

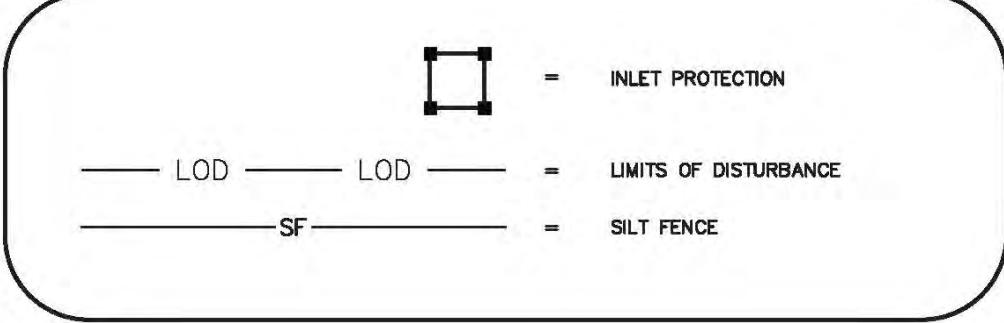
**LIMITS OF DISTURBANCE - 6.99 AC**

**LAT: 34° 14' 56" N  
LONG: 77° 56' 56" W**

**PHASE 2 CONSTRUCTION SEQUENCE**

1. BEGIN PHASE 2 SEDIMENT AND EROSION CONTROL UPON COMPLETION OF CLEARING AND GRUBBING OPERATIONS, ROUGH GRADING OF THE SITE AND INSTALLATION OF THE STORM WATER COLLECTION SYSTEM.
2. MAINTAIN MEASURES FROM PHASE 1 AS SHOWN IN THIS PHASE 2 SEDIMENT AND EROSION CONTROL DRAWING.
3. REMOVE MEASURES FROM PHASE 1 AS SHOWN. STABILIZE THESE AREAS ACCORDING TO THE STABILIZATION MEASURE REQUIRED HEREIN.
4. INSTALL INLET PROTECTION AS SHOWN IN THE PHASE 2 PLAN AND CONSTRUCTION DETAILS.
5. COMPLETE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
6. UPON COMPLETION OF CONSTRUCTION, ESTABLISH PERMANENT GROUND COVER AND OVERALL SITE STABILIZATION.
7. REMOVE THE SEDIMENT AND EROSION CONTROL MEASURES.
8. REFER TO G-002 FOR EROSION AND SEDIMENT CONTROL NOTES AND MAINTENANCE PLAN.

**LEGEND**



For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

1 inch

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

REV.	DESCRIPTION	DATE
G	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	12/20/2018
F	CONTRACTOR BIDDING SET	12/12/2018
E	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITTAL	11/26/2018
D	NEW HANOVER COUNTY SEDIMENT & EROSION CONTROL SUBMITTAL	11/13/2018
C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	11/07/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	10/25/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/31/2018

**FINAL DRAWING FOR REVIEW PURPOSES ONLY**

SEAL

**MCKIM & CREED**  
243 North Front Street  
Wilmington, North Carolina 28401  
Phone: (910)343-1048, Fax: (910)251-8282  
License: F-1222  
www.mckimcreed.com

**dpj**  
RESIDENTIAL

**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

**PHASE 2 SEDIMENT AND EROSION CONTROL**

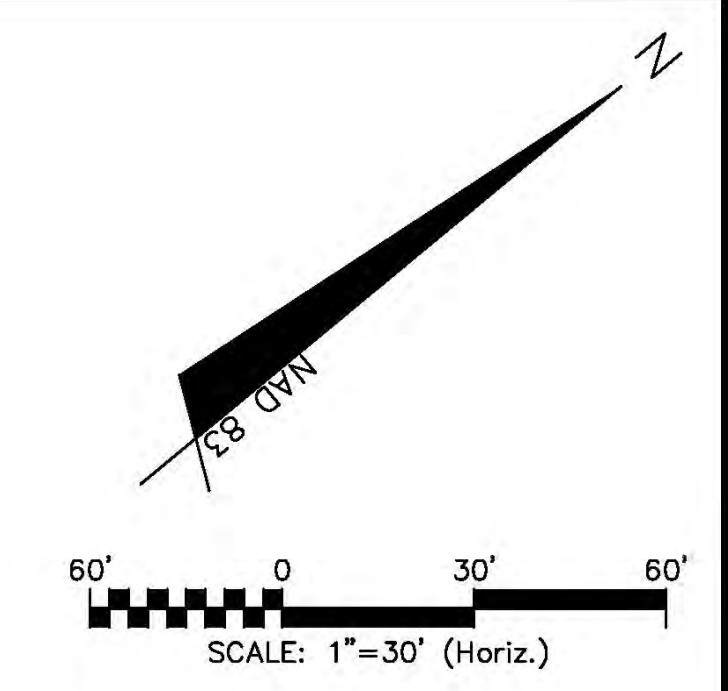
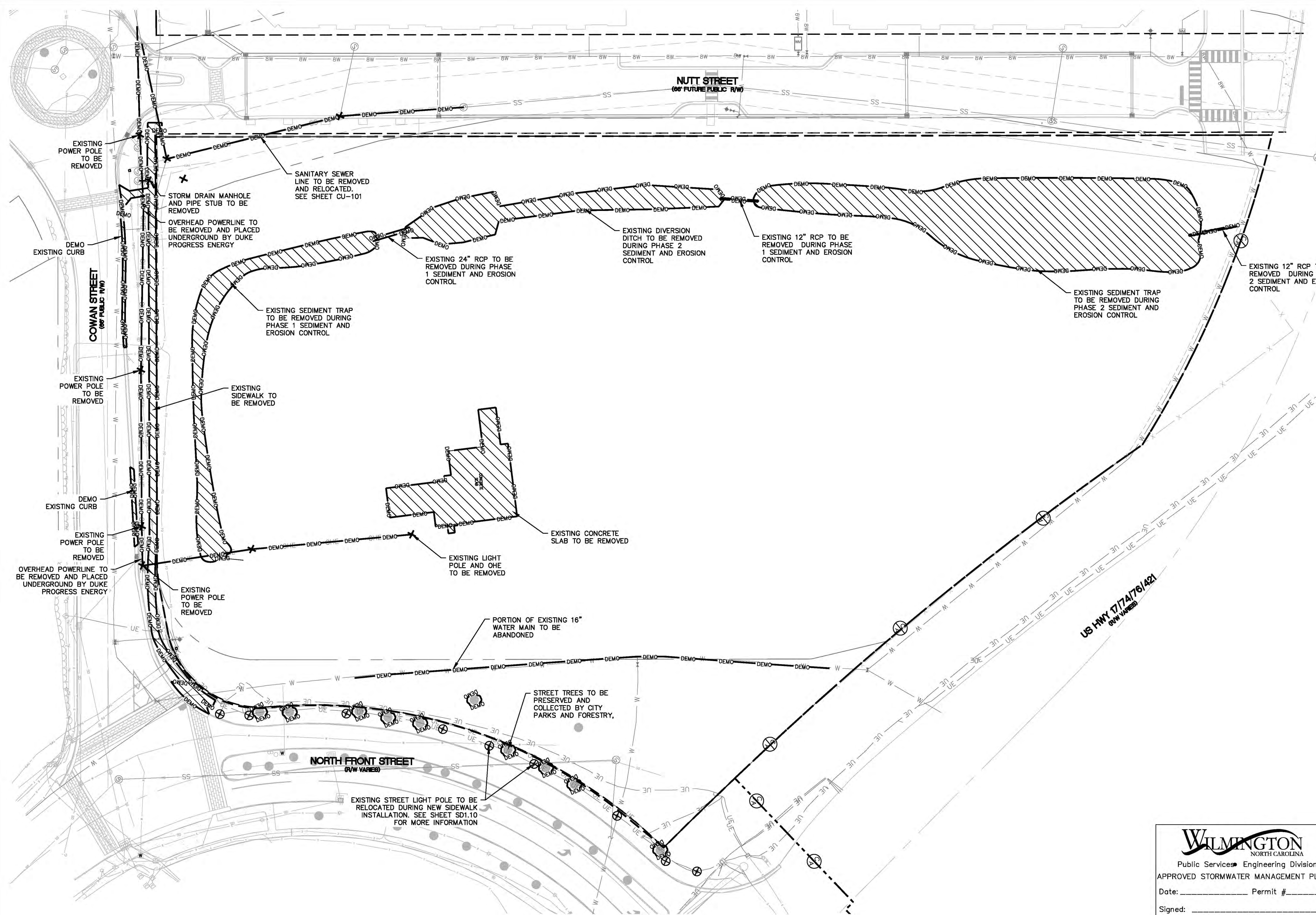
DATE: 12/20/2018  
MCE PROJ. # 7402-0001  
DRAWN: ALM/KCE  
DESIGNED: ALM  
CHECKED: RMC  
PROJ. MGR. KCE

SCALE: HORIZONTAL: 1"=30'  
VERTICAL: N/A

MAC FILE NUMBER: **CE-102**  
DRAWING NUMBER: **8**  
REVISION: **G**

STATUS: **PRELIMINARY DESIGN**  
ISSUED FOR PERMITTING





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1 inch

**WILMINGTON**  
NORTH CAROLINA  
Public Services Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

REV. NO.	DESCRIPTION	DATE
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B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	10/23/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/11/2018

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243 North Front Street  
Wilmington, North Carolina 28401  
Phone: (910)343-1048, Fax: (910)251-8282  
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RESIDENTIAL

**CLINE**  
DESIGN

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

**DEMOLITION PLAN**

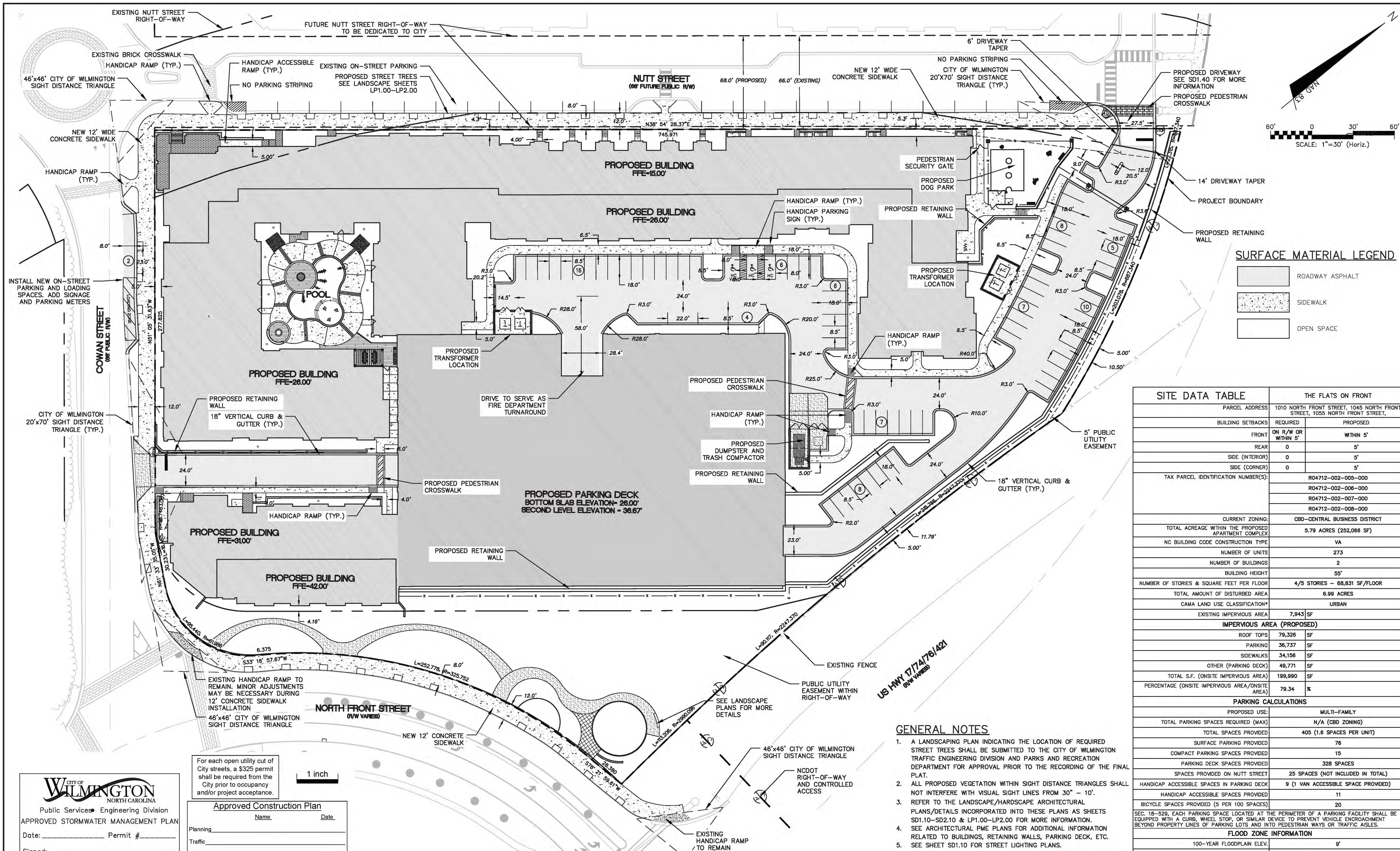
DATE: 12/20/2018  
MCE PROJ. # 7402-0001  
DRAWN ALM/KCE  
DESIGNED ALM  
CHECKED RMC  
PROJ. MGR. KCE

