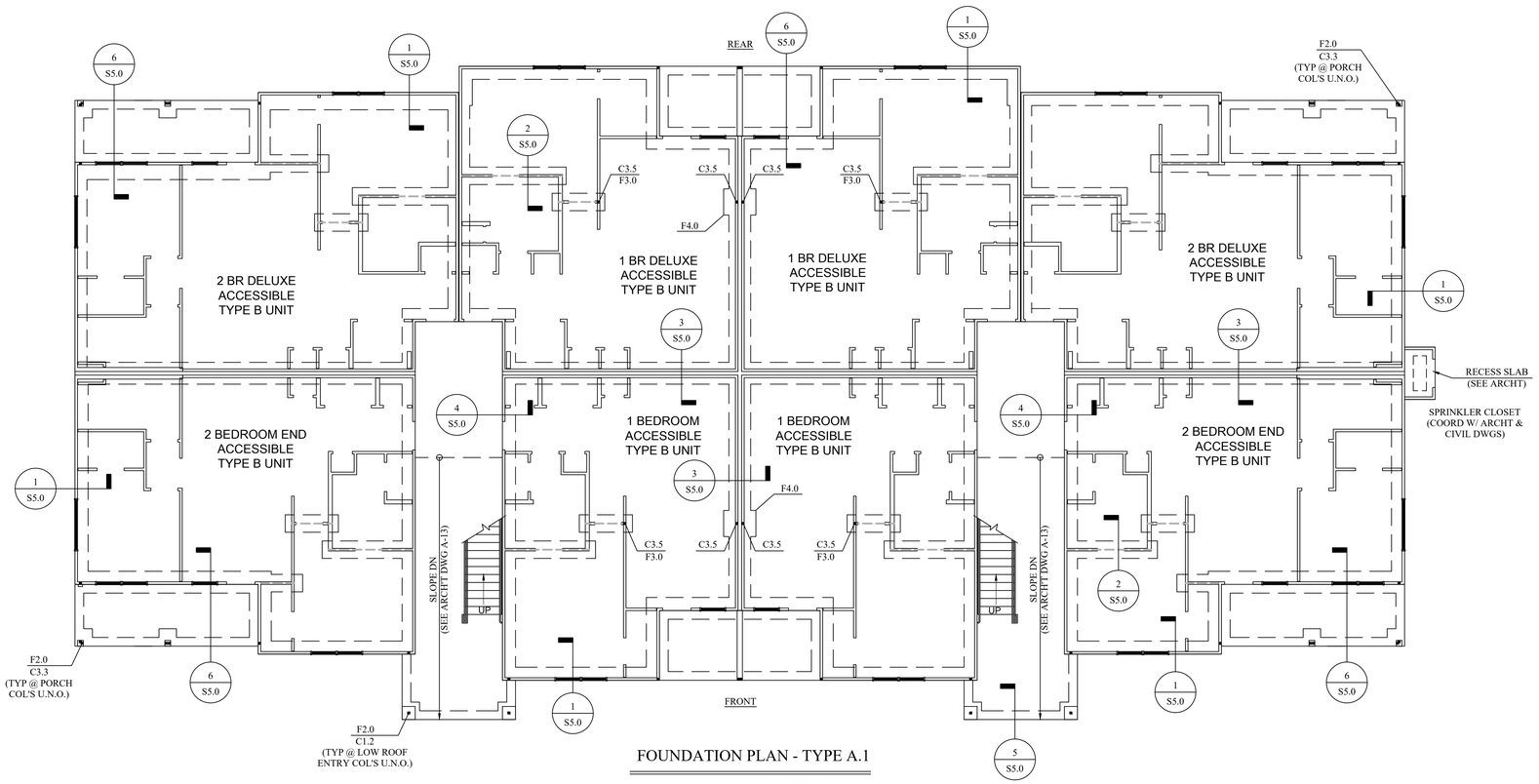
BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, SC 29601
(864) 382-5000

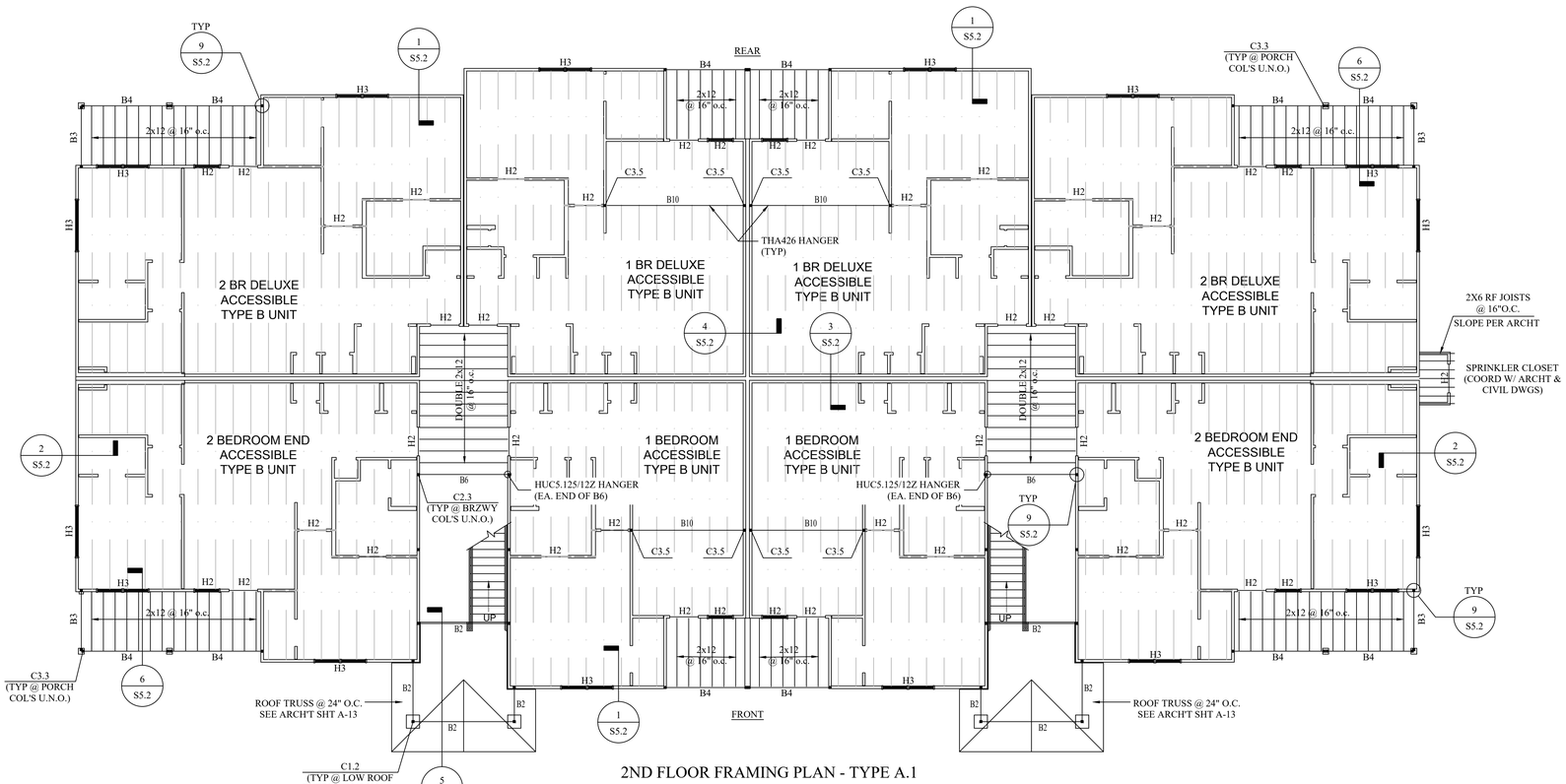
CLUBHOUSE BUILDING SECTIONS

Sheet Number:
CH-6.00



FOUNDATION PLAN - TYPE A.1

BLDG 1 & 2



2ND FLOOR FRAMING PLAN - TYPE A.1

NOTE: 1ST FLOOR WALLS SHOWN

BLDG 1 & 2

FOUNDATION NOTES:

- IF APPLICABLE - POST-TENSION SLAB ON GRADE BY OTHERS & SUBMITTED TO LOCAL AUTHORITY - VERIFY WITH OWNER
- IF APPLICABLE - RECESS SLAB AT HC ROLL-IN SHOWER LOCATIONS. VERIFY WITH ARCH'T DWGS FOR LOCATIONS
- COORDINATE EXTERIOR BRICK EXTENT AND LOCATION W/ ARCH'T DWGS.
- ALL COLUMNS NOTED AT UPPER FRAMING LEVELS EXTEND DOWN TO THE FOUNDATION
- Fx.x DENOTES FOOTING (SEE SCHEDULE S1.1)
- – – – – – – – – DENOTES INTERIOR LOAD BEARING WALL (TYP)

FLOOR FRAMING NOTES:

- Cx - DENOTES BUILT-UP COLUMN (SEE DETAILS AND SCHEDULE ON S1.1 FOR SIZE AND NAILING PATTERN REQUIREMENTS)
- Hx - DENOTES WALL OPENING HEADER (SEE SCHEDULE ON S1.1)
- Bx - DENOTES WOOD BEAM (SEE SCHEDULE ON S1.1)
- TYP. FLOOR FRAMING IS 18" DEEP OPEN-WEB TRUSSES @ 24" O.C.
- G.T. - DENOTES OPEN-WEB 18"GIRDER TRUSS (SEE TRUSS MANUF. DWGS)
- TRUSS SHOP DWGS TO BE REVIEWED BY ARHITECT AND PT SLAB ENGINEER BEFORE SLAB IS POURED.
- – – – – – – – – DENOTES INTERIOR LOAD BEARING WALL (TYP)

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 23582 JASON R. MILLIGAN

REVISIONS

No.	Date	Comments
	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

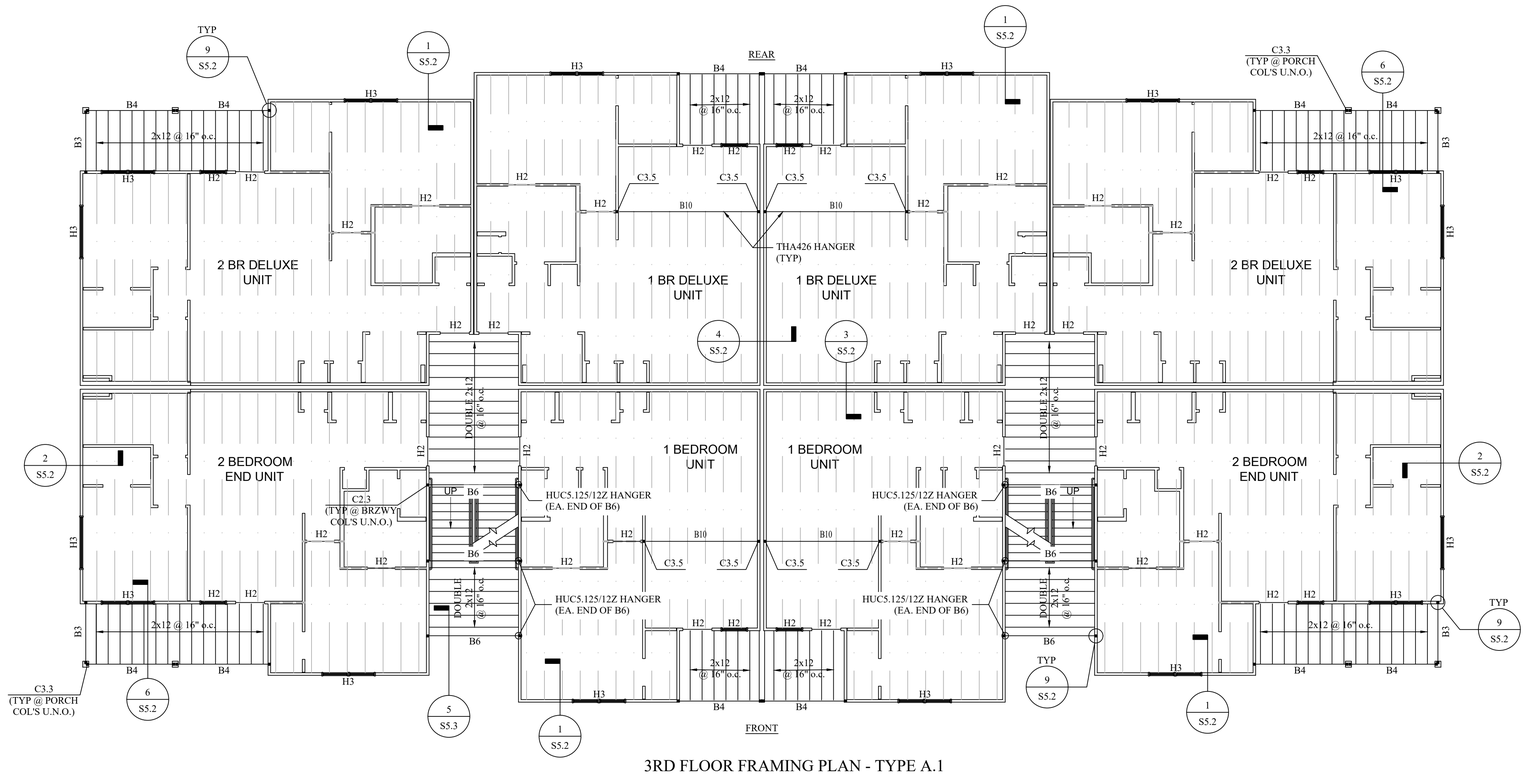
File Reference:

Designed By: JRM | Drawn By: JRM

BLDG TYPE A1 FOUNDATION & 2ND FLR PLAN (BLDG 1 & 2)

Sheet Number:

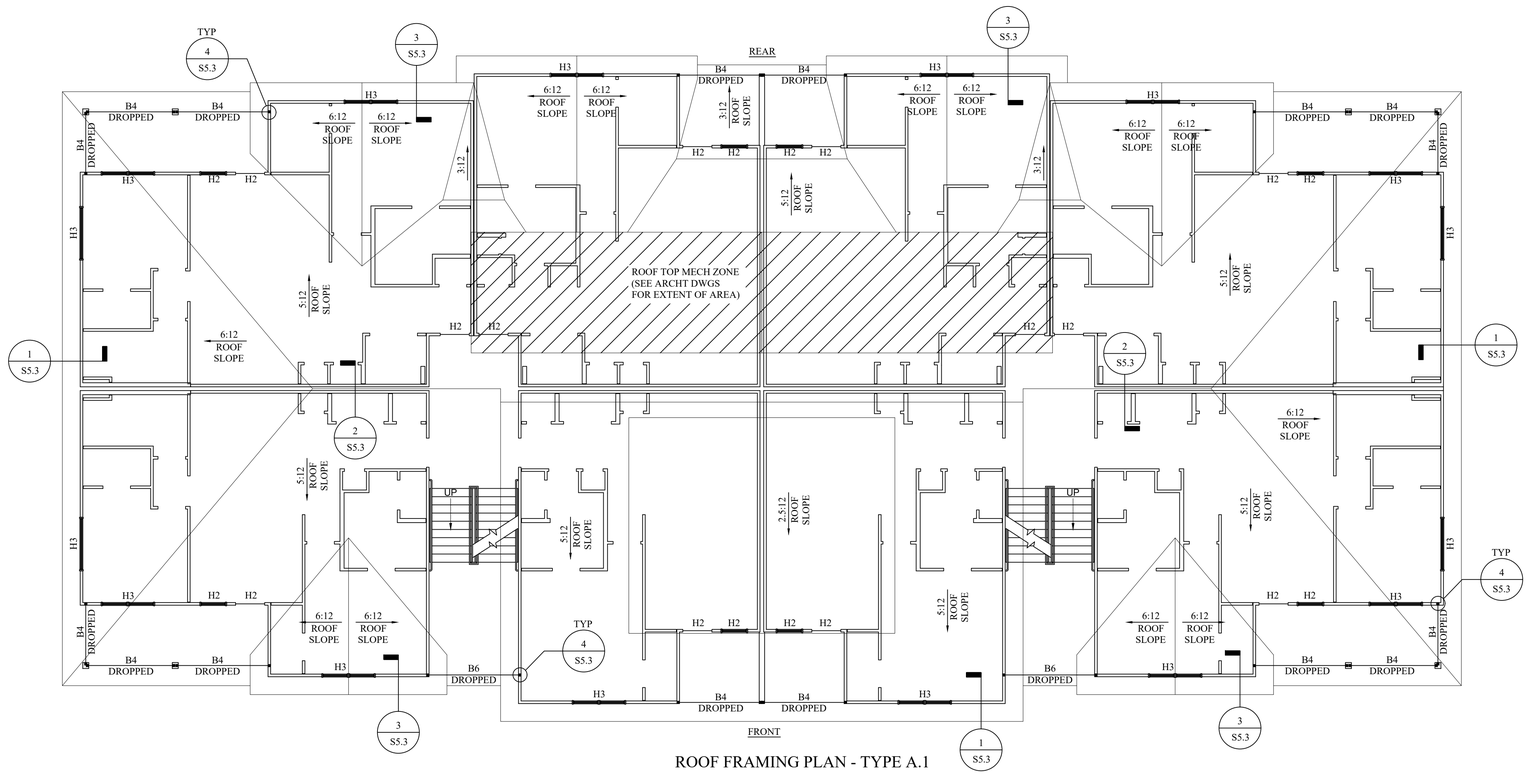
S2.0



3RD FLOOR FRAMING PLAN - TYPE A.1

NOTE: 2ND FLOOR WALLS SHOWN

BLDG 1 & 2



ROOF FRAMING PLAN - TYPE A.1

NOTE: 3RD FLOOR WALLS SHOWN

BLDG 1 & 2

FLOOR FRAMING NOTES:

- Cx - DENOTES BUILT-UP COLUMN (SEE DETAILS AND SCHEDULE ON S1.1 FOR SIZE AND NAILING PATTERN REQUIREMENTS)
- Hx - DENOTES WALL OPENING HEADER (SEE SCHEDULE ON S1.1)
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- TRUSS SHOP DWGS TO BE REVIEWED BY ARHITECT AND PT SLAB ENGINEER BEFORE SLAB IS POURED.
- DENOTES INTERIOR LOAD BEARING WALL (TYP)

ROOF FRAMING NOTES:

- G.T. - DENOTES OPEN-WEB 18"GIRDER TRUSS (SEE TRUSS MANUF. DWGS)
- TRUSS SHOP DWGS TO BE REVIEWED BY ARCHITECT AND PT SLAB ENGINEER BEFORE SLAB IS POURED.
- DENOTES INTERIOR LOAD BEARING WALL (TYP)
- ALL EXTERIOR WALL AND BREEZEWAY WALLS ARE LOAD BEARING
- GC/TRUSS MANUFACTURER TO COORDINATE ROOF PENETRATIONS W/ FINAL SELECTION OF MEP EQUIPMENT PRIOR TO TRUSS FABRICATION. GC/FRAMER TO COORDINATE RTU CURBS W/ FINAL SELECTION OF MEP EQUIPMENT.
- MECHANICAL ZONE - SEE GENERAL NOTES FOR LOADING REQUIREMENTS

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 23587 JASON R. MILLIGAN

REVISIONS

No.	Date	Comments
	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

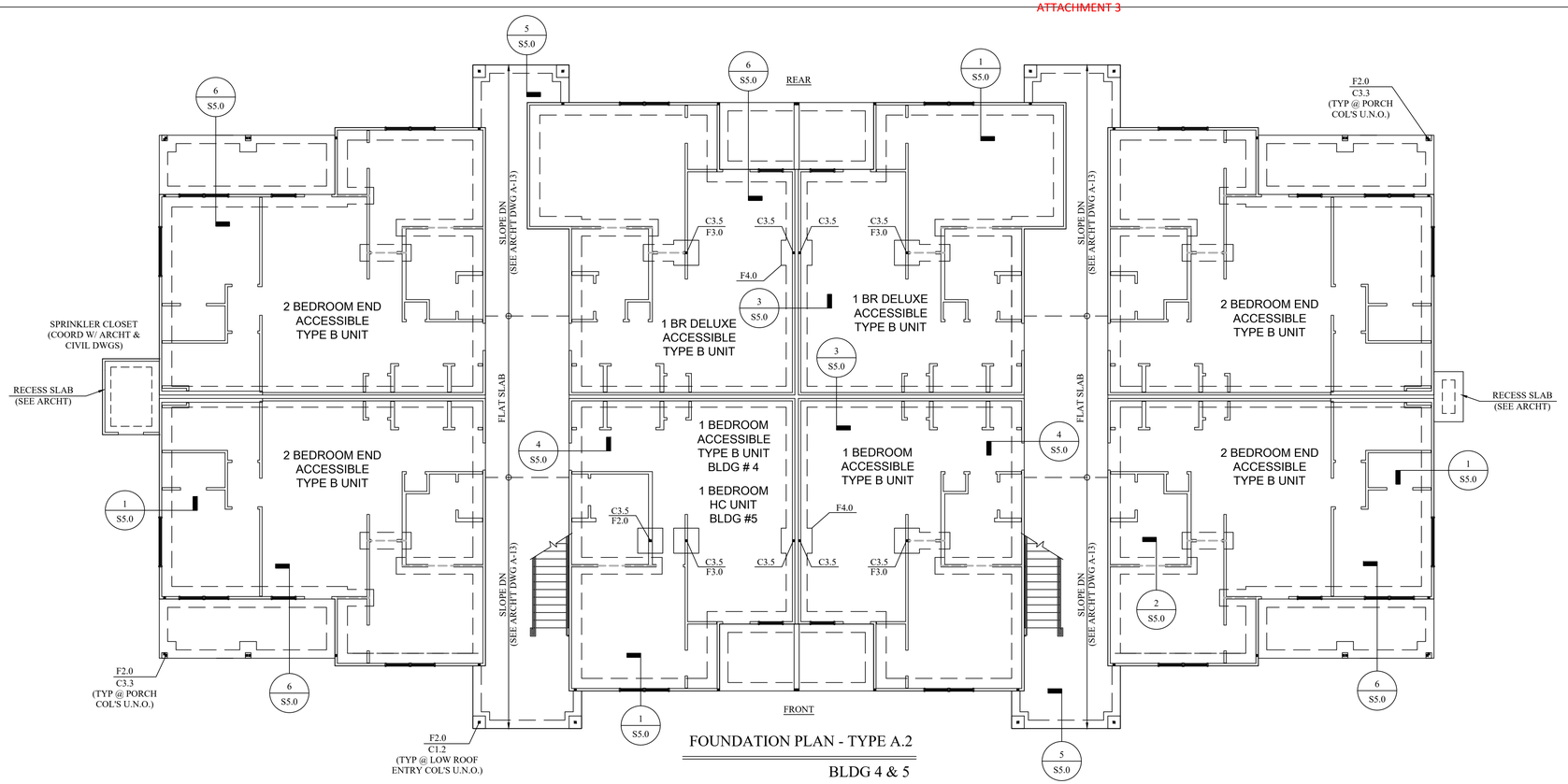
Job Number:

File Reference:

Designed By: JRM | Drawn By: JRM

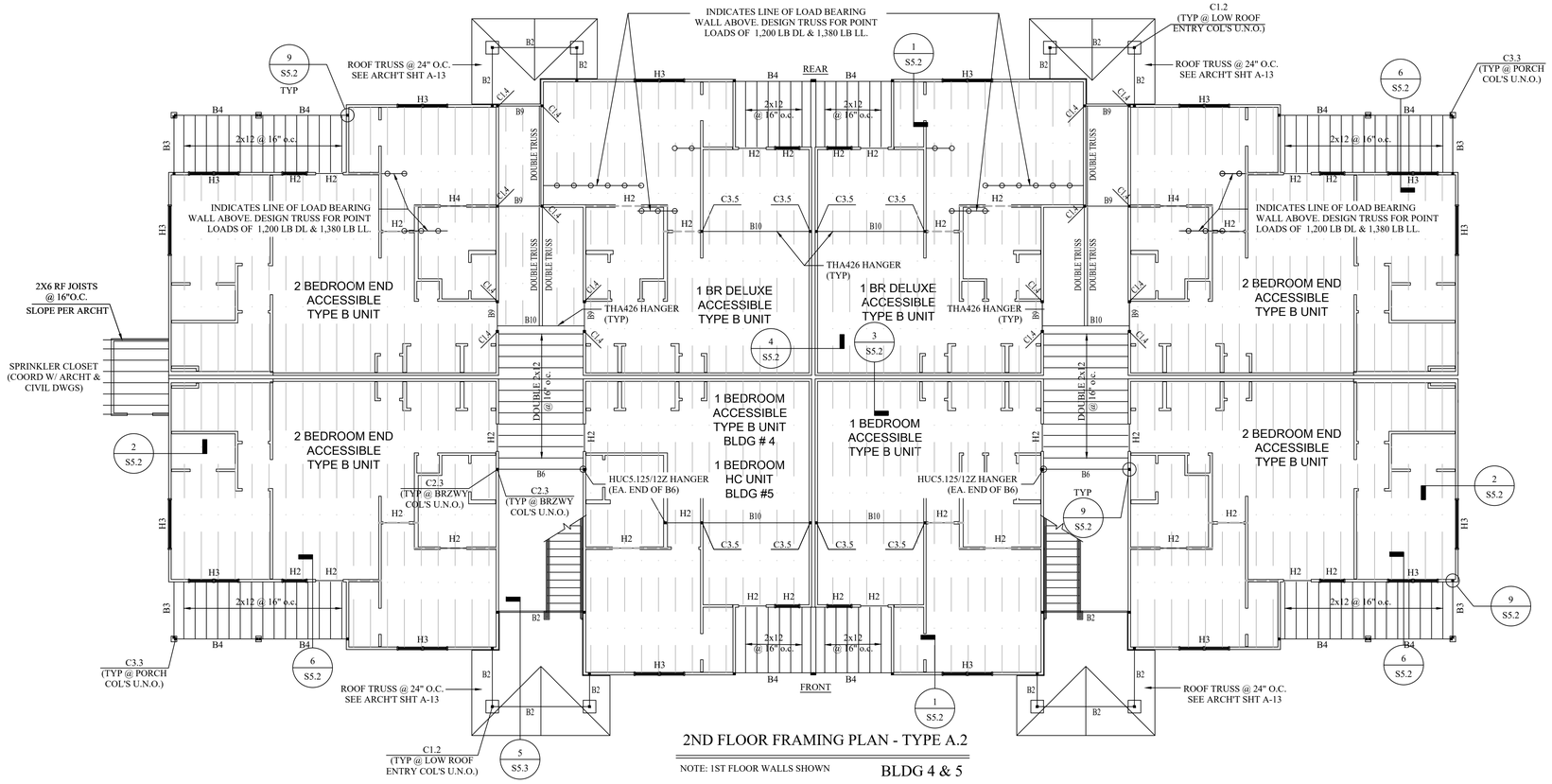
BLDG TYPE A1 3RD FLOOR AND ROOF FRAMING (BLDG 1 & 2)

Sheet Number: S2.1



FOUNDATION PLAN - TYPE A.2

BLDG 4 & 5



2ND FLOOR FRAMING PLAN - TYPE A.2

NOTE: 1ST FLOOR WALLS SHOWN

BLDG 4 & 5

FOUNDATION NOTES:

- IF APPLICABLE - POST-TENSION SLAB ON GRADE BY OTHERS & SUBMITTED TO LOCAL AUTHORITY - VERIFY WITH OWNER
- IF APPLICABLE - RECESS SLAB AT HC ROLL-IN SHOWER LOCATIONS. VERIFY WITH ARCH'T DWGS FOR LOCATIONS
- COORDINATE EXTERIOR BRICK EXTENT AND LOCATION W/ ARCH'T DWGS.
- ALL COLUMNS NOTED AT UPPER FRAMING LEVELS EXTEND DOWN TO THE FOUNDATION
- Fx.x DENOTES FOOTING (SEE SCHEDULE S1.1)
- DENOTES INTERIOR LOAD BEARING WALL (TYP)

FLOOR FRAMING NOTES:

- Cx - DENOTES BUILT-UP COLUMN (SEE DETAILS AND SCHEDULE ON S1.1 FOR SIZE AND NAILING PATTERN REQUIREMENTS)
- Hx - DENOTES WALL OPENING HEADER (SEE SCHEDULE ON S1.1)
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- DENOTES INTERIOR LOAD BEARING WALL (TYP)

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 23587 JASON R. MILLIGAN

REVISIONS		
No.	Date	Comments
	05-20-24	30% SET
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	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

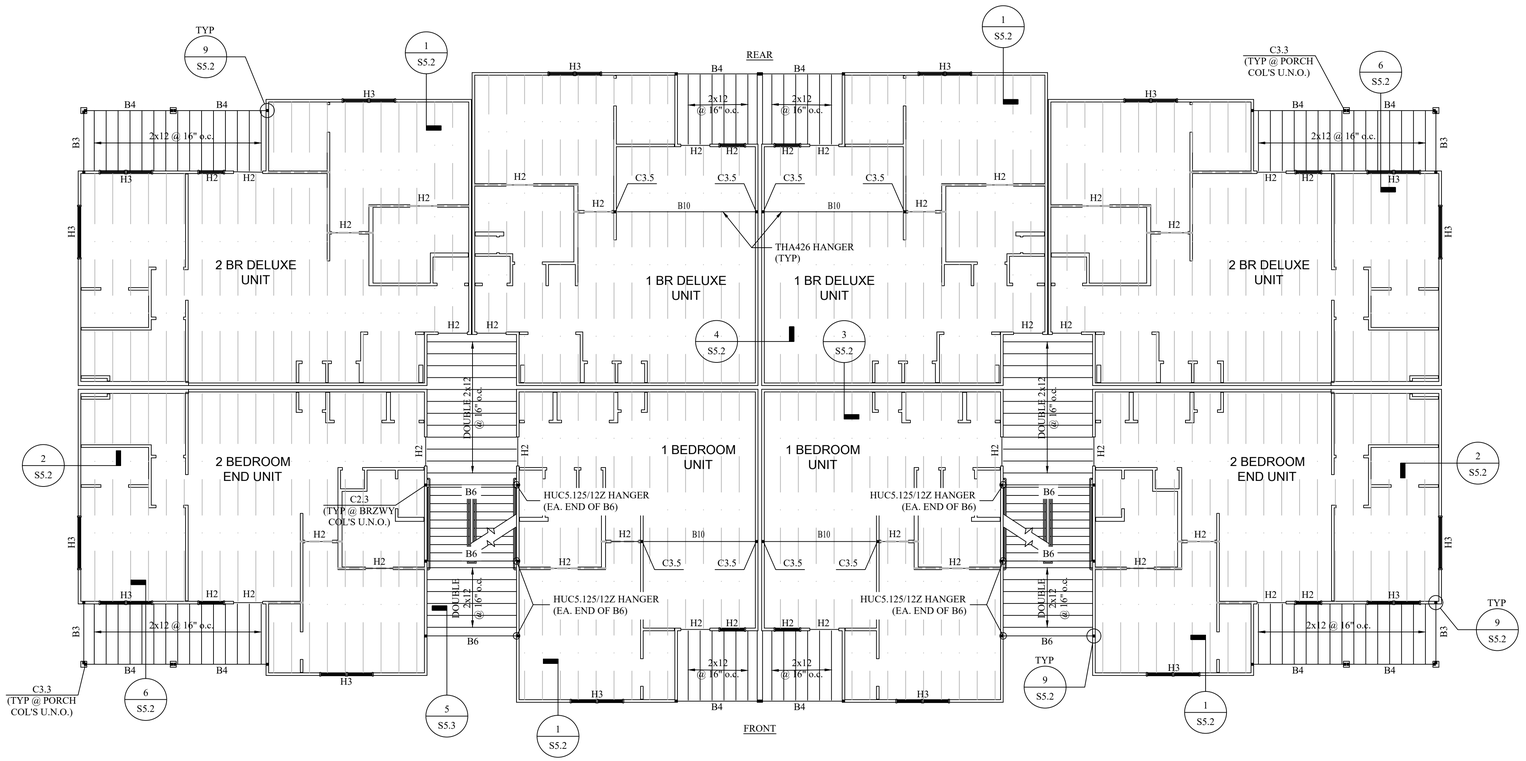
File Reference:

Designed By: JRM | Drawn By: JRM

BLDG TYPE A2 FOUNDATION & 2ND FLR PLAN (BLDG 4 & 5)

Sheet Number:

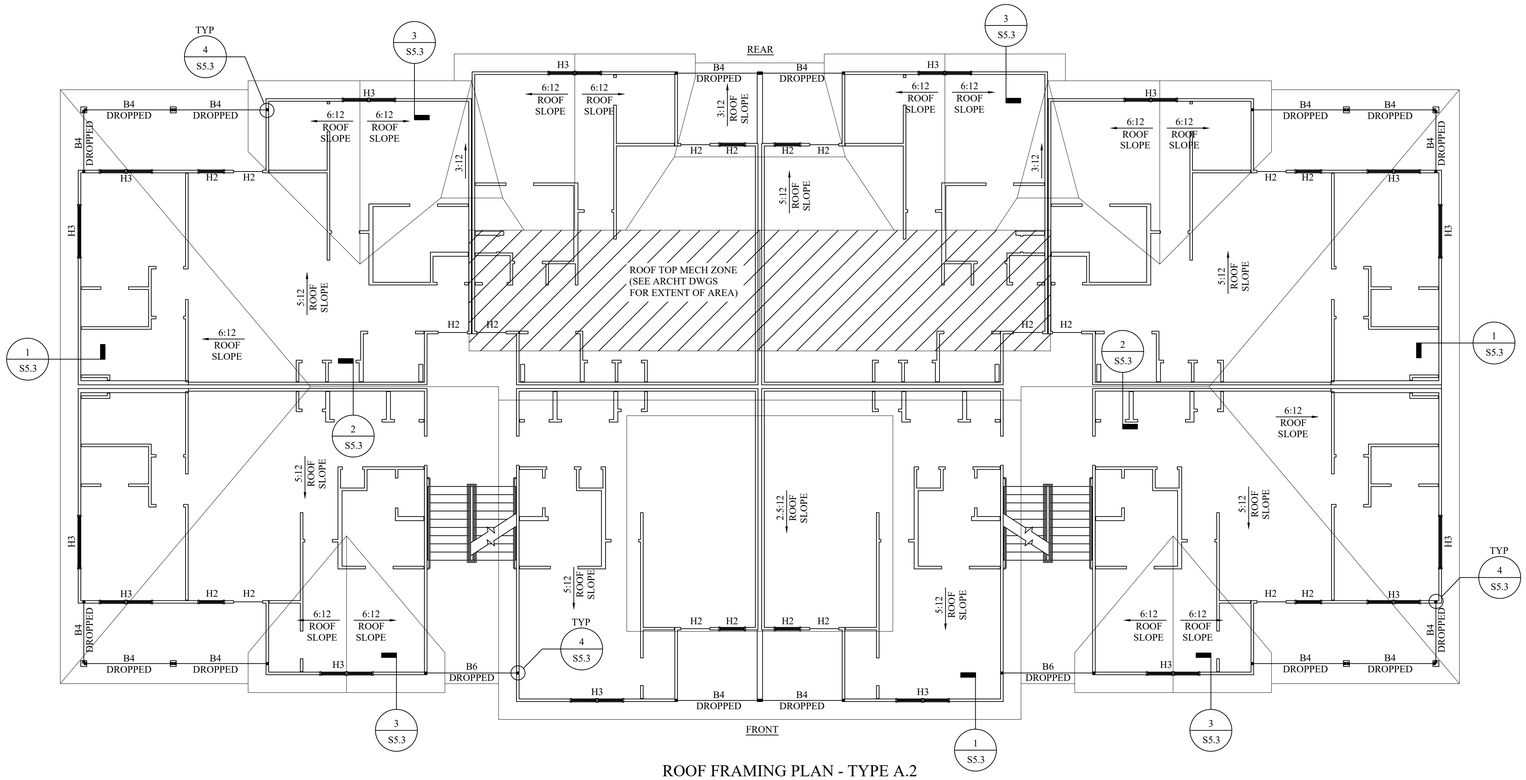
S2.2



3RD FLOOR FRAMING PLAN - TYPE A.2

NOTE: 2ND FLOOR WALLS SHOWN

BLDG 4 & 5



ROOF FRAMING PLAN - TYPE A.2

NOTE: 3RD FLOOR WALLS SHOWN

BLDG 4 & 5

FLOOR FRAMING NOTES:

- Cx - DENOTES BUILT-UP COLUMN (SEE DETAILS AND SCHEDULE ON S1.1 FOR SIZE AND NAILING PATTERN REQUIREMENTS)
- Hx - DENOTES WALL OPENING HEADER (SEE SCHEDULE ON S1.1)
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- ———— DENOTES INTERIOR LOAD BEARING WALL (TYP)

ROOF FRAMING NOTES:

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- MECHANICAL ZONE - SEE GENERAL NOTES FOR LOADING REQUIREMENTS

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No. 23587
JASON R. MILLIGAN

REVISIONS

No.	Date	Comments
	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

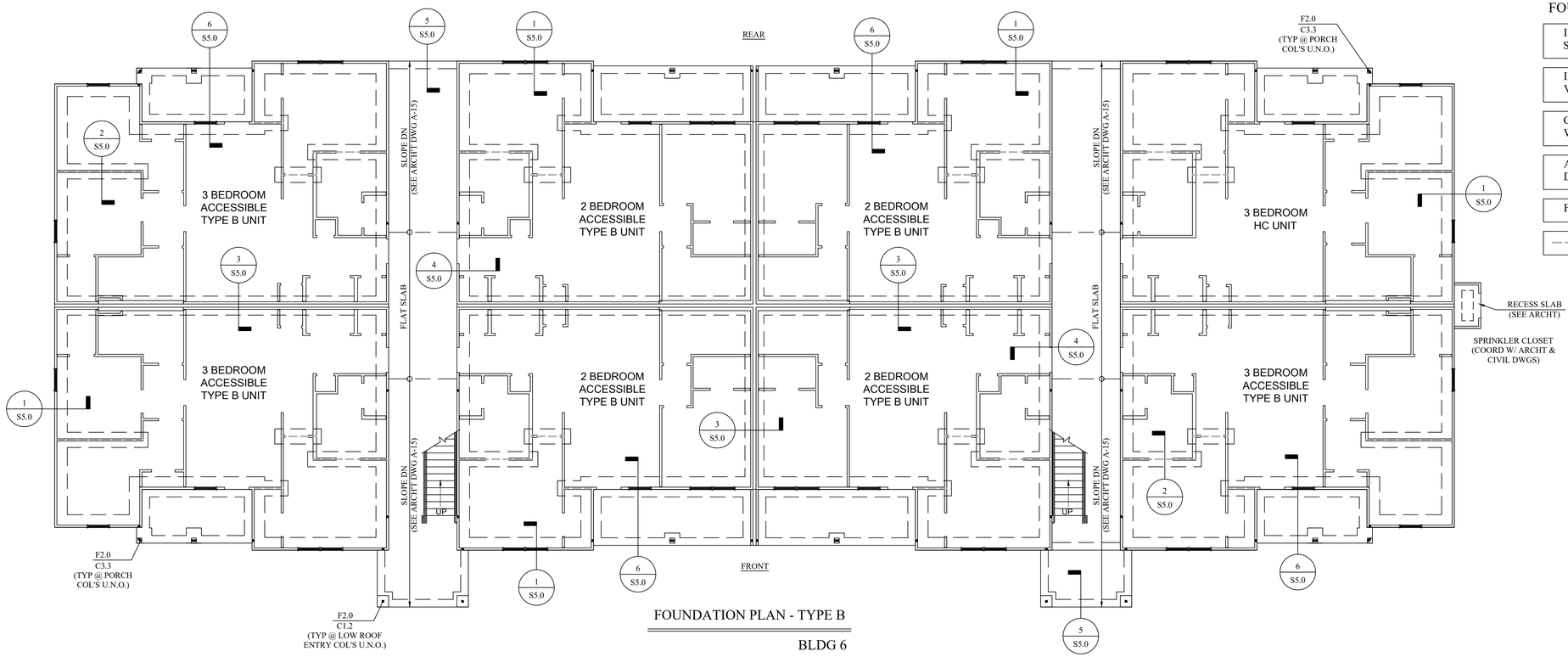
File Reference:

Designed By: JRM | Drawn By: JRM

BLDG TYPE A2
3RD FLOOR AND ROOF FRAMING
(BLDG 4 & 5)

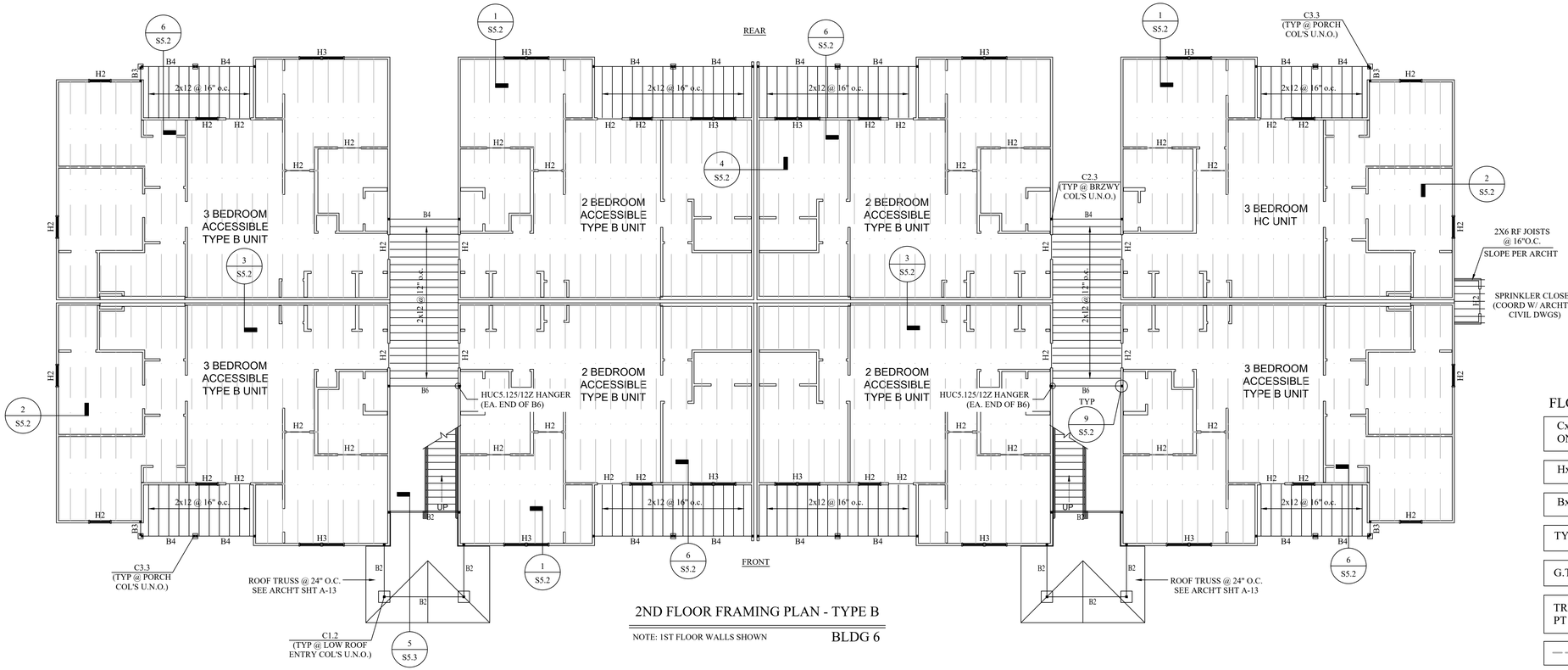
Sheet Number:

S2.0



FOUNDATION PLAN - TYPE B

BLDG 6



2ND FLOOR FRAMING PLAN - TYPE B

NOTE: 1ST FLOOR WALLS SHOWN

BLDG 6

FOUNDATION NOTES:

- IF APPLICABLE - POST-TENSION SLAB ON GRADE BY OTHERS & SUBMITTED TO LOCAL AUTHORITY - VERIFY WITH OWNER
- IF APPLICABLE - RECESS SLAB AT HC ROLL-IN SHOWER LOCATIONS. VERIFY WITH ARCH'T DWGS FOR LOCATIONS
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- ALL COLUMNS NOTED AT UPPER FRAMING LEVELS EXTEND DOWN TO THE FOUNDATION
- Fx.x DENOTES FOOTING (SEE SCHEDULE S1.1)
- DENOTES INTERIOR LOAD BEARING WALL (TYP)

FLOOR FRAMING NOTES:

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- DENOTES INTERIOR LOAD BEARING WALL (TYP)

Jason R. Milligan, P.E.
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SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No. 23582
JASON R. MILLIGAN

REVISIONS		
No.	Date	Comments
	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

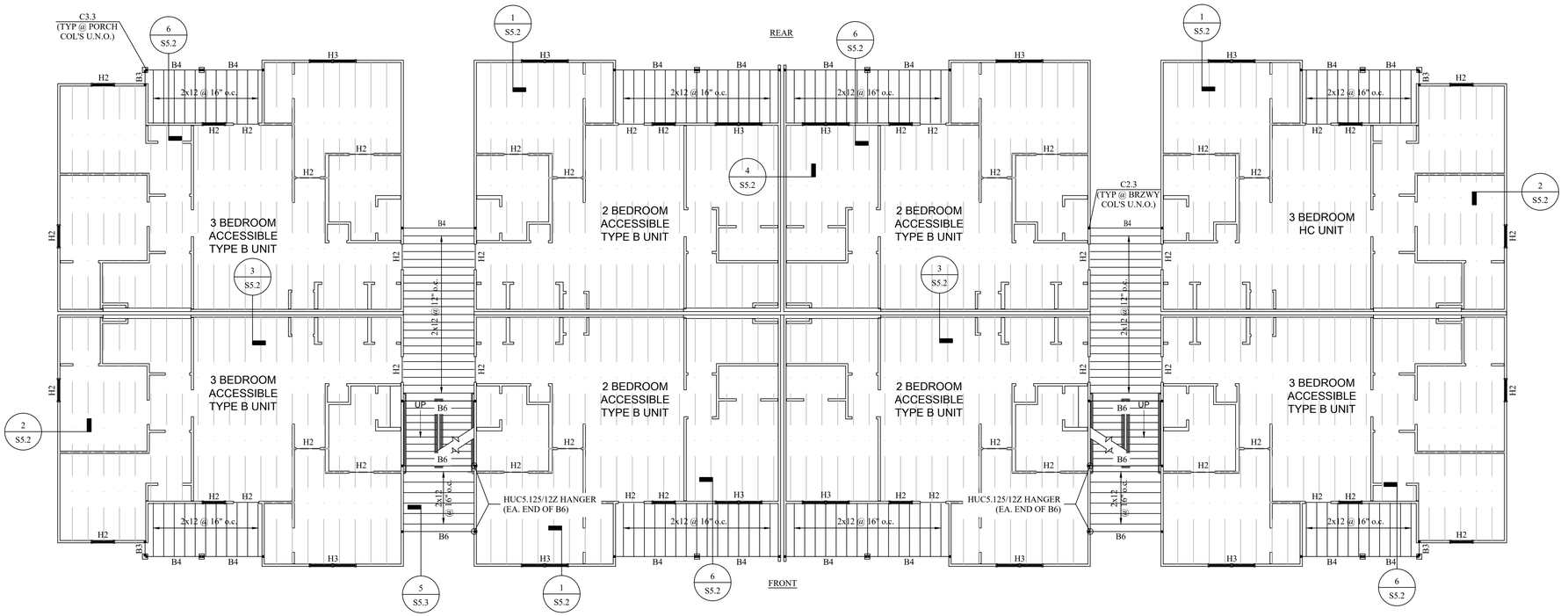
File Reference:

Designed By: JRM | Drawn By: JRM

BLDG TYPE B FOUNDATION & 2ND FLR PLAN (BLDG 6)

Sheet Number:

S2.1



3RD FLOOR FRAMING PLAN - TYPE B

NOTE: 2ND FLOOR WALLS SHOWN

BLDG 6

FLOOR FRAMING NOTES:

- Cx - DENOTES BUILT-UP COLUMN (SEE DETAILS AND SCHEDULE ON S1.1 FOR SIZE AND NAILING PATTERN REQUIREMENTS)
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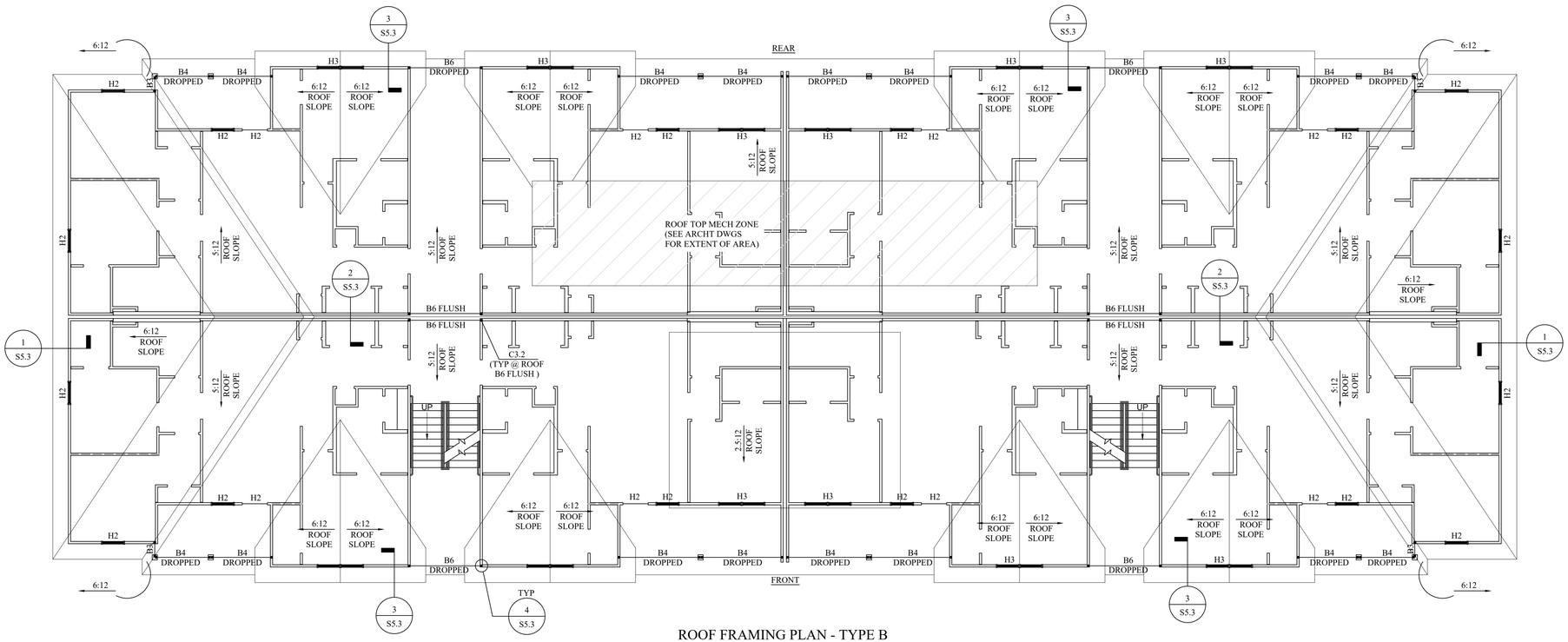
- TRUSS SHOP DWGS TO BE REVIEWED BY ARHITECT AND PT SLAB ENGINEER BEFORE SLAB IS POURED.
- DENOTES INTERIOR LOAD BEARING WALL (TYP)



ROOF FRAMING PLAN - TYPE B

NOTE: 3RD FLOOR WALLS SHOWN

BLDG 6

ROOF FRAMING NOTES:

- G.T. - DENOTES OPEN-WEB 18"GIRDER TRUSS (SEE TRUSS MANUF. DWGS)
- TRUSS SHOP DWGS TO BE REVIEWED BY ARCHITECT AND PT SLAB ENGINEER BEFORE SLAB IS POURED.
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- MECHANICAL ZONE - SEE GENERAL NOTES FOR LOADING REQUIREMENTS

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 23587
JASON R. MILLIGAN

REVISIONS		
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	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

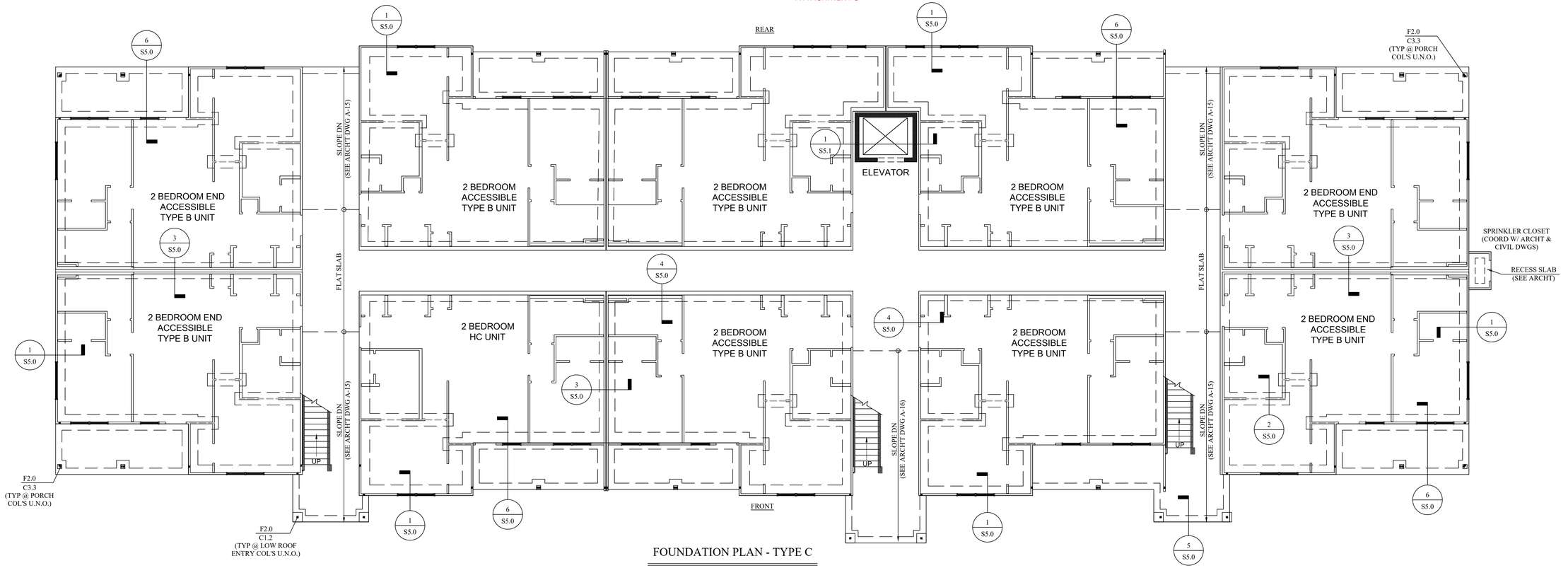
File Reference:

Designed By: JRM | Drawn By: JRM

BLDG TYPE B
3RD FLOOR AND
ROOF FRAMING
(BLDG 6)

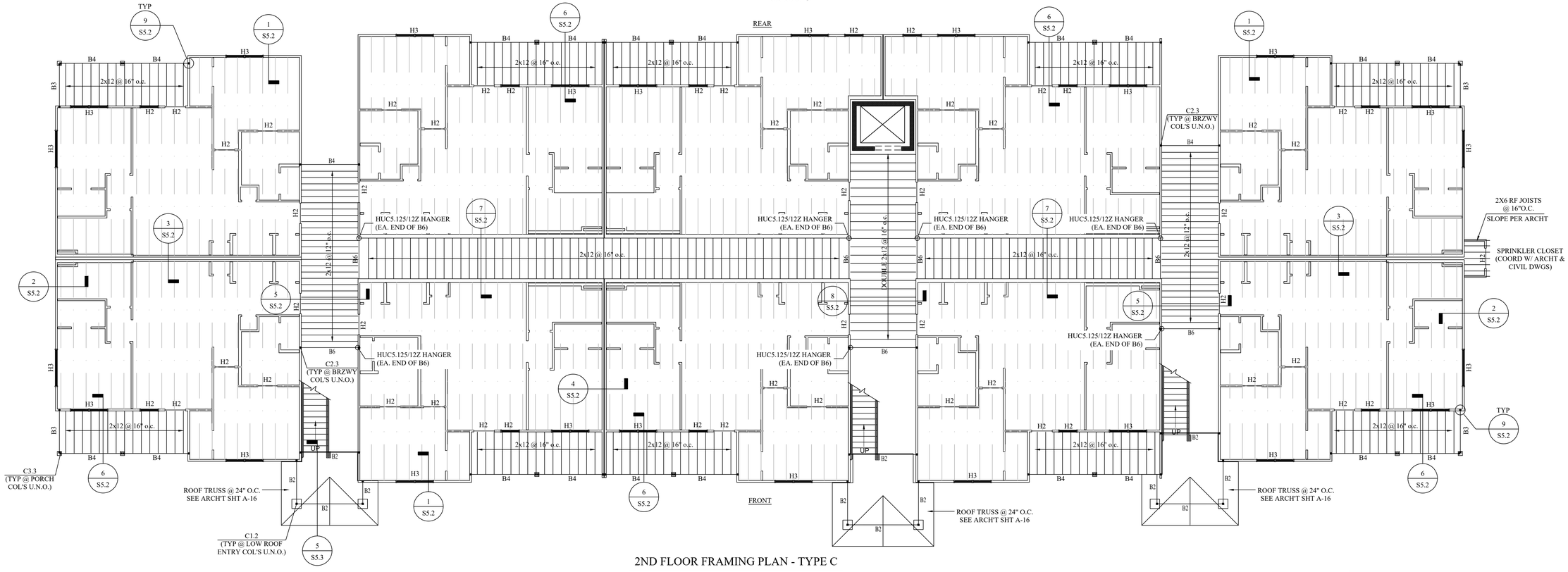
Sheet Number:

S2.5



FOUNDATION PLAN - TYPE C

BLDG 3



2ND FLOOR FRAMING PLAN - TYPE C

NOTE: 1ST FLOOR WALLS SHOWN

BLDG 3

SEE S2.0 FOR TYPICAL FRAMING NOTES

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No. 23582
JASON R. MILLIGAN

REVISIONS		
No.	Date	Comments
	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

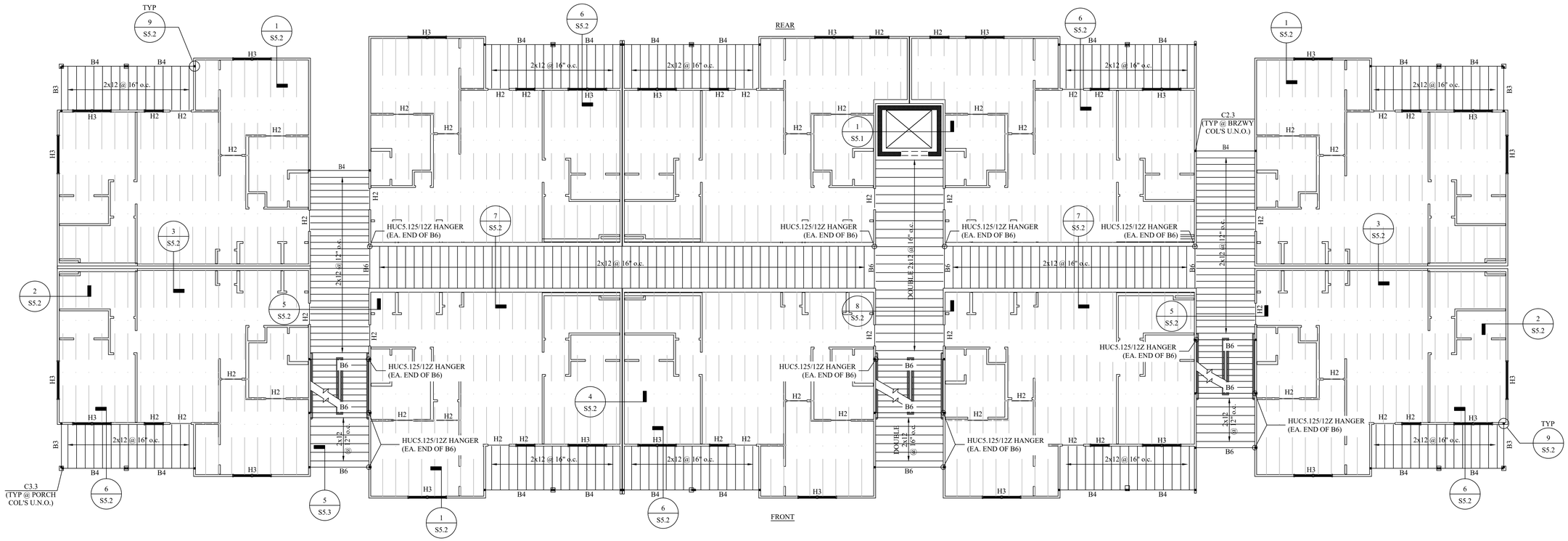
File Reference:

Designed By:	Drawn By:
JRM	JRM

BLDG TYPE C FOUNDATION & 2ND FLR PLAN (BLDG 3)