SCALE  
HORIZONTAL: 1"=30'  
VERTICAL: N/A

MAC FILE NUMBER  
CD-101  
DRAWING NUMBER  
9  
REVISION  
G

STATUS: PRELIMINARY DESIGN  
ISSUED FOR PERMITTING





**SURFACE MATERIAL LEGEND**

	ROADWAY ASPHALT
	SIDEWALK
	OPEN SPACE

SITE DATA TABLE		THE FLATS ON FRONT	
PARCEL ADDRESS	1010 NORTH FRONT STREET, 1045 NORTH FRONT STREET, 1055 NORTH FRONT STREET		
BUILDING SETBACKS	REQUIRED	PROPOSED	
FRONT	ON R/W OR WITHIN 5'	WITHIN 5'	
REAR	0	5'	
SIDE (INTERIOR)	0	5'	
SIDE (CORNER)	0	5'	
TAX PARCEL IDENTIFICATION NUMBER(S)	R04712-002-005-000 R04712-002-006-000 R04712-002-007-000 R04712-002-008-000		
CURRENT ZONING	CBD-CENTRAL BUSINESS DISTRICT		
TOTAL ACREAGE WITHIN THE PROPOSED APARTMENT COMPLEX	5.79 ACRES (252,068 SF)		
NC BUILDING CODE CONSTRUCTION TYPE	VA		
NUMBER OF UNITS	273		
NUMBER OF BUILDINGS	2		
BUILDING HEIGHT	55'		
NUMBER OF STORIES & SQUARE FEET PER FLOOR	4/5 STORIES - 68,831 SF/FLOOR		
TOTAL AMOUNT OF DISTURBED AREA	6.99 ACRES		
CAMA LAND USE CLASSIFICATION*	URBAN		
EXISTING IMPERVIOUS AREA	7,943 SF		
<b>IMPERVIOUS AREA (PROPOSED)</b>			
ROOF TOPS	79,326	SF	
PARKING	36,737	SF	
SIDEWALKS	34,156	SF	
OTHER (PARKING DECK)	49,771	SF	
TOTAL S.F. (ONSITE IMPERVIOUS AREA)	199,990	SF	
PERCENTAGE (ONSITE IMPERVIOUS AREA/ONSITE AREA)	79.34	%	
<b>PARKING CALCULATIONS</b>			
PROPOSED USE:	MULTI-FAMILY		
TOTAL PARKING SPACES REQUIRED (MAX)	N/A (CBD ZONING)		
TOTAL SPACES PROVIDED	405 (1.6 SPACES PER UNIT)		
SURFACE PARKING PROVIDED	76		
COMPACT PARKING SPACES PROVIDED	15		
PARKING DECK SPACES PROVIDED	328 SPACES		
SPACES PROVIDED ON NUTT STREET	25 SPACES (NOT INCLUDED IN TOTAL)		
HANDICAP ACCESSIBLE SPACES IN PARKING DECK	9 (1 VAN ACCESSIBLE SPACE PROVIDED)		
HANDICAP ACCESSIBLE SPACES PROVIDED	11		
BICYCLE SPACES PROVIDED (5 PER 100 SPACES)	20		
SEC. 18-529, EACH PARKING SPACE LOCATED AT THE PERIMETER OF A PARKING FACILITY SHALL BE EQUIPPED WITH A CURB, WHEEL STOP, OR SIMILAR DEVICE TO PREVENT VEHICLE ENCRoACHMENT BEYOND PROPERTY LINES OF PARKING LOTS AND INTO PEDESTRIAN WAYS OR TRAFFIC AISLES.			
<b>FLOOD ZONE INFORMATION</b>			
100-YEAR FLOODPLAIN ELEV.	9'		
PROPOSED BUILDING FINISHED FLOOR ELEV.	SEE THIS SHEET		

**GENERAL NOTES**

- A LANDSCAPING PLAN INDICATING THE LOCATION OF REQUIRED STREET TREES SHALL BE SUBMITTED TO THE CITY OF WILMINGTON TRAFFIC ENGINEERING DIVISION AND PARKS AND RECREATION DEPARTMENT FOR APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAN.
- ALL PROPOSED VEGETATION WITHIN SIGHT DISTANCE TRIANGLES SHALL NOT INTERFERE WITH VISUAL SIGHT LINES FROM 30' - 10'.
- REFER TO THE LANDSCAPE/HARDSCAPE ARCHITECTURAL PLANS/DETAILS INCORPORATED INTO THESE PLANS AS SHEETS SD1.10-SD2.10 & LP1.00-LP2.00 FOR MORE INFORMATION.
- SEE ARCHITECTURAL PME PLANS FOR ADDITIONAL INFORMATION RELATED TO BUILDINGS, RETAINING WALLS, PARKING DECK, ETC.
- SEE SHEET SD1.10 FOR STREET LIGHTING PLANS.
- FOR WALL DESIGN AND DETAILS, SEE PLANS PROVIDED BY ARMOR.

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

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**Approved Construction Plan**

Name	Date
Planning	
Traffic	
Fire	

REV.	DESCRIPTION	DATE
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SEAL  
**FINAL DRAWING FOR REVIEW PURPOSES ONLY**

SEAL

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**dpoj**  
RESIDENTIAL

**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

**OVERALL SITE PLAN**

DATE: 12/20/2018  
MCE PROJ. # 7402-0001  
DRAWN: ALM/KCE  
DESIGNED: ALM  
CHECKED: RMC  
PROJ. MGR.: KCE

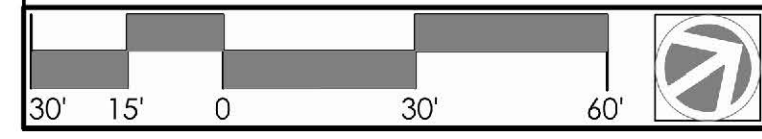
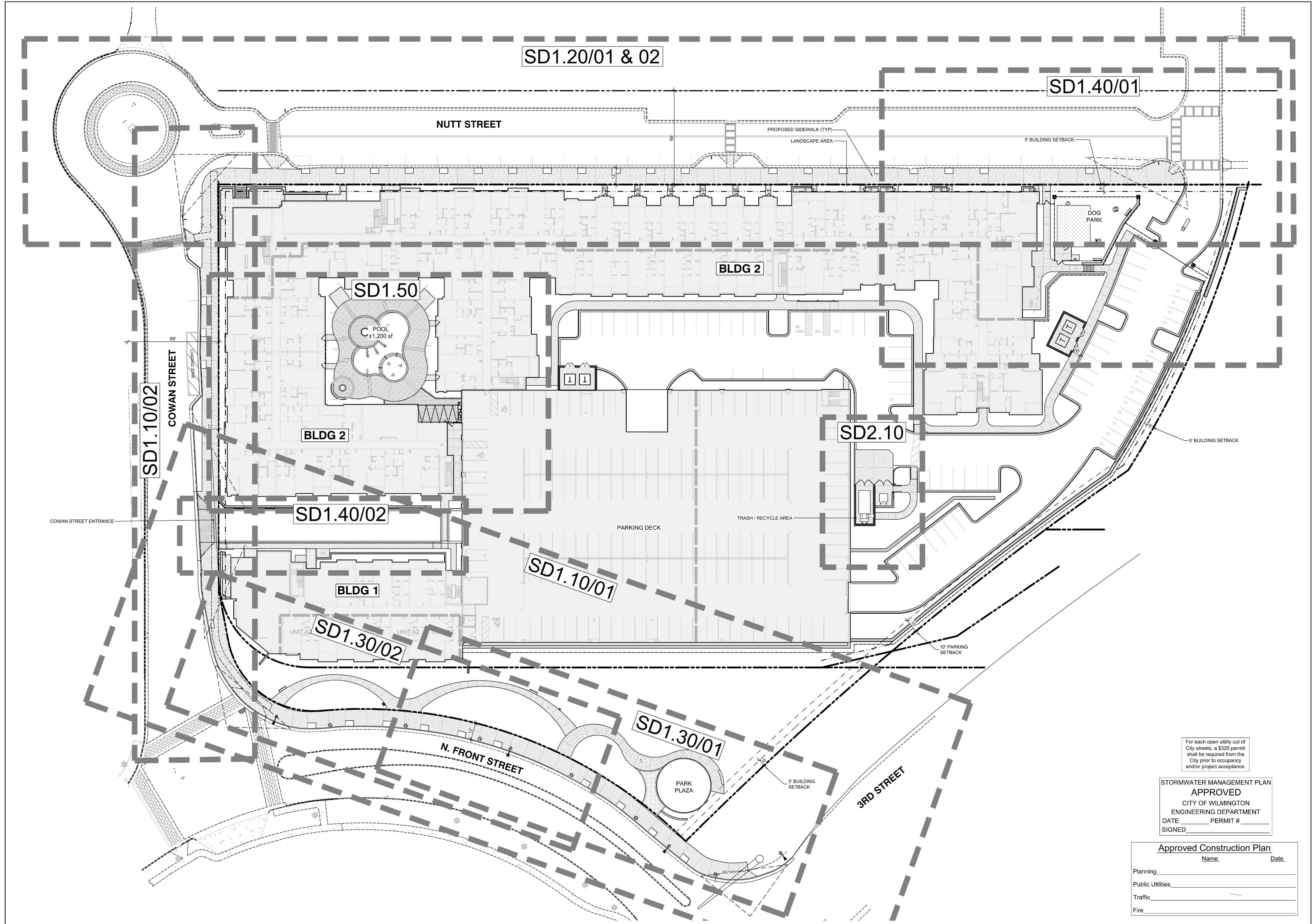
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DRAWING NUMBER: 10

STATUS: PRELIMINARY DESIGN  
ISSUED FOR PERMITTING

REVISION: G





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STORMWATER MANAGEMENT PLAN  
**APPROVED**  
 CITY OF WILMINGTON  
 ENGINEERING DEPARTMENT  
 DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
 SIGNED \_\_\_\_\_

Approved Construction Plan

	Name	Date
Planning		
Public Utilities		
Traffic		
Fire		

TRC SET
NOT FOR CONSTRUCTION
NOT FOR CONSTRUCTION

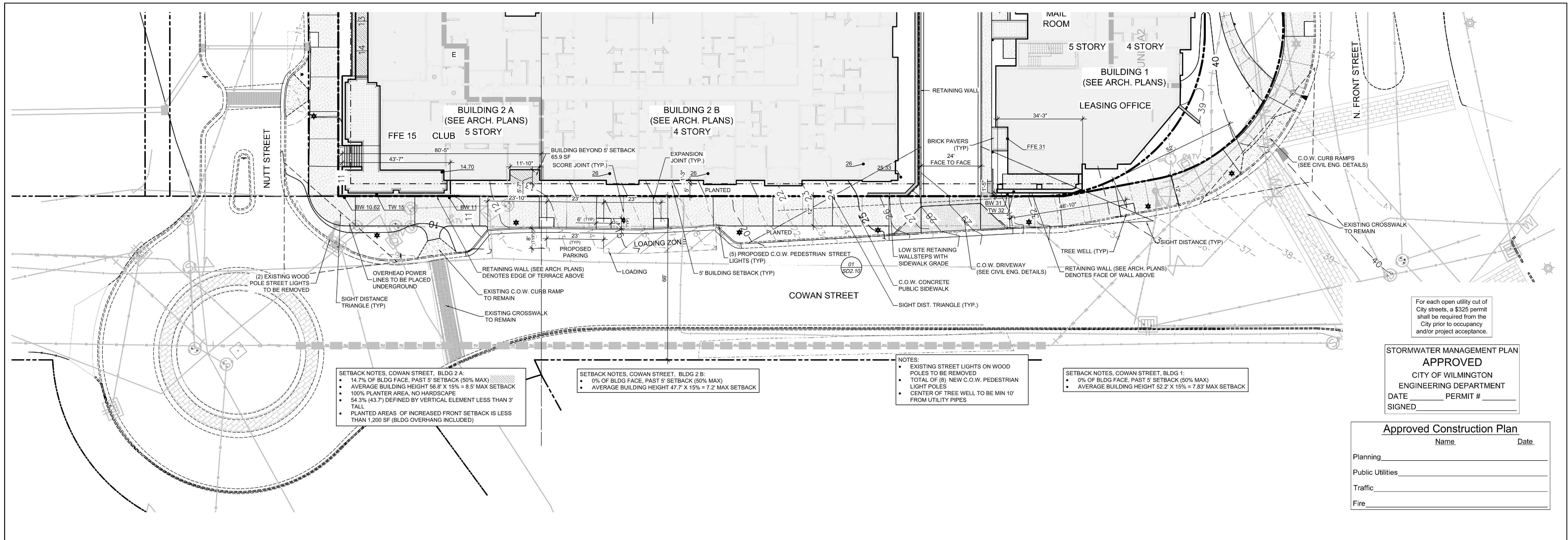
PROJECT: 218022  
 DATE: 11.29.2018

REVISIONS:	DATE
1st TRC Sub	07.11.18
2nd TRC Sub	09.28.18
3rd TRC Sub	11.05.18
4th TRC Sub	12.18.18

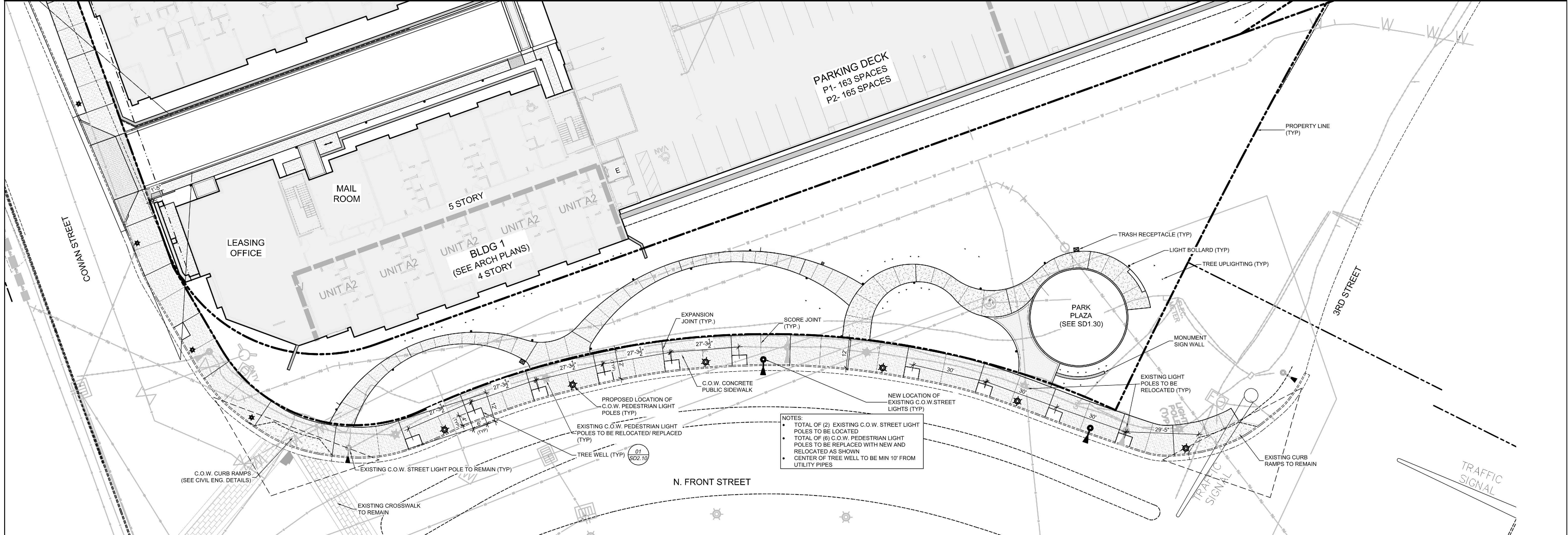
DRAWN BY: SP  
 CHECKED BY: JBM  
 Overall Hardscape  
 Key Plan