Sheet Number:

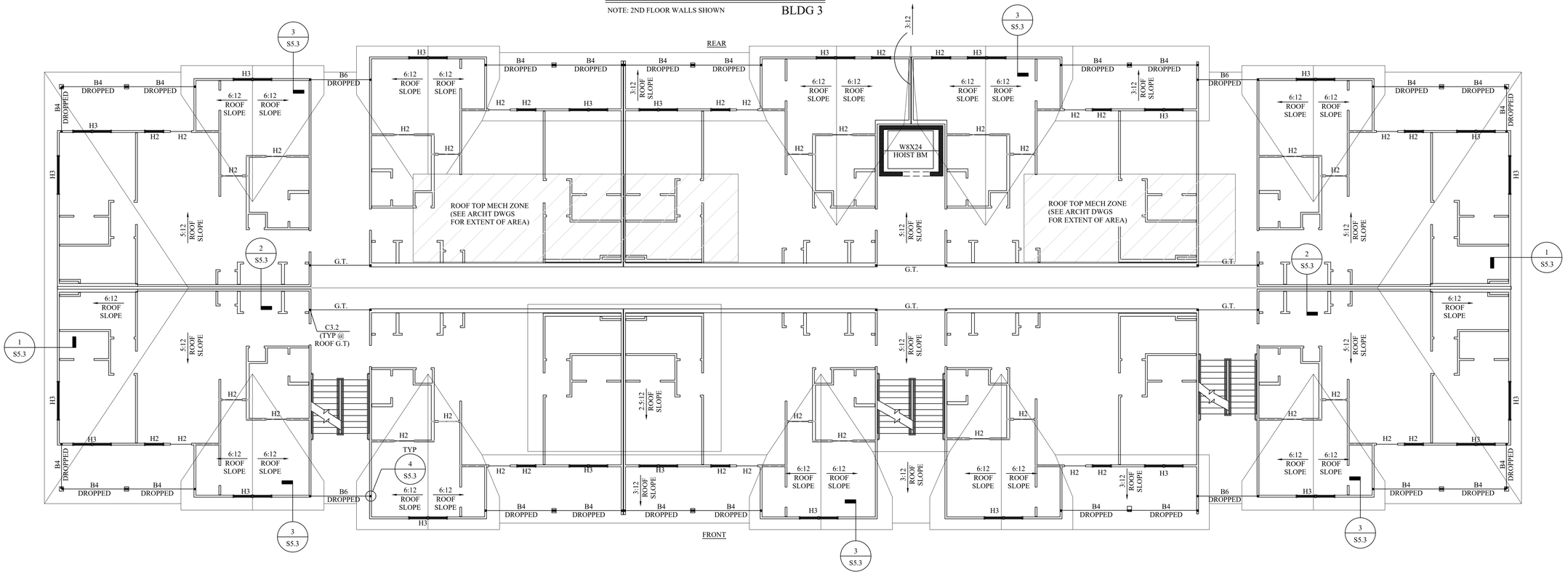
S2.0



3RD FLOOR FRAMING PLAN - TYPE C

NOTE: 2ND FLOOR WALLS SHOWN

BLDG 3



ROOF FRAMING PLAN - TYPE C

NOTE: 3RD FLOOR WALLS SHOWN

BLDG 3

SEE S2.1 FOR TYPICAL FRAMING NOTES

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 23587 JASON R. MILLIGAN

REVISIONS		
No.	Date	Comments
	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

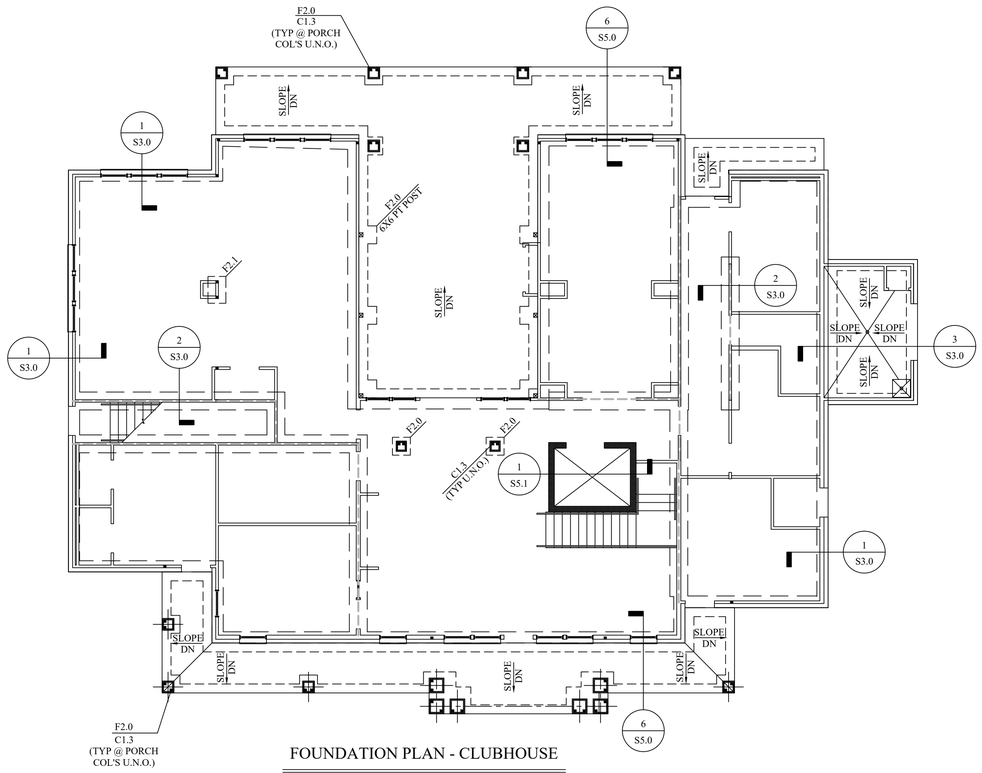
File Reference:

Designed By:	Drawn By:
JRM	JRM

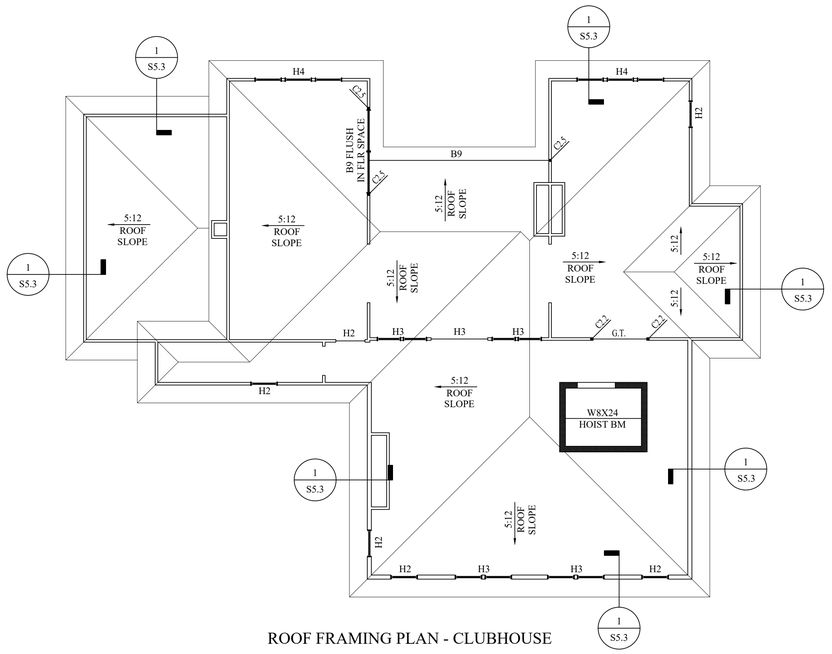
BLDG TYPE C 3RD FLOOR AND ROOF FRAMING (BLDG 3)

Sheet Number:

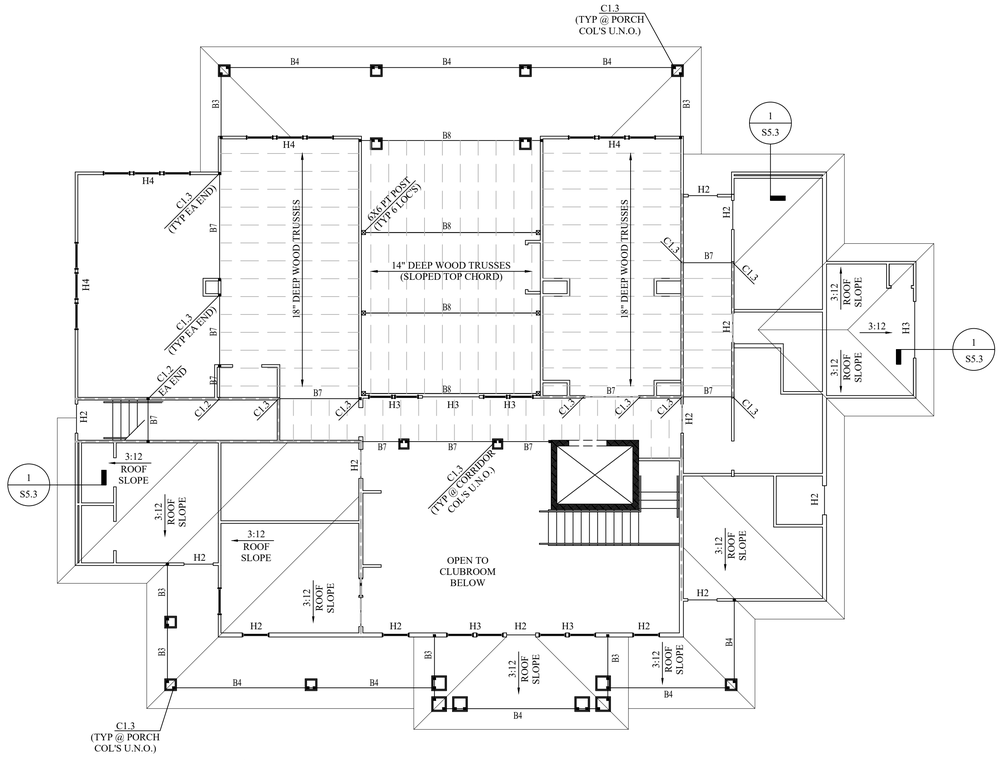
S2.



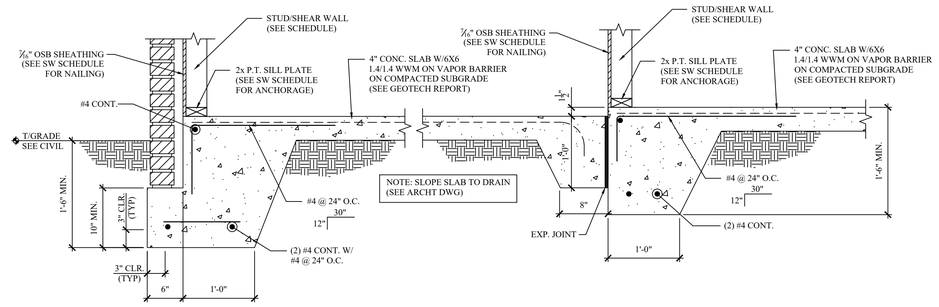
FOUNDATION PLAN - CLUBHOUSE



ROOF FRAMING PLAN - CLUBHOUSE

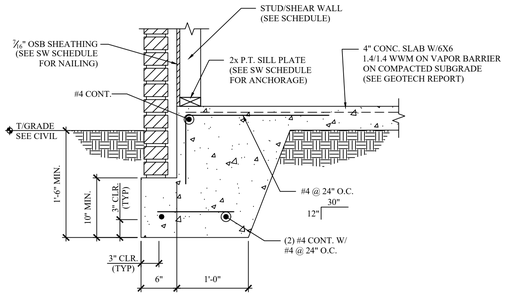


2ND FLOOR AND LOW ROOF ROOF FRAMING PLAN - CLUBHOUSE



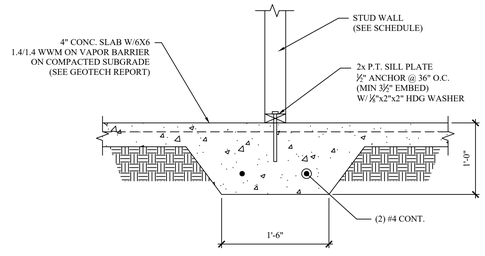
3 SECTION @ POOL EQUIP ROOM

1" = 1'-0"



1 SECTION @ EXTERIOR (CLUBHOUSE)

1" = 1'-0"



2 SECTION @ INTERIOR BEARING WALL

1" = 1'-0" SINGLE WALL

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LICENSED PROFESSIONAL ENGINEER
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JASON R. MILLIGAN

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VENTURE AT OKATIE BLUFF APARTMENTS

BLUFFTON, SC

Job Number:

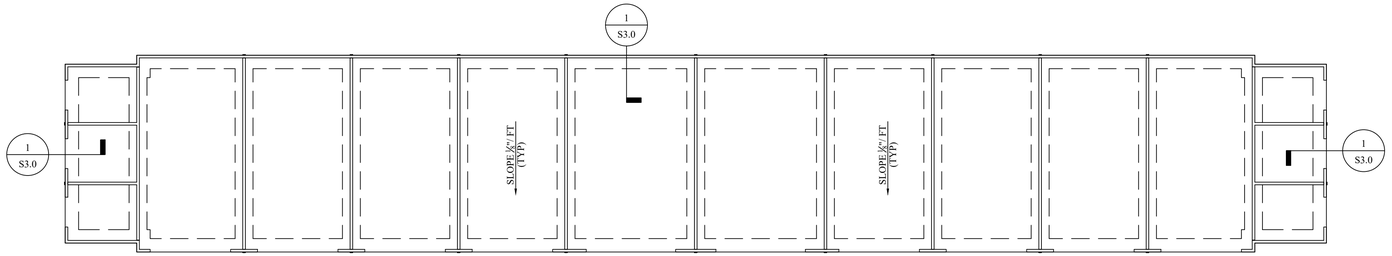
File Reference:

Designed By:	Drawn By:
JRM	JRM

CLUBHOUSE
FOUND & ROOF
FRAMING PLANS

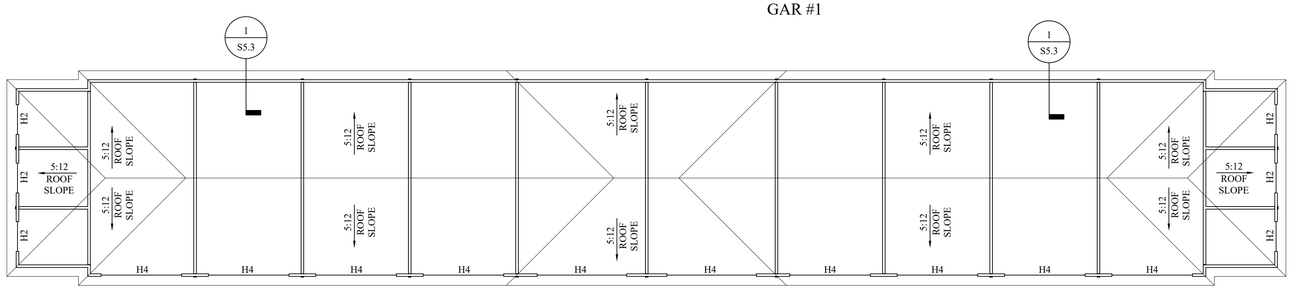
Sheet Number:

S3.0



FOUNDATION PLAN - ACCESSIBLE GARAGE

GAR #1



ROOF FRAMING PLAN - ACCESSIBLE GARAGE

GAR #1

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 23582
JASON R. MILLIGAN

REVISIONS

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VENTURE AT OKATIE BLUFF
APARTMENTS

BLUFFTON, SC

Job Number:

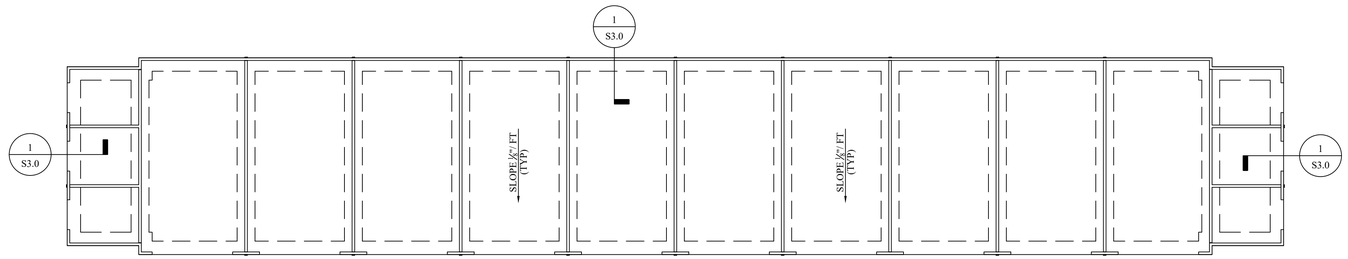
File Reference:

Designed By:	Drawn By:
JRM	JRM

ACCESSIBLE GARAGE FOUND & ROOF FRAMING PLANS

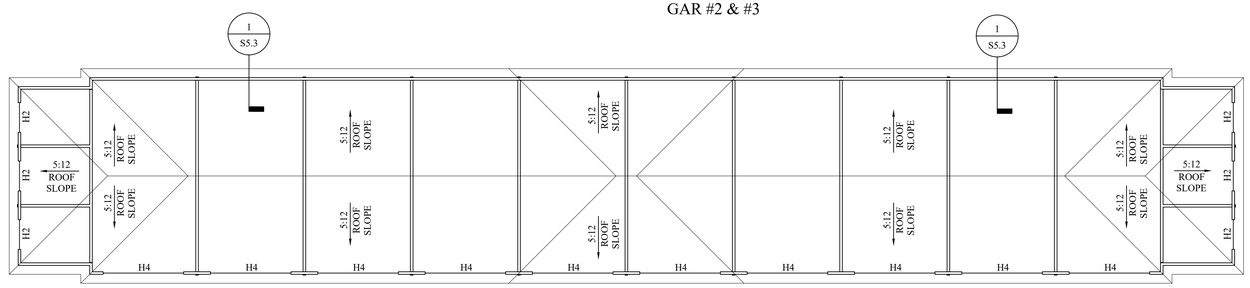
Sheet Number:

S3.1



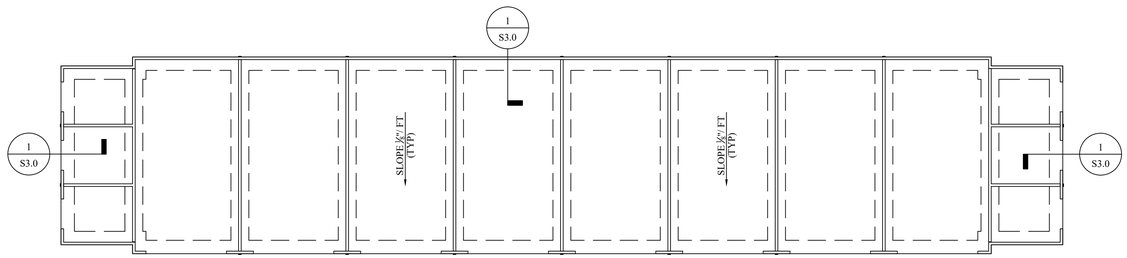
FOUNDATION PLAN - 10-BAY GARAGE

GAR #2 & #3



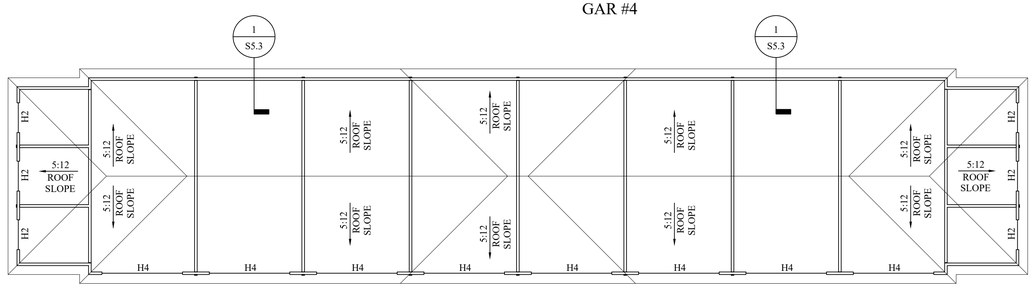
ROOF FRAMING PLAN - 10-BAY GARAGE

GAR #2 & #3



FOUNDATION PLAN - 8-BAY GARAGE

GAR #4



ROOF FRAMING PLAN - 8-BAY GARAGE

GAR #4

Jason R. Milligan, P.E.
Ph: (205) 337-9500

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 23582
JASON R. MILLIGAN

REVISIONS

No.	Date	Comments
	05-20-24	30% SET
	06-24-24	60% SET
	07-10-24	FOR PERMIT
	08-21-24	FOR PERMIT

VENTURE AT OKATIE BLUFF
APARTMENTS

BLUFFTON, SC

Job Number:

File Reference:

Designed By:	Drawn By:
JRM	JRM

10-BAY & 8-BAY GARAGE FOUND & ROOF FRAMING PLANS

Sheet Number:

S3.0

ATTACHMENT 4

PLAN REVIEW COMMENTS FOR COFA-09-24-019322

Town of Bluffton
Department of Growth Management
20 Bridge Street P.O. Box 386 Bluffton, South Carolina 29910
Telephone 843-706-4522

Plan Type: Highway Corridor Overlay District
Apply Date: 09/04/2024
Plan Status: Active
Plan Address:
Case Manager: Charlotte Moore
Plan PIN #: R610 028 000 0921 0000

Plan Description: **A request by Witmer Jones Keefer, on behalf of Parcel 8A, LLC, for review of a Certificate of Appropriateness Highway Corridor Overlay application. The project consists of six residential buildings, to include approximately 150 units, four garage buildings, a clubhouse, amenities and associated infrastructure. The property is zoned Buckwalter PUD and consists of approximately 22.0 acres identified by tax map number R610 028 000 0921 0000 located within the Parcel B-1 Master Plan.**
STATUS: The conceptual COFA will be heard at the October 9, 2024, Development Review Committee meetin

Planning Commission Committee Review

Submission #: 1 Received: 09/04/2024 Completed: 10/04/2024

Reviewing Dept.	*Complete Date*	*Reviewer*	*Status*
Growth Management Dept Review (HD)	10/04/2024	Charlotte Moore	Approved with Conditions

Comments:

1. Lighting fixtures provided for only the pool area. Provide lighting fixture details, including posts, for all exterior lights to ensure compliance with UDO Sec. 5.12.3.B.
2. Some elevations were not provided with the plan set. Provide A2, front, left and right elevations; and, B, right elevation to ensure compliance with Buckwalter Development Agreement and UDO. Color elevation providing for only one building.
3. Metal roof indicated in some locations, but type must be identified and be compliant with UDO Sec. 5.14.3.B.1. Also, more information is needed regarding the mechanical rooftop equipment, which is atypical for this area. Will discuss at DRC meeting.
4. Extend brick siding to the second floor on all elevations where brick and cementitious board is shown as siding for the ground floor.
5. Sec. 5.14.3.A.1. states that “Architectural styles should be reflective of or compatible with architectural styles that exemplify the unique character of the Lowcountry region.” The use of non-operational shutters to suggest a window is not compatible with regional architecture. Further, a bronze color is proposed for the siding used in the patio areas of each apartment building. Dark colors such as this are permitted only for accent colors on a limited basis (and with approval of the UDO Administrator) as predominant colors must adhere to a Lowcountry/coastal vernacular palette per UDO Sec. 5.15.3.B.3. Incorporate a color that complies this requirement. Also, provide color palettes for clubhouse and garage elevations.
6. While improvement has been made to the rear garage elevations, additional architectural articulation and/or landscaping is needed to break up the long expanse of wall.
7. Is fencing proposed. If so, provide details and show location.

Planning Commission Review	10/04/2024	Dan Frazier	Approved with Conditions

Comments:

1. Additional articulation is required along rear garage facades to break up the large spaces and create more variation and interest.
2. Fire Protection features cannot be obstructed. A minimum clearance of 3 feet and unobstructed access is required.
3. Ensure all mechanicals are screened throughout the development.

Addressing Review	10/04/2024	Diego Farias	Approved
Beaufort Jasper Water and Sewer Review	10/04/2024	Matthew Michaels	Approved
Building Safety Review	10/04/2024	Marcus Noe	Approved

Police Department Review	10/04/2024	Bill Bonnag	Approved
Stormwater Review	09/26/2024	Samantha Crotty	Approved
Transportation Department Review	09/05/2024	Megan James	Approved

Comments:
No comments

Plan Review Case Notes:

CLUBHOUSE FRONT ELEVATION

PAINT 1

FIBER CEMENT PANEL SIDING & HORIZONTAL SIDING

SHERWIN WILLIAMS ALABASTER WHITE SW 7008

PAINT 2

FIBER CEMENT PANEL SIDING HORIZONTAL SIDING

SHERWIN WILLIAMS AMAZING GRAY SW 7044

PAINT 3

EXTERIOR DOORS, TRIM & SHUTTERS

SHERWIN WILLIAMS IRON ORE SW 7069

PAINT 4

FIBER CEMENT TRIM

SHERWIN WILLIAMS ALABASTER WHITE SW 7008

PAINT 5

BALCONY TRIM BANDS & COLUMNS

SHERWIN WILLIAMS ALABASTER WHITE SW 7008

PAINT 6

ALL METAL DETAILS, GUARDRAILS

DARK BRONZE

PAINT 7

METAL AWNINGS

DARK BRONZE

PAINT 8

BRACKETS, RAFTER TAILS, & BALCONY CEILINGS (HARDIE PANEL HZ5)

STAINED MAHOGANEY LOOK PAINT

GUTTERS & DOWNSPOUTS

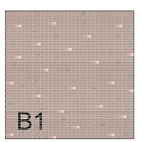
DARK BRONZE

WINDOWS & TRIM

DARK BRONZE

ROOF

TAMKO OXFORD GREY



BRICK

BROWN BRICK W/ WHITE WASH

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No.	Date	Description
	10.17.24	

Job Number: 22-09

File Reference:

Scale:

VENTURE AT OKATIE BLUFF
APARTMENTS
BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, SC. 29601
(864) 382-5000

Sheet Number:

CLUBHOUSE REAR ELEVATION

CLUBHOUSE LEFT SIDE ELEVATION

CLUBHOUSE RIGHT SIDE ELEVATION

No.	Date	Description
	10.17.24	

Job Number: 22-09

File Reference:

Scale:

VENTURE AT OKATIE BLUFF
APARTMENTS

BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
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P1
PAINT 1

FIBER CEMENT PANEL SIDING & HORIZONTAL SIDING

SHERWIN WILLIAMS ALABASTER WHITE SW 7008

P2
PAINT 2

FIBER CEMENT HORIZONTAL SIDING

SHERWIN WILLIAMS URBANE BRONZE SW 7048

P3
PAINT 3

EXTERIOR DOORS

SHERWIN WILLIAMS IRON ORE SW 7069

P4
PAINT 4

FIBER CEMENT TRIM

SHERWIN WILLIAMS ALABASTER WHITE SW 7008

P5
PAINT 5

BALCONY FIBER CEMENT SIDING BODY, ALL TRIM BANDS & COLUMNS, DOOR & WINDOW TRIM

SHERWIN WILLIAMS ALABASTER WHITE SW 7008

P6
PAINT 6

ALL METAL DETAILS, GUARDRAILS

SHERWIN WILLIAMS ALABASTER WHITE SW 7008

P7
PAINT 7

METAL AWNINGS

DARK BRONZE

P8
PAINT 8

BRACKETS & BALCONY CEILINGS

STAINED MAHOGANEY LOOK PAINT

D1
GUTTERS & DOWNSPOUTS

DARK BRONZE

W1
WINDOWS

DARK BRONZE

R1
ROOF

TAMKO OXFORD GREY

B1
BRICK

BROWN BRICK W/ WHITE WASH

MATERIAL BOARD - BUILDING "A" ELEVATION

No.	Date	Description
	5.20.24	30% Set
	6.24.24	60% Set

Job Number: 22-09

File Reference:

Scale:

STATE OF SOUTH CAROLINA
ORVILLE VAN PLAYER III
GREENVILLE, SC
15961
REGISTERED ARCHITECT

VENTURE AT OKATIE BLUFF
APARTMENTS
BLUFFTON, SOUTH CAROLINA

PARKS-PLAYER ARCHITECTURE & PLANNING, LLC
85 CLEVELAND ST., SUITE 201
GREENVILLE, SC 29601
(864) 382-5000

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BUILDING A-1 REAR ELEVATION

BUILDING A-1 RIGHT SIDE ELEVATION

BUILDING A-1 LEFT SIDE ELEVATION

No.	Date	Description
	10.17.24	

Job Number: 22-09

File Reference:

Scale:

VENTURE AT OKATIE BLUFF
APARTMENTS
BLUFFTON, SOUTH CAROLINA

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GENERAL NOTES:

1. ALL NOTES APPLY TO ALL DRAWINGS AND ALL TRADES.
2. REFER TO ENGINEERING PLANS FOR LAYOUT AND LOCATION OF UTILITIES AND ROADS
3. ALL SURVEY AND SITE INFORMATION WERE COMPILED FROM A VARIETY OF SOURCES AT VARIOUS TIMES. SITE INFORMATION MUST BE FIELD VERIFIED BEFORE CONSTRUCTION BEGINS. REPORT ANY DISCREPANCIES TO THE OWNER OR OWNER'S REPRESENTATIVE.
4. IT IS THE RESPONSIBILITY OF ALL CONTRACTORS AND TRADES TO COORDINATE THE INSTALLATION OF THEIR WORK WITH THE INSTALLATION OF WORK BY ALL OTHER CONTRACTORS AND TRADES.
5. THE REQUIREMENTS OF THE SPECIFICATIONS, DRAWINGS, GENERAL REQUIREMENTS, AND ALL ITEMS OF THE CONTRACT DOCUMENTS ARE EQUALLY BINDING FOR ALL CONTRACTORS AND TRADES.
6. EACH CONTRACTOR IS REQUIRED TO MAINTAIN FULL (COLOR) SETS OF THE CONTRACT DOCUMENTS FOR HIS EMPLOYEES USE ON THE PROJECT TO ASSURE THAT ALL WORK IS PROPERLY COORDINATED AND FOR REVIEWS BY COUNTY AND / OR MUNICIPALITY OFFICIALS FOR INSPECTIONS.
7. ALL CONTRACTORS AND ALL TRADES ARE RESPONSIBLE FOR OBTAINING THE CORRECT PERMITS AND INSPECTIONS PRIOR TO CONSTRUCTION AS REQUIRED BY LOCAL PLANNING, ZONING, BUILDING CODE AND OTHER TOWN AUTHORITIES.
8. W.J.K. LTD., THE OWNER AND / OR THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED OF ANY SITE CONDITIONS WHICH MAY NECESSITATE MODIFICATION TO THE PLAN. THE OWNER OR OWNER'S REPRESENTATIVE SHALL MAKE 'INFIELD MODIFICATIONS,' IF NECESSARY.
9. CONTRACTOR SHALL PROVIDE AND FURNISH ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY FOR ALL CONSTRUCTION, PROTECTION, MAINTENANCE AND RELATED ITEMS TO COMPLETE WORK INDICATED ON THE DRAWINGS.
10. BEFORE COMMENCING ANY WORK CONTRACTOR SHALL ASCERTAIN THE LOCATION OF ALL UTILITIES, SUB-SURFACE DRAINAGE, AND UNDERGROUND CONSTRUCTION SO THAT PROPER PRECAUTIONS MAY BE TAKEN NOT TO DISTURB ANY SUB-SURFACE IMPROVEMENTS. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS IN BRINGING EQUIPMENT ON TO AND OFF OF THE SITE, PROTECTING WALKS, PAVING, STEPS AND OTHER EXISTING CONSTRICTION ON THE SITE. CONTACTS SHALL BE MADE BY CONTRACTOR WITH PROPER AUTHORITIES BEFORE AND DURING THIS WORK SO AS TO COMPLY WITH ALL REGULATIONS AND ORDINANCES.
11. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES AND CONFIRM / DETERMINE UTILITY ELEVATIONS PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE AND MAKE REPAIRS, AT THEIR OWN EXPENSE, THAT MAY OCCUR TO EXISTING UTILITIES IN ACCORDANCE WITH NATIONAL, STATE AND LOCAL CODES.
12. CONTRACTOR SHALL VERIFY ALL EXISTING TREE CONDITIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES PRIOR TO THEIR REMOVAL.
13. CONTRACTOR SHALL PROTECT AND INSTALL TREE PROTECTION FENCE AROUND THE DRIP LINE OF ALL TREES, NATURAL AREAS AND EXISTING VEGETATION TO REMAIN. TREE PROTECTION LOCATION SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
14. ALL CONSTRUCTION FOR ALL TRADES SHALL CONFORM TO OR EXCEED THE PRODUCT MANUFACTURER'S RECOMMENDATIONS, REGULATIONS OF BEAUFORT COUNTY AND THE AMERICANS WITH DISABILITIES ACT, AND / OR OTHER APPLICABLE NATIONAL, STATE, AND LOCAL CODES AND ANY OTHER GOVERNING AUTHORITIES.
15. CONTRACTOR ACCESS FOR CONSTRUCTION AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
16. CONTRACTOR SHALL PROTECT THE GENERAL PUBLIC FROM CONSTRUCTION AREAS DURING CONSTRUCTION.
17. THE OWNER MAY REQUIRE FLAG MEN TO BE AVAILABLE DURING THE CONSTRUCTION PROCESS.
18. ANY DEVIATIONS FROM THESE PLANS MUST BE SPECIFICALLY APPROVED BY W.J.K. LTD., AND THE OWNER OR OWNER'S REPRESENTATIVE.

DEMOLITION NOTES:

1. THE CONTRACTOR, BEFORE BEGINNING ANY DEMOLITION ACTIVITY, SHALL CONTACT THE LOCAL UTILITIES FOR INSTRUCTION ON SPECIAL PROCEDURES THAT MAY BE REQUIRED BY THE UTILITIES CONCERNING DEMOLITION.
2. ALL DEMOLISHED MATERIAL SHALL BE HAULED AWAY AND DISPOSED OF PROPERLY IN A LANDFILL AS APPLICABLE PER BEAUFORT COUNTY CODE(S).
3. THE CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS OF LOCAL, STATE AND FEDERAL REGULATORY AGENCIES WHICH MAY HAVE JURISDICTION OVER SUCH ACTIVITIES.
4. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DATA PROVIDED IN THESE DRAWINGS. THE CONTRACTOR SHALL PERFORM HIS OWN ESTIMATE OF MATERIAL FOR DEMOLITION AND REPORT ANY DISCREPANCIES TO THE OWNER OR THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
5. ALL UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND FOR ESTIMATING PURPOSES ONLY. THE EXACT LOCATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING DEMOLITION WORK. ALL UTILITIES SHALL BE LOCATED AND PROTECTED TO PREVENT DAMAGE. ANY DAMAGE WHICH MAY OCCUR DURING THE CONSTRUCTION PROCESS IS TO BE PROMPTLY REPORTED TO THE APPROPRIATE UTILITY AUTHORITY AND REPAIRS SHALL BE MADE IN ACCORDANCE WITH THEIR REQUIREMENTS. THE SAFE DEMOLITION AND REMOVAL OF UTILITIES, STRUCTURES AND EQUIPMENT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY, AT THE DIRECTION OF THE OWNER OR OWNER'S REPRESENTATIVE, THE UTILITIES HAVING JURISDICTION OVER ANY UTILITY EASEMENTS OF ANY KIND FOR APPROVAL OF WORK WITHIN THE EASEMENT.
7. REMOVAL OF ANY AND ALL MATERIALS INDICATED INCLUDES ALL MATERIALS ASSOCIATED WITH THAT ITEM INCLUDING SUBSURFACE MATERIAL, IF APPLICABLE, NOT NEEDED OR IN NEED OF REPAIR OR REPLACEMENT.
8. THE CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING TREES SCHEDULED TO REMAIN. PROPER TREE PROTECTION IN ACCORDANCE WITH LOCAL CODES SHALL BE MADE PRIOR TO CONSTRUCTION BEGINNING AND THROUGHOUT THE CONSTRUCTION PROCESS.
9. SOME TREES AND SHRUBS SCHEDULED FOR RELOCATION AND REUSE ON THE PROPERTY MAY NOT BE SALVAGEABLE DUE TO UNDERGROUND UTILITIES.
10. BARRIERS AND / OR FLAG MEN MAY BE REQUIRED FOR SAFETY, VERIFY REQUIREMENTS WITH THE OWNER FOR SUCH NEEDS PRIOR TO BEGINNING THE WORK.
11. THE OWNER SHALL BE NOTIFIED AS TO THE TIMING OF THE WORK SO THAT PROPER SECURITY NOTIFICATION IS MADE.

GENERAL DISTURBANCE NOTES:

1. CONTRACTOR SHALL IMPLEMENT ALL SILT FENCE OR OTHER SEDIMENT CONTROL MEASURES AROUND ALL DISTURBED AREAS PRIOR TO ANY CONSTRUCTION ACTIVITIES.
2. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED AFTER SILT FENCE AND PRIOR TO ALL OTHER CONSTRUCTION ACTIVITIES.
3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED BY THE CONTRACTOR AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER. IF SITE INSPECTIONS IDENTIFY B.M.P.S. THAT ARE DAMAGED OR ARE NOT OPERATING EFFECTIVELY, MAINTENANCE MUST BE PERFORMED AS SOON AS PRACTICAL AND BEFORE THE NEXT STORM EVENT IF PRACTICAL.
4. CONTRACTOR TO PROVIDE SILT FENCE AND / OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.
5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED BY THE CONTRACTOR DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND / OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED SURFACES FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL REMOVE MUD / SOIL DAILY FROM PAVED SURFACES, AS REQUIRED.
7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG. 72-300 ET SEQ. AND SCR100000.
8. TEMPORARY DIVERSION BERMS AND / OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UP SLOPE RUNOFF AND / OR TO DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
9. ALL WATERS OF THE STATE (W.O.S.), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL W.O.S. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL W.O.S.
10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORMWATER DISCHARGES.
11. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED EXCEPT AS STATED BELOW:
    - 11.1. WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICAL.
    - 11.2. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED AND EARTH-DISTUBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.

LAYOUT NOTES:

1. ALL CONSTRUCTION STAKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. CONTRACTOR TO USE DIGITAL FILES PROVIDED BY WITMER-JONES-KEEFER, LTD. TO LAYOUT AND STAKE ALL SITE IMPROVEMENTS AND ELEMENTS. FINAL LAYOUT AND STAKING TO BE FIELD VERIFIED AND APPROVED BY LANDSCAPE ARCHITECT AND OWNER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL FIELD LOCATE, STAKE AND USE COLOR CODED SPRAY PAINT FOR ALL ABOVE AND BELOW GROUND UTILITIES. CONTRACTOR TO CONFIRM / DETERMINE UTILITY ELEVATIONS PRIOR TO CONSTRUCTION. ANY EXISTING UTILITY CONFLICTS WITH SITE IMPROVEMENTS TO BE REPORTED TO OWNER, OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES AS STATED IN THE GENERAL NOTES.
4. ALL SITE IMPROVEMENTS REPRESENTED IN THIS SET OF PLANS SHALL BE STAKED AND REVIEWED WITH THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
5. ALL DIMENSIONS ARE TO EDGE OF PAVING AND CENTERLINE OF WALLS AND COLUMNS UNLESS OTHERWISE INDICATED.
6. ALL ANGLES ARE 90 UNLESS OTHERWISE INDICATED.
7. CONTRACTOR SHALL PROVIDE LIGHTING, IRRIGATION AND ANY OTHER CONDUIT NEEDED TO ALL LANDSCAPE AREAS.
8. ANY AND ALL FIELD ADJUSTMENTS SHALL RECEIVE APPROVAL FROM THE OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.

GRADING NOTES:

1. CONTRACTOR SHALL VERIFY ALL ELEVATIONS PRIOR TO CONSTRUCTION AND NOTIFY OWNER'S REPRESENTATIVE OF DISCREPANCIES.
2. CROSS SLOPES ON ALL HARDSCAPE WALKWAYS / PATHWAYS ARE NOT TO EXCEED 2%.
3. ALL ACCESSIBLE WALKWAYS / PATHWAYS RUNNING SLOPE (GRADIENT) MAY NOT EXCEED 4.9%, UNLESS A RAMP IS INSTALLED. IF A RAMP IS INSTALLED THE RUNNING SLOPE (GRADIENT) SHALL NOT EXCEED 8.33%, AND HANDRAILS SHALL BE INSTALLED ON BOTH SIDES (MINIMUM 36" CLEARANCE BETWEEN HANDRAILS) WHEN RAMP RISE IS GREATER THAN 6".
4. IF DISCREPANCIES DEVELOP BETWEEN THE PROPOSED GRADES AS SHOWN ON THE PLAN AND THE EXISTING GROUND SURFACE, THE CONTRACTOR, WITH PRIOR APPROVAL FROM THE OWNER'S REPRESENTATIVE, SHALL MAKE GRADING ADJUSTMENTS NECESSARY TO MAINTAIN THE GENERAL INTENT OF THE DESIGN.
5. CONTRACTOR IS RESPONSIBLE FOR ALL PAVED AREAS DAMAGED DURING CONSTRUCTION.
6. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL ADJACENT PROPERTIES, WALLS, WALKS AND PLANTING BEDS AND TOWARDS EXISTING DRAIN INLETS, SWALES, STORMWATER LAGOONS OR ROADS.
7. ALL DISTURBED AREAS INCLUDING SHALLOW SWALES SHALL BE MULCHED OR PLANTED AS INDICATED ON PLANTING PLANS.
8. IF REQUIRED, POP UP EMITTER SHALL BE N.D.S. 6" POP UP DRAINAGE EMITTER BLACK IN COLOR.
9. LANDSCAPE DRAIN SHALL BE AS SPECIFIED ON PLANS.
10. LANDSCAPE DRAINS SHALL BE ADDED TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS IN LOW / FLAT AREAS THAT DID NOT SHOW UP ON THE TOPOGRAPHIC SURVEY. LANDSCAPE DRAIN SHALL BE APPROVED BY OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

LIGHTING NOTES:

1. THE INTENT OF THE LIGHTING DESIGN IS TO PROVIDE LOW LEVEL UNOBTRUSIVE SITE LIGHTING OR ARCHITECTURAL ELEMENTS. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO CREATE THIS EFFECT BY CLOSE COORDINATION WITH THE LANDSCAPE ARCHITECT AND CAREFUL PLACEMENT OF ALL FIXTURES.
2. THE CONTRACTOR SHALL ENGINEER THE ELECTRICAL SYSTEM BASED ON THE LOCATION AND TYPE OF FIXTURES AS SHOWN ON THE PLAN. PROPERLY SIZED WIRING, TRANSFORMERS, BREAKERS, ACCESSORIES, ETC., SHALL BE PROVIDED BY THE CONTRACTOR AS NECESSARY TO GUARANTEE A COMPLETELY FUNCTIONAL LIGHTING, DISTRIBUTION AND CONTROL SYSTEM.
3. CONTRACTOR TO PROVIDE ELECTRICAL PLANS AND SHOP DRAWINGS FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT AND OWNER OR OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
4. ALL LIGHTING EQUIPMENT SHALL BE INSTALLED PER MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS, AND MUST COMPLY WITH ALL APPLICABLE STATE AND COUNTY CODES.
5. THE CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS AND INSPECTION / APPROVALS REQUIRED.
6. THE CONTRACTOR SHALL STAKE OUT ALL LIGHT FIXTURE AND TRANSFORMER LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT, OWNER, OR OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. EXACT LOCATIONS OF CONTROLLERS, ELECTRICAL PANELS, ETC. TO BE COORDINATED WITH AND APPROVED BY OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
7. FINAL AIMING AND ADJUSTMENT SHALL BE MADE AT NIGHT WITH LANDSCAPE ARCHITECT PRESENT TO GIVE FINAL APPROVAL.
8. THE CONTRACTOR SHALL COORDINATE, STAKE AND FLAG ALL LOCATIONS WHERE ELECTRICAL CONDUIT OR P.V.C. SLEEVING MAY BE REQUIRED BENEATH WALKS OR OTHER PAVED AREAS PRIOR TO HARDSCAPE INSTALLATION.
9. ALL ELECTRICAL WIRING RUNNING UNDER PAVED AREAS SHALL BE PLACED IN ELECTRICAL CONDUIT OR P.V.C. SLEEVES PROVIDED BY CONTRACTOR.
10. CONTRACTOR SHALL RUN ALL NECESSARY ELECTRICAL WIRING TO UTILITY PANEL AND TRANSFORMER.
11. CONTRACTOR SHALL PROVIDE A MINIMUM OF 36" OF BURIES EXCESS CABLE AT EACH FIXTURE TO ALLOW FOR FIXTURE ADJUSTMENT.
12. ALL LIGHTING TO BE PLACED ON AN APPROPRIATE TIMER. THE CONTRACTOR SHALL SELECT AN APPROPRIATE TIMER FOR ALL LIGHTS AND SET THE TIME APPROPRIATELY FOR PROPER NIGHT TIME ILLUMINATION, FOR APPROVAL BY OWNER OR OWNER'S REPRESENTATIVE.
13. CONTRACTOR SHALL PROVIDE GROUND FAULT CIRCUIT BREAKERS FOR ALL CIRCUITS AS REQUIRED BY NATIONAL, STATE AND LOCAL CODES.
14. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, LABOR, EXCAVATION AND BACKFILL NECESSARY TO COMPLETE THE WORK.
15. ALL FIXTURES PER MODELS SPECIFIED UNLESS CONTRACTOR GETS APPROVAL FROM LANDSCAPE ARCHITECT FOR A SUBSTITUTION.
16. SYSTEM INSTALLATION, INCLUDING PARTS AND LABOR, SHALL BE GUARANTEED AND REPAIRED AS NECESSARY BY THE CONTRACTOR FOR ONE YEAR.
17. CONTRACTOR TO PROVIDE "AS-BUILT" DRAWINGS IMMEDIATELY AFTER FINAL ACCEPTANCE, ALONG WITH ALL INSTRUCTION MANUALS FOR ALL EQUIPMENT INSTALLED.
18. IF POSSIBLE, FIELD MODIFICATIONS WILL BE DIRECTED BY THE LANDSCAPE ARCHITECT, OWNER OR OWNER'S REPRESENTATIVE.

CONSTRUCTION NOTES:

1. ALL CONTRACTORS AND ALL TRADES ARE RESPONSIBLE FOR OBTAINING THE CORRECT PERMITS AND INSPECTIONS PRIOR TO CONSTRUCTION AS REQUIRED BY LOCAL PLANNING, ZONING, BUILDING CODE AND OTHER TOWN AUTHORITIES.
2. CONTRACTOR SHALL PROVIDE SAMPLES OF ALL MATERIALS AND OBTAIN APPROVAL FROM OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
3. ON SITE TOPOGRAPHY MAY REQUIRE ADJUSTMENTS OF FINAL SPOT ELEVATIONS ON SITE FOR PROPOSED VERTICAL CONSTRUCTION ELEMENTS. THE CONTRACTOR SHALL NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE PROMPTLY UPON THE DISCOVERY OF ANY SUCH REQUIRED ADJUSTMENTS.
4. THE CONTRACTOR SHALL PROVIDE FILL AS IS REQUIRED TO OBTAIN PROPER RELATIONSHIP OF FOOTING TO FINISH GRADE REQUIREMENTS - FEATHER FILL TO ADJACENT EXISTING GRADE TO ASSURE A COORDINATED AND DESIRED EFFECT.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING CONDITIONS SCHEDULED TO REMAIN DURING CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES AND FOR ANY DAMAGE THAT MAY OCCUR TO EXISTING UTILITIES DURING CONSTRUCTION.
7. 'IN-FIELD MODIFICATIONS' MAY BE NECESSARY TO PRODUCE DESIRED EFFECT. MODIFICATIONS TO BE APPROVED BY LANDSCAPE ARCHITECT AND OWNER OR OWNER'S REPRESENTATIVE.
8. ALL WELDS TO BE CONTINUOUS.
9. FOR ALL WOOD MEMBERS, ALL CUTS SHALL BE EVEN AND JOINTS FLUSH. SAND FOUR SIDES AND FILL IMPERFECTIONS, COUNTERSINKS AND NAIL HOLES TO ASSURE EVEN FINISH.
10. CONTRACTOR SHALL VERIFY ALL WOOD MEMBERS FOR APPROPRIATE SIZE, SPACING, ATTACHMENTS AND STRUCTURAL STABILITY PRIOR TO CONSTRUCTION. CONTRACTOR TO REPORT ANY DISCREPANCIES TO OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
11. ALL NOTCHES SHALL BE SHOP CUT TO ASSURE TIGHT JOINTS. EACH MEMBER SHALL BE DRIVEN HOME TO ASSURE TIGHT FIT. PILOT HOLES SHALL BE DRILLED FOR EACH CARRIAGE BOLT. PLUG, SEAL AND PRIME.
12. FINISH ALL SIDES AND CAULK ALL JOINTS WITH APPROPRIATE EXTERIOR CAULK PRIOR TO FINISHING.
13. ALL CONNECTORS, UNLESS OTHERWISE SPECIFIED, SHALL BE STAINLESS STEEL. BOLTS, THREADED RODS, WASHERS, NUTS AND ALL BUILDING HARDWARE SHALL BE STAINLESS STEEL AND SUITABLE FOR PRESSURE TREATED WOOD. ALL THROUGH BOLTS TO BE SMOOTH SHAFT WITH STAINLESS STEEL NUTS, BOLTS AND WASHERS. ALL NAILS AND FINISH NAILS SHALL BE ANNULAR STAINLESS STEEL.
14. ALL DECKING SHALL BE SECURED WITH STAINLESS STEEL SCREWS SIZED FOR DECK APPLICATION. MINIMUM 3" APART.

SOIL AMENDMENT NOTES:

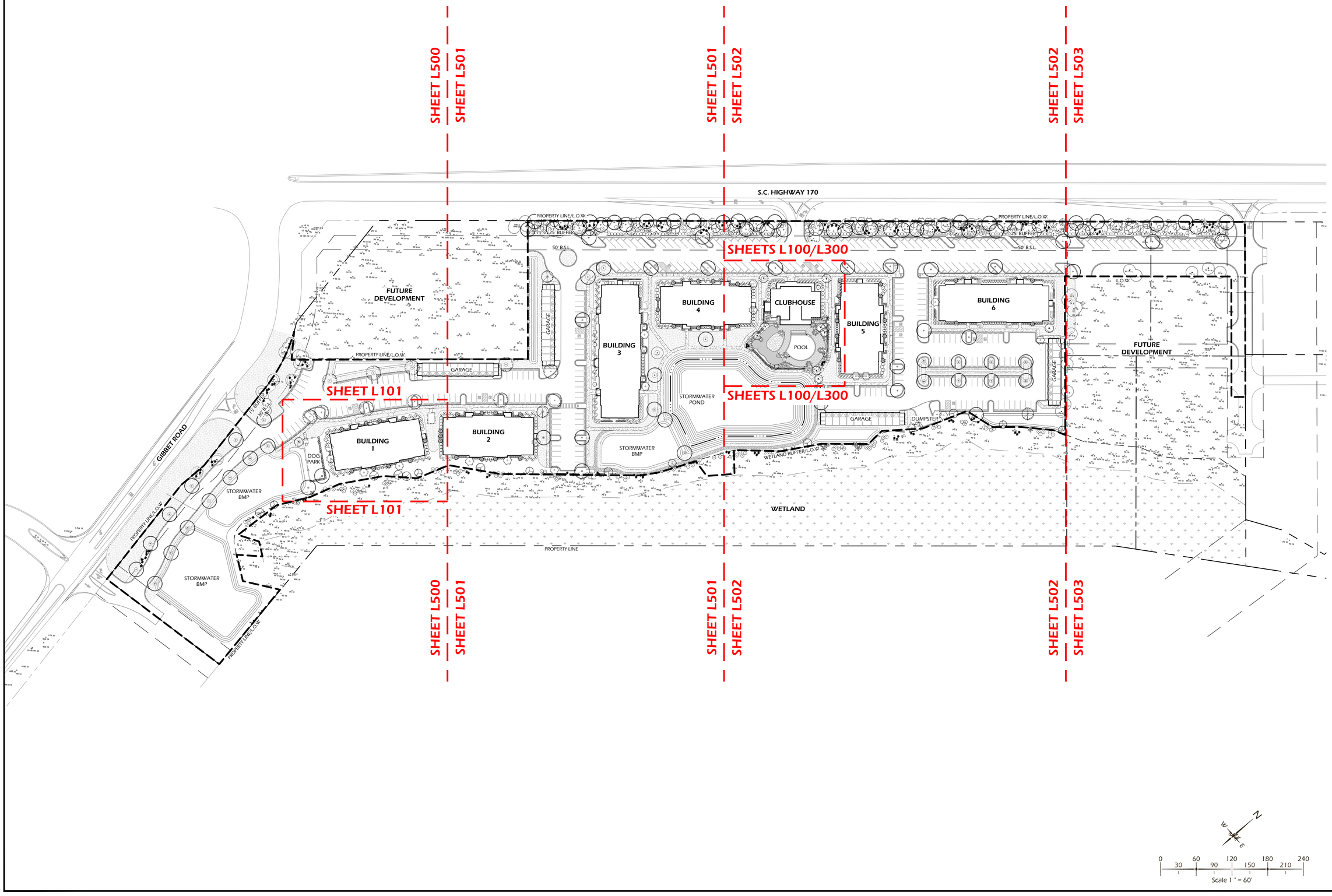
1. TOPSOIL SHALL CONSIST OF THE NATURAL LOAM, SANDY LOAM, SILT LOAM, OR CLAY LOAM HUMUS BEARING SOILS, ADAPTED TO THE SUSTENANCE OF PLANT LIFE, WITH THE FOLLOWING TEXTURE:
    - 1.1. ORGANIC MATERIAL - TWO (2) TO TWENTY (20) PERCENT BY MASS
    - 1.2. SAND CONTENT - TWENTY (20) TO SIXTY (60) PERCENT BY MASS
    - 1.3. CLAY-SILT CONTENT – THIRTY FIVE (35) TO SEVENTY (70) PERCENT BY MASS.
    - 1.4. TOPSOIL PH SHALL BE BETWEEN FIVE (5) AND SEVEN (7).
2. TOPSOIL SHALL BE OF UNIFORM QUALITY AND FREE FROM FOREIGN MATERIAL SUCH HARD CLODS, SOD, STIFF CLAY, HARD PAN, STONES LARGER THAN ONE (1) INCH DIAMETER, LIME CEMENT, ASHES, SLAG, CONCRETE, TAR RESIDUES, TARRED PAPER, BOARDS, CHIPS, STICKS, OR OTHER UNDESIRABLE MATERIALS. IT SHALL ALSO BE REASONABLY FREE FROM WEEDS AND OBJECTIONABLE PLANT MATERIAL.
3. AFTER ALL DEMOLITION, CLEARING AND DISPOSAL IS COMPLETED, THE CONTRACTOR SHALL STRIP FROM THE TOP OF THE EXISTING GROUND ALL TOPSOIL IN ALL AREAS TO BE GRADED.
4. PRIOR TO STOCKPILING OF TOPSOIL, TOPSOIL SHALL BE SCREENED WITH A ONE HALF (1/2) INCH SIZE SIEVE. STOCKPILE TOPSOIL IN DESIGNATED OR APPROVED LOCATIONS WITH PROPER DRAINAGE AND WHERE IT WILL NOT INTERFERE WITH THE WORK. AFTER TOPSOIL HAS BEEN STOCKPILED, CONTRACTOR SHALL QUANTIFY THE AMOUNTS AT NO ADDITIONAL COST TO THE OWNER. QUANTITIES SHALL BE GIVEN TO THE ARCHITECT, OWNER AND SITE DESIGN PROFESSIONAL.
5. IF AMOUNT OF SCREENED TOPSOIL STOCKPILED FROM STRIPING OPERATIONS IS INSUFFICIENT TO PROVIDE THE NECESSARY AMOUNTS (4" MINIMUM DEPTH), IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN (FROM OFF-SITE SOURCE) THE NECESSARY AMOUNT OF SCREENED TOPSOIL TO COMPLETE THE PROJECT.
6. SCREENED TOPSOIL SHALL BE DISTRIBUTED WITH A MINIMUM DEPTH OF FOUR (4) INCHES TO ALL GRADED AREAS (NOT INCLUDING BUILDING, PAVED, SYNTHETIC TURF, PERVIOUS PAVEMENT, ETC.) AND / OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE. GROUND SHALL BE SCARIFIED BEFORE PLACING TOPSOIL. AREAS WHERE SCREENED TOPSOIL IS DISTRIBUTED SHALL BE STABILIZED WITH TEMPORARY AND/OR PERMANENT VEGETATION (SEASON DEPENDENT) OR TEMPORARY MULCH WITHIN FOURTEEN (14) CALENDAR DAYS OF DISTRIBUTION.

PLANTING NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR INSPECTION OF EXISTING CONDITIONS, INCLUDING UTILITIES, AND PROMPTLY REPORTING ANY DISCREPANCIES OR CONFLICTS WITH PLANTING AREAS. REPORT INFORMATION TO OWNER, OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
2. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE AND MAKE REPAIRS THAT MAY OCCUR TO EXISTING UTILITIES IN ACCORDANCE WITH NATIONAL, STATE AND LOCAL CODES.
3. LANDSCAPE PLANTING AND / OR MULCHED AREAS TO BE FINE GRADED, HAND RAKED SMOOTH AND FREE OF DEBRIS.
4. CONTRACTOR TO PERFORM SOIL TESTS AS NECESSARY TO ASSURE PLANT HEALTH AND GROWTH.
5. MULCH ALL PLANTING BEDS TO A MIN. 3" DEPTH WITH MULCH SPECIFIED IN PLANT SCHEDULE.
6. CONTRACTOR VERIFIES THAT ALL PLANT MATERIAL IS DETERMINED AVAILABLE AS SPECIFIED WHEN BID / PROPOSAL IS SUBMITTED.
7. PLANT SCHEDULE WAS PREPARED FOR ESTIMATING PURPOSES ONLY. CONTRACTOR SHALL MAKE OWN QUANTITY TAKEOFFS USING DRAWINGS TO DETERMINE QUANTITIES TO HIS SATISFACTION, REPORTING PROMPTLY ANY DISCREPANCIES WHICH MAY AFFECT BIDDING.
8. GALLON SIZES ARE FOR PRICING PURPOSES ONLY. PLANT MUST MEET HEIGHTS AND WIDTHS SPECIFIED IN PLANT SCHEDULE.
9. ROOT TYPE MAY BE FREELY SUBSTITUTED IN CASE OF BALLED AND BURLAPPED OR CONTAINER GROWN, OTHER SPECIFICATIONS REMAINING UNCHANGED, EXCEPT IN THE CASE OF CONTAINER GROWN SPECIMEN TREES AS INDICATED IN THE TREE PLANTING SCHEDULE.
10. ANY SIGNIFICANT ROOTS ENCOUNTERED 2" DIA. AND LARGER SHALL BE DUG OUT BY HAND AND CLEANLY CUT BACK IN THE FOOTING / FOUNDATION AREA TO PROMOTE ROOT RE-GROWTH AND HELP PREVENT ROOT DIEBACK.
11. ALL PLANT MATERIAL (EXCEPT SEASONAL COLOR) SHALL BE GUARANTEED AND REPLACED AS NECESSARY BY THE CONTRACTOR FOR ONE YEAR.
12. ALL SEASONAL COLOR SHALL BE GUARANTEED AND REPLACED AS NECESSARY BY THE CONTRACTOR FOR THREE MONTH TIME FRAMES.

TURF AND GRASSING NOTES:

1. GRASS SEED: PROVIDE FRESH, CLEAN, NEW-CROP SEED COMPLYING WITH TOLERANCE FOR PURITY AND GERMINATION ESTABLISHED BY OFFICIAL SEED ANALYSIS OF NORTH AMERICA. PROVIDE SEED MIXTURE COMPOSED OF GRASS SPECIES, PROPORTIONS AND MINIMUM PERCENTAGES OF PURITY, GERMINATION, AND MAXIMUM PERCENTAGE OF WEED SEED, AS SPECIFIED SEED MANUFACTURER.
2. SOD SHALL BE STRONGLY ROOTED AND FREE OF PERNICIOUS WEEDS. ALL NETTING SHALL BE REMOVED FROM SOD BEFORE IT IS LAID.
3. ALL AREAS IN WHICH EARTHWORK SHALL BE SUSPENDED FOR MORE THAN TWO (2) WEEKS SHALL BE GRASSED WITH TEMPORARY GRASS.
4. AFTER TOPSOIL HAS BEEN INSTALLED, AND BEFORE ANY SOD IS LAID, CORRECT ALL SOFT SPOTS AND IRREGULARITIES IN GRADE. THE SOD SHALL BE BE LAID BY BUTTING THE ENDS AND SIDES UP EVENLY AND STAGGERING THE ROLLS OF SOD. CONTRACTOR SHALL NOT OVERLAP SOD. AS SOON AS THE SOD IS LAID OR AS IT IS BEING LAID ROLL OVER WITH A LIGHT ROLLER, MAKING CERTAIN THAT ALL OF THE SOD IS IN CONTACT WITH THE SOIL. THE COMPLETED SODDED AREAS SHALL BE TRUE TO FINISH GRADE, EVEN AND FIRM AT ALL POINTS.
5. SEED SHALL BE AT A RATE OF 10 POUNDS PER ACRE.
6. THIRTY DAYS AFTER LAST SEEDING/SODDING OPERATION, APPLY 1 POUND OF TYPE A NITROGEN FERTILIZER PER ACRE OF LAWN AREAS AND IMMEDIATELY WATER.
7. UPON COMPLETION OF PLANTINGS ALL EXCESS SOIL STONES AND DEBRIS WHICH HAS NOT PREVIOUSLY BEEN CLEANED UP SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
8. ALL LAWN AREAS THAT DO NOT SHOW SATISFACTORY GROWTH WITHIN (18) DAYS AFTER PLANTING SHALL BE RE-PLANTED AND RE-FERTILIZED AS SPECIFIED UNTIL A SATISFACTORY LAWN IS EST



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THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR
VENTURE AT OKATIE BLUFFS
APARTMENTS
BLUFFTON, SOUTH CAROLINA

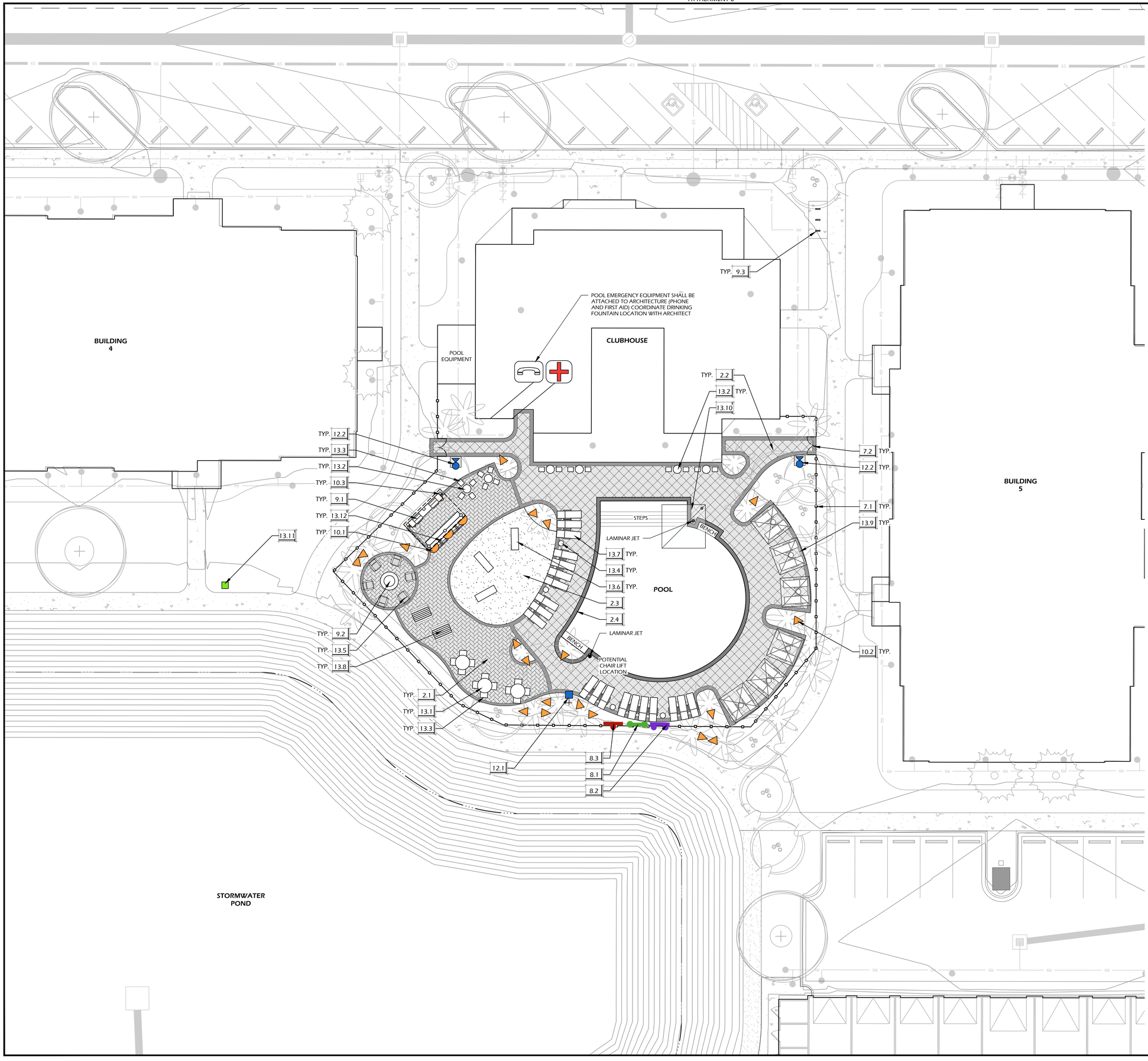
DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL
State of South Carolina
REGISTERED LANDSCAPE ARCHITECT
No. 1037
BRIAN WITMER
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
REFERENCE PLAN
PROPOSED CONDITIONS

DRAWING NUMBER
L11



PAVING SCHEDULE

CALL-OUT	SYMB.	DESCRIPTION	DETAIL
2.1		PAVER WALK	1/L600
2.2		POOL DECK	2/L600
2.3		SYNTHETIC TURF	4/L600
2.4		POOL COPING	3/L600
NA		BORDERS, REFER TO DETAILS 1/L600, 2/L600	NA

NOTE: MATERIAL SYMBOLS / HATCHES ARE GRAPHIC IN NATURE AND ARE NOT INTENDED TO BE TO SCALE. REFER TO SITE DETAILS AND LAYOUT PLANS FOR SIZES AND DIMENSIONS.

SITE DETAILS LEGEND

CALL-OUT	DESCRIPTION	DETAIL
7.1	FENCE TYPE 1 (ALUMINUM)	5/L600
7.2	GATE TYPE 1 (ALUMINUM)	6/L600
9.1	GRILLING PAVILION	1/L602

SITE FURNISHINGS SCHEDULE

CALL-OUT	SYMB.	DESCRIPTION	DETAIL
8.1		POOL RULES	2/L601
8.2		NO DIVING	4/L601
8.3		NO LIFE GUARD	3/L601
9.2		FIRE BOWL	5/L601
9.3		BIKE RACK	6/L601
13.1		DINING TABLE	9/L602
13.2		CAFE TABLE	10/L602
13.3		DINING CHAIR	7/L602
13.4		SIDE TABLE	1/L603
13.5		ADIRONDACK CHAIR	4/L603
13.6		HAMMOCK	2/L603
13.7		LOUNGE CHAIR	3/L603
13.8		PICNIC TABLE - TYPE 1	5/L603
13.9		CABANA	7/L603
13.10		CANTILEVER UMBRELLA	8/L603
13.11		DOG WASTE STATION	6/L602
13.12		BAR STOOL	8/L602

NOTE: SITE FURNISHING SYMBOLS ARE GRAPHIC IN NATURE AND ARE NOT INTENDED TO BE TO SCALE. REFER TO SITE DETAILS FOR SIZES AND DIMENSIONS.

UTILITY SCHEDULE

CALL-OUT	SYMB.	QTY.	DESCRIPTION	DETAIL
10.1		3	NOSE LIGHT	2/L602
10.2		19	UP LIGHT	3/L602
10.3		2	DOWN LIGHT	3/L602
12.1		1	HOSE BIB	4/L602
12.2		2	FOOT WASH	5/L602

NOTE: LIGHTING SYMBOLS ARE GRAPHIC IN NATURE AND ARE NOT INTENDED TO BE TO SCALE. REFER TO SITE DETAILS FOR SIZES AND DIMENSIONS.

N W E

0 5 10 15 20 25 30 35 40

Scale 1" = 10'

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FINAL SUBMITTAL

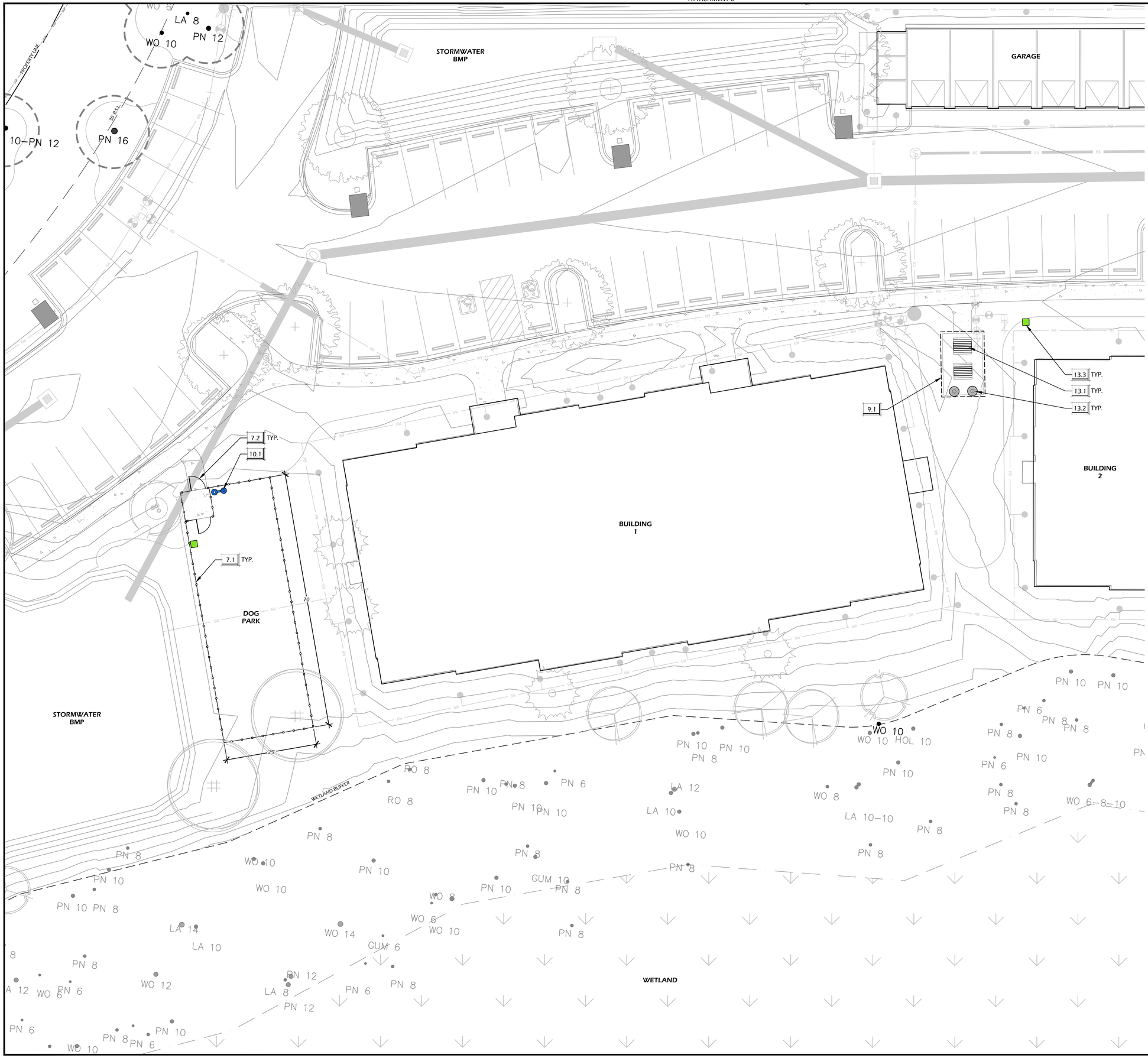
State of South Carolina REGISTERED LANDSCAPE ARCHITECT No. 1077 BRIAN WINTER

NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
KEY SHEET - 01

DRAWING NUMBER
L100



SITE DETAILS LEGEND

CALL-OUT	DESCRIPTION	DETAIL
7.1	FENCE TYPE 2 (WIRE MESH)	7/L600
7.2	GATE TYPE 2 (WIRE MESH)	1/L601
9.1	PICNIC PAVILION (REFER TO ARCHITECT PLANS)	NA

SITE FURNISHINGS SCHEDULE

CALL-OUT	SYMB.	DESCRIPTION	DETAIL
13.1		PICNIC TABLE - TYPE 2	6/L603
13.2		CHARCOAL GRILL	7/L601
13.3		DOG WASTE STATION	6/L602

NOTE: SITE FURNISHING SYMBOLS ARE GRAPHIC IN NATURE AND ARE NOT INTENDED TO BE TO SCALE. REFER TO SITE DETAILS FOR SIZES AND DIMENSIONS.

UTILITY SCHEDULE

CALL-OUT	SYMB.	QTY.	DESCRIPTION	DETAIL
10.1		1	DOG WATER FOUNTAIN	9/L603

NOTE: LIGHTING SYMBOLS ARE GRAPHIC IN NATURE AND ARE NOT INTENDED TO BE TO SCALE. REFER TO SITE DETAILS FOR SIZES AND DIMENSIONS.

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THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS

BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL

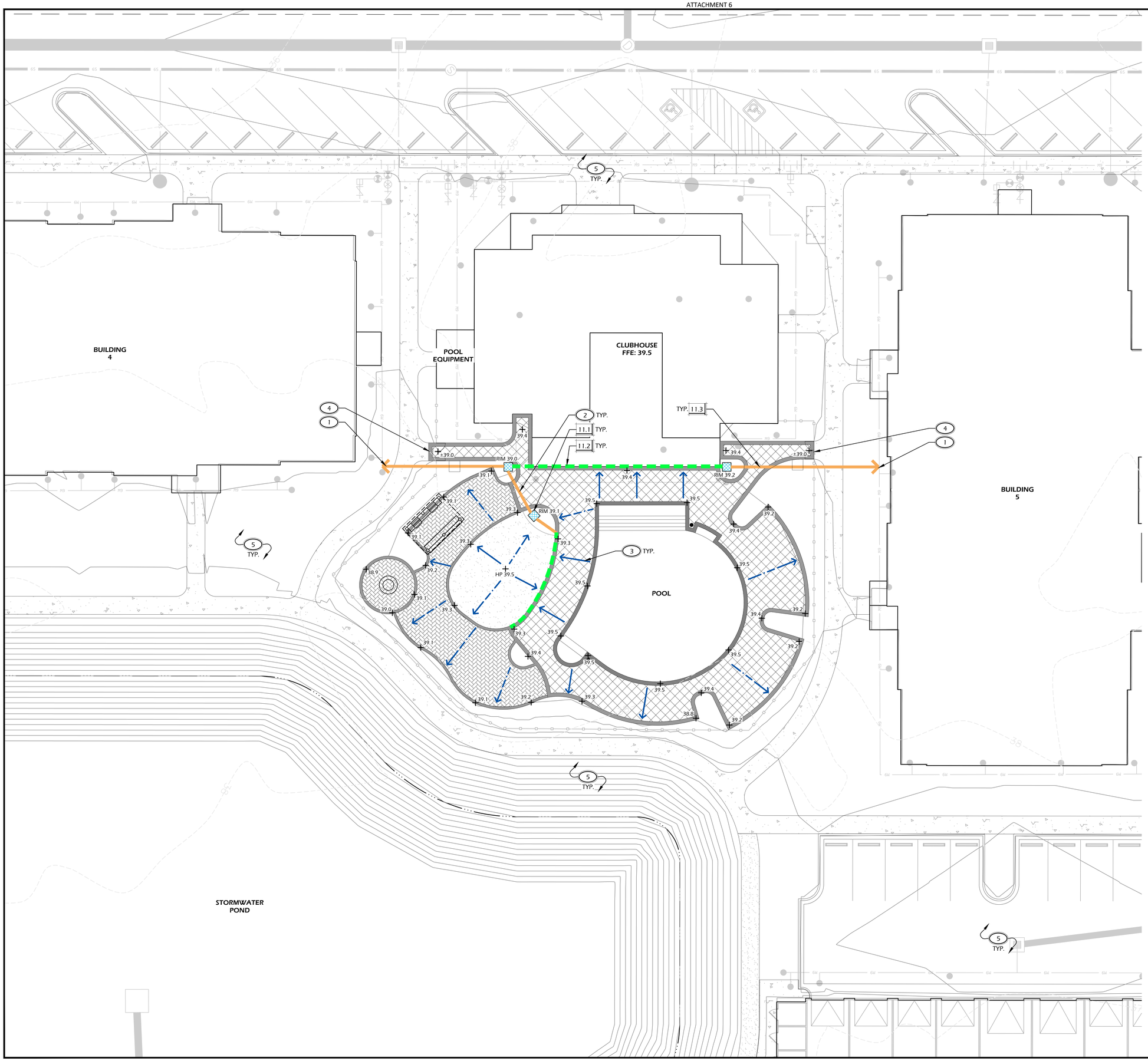
State of South Carolina
REGISTERED LANDSCAPE ARCHITECT
No. 1021
BRANDON WINTER

NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
KEY SHEET - 02

DRAWING NUMBER
L101



DRAINAGE LEGEND

CALL-OUT	SYMB.	DESCRIPTION	DETAIL
11.1		9" AREA DRAIN	8/L601
11.2		TRENCH DRAIN	9/L601
11.3		6" SOLID HDPE PIPE	N/A

NOTE: DRAINAGE SYMBOLS ARE GRAPHIC IN NATURE AND ARE NOT INTENDED TO BE TO SCALE. REFER TO SITE DETAILS FOR SIZES AND DIMENSIONS.

GRADING LEGEND

SYMB.	DESCRIPTION
+	SPOT GRADE
	DRAINAGE ARROW
	PROPOSED CONTOUR MAJOR
	PROPOSED CONTOUR MINOR
	EXISTING GRADE

GRADING ABBREVIATIONS

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
BC	BOTTOM OF CURB	HP	HIGH POINT
BS	BOTTOM OF STEP	RIM	TOP OF DRAIN
BW	BOTTOM OF WALL	TC	TOP OF CURB
FFE	FINISHED FLOOR ELEVATION	TS	TOP OF STEP
FG	FINISHED GRADE	TW	TOP OF WALL
LP	LOW POINT		

GRADING REFERENCE NOTES:

1. CONNECT DRAINS TO ENGINEER'S DRAINAGE STRUCTURES, REFER TO CIVIL ENGINEERS PLANS.
2. ALL PIPING UNDER HARDSCAPE SHALL BE SOLID H.D.P.E. PIPES.
3. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING AND POOL.
4. TIE POOL DECK INTO CONCRETE SIDEWALKS SMOOTHLY AND EVENLY. REFER TO CIVIL ENGINEER PLANS.
5. REFER TO CIVIL ENGINEER PLANS FOR GRADING OUTSIDE OF POOL DECK.

0 5 10 15 20 25 30 35 40
Scale 1" = 10'

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SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS
BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

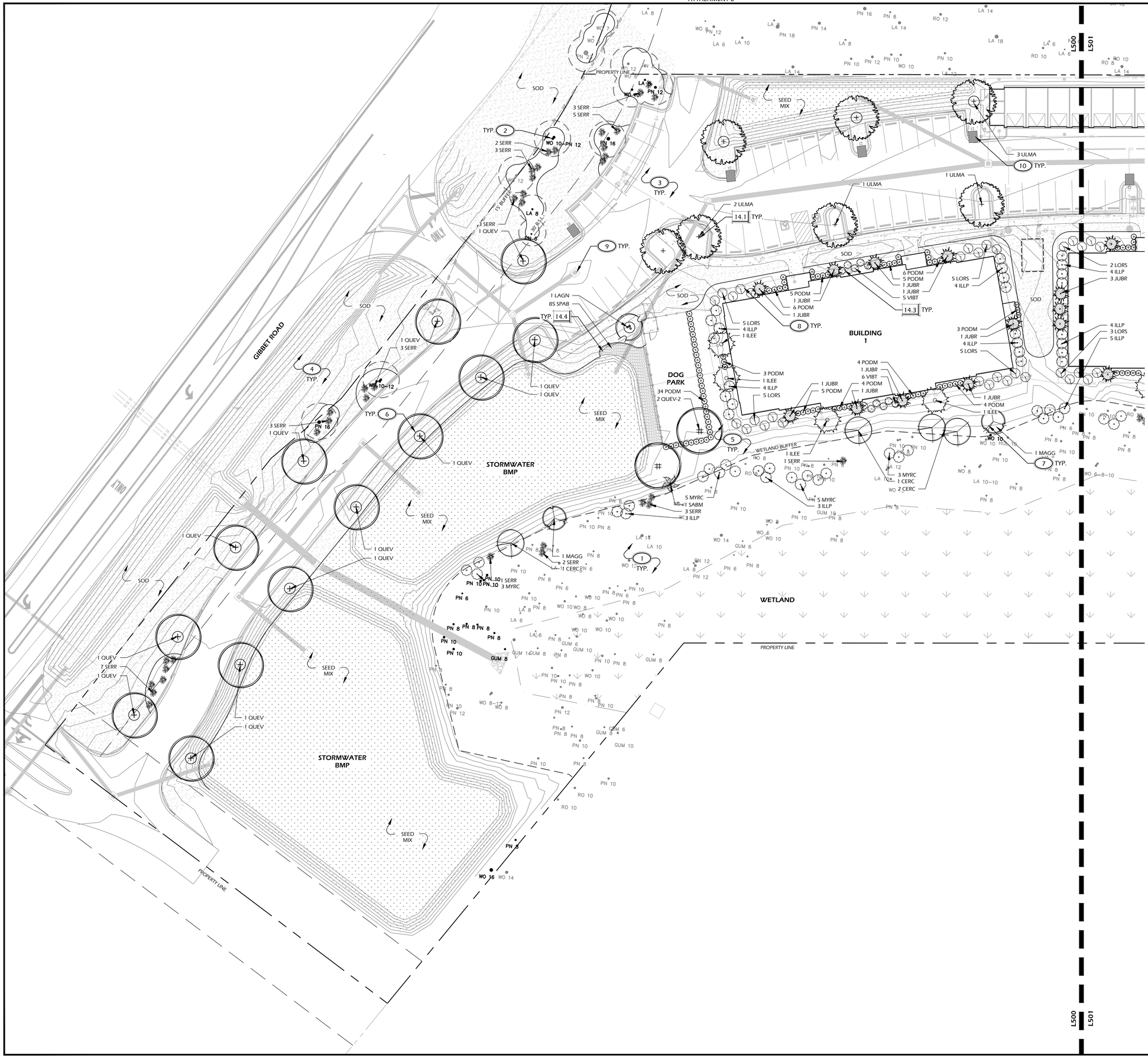
FINAL SUBMITTAL
NOT FOR CONSTRUCTION

State of South Carolina
REGISTERED LANDSCAPE ARCHITECT
No. 1077
BRIAN WINTER

REVISIONS:

DRAWING TITLE
POOL DECK GRADING PLAN

DRAWING NUMBER
L300



PLANTING DETAILS

CALL-OUT	DESCRIPTION	DETAIL
14.1	TREE PLANTING	1/L504
14.2	PALM TREE PLANTING	2/L504
14.3	SHRUB PLANTING	3/L504
14.4	GROUND COVER PLANTING	4/L504

PLANT KEY LEGEND

Abbrev	Botanical Name	Common Name
TREES		
MAGG	Magnolia grandiflora	Southern Magnolia
SABP	Sabal palmetto	Cabbage Palm
QUEV	Quercus virginiana	Live Oak
ULMA	Ulmus parvifolia 'UPMTF' PP 11,295	Bosque Elm
UNDERSTORY TREES		
CERC	Cercis canadensis	Eastern Redbud
ILEE	Ilex x attenuata 'Eagleston'	Eagleston Holly
JUBR	Juniperus virginiana 'Brodie'	Brodie Juniper
LAGN	Lagerstroemia indica x fauriei 'Natchez'	Natchez Crape Myrtle
MAGA	Magnolia grandiflora 'Alta'	Alta Magnolia
SABM	Sabal minor	Dwarf Palmetto
SHRUBS		
ILLP	Illicium parviflorum	Yellow Anise
LORS	Loropetalum chinense 'Sizzling Pink'	Sizzling Pink Loropetalum
MYRC	Myrica cerifera	Wax Myrtle
OSMF	Osmanthus fragrans	Fragrant Tea Olive
PHIB	Philodendron selloum	Cut-Leaf Philodendron
PODM	Podocarpus macrophyllus	Podocarpus
PODP	Podocarpus macrophyllus 'Pringles Dwarf'	Dwarf Podocarpus
SERR	Serenoa repens	Saw Palmetto
VIBS	Viburnum suspensum	Sandankwa Viburnum
VIBT	Viburnum tinus 'Spring Bouquet'	Spring Bouquet Laurustinus Viburnum
ORNAMENTAL GRASSES & FERNS		
MUHC	Muhlenbergia capillaris	Pink Muhly Grass
SPAB	Spartina bakerii	Sand Cordgrass
GROUND COVERS, VINES & PERENNIALS		
EVOB	Evolvulus hybrid 'Blue My Mind'	Blue My Mind
LANC	Lantana 'Chapel Hill Yellow' PP19548	Chapel Hill Yellow Lantana
LIRE	Liriope muscari 'Evergreen Giant'	Evergreen Giant Liriope
SOD & MULCH		
SOD-SF	-	TifTuf Bermuda Sod
MULCH-SF	Pine Straw - all disturbed areas	Pine Straw
SEED-SF	Pennington Reclaim Wetland Mix	Bioretention Seed Mix

PLANTING REFERENCE NOTES:

1. EXISTING VEGETATION TO REMAIN.
2. EXISTING TREES TO REMAIN.
3. REFER TO CIVIL ENGINEER PLANS FOR TREE REMOVAL INFORMATION.
4. CONTRACTOR SHALL REPAIR OR REPLACE ANY AND ALL GRASS DAMAGED DURING CONSTRUCTION.
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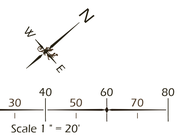
8. COORDINATE SHRUB LAYOUT WITH EXISTING UTILITIES. REPORT ANY CONFLICTS TO LANDSCAPE ARCHITECT.
9. PROTECT AREA DRAIN FROM CLOGGING DURING INSTALLATION OF PLANTS AND MULCH. MAINTAIN FUNCTIONALITY AND POSITIVE PITCH TO DRAIN.
10. REFER TO LIGHTING PLAN FOR DETAILED STREET LIGHT INFORMATION.



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SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS

BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

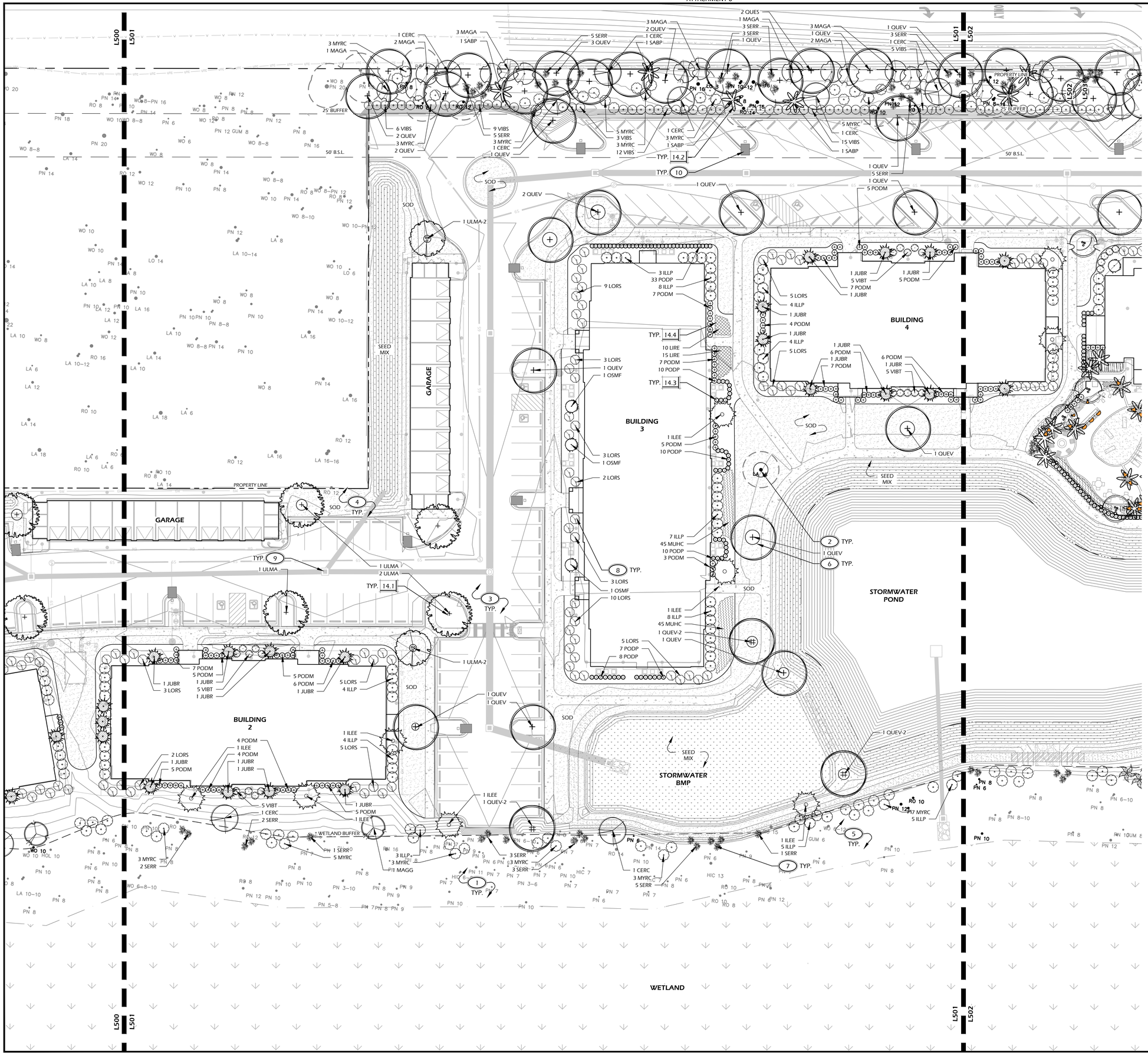
FINAL SUBMITTAL

NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
PLANTING PLAN - 01

DRAWING NUMBER
L500



PLANTING DETAILS

CALL-OUT	DESCRIPTION	DETAIL
14.1	TREE PLANTING	1/L504
14.2	PALM TREE PLANTING	2/L504
14.3	SHRUB PLANTING	3/L504
14.4	GROUND COVER PLANTING	4/L504

PLANT KEY LEGEND

Abbrev	Botanical Name	Common Name
TREES		
MAGG	Magnolia grandiflora	Southern Magnolia
SABP	Sabal palmetto	Cabbage Palm
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JUBR	Juniperus virginiana 'Brodie'	Brodie Juniper
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VIBS	Viburnum suspensum	Sandankwa Viburnum
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ORNAMENTAL GRASSES & FERNS		
MUHC	Muhlenbergia capillaris	Pink Muhly Grass
SPAB	Spartina bakerii	Sand Cordgrass
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LANC	Lantana 'Chapel Hill Yellow' PP19548	Chapel Hill Yellow Lantana
LIRE	Liriope muscari 'Evergreen Giant'	Evergreen Giant Liriope
SOD & MULCH		
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MULCH-SF	Pine Straw - all disturbed areas	Pine Straw
SEED-SF	Pennington Reclaim Wetland Mix	Bioretention Seed Mix

PLANTING REFERENCE NOTES:

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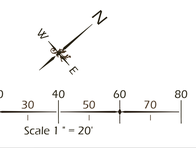
9. PROTECT AREA DRAIN FROM CLOGGING DURING INSTALLATION OF PLANTS AND MULCH. MAINTAIN FUNCTIONALITY AND POSITIVE PITCH TO DRAIN.
10. REFER TO LIGHTING PLAN FOR DETAILED STREET LIGHT INFORMATION.



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SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS
BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
PLANTING PLAN - 02

DRAWING NUMBER
L501

PLANTING DETAILS		
CALL-OUT	DESCRIPTION	DETAIL
14.1	TREE PLANTING	1/L504
14.2	PALM TREE PLANTING	2/L504
14.3	SHRUB PLANTING	3/L504
14.4	GROUND COVER PLANTING	4/L504

PLANT KEY LEGEND

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10. REFER TO LIGHTING PLAN FOR DETAILED STREET LIGHT INFORMATION.

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SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS
BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

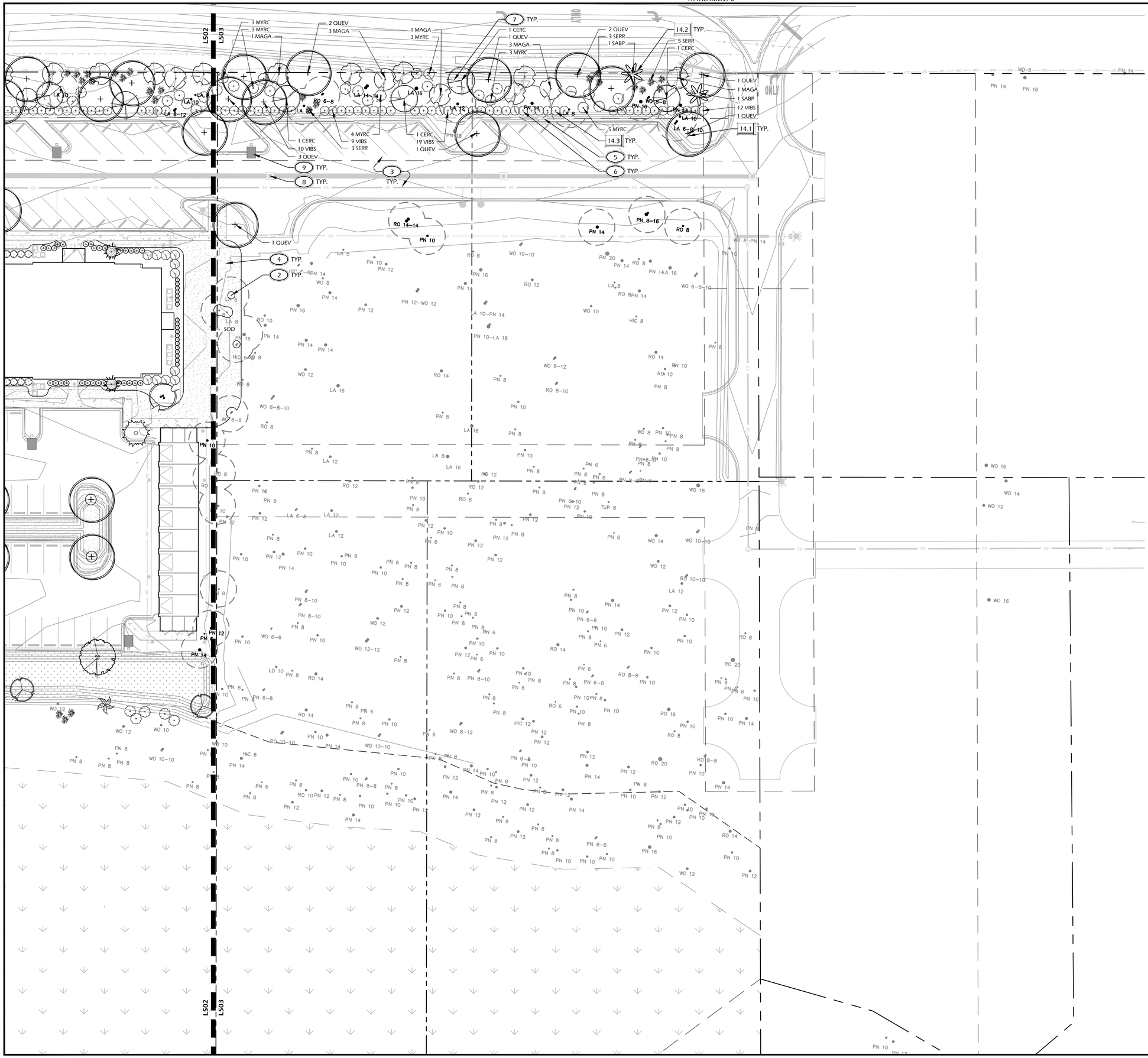
FINAL SUBMITTAL
State of South Carolina
REGISTERED LANDSCAPE ARCHITECT
No. 1071
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
PLANTING PLAN - 03

DRAWING NUMBER
L502

Scale 1" = 20'



PLANTING DETAILS

CALL-OUT	DESCRIPTION	DETAIL
14.1	TREE PLANTING	1/L504
14.2	PALM TREE PLANTING	2/L504
14.3	SHRUB PLANTING	3/L504
14.4	GROUND COVER PLANTING	4/L504

PLANT KEY LEGEND

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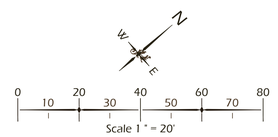

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THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS

BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL

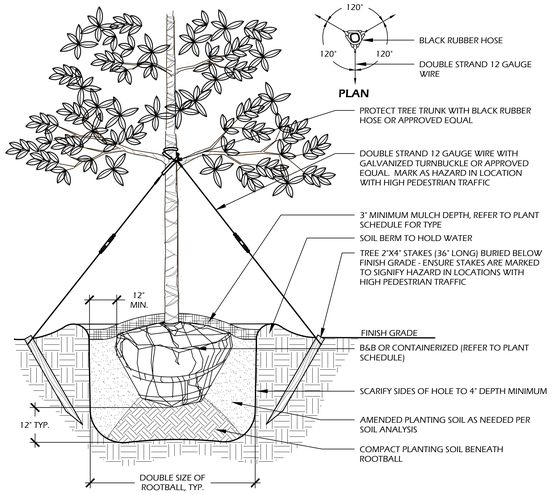
State of South Carolina
REGISTERED LANDSCAPE ARCHITECT
No. 1087
BRANDON WIMER

NOT FOR CONSTRUCTION

REVISIONS:

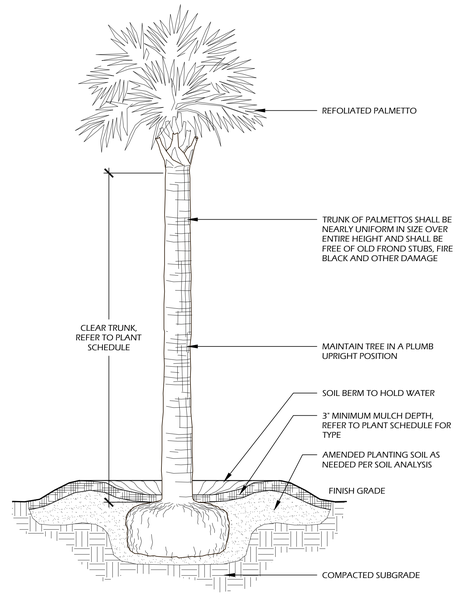
DRAWING TITLE
PLANTING PLAN - 04

DRAWING NUMBER
L503



NOTES:
1. TREE STAKING OPTIONAL, HOWEVER, LANDSCAPE CONTRACTOR RESPONSIBLE FOR MAINTAINING TREES IN AN UPRIGHT (90 DEGREE/ PERPENDICULAR) POSITION FOR 1 YEAR AFTER PLANTING IS COMPLETE OR UNTIL TREE ROOT SYSTEM IS FULLY ESTABLISHED AND STURDY. FINAL TREE STAKING DETAILS AND PLACEMENT TO BE APPROVED BY OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.
3. IN SEMI-IMPERVIOUS SOIL CONDITIONS, ROOTBALL ELEVATION SHALL BE 2" ABOVE FINISH GRADE. COORDINATE WITH OWNER'S REPRESENTATIVE PRIOR TO SETTING ROOTBALL ELEVATIONS.

1 // L504 TREE PLANTING
SCALE: N.T.S.



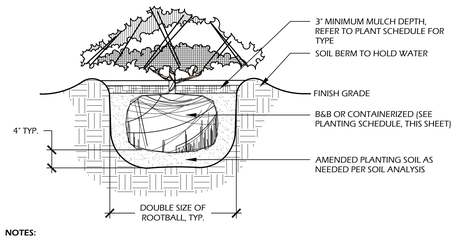
NOTES:
1. FINAL TREE STAKING DETAILS AND PLACEMENT TO BE APPROVED BY OWNER OR OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.
3. SABAL PALMETTOS SHALL BE REFOLIATED, PROTECT CABBAGE HEAD FROM DAMAGE.

2 // L504 PALM TREE PLANTING
SCALE: N.T.S.

PLANT SCHEDULE:

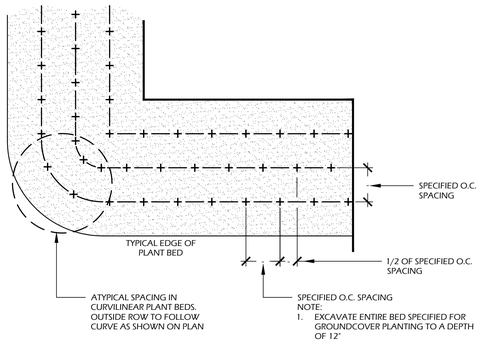
	Quantity	Abbrev	Botanical Name	Common Name	Height	Spread	Container	Cal./Spacing	Notes
TREES									
*	5	MAGG	Magnolia grandiflora	Southern Magnolia	12'-14'	6'-7'	Cont.	4"	Full to ground
*	40	SABP	Sabal palmetto	Cabbage Palm	12'-16'	-	Cont.	-	Refoliated, full clear trunk
*	94	QUEV	Quercus virginiana	Live Oak	12'-14'	5'-6'	Cont.	4"	Full
*	5	QUEV-2	Quercus virginiana	Live Oak	12' min.	4'-5'	Cont.	2.5"	Full
*	11	ULMA	Ulmus parvifolia 'UPMTF' PP 11,295	Bosque Elm	12'-14'	5'-6'	Cont.	4"	Full
*	3	ULMA-2	Ulmus parvifolia 'UPMTF' PP 11,295	Bosque Elm	12' min.	4'-5'	Cont.	2.5"	Full
UNDERSTORY TREES									
*	23	CERC	Cercis canadensis	Eastern Redbud	8'-10'	6'-8'	30 gal.	2.5"	Full
*	28	ILEE	Ilex x attenuata 'Eagleston'	Eagleston Holly	6'-7'	3'-4'	15 gal.	2.5"	Full
	44	JUBR	Juniperus virginiana 'Brodie'	Brodie Juniper	5'-7'	2'-3'	30 gal.		Full to ground
*	13	LAGN	Lagerstroemia indica x fauriei 'Natchez'	Natchez Crape Myrtle	10'-12'	5'-6'	45 gal.	2.5"	Full
*	40	MAGA	Magnolia grandiflora 'Alta'	Alta Magnolia	8'-10'	4'-5'	30 gal.	2.5"	Full
	12	SABM	Sabal minor	Dwarf Palmetto	4'-5'	4'-5'	15 gal.	-	Full
SHRUBS									
	126	ILLP	Illicium parviflorum	Yellow Anise	30"-36"	24"-30"	7 gal.	-	Full
	157	LORS	Loropetalum chinense 'Sizzling Pink'	Sizzling Pink Loropetalum	30"-36"	24"-30"	7 gal.	-	Full
	160	MYRC	Myrica cerifera	Wax Myrtle	30"-36"	24"-30"	7 gal.	-	Full
	5	OSMF	Osmanthus fragrans	Fragrant Tea Olive	36"-42"	18"-24"	7 gal.	-	Full
	5	PHIB	Philodendron selloum	Cut-Leaf Philodendron	24"-30"	24"-30"	7 gal.	-	Full
	313	PODM	Podocarpus macrophyllus	Podocarpus	24"-30"	18"-24"	7 gal.	-	Full
	202	PODP	Podocarpus macrophyllus 'Pringles Dwarf'	Dwarf Podocarpus	18"-24"	16"-20"	7 gal.	-	Full
	152	SERR	Serenoa repens	Saw Palmetto	30"-36"	18"-24"	7 gal.	-	Full
	179	VIBS	Viburnum suspensum	Sandankwa Viburnum	30"-36"	24"-30"	7 gal.	-	Full
	76	VIBT	Viburnum tinus 'Spring Bouquet'	Spring Bouquet Laurustinus Viburnum	24"-30"	24"-30"	7 gal.	-	Full
ORNAMENTAL GRASSES & FERNS									
	125	MUHC	Muhlenbergia capillaris	Pink Muhly Grass	14"-16"	10"-16"	1 gal.	30" O.C.	Full
	85	SPAB	Spartina bakerii	Sand Cordgrass	14"-16"	10"-16"	1 gal.	30" O.C.	Full
GROUND COVERS, VINES & PERENNIALS									
	40	EVOB	Evolvulus hybrid 'Blue My Mind'	Blue My Mind	8"-12"	8"-12"	1 gal.	18" O.C.	Blue Flowers, Full
	200	LANC	Lantana 'Chapel Hill Yellow' PP19548	Chapel Hill Yellow Lantana	8"-12"	8"-12"	1 gal.	18" O.C.	Yellow Flowers, Full
	35	LIRE	Liriope muscari 'Evergreen Giant'	Evergreen Giant Liriope	12"-16"	8"-12"	1 gal.	24" O.C.	Full
SOD & MULCH									
	75,225	SOD-SF	-	TifTuf Bermuda Sod	-	-	-	-	-
	141,600	MULCH-SF	Pine Straw - all disturbed areas	Pine Straw	-	-	-	-	-
	57,867	SEED-SF	Pennington Reclaim Wetland Mix	Bioretention Seed Mix	-	-	-	-	-

* DENOTES TREES USED FOR MITIGATION

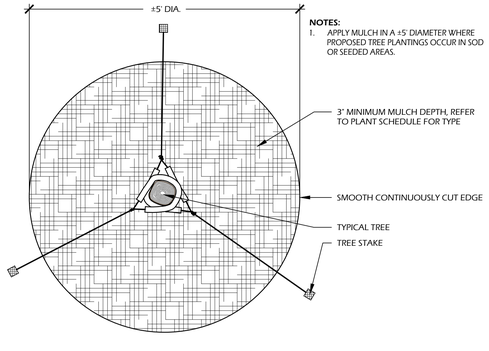


NOTES:
1. WHEN GROUNDCOVERS AND SHRUBS ARE USED IS MASSES, ENTIRE BED TO BE EXCAVATED TO RECEIVE PLANTING SOIL AND PLANT MATERIAL.
2. CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.
3. IN SEMIMPERVIOUS SOIL CONDITIONS, ROOTBALL ELEVATION SHALL BE ±2" ABOVE FINISH GRADE. COORDINATE WITH OWNER'S REPRESENTATIVE PRIOR TO SETTING ROOTBALL ELEVATIONS.

3 // L504 SHRUB PLANTING
SCALE: N.T.S.



4 // L504 GROUND COVER PLANTING
SCALE: N.T.S.



5 // L504 TREE STAKING
SCALE: N.T.S.

Wimmer Jones Keefer Ltd.
landscape architecture
land planning
www.wjkltd.com
23 Promenade Street, Suite 201 | Bluffton, South Carolina | 29910 | ph 843.757.7441

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DESIGN CONCEPTS, DRAWING, SHEETS, LOGOS, SPECIFICATIONS, DETAILS, WRITTEN MATERIAL SHALL NOT BE USED OR REPRODUCED IN WHOLE OR IN PART IN ANY FORM WITHOUT PRIOR WRITTEN CONSENT OF WJK LTD.
THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS

BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL
STATE OF SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1017 BRANDON WIMMER
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
PLANT SCHEDULE AND DETAILS

DRAWING NUMBER
L504

PROPOSED SITE COVERAGE TABLE	
TOTAL LIMIT OF WORK	12.1 ACRES
REQUIRED MITIGATION	332 TREES
EXISTING TREES TO REMAIN	86 TREES
PROPOSED TREES	251 TREES
TOTAL TREES	**337 TREES**

TOTAL LIMIT OF WORK: 12.1 ACRES
EXISTING TREES TO REMAIN: 86 TREES

REPLACEMENT TREE CALCULATIONS:
4" CALIPER TREES: (94+11+5) X 2.0 = 220
2.5" CALIPER TREES: (5+3+23) X 1.0 = 31

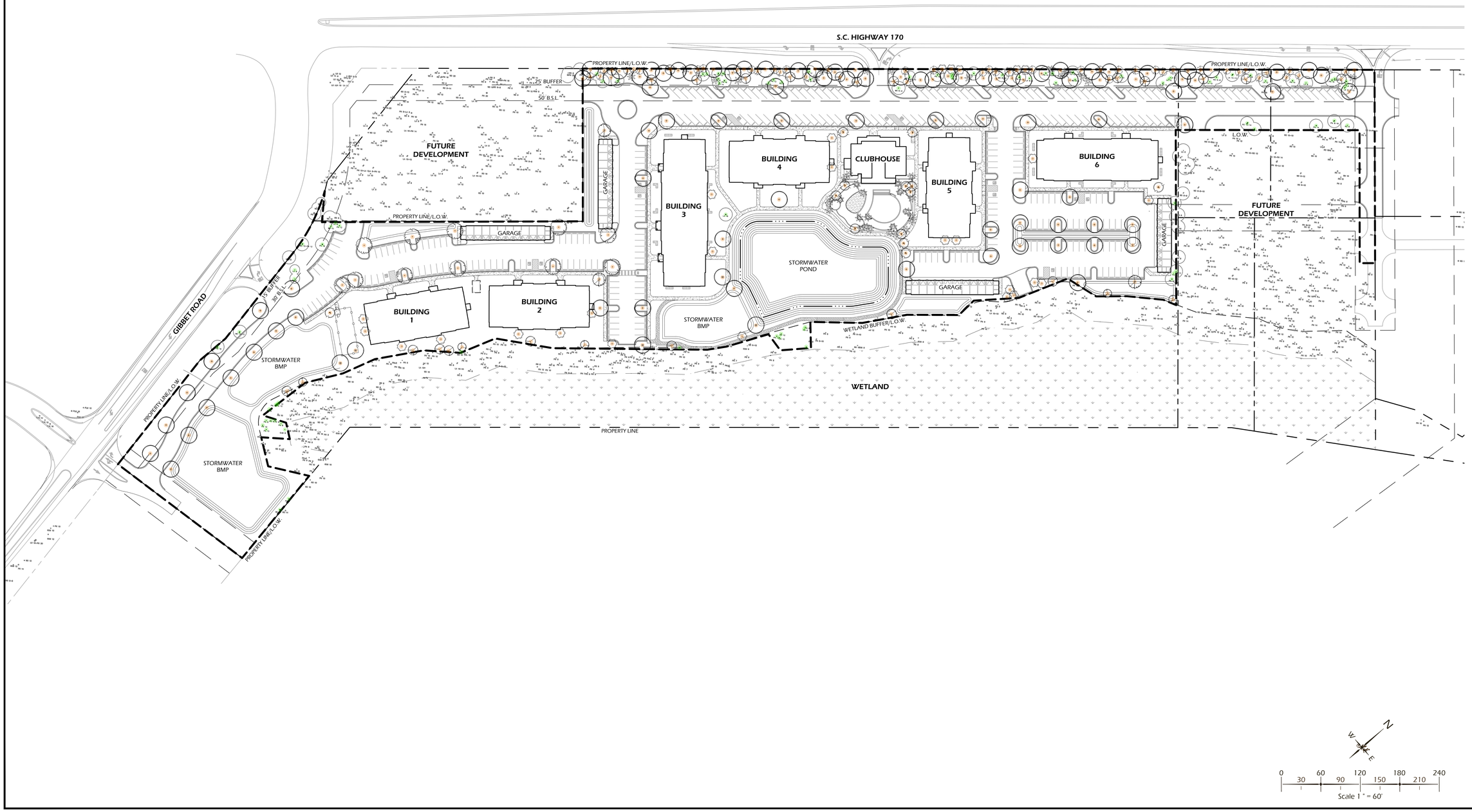
TOTAL POST-DEVELOPMENT TREES: 86 EX. + 220 + 31 = 337 TREES

NOTE: REQUIRED TREE MITIGATION BASED ON UDO SECTION 5.3.3, AND WITMER JONES KEEFER TREE MITIGATION NARRATIVE DATED 9/20/2024

PLANT SCHEDULE:

Quantity	Abbrev	Botanical Name	Common Name	Height	Spread	Container	Cal/Spacing	Notes
TREES								
✶ 5	MAGG	Magnolia grandiflora	Southern Magnolia	12'-14'	6'-7'	Cont.	4"	Full to ground
40	SABP	Sabal palmetto	Cabbage Palm	12'-16'	-	Cont.	-	Refoliated, full clear trunk
✶ 94	QUEV	Quercus virginiana	Live Oak	12'-14'	5'-6'	Cont.	4"	Full
✶ 5	QUEV-2	Quercus virginiana	Live Oak	12' min.	4'-5'	Cont.	2.5"	Full
✶ 11	ULMA	Ulmus parvifolia 'UPMTF' PP 11,295	Bosque Elm	12'-14'	5'-6'	Cont.	4"	Full
✶ 3	ULMA-2	Ulmus parvifolia 'UPMTF' PP 11,295	Bosque Elm	12' min.	4'-5'	Cont.	2.5"	Full
UNDERSTORY TREES								
✶ 23	CERC	Cercis canadensis	Eastern Redbud	8'-10'	6'-8'	30 gal.	2.5"	Full
28	ILEE	Ilex x attenuata 'Eagleston'	Eagleston Holly	6'-7'	3'-4'	15 gal.	2.5"	Full
44	JUBR	Juniperus virginiana 'Brodie'	Brodie Juniper	5'-7'	2'-3'	30 gal.	-	Full to ground
13	LAGN	Lagerstroemia indica x fauriei 'Natchez'	Natchez Crape Myrtle	10'-12'	5'-6'	45 gal.	2.5"	Full
40	MAGA	Magnolia grandiflora 'Alta'	Alta Magnolia	8'-10'	4'-5'	30 gal.	2.5"	Full
12	SABM	Sabal minor	Dwarf Palmetto	4'-5'	4'-5'	15 gal.	-	Full

✶DENOTES TREES USED FOR MITIGATION



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THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS
BLUFFTON, SOUTH CAROLINA

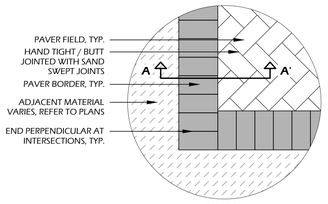
DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
TREE SAVE PLAN

DRAWING NUMBER
L505



PLAN

PAVER MANUFACTURER INFORMATION:
MANUFACTURER: LOW COUNTRY PAVERS

PAVER: PLANTATION PAVER WITH TABBY FINISH
COLOR: BATTERY GRAY
PATTERN: HERRINGBONE FIELD (REFER TO PLAN, **SHEET L100 - L101**, FOR DIRECTION) WITH SINGLE HEADER COURSE BORDER
JOINTS: HAND TIGHT / BUTT JOINTED, SAND SWEPT

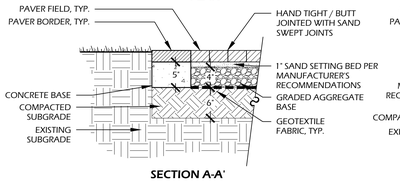
OTHER INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS
GEOTEXTILE FABRIC: TYPAR 3401 OR APPROVED EQUAL
COMPACTED SUBGRADE: 95% STANDARD PROCTOR

EDGE RESTRAINT MANUFACTURER INFORMATION:
MANUFACTURER: SEK
WWW.SEK.US.COM
(800)932.3343

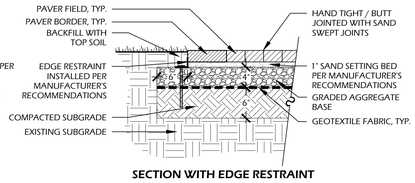
EDGE RESTRAINT: SNAP EDGE
MOUNTING: 3/8" X 8" BARRIER SPIKE SPACED EVERY 12"

OR APPROVED EQUAL

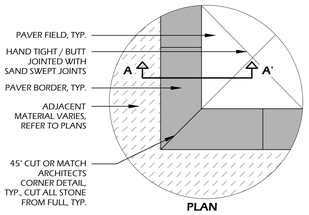
NOTES:
1. PROVIDE 1% MIN., 2% MAX. CROSS SLOPE ON ALL PAVED SURFACES FOR POSITIVE DRAINAGE.
2. REFER TO PLAN **(SHEET L100 – L101)** FOR WIDTHS OF DRIVE AND LOCATION OF BRICK BORDERS.
3. CONTRACTOR SHALL COORDINATE BORDERS AND PATTERN WITH OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
4. UPON REQUEST, CONTRACTOR SHALL PROVIDE 4'X4' PAVING PANELS OF ALTERNATIVE COLORS PRIOR TO CONSTRUCTION FOR APPROVAL BY OWNER OR LANDSCAPE ARCHITECT.



SECTION A-A'



SECTION WITH EDGE RESTRAINT



PLAN
N.T.S.

PAVER INFORMATION:
SAVANNAH SURFACES
46 MCDOWELL CIRCLE
HARDEEVILLE, SC 29927
PHONE: (843) 784-6060
WEB: WWW.SAVANNAHSURFACES.COM

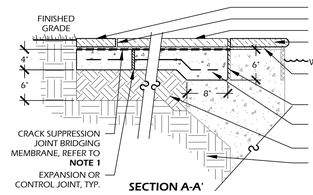
STONE: 3/4"X24"X24" REEF PORCELAIN PAVER
COLOR: IVORY
PATTERN: DIAMOND
JOINTS: HAND TIGHT / BUTT JOINTED, SAND SWEPT, '

BORDER INFORMATION:
SAVANNAH SURFACES
46 MCDOWELL CIRCLE
HARDEEVILLE, SC 29927
PHONE: (843) 784-6060
WEB: WWW.SAVANNAHSURFACES.COM

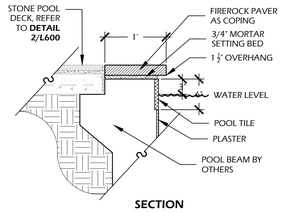
STONE: 1.75"X1.2"X24" FIREROCK PAVER
COLOR: CLAY
JOINTS: HAND TIGHT / BUTT JOINTED, SAND SWEPT,

OTHER INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS, CONTINUOUS POUR, BASE SHALL NOT PASS STONE BORDER EDGE
GEOTEXTILE FABRIC: TYPAR 3401 OR APPROVED EQUAL
SOIL COMPACTION: 98% STANDARD PROCTOR

NOTES:
1. CONTRACTOR TO PROVIDE FRACTURE MEMBRANE SPECIFICATIONS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
2. PROVIDE 1% MIN., 2% MAX. CROSS SLOPE ON ALL PAVED SURFACES FOR POSITIVE DRAINAGE.
3. TURNDOWN CONCRETE 6" AT POOL COPING.
4. REFER TO PLAN **(SHEET L100 - L101)** FOR LOCATION OF BORDERS AND COPING.
5. CONTRACTOR SHALL COORDINATE PATTERN WITH OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL PROVIDE A 4'X4' PAVING PANEL PRIOR TO CONSTRUCTION FOR APPROVAL BY OWNER OR LANDSCAPE ARCHITECT.
7. CONTRACTOR TO ADD TWO COATS OF WATER SEALANT TO POOL DECK.



SECTION A-A'



SECTION

PAVER MANUFACTURER INFORMATION:
SAVANNAH SURFACES
46 MCDOWELL CIRCLE
HARDEEVILLE, SC 29927
PHONE: (843) 784-6060
WEB: WWW.SAVANNAHSURFACES.COM

COPING: 1.75"X24"X24" FIREROCK PAVER
COLOR: CLAY
MORTAR: IVORY BUFF

PLASTER MANUFACTURER INFORMATION:
PEBBLE TECHNOLOGY INTERNATIONAL
15540 NORTH 77TH ST.
SCOTTSDALE, AZ, 85260
PHONE: (800) 937-5058
WEB: WWW.PEBBLETEC.COM

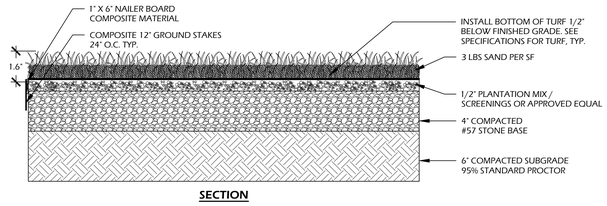
PLASTER: PEBBLESHEEN
COLOR: COOL BLUE

TILE MANUFACTURER INFORMATION:
FUJIWA TILES
2634 ANDJON DRIVE
DALLAS, TX 75220
PHONE: (972) 481-1988
WEB: WWW.FUJIWATILES.COM

TILE: GLASSTEL 7/8" X 1 7/8"
COLOR: AMBER
PRODUCT #: GLASSTEL-12

NOTES:
1. CONTRACTOR SHALL OBTAIN MANUFACTURERS SPECIFICATIONS TO ENSURE PROPER LOADS, COURSE DEPTHS AND INSTALLATION.
2. PROVIDE MIN. 1% CROSS SLOPE ON ALL PAVED SURFACES FOR POSITIVE DRAINAGE AWAY FROM POOL.