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Streetscape Layout & Grading Plan - Cowan Street 02  
 Scale: 1" = 20'



Streetscape Layout Plan - N. Front Street 01  
 Scale: 1" = 20'

TRC SET

NOT FOR CONSTRUCTION

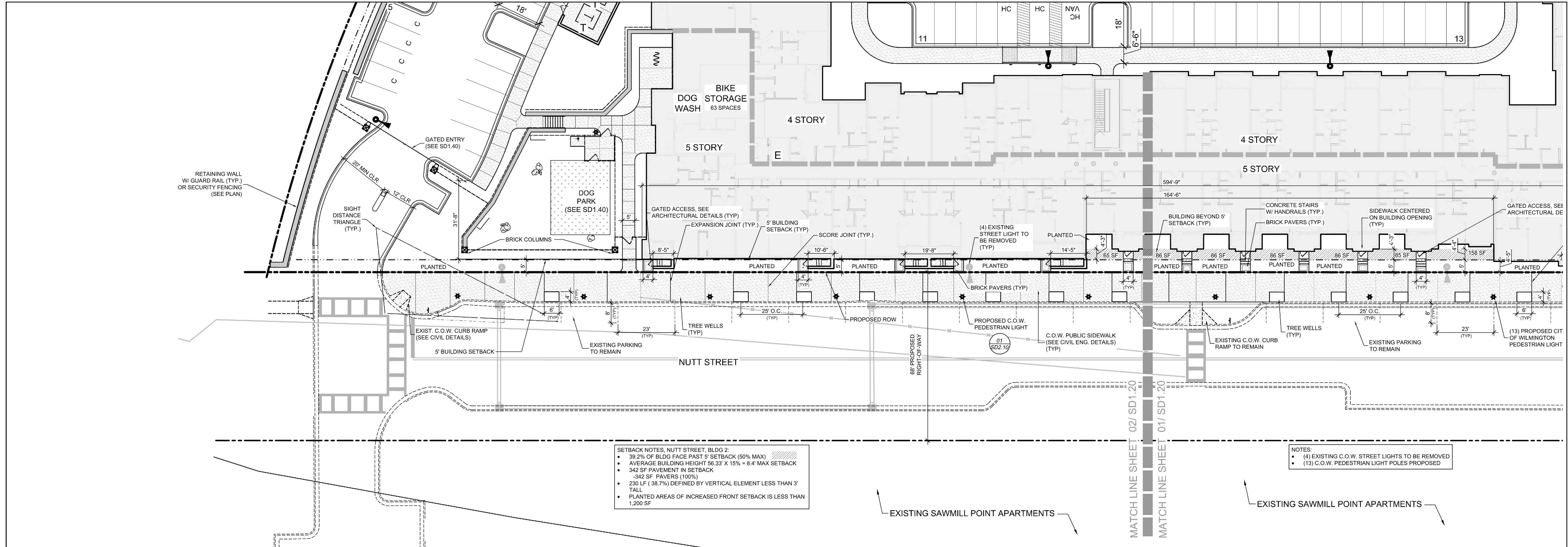
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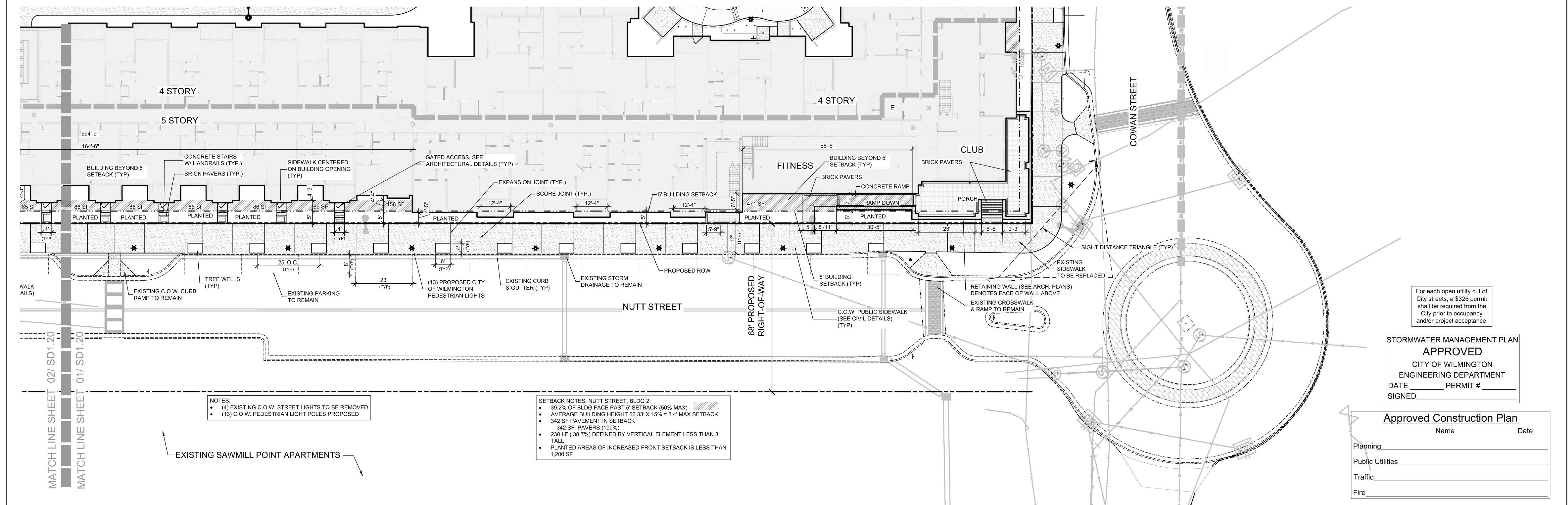
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3rd TRC Sub	11.05.18
4th TRC Sub	12.18.18

DRAWN BY: SP  
 CHECKED BY: JBM  
 Streetscape Layout Plans





Streetscape Layout Plan - Nutt Street 02  
Scale: 1" = 20'



Streetscape Layout Plan - Nutt Street 01  
Scale: 1" = 20'

**SETBACK NOTES, NUTT STREET, BLDG 2:**

- 39.2% OF BLDG FACE PAST 5' SETBACK (50% MAX)
- AVERAGE BUILDING HEIGHT 56.33' X 15% = 8.4' MAX SETBACK
- 342 SF PAVEMENT IN SETBACK
- 342 SF PAVERS (100%)
- 230 LF (38.7%) DEFINED BY VERTICAL ELEMENT LESS THAN 3' TALL
- PLANTED AREAS OF INCREASED FRONT SETBACK IS LESS THAN 1,200 SF

**NOTES:**

- (4) EXISTING C.O.W. STREET LIGHTS TO BE REMOVED
- (13) C.O.W. PEDESTRIAN LIGHT POLES PROPOSED

**NOTES:**

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**STORMWATER MANAGEMENT PLAN APPROVED**  
CITY OF WILMINGTON  
ENGINEERING DEPARTMENT  
DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
SIGNED \_\_\_\_\_

**Approved Construction Plan**  
Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

TRC SET

NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

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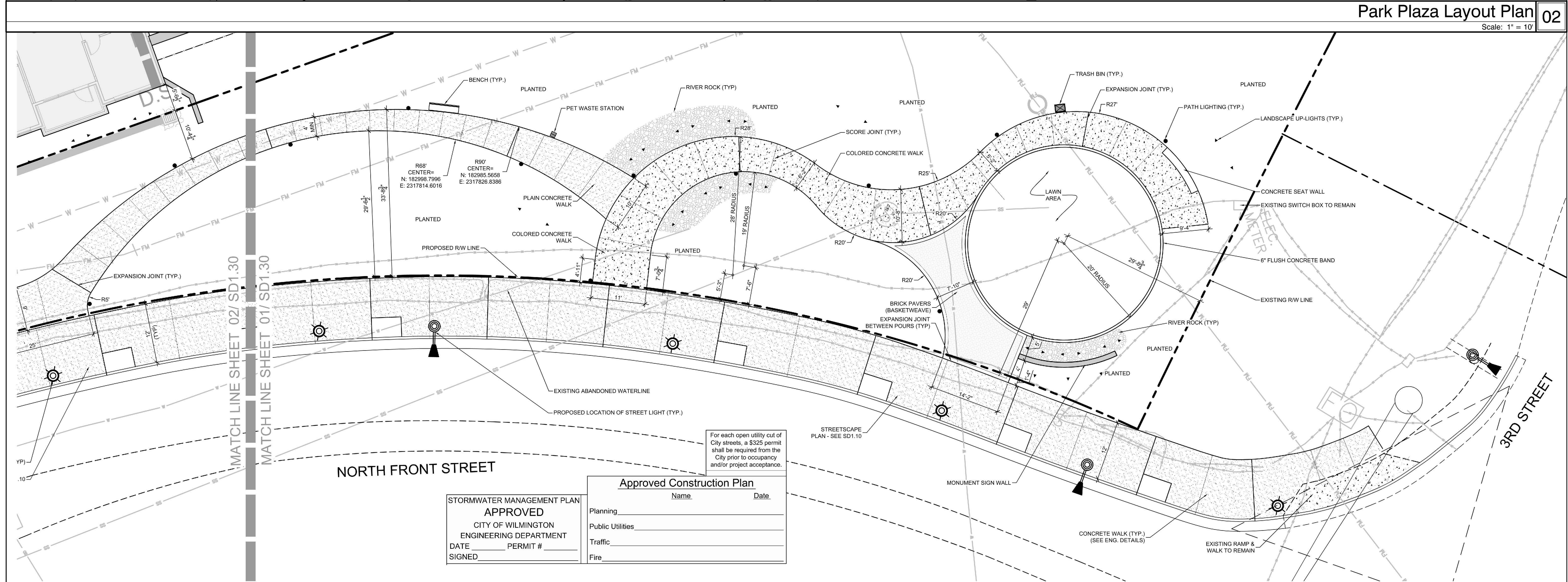
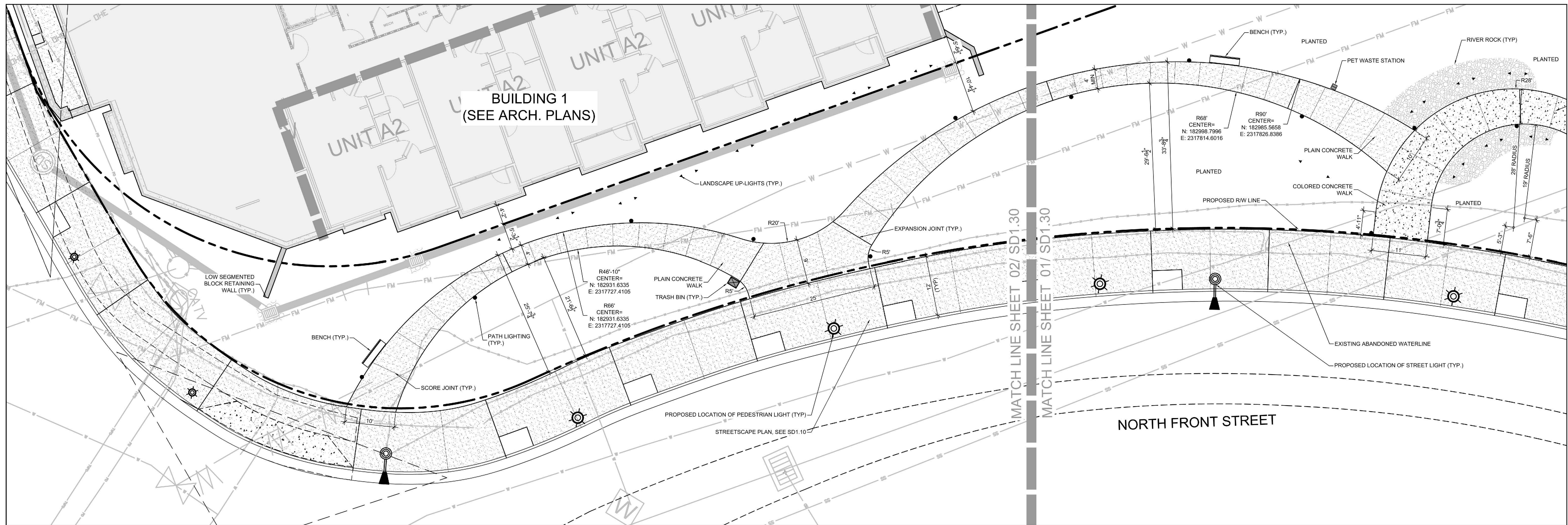
DRAWN BY: SP  
CHECKED BY: ML/JBM  
Streetscape Layout Plans

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**BUILDING 1**  
(SEE ARCH. PLANS)

**Park Plaza Layout Plan 02**  
Scale: 1" = 10'

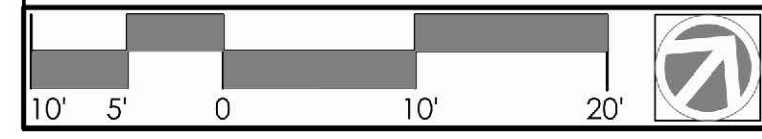
**Park Plaza Layout Plan 01**  
Scale: 1" = 10'

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**Approved Construction Plan**

Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

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ENGINEERING DEPARTMENT  
DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
SIGNED \_\_\_\_\_



**CLINE DESIGN**

125 N. Harrington St.  
Raleigh, NC 27603  
919/833-6413  
919/836-1280 FAX  
ClineDesignAssoc.com

DPJ Residential, LLC  
**The Flats on Front**  
111 Cowan Street  
Wilmington, North Carolina

TRC SET

NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

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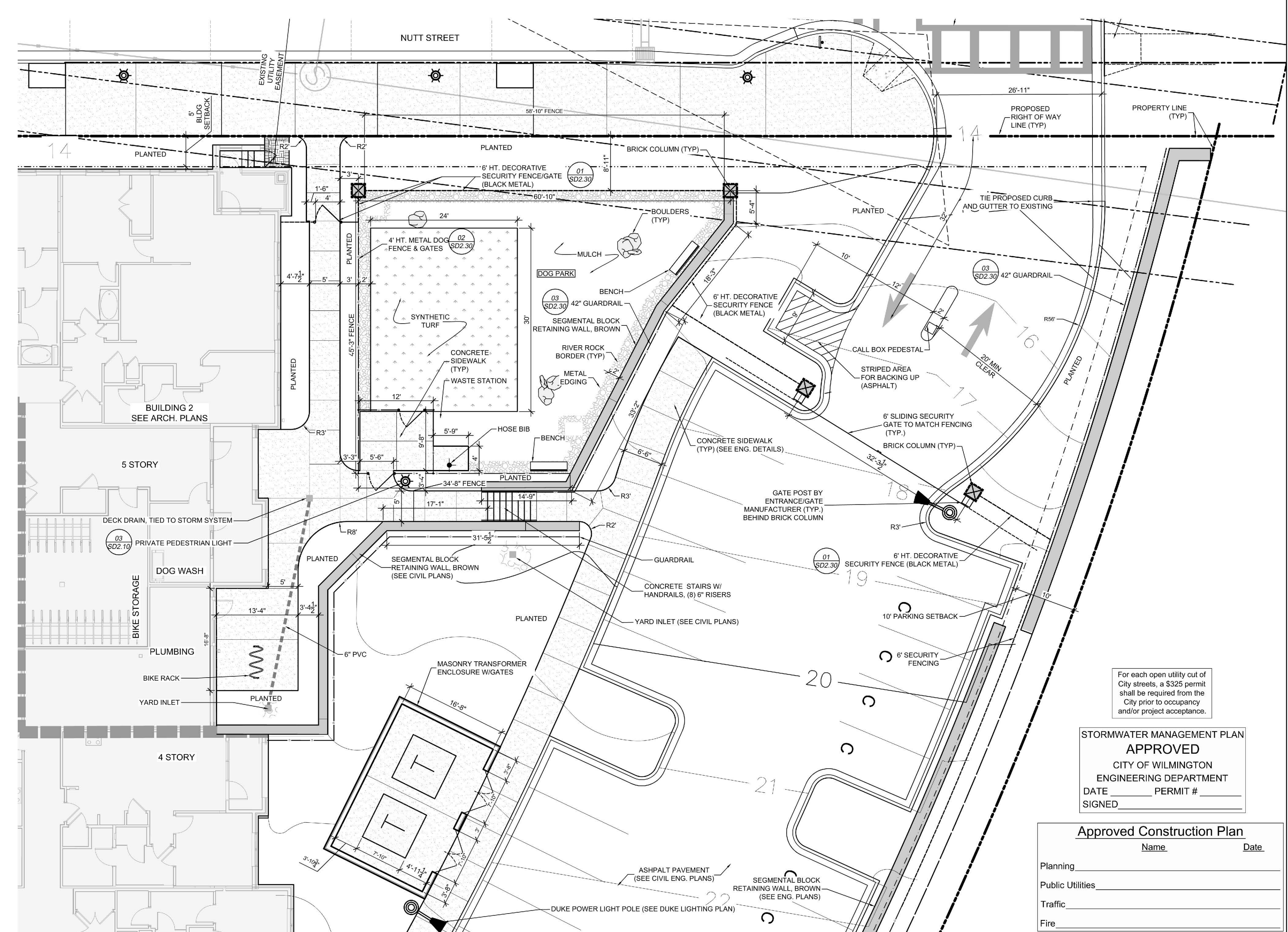
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4th TRC Sub	12.18.18

DRAWN BY: BA  
CHECKED BY: ML/JBM  
Park Plaza Layout Plan

**SD1.30**

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DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
SIGNED \_\_\_\_\_

Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

DPJ Residential, LLC  
**The Flats on Front**  
111 Cowan Street  
Wilmington, North Carolina

TRC SET

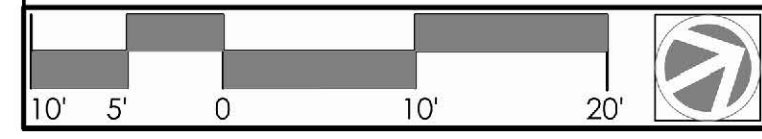
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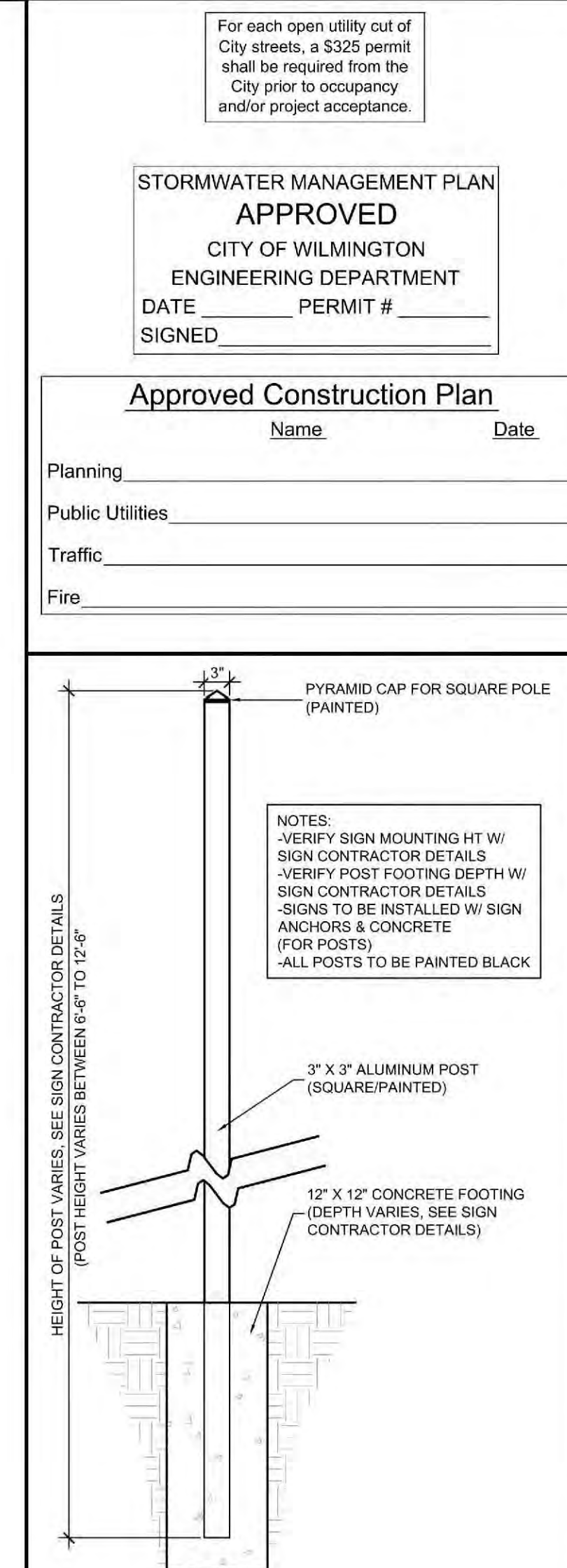
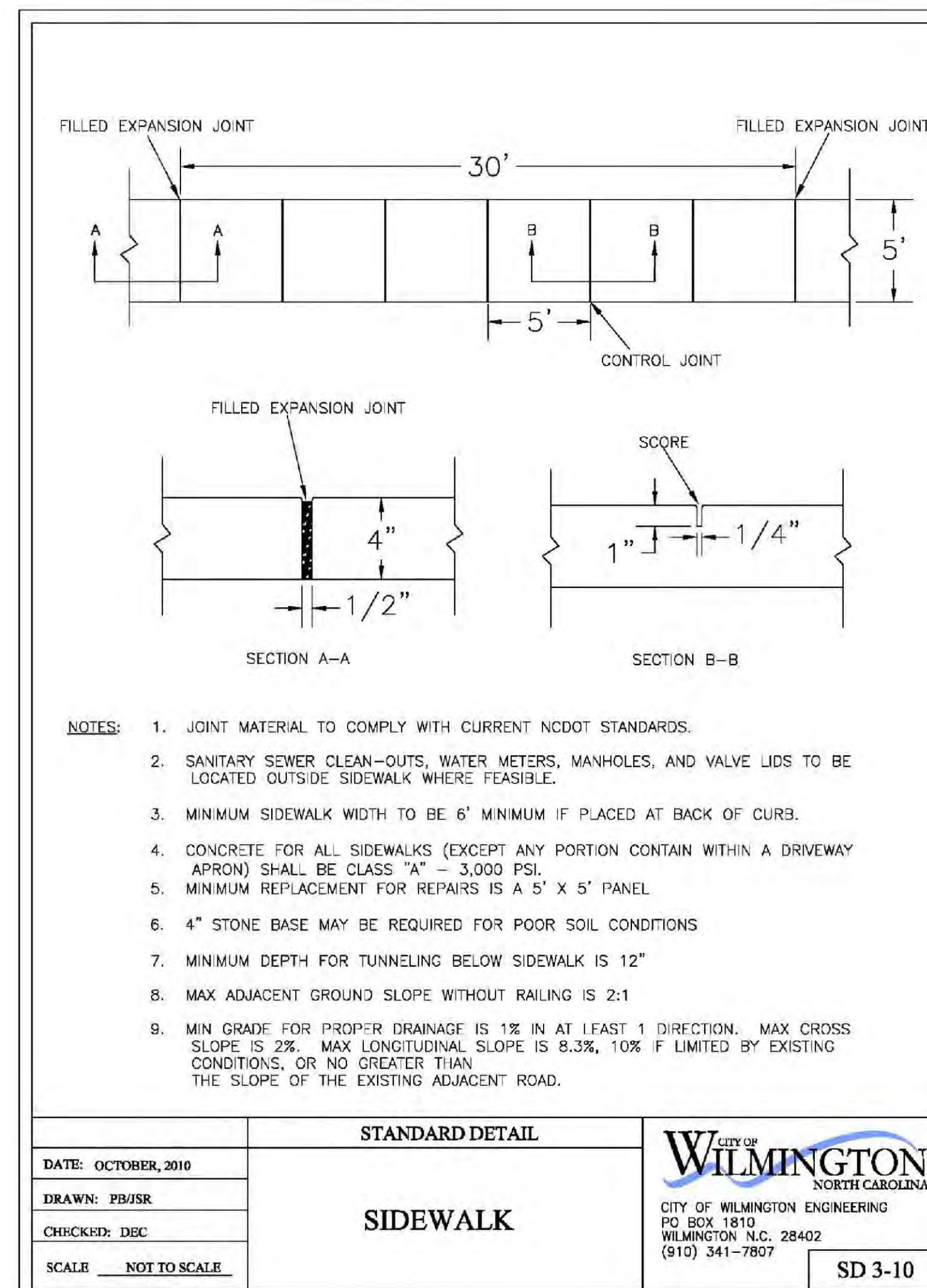
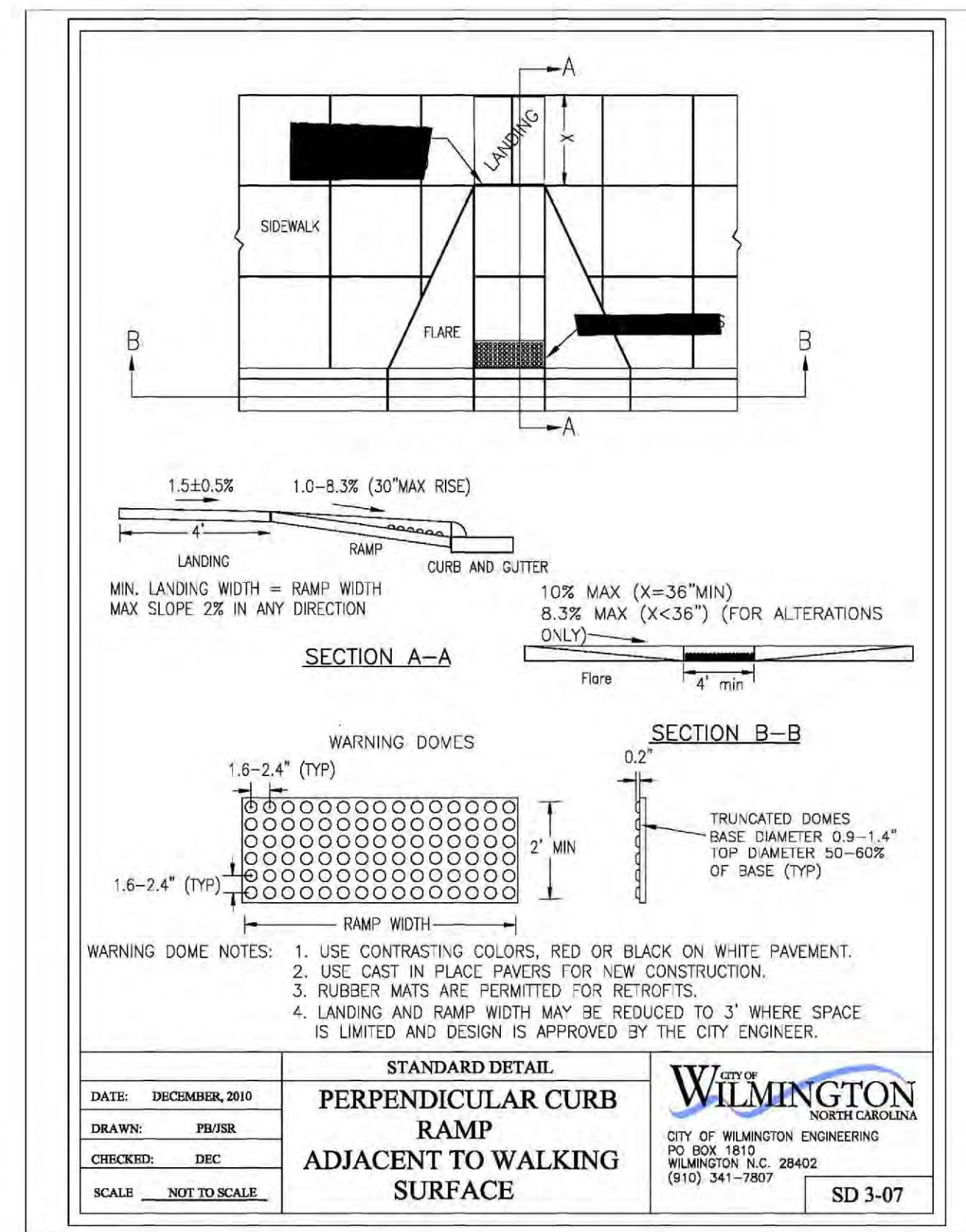
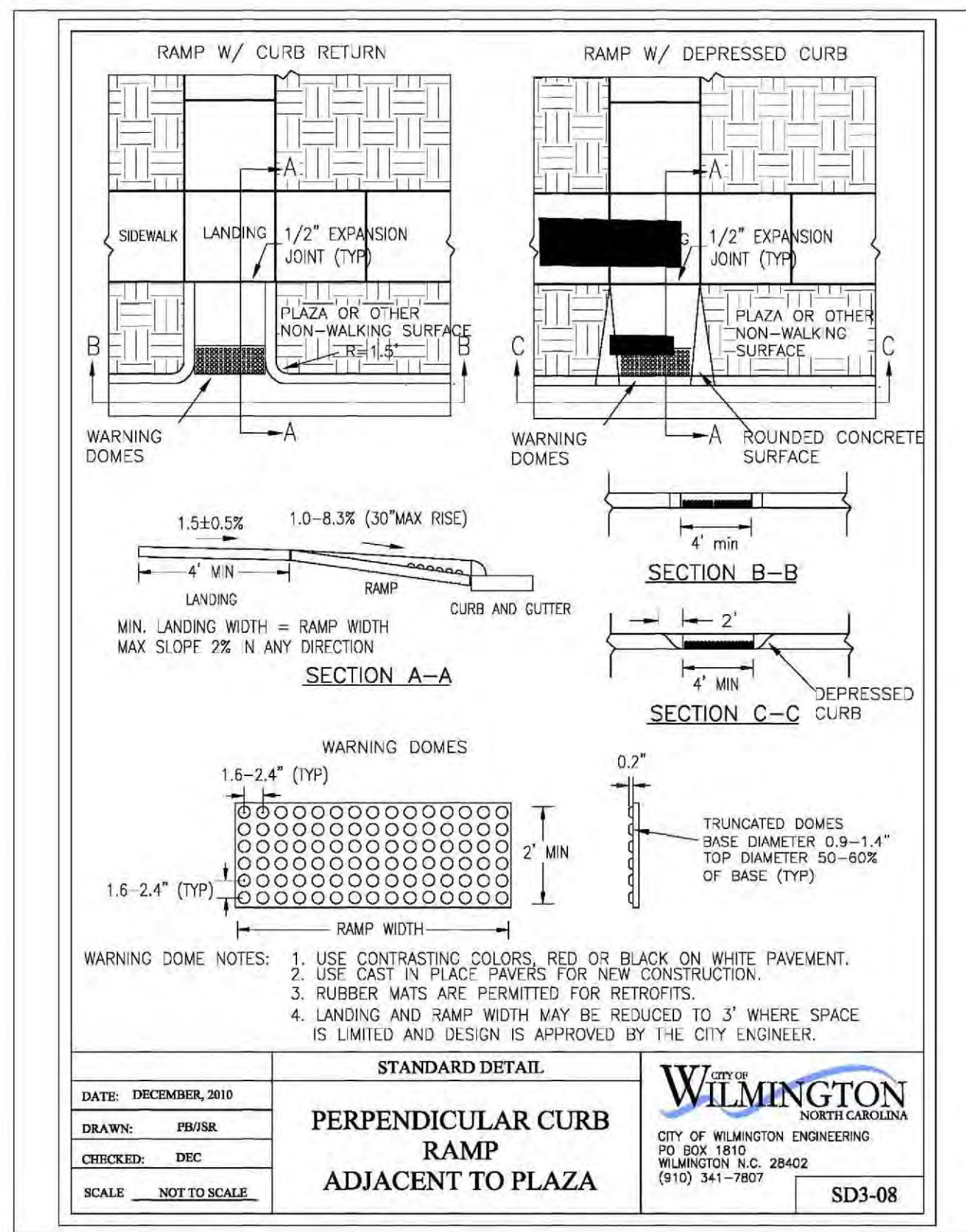
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DRAWN BY: BA  
CHECKED BY: ML/JBM  
Dog Park Layout Plan