1 // L600 PAVER WALK
SCALE: 1" - 1'-0"



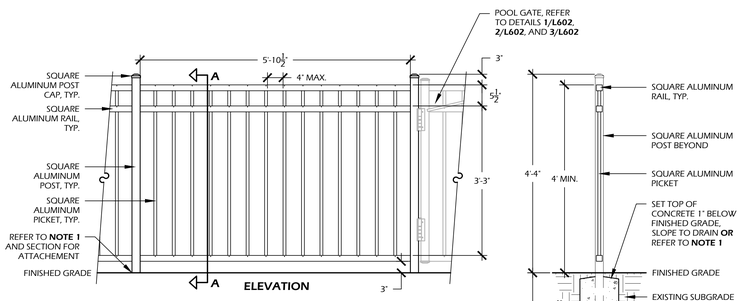
SECTION

TURF MANUFACTURER INFORMATION:
MANUFACTURER:
CHALLENGER TURF
1(888) 368.9596
WWW.CHALLENGERTURF.COM

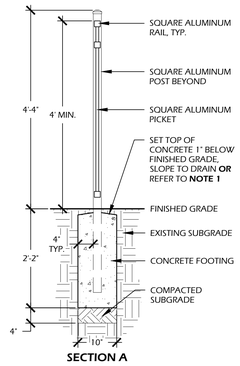
MODEL: CG PLAY
PILE: 1.5"
COLOR: FIELD GREEN / CLOVER
THATCH: FIELD GREEN / TAN
BACKING: ULTRA-FLO

NOTES:
EDGE RESTRAINT INCLUDES NAILER BOARD AND GROUND STAKES

2 // L600 POOL DECK
SCALE: 1" - 1'-0"



ELEVATION



SECTION A

3 // L600 POOL COPING
SCALE: 1" - 1'-0"

FENCE MANUFACTURER INFORMATION:
MANUFACTURER:
JERITH MANUFACTURING LLC
14400 MCNULTY RD,
PHILADELPHIA, PA, 19154
PHONE: (800) 344.2242
WEB: WWW.JERITH.COM

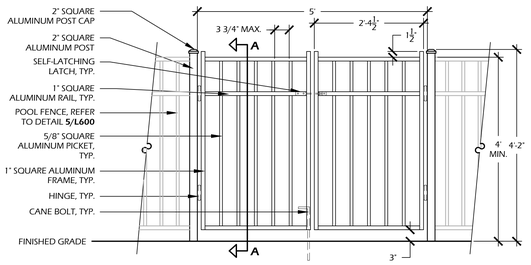
OR APPROVED EQUAL

FENCE: COMMERCIAL GRADE FENCE, REGENCY WINDSOR, 48" HEIGHT
MATERIAL: ALUMINUM
COLOR: POWDER COATED BLACK

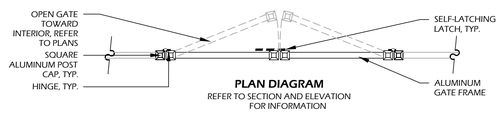
OTHER INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS
SOIL COMPACTION: 95% STANDARD PROCTOR

NOTES:
1. IF FENCE POST(S) LAND ON POOL DECK OR CONCRETE WALK, POST(S) SHALL BE SURFACE MOUNTED PER MANUFACTURERS SPEC. REFER TO PLAN SHEETS **L100 AND L101** FOR LOCATIONS. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF SURFACE MOUNTING ATTACHMENTS FOR APPROVAL BY LANDSCAPE ARCHITECT AND/OR OWNER/OWNER'S REPRESENTATIVE.
2. INSTALLATION TO BE COMPLETED PER MANUFACTURERS SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
4. CONTRACTOR SHALL PROVIDE COLOR SAMPLES PRIOR TO CONSTRUCTION FOR APPROVAL BY OWNER OR LANDSCAPE ARCHITECT.

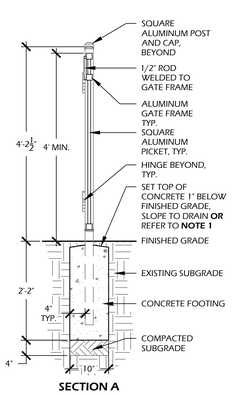
4 // L600 SYNTHETIC TURF
SCALE: 1/2" - 1'-0"



ELEVATION



PLAN DIAGRAM
REFER TO SECTION AND ELEVATION FOR INFORMATION



SECTION A

GATE MANUFACTURER INFORMATION:
MANUFACTURER:
JERITH MANUFACTURING LLC
14400 MCNULTY RD,
PHILADELPHIA, PA, 19154
PHONE: (800) 344.2242
WEB: WWW.JERITH.COM

GATE: COMMERCIAL GRADE GATE, REGENCY WINDSOR STANDARD GATE, 48" HEIGHT
MATERIAL: ALUMINUM
COLOR: POWDER COATED BLACK

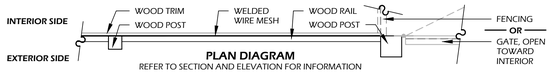
LATCH, HINGE AND CANE BOLT INFORMATION:
LATCH: SELF LATCHING, METAL MATERIAL, POWDER COATED BLACK
HINGE: METAL MATERIAL, POWDER COATED BLACK
CANE BOLT: METAL MATERIAL, POWDER COATED BLACK

OWNER TO APPROVE LATCH, HINGE AND CANE BOLT MODELS AND COLOR PRIOR TO ORDERING.

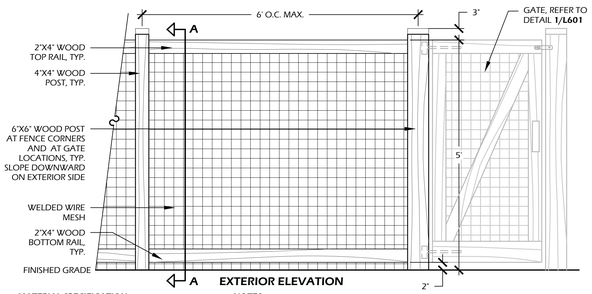
OTHER INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS
SOIL COMPACTION: 95% STANDARD PROCTOR

NOTES:
1. IF FENCE / GATE POSTS LAND ON POOL DECK OR CONCRETE WALK, POSTS SHALL BE SURFACE MOUNTED PER MANUFACTURERS SPEC. REFER TO PLAN SHEET **L100 & L101** FOR LOCATIONS. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF SURFACE MOUNTING ATTACHMENTS.
2. INSTALLATION TO BE COMPLETED PER MANUFACTURERS SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO OWNER, OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
4. CONTRACTOR SHALL CONFIRM GATE OPENING AND HINGE ATTACHMENTS TO ALUMINUM POSTS PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO OWNER , OWNER'S REPRESENTATIVE OF LANDSCAPE ARCHITECT.
5. CONTRACTOR SHALL PROVIDE COLOR SAMPLES PRIOR TO CONSTRUCTION FOR APPROVAL BY OWNER OR LANDSCAPE ARCHITECT.

5 // L600 FENCE TYPE 1 (ALUMINUM)
SCALE: 3/4" - 1'-0"



PLAN DIAGRAM
REFER TO SECTION AND ELEVATION FOR INFORMATION



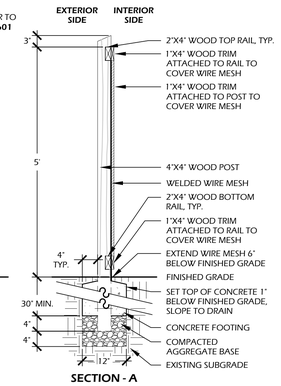
EXTERIOR ELEVATION

MATERIAL SPECIFICATION:
WOOD: NO. 1 PRESSURE TREATED SOUTHERN YELLOW PINE
WOOD COLOR: SW 7048 URBAN BRONZE

WELDED WIRE MESH: 14 GAUGE, 2"X2" GRID
MESH COLOR: PAINTED CHARLESTON GREEN

CONCRETE: 3,000 P.S.I. @ 28 DAYS

NOTES:
1. REFER TO PLANS FOR GATE / CORNER LOCATIONS.
2. SLOPE ALL WOOD POSTS DOWNWARD ON EXTERIOR SIDE TO DRAIN.
3. WELDED WIRE MESH SHALL RUN CONTINUOUS ON INTERIOR SIDE OF FENCE. SEAMS, IF ANY SHALL BE COVERED BY WOOD TRIM PER DETAIL.
4. CONTRACTOR SHALL PROVIDE COLOR SAMPLES TO BE APPROVED BY OWNER AND PALMETTO BLUFF D.R.B. PRIOR TO CONSTRUCTION.
5. ALL ATTACHMENTS SHALL BE WITH STAINLESS STEEL SCREWS SUITABLE FOR PRESSURE TREATED WOOD, NO NAILS SHALL BE USED.



SECTION - A

6 // L600 GATE TYPE 1 (ALUMINUM)
SCALE: 3/4" - 1'-0"

7 // L600 FENCE TYPE 2 (WIRE MESH)
SCALE: 3/4" - 1'-0"

Wimmer Jones Keefer Ltd.
landscape architecture
land planning
www.wjkltd.com
23 Promenade Street, Suite 201 | Bluffton, South Carolina | 29910 | ph 843.757.7441

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DESIGN CONCEPTS, DRAWING, SHEETS, LOGOS, SPECIFICATIONS, DETAILS WRITTEN MATERIAL SHALL NOT BE USED OR REPRODUCED IN WHOLE OR IN PART IN ANY FORM WITHOUT PRIOR WRITTEN CONSENT OF W.J.K. LTD.
THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS

BLUFFTON, SOUTH CAROLINA

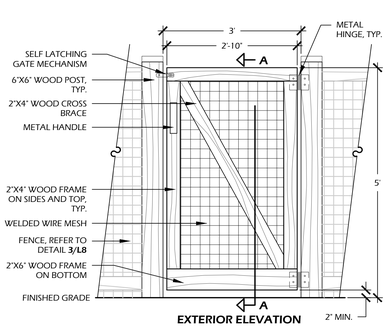
DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL
State of South Carolina
REGISTERED LANDSCAPE ARCHITECT
No. 1401
BRADLEY WIMMER
NOT FOR CONSTRUCTION

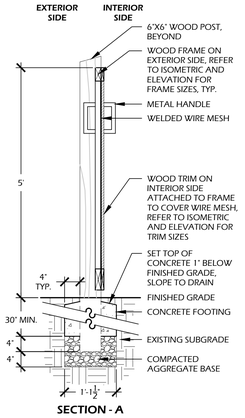
REVISIONS:

DRAWING TITLE
SITE DETAILS - 01

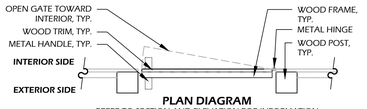
DRAWING NUMBER
L600



EXTERIOR ELEVATION



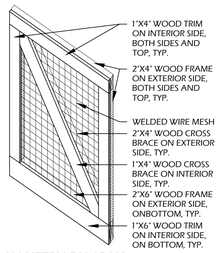
SECTION - A



PLAN DIAGRAM

REFER TO SECTION AND ELEVATION FOR INFORMATION

NOTES:
1. REFER TO PLANS FOR GATE LOCATIONS.
2. SLOPE WOOD POSTS DOWNWARD ON EXTERIOR SIDE TO DRAIN.
3. CONTRACTOR SHALL PROVIDE SAMPLES OF LATCH, HINGE AND HANDLE FOR APPROVAL BY OWNER PRIOR TO ORDERING.
4. CONTRACTOR SHALL PROVIDE COLOR SAMPLES TO BE APPROVED BY OWNER AND PALMETTO BLUFF D.R.B. PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL CONFIRM GATE OPENING AND HINGE ATTACHMENTS TO WOOD POST PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO OWNER AND / OR LANDSCAPE ARCHITECT.
6. ALL ATTACHMENTS SHALL BE WITH STAINLESS STEEL SCREWS SUITABLE FOR PRESSURE TREATED WOOD, NO NAILS SHALL BE USED.



ISOMETRIC DIAGRAM

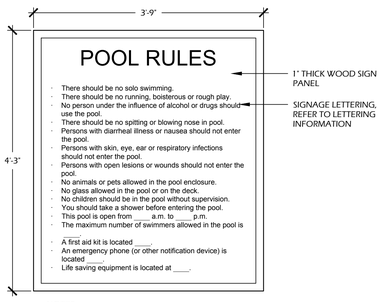
N.T.S.

MATERIAL SPECIFICATION:
WOOD: NO. 1 PRESSURE TREATED SOUTHERN YELLOW PINE
WOOD COLOR: STAINED CHARLESTON GREEN
WELDED WIRE MESH: 14 GAUGE, 2"X2" GRID
MESH COLOR: PAINTED CHARLESTON GREEN

CONCRETE: 3,000 P.S.I. @ 28 DAYS

LATCH AND HINGE INFORMATION:
LATCH: (METAL) SELF LATCHING, BLACK IN COLOR, MODEL BY OWNER, MOUNT ON INTERIOR SIDE OF FENCE
HINGE: (METAL) BLACK IN COLOR, MODEL BY OWNER, MOUNT ON INTERIOR SIDE OF FENCE / GATE
HANDLE: (METAL), BLACK IN COLOR, MODEL BY OWNER, MOUNT ON BOTH SIDES OF GATE

1 // L601 GATE TYPE 2 (WIRE MESH)
SCALE: 3/4" - 1'-0"



NOTES:
1. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL SIGNAGE APPLICATIONS AND PERMITTING PROCESS. ANY DISCREPANCY IN DESIGN MUST BE REPORTED TO LANDSCAPE ARCHITECT AND OWNER OR OWNER'S REPRESENTATIVE.
2. SIGN VERBIAGE SHALL CONFORM TO ALL SOUTH CAROLINA D.H.E.C. POOL SIGNAGE REQUIREMENTS AND SHALL BE FINALIZED WITH POOL CONTRACTOR AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
3. SIGN FABRICATOR SHALL PROVIDE SAMPLES OF PAINT COLORS AND FONT FOR APPROVAL BY LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
4. SIGN FABRICATOR SHALL PROVIDE MOCKUP OF SIGN PANEL WITH APPROVED COLOR(S) AND FONT(S) FOR FINAL APPROVAL BY LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
5. ALL ATTACHMENTS SHALL BE STAINLESS STEEL SUITABLE FOR PRESSURE TREATED WOOD, NO NAILS SHALL BE USED. SHALL BE FENCE MOUNTED.

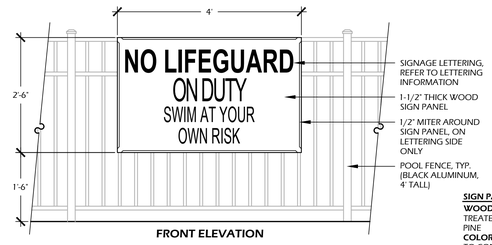
SIGN PANEL INFORMATION:
WOOD: NO. 1 PRESSURE TREATED SOUTHERN YELLOW PINE
COLOR: T.B.D.

LETTERING INFORMATION:
FONT: POOL CONTRACTOR TO CONFIRM VERBIAGE W/ OWNERS REPRESENTATIVE
SIZE: "POOL RULES" 3" MIN., GENERAL TEXT 1" MIN.
COLOR: T.B.D.

ATTACHMENT INFORMATION:
ATTACH SIGN PANEL TO BUILDING WITH 1/4" CARRIAGE BOLT WASHER AND NUT. COUNTER SINK BOLT ON SIGN PANEL. REFER TO NOTE 5 THIS DETAIL.

OTHER INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS
SOIL COMPACTION: 95% STANDARD PROCTOR

2 // L601 POOL RULES SIGNAGE
SCALE: 1" - 1'-0"



FRONT ELEVATION

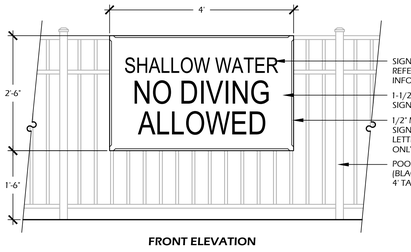
NOTES:
1. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL SIGNAGE APPLICATIONS AND PERMITTING PROCESS. ANY DISCREPANCY IN DESIGN MUST BE REPORTED TO LANDSCAPE ARCHITECT AND OWNER OR OWNER'S REPRESENTATIVE.
2. SIGN VERBIAGE SHALL CONFORM TO ALL SOUTH CAROLINA D.H.E.C. POOL SIGNAGE REQUIREMENTS AND SHALL BE FINALIZED WITH POOL CONTRACTOR AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
3. SIGN FABRICATOR SHALL PROVIDE SAMPLES OF PAINT COLORS AND FONT FOR APPROVAL BY LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
4. SIGN FABRICATOR SHALL PROVIDE MOCKUP OF SIGN PANEL WITH APPROVED COLOR(S) AND FONT(S) FOR FINAL APPROVAL BY LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
5. ALL ATTACHMENTS SHALL BE STAINLESS STEEL SUITABLE FOR PRESSURE TREATED WOOD, NO NAILS SHALL BE USED.

SIGN PANEL INFORMATION:
WOOD: NO. 1 PRESSURE TREATED SOUTHERN YELLOW PINE
COLOR: POOL CONTRACTOR TO CONFIRM VERBIAGE W/ OWNERS REPRESENTATIVE.

LETTERING INFORMATION:
FONT: T.B.D.
SIZE: "NO LIFEGUARD ON DUTY" 6" MIN., "SWIM AT YOUR OWN RISK" 4" MIN.
COLOR: POOL CONTRACTOR TO CONFIRM VERBIAGE W/ OWNERS REPRESENTATIVE.

ATTACHMENT INFORMATION:
CONTRACTOR SHALL REVIEW ATTACHMENT OPTIONS WITH CLIENT AND LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO CONSTRUCTION.

3 // L601 LIFEGUARD SIGNAGE
SCALE: 3/4" - 1'-0"



FRONT ELEVATION

NOTES:
1. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL SIGNAGE APPLICATIONS AND PERMITTING PROCESS. ANY DISCREPANCY IN DESIGN MUST BE REPORTED TO LANDSCAPE ARCHITECT AND OWNER OR OWNER'S REPRESENTATIVE.
2. SIGN VERBIAGE SHALL CONFORM TO ALL SOUTH CAROLINA D.H.E.C. POOL SIGNAGE REQUIREMENTS AND SHALL BE FINALIZED WITH POOL CONTRACTOR AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
3. SIGN FABRICATOR SHALL PROVIDE SAMPLES OF PAINT COLORS AND FONT FOR APPROVAL BY LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
4. SIGN FABRICATOR SHALL PROVIDE MOCKUP OF SIGN PANEL WITH APPROVED COLOR(S) AND FONT(S) FOR FINAL APPROVAL BY LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
5. ALL ATTACHMENTS SHALL BE STAINLESS STEEL SUITABLE FOR PRESSURE TREATED WOOD, NO NAILS SHALL BE USED.

SIGN PANEL INFORMATION:
WOOD: NO. 1 PRESSURE TREATED SOUTHERN YELLOW PINE
COLOR: POOL CONTRACTOR TO CONFIRM VERBIAGE W/ OWNERS REPRESENTATIVE.

LETTERING INFORMATION:
FONT: T.B.D.
SIZE: "SHALLOW WATER" 4" MIN., "NO DIVING ALLOWED" 6" MIN.
COLOR: POOL CONTRACTOR TO CONFIRM VERBIAGE W/ OWNERS REPRESENTATIVE.

ATTACHMENT INFORMATION:
CONTRACTOR SHALL REVIEW ATTACHMENT OPTIONS WITH CLIENT AND LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO CONSTRUCTION.

4 // L601 NO DIVING SIGNAGE
SCALE: 3/4" - 1'-0"

MANUFACTURER INFORMATION:
CONCRETE CREATIONS

WEB: WWW.CONCRETECREATIONSLA.COM

MODEL: SIMPLICITY EDGE FIRE BOWL
SIZE: 60" DIA. 18" HT. 12" EDGE
COLOR: CAL-TAN C-63 3#
FINISH: SMOOTH #90
INTERIOR FILL: LAVA ROCK
FUEL: PROPANE

NOTE: INSTALL DRY WELL UNDER FIRE BOWL AT POINT OF DRAIN

OR APPROVED EQUAL

Cal-Tan
C-63 3#

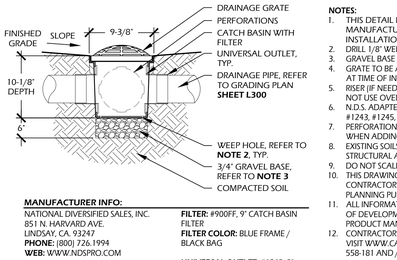
5 // L601 FIRE BOWL
SCALE: N.T.S.

MANUFACTURER INFORMATION:
MADRAX
1080 UNIEK DRIVE
WAUNAKEE, WI. 53597
PHONE: (800) 448.7931
WEB: WWW.MADRAX.COM

MODEL: MET-2-SF-P
COLOR: GALVANIZED STEEL
ATACHMENT: BOLT TO CONCRETE PAD
QUANTITY: 3

OR APPROVED EQUAL

6 // L601 BIKE RACK
SCALE: N.T.S.



MANUFACTURER INFO:
NATIONAL DIVERSIFIED SALES, INC.
851 N. HARVARD AVE.
LINDSAY, CA. 93247
PHONE: (800) 726.1994
WEB: WWW.NDSPRO.COM

DRAINAGE GRATE: #981, 9"X9" ATRIUM GRATE
GRATE COLOR: BLACK
GRATE INFO: STRUCTURAL FOAM POLYOLEFIN DOME ATRIUM GRATE WITH U.V. INHIBITOR

CATCH BASIN: #900, 9"X9" CATCH BASIN, 2 OPENINGS
BASIN COLOR: BLACK
BASIN INFO: POLYOLEFIN TAPERED CATCH BASIN WITH U.V. INHIBITORS

FILTER: #900FF, 9" CATCH BASIN FILTER
FILTER COLOR: BLUE FRAME / BLACK BAG

UNIVERSAL OUTLET: #1243, 3" AND 4" UNIVERSAL LOCKING OUTLET AND #1206, 6" UNIVERSAL ADAPTER PLUG
OUTLET COLOR: BLACK
OUTLET INFO: STYRENE, USE ADAPTER PLUG AS REQUIRED (WHERE ONLY ONE DRAIN LINE RUNS INTO CATCH BASIN)

RISER: #916, 9"X9" CATCH BASIN RISER, BLACK, STYRENE, USE AS REQUIRED

NOTES:
1. THIS DETAIL IS USED FOR DESIGN INTENT ONLY. REFER TO TO MANUFACTURERS DETAIL AND SPECIFICATIONS FOR ACTUAL INSTALLATION.
2. DRILL 1/8" WEEP HOLE TYPICAL OF 4 PLACES AT BOTTOM CORNERS.
3. GRAVEL BASE SHALL BE USED TO PREVENT STANDING WATER.
4. GRATE TO BE ATTACHED TO CATCH BASIN WITH SCREW(S) PROVIDED AT TIME OF INSTALLATION.
5. RISER (IF NEEDED) CAN BE CUT TO ACHIEVE EXACT ELEVATION, DO NOT USE OVER FIVE (5) RISERS WITH CATCH BASIN.
6. N.D.S. ADAPTERS THAT FIT THIS CATCH BASIN ARE AS FOLLOWS: #1242, #1243, #1245, AND #1266, USE #1206 IF PLUGGING AN OUTLET.
7. PERFORATION ON NON OPEN SIDES AND BOTTOM TO BE CUT OUT WHEN ADDING EXTRA OUTLETS.
8. EXISTING SOILS SHOULD BE EVALUATED TO ENSURE PROPER STRUCTURAL AND PERMEABILITY PROPERTIES.
9. DO NOT SCALE DRAWING.
10. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY.
11. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
12. CONTRACTORS NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT WWW.CADDETAILS.COM/INFO AND ENTER REFERENCE NUMBER 558-181 AND / OR 558-186.

NDS We put water in its place

558-181 / 558-186
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REVISION DATE 09/23/2015
CADdetails.com

KEY COMPONENT www.ndspro.com/s5

7 // L601 CHARCOAL GRILL
SCALE: N.T.S.

MANUFACTURER INFO:
NATIONAL DIVERSIFIED SALES, INC.
851 N. HARVARD AVE.
LINDSAY, CA. 93247
PHONE: (800) 726.1994
WEB: WWW.NDSPRO.COM

NDS We put water in its place

KEY COMPONENT www.ndspro.com/s5

558-173
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REVISION DATE 09/23/2015
CADdetails.com

NOTES:
1. THIS DETAIL IS USED FOR DESIGN INTENT ONLY. REFER TO TO MANUFACTURERS DETAIL AND SPECIFICATIONS FOR ACTUAL INSTALLATION
2. EXISTING SOILS SHOULD BE EVALUATED TO ENSURE PROPER STRUCTURAL AND PERMEABILITY PROPERTIES.
3. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
4. DO NOT SCALE DRAWING.
5. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY.
6. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
7. CONTRACTORS NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT WWW.CADDETAILS.COM/INFO AND ENTER REFERENCE NUMBER 558-173

8 // L601 9" AREA DRAIN
SCALE: N.T.S.

9 // L601 TRENCH DRAIN
SCALE: N.T.S.

Winter Jones Keefer Ltd.
landscape architecture
land planning
www.wjkltd.com
23 Promenade Street, Suite 201 | Bluffton, South Carolina | 29910 | ph 843.757.7441

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THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS

BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

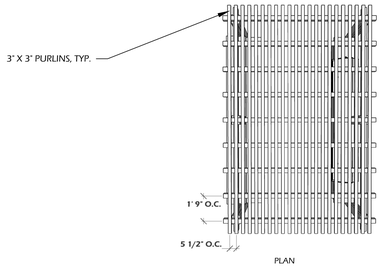
FINAL SUBMITTAL
State of South Carolina
Registered Landscape Architect
No. 1087
Brian Winter
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
SITE DETAILS - 02

DRAWING NUMBER
L601

Section VII. Item #1.



PLAN

NOTES:
1. CONTRACTOR SHALL VERIFY ALL WOOD MEMBERS FOR APPROPRIATE SIZE, SPACING, ATTACHMENTS AND STRUCTURAL STABILITY PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO LANDSCAPE ARCHITECT AND OWNER.
2. CONTRACTOR SHALL PROVIDE COLOR SAMPLES TO BE APPROVED BY OWNER OR OWNER'S REPRESENTATIVE.
3. ALL ATTACHMENTS SHALL BE STAINLESS STEAL SUITABLE FOR PRESSURE TREATED WOOD. NO NAILS SHALL BE USED.

MANUFACTURER INFORMATION:
COUNTERTOP GRANITE: COLOR BLACK OR APPROVE EQUAL
OTHER INFO: OTHER DESCRIPTORS

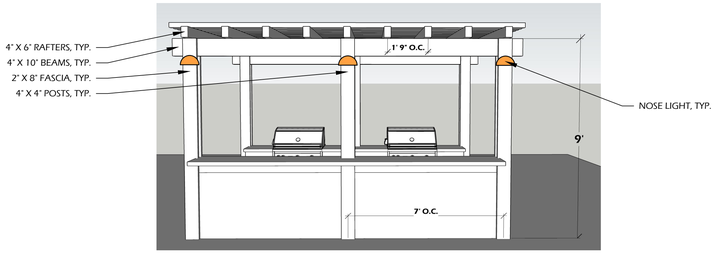
OR APPROVED EQUAL

NOTES:
1. GRILLS TO BE SELECTED BY OWNER REPRESENTATIVE< CONFIRM GRILL SIZE AND ADJUST FABRICATION OF COUNTERTOP TO ACCOMMODATE.

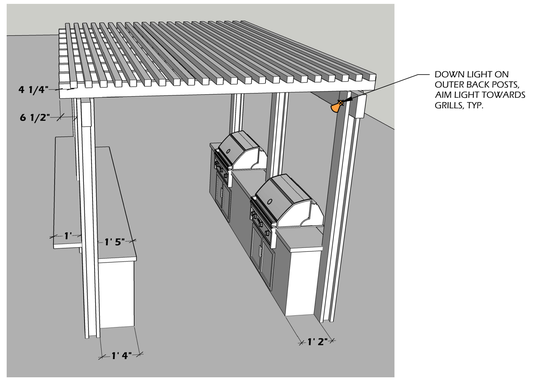
WOOD INFORMATION:
WOOD: NO. 1 PRESSURE TREATED SOUTHERN YELLOW PINE
COLOR: SW 7008 ALABASTER WHITE

OTHER INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS
SOIL COMPACTION: 95% STANDARD PROCTOR

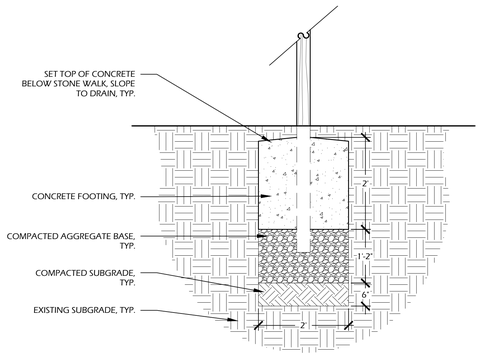
SHADE CLOTH INFORMATION:
MANUFACTURER: T.B.D
ATTACHMENT: PER MANUFACTURER'S SPECIFICATION
COLOR: WHITE



SIDE ELEVATION



FRONT PERSPECTIVE



FOOTING DETAIL

1 // L602 GRILLING PAVILION
SCALE: N.T.S.

MANUFACTURER INFORMATION:
NITELITES
6107 MARKET AVE.
FRANKLIN, OH 45005
PHONE: (513) 424 5510
WEB: WWW.NITELITES.COM

MODEL: NITE-085 NOSE LIGHT
FINISH: AGED BRASS
BULB: NITE-427 LED
WATTAGE: 1 WATTS
TEMPERATURE: 2700K
MOUNTING: SURFACE

OR APPROVED EQUAL

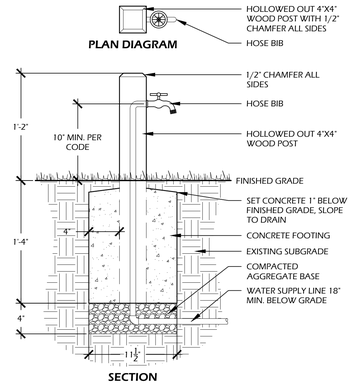
2 // L602 NOSE LIGHT
SCALE: N.T.S.

MANUFACTURER INFORMATION:
NITELITES
6107 MARKET AVE.
FRANKLIN, OH 45005
PHONE: (513) 424 5510
WEB: WWW.NITELITES.COM

MODEL: NITE-004 BULLET
FINISH: AGED BRASS
BULB: NITE-429BR5W MR16 LED
WATTAGE: 5 WATTS
TEMPERATURE: 2700K
UP LIGHT MOUNTING: STAKE
DOWN LIGHT MOUNTING: SURFACE MOUNT TO PAVILION POST

OR APPROVED EQUAL

3 // L602 UP LIGHT/DOWN LICHT
SCALE: N.T.S.



HOSE BIB INFORMATION:
MANUFACTURER:
MATCO-NORCA
1150 SILBER RD.
HOUSTON, TX. 77055
PHONE: (800) 935.5456
WEB: WWW.MATCO-NORCA.COM

MODEL: 646R HOSE BIB
FINISH: CAST BRASS
NOTE: INSTALL PER MANUFACTURERS SPECIFICATION.

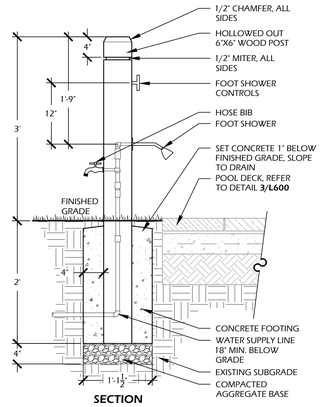
OR APPROVED EQUAL

WOOD INFORMATION:
WOOD: NO 1 PRESSURE TREATED SOUTHERN YELLOW PINE
COLOR: SW 7048 URBAN BRONZE

CONCRETE INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS

NOTES:
1. MANUFACTURER TO PROVIDE SPECIFICATIONS FOR CONTRACTOR REFERENCE.
2. CONTRACTOR SHALL PROVIDE DRAIN PLUG FOR HOSE BIB DURING FREEZING WEATHER.
3. ALL PIPING / PLUMBING SHALL BE CONCEALED WITHIN WOOD POST. REPORT ANY DISCREPANCIES TO LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.

4 // L602 HOSE BIB
SCALE: 1-1/2" - 1'-0"



PLAN DIAGRAM
N.T.S.

FOOT SHOWER INFORMATION:
MANUFACTURER:
T.B.D.

MODEL: T.B.D.
FINISH: T.B.D.
NOTE: INSTALL PER MANUFACTURERS SPECIFICATION.

WOOD INFORMATION:
WOOD: NO.1 PRESSURE TREATED SOUTHERN YELLOW PINE
COLOR: SW 7048 URBAN BRONZE

CONCRETE INFORMATION:
CONCRETE: 3,000 P.S.I. AT 28 DAYS

NOTES:
1. MANUFACTURER TO PROVIDE SPECIFICATIONS FOR CONTRACTOR REFERENCE.
2. TIMED AUTOMATIC SHUTOFF MECHANISM SHALL BE INSTALLED ON FOOT SHOWER UNITS.
3. ALL PIPING / PLUMBING SHALL BE CONCEALED WITHIN WOOD POST. REPORT ANY DISCREPANCIES TO LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.

5 // L602 FOOT WASH
SCALE: 1" - 1'-0"

MANUFACTURER INFORMATION:
DOG WASTE DEPOT
12316 WORLD TRADE DRIVE STE 102
SAN DIEGO, CA 92128
PHONE: 800.678.1612
WEB: WWW.DOGWASTEDEPOT.COM

MODEL: DEPOT-401
COLOR: GREEN

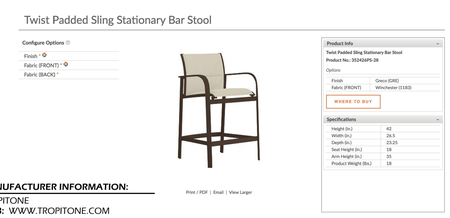
OR APPROVED EQUAL

NOTES:
1. INSTALL PER MANUFACTURER RECOMMENDATIONS .

6 // L602 DOG WASTE STATION
SCALE: N.T.S.

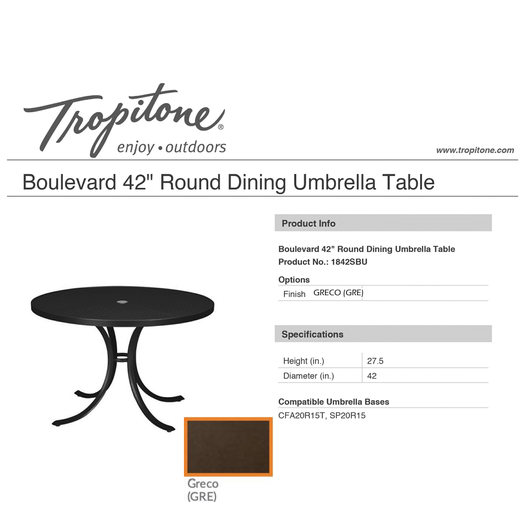
MANUFACTURER INFORMATION:
TROPITONE
WEB: WWW.TROPITONE.COM

7 // L602 DINING CHAIR
SCALE: N.T.S.

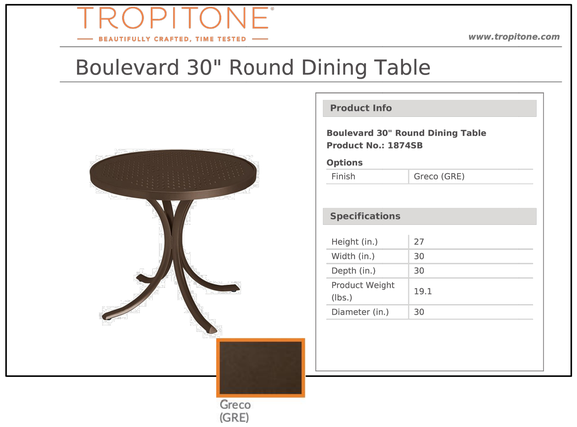


MANUFACTURER INFORMATION:
TROPITONE
WEB: WWW.TROPITONE.COM

8 // L602 BAR STOOL
SCALE: N.T.S.



9 // L602 DINING TABLE
SCALE: N.T.S.



10 // L602 CAFE TABLE
SCALE: N.T.S.

Wimer Jones Keefer Ltd.
landscape architecture
land planning
www.wjkltd.com
83 Promenade Street, Suite 301 | Bluffton, South Carolina | 29910 | ph 843.757.7447

© 2023 WJK LTD.
DESIGN CONCEPTS, DRAWING, SHEETS, LOGOS, SPECIFICATIONS, DETAILS, WRITTEN MATERIAL SHALL NOT BE USED OR REPRODUCED IN WHOLE OR IN PART IN ANY FORM WITHOUT PRIOR WRITTEN CONSENT OF WJK LTD.
THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR
VENTURE AT OKATIE BLUFFS
APARTMENTS
BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL
State of South Carolina
REGISTERED LANDSCAPE ARCHITECT
No. 1067
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
SITE DETAILS - 03

DRAWING NUMBER
L602

Tropitone
enjoy • outdoors
www.tropitone.com

Boulevard 20" Round Tea Table

Product Info

Boulevard 20" Round Tea Table
Product No.: 9382SB

Options

Finish	Greco (GRE)

Specifications

Height (in.)	16
Diameter (in.)	20

GRECO

1 // L603 SIDE TABLE
SCALE: N.T.S.

MANUFACTURER INFORMATION:
PAWLEY'S ISLAND HAMMOCKS
305 INDUSTRIAL BLVD
GREENVILLE, NC. 27835
PHONE: (252) 295.0407
WEB: WWW.PAWLEYSISLANDHAMMOCKS.COM

HAMMOCK STAND:
MODEL: DELUXE ROMAN ARC CYPRESS, 15 FT (ITEM: #SAR)
COLOR: CANYON BROWN

HAMMOCK:
MODEL: LARGE SUNBRELLA QUICK-DRY HAMMOCK (ITEM: #M-BOY)
COLOR: AUGUSTINE OYSTER

OR APPROVED EQUAL

QUANTITY: 3

2 // L603 HAMMOCKS
SCALE: N.T.S.

MANUFACTURER INFORMATION:
TROPITONE
WEB: WWW.TROPITONE.COM

Twist Padded Sling Chaise Lounge

Configure Options

Finish *
Fabric (FRONT) *
Fabric (BACK) *

Print / PDF | Email | View Larger

Product Info

Twist Padded Sling Chaise Lounge
Product No.: 352433PS

Options

Finish	Greco (GRE)
Fabric (FRONT)	Winchester (1183)

WHERE TO BUY

Specifications

Height (in.)	42
Width (in.)	29.5
Depth (in.)	81.5
Seat Height (in.)	14
Product Weight (lbs.)	37
Nest Quantity	4

3 // L603 LOUNGE CHAIR
SCALE: N.T.S.

Country Living

SLATE GREY

MANUFACTURER INFORMATION:
POLY-WOOD
1000 POLYWOOD WAY
SYRACUSE, IN, 46567
WEB: WWW.POLYWOOD.COM

MODEL: COUNTRY LIVING MODERN ADIRONDACK CHAIR (#CLAD451)
COLOR: SLATE GREY

OR APPROVED EQUAL

4 // L603 ADIRONDACK CHAIR
SCALE: N.T.S.

TABLE

BENCH

MANUFACTURER INFORMATION:
LANDSCAPE FORMS
WEB: WWW.LANDSCAPEFORMS.COM

TABLE MODEL: HARVEST RECTANGULAR TABLE
HEIGHT: DINING HEIGHT
COLOR: CHARCOAL/SILVER
QUANTITY: 2

BENCH MODEL: HARVEST 94" BENCH
HEIGHT: DINING HEIGHT
COLOR: CHARCOAL/SILVER
QUANTITY: 4

OR APPROVED EQUAL

5 // L603 PICNIC TABLE - TYPE 1
SCALE: N.T.S.

MANUFACTURER INFORMATION:
POLY-WOOD
1000 POLYWOOD WAY
SYRACUSE, IN, 46567
WEB: WWW.POLYWOOD.COM

MODEL: PARK 72" PICNIC TABLE (#PT172)
COLOR: TEAK
QUANTITY: 2

OR APPROVED EQUAL

6 // L603 PICNIC TABLE - TYPE 2
SCALE: N.T.S.

TROPITONE
BEAUTIFULLY CRAFTED, TIME TESTED
www.tropitone.com

Aluminum Cabana, 8' Square w/ Fabric Curtains & Vent

Product Info

Aluminum Cabana, 8' Square w/ Fabric Curtains & Vent
Product No.: NS008A238V

Specifications

Height (in.)	109
Width (in.)	96
Depth (in.)	96
Clearance Height (in.)	84
Product Weight (lbs.)	107
Shape	Square
Frame/Pole Construction	Aluminum, One Piece
Pole Diameter (in.)	2 3/8

Available Options
Directional Downlights (DD), Alternating Panels (AL), Different Color Air Vent (VC), Silk Screening (SS), Extended Pole (EPA), Leading Edge Curtain Trim (CT), Valance Trim (VT), TV mount (TV), Ceiling Fan Mount (CF)

Product Notes

Cabana is available in all umbrella suitable fabrics and marine grade fabrics.

Linen fabrics are not available on curtains.

Striped fabrics are not available on tops.

MANUFACTURER INFORMATION:
TROPITONE
WEB: WWW.TROPITONE.COM

MODEL: NS008A238
FINISH: GRECO (GRE)
FABRIC (COVER): CANVAS COCOA (5425)
FABRIC (CURTAIN): CANVAS ANTIQUE BEIGE (5422)

OR APPROVED EQUAL

7 // L603 CABANA
SCALE: N.T.S.

MANUFACTURER INFORMATION:
TUUCI
WEB: WWW.TUUCI.COM

MODEL: OCEAN MASTER MAX CLASSIC CANTILEVER
SIZE: 10' SQUARE
POLE FINISH: ASPEN WHITE ALUM-TEAK
CANOPY: SAHARA
QUANTITY: 1
OTHER INFO: MOUNTING REQUIRED, REFER TO MANUFACTURERS SPECIFICATIONS FOR IN-GROUND SECURITY MOUNT ANCHOR

OR APPROVED EQUAL

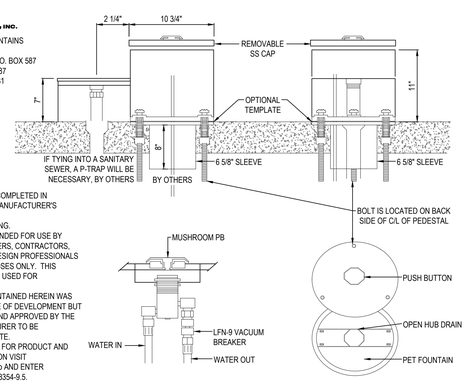
8 // L603 CANTILEVER UMBRELLA
SCALE: N.T.S.

350 SM SS

SHOWN W/ OPTIONAL 10" SS SURFACE CARRIER

MDF
MOST DEPENDABLE FOUNTAINS, INC.

MOST DEPENDABLE FOUNTAINS INC.
5705 COMMANDER DR. P.O. BOX 587
ARLINGTON, TN 38002-0587
TOLL FREE: 1-800-552-6331
PHONE: (901) 867-0039
FAX: (901) 867-0159



NOTES:
1. COLOR TO BE GREEN.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
6. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 3354-9.5.

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Brown

COLOR: BROWN

PHOTO EXAMPLE

9 // L603 CANTILEVER UMBRELLA
SCALE: N.T.S.

Wimmer Jones Keefer Ltd.
landscape architecture
land planning
www.wjkltd.com
23 Promenade Street, Suite 201 | Bluffton, South Carolina | 29910 | ph 843.757.7441

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THIS SHEET TO SCALE AT: 30"X42"

SITE DEVELOPMENT PLANS
FOR

VENTURE AT OKATIE BLUFFS

APARTMENTS
BLUFFTON, SOUTH CAROLINA

DATE:	OCT 23, 2024
PROJECT NO.:	22212.01
DRAWN BY:	AK / ER
CHECKED BY:	BW / CK

FINAL SUBMITTAL
State of South Carolina
No. 1087
LANDSCAPE ARCHITECT
NOT FOR CONSTRUCTION

REVISIONS:

DRAWING TITLE
SITE DETAILS - 04

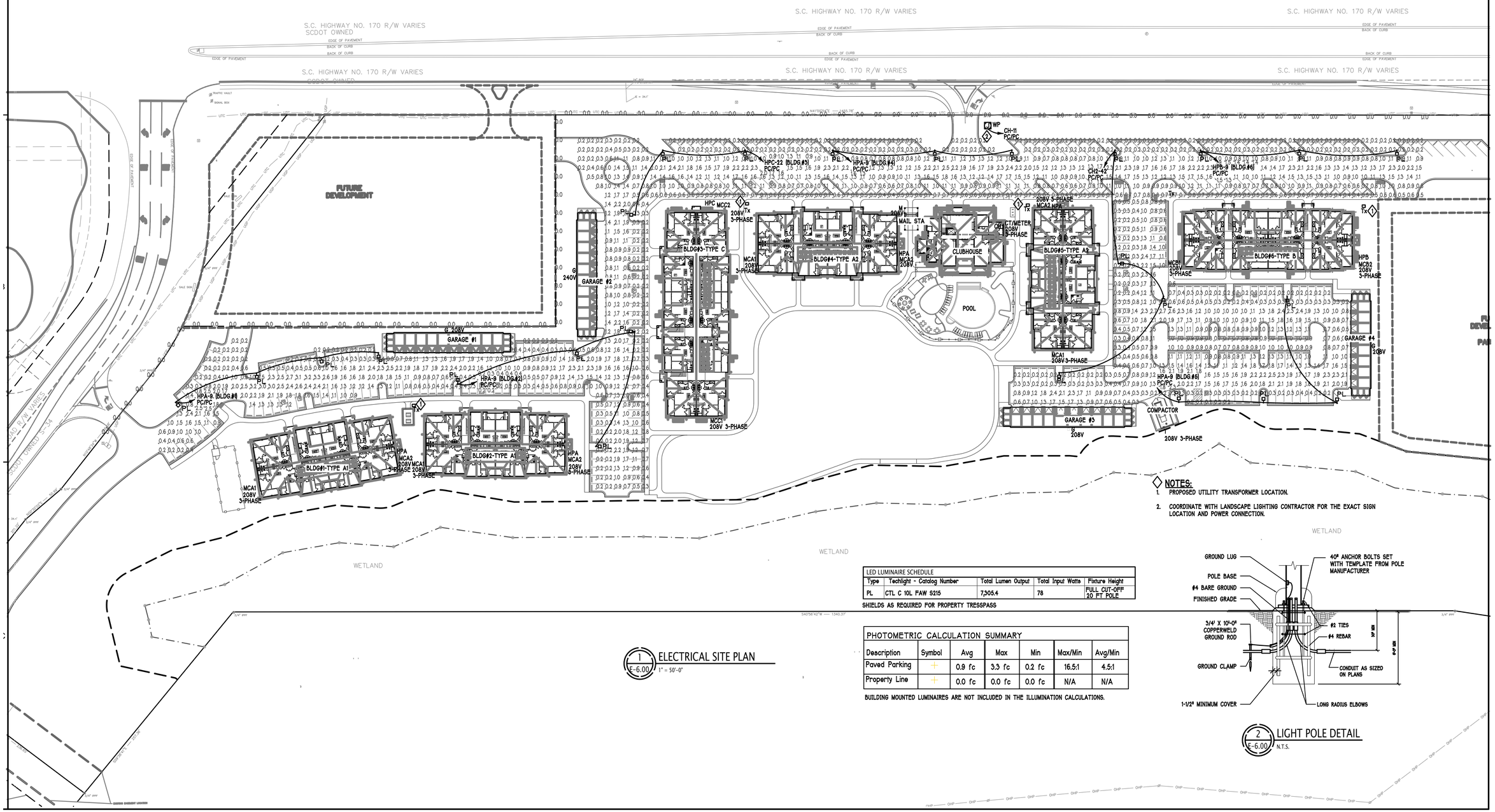
DRAWING NUMBER
L603

No.	Date	Description
0	5.20.24	30% Set
	6.21.24	60% Set
	7.10.24	For Permit
	7.19.24	For Permit Updated

Job Number: 5453

File Reference:

Scale:



NOTES:

1. PROPOSED UTILITY TRANSFORMER LOCATION.
2. COORDINATE WITH LANDSCAPE LIGHTING CONTRACTOR FOR THE EXACT SIGN LOCATION AND POWER CONNECTION.

LED LUMINAIRE SCHEDULE

Type	Techlight - Catalog Number	Total Lumen Output	Total Input Watts	Fixture Height
PL	CTL C 10L FAW S215	7,305.4	78	FULL CUT-OFF 20 FT POLE

SHIELDS AS REQUIRED FOR PROPERTY TRESSPASS

PHOTOMETRIC CALCULATION SUMMARY

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Paved Parking	+	0.9 fc	3.3 fc	0.2 fc	16.5:1	4.5:1
Property Line	+	0.0 fc	0.0 fc	0.0 fc	N/A	N/A

BUILDING MOUNTED LUMINAIRES ARE NOT INCLUDED IN THE ILLUMINATION CALCULATIONS.

1 E-6.00 ELECTRICAL SITE PLAN
1" = 50'-0"

2 E-6.00 LIGHT POLE DETAIL
N.T.S.

VENTURE AT OKATIE BLUFF
APARTMENTS
BLUFFTON, SOUTH CAROLINA

VP ENGINEERING
Mechanical | Electrical | Plumbing | Technology
Vrettos Pappas Consulting Engineers, P.A.
P.O. Box 12540
Charlotte, North Carolina 28220
704-372-7755
www.vpce.com

ELECTRICAL SITE PLAN

Sheet Number:
E-6.00

TECHLIGHT
INNOVATION IN ILLUMINATION

CTL SERIES

High Lumen Output Cutlass LED Area Light

Catalog Number	
Project	Type

Picture shows:
CTL 45L w/ CTLARM

SERIES	HOUSING HEIGHT	LENGTH & WIDTH	EPA (FT²)
CTL	4.44"	17.25" x 12.00"	See Chart

FEATURES & SPECIFICATIONS

APPLICATION — The Cutlass Series of high output LED luminaires are designed for new outdoor parking area lighting and to be a replacement for HID area lights. They are optimal for lighting applications where long life, low maintenance, and consistent color rendering is required. The high efficient/lumen output allows the fixture to be used for parking, restaurant, quick service, shopping centers, or general area lighting applications.

CONSTRUCTION — The heavy-duty housing is constructed of cast aluminum with heat dissipating fins. The optical assemblies are sealed in place using a silicone gasket for weather tight protection. ETL listed for wet locations (IP65). Each fixture can accommodate advanced wireless control, management and reporting systems for outdoor lighting when ordered with the optional accessories (verify compatibility if using controls supplied by others) such as CTLARM mounting (required).

FINISH — A corrosion-resistant epoxy E-Coat layer that forms a uniform and all-encompassing protective barrier is applied to the fixtures prior to electrostatically applying a super durable powder coat finish. Standard colors available: Black, Bronze, US Green, White. Custom colors available upon request.

OPTICAL SYSTEM — Made with a state of the art UV stabilized acrylic high performance refractive optical assemblies that use high transmittance materials to achieve precise photometric distributions. Available in Type II, III, IV, Automotive Frontline Wide, IV Tennis, V Medium and V Wide beam configurations. Star Light Friendly (meets or exceeds Dark Sky requirements) in the horizontal position. Full Cutoff Luminaire.

ELECTRICAL SYSTEM — Available in up to 45,000 LED lumens in most optical distributions with either 5000K Cool White (+/- 500K), 4000K Neutral White or 3000K Warm White color temperatures. LED's rated for over 100,000 hours at 55°C ambient temperature. Available with 120~277V 50/60 Hz power supply. 480V and 347V input option or 0-10V dimming. Built-in surge protection up to 10 kV. Built-in Active PFC Function LED driver conforms to UL8750 standards.

MOUNTING — Proprietary slide-on mounting system allows for quick installation. The CTL can be ordered with an aesthetically pleasing arm mount (CTLARM – required for integrating dynamic control systems), a 2" adjustable slip fitter (CTL2AF) for mounting on a standard 2-3/8" OD tenon and an entire compliment of pole brackets with integrated quick mount technology. CTLSM for direct mounting to poles in single(1 @ 90º) or D180 (2 @ 180º).

LISTINGS — Complies with UL8750. ETL listed for wet locations. Meets US and Canadian safety standards. -40°C to 50°C ambient operation. RoHS Compliant.

WARRANTY — The complete luminaire is covered by a 5-year limited warranty.

ORDERING INFORMATION

Choose the bold face options for the appropriate luminaire configuration for your application and enter on the line above each fixture attribute. Accessories may be factory installed, depending on the particular accessory chosen, but still be ordered as a separate line item.

EXAMPLE:
CTL C 45L T5M 1 BZ

CTL							
SERIES	**COLOR TEMP**		**NOMINAL LUMENS**	**OPTICS**	**VOLTAGE**	**FINISH**	**OPTIONS**
	C = Cool White (5000K) **N** = Neutral White (4000K) **W** = Warm White (3000K)	2 Moduels	**5L** = 5,000 Lumens **8L** = 8,000 Lumens **10L** = 10,000 Lumens **12L** = 12,000 Lumens **15L** = 15,000 Lumens **20L** = 20,000 Lumens	**T2** = Type II **T3** = Type III **T4** = Type IV **FAW** = Frontline Auto Wide **T4T** = Type IV Tennis **T5M** = Type V Medium **T5W** = Type V Wide	**1** = Multi-Volt[1] **2** = 347-480V(HV)	**BZ** = Bronze **BK** = Black **GR** = US Green **WH** = White **SP** = Special[2]	**PCR7**[5] = 7 Pin Twist-Lock Photocell Receptacle ANSI C136.41 & Receptable Shorting Cap **2AF**[6,7] = 2" Adjustable Slip Fitter **DLP**[9] = Dimming Leads Pulled **HOEB**[10] = LED Battery Pack, 90 mins **CTL ARM IMS**[9,11] = Arm with Integrated PIR Motion Sensor For Square Pole **CTL ARM R IMS**[9,11] = Arm with Integrated PIR Motion Sensor For Round Pole ***(IMS Lenses Below, Ordered As A Separate Line Item)*** **TLWSFSP-L2**[12]= 360° lens, maximum coverage: 48ft diameter from 8ft height **TLWSFSP-L3**[12] = 360° lens, maximum coverage: 40ft diameter from 20ft height **TLWSFSP-L7**[12] = 360° lens, maximum coverage: 100ft diameter from 40ft height **CTL ARM IMSBTM**[9,13] = Arm for Square Pole with Network Wireless PIR & Daylight Harvesting Sensor **CTL ARM R IMSBTM**[9,13] = Arm for Round Pole with Network Wireless PIR & Daylight Harvesting Sensor ***(IMSBTM Lenses Below, Ordered As A Separate Line Item)*** **WHBL1** = 360° PIR lens, maximum coverage 80' dia. from 40' height
		4 Modules	**25L** = 25,000 Lumens **30L** = 30,000 Lumens **35L** = 35,000 Lumens **40L** = 40,000 Lumens **45L**[8] = 45,000 Lumens				

FIXTURE WEIGHTS (APPROX)		
Fixture Configuration	2 Module	4 Module
Weight (lbs)	14 lbs	20 lbs

ACCESSORIES (Order as separate line items. Specify finish for accessories.)

PC2 480V Twist-Lock Photocell
PC7 Multi-Tap (105-285V) Twist-Lock Photocell
CTLSM[3,6] Slide Mount Adaptor
CTLB15[7] Adjustable Yoke Mount with Slide Adaptor
CTL ARM[6] Decorative Arm Mount (0.3 EPA, 3.5 lbs)
CTL ARM R[6] Decorative Arm Mount for Round Poles (0.3 EPA, 3.7 lbs)
S215[4] Angled Back Light Shield
CTLHT238 Horizontal 2-3/8" OD Tenon Mount
VBWM Wall Mount Adaptor
TLWSFIR-100 Remote Handheld Configurator Tool for IMS Sensors
MOUNTING OPTIONS See page 3

DesignLights Consortium® Qualified. Please go to **www.designlights.org** for the current Qualified Products List. Further details about qualified models may be found under Family Models.

NOTES

[1] = Multi-Volt is an auto ranging power supply from 100V to 300V input.
[2] = Custom RAL color matching is available. Contact your sales representative for additional info.
[3] = Slide mount adaptor for direct pole mounts cannot be used when mounting fixtures at 90º increments.
[4] = Requires one S215 for 5L-20L units; two S215 for 25L-45L units.
[5] = PCR7 photocell receptacle must be oriented in the field so that the light sensor on the control is facing North. When used with the CTL2AF, the fixture must be in a downward facing position (<90° tilt). Use of the PCR7 with a fixture in an upward facing position will void warranty.
[6] = Accessory mounting device must be ordered for each cutlass luminaire to provide mounting means.
[7] = Do not tilt the CTL more than 75 degrees upward from horizontal when using the CTL2AF & CTLB15.
[8] = Only available in certain optics and wattages. See LUMINAIRE CHARACTERISTICS chart for details.
[9] = DLP Option Required for Arms with Integrated IMS Motion Sensors.
[10] = Only available in 5L, 8L, 10L, 12L and 15L.
[11] = TLWSFSP-L2, L3, or L7 Lens must be ordered along with Arms with Integrated PIR Motion Sensors.
[12] = Photo control shield available upon request. Lens must be ordered with IMS option.
[13] = **WHBL1** Lens must be ordered along with Arms with Integrated PIR Motion Sensors.
[14] = See pg. 5 for specific CTLTH configurations and TH spec sheet for specifications.

All dimensions and specifications are subject to change without notice.

TOWN OF BLUFFTON
2025 PLANNING COMMISSION
Meeting and Application Submission Schedule

MEETING DATES	APPLICATION SUBMISSION DATES
January 22, 2025	December 23, 2024
February 26, 2025	January 29, 2025
March 26, 2025	February 26, 2025
April 23, 2025	March 26, 2025
May 28, 2025	April 30, 2025
June 25, 2025	May 28, 2025
July 23, 2025	June 25, 2025
August 27, 2025	July 30, 2025
September 24, 2025	August 27, 2025
October 22, 2025	September 24, 2025
November 19, 2025**	October 22, 2025
December 17, 2025**	November 19, 2025
January 28, 2026	December 31, 2025

REGULAR MEETINGS ARE HELD THE 4th WEDNESDAY OF EACH MONTH AT 6:00 P.M.
**** The November 26, 2025 meeting will be held one week earlier due to holiday.**
****The December 24, 2025 meeting will be held one week earlier due to the holiday.**

Please Note:

1. For submission requirements and information please consult www.townofbluffton.sc.gov or phone (843) 706-4500.
2. The proper forms and filing fee (as indicated on the Master Fee Schedule) must accompany all submittals. Incomplete submittals will NOT be accepted.
3. Meetings will be held on scheduled meeting dates unless otherwise advertised with FOIA compliance.
4. All new applications, required revisions and information relative to previously submitted applications must be submitted four (4) weeks prior to the meeting date in order to be placed on the agenda.

DRAFT

TOWN OF BLUFFTON
2025 DEVELOPMENT REVIEW COMMITTEE
Meeting and Application Submission Schedule

DRC MEETINGS ARE HELD EVERY WEDNESDAY FROM 1:00 P.M. – 3:00 P.M.
APPLICATION SUBMISSION DATES ARE TWENTY (20) BUSINESS DAYS PRIOR TO DRC MEETING DATES

Please Note:

1. For applications, submission requirements, and general information, please consult www.townofbluffton.sc.gov or call 843.706.4500.
2. No incomplete submittals will be accepted.
3. The proper forms and filing fee (as indicated on the Master Fee Schedule) must accompany all submittals.
4. Meetings will be held on scheduled meeting dates unless otherwise advertised.
5. Minimum requirements for specific applications or resubmittals are listed on project applications.

Meetings are subject to change based on conflicts due to scheduling, meeting locations and observed holidays.

DRAFT

PLANNING COMMISSION

STAFF REPORT
Growth Management Department

MEETING DATE:	November 20, 2024
PROJECT:	Discussion of Amendments to the Town of Bluffton's Southern Lowcountry Stormwater Design Manual and Post-Construction Stormwater Ordinance
PROJECT MANAGER:	Andrea Moreno, MS4 Program Manager

REQUEST: Town Staff requests guidance and suggestions from Planning Commission related to Certain Amendments to various sections of the regional Southern Lowcountry Design Manual and Post-Construction Stormwater Ordinance, as presented.

BACKGROUND: The Southern Lowcountry Regional Board (SoLoCo) prioritized the need for a uniform set of stormwater standards and design guidelines to the meet the goal of protecting the region's sensitive environment, residents' quality of life, and future economic development opportunities.