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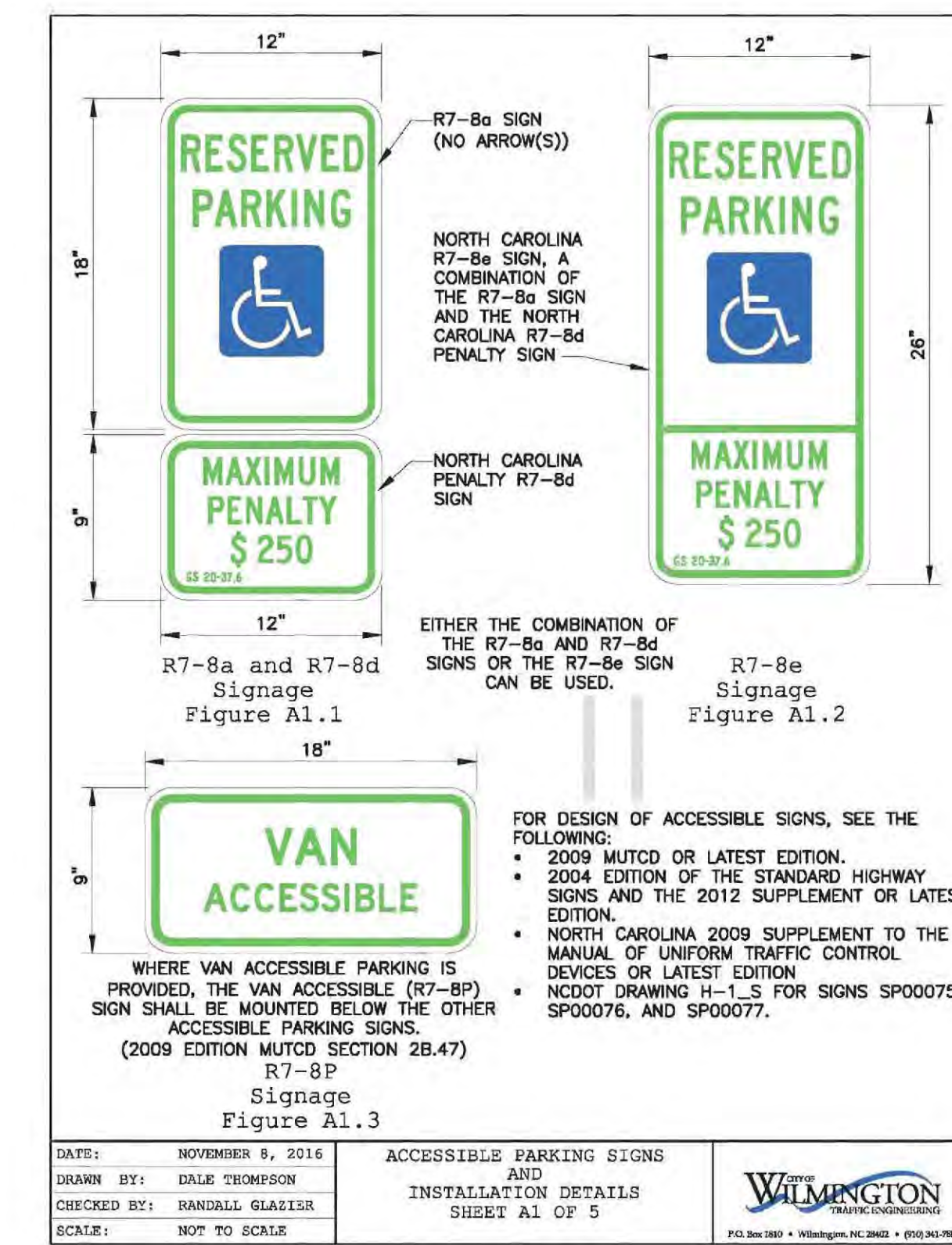
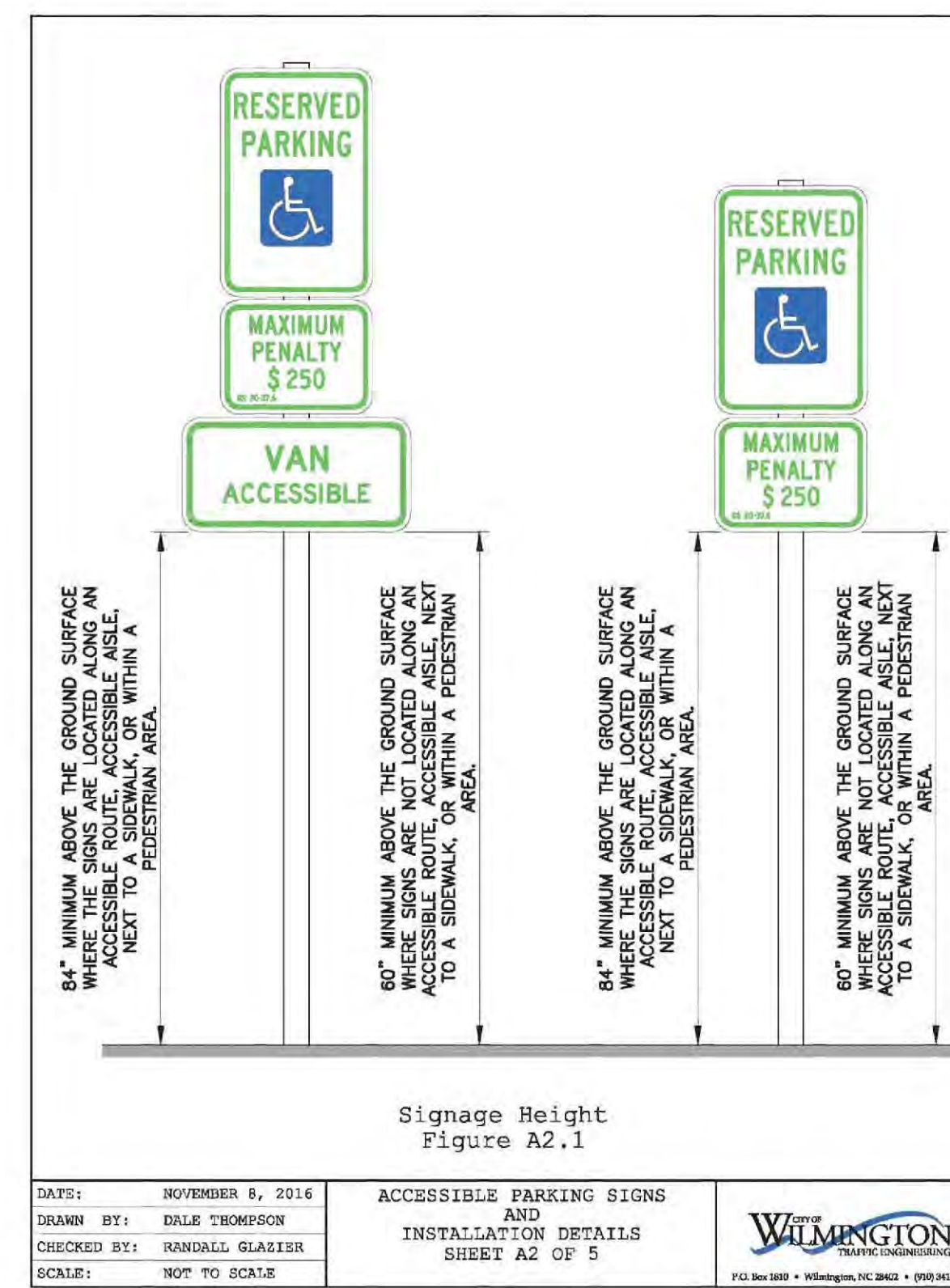
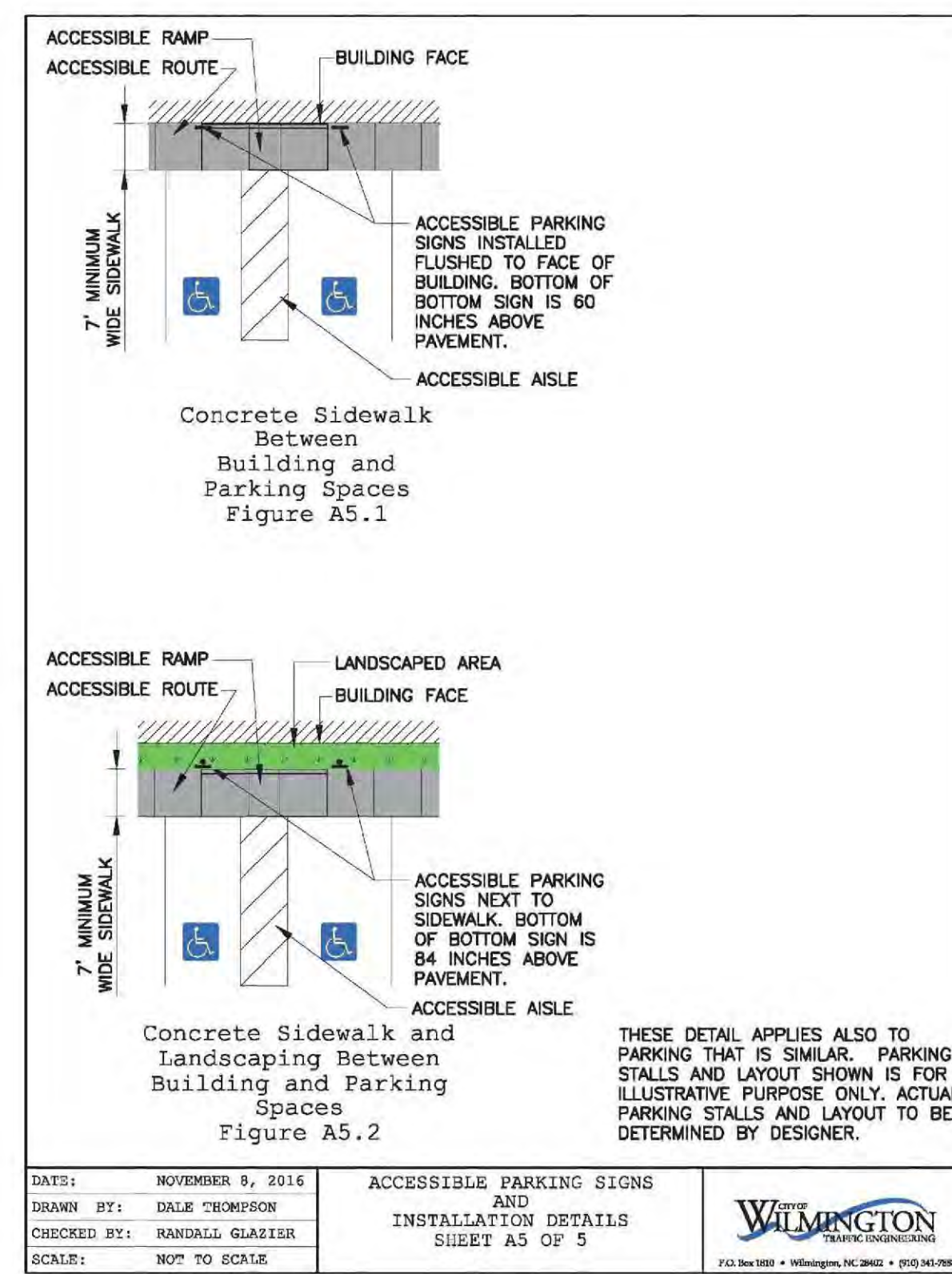