SoLoCo municipalities along with Center for Watershed Protection and McCormick Taylor received local stakeholder input from the project's outset and garnered feedback from the professional design community during statewide, regional, and national presentations. The resulting Southern Lowcountry Stormwater Design Manual, adopted by Bluffton Town Council in September of 2021, is unique in that it accomplished the following:

- Regional collaboration for consistent, effective management of stormwater at the watershed scale.
- The Southern Lowcountry Stormwater Design Manual unified past diversity of municipality requirements due to Municipal Separate Storm Sewer System (MS4) permits, need, and community dynamics:
    - Allows for "Special Watershed Protection Area" designations and requirements
    - Establishes post-construction criteria for volume control (quantity and quality) and design standards
    - Provides enforcement for current design through life of the development
- The Southern Lowcountry Stormwater Design Manual is a watershed-based approach, not by jurisdiction
    - Incorporates green infrastructure/low impact development
    - Protects existing natural areas and incorporates open space in new development
    - Provides water quality and quantity credit for thirteen (13) Best Management Practices (BMPs)

Included within the Town of Bluffton's and WAPAC's FY2025-2026 Strategic Plan is a Priority Item that requires the completion of an assessment of the stormwater regulations within the Southern Lowcountry Stormwater Design Manual to ensure its intended outcomes are being met and modifications made to the regulations if necessary.

In April of 2024, Town Council unanimously voted to adopt Unified Development Ordinance (UDO) Amendments to the Stormwater regulations, outlined in Chapter 5.10 of the UDO. These UDO Amendments changed the stormwater applicability criteria unit of measure from impervious surface to land disturbance to align with Beaufort County standards and created a distinction between Development and Redevelopment with regard to area of land disturbance. These UDO Amendments were made in anticipation of changes to the Stormwater Design Manual.

Staff are proposing the following amendments to the Manual to align with UDO language and Beaufort County stormwater standards.

- Provide clarifications on implementation of stormwater practices
    - Includes refining design standards to ensure the intent of the manual agrees with field application. Examples include:
        - Amends 10% Analysis language to prioritize protection of the overall watershed, even if that results in lessened on-site detention requirements
        - Amends design specifications for bioretention areas (rain gardens) to remove seasonal high-water table as a limiting factor so that these practices can be utilized more frequently
- Enhance enforcement capabilities for post-construction maintenance of pre-MS4 communities
    - Expands the Town's current post-construction program to inspect and enforce maintenance of stormwater practices in communities built after 1992 via the 1991 Sediment and Reduction Act
- Promote the use of Better Site Design principles through credits towards meeting stormwater retention volume requirements
    - Provides conservation area credits to incentivize preservation of natural land cover and/or revegetation to pre-development state
    - These areas would then be protected by a conservation easement or equivalent form of protection
    - The conservation area acreage is then subtracted from the total site when calculating the required stormwater retention volume, resulting in fewer or smaller stormwater practices
- Establish mechanism for stormwater retention volume Fee-in-Lieu
    - When a development project cannot accommodate the required stormwater retention volume due to approved on-site constraints, the developer could opt to pay a fee-in-lieu for the shortfall
    - Funds collected through fee-in-lieu payments would then be used by the Town to install green infrastructure practices in the same watershed
- Multiple housekeeping edits that do not change regulatory requirements

PROJECT TIMELINE:

- 4/1/2024 – 5/31/2024 – Proposed Amendments available online for Public Comment
- 6/3/2024 – 8/2/2024 – Staff and Consultant review of Public Comments
- 6/28/2024 – SoLoCo technical subcommittee and Consultant team technical meeting
- 8/12/2024 – 9/13/2024 – Proposed Amendments available online for Public Comment
- 9/16/2024 – Staff and Consultant review of Public Comments
- 9/17/2024 – Final documents provided to all partners
- 10/8/2024 – Town Council Workshop
- 11/20/2024 – *Planning Commission Meeting*
- 12/5/2024 – May River Watershed Action Plan Advisory Committee recommendation to Town Council
- 2/11/2025 – Town Council Adoption by Resolution
- 3/1/2025 – Implementation of proposed Certain Amendments to regional Southern Lowcountry Stormwater Design Manual and Post-Construction Ordinance

ATTACHMENTS:

1. Certain Amendments to Southern Lowcountry Stormwater Design Manual
2. Certain Amendments to Southern Lowcountry Post-Construction Stormwater Ordinance

Chapter 1. Introduction, Background, Purpose, and Administration

1.1 Introduction

Upon passage of the Southern Lowcountry Stormwater Post-Construction Ordinance (Ordinance) as amended and adopted by the Town of Bluffton within the Unified Development Ordinance (UDO), The Town of Bluffton will follow the design and permitting requirements of the *Southern Lowcountry Stormwater Design Manual* (~~Design~~ Manual). The UDO directs residents, land developers, redevelopment, and government permit applicants to submit details and plans that comply with this Manual. It is the intent of the Ordinance that all proposed development, redevelopment, and major substantial improvements shall provide post-developed condition stormwater quantity control and stormwater quality control for the stormwater retention volume (SWRv) for Watershed Protection Areas and/or Special Watershed Protection Areas. In the following chapters, Better Site Design (BSD) practices, green infrastructure/low-impact development practices (GI/LID), and stormwater best management practices (BMPs) are described in detail to support the stormwater retention requirements. Through in-line and off-line application of these practices, the cumulative impact is reduction of ~~the~~ stormwater runoff and the on-site retention ~~on-site~~ of design storms.

This Manual and the design criteria presented within represent good engineering practice and should be used in the preparation of stormwater management plans. The criteria are intended to establish requirements, minimum standards, and methods for a sound planning, design, and review process. It is intended to guide the stormwater design review of proposed work done by developers, private parties, and governmental agencies.

1.2 Background

The U.S. Environmental Protection Agency (EPA) recommends that the Phase II Small Municipal Separate Storm Sewer System (MS4) permit require the permittee to adopt a planning process that identifies the municipality's program goals (e.g., minimize water quality impacts resulting from post-construction runoff from new development and redevelopment), implementation strategies (e.g., adopt a combination of structural and/or non-structural BMPs), operation and maintenance policies and procedures, and enforcement procedures. In developing the program, EPA states that the permit should also require the permittee to assess existing ordinances, policies, programs and studies that address stormwater runoff quality. These policy assessments should include the following:

- Policies and ordinances that:
    - provide requirements and standards to direct growth to identified areas,
    - protect sensitive areas such as wetlands and riparian areas,
    - maintain and/or increase open space (including a dedicated funding source for open space acquisition),
    - provide buffers along sensitive water bodies,
    - minimize impervious surfaces, and
    - minimize disturbance of soils and vegetation;
- Policies or ordinances that encourage infill development in higher density urban areas and areas with existing infrastructure;

- Education programs for developers and the public about project designs that minimize water quality impacts; and
- Measures such as minimization of percent impervious area after development and minimization of directly connected impervious areas (81 Federal Register 237).

A complete summary of federal and state stormwater regulations can be found in Appendix N of this Manual.

1.3 Purpose

This Manual's purpose is to provide a framework for designing a stormwater management system to:

- Improve water quality through runoff reduction to the maximum extent practicable (MEP);
- Prevent downstream stream bank and channel erosion;
- Reduce downstream overbank flooding; and
- Safely pass or reduce the runoff from extreme storm events.

This Manual presents a unified approach for sizing stormwater best management practices (BMPs) in the Southern Lowcountry to meet pollutant removal goals, reduce peak discharges, and pass extreme floods. Additionally, it follows a watershed approach for their size and specification. Based on the site's watershed, stormwater design criteria specific to each must be met for development permit approval.

For a comprehensive list of terms and definitions utilized throughout this Manual, refer to Appendix L – Glossary.

1.4 Applicability and Exemptions

1.4.1 Applicability

Design criteria in this Manual are applicable to any new development or redevelopment activity that meets one or more of the following criteria, or is a major substantial improvement, unless exempt pursuant to Section 1.4.2 below:

1. Any development that involves ~~the creation of~~ 5,000 square feet or more of ~~impervious surface or that involves other~~ land disturbing activities ~~of one acre or more~~.
2. Any Redevelopment/Infill that will result in an additional~~involves the creation, addition, or replacement of 5~~2,000 square feet or more of impervious surface ~~or that involves other land disturbing activities of one acre or more~~.
3. ~~New development or redevelopment~~Any Land Disturbance, regardless of size, that is part of a larger common plan of development that meets criteria 1 or 2 above, even though multiple, separate, and distinct land disturbing activities may take place at different times and on different schedules.
4. A major substantial improvement of an existing property, which is defined as a renovation or addition to a structure that meets both of the following cost and size thresholds: a) construction costs for the building renovation/addition are greater than or equal to 50% of the pre-project assessed value of the structure as developed using current Building Valuation Data of the International Code Council, and b) project size where the combined footprint of structure(s)

exceeding the cost threshold and any land disturbance is greater than or equal to 5,000 square feet.

~~The design criteria are applicable for infill development of platted lots, whether they are new development or redevelopment sites if the work involves creation, addition or replacement of 5,000 square feet or more of impervious surface or that involves other land disturbing activities of acre or more.~~

1.4.2 Exemptions

The following activities are exempt from the permitting requirements of this Manual:

1. Any maintenance, alteration, renewal, or improvement as approved by the Town of Bluffton which does not alter existing drainage patterns, does not result in changes or adverse impacts on adjacent properties~~y~~, or create adverse environmental or water quality impacts, and does not increase the temperature, rate, quality, volume, or location of stormwater runoff discharge.
2. Projects that are exclusively for agricultural or silvicultural activities within areas zoned for these agricultural and silvicultural uses;
3. Agricultural activity not involving relocation of drainage canals;
4. Projects within an LCP where the impervious surface was included as part of a larger approved stormwater management system, meeting current stormwater design standards, that addresses required retention for the specific lot.
5. Redevelopment that constitutes the replacement of the original square footage of impervious cover and original acreage of other land development activity when the original development is wholly or partially lost due to natural disaster or other acts of God occurring after ~~*<date of adoption>*~~September 14, 2021; and,
6. Work by agencies or property owners required to mitigate emergency flooding conditions. If possible, emergency work should be approved by the duly appointed officials in charge of emergency preparedness or emergency relief. Property owners performing emergency work will be responsible for any damage or injury to persons or property caused by their unauthorized actions. Property owners will stabilize the site of the emergency work within 60 days, or as soon as reasonable, following the end of the emergency period.
7. Town of Bluffton Capital Improvement Projects will consider the requirements of the ~~Design~~ Manual during project design implementation and incorporation into the project scope of work but are exempt.

1.5 Administration

1.5.1 Approval Requirements

Before the Town of Bluffton may issue a stormwater permit for any project requiring stormwater management, the Town of Bluffton must approve a Stormwater Management Plan (SWMP) meeting the requirements of the Southern Lowcountry Stormwater Ordinance and receive all fees required by the Town of Bluffton for site and building development plans.

A complete SWMP submittal includes a completed engineer's certification statement, a submittal checklist, plans and design that are signed and sealed by a registered professional engineer licensed in

South Carolina. Erosion and sediment control for sites below the thresholds set forth by South Carolina Department of ~~Health and~~ Environmental ~~Control~~Services (SC~~DHEC~~DES) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Construction Activities (SCR100000) must obtain permit coverage under this stormwater permit. All construction stormwater permit applications above the SC~~DHEC~~DES thresholds are reviewed by the ~~DHEC~~DES Office of Coastal Resources Management (OCRM), or the reviews are delegated to the Town of Bluffton to determine compliance with the requirements of ~~SCDHEC's~~SCDES's NPDES General Permit for Stormwater Discharges from Construction Activities (SCR100000) ~~thresholds~~ and of the Construction Stormwater Pollution Prevention Plan (C-SWPPP). These permit applications must be approved, issued, and provided to Town of Bluffton prior to the issuance of the stormwater management plan approval.

1.5.2 Fees

An applicant is responsible for paying fees that provide for the cost of review, administration, and management of the stormwater permitting process and inspection of all projects subject to the requirements of the Town of Bluffton. These fees are posted by the Town of Bluffton as part of the Master Fee Schedule.

Chapter 2. Design, Review, & Permitting Process

2.1 Satisfying the Stormwater Management, Site Planning, & Design Criteria

2.1.1 Overview

This chapter presents a comprehensive set of site planning and design and post-construction criteria that must be applied to the Maximum Extent Practicable (MEP) to new development and redevelopment activities occurring within the Southern Lowcountry region. Satisfying these criteria promotes the systematic development of acceptable stormwater management plans, and a successful integration of natural resource protection and stormwater management through the site planning and design process (Example, Figure 2.1). Application of Better Site Design (BSD) principals within the jurisdictional limits of the Town of Bluffton shall be to the ~~Maximum Extent Practicable~~MEP. In the event of a conflict between requirements ~~between~~ among ~~Better Site Design~~BSD principals and the Unified Development Ordinance (UDO), the requirements of the ~~Unified Development Ordinance~~ UDO shall prevail and have precedence.

Through the consideration and implementation of ~~Better Site Design~~BSD principals to the MEP, as described in detail below, the integration of natural resource protection and stormwater management can be achieved by:

- Identifying and protecting valuable natural resources;
- Limiting land disturbance, new impervious cover, and disturbed pervious cover; and
- Reducing and managing post-construction stormwater runoff rates, volumes, and pollutant loads.

This approach involves the consideration and -use of two distinct, but complementary, groups of natural resource protection and stormwater management techniques:

- Green Infrastructure (GI) Practices: Natural resource protection and stormwater management practices and techniques (i.e., better site planning and design techniques, low impact development (LID) practices) that can be used to help prevent increases in post-construction stormwater runoff rates, volumes, and pollutant loads.
- Stormwater Management Practices: Stormwater management practices (e.g., wet ponds, swales) that can be used to manage post-construction stormwater runoff rates, volumes, and pollutant loads.

Natural resource protection and stormwater management techniques help control and minimize the negative impacts of the land development process while retaining and, perhaps, even enhancing a developer's vision for a development site. When applied during the site planning and design process, they can be used to create more natural and aesthetically pleasing development projects and create more cost-effective post-construction stormwater management systems (ARC, 2001). The consideration and use of these techniques, particularly the ~~green infrastructure~~GI practices, can even reduce overall development costs while maintaining or increasing the resale value of a development project (MacMullan and Reich, 2007; US EPA, 2007; Winer-Skonovd et al., 2006).

2.1.2 Better Site Design in the Planning Process

Better Site Design (BSD) refers to planning land development using certain principles to minimize stormwater impacts. Integral to ~~low impact development~~LID design, proper consideration and application of BSD principles can allow for smaller required stormwater BMP storage and retention volumes, and can help provide significant reductions in post-construction peak flows and pollutant loads. These principles include reduction/restoration of impervious cover, conservation of natural cover areas, stream restoration, and integration of both structural and non-structural stormwater management within site design. The principles of ~~Better Site Design~~BSD are referenced in the sections below.

Fundamental to the consideration and -application of ~~Better Site Design~~BSD is the correlation between impervious surface area in a watershed and negative impacts on receiving water resources. On a national level, the Impervious Cover Model (ICM) estimates stream quality based on percentage of impervious cover (Schueler and Fraley-McNeal, 2009). This model demonstrates that streams follow a continuous gradient of degradation in response to increasing impervious cover in a watershed. Local studies have supported this paradigm, and report that changes in the rate and volume of stormwater runoff were primary causes of ecological impairment in headwater tidal creeks, such as those found in Beaufort and Jasper Counties. These studies have shown that physical and chemical characteristics such as altered hydrography, increased salinity variance, increased chemical contaminants, and increased fecal coliform loadings of tidal creeks were negatively impacted with as little as 10 to 20% impervious cover. When impervious cover exceeded 30% of the watershed, measurable impacts to living resources were observed, indicating the ecological processes in the creek ecosystems were impaired (Holland et al., 2004).

Such findings are of consequence to Beaufort and Jasper Counties. Increasing pressure for development in response to population growth, and land development practices of the Lowcountry result in significant tree removal and loss of vegetative cover from land grading and storm pond construction and increases in impervious surfaces. According to the NOAA C-CAP Land Cover Analysis (https://coast.noaa.gov/ccapatlas/), from 1996 to 2010, the percent net increase in impervious surface area was 60% for Beaufort County and 59% for Jasper County. Table 2. 1. Summary of land cover changes in Southern Lowcountry from 1996 to 2010. below summarizes the findings of this NOAA report. Although the percentage of total wetlands lost is relatively low for both counties, the actual wetland types have been converted from palustrine forested wetlands to palustrine scrub/shrub and palustrine emergent wetlands, which may alter ecosystem processes and hydrology in these areas.

Table 2.1. Summary of land cover changes in Southern Lowcountry from 1996 to 2010.

	Beaufort County[1]			Jasper County[1]		
Land Cover %	**1996**	**2010**	**% Change**	**1996**	**2010**	**% Change**
Development	3.87	6.16	+59.12	1.62	2.52	+55.15
Forested Area	25.28	21.5	-14.98	62.50	48.37	-22.60
Wetlands	33.85	33.20	-1.93	45.24	44.74	-1.11

[1] Percent of County under each land cover type.

Given the rapid growth the Southern Lowcountry experienced in the past 20 years, the goals of ~~Better Sign Design~~BSD should resonate with those charged with managing stormwater and its release into the area watersheds. Succinctly, the goals of ~~Better Sign Design~~BSD include the following:

- Preventing stormwater impacts rather than mitigating them;
- Managing stormwater (quantity and quality) as close to the point of origin as possible and minimizing collection and conveyance;
- Utilizing simple, nonstructural methods for stormwater management that are lower cost and lower maintenance than structural controls;
- Creating a multifunctional landscape; and
- Using hydrology as a framework for site design.

The Center for Watershed Protection's Better Site Design Handbook outlines 22 model development principles for site design that act to reduce impervious cover, conserve open space, prevent stormwater pollution, and reduce the overall cost of development (CWP, 2017). The principles can provide notable reductions in post-construction stormwater runoff rates, volumes and pollutant loads (ARC, 2001). ~~Better Sign Design~~BSD across the country is implemented through review of existing planning and development codes, ~~and~~as well as streets, parking and stormwater engineering criteria. Within the context of a stormwater management document and this Southern Lowcountry Stormwater Design Manual ~~(~~Manual~~)~~, the ~~Better Sign Design~~BSD techniques of greatest application include protection of existing natural areas, incorporation of open space into new development, effective sediment and erosion control practices, and stormwater management that mimics natural systems. The following sections identify ~~Better Sign Design~~BSD techniques to be considered and applied to the MEP to the Southern Lowcountry Watershed Protection Areas and Special Watershed Protection Areas to help mitigate the effects of development to the watersheds. Therefore, the conservation principles below are part of an overall watershed approach to stormwater management and will complement the Watershed Protection Area approach in this Manual. Their application is subject to Town of Bluffton requirements and/or standards.

2.1.3 Natural Resources Inventory

The first step to conserve natural resources is properly documenting existing assets. An up-to-date natural resources inventory map can provide geospatial information for water resources, soils, sensitive natural resource areas, critical habitats, and other unique resources (Ellis et al., 2014).

An application for new development requires a natural resources inventory prior to the start of any land disturbing activities. A natural resources inventory prepared by a qualified person shall be used to identify and map the most critical natural resources identified on the property that would be best to preserve, such as those listed in Table 2.2, as they exist predevelopment. Qualified persons include individuals with a working knowledge of hydrology, wetlands, plant taxonomy, and field survey methods. Qualified individuals include but are not limited to licensed foresters, professional wetland scientists, and geographic information professionals. A thorough assessment and narrative of the

natural resources, both terrestrial and aquatic, found on a development site shall be submitted in the preliminary development application package and should represent and describe the efforts taken to preserve the most critical natural resources identified on the property and the most critical natural resources directly impacted by the proposed development.

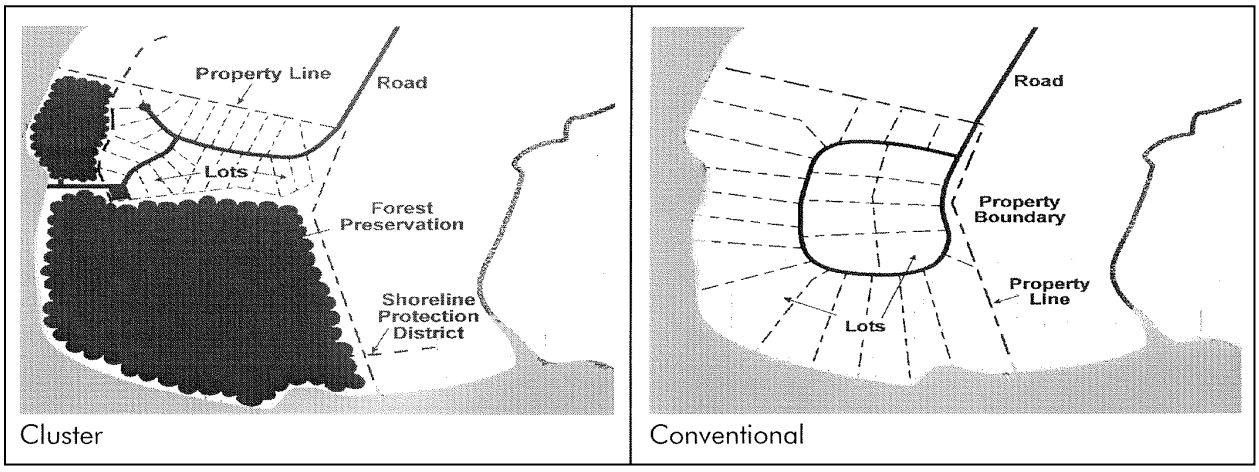
Table 2.2. Resources to be identified and mapped during the Natural Resources Inventory.

Resource Group	Resource Type
General Resources	• Topography • Natural Drainage Divides • Natural Drainage Patterns • Natural Drainage Features (e.g., Swales, Basins, Depressional Areas) • Soils • Erodible Soils • Steep Slopes (e.g., Areas with Slopes Greater Than 15%) • Trees and Other Existing Vegetation
Freshwater Resources	• Rivers • Perennial and Intermittent Streams • Freshwater Wetlands
Estuarine Resources	• Tidal Rivers and Streams • Tidal Creeks • Coastal Marshlands • Tidal Flats • Scrub-Shrub Wetlands
Marine Resources	• Near Coastal Waters • Beaches
Groundwater Resources	• Groundwater Recharge Areas • Wellhead Protection Areas
Terrestrial Resources	• Dunes • Maritime Forests • Marsh Hammocks • Evergreen Hammocks • Canebrakes • Bottomland Hardwood Forests • Beech-Magnolia Forests • Pine Flatwoods • Longleaf Pine-Wiregrass Savannas • Longleaf Pine-Scrub Oak Woodlands
Other Resources	• Shellfish Harvesting Areas • Floodplains • Aquatic Buffers • Other High Priority Habitat Areas as described by South Carolina Department of Natural Resources

2.1.4 Conservation Development

Conservation development, also known as open space development or cluster development, is a site planning and design technique used to concentrate structures and impervious surfaces in a small portion of a development site, leaving room for larger conservation areas and managed open spaces

elsewhere on the site (Example, Figure 2.1). Alternative lot designs are typically used to "cluster" structures and other impervious surfaces within these conservation developments.



Example, Figure 2.1. Conservation (i.e., cluster) development versus conventional development.

Conservation development projects provide a host of environmental benefits that are typically more difficult to achieve with conventional site design techniques. They provide for better natural resource protection on development sites and inherently limit increases in site imperviousness, sometimes by as much as 40 to 60 percent (CWP, 1998). Reduced site imperviousness results in reduced post-construction stormwater runoff rates, volumes and pollutant loads, which helps better protect both on-site and downstream aquatic resources from the negative impacts of the land development process. Reduced stormwater runoff rates, volumes and pollutant loads also help reduce the size of and need for storm drain systems and stormwater management practices on development sites.

As a number of recent studies have shown (MacMullan and Reich, 2007; US EPA, 2007; Winer-Skonovd et al., 2006), conservation development projects can also be significantly less expensive to build than more conventional development projects. Most of the cost savings can be attributed to the reduced amount of infrastructure (e.g., roads, sidewalks, post-construction stormwater management practices) needed on these development projects. And while these projects are frequently less expensive to build, developers often find that the lots located within conservation developments command higher prices and sell more quickly than those located within more conventional developments (ARC, 2001).

Table 2.3 provides suggestions for ~~Better Site Design~~BSD techniques that will help protect valuable resources such as buffers, trees, wetlands, and open space.

Table 2.3. Better Site Design principles for conservation.

Principle	Description
Vegetated Buffer System	Create a variable width, naturally vegetated buffer system along all streams that also encompasses critical environmental features such as the 100-year floodplain, steep slopes, and freshwater wetlands. *Recommended buffer widths are included in Table 3.2-4 in Ellis et al., 2014*
Buffer Maintenance	The riparian buffer should be preserved or restored with native vegetation that can be maintained through delineation, plan review, construction, and occupancy stages of development.
Clearing and Grading	Clearing and grading of forests and native vegetation should be limited to the minimum amount needed for lot construction, allow access, and provide fire protection. A fixed portion of any community open space should be managed as protected green space in a consolidated manner.
Tree Conservation	Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community open space, street rights-of-way, parking lot islands, and other landscaped areas to promote natural vegetation.
Land Conservation	Open space development should be encouraged to promote conservation of stream buffers, forests, meadows, and other areas of environmental value. In addition, off-site mitigation consistent with locally-adopted watershed plans should be encouraged.
Stormwater Outfalls	New stormwater outfalls should not discharge unmanaged into jurisdictional wetlands, sole-source aquifers, or sensitive areas.

2.1.5 Residential Streets & Parking Lots

Up to 65% of the total impervious cover in a watershed can be ~~the~~ attributed to streets, parking lots, and driveways (CWP, 1998). Table 2.4 describes ~~Better Site Design~~BSD principles related to techniques to be considered to reduce the impervious surfaces associated with these hardscapes.

Table 2.4. Better Site Design principles for streets and parking to meet Town of Bluffton requirements.

Principle	Description
Street Width	Design residential streets for the minimum required pavement width needed to support travel lanes; on-street parking; and emergency, maintenance, and service vehicles.
Street Length	Reduce the total length of residential streets by examining alternative street layouts to determine the best option for increasing the number of homes per unit length.
Right-of-Way Width	Wherever possible, residential street right-of-way widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and vegetated open channels. Utilities and storm drains should be located within the pavement section of the right-of-way wherever feasible.

Cul-de-sacs	Minimize the number of residential cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.
Vegetated Open Channels	Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat stormwater runoff.
Parking Ratios	The required parking ratio governing a particular land use or activity should be enforced as both a maximum and a minimum in order to curb excess parking space construction. Existing parking ratios should be reviewed for conformance, taking into account local and national experience to see if lower ratio is warranted and feasible.
Parking Lots	Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.
Structured Parking	Utilize structured (e.g., parking garage) and shared parking to reduce impervious surface area.
Parking Lot Runoff	Wherever possible, provide stormwater treatment for parking lot runoff using bioretention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic islands.

2.1.6 Lot Development Principles to Meet Requirements

Development of lots follows similar guidelines for reducing impervious cover and protecting natural areas, such as open space. Table 2. 5 summarizes ~~Better Site Design~~BSD principles to be considered for lot development. Preserving open space is critical to maintaining water quality at the regional level. Compared to traditional development, open space development can reduce the annual runoff volume from a site by 40%–60%, nitrogen loads by 42%–81%, and phosphorus loads by 42%–69% (CWP, 1998). Large, continuous areas of open space reduce and slow runoff, absorb sediments, serve as flood control, and help maintain aquatic communities. Open space can be provided by minimizing lot sizes, setbacks, and frontage distances.

Table 2.5. Better Site Design principles for lot development.

Principle	Description
Open Space Development	Utilize open space development that incorporates smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve natural areas, provide community recreational space, and promote watershed protection.
Setbacks and Frontages	Consider minimum setbacks allowed by Town of Bluffton. Relax side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness.
Sidewalks	Where practical, consider locating sidewalks on only one side of the street and providing common walkways linking pedestrian areas.

Driveways	Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together.
Rooftop Runoff	Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas and avoid routing rooftop runoff to the roadway and the stormwater conveyance system.
Open Space Management	Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.

For more detailed descriptions of these techniques, please reference *Better Site Design: A Handbook for Changing Development Rules in Your Community* (CWP, 1998) and Chapter 3 of *Low Impact Development in Coastal South Carolina: A Planning and Design Guide* (Ellis et al., 2014).

2.1.7 Site Planning & Design Process

Figure 2.2 depicts the site planning and design process that is ~~captured in *Low Impact Development in Coastal South Carolina: A Planning and Design Guide* (Ellis et al., 2014)~~ applicable to the Town of Bluffton. The site planning and design checklist of the ~~Southern Lowcountry Design~~ Manual does not make each of the phases of the process a submittal requirement. The checklist, however, gives the Town of Bluffton the opportunity to determine whether each of these steps have been adequately considered. The actual document submittal begins with the ~~Stormwater Concept Plan,~~ Preliminary Development Plan application and submittal package when considered in context of the planning process below:

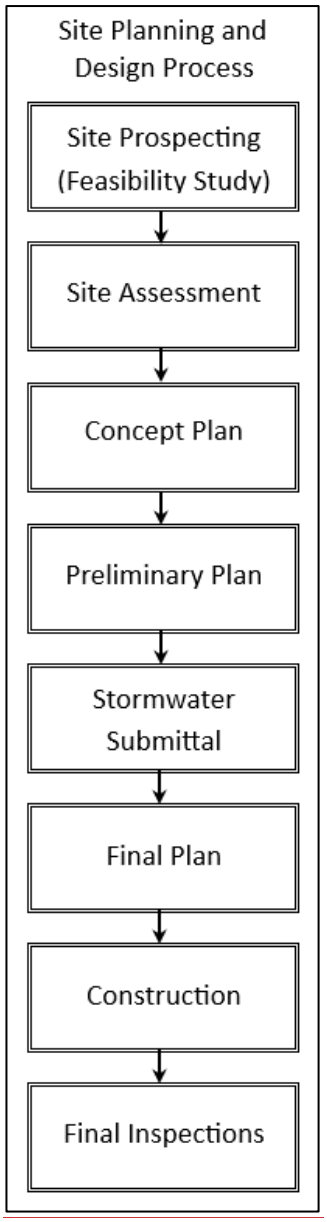


Figure 2.2. Site planning & design process (source: Center for Watershed Protection, Inc.)

- Site Prospecting: During the site prospecting phase, some basic information is used to evaluate the feasibility of completing a development or redevelopment project. A *feasibility study* is typically used to evaluate the many factors that influence a developer's decision about whether or not to move forward with a potential development project. Factors that are typically evaluated during a *feasibility study* include information about site characteristics and constraints, applicable local, state and federal stormwater management and site planning and design requirements, adjacent land uses and access to local infrastructure (e.g., water, sanitary sewer).

- Site Assessment: Once a potential development or redevelopment project has been deemed feasible, a more thorough assessment of the development site is completed. The site assessment, which is typically completed using acceptable site reconnaissance and surveying techniques, provides additional information about a development site's characteristics, its natural resource inventory and constraints. Once the assessment is complete, a developer can identify and analyze the natural, man-made, economic and social aspects of a potential development project, define the actual buildable area available on the development site and begin making some preliminary decisions about the layout of the proposed development project.

- Concept Plan: The results of the site assessment are typically used to create a concept plan (also known as a *sketch plan*) for the proposed development project and ~~it~~ is provided during the~~a~~ pre-application meeting. A concept plan is used to illustrate the basic layout of the proposed

development project, including lots and roadways, and post-construction stormwater management system layout. ~~Geotechnical investigations have been performed to obtain necessary information to determine certain feasibilities of the proposed development.~~ This concept is usually reviewed with the local development review authority on a very surface level before additional resources are used to create a more detailed plan of development. During this phase, several alternative concept plans can be created and compared with one another to craft a plan of development that best "fits" the character of the development site (~~Example~~ Example, Figure 2.3, ~~Example~~ Example, Figure 2.4, and ~~Example~~ Example, Figure 2.5). ~~It is at this point in the planning and design process that a Maximum Extent Practicable (MEP) demonstration described in Section 3.9 is intended and recommended to be provided for development projects seeking MEP considerations.~~

- Preliminary Plan: A preliminary plan presents a more detailed layout of a proposed development project. It typically includes information about lots, buildings, roadways, parking areas, sidewalks, conservation areas, utilities and other infrastructure, including the post-construction stormwater management system. Soil information has been obtained through sources such as USDA Natural Resources Conservation Service (NRCS) or another source acceptable to the Town of Bluffton to estimate certain feasibilities. After the preliminary plan has been reviewed and approved by the local development review authority, a final plan may be prepared. There may be several iterations of the preliminary plan between the time that it is submitted and the time that it is approved by the local development review authority.

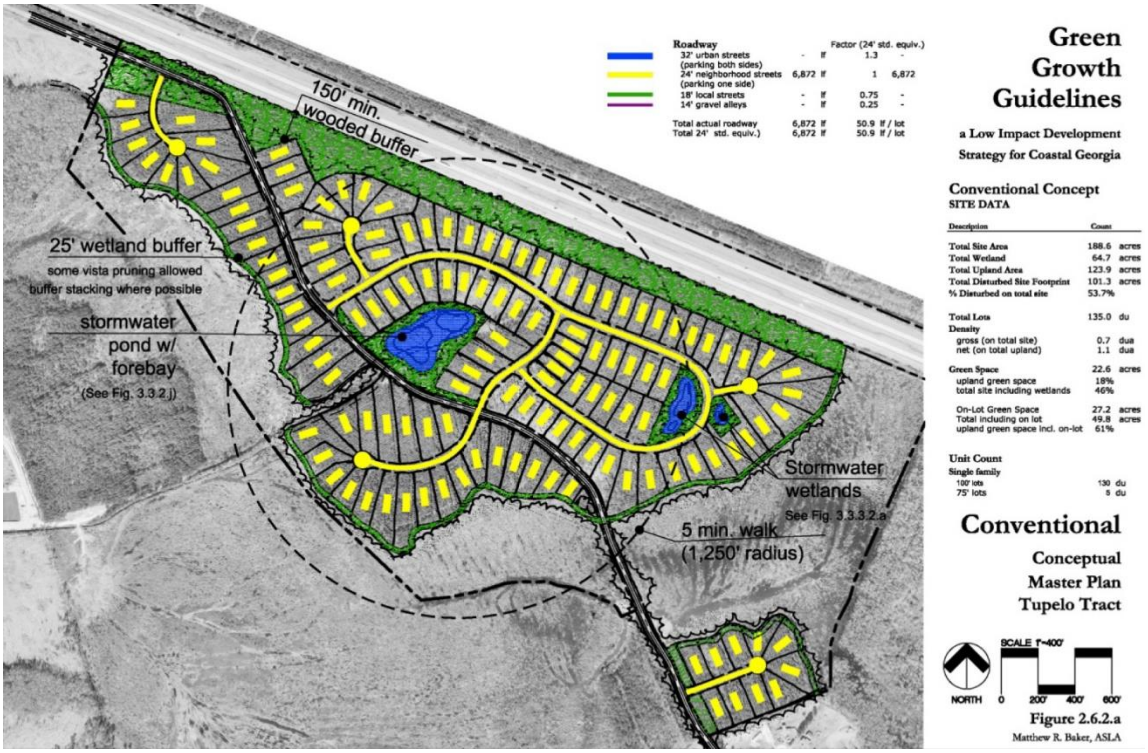
- Stormwater Submittal: Geotechnical investigations have been performed to obtain necessary information to determine certain feasibilities of the proposed development. It is at this point in the planning and design process that an MEP demonstration described in Section 3.11 is intended and recommended to be provided for development projects seeking MEP considerations. There may be several iterations of the stormwater submittal between the time that it is submitted and the time that it is approved by the local development review authority. Once the stormwater submittal has been reviewed and conditionally approved, Town staff issue the MS4 Approval to SCDES.

- Final Plan: The final plan adds further detail to the preliminary plan and stormwater submittal and reflects any changes to the plan of development that were requested or required by the local development review authority. The final plan typically includes all of the information that was included in the preliminary plan, as well as information about landscaping, pollution prevention, erosion and sediment control and long-term operation and maintenance of the site's post-construction stormwater management system. There may be several iterations of the final plan between the time that it is submitted and the time that it is approved by the local development review authority.

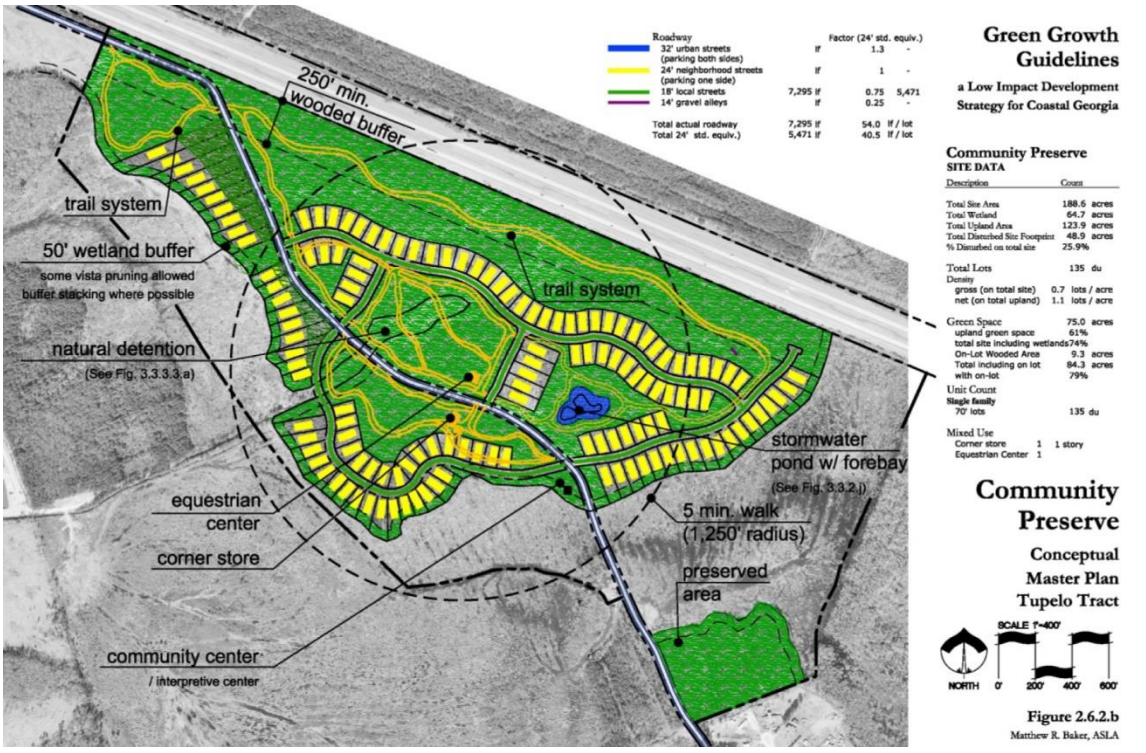
- Construction: Once the final plan has been reviewed and approved, performance bonds are set and placed, contractors are retained, and construction begins. During the construction phase, a development project may be inspected on a regular basis by the local development review authority to ensure that all roadways, parking areas, buildings, utilities and other infrastructure, including the post-construction stormwater management system, are being built in accordance

with the approved final plan and that all primary and secondary conservation areas have been protected from any land disturbing activities.

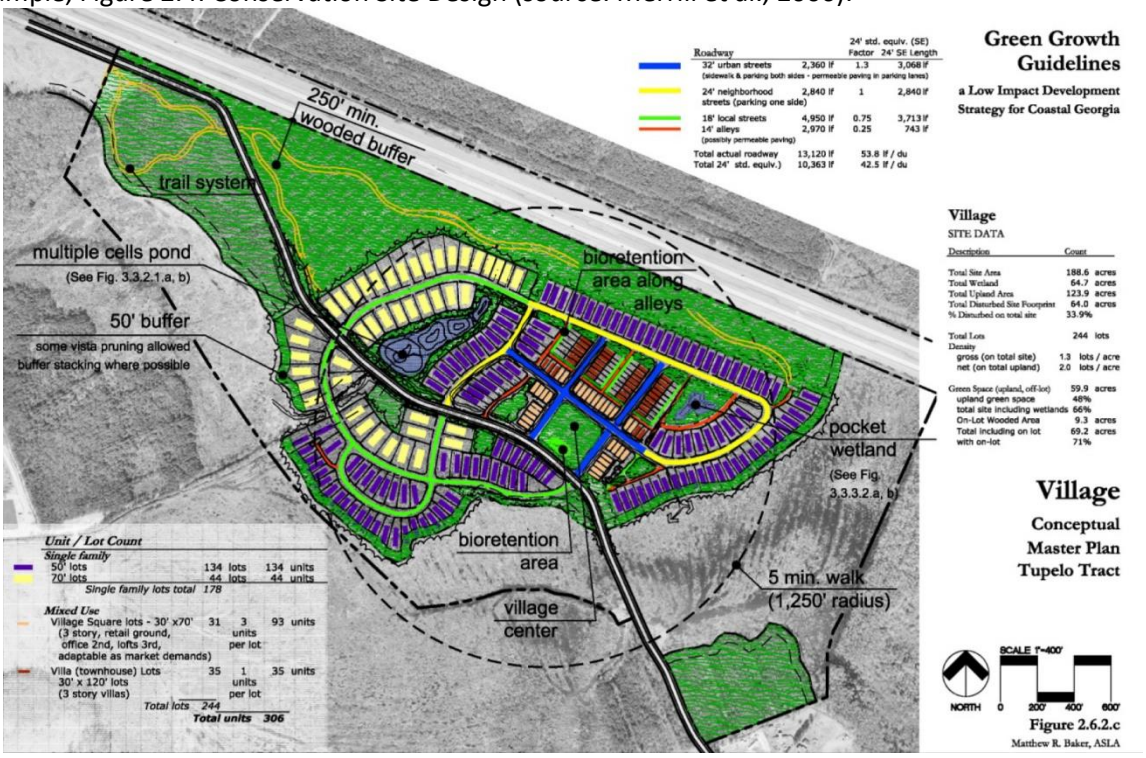
- Final Inspections: Once construction is complete, final inspections take place to ensure that all roadways, parking areas, buildings, utilities and other infrastructure, including the post-construction stormwater management system, were built according to the approved final plan. As-built plans are also typically prepared and executed during this phase. If a development project passes all final inspections, an occupancy permit may be issued for the project.



Example, Figure 2.3. Conventional Site Design (source: Merrill et al., 2006).



Example, Figure 2.4. Conservation Site Design (source: Merrill et al., 2006).



Example, Figure 2.5. New Urbanist Site Design (source: Merrill et al., 2006).

2.1.8 Integrating Natural Resource Protection & Stormwater Management with the Site Planning & Design Process Town of Bluffton Development Plan Review and Stormwater Approval Process

In order to successfully consider and *integrate* to the MEP natural resource protection and stormwater management with the site planning and design process, site planning and design teams are encouraged to consider following questions at the beginning of the process:

- What valuable natural resources, both terrestrial and aquatic, can be found on the development site?
- How can better site planning techniques be used to protect these valuable natural resources from the direct impacts of the land development process?
- How can better site design techniques be used to minimize land disturbance and the creation of new impervious and disturbed pervious cover?
- What ~~low impact development~~LID practices can be used to help preserve pre-development site hydrology and *reduce* post-construction stormwater runoff rates, volumes and pollutant loads?
- What stormwater management practices can be used to *manage* post-construction stormwater runoff rates, volumes and pollutant loads?
- Are there any site characteristics or constraints that prevent the use of any particular ~~low impact development~~LID or stormwater management practices on the development site?

Although answering these questions is no easy task, they can be readily obtained within the context of the six-step *stormwater management planning and design process* outlined in Figure 2.6, and the steps are described in more detail below.

- **Step 1: Pre-Application Meeting**

It is recommended that a pre-application meeting between the applicant's site planning and design team and the Town of Bluffton development review authority occur at the very beginning of the stormwater management planning and design process. This meeting, which should occur during the site prospecting phase of the overall site planning and design process (Figure 2.6), helps establish a relationship between the site planning and design team and the Town of Bluffton development review authority. The pre-application meeting also provides an opportunity to discuss the local site planning and stormwater management design criteria that will apply to the proposed development project, which increases the likelihood that the remainder of the site planning and design process will proceed both quickly and smoothly.

- **Step 2: Review of Local, State, and Federal Stormwater Management, Site Planning, & Design Requirements**

Once a pre-application meeting has been completed, it is recommended that the site planning and design team review the local, state and federal requirements that will apply to the proposed development project. This review should occur during the site prospecting phase of the overall site planning and design process (Figure 2.6), while the feasibility study is still being completed.

During their review of stormwater management and site planning and design requirements, the applicant's site planning and design teams should also investigate opportunities and incentives for land conservation, and opportunities and incentives for conservation development as illustrated earlier in Example, Figure 2.1.

- **Step 3: Natural Resources Inventory**

Once the potential development or redevelopment project has been deemed feasible, acceptable site reconnaissance and surveying techniques must be used to complete a thorough assessment of the natural resources, both terrestrial and aquatic, found on the development site. The identification and subsequent preservation and/or restoration of these natural resources helps reduce the negative impacts of the land development process “by design.” The natural resources inventory should be completed during the site assessment phase of the overall site planning and design process. A map that is created to illustrate the results of the natural resources inventory, known as a site fingerprint, should be used to prepare a stormwater management concept plan for the proposed development project.

Once the natural resources inventory has been completed and a site fingerprint has been created, the site planning and design team should have a better understanding of a development site’s characteristics and constraints. This information can be used to identify primary and secondary conservation areas (~~Example~~ Example, Figure 2.7. Buildable Area and Primary/Secondary Conservation Areas (source: Merrill et al., 2006).) and define the actual buildable area available on the development site. Along with information about adjacent land uses and available infrastructure (e.g., roads, utilities), the site fingerprint can also be used to make some preliminary decisions about the layout of the proposed development project and to guide the creation of the stormwater management concept plan.

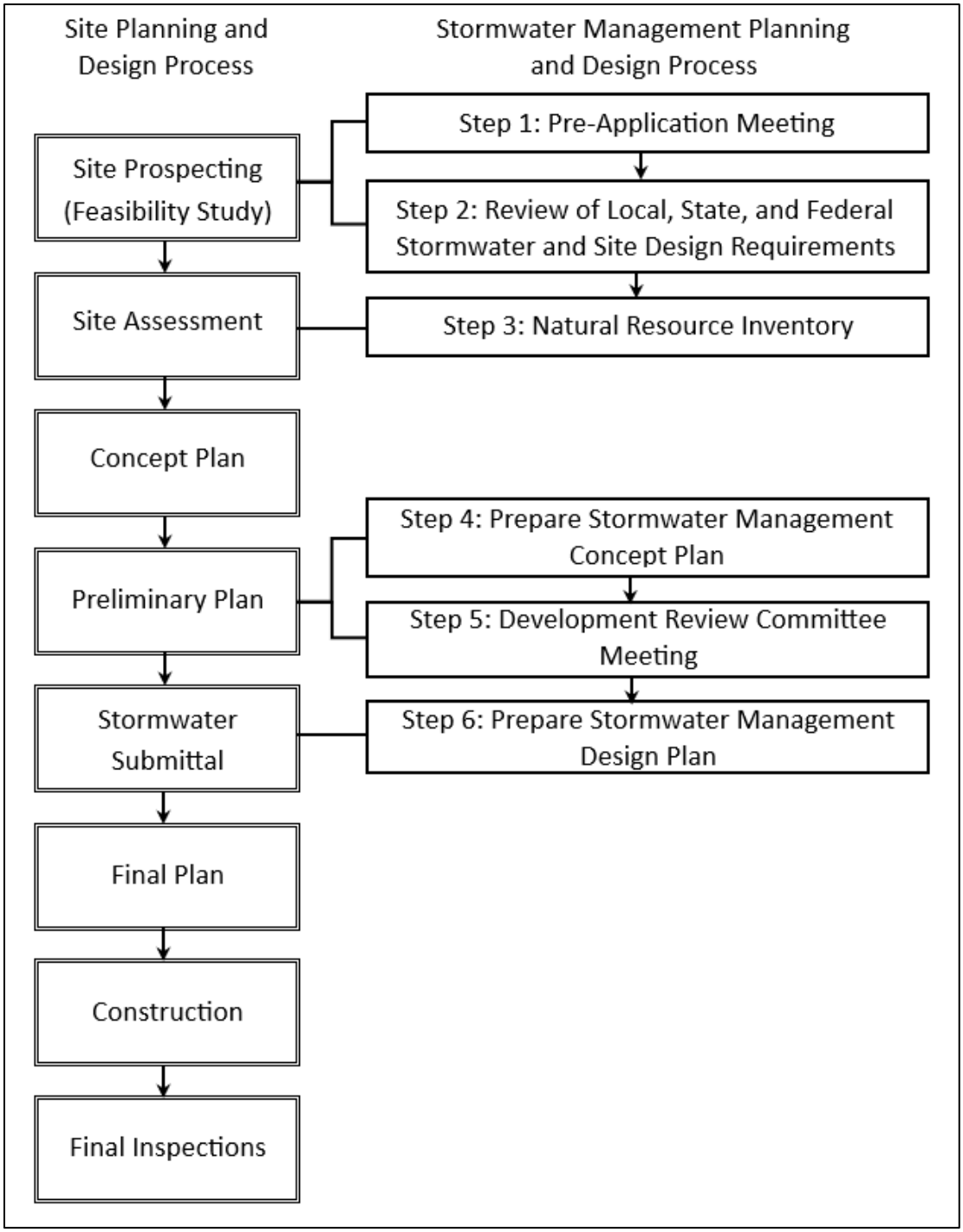
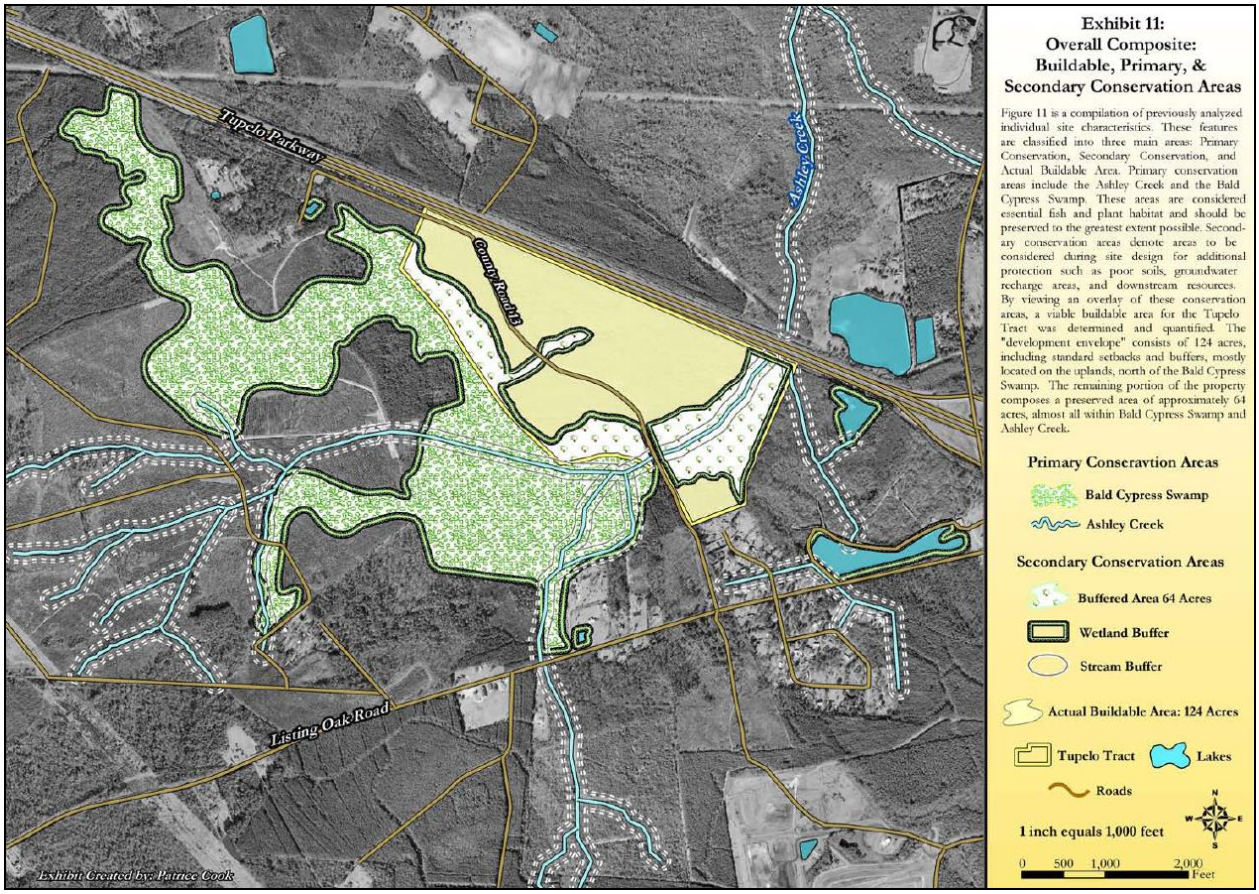


Figure 2.6. Integrating Natural Resource Protection & Stormwater Management with the Site Planning & Design Process (source: Center for Watershed Protection, Inc.).



Example, Figure 2.7. Buildable Area and Primary/Secondary Conservation Areas (source: Merrill et al., 2006).

- **Step 4: Prepare Stormwater Management Concept Plan**

After the natural resources inventory has been completed, it is recommended that the site fingerprint be used to develop a stormwater management concept plan for the proposed development project. The stormwater management concept plan should illustrate the layout of the proposed development project and should show, in general, how post-construction stormwater runoff will be managed on the development site. Geotechnical investigations have been performed to obtain necessary information to determine certain feasibilities of the proposed development and stormwater concept plan.

The creation of a stormwater management concept plan allows the applicant's site planning and design team to make some preliminary decisions about the layout of the proposed development project in meeting the requirements of the Manual. Once the stormwater management concept plan is completed it can also be used to solicit early discussions and feedback with the Town of Bluffton review authority on the stormwater management practices that will be used to manage post-construction stormwater runoff on the development site. Submittal, review and discussions with the Town of Bluffton review authority of the stormwater management concept plan are required prior to proceeding with submittal to Town of Bluffton as part of the ~~Development~~ Preliminary Development Plan approval process and is particularly relevant in cases where MEP considerations may be sought by the Owner/applicant and in meeting the requirements of 3.9.

During the creation of the stormwater management concept plan, most of the site layout, including the layout of lots, buildings, roadways, parking areas, sidewalks and ~~green infrastructure~~GI and stormwater management practices, will be completed. Therefore, it is very important that natural resource protection and stormwater management be considered throughout this part of the stormwater management planning and design process.

The Stormwater Concept Plan shall consider and include, but not be limited to, the following:

- A current Natural Resources Inventory identifying natural resources within the site at time of application. A thorough assessment and narrative of the natural resources, both terrestrial and aquatic, found on the development site.
- Better Site Design (BSD) principals have been evaluated, considered, and incorporated to the maximum extent practicable.
- Post development stormwater management facilities/systems to address stormwater runoff volume, rate, quality, off-site discharge points, evaluation of downstream conveyance from off-site discharge points for safe/adequate conveyance capacity and downstream study point for Extreme Flood, 10% Rule analysis. Preliminary calculations to determine feasibility of plan submitted.

- **Step 5: ~~Development Preliminary Plan Submittal, Review, Approval~~Development Review Committee Meeting**

Once a stormwater management concept plan has been created, the applicant's site planning and design team shall submit a Preliminary Development Plan Application and submit requisite documentation to the Town of Bluffton ~~development review authority~~Development Review Committee. This application and submission, which should occur after completion of the stormwater management concept plan, provides an opportunity to discuss the proposed development project and the approach that was used to satisfy the stormwater management and site planning and design criteria that apply to the development site. Geotechnical investigations have been performed to obtain necessary information to determine certain feasibilities of the proposed development. It may be advantageous for a consultation meeting to take place on the development site after the application and plan submittal, but prior to approval. This meeting can be used to verify site conditions and feasibility of the proposed stormwater management concept plan and development. Comments, if any, pertaining to the Preliminary Development Plan submittal are heard at the Development Review Committee Meeting. The Stormwater Concept Plan components of the Preliminary Development ~~Preliminary~~ Plan Application shall include, but not be limited to, the following:

- A current Natural Resources Inventory identifying natural resources within the site at time of application. A thorough assessment and narrative of the natural resources, both terrestrial and aquatic, found on the development site. Represent and describe the efforts taken to preserve the most critical natural resources identified on the property and the most critical natural resources directly impacted and to be removed by the proposed development.
- Better Site Design (BSD) principals have been evaluated, considered, and incorporated to the maximum extent practicable. A thorough assessment and narrative of the ~~Better Site Design~~BSD Principals considered and employed within the proposed Preliminary

Development ~~Preliminary~~ Plan submittal package and ~~Better Site Design~~BSD Principals considered and found to be not feasible and reasons why.

- Post-development stormwater management facilities/systems to address stormwater runoff volume, rate, quality, off-site discharge points, evaluation of downstream conveyance from off-site discharge points for safe/adequate conveyance capacity and downstream study point for Extreme Flood, 10% Rule analysis. Preliminary calculations to determine feasibility of plan submitted.

It is at this point in the planning and design process that a Maximum Extent Practicable (MEP) demonstration described in Section 3.~~9~~11 is intended for the proposed development project. In cases where MEP considerations are being sought by the applicant, the applicant shall review and understand the requirements of 3.~~9~~11 and shall provide and present required information to determine if MEP applies to the proposed development site, and if so, to what to degree for Town of Bluffton consideration, review and approval. The Preliminary Development Plan Application and Stormwater Management Concept Plan must be Approved or Approved with Conditions prior to proceeding with the Town of Bluffton Development Plan approval process.

- **Step 6: Prepare Stormwater Management Design Plan**

Subsequent to review and approval of the Preliminary Development Plan and Stormwater Management Concept Plan, the site planning and design team should prepare a stormwater management design plan. The stormwater management design plan should detail how post-construction stormwater runoff will be managed on the development site and should include maps, narrative descriptions and design calculations (e.g., hydrologic and hydraulic calculations) that show how the stormwater management and site planning and design criteria that apply to the development project have been met. The stormwater management design plan should be submitted to the Town of Bluffton development review authority by way of the Stormwater Management Plan Application, with requisite documentation, for review and approval.

Stormwater Management Design Plan conditional approval is required prior to Applicant proceeding to Town of Bluffton's Development Final Plan approval process. Final Stormwater approval and Permit ~~is issued~~issuance occurs once all administrative requirements, County/ State/Federal permits (as required) have been obtained and submitted, and ~~other~~ requirements of the UDO and ~~Design~~ Manual have been ~~meet~~met, but prior to ~~Development~~ Final Development Plan approval.

2.2 Submittal & Review Process of Stormwater Management Plans

The Stormwater Management Plan (SWMP) consists of the entire submittal package and includes the following components:

- Project description and narrative;
- Description of selected stormwater management systems;
- Erosion and sediment control plans;
- Sufficient information to evaluate the environmental characteristics of the affected areas, the potential impacts of the proposed development on water resources, the effectiveness and acceptability of stormwater best management practices (BMPs), and land covers (Appendix R) for managing stormwater runoff;
- Supporting computations and drawings; and

- Construction, inspection, and maintenance schedules.

All SWMPs must include the Stormwater submittal checklist (Appendix D) and calculations summary. The ~~plans~~SWMP must include the calculated stormwater retention volume (SWRv) for each BMP and for the overall project, ~~the~~a pre~~-~~ and post~~-~~development peak flow comparison, extreme flood requirements, 10% rule analysis, and any off-site retention or detention volume obligation.

The SWMP and accompanying documentation shall be submitted electronically according to the Town of Bluffton process, carrying the stamp of a registered professional engineer licensed in the State of South Carolina with all supporting documentation to Town of Bluffton.

Upon acceptance of a complete application (which includes payment of filing fees), the Town of Bluffton will review the SWMP and make a determination to approve~~,~~ or disapprove the SWMP. Relatively large and/or complicated projects tend to require a longer review time than smaller and less complicated projects. A written response of approval or disapproval will be provided to the applicant. If it is determined that more information is needed or that a significant number of changes must be made before the SWMP can be approved, the applicant must resubmit the applications with the required revisions ~~required and~~that have been certified by ~~the~~a registered professional engineer according to the plan resubmittal process of the Town of Bluffton. A final SWMP a~~A~~pproval results in the issuance of a Stormwater P~~p~~permit associated with the Development~~.~~ ~~and a~~A Stormwater ~~p~~Permit approval is required prior to proceeding ~~to~~ with the Town of Bluffton ~~development review authority~~Final Development Plan a~~A~~pproval process.

When a SWMP approval is granted, a final submission package is required, including the following:

- One PDF copy of the SWMP, certified by a registered professional engineer licensed in the State of South Carolina,
- A fully executed declaration of covenants for each BMP and Conservation Area/Tree credit area identified on the SWMP that has been approved for legal sufficiency by the Town of Bluffton, and
- All supporting documents specified within this Manual or as requested during the review process according to the Town of Bluffton requirements.