COW Accessible Ramp 04  
 Not to Scale

COW Concrete Sidewalk 03  
 Not to Scale

Sign Post Detail 02  
 Scale: 3/4" = 1'-0"



COW Handicap Parking Space Signage 01  
 Not to Scale

**PROJECT: 218022**  
 DATE: 11.29.2018

REVISIONS:	DATE
1st TRC Sub	07.11.18
2nd TRC Sub	09.28.18
3rd TRC Sub	11.05.18
4th TRC Sub	12.18.18

DRAWN BY: SP  
 CHECKED BY: MWL/JBM  
 Site Details



**KIMLIGHTING®** BNS1 Bounce® PicoEmitter® LED  
kl\_bns1e2d\_spec.pdf

JOB \_\_\_\_\_ TYPE \_\_\_\_\_  
NOTES \_\_\_\_\_ APPROVALS \_\_\_\_\_

**FEATURES**

- Full Cut-off PicoEmitter technology
- Available in 580nm, 3000K, 4000K and 5000K standard CCT
- Type 1, 2, 3, 4, 5, R & L distributions
- 0-10V dimming drivers standard
- Sealed optical chamber, IP66 certified

**Certifications**

UL, IESNA, AIAA, IESNA, IESNA

**SPECIFICATIONS**

Max. Weight = 26 lbs. FPA 12. See Configuration for additional FPA's.

**ORDERING CODE**

Configuration	CFL	Feature	Time Circuit	Source	Color Temperature	Voltage	Finish
▲ F14 Flush Mt. 4" O.D. Pole only	12	BNS1	ESS 35mA PicoEmitter	60W 60-120V, 60W	2K 2800K, 3K 3000K, 4K 4000K, 5K 5000K	120-277V, 247-247V, 480-480V	BL Black, DB Dark Bronze, LG Light Gray, PS Platinum Silver, TT Titanium, WH White, CC Custom Color, consult representative
▲ P1 Pole Mount Mini 2" Poleable Teron	12	H1 Type I, H2 Type II, H3 Type III, H4 Type IV, H5 Type V					
▲ 15A Single Arm, 1/8" Mt. 4" or 5" O.D. Pole only	18						
▲ 25B Single Arm, 4" or 5" O.D. Pole only	26	BR Type II Right, RL Type I Left					
▲ 117 Single Arm Mt. etc.	etc.						

**Shield Options:** A30 12V Battery Powered, A31 24V Battery Powered, A32 24V Battery Powered, A33 12V Battery Powered, A34 48V Battery Powered, A35 24V Battery Powered.

**Mounting Options:** 3.3 3.3" O.D. Pole, 4.0 4" O.D. Pole, 4.5 4.5" O.D. Pole, 4.5 4.5" O.D. Pole, 5.0 5" O.D. Pole, 5.0 5" O.D. Pole.

**Fixture Finish Color:** DARK BRONZE

**Pole:** 12" ROUND ALUMINUM NON-TAPERED DARK BRONZE

**RINCON™ BOLLARD**

PRODUCT CODE \_\_\_\_\_

The Rincon Bollard blends a minimalist form, stainless steel construction, and the unparalleled performance of Cree® LEDs. Precision manufacturing gives shape to the 4.5" square profile and creates a virtually seamless appearance. Optional perforated shields add to the bollard's versatility. Coordinating Rincon Pathway Bollards and Rincon Pedestrian Lighting make it easy to carry Rincon's aesthetic across a project.

**MATERIALS & FINISHES**

- Head consists of a .25" to 4 mm thick ultra-fused acrylic lens and a cast stainless steel head cap with a 3/16" finish.
- Body is constructed from .0875" to .119" stainless steel with a Satin finish or powdercoat finish. See the Forms+Surfaces Powdercoat Chart. Custom RAL colors are available for an upcharge.
- Stainless steel base with a Satin finish powdercoat finish.
- Shields are stainless steel with a Satin finish and measure 10.76" (273 mm) high x 4.18" (106 mm) wide.

**LED LIGHT ENGINE & DRIVER**

- Custom LED light engine with Cree® LEDs.
- Features advanced LED technology with 1420, 3000K warm white and 4000K neutral white LEDs.
- LED driver includes high efficiency, constant output current, with over-voltage, short circuit, and over-temperature protection.
- LED driver input power is 100-277 V.
- Driver has 0-10V dimming capabilities.
- LED driver certifications include: POE (weatherproof) enclosure, and Class 2 rated output (UL513-UL513CS).

**INSTALLATION & MAINTENANCE**

- Surface mounted with four tamper-resistant bolts.
- Installation of a surge protector or GFI of each utility wiring is recommended.
- Stainless steel hardware is included. Templates are available upon request.

**WEIGHT**

- 24 lbs (11 kg).

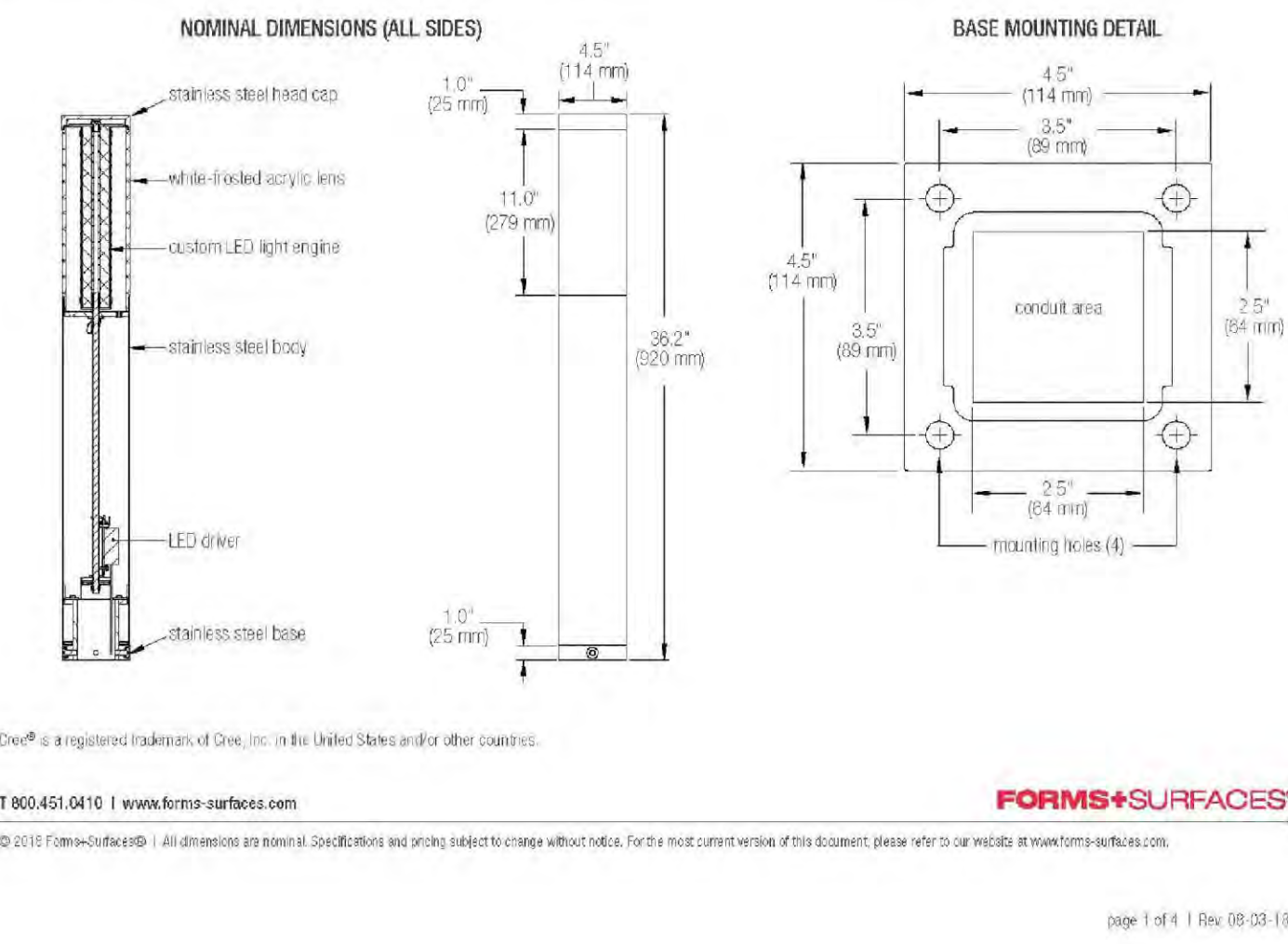
**MAINTENANCE**

- Make surfaces can be cleaned as needed using a soft cloth or brush with warm water and a mild detergent. Avoid abrasive cleaners.

**COLOR: DARK BRONZE METALLIC**

**SHIELD OPTIONS**

- Custom perforated shields can be specified for 1-4 sides of the bollard. Four standard shield designs are available for an upcharge. Please refer to pages 2 and 3 for details.
- Custom shield designs are also available.



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**STORMWATER MANAGEMENT PLAN APPROVED**

CITY OF WILMINGTON  
ENGINEERING DEPARTMENT  
DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
SIGNED \_\_\_\_\_

**Approved Construction Plan**

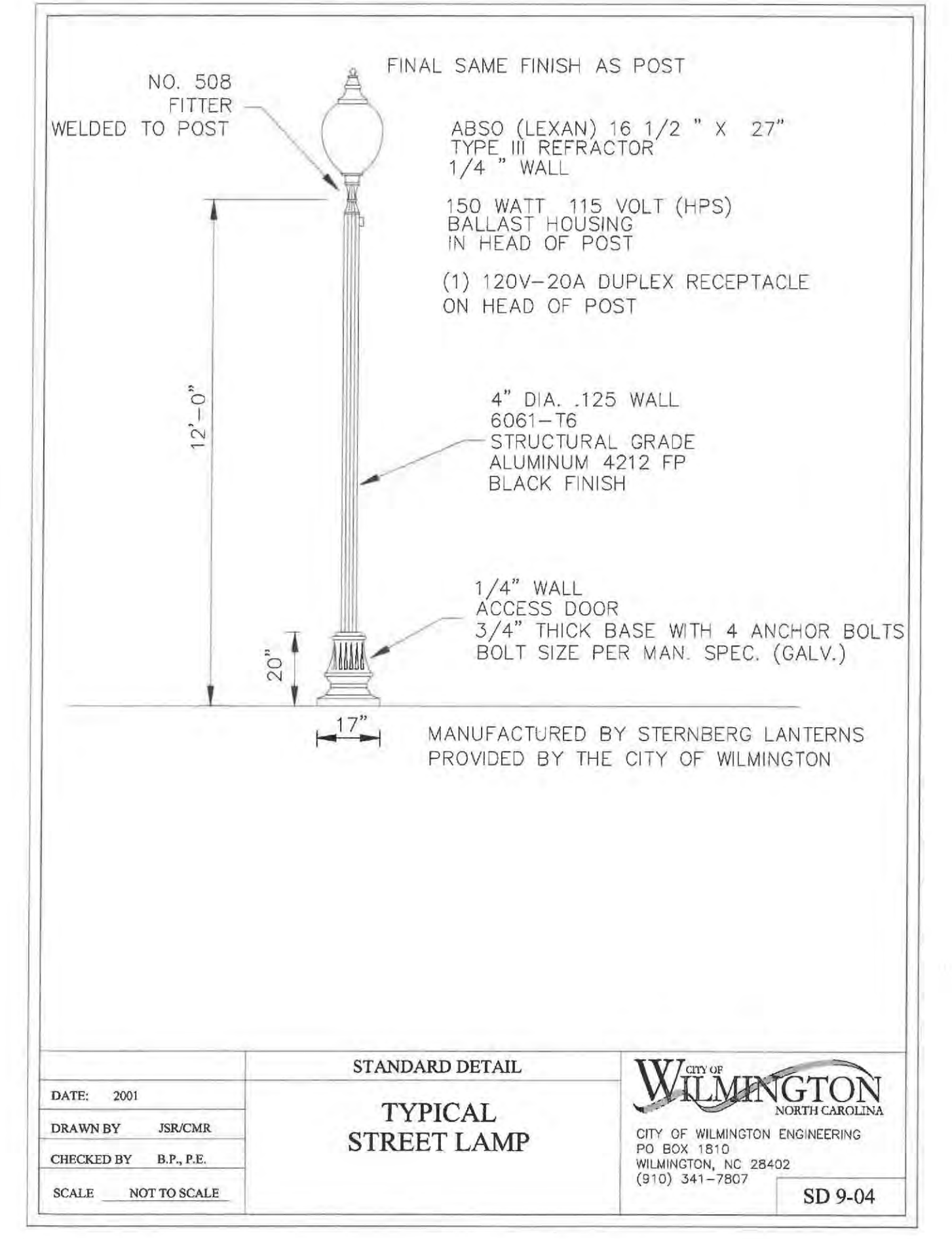
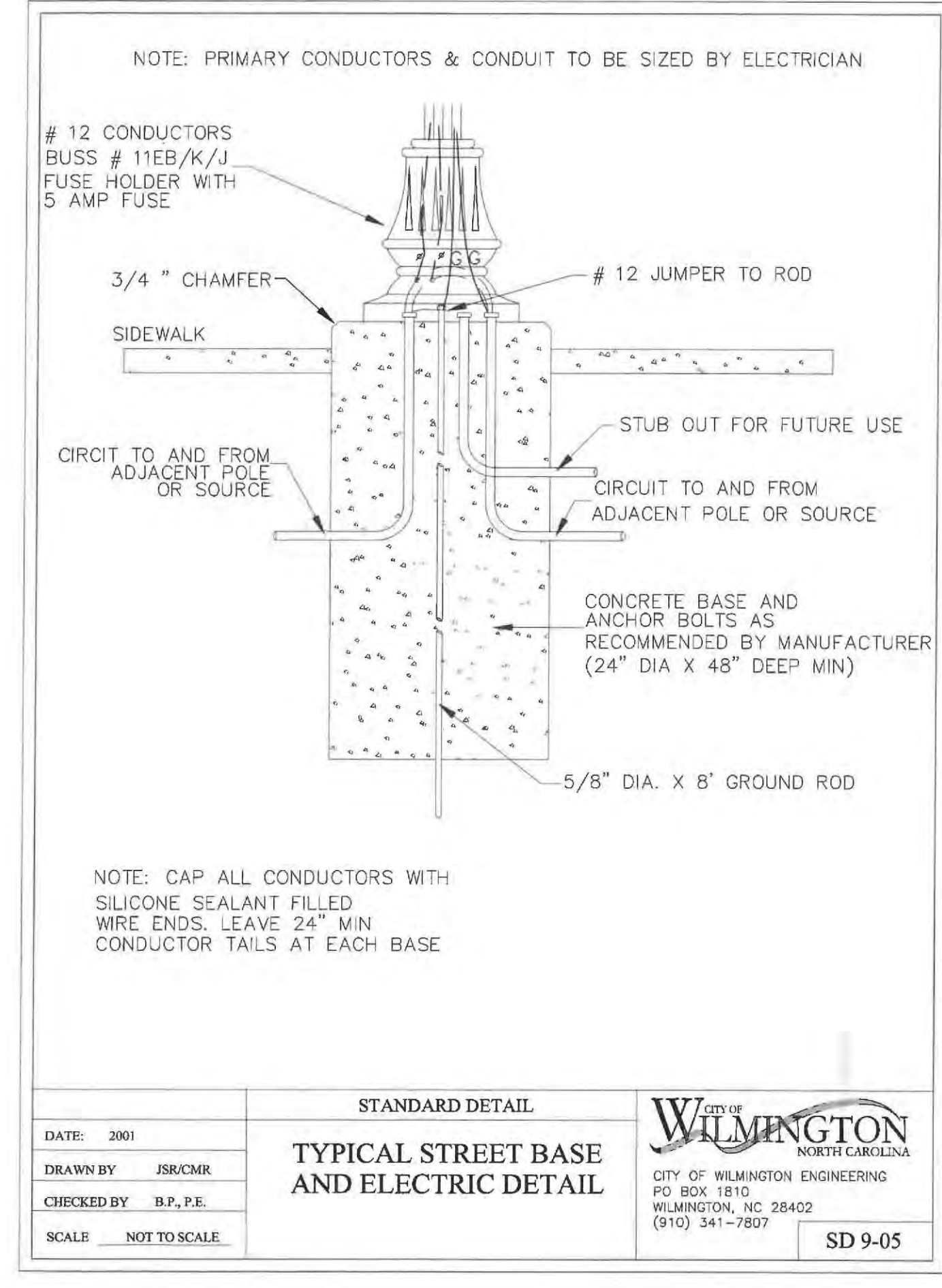
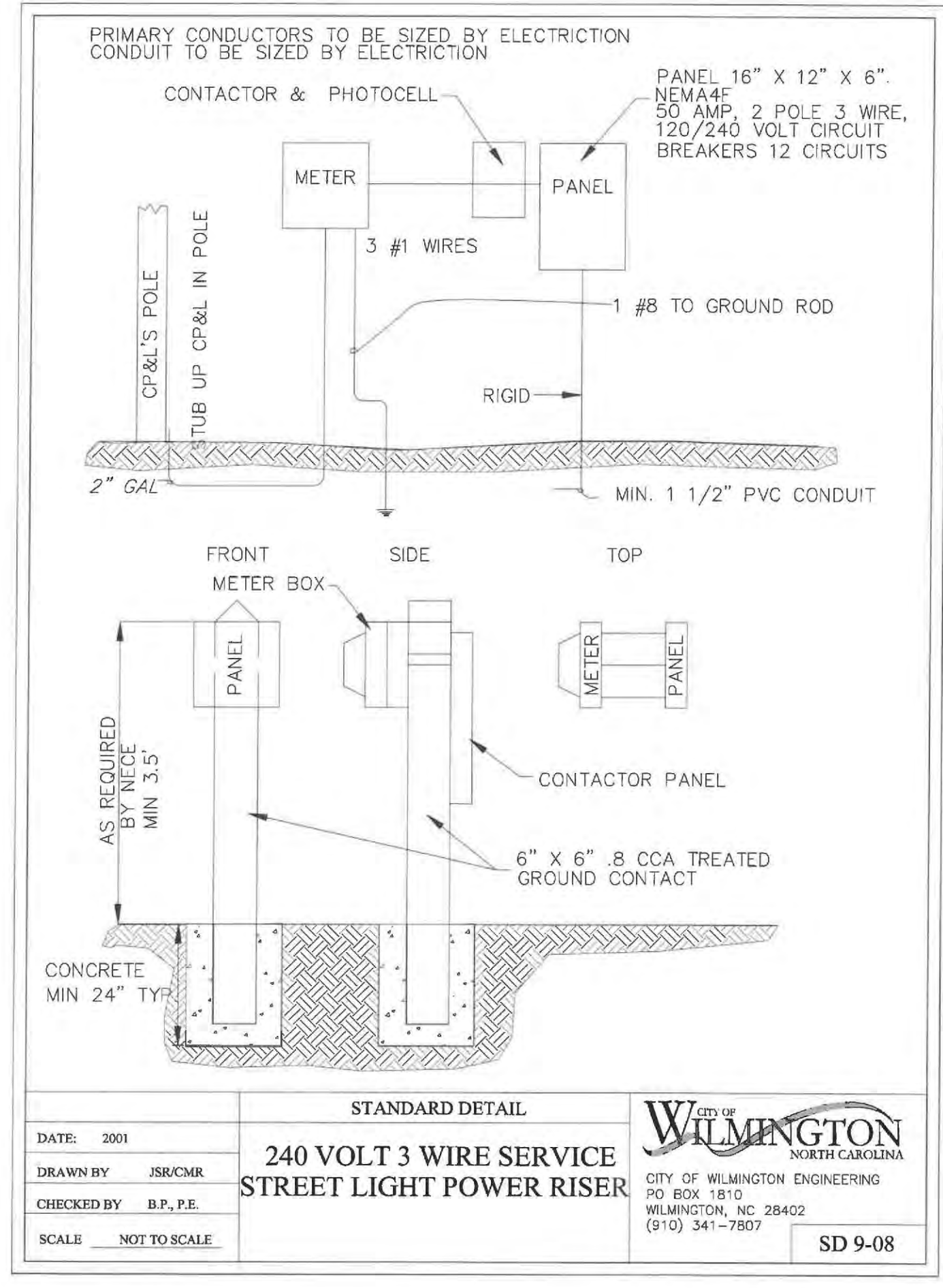
Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_



Pool Deck/ Private Pedestrian Lighting 03  
Not to Scale

Path Light 02  
Not to Scale



COW Typical Pedestrian Lighting Details 01  
Not to Scale

**CLINE DESIGN**

125 N. Harrington St.  
Raleigh, NC 27603  
919/833-6413  
919/836-1280 FAX  
ClineDesignAssoc.com

DPJ Residential, LLC  
The Flats on Front  
111 Cowan Street  
Wilmington, North Carolina

TRC SET

NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

PROJECT: 218022  
DATE: 11.29.2018

REVISIONS:	DATE
1st TRC Sub	07.11.18
2nd TRC Sub	09.28.18
3rd TRC Sub	11.05.18
4th TRC Sub	12.18.18

DRAWN BY: SP  
CHECKED BY: MWL/JBM  
Lighting Details

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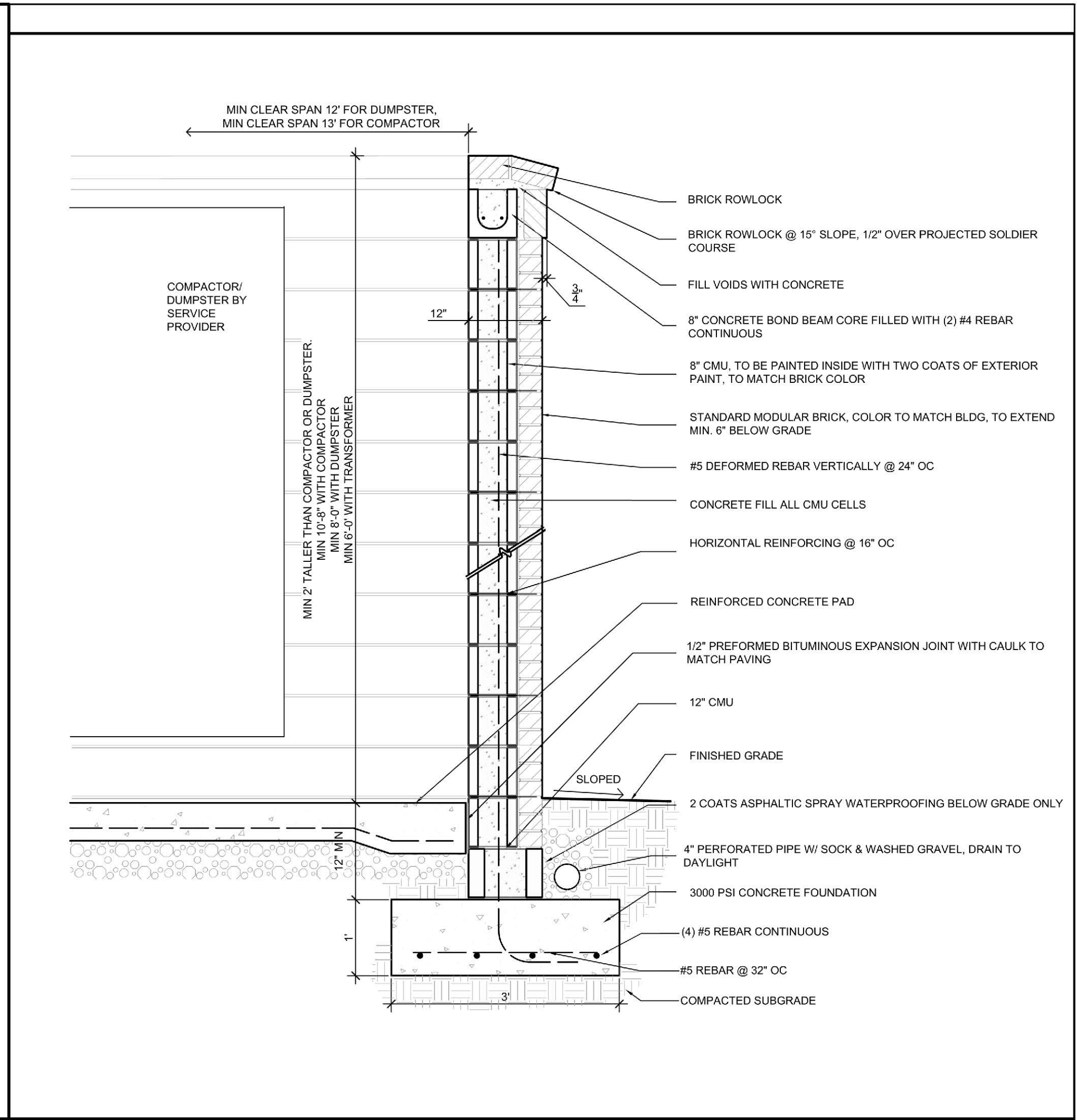
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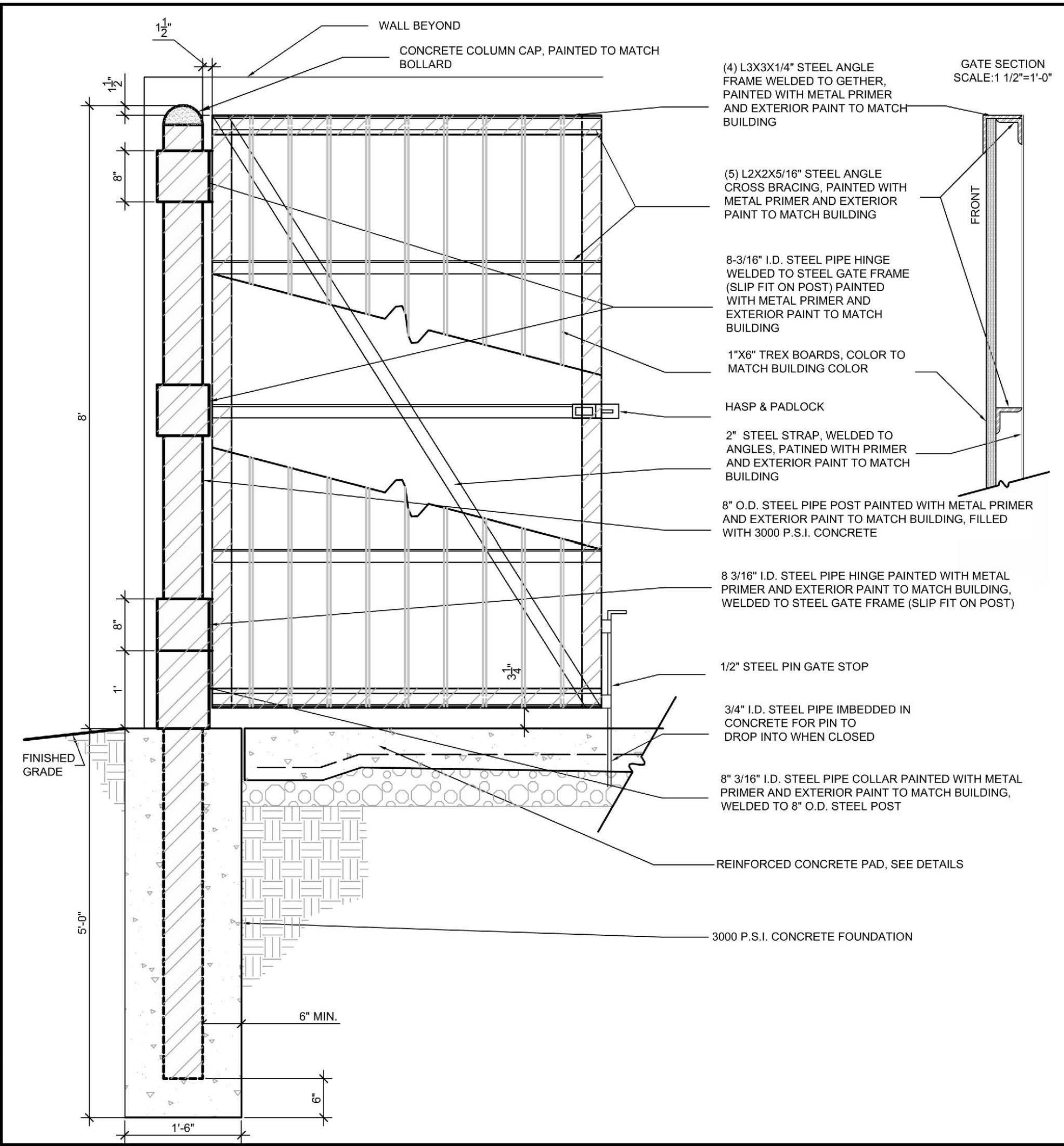
PROJECT: 218022  
DATE: 11.29.2018