2.2.1 Components of a Stormwater Management Plan

As itemized in the SWMP Design ~~c~~Checklist in Appendix D~~ Design Checklists~~, a SWMP includes the following:

Site Plan

The following information must be formatted to print as a standard drawing size of 24 by 36 inches. The site drawing will provide details of existing and proposed conditions:

- ~~A cover page that contains a blank space measuring 7 inches wide by 9.5 inches high. The blank space must be located 1 inch below the top edge and 1 inch from the left edge of the page;~~
- A plan showing all property boundaries and the complete address of the property;
- Lot number or property identification number designation (if applicable);
- North arrow, scale, and date;
- Property lines (include ~~longitude and latitude~~distance and bearings);

- Location of easements (if applicable);
- Existing and proposed structures, utilities, roads, and other paved areas;
- Existing and proposed topographic contours;
- Soil information for design purposes;
- Limits ~~Area(s)~~ of soil disturbance (LOD) shown on all plan sheets;
- Drainage area(s) within the ~~limits of disturbance (~~LOD~~)~~ and contributing to the LOD;
- Contributing drainage area (CDA) to each BMP;
- Location(s) of BMPs, marked with the BMP ID Numbers to agree with ~~the~~a BMP design summary list;
- Cross sections for each BMP;
- Necessary design details for each BMP, material descriptions, including inlets, outlets, and overflow structures;
- Delineation of existing and proposed land covers (Appendix R) including natural cover, compacted cover, and impervious surfaces. Consult Appendix G – Compliance Calculator Instructions for details;
- A landscaping plan, including specific planting plans for each proposed BMP;
- Natural resources inventory with site fingerprint map;
- All plans and profiles must be drawn at a scale of 1 in. = 10 ft, 1 in. = 20 ft, 1 in. = 30 ft, 1 in. = 40 ft, 1 in. = 50 ft, or 1 in. = 100 ft. Although, 1 in. = 10 ft, 1 in = 20 ft, and 1 in. = 30 ft, are the most commonly used scales. Vertical scale for profiles must be 1 in. = 2 ft, 1 in. = 4 ft, 1 in. = 5 ft, or 1 in. = 10 ft;
- Drafting media that yield first- or second-generation, reproducible drawings with a minimum letter size of No. 4 (1/8 inch);
- Location and size of existing utility lines including gas lines, sanitary lines, telephone lines or poles, electric utilities and water mains;
- A legend identifying all symbols used on the plan;
- Applicable flood boundaries and FEMA map identification number for sites lying wholly or partially within the 100-year floodplain;
- Site development plan and stormwater management narrative;
- Assess potential application of ~~green infrastructure~~GI practices in the form of better site planning and design techniques. ~~Low impact development~~LID practices should be used to the ~~maximum extent practicable~~MEP during the creation of a stormwater management concept plan. A demonstration of better site planning is required. The following site information and practices shall be considered:
    - Soil type(s) (from Soil Study);
    - Depth(s) of ground water on site;
    - Whether the type of development proposed is a hotspot as defined by the ~~Ordinance~~UDO and ~~Design~~ Manual and address how this influences the concept proposal;
    - Protection of primary and secondary conservation areas;
    - Reduced clearing and grading limits;
    - Reduced roadway lengths and widths;
    - Reduced parking lot and building footprints to minimize impervious surface;
    - Soil restoration;
    - Site reforestation/revegetation;
    - Impervious area disconnection;
    - Green roof (for redevelopment, infill and major substantial improvement projects); and

- Permeable pavements.

- Stormwater Pollution Prevention Plan (SWPPP) or Erosion and Sediment Control narrative (for projects disturbing over an acre);
- Information regarding the mitigation of any off-site impacts anticipated as a result of the proposed development;
- Construction specifications;
- Design ~~and As-Built~~ Certification, including the following:
  - i Design Certification by a registered professional engineer licensed in the State of South Carolina seal that engineering features of all stormwater best management practices (BMPs), stormwater infrastructure, and land covers (collectively the "Facility") have been designed/examined by me and found to be in conformity with the standard of care applicable to the treatment and disposal of stormwater pollutants. The Facility has been designed in accordance with the specifications required under the ~~Unified Development Ordinance~~UDO of the Town of Bluffton. ~~Note these changes were made to be consistent with language of 2.2.3~~
  - ~~ii As-Built Certification and submission shall include one set of the As-Built drawings sealed by a registered professional engineer licensed in the State of South Carolina within 21 days after completion of construction of the site, all BMPs, land covers, and stormwater conveyances. The Engineer shall certify as-built SWMPs and state that "all activities including clearing, grading, site stabilization, the preservation or creation of pervious land cover, the construction of drainage conveyance systems, the construction of BMPs, and all other stormwater-related components of the project were accomplished in strict accordance with the approved SWMP and specifications and function as designed. Furthermore, to the best of my knowledge and belief this As-Built truly represents existing field conditions including but not limited to sizes, diameters, dimensions, depth, horizontal location, line and grade, and elevation" (this comes from right before 2.3).~~
  - ~~iii For a project consisting entirely of work in the public right-of-way (PROW), the submission of a Record Drawing certified by an officer of the project contracting company is acceptable if it details the as-built construction of the BMP and related stormwater infrastructure.~~
- Maintenance sheet for stormwater BMPs, including the following:
  - i A maintenance plan that identifies routine and long-term maintenance needs and a maintenance schedule;
  - ii A ~~m~~Maintenance ~~a~~Agreement (Appendix O) and schedule for all post-construction best management practices in a form and manner that meets the Town of Bluffton requirements.
  - iii For applicants using Rainwater Harvesting, submission of third-party testing of end-use water quality may be required at equipment commissioning as determined by the requirements in Appendix J – Rainwater Harvesting Treatment and Management Requirements. Additional regular water quality reports certifying compliance for the life of the BMP may also be required in Appendix J – Rainwater Harvesting Treatment and Management Requirements. Irrigation re-use systems must have a submitted and approved Operations and User's Manual describing: 1) design assumptions of system including daily, weekly, monthly, annual, output requirements, 2) system layout in schematic drawing showing control panel, irrigation zones, irrigation line(s) and head(s) locations, 3) narrative of operation set-up and troubleshooting, and 4) system component maintenance requirements and frequency as monthly, quarterly and annual.

Stormwater Retention Volume Computations

The following summary calculations must be included on the plan set. Supporting documentation and the South Carolina ~~DHEC~~DES C-SWPPP are not in the plan set but provided separately.

- Calculation(s) of the required SWRv for the entire site within the LOD and each site drainage area (SDA) and contributing drainage area (CDA) within the LOD, as determined using the SWRv Compliance Calculator;
- Calculation(s) for each proposed BMP demonstrating storage volume provided and retention value achieved towards SWRv in accordance with Chapters 2 and 4;
- For Rainwater Harvesting BMP, calculations demonstrating the annual water balance between collection, storage, and demand, as determined using the Rainwater Harvesting Retention Calculator (Appendix K);
- For proprietary and non-proprietary BMPs follow the guidance in Chapter 4.~~13~~15 to identify/receive approval or denial to use these practice(s); and
- Off-site stormwater volume requirement.

Pre-/Post-Development Hydrologic Computations

Include in the plan set a summary of the pre-/post-runoff analysis with the following information at a minimum:

- A summary of soil conditions and field data;
- Pre- and post-project curve number summary table;
- Pre- and post-construction peak flow summary table for the 2-, 10-, 25- ,50- and 100-year, 24-hour storm events for each SDA within the project's LOD; and
- Flow control structure elevations.

Hydraulic Computations

Hydraulic computations for the final design of water quality and quantity control structures may be accomplished by hand or through the use of software using equations/formulae as noted in Chapters 3 and 4. The summary of collection or management systems will include the following:

- Existing and proposed SDA and CDA must be delineated on separate plans with the flow paths used for calculation of the times of concentration;
- Hydraulic capacity and flow velocity for drainage conveyances, including ditches, swales, pipes, inlets, and gutters designed for the 25-year, 24-hour design storm. Plan profiles for all open conveyances and pipelines, with energy and hydraulic gradients for the 25-year and 100-year, 24-hour storms;
- The proposed development layout including the following:
    - Location and design of BMP(s) on site, marked with the BMP ID Numbers;
    - Stormwater lines and inlets;
    - A list of design assumptions (e.g., design basis, 2- through 50-year return periods);
    - The boundary of the CDA to the BMP;
    - Schedule of structures (a listing of the structures, details, or elevations including inverts); and
    - Manhole to manhole profile, listing of pipe size, pipe type, slope, (i.e., a storm drain pipe schedule) computed velocity, and computed flow rate, hydraulic grade line (HGL), assumed Tailwater elevations, seasonally high groundwater table/channel water surface elevation (WSEL) of receiving channel, and King Tide WSEL as applicable, indicated at proposed outfall structures.

Supporting Documentation

Provide a written report with the following supporting documentation:

- Pre- and post-project curve number selection;
- Time of concentration calculation;
- Travel time calculation;
- Hydrologic computations supporting peak discharges assumed for each SDA within the project's LOD for the 2-, 10-, 25-, 50- and 100-year, 24-hour storm events;
- SC~~DHEC's~~DES's Construction Stormwater Pollution Prevention Plan (C-SWPPP).

A professional engineer registered in the State of South Carolina must also submit the following:

1. Elevation and topographic data illustrating changes in topography and drainage;
2. Impacts upon local flood flows (25- and 100-yr storm events).
3. Identify areas where stormwater flows are discharged off-site or off-property;
4. For proposed off-site/property discharge points, perform analysis of receiving off-site conveyance systems to confirm safe conveyance from the proposed developed property, no negative impact to adjacent properties, and adequacy of the receiving, existing conveyance system for 25-yr storm flows. Such analysis shall be taken to point where the 25-yr storm conveyance is determined to be adequate in the public stormwater conveyance/infrastructure system; and
5. Documentation supporting safe passage of the 100-yr post development flow according to the 10% Rule (see Section 3.~~8~~10);

2.2.2 Resubmission of Stormwater Management Plans

If major changes occur in the design or construction of an accepted SWMP, the applicant may be required to ~~re~~submit the amended SWMP for approval. Examples of major changes during design and construction that will require SWMP resubmission for review include the following:

1. Revision to the property boundary, property size, or LOD boundaries that may require redesigning BMPs;
2. Any change to SWRv through land cover (Appendix R) designation change;
3. Change in compaction or infiltration rates due to construction activities;
4. Encountering contaminated soil or other underground sources of contamination;
5. Changes to floodplain designation or requirements;
6. Changes in any component of the BMP that may adversely affect the intended capacity of the approved BMP, such as the following:
    a. Modification to approved BMP selection, dimensions, or location
    b. Modification to approved material specification
    c. Changes to the size, invert, elevation, and slopes of pipes and conveyances
    d. Installation of new drains and conveyance structures
    e. Need for a new storm sewer outlet connection to the sanitary/storm sewer main
    f. Changes to the amount of off-site requirements
    g. Changes to the CDA to a BMP
7. Revision to the approved grading and drainage divides and that may require redesigning BMPs;
8. Relocation of an on-site storm sewer or conveyance; or
9. Abandonment, removal, or demolition of a BMP.

If the applicant must ~~re~~submits and ~~d~~ amended ~~an~~ SWMP ~~after making changes~~, the resubmission must contain a list of the major changes made and may be in the form of a response to comments. The resubmittal plans and calculations must include the stamp of the registered professional engineer licensed in the state of South Carolina.

However, if any of the following minor changes are made to the SWMP, resubmission is not required. These minor changes may be made anytime during inspection or at the time of as-built submittal to the Town of Bluffton.

1. Changes to SWMP components that do not adversely affect BMP capacity while in consultation with the Town of Bluffton. The inspector should review the appropriate manufacturer's documentation to his/her satisfaction before approving such a change and should ensure that such changes are recorded as red line changes or deviations in the as-built plans. These changes include the following:
    a. Changes to parts type of similar function (e.g. dewatering valve)
    b. Change in project address, ownership, permit status, or zoning

2.2.3 Design Certifications

The engineer shall certify that the ~~is Plan~~SWMP satisfies all requirements of the ~~Town of Bluffton Unified Development Ordinance~~UDO and ~~Stormwater Design~~ Manual. The following statement with engineer's seal, signature and date is required in the ~~Plan~~SWMP submittal.

> The engineering features of all stormwater best management practices (BMPs), stormwater infrastructure, and land covers (collectively the "Facility") have been designed/examined by me and found to be in conformity with the standard of care applicable to the treatment and disposal of stormwater pollutants. The Facility has been designed for safe passage of the 100-year post-development flow. The Facility has been designed in accordance with the specifications required under Town of Bluffton Unified Development Ordinance.

2.2.4 Performance Bonds

Bonding for the cost of stormwater facilities approved for the proposed development shall be provided in accordance with Article 3 of the ~~Town of Bluffton Unified Development Ordinance~~UDO~~, Article 3~~. The stormwater bond shall not be fully released without a final inspection of the completed work by the Town of Bluffton, a recorded inspection and maintenance agreement (Appendix O) and plan, and submission of "as-built" plans containing minimum as-built information/documentation as specified in Section 2.5 and certifications provided by the applicant and engineer, including the following:

1. Certification that facilities were constructed in accordance with the submitted and approved design and will function as designed.
2. As-built certification to be on as-built drawing submitted by ~~E~~engineer after construction and prior to Certificate of Project Completion ~~and~~ confirming line, size, elevation and grade of constructed stormwater BMPs and drainage/conveyance systems.

Stormwater bonds may be reduced, utilizing procedures outlined in Article 3 of the UDO. ~~A~~ Bond reductions~~procedure~~ may be used to release parts of the bond held by the Town of Bluffton after various stages of construction have been completed and accepted by the Town of Bluffton. ~~Partial Bond release will be determined for the portion of work being accepted and construction work has been approved by the Town of Bluffton.~~ All requirements pertaining to this portion of work have been satisfied to include, but not be limited to, as-built~~s~~ plans, all certifications and approvals for that portion of work related to the ~~partial bond release~~bond reduction have been provided by applicant's engineer and approved by

Town of Bluffton. ~~The procedures used for partially releasing performance bonds must be specified by the Town of Bluffton in writing prior to the approval of a stormwater management design plan.~~

2.3 Construction Inspection Requirements

2.3.1 Inspection Schedule & Reports

Prior to the approval of a SWMP, the applicant will submit a proposed construction inspection schedule detailing inspections to be performed by the applicant's professional engineer responsible for certifying the as-built SWMP to ensure required information is obtained by applicant's ~~E~~engineer for As-Built drawing documentation submittal and certification requirements. The Town of Bluffton will review the schedule to determine if changes are required. The construction schedule should reflect the construction sequences defined ~~in~~for each stormwater Best Management Practice (BMP) ~~BMP section Stormwater~~ in Chapter 4 ~~Best Management Practices (BMPs)~~ of this Manual. The construction and inspection schedule for each BMP must be included in the SWMP. The Town of Bluffton may also conduct inspections and file reports of inspections during construction of BMPs and site stormwater conveyance systems to ensure compliance with the approved plans.

Note: No stormwater management work may proceed past the stage of construction that the Town of Bluffton has identified as requiring an inspection unless:

- the professional engineer responsible for certifying the as-built SWMP has issued an "approved" or "passed" report;
- the professional engineer responsible for certifying the as-built SWMP has approved a plan modification that eliminates the inspection requirement; or
- the Town of Bluffton has eliminated or modified the inspection requirement in writing.

The Town of Bluffton may require~~s~~ that the professional engineer responsible for certifying the as-built SWMP be present during inspections. For a project entirely in the PROW, the officer of the contracting company responsible for certifying the Record Drawing shall be present during inspections.

If the professional engineer responsible for certifying the as-built SWMP conducts an inspection and finds work that is not in compliance with the SWMP, he must so inform the Owner/applicant and the applicant must take prompt corrective action. If such inspection is performed by The Town of Bluffton, The Town of Bluffton will issue a written notice to the applicant. The written notice shall provide details on the nature of corrections required and the time frame within which corrections must be made.

2.3.2 Inspection Requirements Before & During Construction

The Town of Bluffton construction stormwater inspection form is provided in Appendix E Construction Inspection Form.

Pre-~~c~~Construction Meetings. These meetings are required prior to the commencement of any land-disturbing activities and prior to the installation of and/or construction of any BMPs. The applicant is required to contact the Town of Bluffton to schedule and hold a pre-construction meeting~~s three days (3)~~ prior to ~~beginning any construction activity subject to the requirements the Town of Bluffton~~installation of any tree protection and erosion and sediment control measures, as shown on the approved Final Development Plan.

Pre-Clearing Inspection. Prior to beginning any construction activity subject to the requirements of the Town of Bluffton, the applicant is required to contact the Town of Bluffton to schedule a pre-clearing inspection to ensure proper installation of any tree protection and erosion and sediment control measures, as shown on the approved Final Development Plan.

Inspections During Construction. The applicant is required to contact the Town of Bluffton and the professional engineer responsible for certifying the as-built SWMP to schedule an inspection three (3) days prior to any stage of BMP construction, or other construction activity, requiring an inspection. For large, complicated projects, the applicant and the Town of Bluffton and the professional engineer responsible for certifying the as-built SWMP may agree during the pre-construction meeting to an alternative approach such as a weekly notification schedule. Any such agreement must be made in writing and signed by all parties. The Town of Bluffton will revert to the 3-day notification procedure if the agreement is not followed. The Town of Bluffton may or may not perform the requested inspection; however, the professional engineer responsible for certifying the as-built SWMP must inspect, gather requisite information for as-built documentation and approve the work prior to construction proceeding to next requisite inspection point.

Final Inspection. The applicant is required to contact the Town of Bluffton and the professional engineer responsible for certifying the as-built SWMP to schedule a final inspection one week prior to the completion of a BMP ~~construction to schedule a final inspection of the BMP~~. The professional engineer responsible for certifying the as-built SWMP shall provide an inspection report and punch-list items to be performed by applicant to The Town of Bluffton. Upon owner/applicant request and Town of Bluffton receipt of Final Inspection report and punch list from the professional engineer responsible for certifying the as-built SWMP, the Town of Bluffton will conduct a final inspection to review project work and~~,~~ punch-list and determine if any additional punch-list items are required to be performed. As-builts, all requisite paperwork, and close out materials must be submitted to and approved by the Town of Bluffton for final approval. ~~Final approval of the BMP will not be issued until As builts are submitted and approved by the Town of Bluffton and all requisite paperwork and close out materials have been submitted to and approved by the Town of Bluffton.~~

Inspection Requirements by BMP Type. Chapter 4 Stormwater Best Management Practices (BMPs) of this Manual provides details about the construction sequences for each BMP. After holding a pre-construction meeting and pre-clearing inspection, regular inspections will be made at the following specified stages of construction:

- **Infiltration Systems and Bioretention Areas** shall be inspected at the following stages to ensure proper placement and allow for infiltration into the subgrade:
    - During on-site or off-site percolation or infiltration tests;
    - Engineer approval of contractor submittals of Infiltration and Bioretention system materials to be used in construction;~~.~~
    - Upon completion of stripping, stockpiling, or construction of temporary sediment control and drainage facilities (drainage area to BMP must be protected with sediment control measures, and maintained~~,~~ at all times until final site stabilization is established);
    - Upon completion of excavation to the subgrade (keep construction equipment off bottom area of infiltration ~~area~~BMP within 2' of subgrade elevation);
    - Throughout the placement of perforated PVC/HDPE pipes (for underdrains and observation wells) including bypass pipes (where applicable), geotextile materials (generally fabric and high permeability), gravel, or crushed stone course (all stone to be clean, washed, no fines), Bio soil material as mixed and testing results, and backfill; and
    - Upon completion of final grading and establishment of permanent stabilization;
- **Flow Attenuation Devices**, such as open vegetated swales upon completion of construction;

- **Retention and Detention Structures**, at the following stages:

    - Upon completion of excavation to the sub-foundation and, where required, installation of structural supports or reinforcement for structures, including but not limited to the following:
    - During testing of the structure for water-tightness;
    - During placement of structural fill and concrete and installation of piping and catch basins;
    - During backfill of foundations and trenches;
    - During embankment construction; and
    - Upon completion of final grading and establishment of permanent stabilization.

- **Stormwater Filtering Systems**, at the following stages:

    - Upon completion of excavation to the sub-foundation and installation of structural supports or reinforcement for the structure;
    - During testing of the structure for water-tightness;
    - During placement of concrete and installation of piping and catch basins;
    - During backfill around the structure;
    - During prefabrication of the structure at the manufacturing plant;
    - During pouring of floors, walls, and top slab;
    - During installation of manholes/trap doors, steps, orifices/weirs, bypass pipes, and sump pit (when applicable);
    - During placement of the filter bed; and
    - Upon completion of final grading and establishment of permanent stabilization.

- **Green Roof Systems**, at the following stages:

    - During placement of the waterproofing layer, to ensure that it is properly installed and water-tight;
    - During placement of the drainage layer and drainage system;
    - During placement of the growing media, to confirm that it meets the specifications and is applied to the correct depth (certification for vendor or source must be provided);
    - Upon installation of plants, to ensure they conform to the planting plan (certification from vendor or source must be provided); and
    - At the end of the first or second growing season, to ensure desired surface cover specified in the Care and Replacement Warranty has been achieved.

- **Stormwater Wetlands**, at the following stages:

    - Upon completion of stripping, stockpiling, or construction of temporary sediment control and drainage facilities (drainage area to BMP must be protected with sediment control measures, and maintained at all times until final site stabilization is established);
    - During installation of the embankment, the riser/primary spillway, and the outlet structure; and
    - Within two (2) weeks of installation of landscaping plan and vegetative stabilization to ensure adequate stabilization of banks and slopes.

2.3.3 ~~Final Construction~~Notice of Termination (NOT) Inspection Reports

Upon notification ~~of~~by the applicant, the Town of Bluffton will conduct a final inspection to determine if the completed work is constructed in accordance with approved plans and the intent of this Manual and the ~~Unified Development Ordinance~~UDO. Within 21 days of ~~the final inspection~~construction site completion, the applicant must submit an as-built package, as required by the ~~Design~~ Manual and/or as-built submittal checklist, as provided by the Town of Bluffton. The as-built submittal must be certified by a registered professional engineer licensed in the state of South Carolina. For a project consisting entirely of work in the PROW, the submission of a Record Drawing certified by an officer of the project contracting company is acceptable if it details the as-built construction of the BMPs, related stormwater infrastructure, and land covers.

A registered professional engineer licensed in South Carolina is required to certify as-built SWMPs and state that "all activities including clearing, grading, site stabilization, the preservation or creation of pervious land cover, the construction of drainage conveyance systems, the construction of BMPs, and all other stormwater-related components of the project were accomplished in strict accordance with the approved SWMP and specifications. Furthermore, to the best of my knowledge and belief this as-built truly represents existing field conditions including but not limited to sizes, diameters, dimensions, horizontal location, line and grade, and elevation". As stated in Section 2.2.2 Resubmission of Stormwater Management Plans, all plan changes are subject to the Town of Bluffton approval. The as-built certification must be on the original SWMP.

Upon completion, these plans will be submitted to the Town of Bluffton for processing. The estimated time for processing will be two weeks (10 working days), after which the plans will be returned to the engineer. The Town of Bluffton will provide the applicant with written notification of the ~~final~~ NOT inspection results.

~~**2.3.4 Inspection for Preventative Maintenance**~~

~~The Stormwater Ordinance requires maintenance inspections for BMPs and landcovers to ensure their ongoing performance is in compliance with their original design. The inspection will occur at least once every three (3) years. Maintenance inspection forms are provided in Appendix F Maintenance Inspection Checklists. The Town of Bluffton will conduct these maintenance inspections, though it may, in certain circumstances, allow a property to self-inspect and provide documentation.~~

~~The Town of Bluffton will maintain maintenance inspection reports for all BMPs. The reports will evaluate BMP functionality based on the detailed BMP requirements of Stormwater Best Management Practices (BMPs) and inspection forms found in Appendix F Maintenance Inspection Checklists.~~

~~If, after an inspection by the Town of Bluffton, the condition of a BMP requires repairs and/or maintenance work to restore functionality of the BMP to meet its design intent, The Town of Bluffton will provide notice to the Owner of the required repairs and/or maintenance required and time frame in which the work is to be completed. If, after an inspection by the Town of Bluffton, the condition of a BMP presents an immediate danger to the public safety or health because of an unsafe condition or improper maintenance, the Town of Bluffton will take such action as may be necessary to protect the public and make the BMP safe. Any costs incurred by the Town of Bluffton will be assessed against the owner(s).~~

2.4 Inspections & Maintenance

2.4.1 Inspections & Maintenance Responsibilities

A site with an approved SWMP must also have a responsible party inspect and maintain the BMPs and land covers (Appendix R) according to the inspections and maintenance schedule in the SWMP and this

Manual. Land covers must be maintained in type and extent as approved. Approved BMPs must be kept in good condition, including all the engineered and natural elements of each practice, as well as conveyance features (e.g., grade surfaces, walls, drains, structures, vegetation, soil erosion and sediment control measures, and other protective devices). All repairs or restorations must be in accordance with the approved SWMP.

A declaration of covenants including an exhibit stating the owner's specific maintenance responsibilities must be recorded with the property deed at the Beaufort County ~~Record~~ Register of Deeds Office. An inspection and maintenance schedule for any BMP will be developed for the life of the project and shall state the inspection and maintenance to be completed, the time for completion, and who will perform the inspections and maintenance. The schedule will be printed on the SWMP and will appear as an exhibit in the declaration of covenants.

2.4.2 Inspection & Maintenance Agreements

Inspection and maintenance obligations are binding on current and future owners of a property subject to recorded covenants. The Town of Bluffton will not issue final approval of a complete set of the SWMP for private parcels until the applicant has executed a declaration of covenants providing notice of this obligation to current and subsequent owners of the land served by the BMP(s) and land covers (Appendix R). Inspection and maintenance agreements by regulated projects include providing access to the site and the BMP(s) at reasonable times for regular inspection by the Town of Bluffton and for regular or special assessments of property owners, as needed, to ensure that the BMP(s) is maintained in proper working condition and the land covers are retained as approved in the SWMP. An example of the declaration of covenants/maintenance agreement for a site with BMPs and designated land covers is provided ~~at the end of this chapter~~in Appendix O.

The applicant must record the agreement as a declaration of covenants with the ~~with the Town of Bluffton Recorder of Deeds~~Beaufort County Register of Deeds Office. The agreement must also provide that, if, after written notice by the Town of Bluffton to correct a violation requiring maintenance work, satisfactory corrections are not made by the owner(s) of the land served by the BMP within a reasonable period of time, not to exceed 45 to 60 days unless an extension is approved in writing by the Town of Bluffton, the Town of Bluffton may perform all necessary work to place the BMP in proper working condition. The owner(s) of property served by the BMP will be assessed the cost of the work and any penalties, and there will be a lien on any property served by the BMP, which may be placed on the tax bill and collected as ordinary taxes by the State.

2.4.3 Post-Construction BMP Inspection for Preventative Maintenance

The Stormwater Post-Construction Ordinance (Appendix A) and UDO Section 5.10.4 requires maintenance inspections for BMPs and landcovers to ensure their ongoing performance is in compliance with their original design. The inspection will occur at least once every three (3) years. The person responsible for maintenance of any structural BMPs shall submit an inspection report from a certified Post-Construction BMP Inspector, a registered South Carolina Professional Engineer or Landscape Architect to the Town of Bluffton. The reports will evaluate BMP functionality based on the detailed BMP requirements of Stormwater Best Management Practices (BMPs) and inspection forms found in Appendix F. Individual lot BMPs implemented as part of the Single-Family On-Lot Volume Control requirement are exempt from this submittal requirement.

Additionally, the Town of Bluffton will conduct post-construction inspections following steps outlined in the Town's Post-Construction BMP Standard Operating Procedures (SOP). The Town of Bluffton may maintain maintenance inspection reports for all BMPs.

If, after an inspection by the Town of Bluffton, the condition of a BMP requires repairs and/or maintenance work to restore functionality of the BMP to meet its design intent, the Town of Bluffton will provide notice to the Owner of the required repairs and/or maintenance and the time frame in which the work is to be completed. If, after an inspection by the Town of Bluffton, the condition of a BMP presents an immediate danger to the public safety or health because of an unsafe condition or improper maintenance, the Town of Bluffton shall take such action as may be necessary to protect the public and make the BMP safe. Any costs incurred by the Town of Bluffton will be assessed against the owner(s).

2.5 As-Built Submittals

One set of as-built built drawings sealed by a registered professional engineer licensed in the state of South Carolina must be submitted within 21 days after completion of construction of the site, including all BMPs, land covers, and stormwater conveyances, as required by the procedure for handling close out documents for private development projects by the Town of Bluffton.

The following items must be completed and provided:

General Information:

- As-builts are to be submitted digitally in GIS, CAD and Geo-referenced PDF format
- The GIS/CAD file must include an annotation layer showing, at a minimum, inlet types, materials, structure depths, pipe lengths, and pipe diameters
- Words As-Built in or near the project title, on Plan set Cover Sheet
- Engineer's or surveyor's as-built certification statement, signature, date, ~~PE~~ seal
- As-built Signature/Approval block on the cover sheet
- As-builts shall have a coordinate system based on the South Carolina Coordinate System North American Datum of 1983 (NAD83)
- Elevations shown shall be based on the North American Vertical Datum of 1988 (NAVD88)
- Vicinity map
- Sheets numbered correctly
- Project ID number, Project Name, Permit number and name, address and contact information of project engineer
- All measurements and coordinates shall be shown on all drainage structures, detention and BMP structure outlets, outlet control structures and manholes
- Any change to design value elevations, dimensions (L, W, D), specifications or location shall be shown as mark-through of the original design value on the drawings and constructed/as-built value next to it and "boxed" in red ink
- Elevations to the nearest 0.1 ft
- All BMPs must be labeled and identified on as-builts as shown on approved plans.

Basins:

- At least two benchmarks on the plans
- Profile of the top of berm
- Cross-section of emergency spillway at the control section
- Profile along the centerline of the emergency spillway

- Cross-section of berm at the principle spillway
- Elevation of the principle spillway crest or top of structure elevations
- Elevation of the principle spillway inlet and outlet invert
- Riser diameter/dimensions and riser base size
- Diameter, invert elevation and sizes of any stage orifices, weirs or storm drain pipes
- Barrel diameter, length, and slope
- Types of material used
- Outfall protection length, width, depth, size of rip rap and filter cloth
- Size, location, and type of anti-vortex and trash rack device (height and diameter, elevations and spacing)
- Pipe cradle information
- On plan view show length, width and depth of pond and contours of the basin area so that design volume is specified
- As-built spot elevations within the disturbed area required for basin construction in sufficient detail to provide accurate as-built contours
- Core trench limits and elevations of bottom of cut off trench
- Show length, width, and depth of outfall rip rap
- Certification by a Geotechnical Engineer for compaction and unified soil classes
- Vegetation cover certification stating that the disturbed area of site has achieved ~~80~~70% or greater established, permanent stabilization
- Show location, plant types and size of planted landscaping per approved landscape plan
- Utility locations and elevations encountered, test pitted and/or relocation during contract work

Storm Drain Piping: *(no changes)*

Post-Construction BMP-Specific Details: *(no changes)*

Rainwater Harvesting: *(no changes)*

Irrigation Re-Use: *(no changes)*

2.6 References *(no changes)*

Chapter 3. Minimum Control Requirements

3.1 Introduction

This chapter establishes the minimum stormwater control standards necessary to implement the Southern Lowcountry Post-Construction Stormwater Ordinance (Appendix A) within the Town of Bluffton. The term "runoff reduction" is used throughout this chapter to describe the retention of the stormwater on site. The SWRv is used to describe the volume of stormwater to be retained on site.

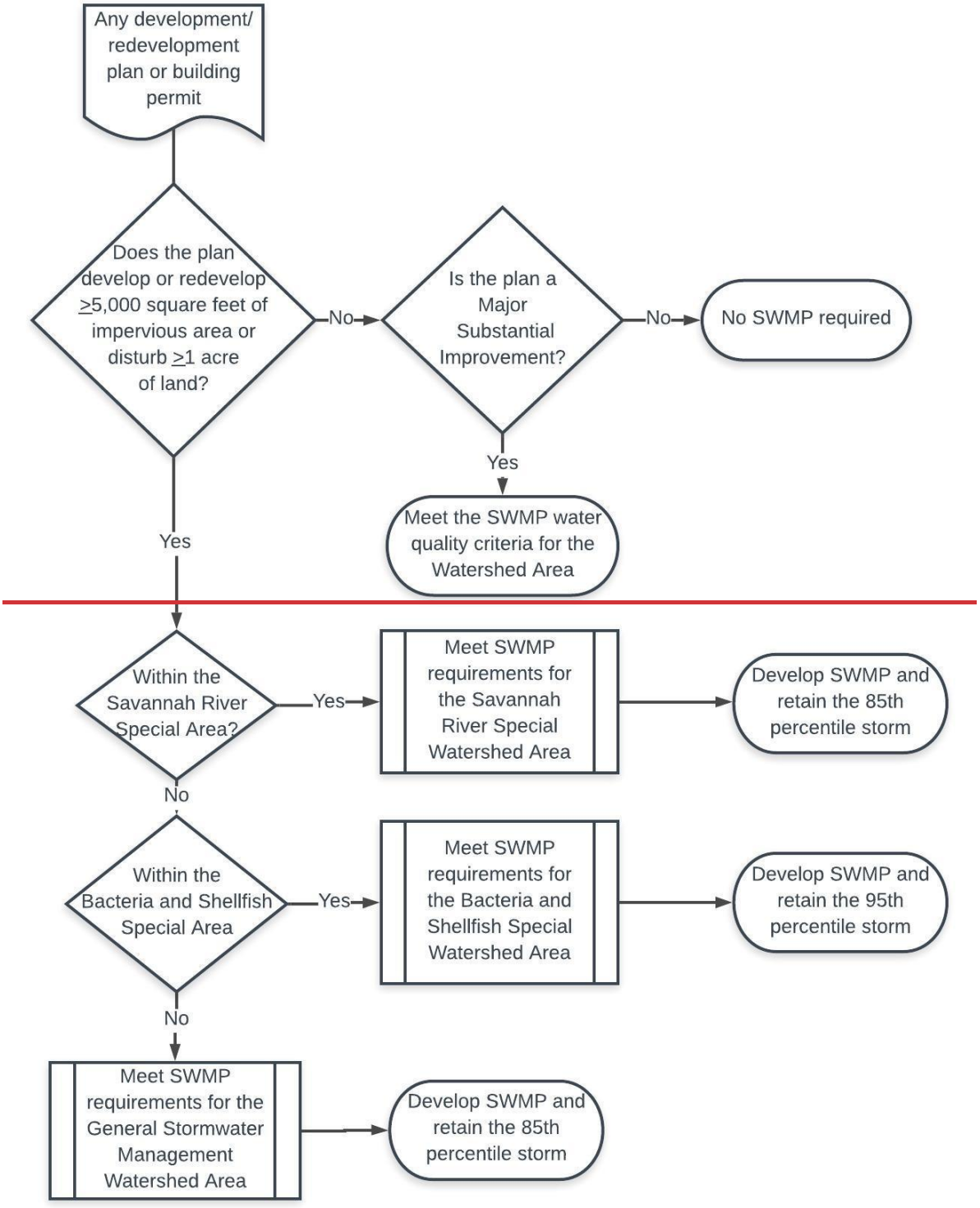
Two levels of stormwater retention are prescribed, the 85th and the 95th percentile storm, and are assigned based on a site's subwatershed as identified by the U.S. Geological Survey Hydrologic Unit Code 12 (HUC-12) presented in Section 3.5.1 below. In addition, peak discharge control of the post-development 2-, 10-, and 25-year, 24-hour storms for the General and Savannah Watershed Protection Areas and 2-, 10-, 25-, 50- and 100-year, 24-hour storms for the Bacteria and Shellfish Watershed Protection Area to their pre-development flow shall be provided by a combination of structural controls, GI/LID practices and other non-structural BMPs. As well, requirements to manage the 100-yr, 24-hour storm event are provided in the extreme flood event section below. Further, this Manual and Appendices provide the framework and necessary tools to document the methods proposed by development plans to comply with these requirements. It should be noted that stormwater ponds are considered the least favorable structural best management practice to meet the SWRv and water quality requirements of this Manual.

3.2 Regulated Site Definition

According to the ~~Unified Development Ordinance~~UDO, the design criteria of this Manual shall be applicable to any new development, redevelopment or major substantial improvement activity, including, but not limited to, Development Plan applications, site plan applications, grading plan applications, public improvement projects, and subdivision applications that meet the applicability standards found in ~~Chapter~~Section 1.4.

The Southern Lowcountry stormwater design requirements are applied according to the flow chart in Figure 3.1 and should be determined as follows:

1) In sequence, first determine which HUC-12 watershed the project is in according to Table 3.1. Stormwater design criteria for the development follows the watershed area in which it is located. Next, determine the square feet of ~~impervious area~~land disturbance to occur ~~be created, added or replaced~~ as a part of the development. Does it equal or exceed 5,000 square feet? ~~or~~If the project is considered redevelopment/infill, determine how much impervious surface is to be added. Does it equal or exceed 2,000 square feet? If the answer is "yes" to either of these questions, the project plan must meet the requirements for stormwater management in this Manual for their respective watershed area.
2) If a project is a major substantial improvement, it must meet the water quality criteria for its respective watershed protection area to the maximum extent practicable (MEP) or obtain off-site stormwater credit. The terms MEP and off-site stormwater credit are further explained in Sections 3.9 and 3.10 below. Peak control requirements do not apply to major substantial improvement projects.


Any development/ redevelopment plan or building permit
Does the plan develop or redevelop ≥5,000 square feet of impervious area or disturb ≥1 acre of land?
No
Is the plan a Major Substantial Improvement?
No
No SWMP required
Yes
Meet the SWMP water quality criteria for the Watershed Area
Yes
Within the Savannah River Special Area?
Yes
Meet SWMP requirements for the Savannah River Special Watershed Area
Develop SWMP and retain the 85th percentile storm
No
Within the Bacteria and Shellfish Special Area
Yes
Meet SWMP requirements for the Bacteria and Shellfish Special Watershed Area
Develop SWMP and retain the 95th percentile storm
No
Meet SWMP requirements for the General Stormwater Management Watershed Area
Develop SWMP and retain the 85th percentile storm

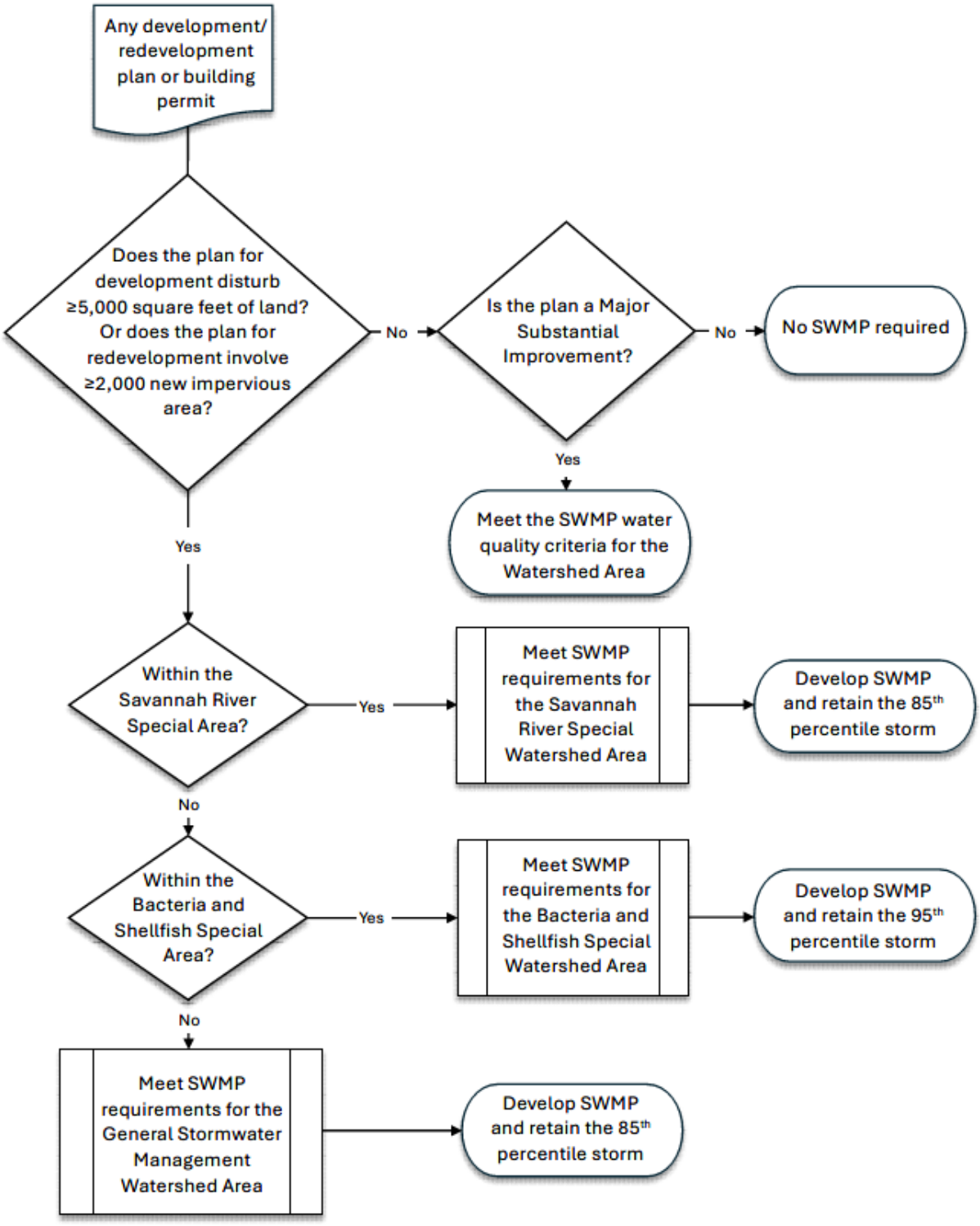


Figure 3.1. Southern Lowcountry Stormwater Design Manual applicability diagram.

3.3 Infill & Redevelopment

An infill project is one on a previously platted property that may or may not have stormwater management capacity in its original development plan. Regardless of size, infill that is part of a larger common plan of development (LCP), even through multiple, separate, and distinct land disturbing activities that may take place at different times and on different schedules must comply with this Manual. Such projects may include Planned Unit Developments (PUDs) that have stormwater systems built that do not meet the requirements of this Manual. If the proposed project meets the applicability criteria of Section 1.4.1, the stormwater plan review in this Manual is necessary. If the development's original stormwater management plan is sufficient to meet the current requirements of this Manual and is documented through approved plans and as-built drawings, or current field measurements and engineering calculations, no further stormwater requirements must be met. When the infill project is part of an original plan that does not meet the current stormwater requirements, the level of stormwater management that is provided in the current development may be credited toward the current volume and hydrologic analysis. Infill locations that, due to the municipal jurisdiction's zoning or land use requirements or site conditions, cannot meet the requirements of this Manual must complete the maximum extent practicable (MEP) evaluation in Section 3.9 for project approval.

Similarly, redevelopment may be credited for the level of stormwater in place. If the redevelopment's original stormwater management plan is sufficient to meet the current requirements of this Manual and is documented through approved plans and as-built drawings, or current field measurements and engineering calculations, no further stormwater requirements must be met. When the redevelopment is part of an original plan that does not meet the current stormwater requirements, the level of stormwater management that is provided in the current development may be credited toward the current volume and hydrologic analysis. Redevelopment projects that, due to the municipal jurisdiction's zoning or land use requirements or site conditions, cannot meet the requirements of this Manual must complete the ~~maximum extent practicable (MEP)~~MEP evaluation in Section 3.9 for project approval.

3.4 Single-Family On-Lot Volume Control

Individual lots outside of an LCP, regardless of size, and individual lots within an LCP, with greater than or equal to 5,000 sqft. of land disturbance, are required to retain the 95th percentile storm event on-site using Appendix T.

3.5 Stormwater Runoff Quality & Peak Discharge Control *(no changes)*

3.6 Southern Lowcountry Stormwater Management Performance Requirements

Stormwater management requirements of this Manual are intended to enhance the quality of development, protect and enhance stormwater quality and management, protect aquatic resources from the negative impacts of the land development process, address water quality impairments or a total maximum daily load, as identified by the South Carolina Department of ~~Health and~~ Environmental ~~Control~~Services (~~DHEC~~DES), or address localized flooding issues.

3.6.1 Watershed Protection Area Designations

Not all watersheds of the Southern Lowcountry region require the same level of post-construction stormwater management. Currently, three watershed protection areas are designated with specific

unique stormwater management requirements based on the current and anticipated water quality control measures for their contributing watersheds. The Southern Lowcountry Post-Construction Stormwater Ordinance provides the Town of Bluffton the flexibility and authority to designate subwatersheds or drainage areas as Special Watershed Protection Areas that lead to more restrictive requirements or special criteria. Such special designations and criteria will be provided as Appendix P to this Manual.

In the Southern Lowcountry, impairments include recreational water use impairment from bacteria (*Enterococcus* for saltwater and *E. coli* for freshwater), aquatic life use impairment from turbidity or dissolved oxygen, and shellfish harvesting use impairment from fecal coliform bacteria. Stormwater best management practices for these types of impairments include erosion and sediment control for turbidity impairments, illicit discharge detection, vegetated conveyances, vegetated buffers, pet waste programs, and post-construction runoff control. Currently, Southern Lowcountry water quality impairments do not include nutrient impairments, but nutrients can also be addressed through erosion and sediment control and the stormwater best management practices outlined in this Manual.

Most of Beaufort County and the lower reaches of the Jasper County watersheds have shellfish receiving waters or are recreational waters and are therefore sensitive to bacteria impairments. Land development and redevelopment projects in these watersheds require greater scrutiny to ensure that low impact development methods are designed, implemented and maintained to be protective of these water uses.

Watersheds tributary to the Savannah River in the Southern Lowcountry include most of the freshwater wetlands of the region. River water quality is excellent and is a supply for drinking water for the City of Savannah and the Beaufort Jasper Water and Sewer Authority. Savannah River impairments downstream of the I-95 bridge are primarily aquatic life use due to low dissolved oxygen. Since the Savannah River is the boundary of Georgia and South Carolina, it is reasonable to align stormwater requirements within Jasper County with those in Chatham and Effingham Counties, GA. Stormwater permits for the Georgia jurisdictions require use of the Georgia Coastal Stormwater Supplement to the Georgia Stormwater Management Manual, which is primarily a green infrastructure/low impact development (GI/LID) design Manual with requirements specific to the Georgia coastal counties.

The remaining watersheds of the Southern Lowcountry are more upland areas and in agricultural or silvicultural use or are conservation lands. For these areas new development is subject to stormwater management requirements similar to previous county requirements. This Manual unifies stormwater management standards across the designated watersheds rather than differing across county or jurisdictional lines.

The map in Figure 3.2 outlines the boundaries of the three watershed protection areas of the Southern Lowcountry. Requirements specific to each area are further developed in this chapter. Table 3.1 lists the US Geological Survey 12-Digit Hydrologic Unit Code (HUC-12) for the watersheds in each area. To identify a site's HUC-12, refer to the South Carolina ~~DHEC~~DES Watershed Atlas, available online at https://gis.dhec.sc.gov/watersheds/. After identifying the site's HUC 12, use Table 3.2 to identify the watershed protection area.

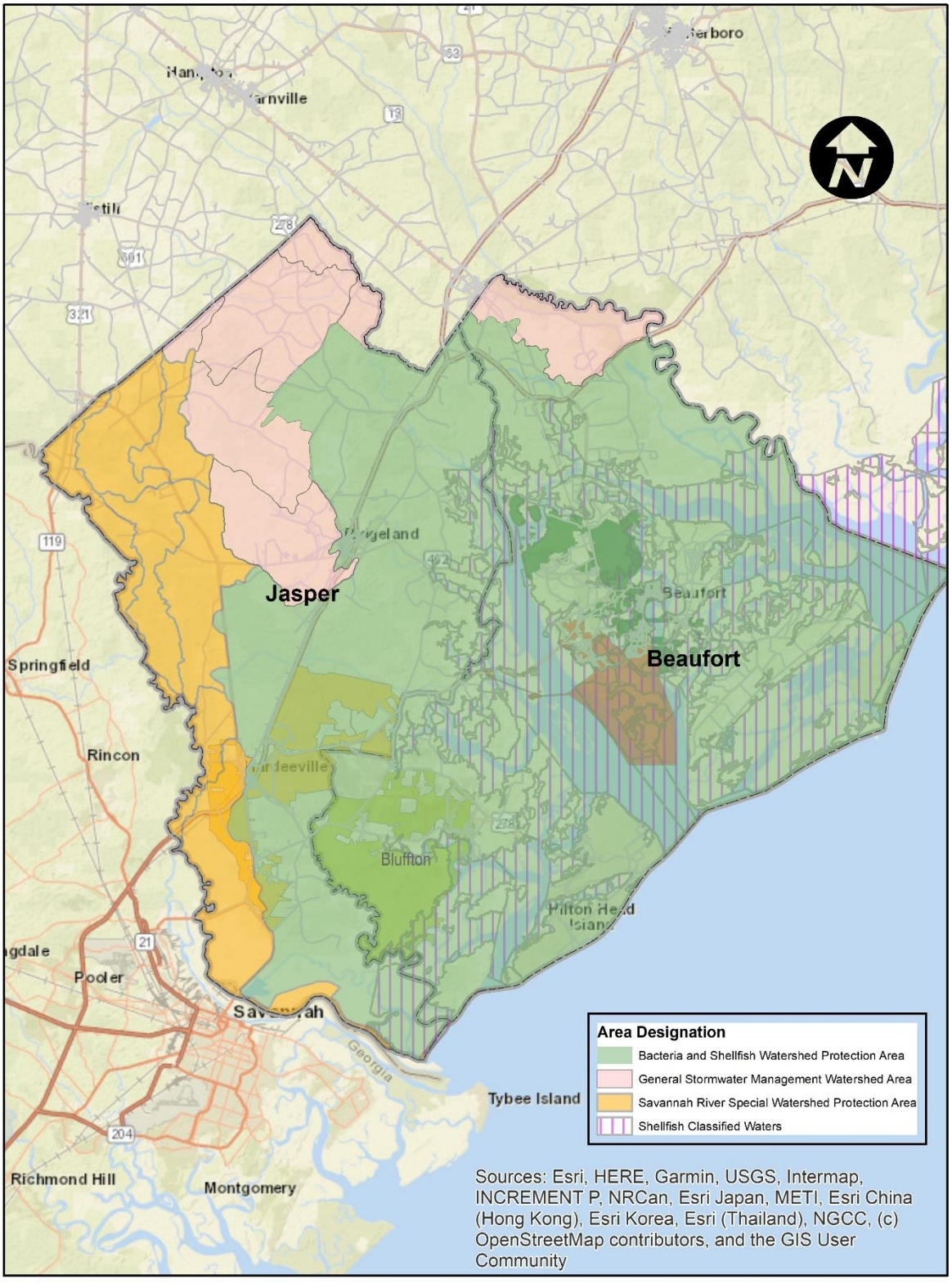


Figure 3.2. Watershed Protection Areas of the Southern Lowcountry.

Table 3.1. Watershed Protection Area HUC-12 Codes.

General Stormwater Management Watershed Areas		Savannah River Watershed Protection Area	
HUC-12 No.	Watershed Name	HUC-12 No.	Watershed Name
030502070704	Middle Combahee River	030601090107	Hog Branch-Savannah River
030502080301	Johns Pen Creek	030601090301	Cypress Branch
030502080302	Cypress Creek	030601090302	Black Swamp
030502080404	Mcpherson Creek-Coosawhatchie River	030601090303	Coleman Run
030502080405	Early Branch-Coosawhatchie River	030601090304	Sand Branch
030601100101	Gillison Branch	030601090305	Dasher Creek-Savannah River
030601100102	Upper Great Swamp	030601090307	Outlet Savannah River
Bacteria and Shellfish Watershed Protection Area			
HUC-12 No.	Watershed Name	HUC-12 No.	Watershed Name
030502070706	Lower Combahee River	030502080605	Boyd Creek-Broad River
030502071101	Wimbee Creek	030502080606	Colleton River
030502071102	Coosaw River	030502080607	Chechessee River
030502071103	Morgan River	030502080608	Broad River-Port Royal Sound
030502071104	Coosaw River-St. Helena Sound	030502100101	Harbor River-St. Helena Sound
030502080406	Bees Creek	030502100102	Harbor River-Trenchards Inlet
030502080407	Tulifiny River-Coosawhatchie River	030601090306	Wright River
030502080501	Battery Creek	030601100103	Lower Great Swamp
030502080502	Upper Beaufort River-Atlantic Intracoastal Waterway	030601100201	Upper New River-Atlantic Intracoastal Waterway
030502080503	Lower Beaufort River-Atlantic Intracoastal Waterway	030601100202	Lower New River-Atlantic Intracoastal Waterway
030502080601	Pocotaligo River-Broad River	030601100301	May River
030502080602	Huspa Creek	030601100302	Broad Creek
030502080603	Whale Branch	030601100303	Cooper River-Calibogue Sound
030502080604	Euhaw Creek	030601100304	Calibogue Sound

3.6.2 Overall Performance Requirements

Based on the watershed water quality criteria, its impairment status, or stormwater permit requirements, development and redevelopment stormwater management performance requirements will differ. These requirements are interpreted in terms of sizing and performance criteria. Table 3.2 presents a summary of the sizing criteria used to achieve the stormwater management performance requirements for each watershed protection area.

Table 3.2. Watershed Area Overall Performance Requirements.

General Stormwater Management Watershed Protection Areas	Savannah River Watershed Protection Area
Overall Performance Requirements	Overall Performance Requirements
• Water Quality: Implement Better Site Design, maintain pre-development hydrology of the site to the Maximum Extent Practicable (MEP) for the 85th percentile storm event. • Peak Control: Control post-development peak runoff discharge rate to pre-development rate for: 2-, 10- and 25-year, 24-hour design storm events. • Accommodate the 100-year, 24-hour storm event conveyance through the site and downstream without causing damage/inundation to structures. Provide 10% rule analysis. • As a pollutant removal minimum, intercept and treat stormwater runoff volume to at least an 80 percent reduction in total suspended solids load, 30 percent reduction of total nitrogen load and 60 percent reduction in bacteria load. • Complete a natural resources inventory for new site development applications.	• Water Quality: Implement Better Site Design, retain the 85th percentile storm event on-site to the MEP or obtain off-site credit. • Peak Control: Control post-development peak runoff discharge rate to pre-development rate for: 2-, 10- and 25-year, 24-hour design storm events. • Accommodate the 100-year, 24-hour storm event conveyance through the site and downstream without causing damage/inundation to structures. Provide 10% rule analysis. • As a pollutant removal minimum, intercept and treat stormwater runoff volume to at least an 80 percent reduction in total suspended solids load, 30 percent reduction of total nitrogen load and 60 percent reduction in bacteria load. • Complete a natural resources inventory for new site development applications.
Rationale	Rationale
The previous Jasper County stormwater design manual specified these overall performance requirements.	The Savannah River watershed adjoins Georgia counties that are subject to similar overall performance requirements as outlined in the Georgia Coastal Stormwater Supplement.
Bacteria and Shellfish Watershed Protection Area	
Overall Performance Requirements	
• Water Quality: Implement Better Site Design and retain the 95th percentile storm on-site with approved infiltration/filtering BMPs. Fulfill MEP requirements or, as a last resort, fulfill off-site credit and/or fee-in-lieu requirements. • As a pollutant removal minimum, intercept and treat stormwater runoff volume to at least an 80 percent reduction in total suspended solids load, 30 percent reduction of total nitrogen load and 60 percent reduction in bacteria load.	• Peak control: Control the post-development peak runoff discharge rate for the 2, 10, 25, 50 and 100-year, 24-hour design storm events to the pre-development discharge rates (subject to 10% rule analysis). • Accommodate the 100-year, 24-hour storm event conveyance through the site and downstream without causing damage/inundation to structures. • Provide 10% rule analysis. • Complete a natural resources inventory for new site development applications.
Rationale	
The Bacteria and Shellfish Watershed Protection Areas are either impaired or have TMDLs, or the receiving waters are classified for shellfish harvesting. These watersheds require greater protection due to their Clean Water Act status or water quality classification. The site's natural resource inventory is a necessary component of permit application.	

3.6.3-3.6.7 *(no changes)*

3.7 Erosion & Sediment Control (ESC) Requirements

The design and management of construction site runoff control measures for all qualifying developments as defined in the Southern Lowcountry Post-Construction Stormwater Ordinance (Appendix A) and Town of Bluffton UDO shall be in accordance with ~~SCDHEC~~SCDES NPDES General Permit for Stormwater Discharges from Construction Activities, the ~~SCDHEC~~SCDES Erosion and Sediment Reduction and Stormwater Management regulations and its most current version of standards, where applicable. The Town of Bluffton reserves the right to require additional erosion and sediment control or a higher standard of measure and make their requirement a condition of a development permit approval.

3.8 Retention Standard & Volume

This section provides the formulas and rationale for use of the runoff reduction method to compare predeveloped and post-development hydrology for projects submitted for approval to the Southern Lowcountry jurisdictions.

Runoff reduction is defined as "the total annual runoff volume reduced through canopy interception, soil infiltration, evaporation, transpiration, rainfall harvesting, engineered infiltration, or extended infiltration" (Hirschman, 2008). The formula to calculate the volume reduced through successive application of stormwater best management practices originates with the Natural Resources Conservation Service (NRCS) method of estimating direct runoff from storm rainfall and the curve number method of NEH Chapter 9 (NEH, 2004). As shown in Equation 3.1, rainfall event runoff (Q) is a function of depth of event rainfall (P) over the watershed, the initial abstraction (I_a) and the maximum potential retention (S).

Equation 3.1. Curve number runoff equation.

$$\boldsymbol{Q = \frac{(P - I_a)^2}{(P - I_a) + S}}$$

$$\boldsymbol{I_a = 0.2S}$$

$$\boldsymbol{Q = \frac{(P - 0.2S)^2}{(P + 0.8S)}}$$

$$\boldsymbol{Q - R = \frac{(P - 0.2S)^2}{(P + 0.8S)}}$$

$$\boldsymbol{S = \frac{100}{CN} - 1}$$

Where:

Q = Runoff depth (in)
P = Depth of rainfall event for the designated watershed protection area (85th or 95th percentile rain event)
I_a = Initial abstraction (in)
S = Potential maximum retention after runoff begins (in)

CN = Runoff curve number
R = Retention storage provided by runoff reduction practices (in)

Not all stormwater BMPs provide runoff reduction equally. Through the crediting procedures of the Compliance Calculator found in Appendix H and the retention volumes required in this section, designers will be able to evaluate their proposed designs and submit for approval in a unified process across the Southern Lowcountry jurisdictions.[1]

Supplemental information on the terms below can be found in the *Low Impact Development in Coastal South Carolina: Planning and Design Guide*, and the Georgia Stormwater Management Manual (Ellis, K. et al., 2014; ARC, 2016).

The Stormwater Retention Volume (SWRv) is the volume of stormwater runoff that is required to be retained, post-development. It is calculated as shown in Equation 3.2 for the entire site and for each site drainage area (SDA). The SDA is defined as the area that drains to a single discharge point from the site or sheet flows from a single area of the site. A development site may have multiple SDAs and runoff coefficients.

Equation 3.2. Stormwater retention volume (SWRv) equation

$$\boldsymbol{SWRv = \frac{P \times [(Rv_I \times I) + (Rv_C \times C) + (Rv_N \times N)]}{12}}$$

Where:

SWRv = Volume required to be retained (cubic feet)
P = Depth of rainfall event for the designated watershed protection area (85th or 95th percentile rain event)
Rv_I = Runoff coefficient for impervious cover and BMP cover based on SCS hydrologic soil group (HSG) or soil type
I = Impervious cover surface area (square feet)
Rv_C = Runoff coefficient for compacted cover based on soil type
C = Compacted cover surface area (square feet)
Rv_N = Runoff coefficient for forest/open space based on soil type
N = Natural cover surface area (square feet)
12 = Conversion factor (inches to feet)

	Rv Coefficients			
	A soils	**B Soils**	**C Soils**	**D Soils**
Forest/Open Space (R_{VN})	~~0.02~~0	~~0.03~~0	~~0.04~~0	~~0.05~~0
Managed Turf (Rv_C)	0.15	0.20	0.22	0.25
Impervious Cover (R_{vI})	0.95	0.95	0.95	0.95
BMP	0.95	0.95	0.95	0.95

[1] Compliance Calculator instructions are found in Appendix G

For purposes of ~~determining~~calculating the SWRv, the surface area of a non-infiltrating BMP or its permanent pool shall not be calculated as part of the impervious cover. For purposes of determining pre-/ post development peak discharge rates, the surface area of a non-infiltrating BMP or its permanent pool shall be calculated as part of the impervious cover.

The Compliance Calculator in Appendix H uses best available pollutant removal efficiencies for total suspended solids, total nitrogen and fecal indicator bacteria. Use of the compliance calculator allows the designer to evaluate alternative designs to arrive at compliance with the runoff reduction and pollutant removal requirements and clearly summarize them for the Town of Bluffton plan reviewer. The compliance calculator output is a necessary submittal for a plan reviewer to evaluate selected BMPs to demonstrate compliance with the watershed protection area standards of this Manual.

3.8.1 Total Suspended Solids, Nutrients, & Bacteria *(no changes)*

3.8.2 Hydrologic & Hydraulic Analysis

In order to prevent an increase in the duration, frequency and magnitude of downstream overbank flooding and scouring, this Manual requires that enough stormwater detention be provided on a development site to control the post-development peak runoff discharge to the predevelopment runoff rates for the 2, 10, 25, 50 and 100 -year, 24-hour storm events, unless deemed detrimental through the 10% rule analysis. The capacity of the existing downstream receiving conveyance system for all off-site discharge points must be determined to be adequate. An analysis of the downstream conveyance capacity to accommodate the site's post development 25- and 100-year, 24-hour peak flow shall be provided in the engineering report. Discharge to the public right-of-way of the SC State highway system shall comply with the SCDOT Requirements for Hydraulic Design Studies. Necessary upgrades within the public right-of-way due to inadequate capacity for the post-development 25-yr flow must be identified during the permit application process. ~~Upgrades to the downstream system to accommodate the 100-yr 24-hour flow must be considered through the MEP process outlined in Section 3.9.~~ Documentation supporting safe passage of the 100-yr post development flow to the downstream point where the detention or storage area comprises 10% of the total drainage area ~~and an analysis of the surrounding neighborhood area to identify any existing capacity shortfalls or drainage blockages~~ is required for plan approval. This analysis is called the 10% analysis rule in Section 3.8 of this Manual.

~~The recommended 2, 10, 25, 50 and 100-year, 24-hour storm event values from Appendix F of the South Carolina DHEC Storm Water Management BMP Handbook, July 31, 2005 for Beaufort and Jasper Counties are in Table 3.4[2].~~

~~Table 3.4. Rainfall depth (inches) for the Southern Lowcountry.~~

	~~Return Period (years)~~				
~~County~~	~~2~~	~~10~~	~~25~~	~~50~~	~~100~~
~~Beaufort~~	~~4.5~~	~~6.9~~	~~8.4~~	~~9.7~~	~~11.0~~
~~Jasper~~	~~4.2~~	~~6.4~~	~~7.8~~	~~9.0~~	~~10.2~~

~~[2] Until SCHECSCDES updates its Stormwater Management BMP Handbook rainfall table to the NOAA Atlas 14 values, the Southern Lowcountry region shall use the Handbook Appendix F rainfall table for 24 hour storm events.~~

In this Manual, Appendix I – General Design Criteria and Guidelines provides the acceptable methodologies and computer models for estimating runoff hydrographs before and after development, as well as design criteria for stormwater collection systems and land cover (Appendix R) designations. The following are the acceptable methodologies and computer models for estimating runoff hydrographs before and after development. These methods are used to predict the runoff response from given rainfall information and site surface characteristic conditions. The design storm frequencies used in all of the hydrologic engineering calculations will be based on design storms required in this Manual unless circumstances make consideration of another storm intensity criterion appropriate:

- Rational Method (limited to sites under 10 acres) Note: ~~DHEC~~DES, nor this manual, allows the Rational Method when conducting analysis for stormwater being routed to/through BMP structures. However, it is allowed for culvert crossings with a drainage area of less than 10 acres.
- Urban Hydrology for Small Watersheds TR-55
- Storage-Indication Routing
- HEC-1, WinTR-55, TR-20, ICPR v3 or 4 and SWMM computer models

These methods are given as valid in principle and are applicable to most stormwater management design situations in the Southern Lowcountry.

The following conditions should be assumed when developing predevelopment, pre-project, and post-development hydrology, as applicable:

- The design storm duration shall be the 24-hour rainfall event, using the NRCS (SCS) Type III rainfall distribution with a maximum six-minute time increment.
- The rainfall intensity – duration – frequency curve shall be determined from the most recent version of the Hydrometeorological Design Studies Center's Precipitation Frequency Data Server (NOAA Atlas).
- The predeveloped, post development, and redevelopment peaking factor shall be 323.
- For new development sites the predeveloped condition shall be calculated as a composite CN based on the HSG and current land use conditions (NEH, 2004).
- For infill and redevelopment sites, the predeveloped condition shall be calculated as a composite CN based on the HSG and the land cover type (Appendix R) and hydrologic condition at the time of the project's initial submittal.
- Antecedent Runoff Condition (ARC) II is the average adjustment factor for calculations using TR-55. ARC III is to be used for wetter conditions such as areas that receive irrigation water harvested from stormwater ponds and for poorly drained soils.

Project designs must include supporting data and source information. All storm sewer systems shall be analyzed for both inlet and outlet control (including tailwater effects) by using the following:

a. Equations and nomographs as shown in the Federal Highway Administration (FHWA) Hydraulic Design Services (HDS) publication No. 5.

b. Computer programs that calculate the actual hydraulic grade line for the storm sewer system can be used, provided all losses (friction, bend, junction, etc.) are taken into account using the appropriate loss coefficient (K) values.

c. Design tailwater condition elevation shall be supported by a reasonable resource and/or analysis.

d. Allowable headwater. The allowable headwater of all culverts, pipe systems, open channels, bridges and roadway culverts shall be established following the SCDOT Requirements for Hydraulic Design Studies.

All culverts, pipe systems, and open channel flow systems shall be sized in accordance with the design criteria found in Appendix I – General Design Criteria and Guidelines~~Hydrology and Hydraulics Design Requirements~~.

3.8.3 Maintenance Easements *(no changes)*

3.9 Extreme Flood ~~Requirement: 10% Rule~~Protection

Flooding problem areas exist in many locations in the Southern Lowcountry to the point that stormwater infrastructure has become overwhelmed where controls were never adequately designed or installed to control runoff. The ability to maintain a system is also suspected to contribute to some of the frequent flooding. Acceptable means of determining the hydrology may include a variety of data sources including topographic survey, LiDAR data, and USGS quad maps. Acceptable means of determining runoff of the study area may include applicable methods previously identified in this manual, USGS regression equations (including Streamstats, if applicable), watershed lag method, and flows utilized in effective FEMA models. Hydraulic routing parameters such as channel geometry, pipe sizes, invert elevations, bridge dimensions, etc. may be obtained using topographic survey, field reconnaissance, or other methods acceptable to the Town of Bluffton.

Additional resources for this exercise may include Coastal Stormwater Supplement to the Georgia Stormwater Management Manual, Spreadsheet for the South Carolina Synthetic Unit Hydrograph Method. Attenuation patterns of other stormwater ponds in the contributing drainage area of the watershed should not be assumed without valid documentation.

The peak discharge generated by the 100-year, 24-hour storm event under post-development conditions is considered the extreme peak discharge. The intent of the extreme flood protection is to prevent flood damage from infrequent but large storm events, maintain the boundaries of the mapped 100-year floodplain, and protect the physical integrity of the best management practices as well as downstream stormwater and flood control facilities. The 100-yr flow is to be used in the routing of runoff through the drainage system and stormwater management facilities to determine the effects on the facilities, adjacent property, and downstream. Emergency spillways of best management practices should be designed appropriately to pass the resulting flows safely. Documentation supporting safe passage of the 100-year post-development flow shall be provided by the applicant/engineer. Demonstration of safe passage of the 100-year, 24-hour storm shall include a stage /storage analysis of the system, an inflow/outflow comparison of the system, and construction of a table showing peak

stage elevations in comparison to finished floor elevations of adjacent buildings/structures/infrastructure. The table should also include peak stage and overtopping elevations of pipe/culvert crossings to determine if the crossing requires upgrades or the peak discharge rate will need to be limited to the capacity of the downstream system. Safe passage to the receiving water also requires that there be no additional downstream flooding or other environmental impacts (e.g., stream channel enlargement, degradation of habitat).

Individual single-family lots outside of an LCP, regardless of size, and individual lots within an LCP, subject to this Manual, are exempt from this requirement.

3.10 10% Rule

In order to prevent an increase in the duration, frequency and magnitude of downstream ~~extreme~~ flooding over existing conditions, an evaluation must be provided to include downstream analysis to the point where the project comprises 10% of the total contributing drainage area. ~~The 10% rule evaluation must address existing conveyance system capacity and "pinch points" where a pipe/culvert would be overtopped and where the pipe/culvert will need to be upgraded or the peak discharge rate will need to be limited to the capacity of the downstream system.~~

The 10% rule recognizes the fact that a structural BMP control providing detention has a "zone of influence" downstream where its effectiveness can be felt. Beyond this zone of influence, the structural control becomes relatively small and insignificant compared to the runoff from the total drainage area at that point. Based on studies and master planning results from a large number of sites, that zone of influence is considered to be the point where the drainage area controlled by the detention or storage facility comprises 10% of the total drainage area. For example, if the drainage control drains 10 acres, the zone of influence ends at a point where the total drainage area is 100 acres or greater (ARC, 2016).

~~Demonstration of safe passage of the 100-year, 24-hour storm shall include a stage storage analysis of the system, an inflow/outflow comparison of the system, and construction of a table showing peak stage elevations in comparison to safe freeboards to structures of the system and adjacent buildings/structures/infrastructure. Safe passage to the receiving water also requires that there be no additional downstream flooding or other environmental impacts (e.g., stream channel enlargement, degradation of habitat).~~

Typical steps in the application of the 10% rule are:

1. Determine the target peak flow for the site for predevelopment conditions from the 10-, 25-, 50-, and 100-year storms.
2. Using a topographic map, determine the lower limit of the zone of influence (10% point) in the watershed.
3. Using a hydrologic model, determine the predevelopment peak flows and timing of those peaks at each tributary junction beginning at the pond outlet and ending at the next tributary junction beyond the 10% point.
4. Change land use on the site to post-development and rerun the model for the 10-, 25, 50-, and 100-year storms.

5. Design the structural control facility such that the 10-, 25-, 50-, and 100-year facility outflows do not increase the peak flows at the outlet and each tributary junction. ~~overbank flood protection (25-year) post-development flow is adequately conveyed to the lower limit of the zone of influence and the Extreme Flood (100-year) post-development flow does not impact any existing structures within the area of zone of influence.~~ If the ~~overbank flood protection (25-year)~~ post-development facility outflows do increase the peak flows at the outlet and each tributary junction ~~is not adequately conveyed to the lower limit of the zone of influence and/or Extreme Flood (100-year) post-development flow is shown to impact any structure~~, the structural control facility must be redesigned or one of the following options considered:
    a. Work with the Town of Bluffton to reduce the flow elevation through channel or flow conveyance structure improvements downstream.
    b. Obtain a flow easement from downstream property owners to the 10% point.
    c. Request a detention waiver from Town of Bluffton. This waiver would be for water quantity control only and best management practices to achieve water quality goals will still be required.

Individual single-family lots outside of an LCP, regardless of size, and individual lots within an LCP, subject to this Manual, are exempt from this requirement.

3.11 Maximum Extent Practicable

Maximum extent practicable (MEP) is the language of the Clean Water Act that sets the standards to evaluate efforts pursued to achieve pollution reduction to the Waters of the United States. The MEP refers to management practices; control techniques; and system, design, and engineering methods for the control of pollutants. It allows for considerations of public health risks, societal concerns, and social benefits, along with the gravity of the problem and the technical feasibility of solutions. The MEP for stormwater management is achieved, in part, through a process of selecting and implementing different design options with various structural and non-structural stormwater best management practices (BMPs), where ineffective BMP options may be rejected, and replaced when more effective BMP options are found (DOEE, 2019).

The Owner/Applicant must be aware that the first priority for the proposed development is to meet the required stormwater retention volume (SWRv) and peak flow requirements according to the Southern Lowcountry Stormwater Design Manual. Meeting the SWRv and peak flow requirements is attainable on any site depending on a number of factors including percent of proposed impervious area and green space conserved and/or provided. The proposed development site may have constraints or limitations that prevent Design Manual requirements from being met. It is for these projects that the MEP evaluation and waiver consideration will be required. Several site and stormwater design iterations may be necessary to ensure that Maximum Extent Practicable is achieved.

Through application of stormwater best management practices on site and/or at an off-site property within the same stormwater drainage catchment, land development projects should be able to comply with the Southern Lowcountry Stormwater Design Manual. It is the applicant's responsibility to demonstrate to the greatest extent that the requirements of this Manual can be met for the proposed development. The applicant must fully demonstrate that the requirements of the Manual are not possible or feasible before entering into a MEP analysis, and only after the concurrence of the Town of

Bluffton based on the project submittals, documentation and discussions. The Owner/applicant must realize that if the requirements of the Manual cannot be met, the site may not be conducive for development, as proposed, in the interest of public safety and welfare.

This evaluation is intended to be evaluated, considered and presented ~~during the concept review stage~~ as part of the Stormwater Management Plan submittal for the proposed development.

1) Present a SWMP for the proposed development that meets stormwater retention volume (SWRv), and peak flow requirements for channel and extreme flood protection for the proposed development and identify the reasons that this plan cannot be implemented.
2) Demonstrate why SWRv cannot be achieved by a reduction of impervious and disturbed area and/or increase in green space area on site.
3) Demonstrate how Better Site Design (BSD) has been implemented to the maximum extent practicable or document site restrictions that prevent BSD application.
    a. What efforts have been made to reduce impervious cover in the project limits of disturbance?
    b. ~~Are~~What natural assets, such as forests, wetlands, and areas of environmental or archaeological significance, are protected or conserved within the Development? Provide the cumulative acreage of land cover within the development that is protected.
    c. ~~Is stream restoration considered?~~
    d. Are structural and non-structural BMPs used in this project? Provide a completed compliance calculator showing structural and non-structural BMPs used.
4) List site restrictions that prevent or otherwise limit effective use of stormwater BMPs, retention of the SWRv and/or meeting the required peak discharge limits.
5) Provide SWRv and Pollutant Load reductions (via the compliance calculator) for alternatives analyzed as compared to pollutant load reductions for full SWRv.
~~6) What site limitations prevent retention of the SWRv or meeting the required peak discharge limits?~~
6) Is there off-site opportunity and capacity in the same drainage catchment to meet the volume/peak flow and/or SWRv requirements for the site's contributing drainage area(s)?
7) Do the publicly maintained stormwater drainage system and/or existing natural drainage courses have sufficient capacity for the development site's extreme flood peak flow?
~~9) Develop a cost versus aggregated stormwater retention volume achieved curve for the site's contributing drainage area (e.g. cost vs. % SWRv met). A minimum of five cost points with various BMP iterations/%SWRv met are necessary for the curve. One of the cost points shall be for 100% of the SWRv. If it's available, off-site capacity cost may be included in your evaluation. Identify the inflection point of the cost curve to select the optimal solution where increased cost does not result in increased effectiveness. What is the projected cost to meet the SWRv with filtering BMPs with underdrains and green roofs? What alternatives have been considered to reduce impervious and disturbed area and/or increase green space area on site.~~
8) The ~~optimum aggregated~~maximum extent practicable retention value and BMP selection and size analysis must be submitted as a part of the stormwater management plan for the project.
9) Offsite stormwater volume retention credit or fee-in-lieu documents will be required for project completion.

The MEP submittal must provide documentable evidence of the process the applicant has performed that demonstrates the restrictions to the use and implementation of BMPs to meet the requirements of this Manual in whole or in part.

3.12 Off-Site Stormwater Management *(no changes)*

3.13 Fee-in-Lieu

Fee-in-lieu (FIL) is, as the name suggests, a program that allows developers to pay a FIL if they cannot meet the SWRv requirement on their site whereby a developer can purchase units of SWRv for the needed volume through a monetary contribution to the FIL program. ~~where an entity with the responsibility of managing stormwater runoff pays a fee-in-lieu of physically managing and maintaining stormwater on site or off site. Based on the cost of treatment, long term maintenance/repair/replacement and inspection costs, a representative cost of treating stormwater can be established, and that money can go to larger scale and more efficient practices being implemented (ARC, 2016). The developer provides a fee~~ When a development project cannot accommodate the SWRv due to on-site constraints identified in the approved MEP analysis, that developer could opt to pay fee-in-lieu to the Town of Bluffton ~~(or its assigned entity)~~ for the shortfall of required SWRv according to the established FIL fee schedule. The money collected through FIL payments would then be used by the Town to install green infrastructure practices (water quality BMPs) or for other qualified uses per the site selection criteria and hierarchy that is outlined in Section 3.13.3. In general, the goal is to install water quality BMP practices or fund other qualified uses that protect water quality within the same HUC-12 watershed as the original project by water quality BMP installation/treatment of at least the same amount of stormwater runoff that is not feasible to manage on-site or to create a conservation area that protects a qualified natural resource that would otherwise require the same SWRv treatment if developed. This approach allows for more flexibility in siting BMPs where soils and watershed characteristics are more appropriate for green infrastructure practices or creating conservation areas, while still achieving the goal of treating the water quality volume from the 95th percentile event (1.95-inch event) for any new development or redevelopment project. ~~that will help cover cost of installation and long-term operation and maintenance of the stormwater practice. A fee-in-lieu program can be administered through the Town of Bluffton, a public/private initiative, or a private bank. Any fee-in-lieu program must have an Enterprise Fund and ability to oversee construction activities (e.g. programs managed by the Town of Bluffton) or be able to collect fees and dedicate those funds to stormwater related projects. In-lieu fees typically need to cover higher municipal prevailing wage and public bidding costs. The off-site mitigation practices must be implemented in the same HUC-12 watershed as the original project (or more restrictive limits, at the discretion of the Town of Bluffton). Therefore, careful accounting must take place to ensure that each site using off-site mitigation to meet pollutant removal requirements has corresponding off-site controls in the same watershed (CWP, 2012).~~

3.13.1 Unit of Measure

Fee-in-lieu payment is based and equal to a unit of SWRv in cubic feet or designating a conservation area/easement area that protects a qualified natural resource that would otherwise require the same SWRv treatment if developed.

3.13.2 Unit Cost

The monetary value for a unit of SWRv is based on the current and typical costs for the land as well as associated costs for design, construction, construction management, Town program management, post-construction inspection, and ongoing maintenance of water quality BMP practices. The SWRv FIL rate can

be found in the Town's Master Fee Schedule, under Section VII "Stormwater Management Fees", allowing for annual review and updates as needed based on the Consumer Price Index (CPI) or based on updated information regarding the cost of water quality BMP construction and maintenance, changes in the construction industry, availability of supplies, etc. If the developer and/or private property owner take responsibility for maintaining the BMP or provide land, then the associated cost for a unit of SWRv could be lessened accordingly.

3.13.3 Qualified Uses of Fund, Eligible Projects

The Stormwater FIL Program may be supplemented by other funding sources, such as SWU fees or grants, if the Town requires additional revenue to fund program activities. However, the funds collected from the sale of SWRv units via the FIL program are only eligible for certain uses, including:

1. The construction and maintenance of Impervious Restoration Program water quality BMPs by the Town
2. Purchase of land for increased conservation areas, application of Better Site Design to the approved Master Plan, buffers, undisturbed open space, and natural resource of significance areas
3. Purchase of development rights

Impervious Restoration Program water quality BMPs that are currently available and eligible for implementation using FIL Program funds, as well as any special conditions, include:

- Bioretention
- Permeable Pavement
    - *Only Town of Bluffton approved permeable pavers with adequate subsurface storage*
- Infiltration Practice
- Rainwater Harvesting
    - *Requires verification of no groundwater influence and an operation and maintenance plan*
- Tree Planting and Preservation
- Proprietary Practices
    - *Upon Town of Bluffton review and approval*
- Permanent Conservation/Easement Areas of Qualified Natural Resources
    - *Where features protected and not disturbed by development process are recorded in conservation areas or easements that are in addition to other required protections from Federal, State, County, and Town agencies/requirements/restrictions.*

Water Quality BMPs or other mitigation measures to protect water quality that are built or purchased with FIL Program funds should be installed in the same major drainage basin as the site for which the fee was assessed so that the "balance" of SWRv units is not negative and resulting in a cumulative impact to water quality in the basin. This includes eight major basins within the Town of Bluffton municipal limits.

The May River watershed is divided into five major basins, where the first four are identified in the "2020 May River Watershed Action Plan Update and Modeling Report." If no projects are immediately available in one of these major basins, an adjacent major basin in the May River watershed can be targeted.

1. Stoney Creek
2. Rose Dhu Creek

3. Duck Pond
4. Palmetto Bluff
5. Old Town

The remainder of the municipal town limits are divided into the following three major basins based on other watershed boundaries. If no projects are immediately available in one of these major basins, only Okatie River and Colleton River can be pursued for alternative project locations.

1. New River (*west and south of May River watershed*)
2. Okatie River (*north central*)
3. Colleton River (*northeastern corner, remainder that is north of May River but east of Okatie River*)

3.13.4 Long-Term Operations and Maintenance

A "Permanent Stormwater Facility Maintenance and Responsibility Agreement" (Appendix O) is needed for any stormwater BMP installed as part of the FIL program to ensure continued function of the BMP. BMPs installed as part of the FIL program must adhere to requirements of Section 2.4.2 of this Manual and are subject to the Stormwater Post-Construction Ordinance (Appendix A).

If the property owner removes the BMP, they will be required to offset the SWRv units elsewhere on their site or purchase new SWRv units to offset the ones from the removed practice.

3.14 Detention Waivers

Individuals seeking a detention waiver from the requirements of the Town of Bluffton UDO and this ~~Design~~ Manual may submit to the Town of Bluffton UDO Administrator a request for a waiver in accordance with the Southern Lowcountry Stormwater Design Manual.

(1) Request of a Waiver at Staff Level
A written request for a waiver is required and shall state the specific waiver sought and the reasons, with supporting data, a waiver should be granted. The request shall include all information necessary to evaluate the proposed waiver. Requests must outline the need for such a waiver. Cost shall not be considered cause for a waiver. The applicant will address the criteria below for consideration of a waiver approval:

a. What exceptional circumstances to the site are evident that on-site or off-site stormwater management requirements cannot be met?
b. What unnecessary hardship is being caused?
c. How will denial of the waiver be inconsistent with the intent of the Ordinance?
d. How will granting the waiver comply with the intent of the Ordinance?
e. How are state and federal regulations still being met?

(2) Review of Waivers
The Town of Bluffton UDO Administrator will conduct a review of the request and will issue a decision within thirty (30) working days of receiving the request.

~~(3) Fee-in-Lieu Requirement~~
~~a. If a Waiver is granted, the applicant must submit a fee in lieu of meeting stormwater requirements as determined by the Town of Bluffton for regional stormwater projects.~~

(3) Appeal of Decision

Any person aggrieved by the decision of the UDO Administrator concerning a waiver request may appeal such decision in accordance with the Town of Bluffton established process.

3.15 References *(no changes)*

Chapter 4. Stormwater Best Management Practices (BMPs)

4.1 Standard Stormwater BMP Design Sections

This chapter summarizes and outlines performance criteria for 13 stormwater best management practice (BMP) categories that include:

- Bioretention
- Permeable Pavements
- Infiltration
- Green Roofs
- Rainwater Harvesting
- Impervious Surface Disconnection
- Open Channel Systems
- Filtering Systems
- Storage Practices
- Ponds
- Stormwater Wetlands
- Tree Planting and Preservation
- Proprietary Practices

Following these criteria is the criteria to credit for stormwater benefit the use of conservation areas and open space preservation.

Additional detailed information on many aspects of BMP design is found in Appendix M – References and Resources of this Manual. These resources may be useful for those looking to develop greater understanding of individual BMPs or stormwater design in general. Recommendations in these resources may be used to inform BMP designs; however, where conflicts occur between these resources and the Manual, the requirements of the Manual prevail.

4.1.1 Format of Standard Stormwater BMP Design Sections *(no changes)*

4.1.2 Standard Nomenclature

In this chapter, and throughout the ~~guidebook~~Manual, the terms, *must* or *shall*, denote required aspects of BMPs or their design and implementation. The term, *should*, denotes a recommendation, however, justification may be necessary for design or implementation that does not correspond to certain recommendations.

4.2 Summary of BMP Stormwater Management Capabilities, Site Applicability, & Physical Feasibility

Stormwater management requirements for a given site vary based on the site's location, and minimum control requirements discussed in detail in Section 3.5.

4.2.1 Stormwater Retention & Water Quality Treatment *(no changes)*

4.2.2 Site Applicability *(no changes)*

4.2.3 Site Conditions & Physical Feasibility

While some BMPs can be applied almost anywhere, others require specific conditions to be most effective. Physical feasibility refers to the physical site conditions necessary to effectively design and install a BMP. Table 4.2 includes the feasibility factors listed below.

- Contributing Drainage Area (CDA): Volume of water received by a practice can affect BMP performance. This column indicates the contributing drainage areas that typically apply for each BMP.
- Slope: This column describes the influence that site slope can have on the performance of the BMP. It indicates the maximum slope on which the BMP should be installed.
- Minimum Head: This column provides an estimate of the minimum amount of elevation difference needed within the BMP, from the inflow to the outflow, to allow for gravity operation.
- Minimum Depth to Seasonal High Water Table: This column indicates the minimum distance that should be provided between the bottom of the stormwater management practice and the top of the water table.
- Soils: This column describes the influence that the underlying soils (i.e., hydrologic soil groups) can have on the performance of the stormwater management practice.

Infiltration rates modeled in hydrologic and hydraulic computations must be verified by a licensed professional (geotechnical engineer or soil scientist).

Table 4.2. Feasibility limitations for BMPs.

BMP	Contributing Drainage Area	Slope	Minimum Head	Minimum Depth to Water Table	Soils
Bioretention	Up to 2.5 acres	Up to 5%[2]	4 - 5 feet	0.5 feet	All soils[3]
Permeable Pavement	Up to 5 times the practice surface area	Up to 5%	1 – 4 feet	0.5 feet	All soils[3]
Infiltration	Up to 2 acres	Up to 6%[2]	2 feet	0.5 feet	Must drain within 72 hours
Green Roof	Green roof area + 100%	Up to 30%[4]	N/A	N/A	N/A
Rainwater Harvesting	No limit	No limit	N/A	N/A	N/A
Disconnection	Up to 1,000 ft^2 per downspout	Up to 5%	N/A	N/A	All soils
Open Channels	Up to 2.5 acres	Up to 4%[2]	Varies	Varies	All soils
Filtration	Up to 5 acres	Up to 6%	2 – 10 feet	0.5 feet	All soils
Storage Practices	Varies	No limit	5 feet	0.5 feet	All soils
Ponds	Greater than 10 acres[1]	Up to 15%	6 – 8 feet	No limit	Slow-draining soils preferred

Stormwater Wetlands	Varies	Up to 8%[2]	2 – 4 feet	No limit	Slow-draining soils preferred

[1] *CDA can be smaller if practice intersects the water table.*
[2] *Check dams may be necessary to create sufficient ponding volume.*
[3] *Slow-draining soils (< 0.5"/hr.) may require an underdrain and designed to drain within 48 hr.*
[4] *Roof slope.*

Irrigation from ponds is not included as a specific best management practice in this M*anual* but is included as Rainwater Harvesting (§4.5). Requirements and guidance for irrigation use of retained stormwater have been included in Hydrologic and Hydraulic Analysis (ARC requirements in §3.7.2); Ponds (§4.10); and Rainwater Harvesting Treatment and Management Requirements (Appendix J). The Rainwater Harvesting Calculator in Appendix K will be used to determine the SWRv credit for ponds used for irrigation, and then these ponds are entered in the Compliance Calculator in Appendix H as rainwater harvesting. Instructions for these entries in the Compliance Calculator are included in Appendix G Compliance Calculator Instructions.

4.3 Bioretention

<table>
<tr><th colspan="5">Bioretention</th></tr>
<tr><td colspan="5">Definition: Practices that capture and store stormwater runoff and pass it through a filter bed of engineered filter media composed of sand, soil, and organic matter. Filtered runoff may be collected and returned to the conveyance system or allowed to infiltrate into the soil.</td></tr>
<tr><th colspan="2">Site Applicability</th><th colspan="3">BMP Performance Summary</th></tr>
<tr><th>Land Uses</th><th>Required Footprint</th><td colspan="3">WQ Improvement: Moderate to High</td></tr>
<tr><td rowspan="2">▪ Urban
▪ Suburban
▪ Rural</td><td rowspan="2">Small to Large</td><td>TSS[1]</td><td>Total N[1,]</td><td>Bacteria[1,2]</td></tr>
<tr><td>85%–100%</td><td>75%–100%</td><td>80%–100%</td></tr>
<tr><th>Construction Costs</th><th>Maintenance Burden</th><th colspan="3">Runoff Reduction
Volume</th></tr>
<tr><td>Moderate</td><td>Moderate</td><td colspan="3">High</td></tr>
<tr><th colspan="2">Maintenance Frequency:</th><th colspan="3">SWRv</th></tr>
<tr><td>Routine</td><td>Non-Routine</td><td>No Underdrain</td><td>IWS</td><td>Standard</td></tr>
<tr><td>Quarterly</td><td>Every 2–3 years</td><td>100% of Sv</td><td>75% of Sv</td><td>60%</td></tr>
<tr><th colspan="2">Advantages/Benefits</th><th colspan="3">Disadvantages/Limitation</th></tr>
<tr><td colspan="2">▪ Easily incorporated into new development
▪ High community acceptance
▪ Good for small, highly paved drainage areas (i.e. parking lots)</td><td colspan="3">▪ Maximum CDA is 1 to 2.5 acres
▪ Requires pretreatment to prevent clogging
▪ Requires detailed landscape planning
▪ Not appropriate for steep slopes</td></tr>
<tr><th colspan="2">Components</th><th colspan="3">Design considerations</th></tr>
<tr><td colspan="2">▪ Pretreatment
▪ Conveyance system
▪ Ponding area
▪ Soils/Filter Media/Mulch
▪ Observation Well/Monitoring Port
▪ Plants</td><td colspan="3">▪ Maximum ponding depth 18 inches
▪ Minimum filter media bed depth 18 inches
▪ ~~Depth to seasonal high water table must be at least 6 inches below bottom of practice~~
▪ Underdrain system needed if ex soil infiltration rate < 0.5”/hr</td></tr>
<tr><th colspan="5">Maintenance Activities</th></tr>
<tr><td colspan="2">▪ Mow turf cover periodically
▪ Replace mulch as needed to maintain depth of mulch</td><td colspan="3">▪ Replace plant material, as needed
▪ Replace soil if it becomes clogged
▪ Clean conveyance system(s)</td></tr>
</table>

[1]*Credited pollutant load removal*
[2]*In order to receive the full credit for bacteria removal a minimum media depth of 24” is required.*

Bioretention areas, shallow depressional areas that are filled with an engineered soil media and are planted with trees, shrubs, and other herbaceous vegetation, are one of the most effective stormwater management practices that can be used to reduce post-construction stormwater runoff rates, volumes, and pollutant loads. They also provide a number of other benefits, including improved aesthetics, wildlife habitat, urban heat island mitigation, and improved air quality. See Figure 4.1 for an example image.

They are designed to capture and temporarily store stormwater runoff in the engineered soil media, where it is subjected to the hydrologic processes of evaporation and transpiration, before being conveyed back into the storm drain system through an underdrain or allowed to infiltrate into the surrounding soils. The engineered soil media is comprised of sand, soil, and organic matter.

Typically, bioretention systems are not designed to provide stormwater detention of larger storms (e.g., 2-, 10-, 25-year), but in some circumstances that may be possible. Bioretention practices should generally be combined with a separate facility to provide those controls.

Figure 4.1. Bioretention in parking lot (photo credit: Center for Watershed Protection, Inc.).

Definition. *(no changes)*

4.3.1 Bioretention Feasibility Criteria

Bioretention can be applied in most soils or topography, since runoff simply percolates through an engineered soil bed and is infiltrated or returned to the stormwater system via an underdrain. Key constraints with bioretention include the following:

Required Space *(no changes)*

Site Topography *(no changes)*

Available Hydraulic Head *(no changes)*

Water Table

For bioretention to function at its best, the entire ~~B~~bioretention area ~~must~~should be separated from the water table to ensure that groundwater does not intersect with the stone layer or filter bed and limit the bioretention's functional storage volume. ~~Mixing can lead to possible groundwater contamination or failure of the bioretention facility.~~ To fully utilize a bioretention area and count its entire design storage volume, ~~A~~a separation distance of no less than 0.5 feet of the seasonally high groundwater table cannot be included in the volume calculations. Where this is not possible, portions of the practice below or within 0.5 feet of the seasonally high groundwater table cannot be included in the volume calculations. Bioretention areas that intersect the groundwater table and include an underdrain must be installed with an internal water storage design (see Internal Water Storage in Section 4.3.4 Bioretention Design Criteria) so that the underdrain system discharges above the groundwater level. In all cases, at least 12 inches of filter media must be located above the seasonally high groundwater table.

Tidal Impacts *(no changes)*

Soils and Underdrains

Soil conditions do not typically constrain the use of bioretention, although they do determine whether an underdrain is needed. Underdrains shall be required if the measured permeability of the underlying soils is less than 0.5 inches per hour. When designing a bioretention practice, designers must verify soil permeability by using the on-site soil investigation methods provided in Appendix B for Geotechnical Information Requirements for Underground BMPs. Impermeable soils will require an underdrain.

~~For fill soil locations, g~~Geotechnical investigations are required to support modeled infiltration rates and determine if it is necessary to use an impermeable liner and/or underdrain.

Contributing Drainage Area *(no changes)*

Pollutant Hotspot Land Uses *(no changes)*

No Irrigation or Baseflow *(no changes)*

Setbacks *(no changes)*

Proximity to Utilities *(no changes)*

Minimizing External Impacts *(no changes)*

Economic Considerations *(no changes)*

4.3.2 Bioretention Conveyance Criteria *(no changes)*

4.3.3 Bioretention Pretreatment Criteria *(no changes)*

4.3.4 Bioretention Design Criteria *(no changes)*

Design Geometry *(no changes)*

Inlets and Energy Dissipation *(no changes)*

Ponding Depth *(no changes)*

Side Slopes *(no changes)*

Filter Media

The filter media of a bioretention practice consists of either in-situ soils which meet infiltration criteria specified above or an engineered soil mixture that has been carefully blended to create a filter media that maintains long-term permeability while also providing enough nutrients to support plant growth. The final filter media shall consist of a well-blended mixture of medium to coarse **sand**, **loam soil**, and an **organic amendment** (compost). The sand maintains the desired permeability of the media while the limited amount of loam soil and organic amendments are considered adequate to help support initial plant growth. It is anticipated that the gradual increase of organic material through natural processes will continue to support plant growth without the need to add fertilizer, and the root structure of maturing plants and the biological activity of the media will maintain sufficient long-term permeability.

The following is the recommended composition of the three media ingredients:

- **Sand (Fine Aggregate).** *(no changes)*
- **Loam Soil.** *(no changes)*
- **Organic Amendments.** *(no changes)*

Complete Filter Media *(no changes)*

Filter Media Depth *(no changes)*

Surface Cover *(no changes)*

Choking Layer *(no changes)*

Geotextile

If the available head is limited, or the depth of the practice is a concern, geotextile fabric may be used in place of the choking layer, but is not recommended unless design considerations govern. An appropriate geotextile fabric that complies with the latest edition of AASHTO M-288 Class 2 requirements and has a permeability of at least an order of magnitude (i.e., 10 times) higher than the soil subgrade permeability must be used. Geotextile fabric may be used on the sides and bottom of bioretention areas as well, particularly when bioretention is placed in silt/clay soils where fine particles could impact the filter media.

Underdrains *(no changes)*

Internal Water Storage (IWS) *(no changes)*

Observation Wells *(no changes)*

Underground Storage Layer (optional) *(no changes)*

Impermeable Liner (optional) *(no changes)*

Material Specifications

Recommended material specifications for bioretention areas are shown in Table 4.6. Bioretention material specifications.

Table 4.6. Bioretention material specifications.

Material	Specification	Notes
Filter Media	▪ See Table 4.5 and Table 4.6	Minimum depth of 24 inches (18 inches for standard design). To account for settling/compaction, it is recommended that 110% of the plan volume be utilized.
Mulch Layer	Use aged, shredded hardwood bark mulch	Lay a 2- to 3-inch layer on the surface of the filter bed.
Alternative Surface Cover	Use river stone or pea gravel, coir and jute matting, or turf cover.	Lay a 2- to 3-inch layer of to suppress weed growth.
Topsoil for Turf Cover	Loamy sand or sandy loam texture, with less than 5% clay content, pH corrected to between 6 and 7, and an organic matter content of at least 2%.	3-inch tilled into surface layer.
Geotextile or Choking Layer	An appropriate geotextile fabric that complies with AASHTO M-288 Class 2, latest edition, requirements and has a permeability of at least an order of magnitude (10 times) higher than the soil subgrade permeability must be used	Can use in place of the choking layer where the depth of the practice is limited. Geotextile fabric may be used on the sides and bottom of bioretention areas as well.
	Lay a 2- to 4-inch layer of choker stone (e.g., typically No.8 or No.89 washed gravel) over the underdrain stone.	
Underdrain Stone	1-inch diameter stone must be double-washed and clean and free of all fines (e.g., ASTM D448 No. 57 or smaller stone).	At least 2 inches above and below the underdrain.
Storage Layer (optional)	To increase storage for larger storm events, chambers, perforated pipe, stone, or other acceptable material can be incorporated below the filter media layer.	
Impermeable Liner (optional)	Where appropriate, use a PVC Geomembrane liner or equivalent material of an appropriate thickness.	
Underdrains, Cleanouts, and Observation Wells	Use 4- or 6-inch rigid schedule 40 PVC pipe, or equivalent corrugated HDPE for small bioretention BMPs, with three or four rows of 3/8-inch perforations at 6 inches on center. Multiple underdrains may be necessary for bioretention areas wider than 40 feet, and each underdrain is recommended to be located no more than 20 feet from the next pipe or the edge of the bioretention.	Lay the perforated pipe under the length of the bioretention cell and install non-perforated pipe as needed to connect with the storm drain system or to daylight in a stabilized conveyance. Install T's and Y's as needed, depending on the underdrain configuration. Extend cleanout pipes to the surface of ponding.
Plant Materials	See Section 4.3.5 Bioretention Landscaping Criteria	Establish plant materials as specified in the landscaping plan and the recommended plant list.

Signage *(no changes)*

Specific Design Issues for Streetscape Bioretention (B-2) *(no changes)*

Specific Design Issues for Engineered Tree Boxes (B-3) *(no changes)*

Specific Design Issues for Stormwater Planters (B-4) *(no changes)*

Specific Design Issues for Residential Rain Gardens (B-5) *(no changes)*

BMP Sizing *(no changes)*

4.3.5 Bioretention Landscaping Criteria *(no changes)*

4.3.6 Bioretention Construction Sequence *(no changes)*

4.3.7 Bioretention Maintenance Criteria *(no changes)*

4.3.8 Bioretention Stormwater Compliance Calculations *(no changes)*

4.3.9 References *(no changes)*

4.4 Permeable Pavement Systems

<table>
<tr><th colspan="5">Permeable Pavement Systems</th></tr>
<tr><td colspan="5">Definition: Paving systems that capture and temporarily store the SWRv by filtering runoff through voids in an alternative pavement surface into an underlying stone reservoir. Filtered runoff may be collected and returned to the conveyance system or allowed to partially (or fully) infiltrate into the soil.</td></tr>
<tr><th colspan="2">Site Applicability</th><th colspan="3">BMP Performance Summary</th></tr>
<tr><th>Land Uses</th><th>Required Footprint</th><td colspan="3">WQ Improvement: Moderate to High</td></tr>
<tr><td rowspan="2">▪ Urban
▪ Suburban
▪ Rural</td><td rowspan="2">Small</td><th>TSS[1]</th><th>Total N[1]</th><th>Bacteria[1]</th></tr>
<tr><td>80-100%</td><td>45-100%</td><td>30-100%</td></tr>
<tr><td colspan="2"></td><th colspan="3">Runoff Reduction</th></tr>
<tr><th>Construction Costs</th><th>Maintenance Burden</th><th colspan="3">Volume</th></tr>
<tr><td>High</td><td>High</td><td colspan="3">Moderate</td></tr>
<tr><th colspan="2">Maintenance Frequency:</th><th colspan="3">SWRv</th></tr>
<tr><th>Routine</th><th>Non-Routine</th><th colspan="2">Standard Design</th><th>Enhanced Design</th></tr>
<tr><td>2-4 times per year</td><td>Every 2-3 years</td><td colspan="2">30%</td><td>100%</td></tr>
<tr><th colspan="2">Advantages/Benefits</th><th colspan="3">Disadvantages/Limitation</th></tr>
<tr><td colspan="2">▪ Reduces runoff volume, attenuates peak runoff rate and outflow
▪ Reduces slick surfaces during rain
▪ Water quality enhancement from filtration of stormwater</td><td colspan="3">▪ Sediment-laden runoff can clog pervious pavement, causing it to fail
▪ Incorrect installation practices can clog pores</td></tr>
<tr><th colspan="2">Components</th><th colspan="3">Design considerations</th></tr>
<tr><td colspan="2">▪ Open graded pavement mix or pavers with open surfaces
▪ Bedding course
▪ Open-graded base material
▪ Underdrain (where required)
▪ Subgrade with minimal compaction</td><td colspan="3">▪ Same basic considerations as any paved area
▪ Infiltration rate of native soil of < 0.5 in./hr determines need for underdrain
▪ Depth to seasonal high water table must be at least 6 inches below bottom of practice
▪ Not appropriate for heavy or high traffic areas
▪ Accessibility, aesthetics, maintainability</td></tr>
<tr><th colspan="2">Installation Considerations</th><th colspan="3">Maintenance Activities</th></tr>
<tr><td colspan="2">▪ Proper construction sequencing and installation is crucial to ensure proper functioning
▪ Subgrade cannot be overly compacted</td><td colspan="3">▪ Vacuum or jet wash to increase pavement life and avoid clogging
▪ Ensure that contributing area is clear of debris and sediment.</td></tr>
</table>

[1]*Credited pollutant load removal*

Permeable pavement systems represent alternative paving surfaces that capture and temporarily store the design volume by filtering runoff through voids in the pavement surface into an underlying stone reservoir (see Figure 4.11). Filtered runoff may be collected and returned to the conveyance system, or it may be allowed to infiltrate into the soil**.** Permeable pavement systems may also provide stormwater detention of larger storms (e.g., 2- to 25-year).

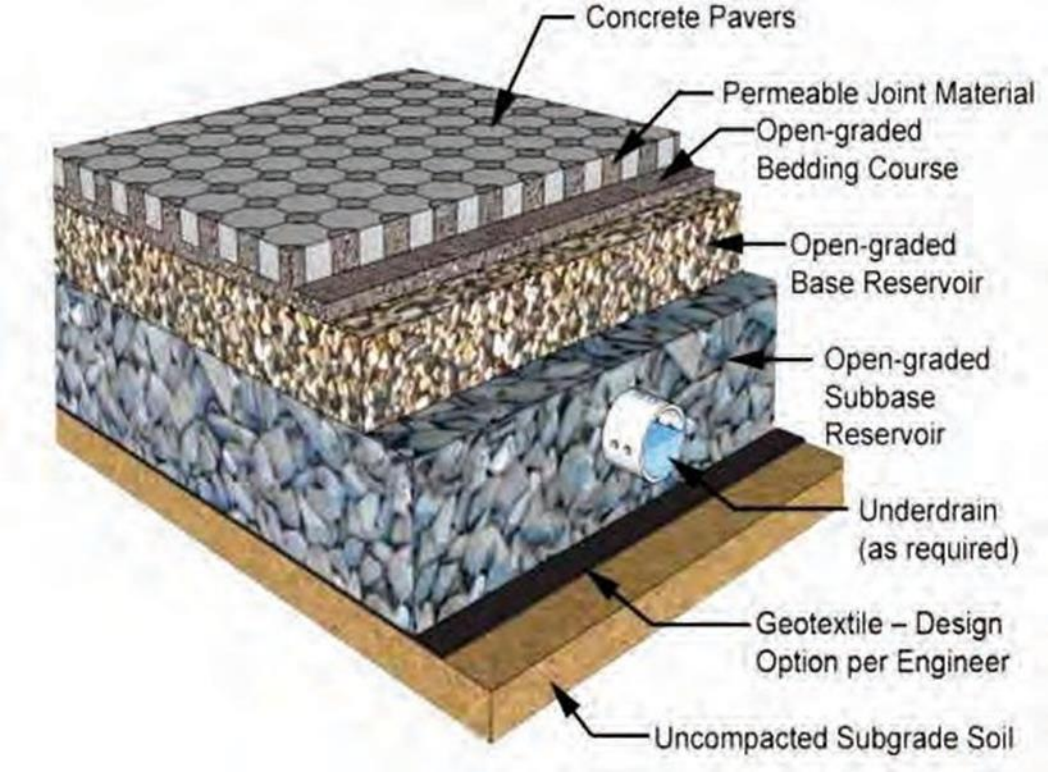


Figure 4.11. Cross-section of permeable pavement (source: ICPI).

Definition *(no changes)*

Porous Asphalt *(no changes)*

Pervious Concrete *(no changes)*

Permeable Pavers

Permeable pavers (PP) are solid structural units (e.g., blocks, bricks) that are designed and installed in a way that provides regularly spaced openings through which stormwater runoff can rapidly pass through the pavement surface and into the underlying stone reservoir. The regularly spaced openings, which generally make up between 8% and 20% of the total pavement surface, are typically filled with pea gravel (i.e., ASTM D 448 Size No. 8, 3/8 inch to 1/8 inch). Typical PP systems consist of the pavers, a 1.5- to 3-inch thick fine gravel bedding layer and an underlying stone reservoir.

Design Configurations *(no changes)*

4.4.1 Permeable Pavement Feasibility Criteria *(no changes)*

4.4.2 Permeable Pavement Conveyance Criteria *(no changes)*

4.4.3 Permeable Pavement Pretreatment Criteria *(no changes)*

4.4.4 Permeable Pavement Design Criteria *(no changes)*

Type of Surface Pavement *(no changes)*

Pavement Bottom Slope *(no changes)*

Internal Geometry and Drawdowns *(no changes)*

Reservoir Layer *(no changes)*

Underdrains *(no changes)*

Observation Wells

All permeable pavement practices must include at least one observation well, per system. The observation well is used to observe the rate of drawdown within the reservoir layer following a storm event and to facilitate periodic inspection and maintenance. The observation well should consist of a well-anchored, perforated 4- to 6-inch diameter PVC pipe. There should be no perforation within 1 foot of the surface. If the permeable pavement has an underdrain, tie the observation well into any Ts or Ys in the underdrain system. The observation well should extend vertically to the bottom of the reservoir layer and extend upwards to be flush with the surface (or just under pavers) with a lockable cap.

Infiltration Sump (optional, required for enhanced designs with an underdrain) *(no changes)*

Filter Layer (optional) *(no changes)*

Geotextile (optional) *(no changes)*

Material Specifications

Permeable pavement material specifications vary according to the specific pavement product selected. A general comparison of different permeable pavements is provided in Table 4.13, but designers should consult manufacturer's technical specifications for specific criteria and guidance. Table 4.14 provides general material specifications for the component structures installed beneath the permeable pavement. Note that the size of stone materials used in the reservoir and filter layers may differ depending on the type of surface material.

Table 4.13. Permeable pavement specifications for a variety of typical surface materials.

Material	Specification	Notes
Permeable Pavers (PP)	Void content, thickness, and compressive strength vary based on type and manufacturer Open void fill media: aggregate, topsoil and grass, coarse sand, etc.	Pavers must be designed specifically to be permeable. Reservoir layer required to support the structural load.
Pervious Concrete (PC)	Void content: 15–20% Thickness: Typically 4–8 inches Compressive strength: 2.8–28 MPa Open void fill media: None	May not require a reservoir layer to support the structural load, but a layer may be included to increase the storage or infiltration. Requires certified supplier and installer.
Porous Asphalt (PA)	Void content: 15–20% Thickness: Typically 3–7 inches (depending on traffic load) Open void fill media: None	Reservoir layer required to support the structural load. Requires certified supplier and installer.

Table 4.14. *(no changes)*

Permeable Pavement Sizing *(no changes)*

Structural Design *(no changes)*

Detention Storage Design *(no changes)*

4.4.5 Permeable Pavement Landscaping Criteria *(no changes)*

4.4.6 Permeable Pavement Construction Sequence *(no changes)*

Soil Erosion and Sediment Controls *(no changes)*

Permeable Pavement Installation *(no changes)*

1.-9. *(no changes)*

10. Installation of Porous Asphalt

The following has been excerpted from various documents, most notably Jackson (2007):

- Install porous asphalt pavement similarly to regular asphalt pavement. The pavement should be laid in a single lift over the filter course. The laying temperature should be between 230°F and 260°F, with a minimum air temperature of 50°F, to ensure the surface does not stiffen before compaction.
- Complete compaction of the surface course when the surface is cool enough to resist a 10-ton roller. One or two passes of the roller are required for proper compaction. More rolling could cause a reduction in the porosity of the pavement.
- The mixing plant must provide certification of the aggregate mix, abrasion loss factor, and asphalt content in the mix. Test the asphalt mix for its resistance to stripping by water using ASTM D1664. If the estimated coating area is not above 95%, additional anti-stripping agents must be added to the mix.
- Transport the mix to the site in a clean vehicle with smooth dump beds sprayed with a non-petroleum release agent. The mix shall be covered during transportation to control cooling.
- Test the ~~full~~ permeability of the pavement surface by performing ASTM test C1701, Standard Test Method for Infiltration Rate of In Place Pervious Concrete in at least three (3) locations spaced evenly throughout the pavement area. ~~application of clean water at a rate of at least 5 gallons per minute over the entire surface. All water must infiltrate directly, without puddle formation or surface runoff.~~
- Inspect the facility 18 to 30 hours after a significant rainfall (0.5 inch or greater) or artificial flooding to determine if the facility is draining properly.

11. Pervious Concrete Installation

The basic installation sequence for pervious concrete is outlined by the National Ready Mixed Concrete Association (NRMCA; NRMCA, 2004). Concrete installers are required to be certified by a recognized pervious concrete installers training program, such as the Pervious Concrete Contractor Certification Program offered by the NRMCA. The basic installation procedure is as follows:

- Drive the concrete truck as close to the project site as possible.

- Water the underlying aggregate (reservoir layer) before the concrete is placed, so the aggregate does not draw moisture from the freshly laid pervious concrete.
- After the concrete is placed, approximately 3/8 to 1/2 inches is struck off, using a vibratory screed. This is to allow for compaction of the concrete pavement.
- Compact the pavement with a steel pipe roller. Care should be taken to ensure over-compaction does not occur.
- Cut joints for the concrete to a depth of 1/4 inch.
- The curing process is very important for pervious concrete. Concrete installers should follow manufacturer specifications to the extent allowed by on-site conditions when curing pervious concrete. This typically requires covering the pavement with plastic sheeting within 20 minutes of the strike-off and may require keeping it covered for at least 7 days. Do not allow traffic on the pavement during the curing period.
- Remove the plastic sheeting only after the proper curing time.
- Test the permeability of the pavement surface by performing ASTM test C1701, Standard Test Method for Infiltration Rate of In Place Pervious Concrete in at least three (3) locations spaced evenly throughout the pavement area.
- Inspect the facility 18 to 30 hours after a significant rainfall (0.5 inch or greater) or artificial flooding, to determine if the facility is draining properly.

12. Permeable Interlocking Concrete Paver Installation

The basic installation process is described in greater detail by Smith (2006):

- Place edge restraints for open-jointed pavement blocks before the bedding layer and pavement blocks are installed. Permeable interlocking concrete pavement systems require edge restraints to prevent vehicle loads from moving the paver blocks. Edge restraints may be standard curbs or gutter pans, or precast or cast-in-place reinforced concrete borders a minimum of 6 inches wide and 18 inches deep, constructed with Class A3 concrete. Edge restraints along the traffic side of a permeable pavement block system are recommended.
- Place the double-washed No. 57 stone in a single lift. Level the filter course and compact it into the reservoir course beneath with at least four passes of a 10-ton steel drum static roller until there is no visible movement. The first two passes are in vibratory mode, with the final two passes in static mode. The filter aggregate should be moist to facilitate movement into the reservoir course.
- Place and screed the bedding course material (typically No. 8 stone).
- Fill gaps at the edge of the paved areas with cut pavers or edge units. When cut pavers are needed, cut the pavers with a paver splitter or masonry saw. Cut pavers no smaller than 1/3 of the full unit size.
- Pavers may be placed by hand or with mechanical installers. Fill the joints and openings with stone. Joint openings must be filled with ASTM D448 No. 8 stone; although, No. 8P or No. 9 stone may be used where needed to fill narrower joints. Remove excess stones from the paver surface.

- Compact and seat the pavers into the bedding course with a minimum low-amplitude 5,000-pound-foot, 75- to 95-Hz plate compactor.
- Do not compact within 6 feet of the unrestrained edges of the pavers.
- The system must be thoroughly swept by a mechanical sweeper or vacuumed immediately after construction to remove any sediment or excess aggregate.
- Inspect the area for settlement. Any blocks that settle must be reset and re-inspected.
- Test the permeability of the pavement surface by performing ASTM test C1781, Standard Test Method for Surface Infiltration Rate of Permeable Unit Pavement Systems in at least three (3) locations spaced evenly throughout the pavement area.
- Inspect the facility 18 to 30 hours after a significant rainfall (0.5 inch or greater) or artificial flooding to determine whether the facility is draining properly.

13. Construction Supervision

Supervision before, during, and after construction by a qualified professional is recommended to ensure permeable pavement is built in accordance with these specifications. **ASTM test C1781 or C1701 must be performed following installation to ensure initial pavement permeability of at least 6 inches per hour in at least three (3) locations spaced evenly throughout the pavement area.** Inspection checklists that require sign-offs by qualified individuals should be used at critical stages of construction to ensure the contractor's interpretation of the plan is consistent with the designer's intent.

Construction phase inspection checklist for permeable pavement practices can be found in Appendix E Construction Inspection Checklists.

Some common pitfalls can be avoided by careful construction supervision that focuses on the following key aspects of permeable pavement installation:

- Store materials in a protected area to keep them free from mud, dirt, and other foreign materials.
- The CDA should be stabilized prior to directing water to the permeable pavement area.
- Check the aggregate material to confirm it is clean and washed, meets specifications and is installed to the correct depth. Aggregate loads that do not meet the specifications or do not appear to be sufficiently washed may be rejected.
- Check elevations (i.e., the invert of the underdrain, inverts for the inflow, and outflow points) and the surface slope.
- Make sure the permeable pavement surface is even, runoff spreads evenly across it, and the storage bed drains within 48 hours.
- Ensure caps are placed on the upstream (but not the downstream) ends of the underdrains.
- Inspect the pretreatment structures (if applicable) to make sure they are properly installed and working effectively.
- Once the final construction inspection has been completed, log the GPS coordinates for each facility and submit them for entry into the BMP maintenance tracking database.

Runoff diversion structures are recommended to protect larger permeable pavement applications from early runoff-producing storms, particularly when up-gradient conventional asphalt areas drain to the permeable pavement. This can help reduce the input of fine particles often produced shortly after conventional asphalt is laid.

4.4.7 Permeable Pavement Maintenance Criteria *(no changes)*

4.4.8 Permeable Pavement Stormwater Compliance Calculations *(no changes)*

4.4.9 References *(no changes)*

4.5 Infiltration Practices *(no changes)*

4.6 Green Roofs *(no changes)*

4.7 Rainwater Harvesting

<table>
<tr><th colspan="4">Rainwater Harvesting</th></tr>
<tr><td colspan="4">Definition: Rainwater harvesting systems store rainfall and release it for future use. Rainwater that falls on a rooftop or other impervious surface is collected and conveyed into an above- or below-ground tank (also referred to as a cistern) or settling pond, where it is stored for non-potable uses.</td></tr>
<tr><th colspan="2">Site Applicability</th><th colspan="2">BMP Performance Summary</th></tr>
<tr><th>Land Uses</th><th>Required Footprint</th><th colspan="2">WQ Improvement: Moderate to High</th></tr>
<tr><td rowspan="2">▪ Urban
▪ Suburban
▪ Rural</td><td rowspan="2">Small</td><td>TSS[1]
Varies*</td><td>Total N[1]
Varies*</td><td>Bacteria[1]
Varies*</td></tr>
<tr><th colspan="3">Runoff Reduction</th></tr>
<tr><th>Construction Costs</th><th>Maintenance Burden</th><th colspan="2">Volume</th></tr>
<tr><td>Low to Moderate</td><td>Moderate</td><td colspan="2">Varies*</td></tr>
<tr><th colspan="2">Maintenance Frequency:</th><th colspan="2">SWRv</th></tr>
<tr><th>Routine</th><th>Non-Routine</th><td colspan="2" rowspan="2">100% of Available Storage Volume</td></tr>
<tr><td>Quarterly</td><td>Every 3 years</td></tr>
<tr><th colspan="2">Advantages/Benefits</th><th colspan="2">Disadvantages/Limitation</th></tr>
<tr><td colspan="2">▪ Reduces runoff rates and volume
▪ Can provide for/supplement irrigation needs</td><td colspan="2">▪ Stored water must be used on regular basis to maintain capacity
▪ Stagnant water can breed mosquitos</td></tr>
<tr><th colspan="2">Components</th><th colspan="2">Design considerations</th></tr>
<tr><td colspan="2">▪ Pretreatment
▪ Conveyance
▪ First flush diverter
▪ Cistern (storage tank)
▪ Overflow
▪ Low water cutoff</td><td colspan="2">▪ Plumbing codes (for indoor tanks)
▪ Size based on CDA, local rainfall patterns, and projected harvest rainwater demand
▪ Location and elevation of cistern
▪ Tank manufacturer’s specifications
▪ Irrigation system and application rates</td></tr>
<tr><th colspan="4">Maintenance Activities</th></tr>
<tr><td colspan="2">▪ Inspect/clean pretreatment devices and first flush diverts
▪ Clear gutter/downspouts</td><td colspan="2">▪ Inspect and clean storage tank
▪ Maintenance log required</td></tr>
</table>

[1]*Credited pollutant load removal*

**Varies according to rainwater harvesting storage capacity and demand*

Rainwater harvesting systems store rainfall for future, non-potable water uses and on-site stormwater disposal/infiltration. By providing a reliable and renewable source of water to end users, rainwater harvesting systems can also have environmental and economic benefits beyond stormwater management (e.g. increased water conservation, water supply during drought and mandatory municipal water supply restrictions, decreased demand on municipal or groundwater supply, decreased water costs for the end-user, potential for increased groundwater recharge, supply of water post storm/hurricane in case of failed municipal infrastructure etc.).

Definition *(no changes)*

4.7.1 Rainwater Harvesting Feasibility Criteria *(no changes)*

4.7.2 Rainwater Harvesting Conveyance Criteria *(no changes)*

4.7.3 Rainwater Harvesting Pretreatment Criteria *(no changes)*

4.7.4 Rainwater Harvesting Design Criteria *(no changes)*

4.7.5 Rainwater Harvesting Landscaping Criteria

If the harvested water is to be used for irrigation, the design plan elements must include the proposed delineation of planting areas to be irrigated, the planting plan, and quantification of the expected water demand. The default water demand for irrigation is 1.0 inches per week over the area to be irrigated during the months of ~~May~~ March through ~~October~~ November only. Justification must be provided if larger volumes are to be used.

4.7.6 Rainwater Harvesting Construction Sequence *(no changes)*

Installation *(no changes)*

Construction Supervision

Construction phase inspection checklist for rainwater harvesting practices ~~and the Stormwater Facility Leak Test form~~ a can be found in Appendix E – Construction Inspection Checklists.

4.7.7 Rainwater Harvesting Maintenance Criteria *(no changes)*

4.7.8 Rainwater Harvesting Stormwater Compliance Calculations *(no changes)*

4.7.9 References *(no changes)*

4.8 Impervious Surface Disconnection *(no changes)*

4.9 Open Channel Systems

<table>
<tr><th colspan="8">Open Channel Systems</th></tr>
<tr><td colspan="8">Definition: Vegetated open channels that are designed to capture and treat or convey the design storm volume (SWRv).</td></tr>
<tr><th colspan="2">Site Applicability</th><th colspan="6">BMP Performance Summary</th></tr>
<tr><th>Land Uses</th><th>Required Footprint</th><td colspan="6">WQ Improvement: Moderate to High</td></tr>
<tr><td rowspan="2">▪ Suburban
▪ Rural</td><td rowspan="2">Moderate</td><th colspan="2">TSS[1]</th><th colspan="2">Total N[1]</th><th colspan="2">Bacteria[1]</th></tr>
<tr><td colspan="2">50-80%</td><td colspan="2">25-70%</td><td colspan="2">30-80%</td></tr>
<tr><td></td><td></td><th colspan="6">Runoff Reduction</th></tr>
<tr><th>Construction Costs</th><th>Maintenance Burden</th><th colspan="6">Volume</th></tr>
<tr><td>Low</td><td>Low</td><td colspan="6">Low</td></tr>
<tr><th colspan="2">Maintenance Frequency:</th><th colspan="6">SWRv</th></tr>
<tr><td>Routine</td><td>Non-Routine</td><td>O-1a</td><td>O-1b</td><td>O-2</td><td>O-3</td><td>O-4</td><td></td></tr>
<tr><td>Quarterly</td><td>Every 10-15 years</td><td>10%</td><td>20%</td><td>60%</td><td>0%</td><td>0%</td><td></td></tr>
<tr><th colspan="3">Advantages/Benefits</th><th colspan="5">Disadvantages/Limitation</th></tr>
<tr><td colspan="3">▪ Less expensive than curb and gutter
▪ Relatively low maintenance requirements
▪ Provides pretreatment if used as part of runoff conveyance system
▪ Provides partial infiltration of runoff in some soils
▪ Good for small drainage areas</td><td colspan="5">▪ Must be carefully designed to achieve low flow rates in the channel (< 1.0 ft/s)
▪ May re-suspend sediment
▪ May not be acceptable for some areas because of standing water in channel</td></tr>
<tr><th colspan="3">Components</th><th colspan="5">Design considerations</th></tr>
<tr><td colspan="3">▪ Channel geometry
▪ Dense vegetation
▪ Check dams, as needed)</td><td colspan="5">▪ Maximum drainage area of 2.5 acres
▪ Slopes (<4% unless using O-4)
▪ Runoff velocities must be non-erosive
▪ Vegetation must withstand both relatively high velocity flows and wet/dry periods.</td></tr>
<tr><th colspan="8">Maintenance Activities</th></tr>
<tr><td colspan="3">▪ Mow grass to 3 or 4 inches high
▪ Inspect for, and correct, formation of rills and gullies</td><td colspan="5">▪ Clean out sediment accumulation in channel
▪ Ensure that vegetation remains well established</td></tr>
</table>

[1]*Credited pollutant load removal*

Often found along roadsides, parking lots, and property boundaries, open channels can provide stormwater conveyance, capture and/or treatment. One of the most visible stormwater BMPs, they are often part of stormwater conveyance systems.

Figure 4.33. Open channel (photo: Center for Watershed Protection, Inc.)

Definition. *(no changes)*

4.9.1 Open Channel Feasibility Criteria *(no changes)*

4.9.2 Open Channel Conveyance Criteria *(no changes)*

4.9.3 Open Channel Pretreatment Criteria *(no changes)*

4.9.4 Open Channel Design Criteria

Channel Geometry. – Ponding Depth. *(no changes)*

Dry Swale Filter Media. Dry swales may require replacement of native soils with a prepared filter media if geotechnical analysis shows that in-situ soils do not provide the necessary infiltration rates. The filter media provides adequate drainage, supports plant growth, and facilitates pollutant removal within the dry swale. At least 18 inches of filter media must be added above the choker stone layer (and no more than 6 feet) to create an acceptable filter. The recipe for the filter media is identical to that used for bioretention and is provided in Section 4.3 Bioretention. The batch receipt confirming the source of the filter media must be submitted to the Town of Bluffton inspector. One acceptable design adaptation is to use 100% sand for the first 18 inches of the filter and add a combination of topsoil and compost, as specified in Appendix C – Soil Compost Amendment Requirements, for the top 4 inches, where turf cover will be maintained.

Dry Swale Drawdown. – RSC Sizing. *(no changes)*

4.9.5 Open Channel Landscaping Criteria *(no changes)*

4.9.6 Open Channel Construction Sequence *(no changes)*

4.9.7 Open Channel Maintenance Criteria *(no changes)*

4.9.8 Open Channel Stormwater Compliance Calculations *(no changes)*

4.9.9 References *(no changes)*

4.10 Filtering Systems

4.10.1 Filtering System Feasibility Criteria *(no changes)*

4.10.2 Filtering System Conveyance Criteria *(no changes)*

4.10.3 Filtering System Pretreatment Criteria *(no changes)*

4.10.4 Filtering System Design Criteria *(no changes)*

4.10.5 Filtering System Landscaping Criteria *(no changes)*

4.10.6 Filtering System Construction Sequence

Soil Erosion and Sediment Control. *(no changes)*

Filter Installation. The following is the typical construction sequence to properly install a structural sand filter. This sequence can be modified to reflect different filter designs, site conditions, and the size, complexity, and configuration of the proposed filtering application.

1. **Stabilize Contributing Drainage Area. – 5. Excavate and Grade** *(no changes)*

6. **Install Filter Structure. Install filter structure in design location** and check all design elevations (i.e., concrete vaults for surface, underground, and perimeter sand filters). Upon completion of the filter structure shell, inlets and outlets must be temporarily plugged and the structure filled with water to the brim to demonstrate water tightness. Maximum allowable leakage is 5% of the water volume in a 24-hour period. ~~See Appendix E Construction Inspection Checklists for the Stormwater Facility Leak Test form.~~ If the structure fails the test, repairs must be performed to make the structure watertight before any sand is placed into it.

7. **Install Base Material Components. – 11. Final Inspection** *(no changes)*

Construction phase inspection checklist for filters ~~and the Stormwater Facility Leak Test form~~ can be found in Appendix E Construction Inspection Checklists.

4.10.7 Filtering System Maintenance Criteria *(no changes)*

4.10.8 Filtering System Stormwater Compliance Calculations *(no changes)*

4.10.9 References *(no changes)*

4.11 Storage Practices *(no changes)*

4.12 Ponds

<table>
<tr><th colspan="5">Ponds</th></tr>
<tr><td colspan="5">Definition: Stormwater storage practices that consist of a combination of a permanent pool, micropool, or shallow marsh that promote a good environment for gravitational settling, biological uptake, and microbial activity.</td></tr>
<tr><th colspan="2">Site Applicability</th><th colspan="3">BMP Performance Summary</th></tr>
<tr><th>Land Uses</th><th>Required Footprint</th><td colspan="3">WQ Improvement: Moderate to High</td></tr>
<tr><td rowspan="2">▪ Urban
▪ Suburban
▪ Rural</td><td rowspan="2">Medium</td><th>TSS[1]</th><th>Total N[1]</th><th>Bacteria[1]</th></tr>
<tr><td>80%</td><td>30%</td><td>60%</td></tr>
<tr><td colspan="2"></td><th colspan="3">Runoff Reductions</th></tr>
<tr><th>Construction Costs</th><th>Maintenance Burden</th><th colspan="3">Volume</th></tr>
<tr><td>Moderate</td><td>Moderate</td><td colspan="3">Low</td></tr>
<tr><th colspan="2">Maintenance Frequency:</th><th colspan="3">SWRv</th></tr>
<tr><th>Routine</th><th>Non-Routine</th><td colspan="3" rowspan="2">0%</td></tr>
<tr><td>At least annually</td><td>Every 5–7 years</td></tr>
<tr><th colspan="2">Advantages/Benefits</th><th colspan="3">Disadvantages/Limitation</th></tr>
<tr><td colspan="2">▪ Moderate to high pollutant removal
▪ Can be designed as a multi-functional BMP
▪ Cost effective
▪ Good for sites with high water table and/or poorly drained soils
▪ Wildlife habitat potential
▪ High community acceptance when integrated into a development</td><td colspan="3">▪ Requires large amount of flat land (1-3% of CDA)
▪ Must be properly designed, installed, and maintained to avoid nuisance problems
▪ Routine sediment cleanout may be needed
▪ Potential for thermal impacts downstream</td></tr>
<tr><th colspan="2">Components</th><th colspan="3">Design considerations</th></tr>
<tr><td colspan="2">▪ Conveyance
▪ Forebay
▪ Ponding area with available storage
▪ Micropool
▪ Spillway system(s)
▪ Liners, as needed</td><td colspan="3">▪ CDA of at least 10 acres and slopes <15%
▪ Use CN adjustment factor ARC III for CDA that are irrigated with harvested rainwater
▪ Minimum length to width ratio = 3:1
▪ Maximum depth of permanent pool = 8’
▪ 3:1 side slopes or flatter around pond perimeter</td></tr>
<tr><th colspan="5">Maintenance Activities</th></tr>
<tr><td colspan="2">▪ Remove debris from inlet and outlet structures
▪ Maintain side slopes/remove invasive vegetation</td><td colspan="3">▪ Monitor sediment accumulation and remove periodically</td></tr>
</table>

[1]*Credited pollutant load removal*

Stormwater ponds are widely applicable for most land uses and are best suited for larger drainage areas (Figure 4.47); however, they should be considered for use after all other upland retention opportunities have been exhausted and there is still a remaining treatment volume or runoff from larger storms (i.e., 2- to 25-year or flood control events) to manage.

Stormwater ponds receive no retention credit and should be considered mainly for management of larger storm events. Stormwater ponds have both community and environmental concerns (see Section 4.12.1 Pond Feasibility Criteria) that should be considered before choosing stormwater ponds as the appropriate stormwater practice on site.

Figure 4.50. Wet Pond (photo: Denise Sanger)

Definition. *(no changes)*

4.12.1 Pond Feasibility Criteria *(no changes)*

4.12.2 Pond Conveyance Criteria

Internal Slope. – Emergency Spillway. *(no changes)*

Adequate Outfall Protection. The design must specify an outfall that will be stable for the ~~25~~100-year design storm event. The channel immediately below the pond outfall must be modified to prevent erosion and conform to natural dimensions in the shortest possible distance. This is typically done by placing appropriately sized riprap over geotextile fabric, which can reduce flow velocities from the principal spillway to non-erosive levels (3.5 to 5.0 feet per second) depending on the channel lining material. Flared pipe sections, which discharge at or near the stream invert or into a step pool arrangement, should be used at the spillway outlet.

When the discharge is to a manmade pipe or channel system, the system must be adequate to convey the required design storm peak discharge.

If a pond daylights to a channel with dry weather flow, care should be taken to minimize tree clearing along the downstream channel, and to reestablish a forested riparian zone in the shortest possible distance. Excessive use of riprap should be avoided.

The final release rate of the facility shall be modified if any increase in flooding or stream channel erosion would result at a downstream structure, highway, or natural point of restricted streamflow.

Inlet Protection. – Dam Safety Permits. *(no changes)*

4.12.3 Pond Pretreatment Criteria *(no changes)*

4.12.4 Pond Design Criteria

Pond Storage Design. – Stormwater Pond Benches. *(no changes)*

~~**Liners.** When a stormwater pond is located over highly permeable soils, a liner may be needed to sustain a permanent pool of water. If geotechnical tests confirm the need for a liner, acceptable options include the following:~~

~~1. a clay liner following the specifications outlined in Table 4.49;~~
~~2. a 30-mil- poly-liner;~~
~~3. bentonite;~~
~~4. use of chemical additives; or~~
~~5. an engineering design, as approved on a case-by-case basis by Town of Bluffton.~~

~~A clay liner must have a minimum thickness of 12 inches with an additional 12-inch layer of compacted soil above it, and it must meet the specifications outlined in Table 4.49. Other synthetic liners can be used if the designer can supply supporting documentation that the material will achieve the required performance.~~

~~Table 4.49. Clay Liner Specifications~~

~~Property~~	~~Test Method~~	~~Unit~~	~~Specification~~
~~Permeability~~	~~ASTM D2434~~	~~cm/s~~	~~1×10^{-6}~~
~~Plasticity Index of Clay~~	~~ASTM D4318~~	~~%~~	~~Not less than 15~~
~~Liquid Limit of Clay~~	~~ASTM D2216~~	~~%~~	~~Not less than 30~~
~~Clay Particles Passing~~	~~ASTM D422~~	~~%~~	~~Not less than 30~~
~~Clay Compaction~~	~~ASTM D2216~~	~~%~~	~~95% of standard proctor density~~

~~Source: DCR (1999). VA~~

Required Geotechnical Testing. – Pond Drain. *(no changes)*

Safety Features.

- The principal spillway opening must be designed and constructed to prevent access by small children.

- End walls above pipe outfalls greater than 48 inches in diameter must be fenced to prevent a falling hazard.
- Storage practices must incorporate an additional 1 foot of freeboard above the emergency spillway, or 2 feet of freeboard if design has no emergency spillway, for the 100-year storm.
- The emergency spillway must be located so that downstream structures will not be impacted by spillway discharges.
- ~~Both the safety bench and the aquatic bench should be landscaped with vegetation that hinders or prevents access to the pool.~~
- Warning signs prohibiting swimming must be posted.
- Where permitted, fencing of the perimeter of ponds is discouraged. The preferred method to reduce risk is to manage the contours of the stormwater pond to eliminate drop-offs or other safety hazards. Fencing is required at or above the maximum water surface elevation in the rare situations when the pond slope is a vertical wall.
- Side slopes to the pond shall not be steeper than 3H:1V, and shall terminate on a ~~15 foot wide~~ safety bench. Both the safety bench and the aquatic bench ~~may~~should be landscaped to prevent unintended access to the pool. ~~The bench requirement may be waived if slopes are 4H:1V or flatter.~~

Maintenance Reduction Features – Water Balance Testing *(no changes)*

4.12.5 Pond Landscaping Criteria

Pond Benches. The perimeter of all deep pool areas (4 feet or greater in depth) must be surrounded by two benches:

- A safety bench that ~~extends 8 to 15 feet outward from the normal water edge to the toe of the pond side slope. The maximum slope of the safety bench shall be 6%~~is landscaped.
- An aquatic bench that ~~extends up to 10 feet inward from the normal shoreline and~~ has a maximum depth of 18 inches below the normal pool water surface elevation, planted with native aquatic plant species.

Landscaping and Planting Plan. A landscaping plan must be provided that indicates the methods used to establish and maintain vegetative coverage in the pond and its buffer (see Section 4.3.5 Bioretention Landscaping Criteria for extended landscaping and planting details). Minimum elements of a landscaping plan include the following:

- Delineation of ~~pondscaping~~landscaping zones within both the pond and buffer.
- Selection of corresponding plant species.
- The planting plan.
- The sequence for preparing the wetland benches (including soil amendments, if needed).
- Sources of native plant material.
- The landscaping plan should provide elements that promote diverse wildlife and waterfowl use within the stormwater wetland and buffers.
- Woody vegetation may not be planted or allowed to grow within 15 feet of the toe of the embankment nor within 25 feet from the principal spillway structure.

- A vegetated buffer should be provided that extends at least 25 feet outward from the maximum water surface elevation of the pond. Permanent structures (e.g., buildings) should not be constructed within the buffer area. Existing trees should be preserved in the buffer area during construction.
- The soils in the stormwater buffer area are often severely compacted during the construction process, to ensure stability. The density of these compacted soils can be so great that it effectively prevents root penetration and, therefore, may lead to premature mortality or loss of vigor. As a rule of thumb, planting holes should be three times deeper and wider than the diameter of the root ball for bare root and ball-and-burlap stock, and five times deeper and wider for container-grown stock.
- Avoid species that require full shade or are prone to wind damage. Extra mulching around the base of trees and shrubs is strongly recommended as a means of conserving moisture and suppressing weeds.

For a list of recommended aquatic plants for South Carolina, consult Clemson's fact sheet entitled "Aquatic & Shoreline Plant Selection" available online at https://hgic.clemson.edu/factsheet/aquatic-shoreline-plant-selection/. For more guidance on planting trees and shrubs in pond buffers, consult Cappiella et al. (2006).

4.12.6 Pond Construction Sequence *(no changes)*

4.12.7 Pond Maintenance Criteria *(no changes)*

4.12.8 Pond Stormwater Compliance Calculations *(no changes)*

4.12.9 References *(no changes)*

4.13 Stormwater Wetlands *(no changes)*

4.14 Tree Planting & Preservation

<table>
<tr><th colspan="8">Tree Planting and Preservation</th></tr>
<tr><td colspan="8">Definition: Existing trees can be preserved or new trees can be planted to reduce stormwater runoff.</td></tr>
<tr><td colspan="2">Site Applicability</td><td colspan="6">BMP Performance Summary</td></tr>
<tr><td>Land Uses</td><td>Required Footprint</td><td colspan="6">WQ Improvement: Moderate to High</td></tr>
<tr><td rowspan="2">▪ Urban
▪ Suburban
▪ Rural</td><td rowspan="2">Small</td><td colspan="2">TSS[1]</td><td colspan="2">Total N[1]</td><td colspan="2">Bacteria[1]</td></tr>
<tr><td colspan="2">N/A</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
<tr><td colspan="2"></td><td colspan="6">Runoff Reductions</td></tr>
<tr><td>Construction Costs</td><td>Maintenance Burden</td><td colspan="6">Volume</td></tr>
<tr><td>Low</td><td>Low</td><td colspan="6">Low</td></tr>
<tr><td colspan="2">Maintenance Frequency:</td><td colspan="6">SWRv*</td></tr>
<tr><td>Routine</td><td>Non-Routine</td><td>T-1 Small</td><td>T-1 Large</td><td>T-2 Small</td><td>T-2 Large</td><td>T-2 Special</td></tr>
<tr><td>At least annually</td><td>Every 10–15 years</td><td>5 ft^3</td><td>10 ft^3</td><td>10 ft^3</td><td>20 ft^3</td><td>30 ft^3</td></tr>
</table>

Advantages/Benefits	Disadvantages/Limitation
▪ High community acceptance ▪ Relatively low maintenance requirements ▪ Increases property value ▪ Easily incorporated with other practices ▪ Excellent for soils	▪ Preserved trees must be protected during construction ▪ Must be within LOD ▪ Must maintain tree health and replace trees as necessary
Components	**Design considerations**
▪ Inventory of existing trees ▪ Identification of trees to preserve or plant ▪ Preference for Special trees ▪ Average tree spread	▪ Inventory of existing trees ▪ Identification of trees to preserve or plant ▪ Preference for Special trees ▪ Slope-steep slopes must be terraced/benched ▪ Maintenance access
Maintenance Activities	
▪ If staked during establishment, remove stakes within 1 year of planting	▪ Maintain appropriate mulch cover ▪ Ensure tree health and replace trees as necessary

[1]*Credited pollutant load removal*

**Per planted/preserved tree*

Easily combined with other practices, tree planting and preservation provide stormwater interception, beauty, and shade, thereby increasing aesthetics and property values. See Figure 4.57

Figure 4.57. Tree Planting and Preservation in Bioretention (photo: Center for Watershed Protection)

Definition. *(no changes)*

4.14.1 Preserving Existing Trees during Construction

The preferred method for increasing tree cover at a development site is to preserve existing trees during construction, particularly where mature trees are present. Existing trees are preserved during construction through a four-step process:

1. Inventory existing trees.
2. Identify trees to preserve.
3. Protect trees and soil during construction.
4. Protect trees after construction.

Inventory Existing Trees. – Protect Trees and Soil During Construction. *(no changes)*

Protect Trees After Construction. Maintenance covenants, as described below, are required to ensure that preserved trees are protected. Additionally, trees credited for stormwater retention must be included in the stormwater management plan. If trees die, they must be replaced with a tree of similar mature spread no longer than 6 months from time of death in an appropriate location.

4.14.2 Planting Trees *(no changes)*

4.14.3 Tree Inspection Criteria *(no changes)*

4.14.4 Tree Maintenance Criteria *(no changes)*

4.14.5 Tree Stormwater Compliance Calculations *(no changes)*

4.14.6 References *(no changes)*

4.15 Proprietary Practices *(no changes)*

4.16 Conservation Area

If a site includes a Conservation Area which is protected under a conservation easement or equivalent form of protection, a portion of the conservation area may be "removed" from the site for the purposes of calculating the stormwater retention volume (SWRv). There are four scenarios that could qualify for a conservation area credit. The portion of the conservation area that is eligible to be removed from the SWRv calculation is any area that is not already protected from development by any Federal, State, County, and/or Town agency/code/requirement/restriction.

The process of "removing" a portion of the conservation area is completed with the following revision to Equation 3.2 (SWRv equation), as shown in equation 4.32.

Equation 4.32. Stormwater retention volume (SWRv) equation for conservation areas

$$SWRv = \frac{P \times \left[\left(R_{V_I} \times I\right) + \left(R_{V_C} \times C\right) + \left(R_{V_N} \times N\right)\right]}{12} \times \left(\frac{A_T - (A_C \times Credit)}{A_T}\right)$$

Where:

SWRv = Volume required to be retained (cubic feet)

P = Depth of rainfall event for the designated watershed protection area (85th or 95th percentile rain event)

Rv_I = Runoff coefficient for impervious cover and BMP cover based on SCS hydrologic soil group (HSG) or soil type

I = Impervious cover surface area (square feet)

Rv_C = Runoff coefficient for compacted cover based on soil type

C = Compacted cover surface area (square feet)

Rv_N = Runoff coefficient for forest/open space based on soil type

N = Natural cover surface area (square feet)

12 = Conversion factor (inches to feet)

A_T = Total site area, sum of I, C, and N (square feet)

A_C = Total area of conservation easement or equivalent form of protection (square feet)

Credit= Credit awarded for the type of conservation – 100% for Scenarios 1 and 4, and 50% for Scenarios 2 and 3 below (insert credit as a fraction – 1.0 or 0.5).

There are four scenarios that could qualify for a conservation area credit. All conservation areas must have a contiguous area of 10,000 square feet or more to be eligible for these credits.

Scenario 1: Natural Conservation Area

Scenario 1 is applicable if a portion of the post-developed area is left in its natural condition and protected, in perpetuity, by a conservation easement or equivalent form of protection. If this scenario is applicable, subtract 100% of the protected natural area from the total site area when calculating the SWRv, using Equation 4.32 above.

Scenario 2: Reforestation/Revegetation

Scenario 2 is applicable if a portion of the post-developed area employs site reforestation/revegetation and is protected, in perpetuity, by a conservation easement or equivalent form of protection. If this application is used alone, subtract 50% of the reforested/revegetated area from the total site area when calculating the SWRv, using Equation 4.32 above.

Scenario 3: Soil Restoration

Scenario 3 is applicable if a portion of the post-developed area employs soil restoration and is protected, in perpetuity, by a conservation easement or equivalent form of protection. If this application is used alone, subtract 50% of the soil restoration area from the total site area when calculating the SWRv, using Equation 4.32 above.

Scenario 4: Reforestation/Revegetation & Soil Restoration

Scenario 4 is applicable if the same portion of the post-developed area employs site reforestation/revegetation as well as soil restoration and is protected, in perpetuity, by a conservation easement or equivalent form of protection, subtract 100% of the acres of development with restored soils in a reforested and revegetated area from the total site area when calculating the SWRv, using Equation 4.32 above.

4.16.1 ~~Scenario 1: Natural Conservation Area~~Planning and Design Criteria – Reforestation/Revegetation

~~Scenario 1 is applicable if a portion of the post-developed area is left in its natural condition and protected, in perpetuity, by a conservation easement or equivalent form of protection. If this scenario is applicable, subtract 100% of the protected natural area from the total site area when calculating the SWRv.~~ Site reforestation/revegetation refers to the process of planting trees, shrubs and other native vegetation in disturbed pervious areas to restore them to their pre-development conditions. The process can be used to help establish mature native plant communities (e.g., forests) in pervious areas that have been disturbed by clearing, grading and other land disturbing activities.

The reforestation/re-vegetation process used on a development site must meet all of the following criteria to be eligible for the stormwater management "credits" described above:

General Planning and Design

- Reforested/revegetated areas should not be disturbed after construction (except for disturbances associated with landscaping or removal of invasive vegetation).
- Reforested/revegetated areas should be protected, in perpetuity, from the direct impacts of the land development process by a legally enforceable conservation instrument (e.g., conservation easement, deed restriction).

Landscaping

- A soil test should be performed to determine what type of vegetation can be supported by the soils in the area to be reforested/revegetated and/or what soil amendments will be required.
- A landscaping plan should be prepared by a qualified licensed professional for all reforested/revegetated areas. The landscaping plan should be reviewed and approved by the local development review authority prior to construction.
- Landscaping commonly used in site reforestation/revegetation efforts includes native trees, shrubs and other herbaceous vegetation. Because the goal of the site reforestation/revegetation process is to establish a mature native plant community (e.g., forest), managed turf cannot be used to landscape reforested/revegetated areas.
- Methods used for site reforestation/revegetation should achieve at least 75 percent vegetative cover one year after installation.

A long-term vegetation management plan should be developed for all reforested/revegetated areas. The plan should clearly specify how the area will be maintained in an undisturbed, natural state over time. Plan should include method for watering during plant establishment period of one to two years.

4.16.2 ~~Reforestation/Revegetation~~Planning and Design Criteria – Soil Restoration

~~Scenario 2 is applicable if a portion of the post-developed area employs site reforestation/revegetation and is protected, in perpetuity, by a conservation easement or equivalent form of protection. If this application is used alone, subtract 50% of the reforested/revegetated area from the total site area when calculating the SWRv.~~ Soil restoration refers to the process of tilling and adding compost and other amendments to soils to restore them to their pre-development conditions, which improves their ability to reduce post-construction stormwater runoff rates, volumes and pollutant loads. The soil restoration process can be used to improve the hydrologic conditions of pervious areas that have been disturbed by clearing, grading and other land disturbing activities.

The soil restoration process used on a development site must meet all of the following criteria to be eligible for the stormwater management “credits” described above:

General Planning and Design

- To avoid damaging existing root systems, soil restoration should not be performed in areas that fall within the drip line of existing trees.

- Compost should be incorporated into existing soils, using a rototiller or similar equipment, to a depth of 18 inches and at an application rate necessary to obtain a final average organic matter content of 8%-12%. Required application rates can be determined using a compost calculator, such as the one provided on the following website: https://www.soilsforsalmon.org/resources. Other calculations are available online.
- Only well-aged composts that have been composted for a period of at least one year should be used to amend existing soils. Composts should be stable and show no signs of further decomposition.
- Composts used to amend existing soils should meet the following specifications (most compost suppliers will be able to provide this information):
    - Organic Content Matter: Composts should contain 35%-65% organic matter.
    - Moisture Content: Composts should have a moisture content of 40%-60%.
    - Bulk Density: Composts should have an "as-is" bulk density of 40-50 pounds per cubic foot (lb/cf). In composts that have a moisture content of 40%-60%, this equates to a bulk density range of 450-800 pounds per cubic yard (lb/cy), by dry weight.
    - Carbon to Nitrogen (C:N) Ratio: Composts should have a C:N Ratio of less than 25:1.
    - pH: Composts should have a pH of 6-8.
    - Cation Exchange Capacity (CEC): Composts should have a CEC that exceeds 50 milliequivalents (meq) per 100 grams of dry weight.
    - Foreign Material Content: Composts should contain less than 0.5% foreign materials (e.g., glass, plastic), by weight.
    - Pesticide Content: Composts should be pesticide free.
- Biosolids (except Class A biosolids) and composted animal manure should not be used to amend existing soils.
- Composts used to amend existing soils should be provided by a member of the U.S. Composting Seal of Testing Assurance program. Additional information on the Seal of Testing Assurance program is available on the following website: http://www.compostingcouncil.org.

Landscaping

- Vegetation commonly planted on restored pervious areas includes turf, shrubs, trees and other herbaceous vegetation. Although managed turf is most commonly used, site planning and design teams are encouraged to use trees, shrubs and/or other native vegetation to help establish mature native plant communities (e.g., forests) in restored pervious areas.
- Methods used to establish vegetative cover within a restored pervious area should achieve at least 75 percent vegetative cover one year after installation.
- To help prevent soil erosion and sediment loss, landscaping should be installed immediately after the soil restoration process is complete. Temporary irrigation may be needed to quickly establish vegetative cover on a restored pervious area.

4.16.3 ~~Scenario 3: Soil Restoration~~Other Design Considerations

~~Scenario 3 is applicable if a portion of the post-developed area employs soil restoration and is protected, in perpetuity, by a conservation easement or equivalent form of protection. If this application is used alone, subtract 50% of the soil restoration area from the total site area when calculating the SWRv.~~

When conducting sitewide hydrologic and hydraulic analysis for the 2, 10, 25, 50, and 100-year, 24-hour

storm events to control post-development peak runoff discharge to the predevelopment runoff rates, do NOT remove the conservation area. It should be included in the analysis to adequately size stormwater detention for the site.

- *Reforestation/Revegetation & Natural Conservation Area*: Assume that the post-development hydrologic conditions of any restored and reforested/revegetated areas and natural conservation areas are equivalent to those of a similar cover type (e.g., meadow, brush, woods) in good condition.
- *Soil Restoration*: Assume that the post-development hydrologic conditions of any restored pervious areas are equivalent to those of open space (e.g., lawns, parks, golf courses) in good condition.

~~**4.16.4 Scenario 4: Reforestation/Revegetation & Soil Restoration**~~

~~Scenario 4 is applicable if the same portion of the post-developed area employs site reforestation/revegetation as well as soil restoration and is protected, in perpetuity, by a conservation easement or equivalent form of protection, subtract 100% of the acres of development with restored soils in a reforested and revegetated area from the total site area when calculating the SWRv.~~

Chapter 5. Erosion & Sediment Control

Sedimentation involves three basic geologic processes: erosion, transportation, and deposition. These are natural geologic phenomena; however, land development activities may initiate severe, highly undesirable and damaging alterations in the natural sedimentation cycle by drastically accelerating the erosion and transportation process. Receiving waters are the final destination for sediment transport and deposition. However, natural streams and lakes are not capable of handling the excessive sediments created by this accelerated cycle. Therefore, excessive sediment loads result in turbid waters and heavy deposition over the substrate. The impact of these events directly affects the propagation of aquatic life, which relies on clear substrates and water to feed and reproduce. Sediment-laden waters affect human activities through the degradation of waters used for aquatic recreation and sport fishing and complicate water treatment processes. Consequently, minimizing the occurrence of erosion and effective control of sediment transport is imperative to all.

5.1 Sedimentation Cycle *(no changes)*

5.2 Factors Influencing Erosion *(no changes)*

5.3 Concepts of Erosion & Sediment Control

Principles of erosion and sedimentation control are based on minimizing the effects of the soil and climatologic factors just discussed. None of the following concepts provide a singular solution for controlling those factors, nor can they all be performed at every site. However, the integration of as many concepts as possible provides the most effective erosion and sedimentation control:

A. Compatible Site Planning
- Minimize development within sensitive areas (e.g. highly erosive soils).
- Limit the length and steepness of the designed slopes.
- Maintain natural vegetative cover when possible.

B. Disturbed Areas Reduction
- Minimize the extent of the disturbed area and the duration of exposure.
- Phase or stage development so that only the areas that are actively being developed are disturbed.
- Minimize large or critical area grading during the season of maximum erosion potential.

C. Disturbed Areas Protection
- Complete grading as quickly as possible.
- Establish permanent vegetation as soon as possible on disturbed areas.
- Divert runoff from disturbed areas.

D. Sediment Retention within Site Boundaries
- Filter runoff as it flows from a disturbed area.
- Impound sediment-laden runoff temporarily so that the soil particles are deposited onsite.

The NPDES Phase II storm water regulations enacted by the Clean Water Act of 1972 and promulgated by Stormwater Phase II Final Rule (1999) require that any activity disturbing an acre or greater of land, or a smaller project part of a larger common plan for development or sale, obtain NPDES construction permit coverage. This regulation differs somewhat from the South Carolina state regulations relating to areas of

disturbance. Any land disturbing activity in the Town of Bluffton that meets the aforementioned criteria of one acre or more of disturbance will need to ~~will~~ comply with the state process for permitting. Application and issuance of an approved permit under the South Carolina state regulations for erosion and sedimentation control will meet the requirements for coverage under NPDES Phase II as well (~~SCDHEC~~SCDES, ~~2012~~2021).

5.4 General Criteria

All construction site activities must adhere the ~~SCDHEC~~SCDES General Permit SC0010000 for Large and Small Site Construction Activities. In addition, the Town of Bluffton will require as a minimum, implementation of the following construction site BMPs:

Single Family Development, not part of a larger common plan of development:

1. Silt Fencing buried a minimum of 6 inches below disturbed grade, where applicable;
2. In areas where more than two feet of fill material has been placed or in areas adjacent to all wetlands, silt fencing meeting the requirements of SCDOT must be used;
3. Temporary gravel driveways a minimum of 15 feet by 10 feet, where applicable; and
4. Sediment barriers surrounding all catch basins or drop inlets on site and sediment ~~socks~~tubes on all catch basins or drop inlets adjoining to the site. Sediment tubes containing rubber tires are not permitted for use as inlet protection.
5. Two rows of silt fence are required between land disturbing activities and adjacent wetland buffers.

Single Family and Multi-Family Development, part of a larger common plan of development, and Non-residential Development:

1. Silt Fencing buried a minimum of 6 inches below disturbed grade;
2. Temporary gravel driveways a minimum of 15 feet by 10 feet;
3. Sediment barriers surrounding all catch basins or drop inlets on site and sediment ~~socks~~ tubes on all catch basins or drop inlets adjoining to the site. Sediment tubes containing rubber tires are not permitted for use as inlet protection;
4. Flow dissipation devices, such as check dams, in all swales and ditches;
5. Temporary stabilization shall be placed within 7 days after construction activity is complete unless construction activity is going to resume within 21 days;
6. Floating pump suctions for all temporary or permanent ponds or pumping of excavations;
7. Discharge velocities shall be reduced to provide non-erosive flows from dewatering for all temporary or permanent ponds or pumping of excavations;
8. No more that 25 Nephelometric turbidity units (NTU) difference between upstream and downstream monitoring sites for surface water(s) receiving stormwater discharge(s). Stormwater discharge(s) not directly received by a surface water shall have a value of no more than 25 NTU's.
9. Site inspections must be performed by a Town of Bluffton qualified individual. Copies of inspection reports shall be provided to the Town of Bluffton within 7 days of inspection;
10. Temporary stockpile areas and appropriate BMPs to be identified on plans; and
11. Two rows of silt fence are required between land disturbing activities and adjacent ~~wetlands~~ wetland buffers.

5.5 References

South Carolina Department ~~of Health and~~ Environmental ~~Control~~ Services(~~DHEC~~SCDES). ~~2012~~2021. NPDES General Permit for Stormwater Discharges from Construction Activities SCR100000. Retrieved from: https://des.sc.gov/sites/des/files/media/document/BOW_NPDESStormwaterDischargesGP_01292021_0.pdf ~~https://www.scdhec.gov/sites/default/files/docs/Environment/docs/CGP-permit.pdf~~

Chapter 6. Enforcement & Violations *(no changes)*

Appendix A. Southern Lowcountry Post Construction Stormwater Ordinance

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Post-Construction Stormwater Management Ordinance for the Southern Lowcountry Region

Description: This ordinance addresses post-construction stormwater management in the Southern Lowcountry Region, defined as the jurisdictional boundaries of Beaufort County, Jasper County, City of Beaufort, Town of Bluffton, City of Hardeeville, and Town of Port Royal. The ordinance establishes requirements for stormwater plans that are to be submitted before land development, redevelopment or major substantial improvement commences. The plans document how post-construction stormwater runoff quality and quantity will be effectively managed according to performance criteria described in the Ordinance and *Southern Lowcountry Design Manual*. Guidelines for inspection, maintenance, and violations are also included and these requirements are hereby incorporated herein. The ordinance incorporates by reference the *Southern Lowcountry Stormwater Design Manual* and technical specifications for stormwater system design.

Section A1. General Provisions

1.1. Findings of Fact

It is hereby determined that:

1) Land development or redevelopment activities can alter the hydrologic response of local watersheds by increasing:
    a. stormwater runoff rates, volumes, and pollutant loads;
    b. flooding;
    c. channel erosion;
    d. pollutant transport and deposition in rivers and streams, wetlands, and estuaries;
    e. fluctuations in salinity concentrations and productivity in estuaries; and
    f. beach contamination and subsequent serious threats to human health.
2) Land development or redevelopment activities can alter the hydrologic response of local watersheds, increasing stormwater runoff rates and volumes, and, consequently, decreasing the amount of rainfall that is available to recharge shallow groundwater aquifers;
3) Without proper mitigation in place, some discharges which end up in stormwater management systems are not stormwater discharges and can carry with them harmful metals and other contaminants;
4) The negative impacts of land development or redevelopment activities on local aquatic resources can adversely affect the health, safety and general welfare of the general public;
5) The negative impacts of land development or redevelopment can be controlled and minimized through the regulation of stormwater runoff rates, volumes, and pollutant loads on development and redevelopment sites;

6) Communities within the *Southern Lowcountry* Region are required to comply with a number of State and Federal regulations that require the adverse impacts of stormwater runoff rates, volumes and pollutant loads to be controlled and minimized;

7) Therefore, the Town of Bluffton has determined that it is in the public interest to control and minimize the adverse impacts of land development or redevelopment activities and has established this set of stormwater management provisions to regulate post-construction stormwater runoff rates, volumes and pollutant loads on development and redevelopment sites.

1.2. Purpose and Intent

The purpose of this ordinance is to protect and maintain the integrity of local aquatic resources, and, consequently, the health, safety and welfare of the general public, by establishing minimum stormwater management provisions that control and minimize the adverse impacts of land development or redevelopment activities. This ordinance seeks to meet that purpose through the following objectives:

1) Establish decision-making processes surrounding land development or redevelopment activities that protect the integrity of local aquatic resources;

2) Establish minimum post-development stormwater management standards and design criteria in the *Southern Lowcountry Stormwater Design Manual* that will reduce flooding, channel erosion, and pollutant transport and deposition in local aquatic resources;

3) Establish minimum post-development stormwater management standards and design criteria in the *Southern Lowcountry Stormwater Design Manual* that will help preserve existing hydrologic conditions on development and redevelopment sites;

4) Establish design criteria in the *Southern Lowcountry Stormwater Design Manual* for structural and nonstructural stormwater management practices that can be used to meet the minimum post-development stormwater management standards and design criteria;

5) Establish that Better Site Design (BSD) and site planning has been incorporated, documented, and presented in the development/redevelopment design process.

6) Maintain structural and nonstructural stormwater management practices to ensure that they continue to function as designed and pose no threat to public safety; and,

7) Streamline administrative procedures for the submission, review, approval and disapproval of stormwater management plans and for the inspection of approved land development projects.

8) If any of the stormwater management standards, as defined in this Ordinance and in the *Southern Lowcountry Stormwater Design Manual* cannot be attained on the site (due to impractical site characteristics or constraints), a Maximum Extent Practicable analysis shall be prepared and submitted by the applicant for review, discussion, and ultimate approval of the jurisdiction. Any uncontrolled post-development stormwater quantity or quality volume shall be intercepted and treated in one or more off-site stormwater management practices or a fee-in-lieu shall be required.

9) The stormwater management practices of approved plans shall provide volume control and at least an eighty (80) percent reduction in total suspended solids loads, thirty (30) percent reduction of total nitrogen load, and sixty (60) percent reduction in bacteria load.

1.3. Applicability and Exemptions

1) This ordinance shall be applicable to any new development or redevelopment activity that meets one or more of the ~~following~~ criteria as outlined in Section 1.4.1 of the *Southern Lowcountry Stormwater Design Manual*, unless exempt pursuant to Section 1.3~~4~~.2 ~~below:~~ of the Southern Lowcountry Stormwater Design Manual.

   a. ~~New development that involves the creation of 5,000 square feet of impervious surface or that involves other land disturbing activities of one acre or more.~~

   b. ~~Redevelopment that involves the creation, addition or replacement of 5,000 square feet or more of impervious surface or that involves other land disturbing activities of one acre or more.~~

   c. ~~New development or redevelopment, regardless of size, that is part of a larger common plan of development, even though multiple, separate and distinct land disturbing activities may take place at different times and on different schedules.~~

   d. ~~A major substantial improvement of an existing property.~~

~~2) The following activities are exempt from this ordinance:~~

   ~~a. Any maintenance, alteration, renewal, or improvement as approved by Town of Bluffton which does not alter existing drainage pattern, does not result in change or adverse impact on adjacent property, or create adverse environmental or water quality impacts, and does not increase the temperature, rate, quality, or volume or location of stormwater runoff discharge.~~

   ~~b. Projects that are exclusively for agricultural or silvicultural activities within areas zoned for these agricultural and silvicultural uses;~~

   ~~c. Agricultural activity not involving relocation of drainage canals;~~

   ~~d. Redevelopment that constitutes the replacement of the original square footage of impervious cover and original acreage of other land development activity when the original development is wholly or partially lost due to natural disaster or other acts of God occurring after September 14, 2021; and,~~

   ~~e. Work by agencies or property owners required to mitigate emergency flooding conditions. If possible, emergency work should be approved by the duly appointed officials in charge of emergency preparedness or emergency relief. Property owners performing emergency work will be responsible for any damage or injury to persons or property caused by their unauthorized actions. Property owners will stabilize the site of the emergency work within 60 days, or as soon as reasonable, following the end of the emergency period.~~

1.4. Designation of Ordinance Administrator

The UDO Administrator is hereby appointed to administer and implement the provisions of this ordinance.

1.5. Compatibility with Other Regulations

This ordinance is not intended to interfere with, modify or repeal any other ordinance, rule, regulation, or other provision of law. The requirements of this ordinance should be considered minimum requirements, and where any provision of this ordinance imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control.

1.6. Severability

If the provisions of any section, subsection, paragraph, subdivision, or clause of this ordinance shall be adjudged invalid by a court of competent jurisdiction, such judgment shall not affect or invalidate the remainder of any section, subsection, paragraph, subdivision, or clause of this ordinance.

1.7. Stormwater Management Manual

The Town of Bluffton will utilize the standards, criteria, and information presented in the latest edition of the *Southern Lowcountry Stormwater Design Manual or applicable addendums, appendices, technical memorandums, and/or applicable revisions that may be directly applied* for the proper implementation of this ordinance. This Manual may be updated and expanded periodically, based on improvements in science, engineering, monitoring, local experience, and state or federal water quality requirements.

The procedures and standards set forth in this Stormwater Management Ordinance, and the policies, procedures, and design data specified in the *Southern Lowcountry Stormwater Design Manual* provide the minimum standards to be adhered to by land development and redevelopment activities under the jurisdiction of Town of Bluffton.

The *Southern Lowcountry Stormwater Design Manual* identifies Special Watershed Protection Areas that have standards and criteria specific to land development or redevelopment in the areas.

Section A2. Definitions

"Administrator" means the person appointed by each jurisdiction to execute the requirements of this Ordinance and Stormwater Design Manual.

"Applicant" means a property owner or other responsible person who has submitted an application for a post-development stormwater management permit.

"Best management practice" (BMP) – Structural or non-structural practice that minimizes the impact of stormwater runoff on receiving waterbodies and other environmental resources, especially by reducing runoff volume and the pollutant loads carried in that runoff.

"Better Site Design" means site design techniques that can be used during the site design process to minimize the creation of new impervious cover and reduce a site's impact on the watershed. Better site design techniques include reduced clearing and grading limits, roadway lengths and widths, and parking lot and building footprints.

"Better Site Planning" means site planning techniques that can be used during the site planning process to protect and conserve natural areas that are critical in preserving pre-development site hydrology and reducing a site's impact on the watershed. Better site planning techniques include conserving significant stands of trees and other vegetation, natural drainage features, and riparian buffers.

"Building" means any structure, either temporary or permanent, having walls and a roof, designed for the shelter of any person, animal, or property, and occupying more than 100 square feet of area.

"Channel" means a natural or artificial watercourse with a definite bed and banks that conducts continuously or periodically flowing water.

"Dedication" means the deliberate appropriation of property by its owner for general public use.

"Detention" means the temporary storage of stormwater runoff in a stormwater management practice for the purpose of controlling the peak discharge.

"Developer" means a person who undertakes land development or redevelopment activities.

"Development" is a term that means the physical improvement of land by land disturbing activities or construction of infrastructure, buildings and structures allowed through site plan, development plan or subdivision approval.

"Drainage Easement" means an easement appurtenant or attached to a tract or parcel of land allowing the owner of adjacent tracts or other persons to discharge stormwater runoff onto the tract or parcel of land subject to the drainage easement.

"Easement" means a legal right granted by a land owner to a grantee allowing the use of private land for conveyance or treatment of stormwater runoff and access to stormwater management practices.

"Erosion and Sedimentation Control Plan" means a plan that is designed to minimize the accelerated erosion and sediment runoff at a site during land development or redevelopment activities.

"Evapotranspiration" means the loss of water to the atmosphere by both evaporation and transpiration, through the uptake of water by plants.

"Existing Conditions" means land use and land cover conditions at the time of a land development or redevelopment permit application.

"Extreme Flood Protection" means measures taken to prevent adverse impacts from large low-frequency storm events with a return frequency of 100 years or more.

"Fee-in-lieu" means a payment collected by approval of a local jurisdiction as an alternative to meeting the requirements of onsite stormwater control facilities.

"Flooding" means a volume of surface water that is too great to be confined within the banks or walls of a conveyance or stream channel and that overflows onto adjacent lands.

"Greenspace" or "**Open Space**" means permanently protected areas of the site that are preserved in a natural state.

"Hydrologic Soil Group (HSG)" means a Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from group A soils, with high permeability and little runoff produced, to group D soils, which have low permeability rates and produce much more runoff.

"Impaired Waters" means those streams, rivers and lakes that currently do not meet their designated use classification and associated water quality standards and as identified in the Clean Water Act Section 303(d) list by the South Carolina Department of Health and Environmental Control.

"Impervious Cover" means a surface composed of any material that impedes or prevents the passive, natural infiltration of water into soil. Impervious surfaces include, but are not limited to, rooftops, buildings, streets, roads, and compacted stone or gravel, except those designed specifically to provide active, engineered infiltration.

"Infill Development" means land development that occurs within designated areas based on local land use, watershed, and/or utility plans where the surrounding area is generally developed, and where the site or area is either vacant or has previously been used for another purpose.

"Infiltration" means the process of percolating stormwater runoff into the subsoil.

"Infiltration Practice" means any stormwater management practice designed to provide active, engineered infiltration of retained water to the subsurface. These stormwater management practices may be above or below grade.

"Inspection and Maintenance Agreement and Covenant" means a written agreement and covenant providing for the long-term inspection and maintenance of stormwater management facilities and practices on a site or with respect to a land development or redevelopment project, which when properly recorded in the deed records constitutes a restriction on the title to a site or other land involved in a development project.

"Land Development" means any change in land cover, including, but not limited to, clearing, digging, grubbing, stripping, removal of vegetation, dredging, grading, excavating, filling, and paving, that alters the hydrologic response of local watersheds.

"Land Development Activities" means those actions or activities that comprise, facilitate, or result in land development.

"Land Development Project" means a discrete land development undertaking.

"Larger Common Plan of Development" means a common plan for development or sale. It identifies a site where multiple separate and distinct construction activities (areas of disturbance) are occurring on contiguous areas. Such sites may have one operator or owner or several operators and owners. Construction activities may take place at different times on different schedules, in separate stages, and/ or in separate phases, and/or in combination with other construction activities. Each developer, operator or owner for each site or project determined to be a part of a larger common plan of development are subject to land development approval and permitting requirements as defined herein and the Southern Lowcountry Design Manual.

"Low Impact Development" means small-scale, distributed stormwater management practices that can be used during the site design process to replicate existing hydrologic conditions, help offset the creation of new impervious cover, and reduce a site's impact on the watershed.

"Major Substantial Improvement" is a renovation or addition to a structure that meets both of the following cost and size thresholds: a) construction costs for the building renovation/addition are greater than or equal to 50% of the pre-project assessed value of the structure as developed using current Building Valuation Data of the International Code Council, and b) combined footprint of structure(s) exceeding the cost threshold and any land disturbance is greater than or equal to 5,000 square feet.

"Maximum Extent Practicable (MEP)" refers to the extent of efforts to comply with local post-construction stormwater management requirements. Elements of MEP indicate serious intent to comply and include selecting and implementing design elements to address site restrictions. Maximum extent practicable is defined as the following:

- Proponents of redevelopment projects have made all reasonable efforts to meet the applicable *Southern Lowcountry Stormwater Design Manual*;
- They have made a complete evaluation of possible stormwater management measures including environmentally sensitive site design that minimize land disturbance and impervious surfaces, low impact development techniques, and stormwater best management practices (BMPs); and,

- If not in full compliance with the applicable Standards, they are implementing the highest practicable level of stormwater management.

"New Development" means a land development activity on a previously undeveloped site.

"Nonpoint Source Pollution" means a form of water pollution that does not originate from a discrete point, such as a sewage treatment plant or industrial discharge, but involves the transport of pollutants, such as sediment, fertilizers, pesticides, heavy metals, oil, grease, bacteria, nutrients, organic materials, and other contaminants from land to surface water and groundwater via mechanisms such as precipitation, stormwater runoff and leaching. Nonpoint source pollution is a by-product of land use practices, such as agriculture, silviculture, mining, construction, subsurface disposal, suburban and urban runoff.

"Nonstructural Stormwater Management Practice" or **"Nonstructural Practice"** means any natural or planted vegetation or other nonstructural component of the stormwater management plan that provides for or enhances stormwater quantity and/or quality control or other stormwater management benefits and includes, but is not limited to, riparian buffers, open and greenspace areas, overland flow filtration areas, natural depressions, and vegetated channels.

"Off-Site Facility" means a stormwater management facility located outside the boundaries of the site.

"On-Site Facility" means a stormwater management facility located within the boundaries of the site.

"Overbank Flood Protection" means measures taken to prevent an increase in the frequency and magnitude of out-of-bank flooding (i.e. flow events that exceed the capacity of the channel and enter the floodplain) and that are intended to protect downstream properties from flooding for the 2-year through 25-year frequency storm events.

"Owner" means the legal or beneficial owner of a site, including, but not limited to, a mortgagee or vendee in possession, receiver, executor, trustee, lessee or other person, firm, or corporation in control of the site.

"Permit" means the permit issued by the <*local jurisdiction*> to the applicant, which is required for undertaking any land development or redevelopment activity.

"Person" means, except to the extent exempted from this ordinance, any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, city, county or other political subdivision of the State, any interstate body, or any other legal entity.

"Post-development" refers to the time period or the conditions that may reasonably be expected or anticipated to exist, after completion of the land development or redevelopment activity on a site.

"Pre-development" refers to the time period or the conditions that exist, on a site prior to land development. For the purpose of determining pre-development surface runoff conditions, it is assumed that predevelopment is meadow conditions.

"Project" means a land development or redevelopment project.

"Recharge" means the replenishment of groundwater aquifers.

"Redevelopment" means a change to previously existing, improved property, including but not limited to the building of structures, filling, grading, paving, or excavating, but excluding ordinary maintenance

activities, remodeling of buildings on the existing footprint, resurfacing of paved areas, and exterior changes or improvements that do not materially increase or concentrate stormwater runoff or cause additional nonpoint source pollution..

"Regional Stormwater Management Facility" or **"Regional Facility"** means stormwater management facilities designed to control stormwater runoff from multiple properties, where the owners or developers of the individual properties may assist in the financing of the facility and the requirement for on-site controls in the contributing drainage area is either eliminated or reduced.

"Riparian Buffer" means an area of land at or near a streambank, wetland, or waterbody that has intrinsic water quality value due to the ecological and biological processes it performs or is otherwise sensitive to changes which may result in significant degradation of water quality.

"Runoff" means stormwater runoff.

"Runoff Reduction" means the total annual runoff volume reduced through canopy interception, soil infiltration, evaporation, transpiration, rainwater harvesting, engineered filtration, or extended filtration.

"Site" means the parcel of land being developed, or the portion thereof on which the land development or redevelopment project is located.

"Special Watershed Protection Area" means a watershed or drainage catchment designated by the *Town of Bluffton* to provide specific stormwater management requirements beyond those established in the *Southern Lowcountry Stormwater Design Manual* for the general three watershed protection areas of the Southern Lowcountry.

"Stop Work Order" means an administrative order that requires development activity on a site to be stopped. The extent of the stop work order is determined by the <*local jurisdiction*> and is identified in accompanying details of each Order.

"Stormwater Hotspot" means an area where land use or activities generate highly contaminated runoff with concentrations of pollutants in excess of those typically found in stormwater runoff. The following operations are examples of, but not limited to, stormwater hot spots in this ordinance: car washes, industrial sites, auto repair shops, parking garages, vehicle fueling and storage areas, golf courses, marinas, and transportation equipment repair facilities.

"**Stormwater Management Practice**" means structural and nonstructural practices that control stormwater runoff and provide for or enhance stormwater quantity and/or quality control or other stormwater management benefits.

"Stormwater Management" means the collection, conveyance, storage, treatment, and disposal of stormwater runoff in a manner intended to prevent increased flood damage, streambank channel erosion, habitat degradation, and water quality degradation and to enhance and promote the public health, safety, and general welfare.

"Stormwater Management Facility" means any infrastructure that controls or conveys stormwater runoff.

"Stormwater Management Plan" means a document describing how existing runoff characteristics will be affected by a land development or redevelopment project and containing measures for complying with the provisions of this ordinance.

"Stormwater Management System" means the entire set of structural and nonstructural stormwater management practices that are used to capture, convey, and control the quantity and quality of the stormwater runoff.

"Stormwater Retrofit" means a stormwater management practice designed for an existing development site that previously had either no stormwater management practice in place or a practice inadequate to meet the requirements of the *Southern Lowcountry Stormwater Design Manual*.

"**Stormwater Runoff**" means the flow of surface water resulting from precipitation.

"Structural Stormwater Management Practice" means a structural stormwater management facility or device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release, or the velocity of flow of such runoff.

"Subdivision" means the division of a parcel of land resulting in one or more new lots or building sites for the purpose, whether immediately or in the future, of sale, transfer of ownership, or land development or redevelopment, and includes divisions of land resulting from or made in connection with the layout or development of a new street or roadway or a change in an existing street or roadway.

"Violation" means to transgress conditions of a permit, development plan, maintenance agreement, or local or state statutes.

"Watercourse" means a permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water.

"Watershed Management Plan" means a document, usually developed cooperatively by government agencies and other stakeholders, to protect, restore, and/or otherwise manage the water resources within a particular watershed or subwatershed. The plan commonly identifies threats, sources of impairment, institutional issues, and technical and programmatic solutions or projects to protect and/or restore water resources.

"Watershed Protection Area" means a watershed or drainage catchment designated in the *Southern Lowcountry Stormwater Design Manual* with specific stormwater management requirements that are intended to enhance the quality of development, protect and enhance stormwater quality and management, protect aquatic resources from the negative impacts of land development process, address water quality impairments or a total maximum daily load, as identified by the South Carolina Department of Health and Environmental Control (DHEC), or address localized flooding issues.

Section A3. Permit Procedures and Requirements

3.1 Permit Application Requirements

No owner or developer shall perform any land development or redevelopment activity without first meeting the requirements of this ordinance and the *Southern Lowcountry Stormwater Design Manual* and having been issued a permit from the Town of Bluffton. Unless specifically exempted by this ordinance, any owner or developer proposing a land development or redevelopment activity shall submit to the Town of Bluffton a permit application and accompanying items as dictated in the *Southern Lowcountry Stormwater Design Manual* and Town of Bluffton for that purpose.

The UDO *Administrator* shall use the criteria, and information, including technical specifications and standards, in the *Southern Lowcountry Stormwater Design Manual* as the basis for decisions about

stormwater plans and about the design, implementation and performance of structural and non-structural stormwater systems. The *Southern Lowcountry Stormwater Design Manual* standards shall describe in detail how post-development stormwater runoff will be controlled and managed, the design of all stormwater facilities and practices, the components of a project plan necessary to meet the requirements of this Ordinance and post-construction maintenance and inspection requirements.

3.2 Maximum Extent Practical Guidelines and Process

Maximum extent practicable, or "MEP," is the language of the Clean Water Act that sets the standards to evaluate efforts pursued to achieve pollution reduction to the waters of the United States. It is the determination of this Ordinance that all proposed development and redevelopment sites meet the requirements of the Southern Lowcountry Stormwater Design Manual to achieve reduction of pollution to the waters of the Southern Lowcountry. If it is technically infeasible to do so, the applicant shall document and provide such information to Town of Bluffton for review. Information provided shall demonstrate how a combination of several iterations of Better Site Design and post development stormwater management design scenarios fail to meet the minimum requirements of the Southern Lowcountry Stormwater Design Manual and justification of their determination of infeasibility. Cost is not a viable justification.

The MEP process defined by the Southern Lowcountry Stormwater Design Manual shall be the basis of submittals for plan approval under this Ordinance. The MEP submittal must provide documentable evidence of the process the applicant has performed that demonstrates the restrictions to the use and implementation of BMPs to meet the requirements of this Manual in whole or in part. The consideration for a waiver of this Ordinance's requirements will rely on the MEP submittal and UDO *Administrator* review.

3.3 Performance Bonds

Bonding for the cost of stormwater facilities approved for the proposed development shall be provided in accordance with the Town of Bluffton performance bond and permit issuance process. The Town of Bluffton shall require from the developer a surety or cash bond, irrevocable letter of credit, or other means of security acceptable to the Town of Bluffton prior to the issuance of any building, grading and/or stormwater permit for any land development, redevelopment or major substantial improvement activity requiring a permanent stormwater management system. The bond required in this Section shall include provisions relative to forfeiture for failure to complete work specified in the approved stormwater management design plan, compliance with all of the provisions of this ordinance, other applicable laws and regulations, and any time limitations.

3.4 Waivers

Individuals seeking a waiver from the requirements of this Ordinance may submit to the *(administrator)* a request for a waiver in accordance with the Southern Lowcountry Stormwater Design Manual.

3.5 Fee-in-Lieu

A fee-in-lieu process shall be established by Town of Bluffton for development projects when none or only partial stormwater requirements can be met. The intent of the fee-in-lieu is to perform or construct future stormwater management BMP projects to mitigate impacts resulting from the development

project. The fee-in-lieu may apply in both a waiver and non-waiver development and redevelopment review process.

Section A4. Post-Construction Stormwater Management Criteria

All development and redevelopment sites shall utilize structural and nonstructural stormwater management practices to control and minimize the increased stormwater runoff rates, volumes, and pollutant loads caused by land development in accordance with the criteria presented in the *Southern Lowcountry Stormwater Design Manual*.

For structural and nonstructural stormwater management practices not included in the *Southern Lowcountry Stormwater Design Manual*, or for which pollutant removal and runoff reduction rates have not been provided, the effectiveness of the structural or nonstructural stormwater management practice must be documented through prior studies, literature reviews, or other means and receive approval from the Town of Bluffton before being included in the design of a stormwater management sy stem. In addition, if the site is located in a Watershed Protection Area or a Special Watershed Protection Area the Town of Bluffton may impose additional requirements as deemed necessary, which are located in the *Southern Lowcountry Stormwater Design Manual*.

4.1 Stormwater Volume Control

Some portion of the stormwater runoff generated on a development or redevelopment site shall be captured and retained, reused, or otherwise reduced in order to preserve and/or replicate pre-development site hydrology, recharge shallow groundwater aquifers, promote baseflow to on-site and downstream aquatic resources, and minimize the water quality impacts of land development. Applicants shall follow the runoff reduction, peak flow and extreme flood requirements in the *Southern Lowcountry Stormwater Design Manual*.

4.2 Stormwater Conveyance Systems

Stormwater conveyance systems, which may include but are not limited to culverts, stormwater drainage pipes, catch basins, drop inlets, junction boxes, headwalls, gutters, swales, channels, ditches, and energy dissipaters, shall be provided when necessary for the protection of public right-of-way and private properties adjoining development and redevelopment sites and/or public right-of-ways. Applicants shall consult the latest edition of the *Southern Lowcountry Stormwater Design Manual* for guidance on the design and specification of stormwater conveyance systems.

4.3 Structural Stormwater Management Practices

All structural stormwater management practices shall be selected, designed, constructed, and maintained in accordance with the standards, criteria, and information presented in the latest edition of the *Southern Lowcountry Stormwater Design Manual* and any relevant addenda.

Section A5. Construction of Stormwater Management Systems

The Town of Bluffton is authorized under this Ordinance to require performance bonds for construction of stormwater management systems, as detailed in the *Southern Lowcountry Stormwater Design Manual*.

The Town of Bluffton is authorized under this Ordinance to perform construction inspections including, but not limited to, preconstruction, preclearing, and construction sequence inspections as detailed in the *Southern Lowcountry Stormwater Design Manual*.

The Town of Bluffton is authorized under this Ordinance to perform final construction inspections and require "as built" plans for all permanent stormwater management practices as detailed in the *Southern Lowcountry Stormwater Design Manual*.

Section A6. Ongoing Inspection and Maintenance of Stormwater Management Systems

Under the South Carolina Stormwater Management and Sediment Reduction Act of 1991 (48-14-10, et. seq.), t~~T~~he Town of Bluffton is authorized under this Ordinance to perform and require ongoing inspections and maintenance of stormwater management systems as detailed in the *Southern Lowcountry Stormwater Design Manual* and the Town's Post-Construction BMP Standard Operating Procedure (SOP).

The Town of Bluffton is authorized under this Ordinance to require maintenance inspection reports be submitted electronically one (1) year from the date of as-built certification and thereafter every three (3) years on or before the date of the as-built certification.

The Town of Bluffton is authorized under this Ordinance to require that corrective action and submission of certification of any non-compliant items identified in the maintenance inspection report be completed or communicated within 60 calendar days of inspection.

Section A7. Violations, Enforcement, and Penalties

The Town of Bluffton is authorized under this Ordinance to enforce the provisions of this ordinance as described in Town of Bluffton violations, enforcement and penalties process (UDO Article 8). Any action or inaction that violates the provisions of this ordinance or the requirements of an approved stormwater management design plan, stormwater management inspection and maintenance agreement and plan, or permit may be subject to the enforcement actions as described in the Town's UDO Article 8. Any such action or inaction that is continuous with respect to time is deemed to be a public nuisance and may be abated by injunctive or other equitable relief.