REVISIONS:	DATE
1st TRC Sub	07.11.18
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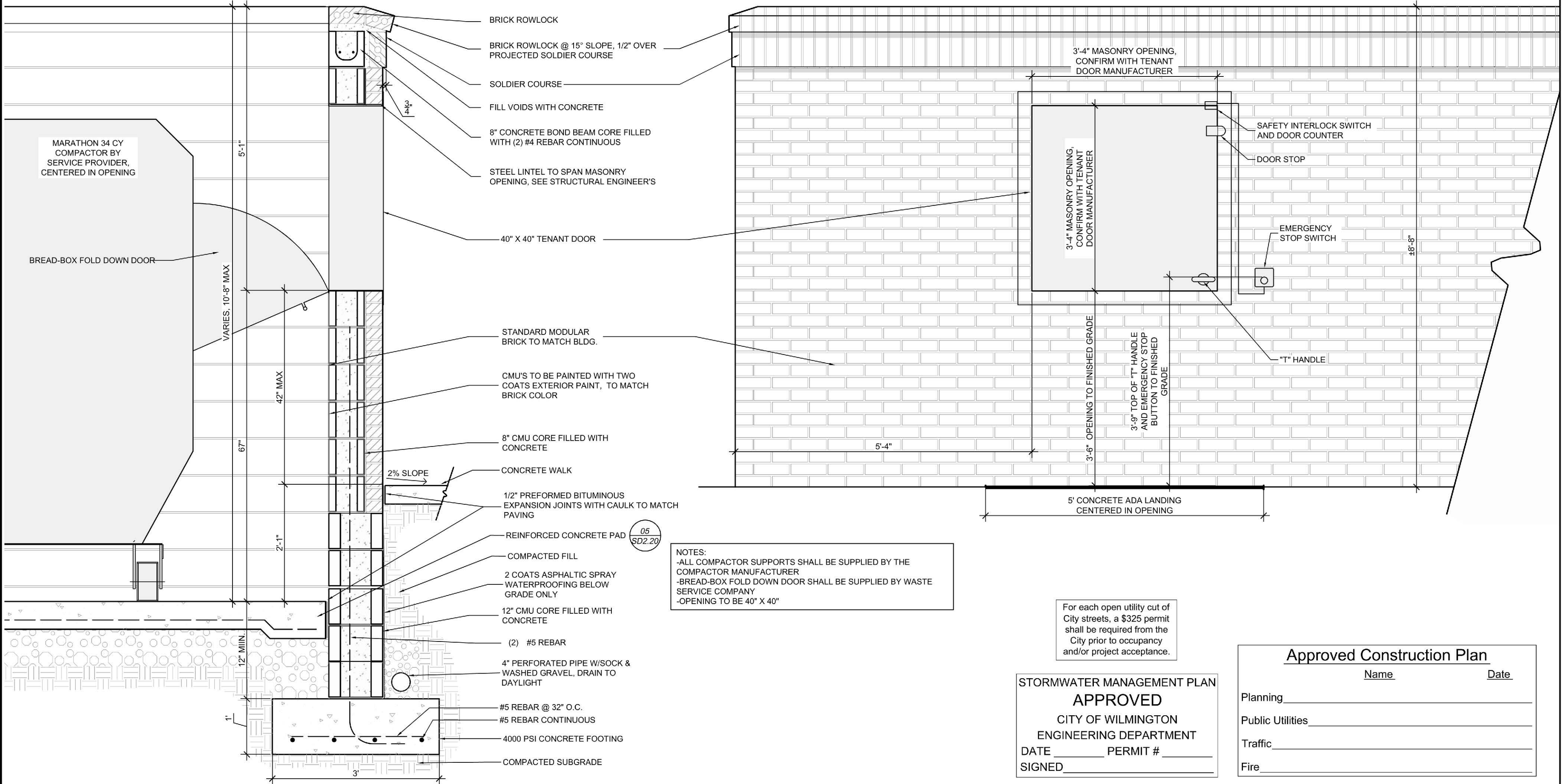
DRAWN BY: SP  
CHECKED BY: ML/JBM  
Trash Area Layout  
Plan And Details



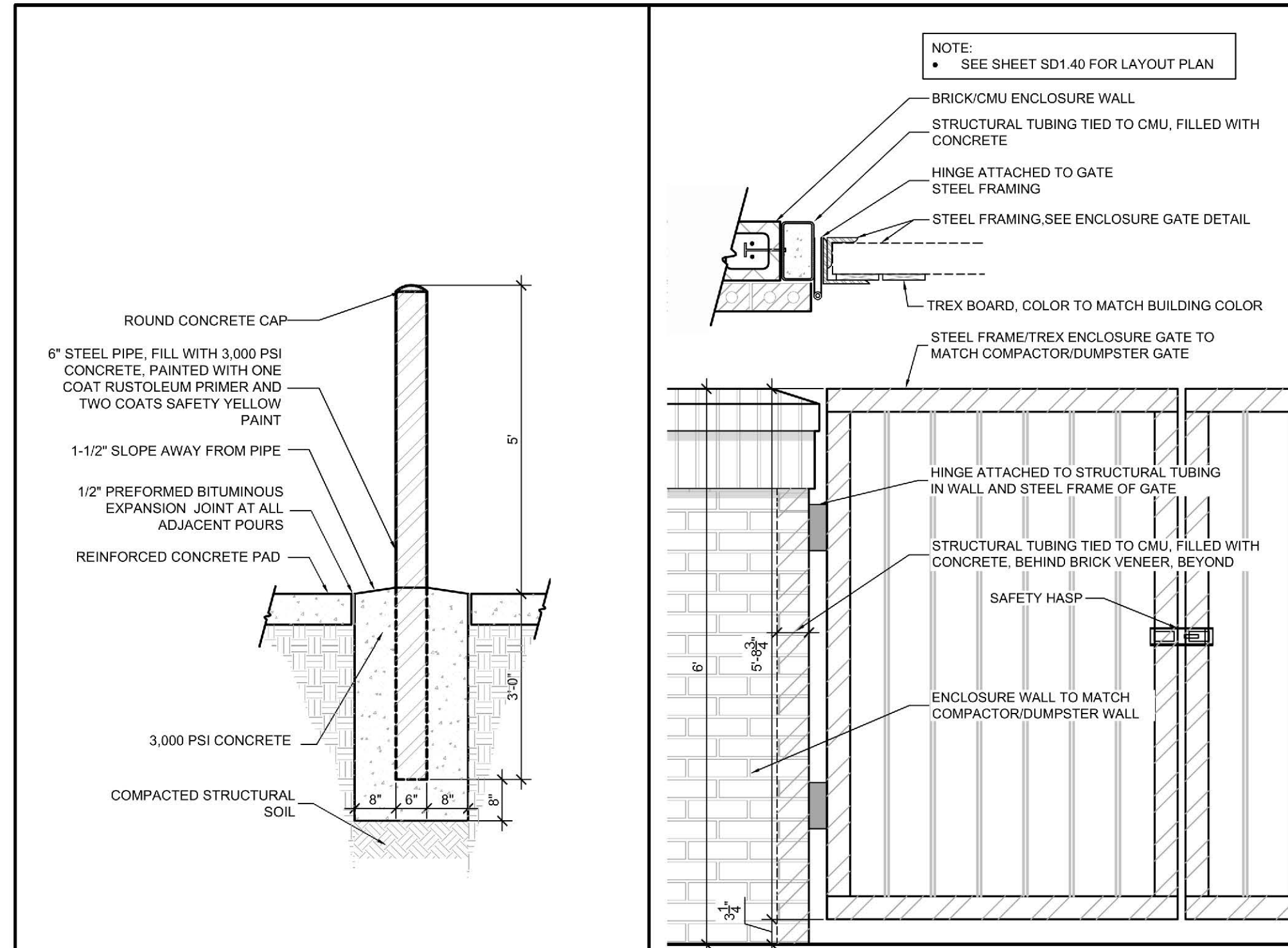
**Enclosure Wall 02**  
Scale: 3/4" = 1'-0"



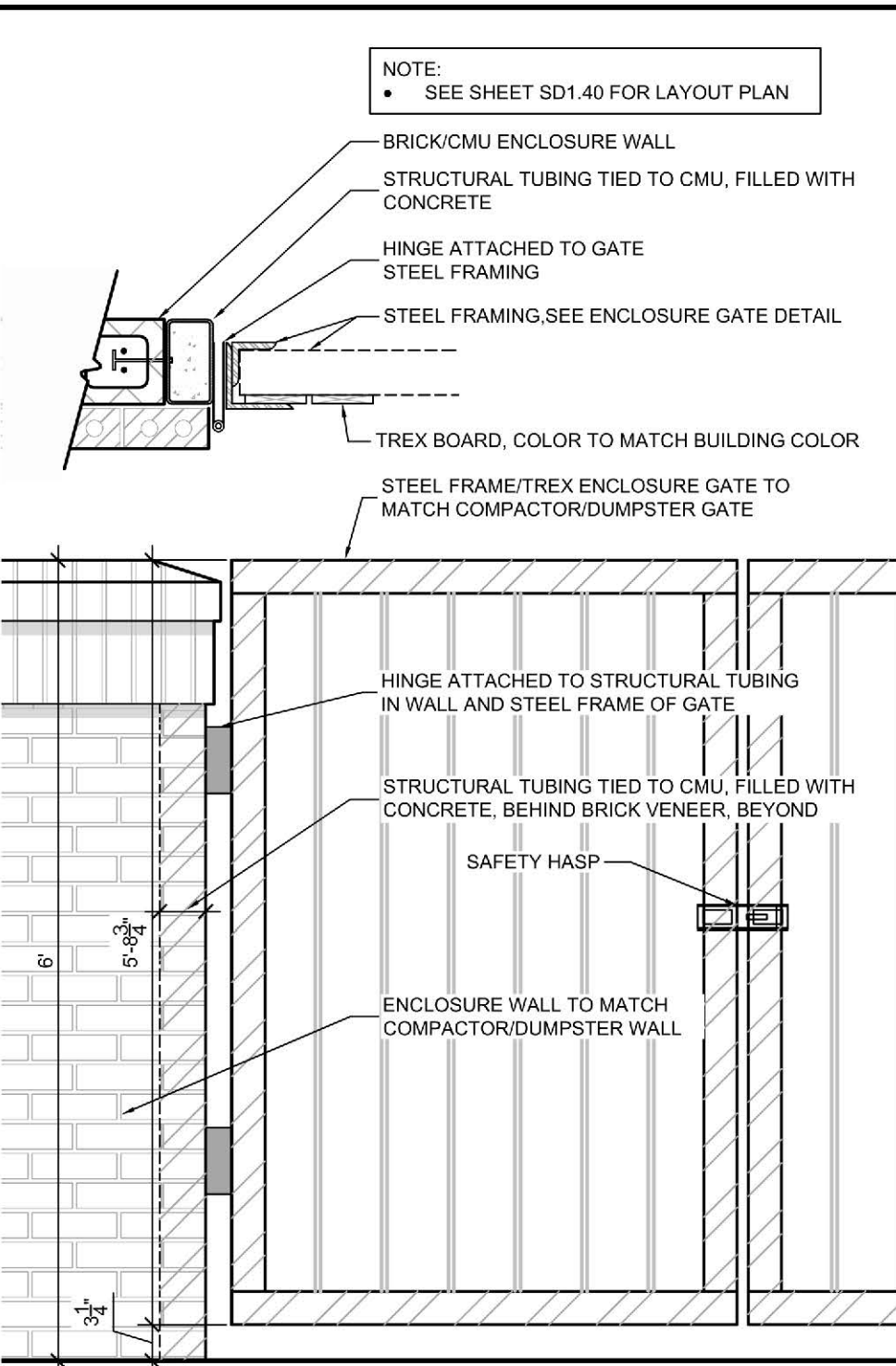
**Trex Enclosure Gate 03**  
Scale: 3/4" = 1'-0"



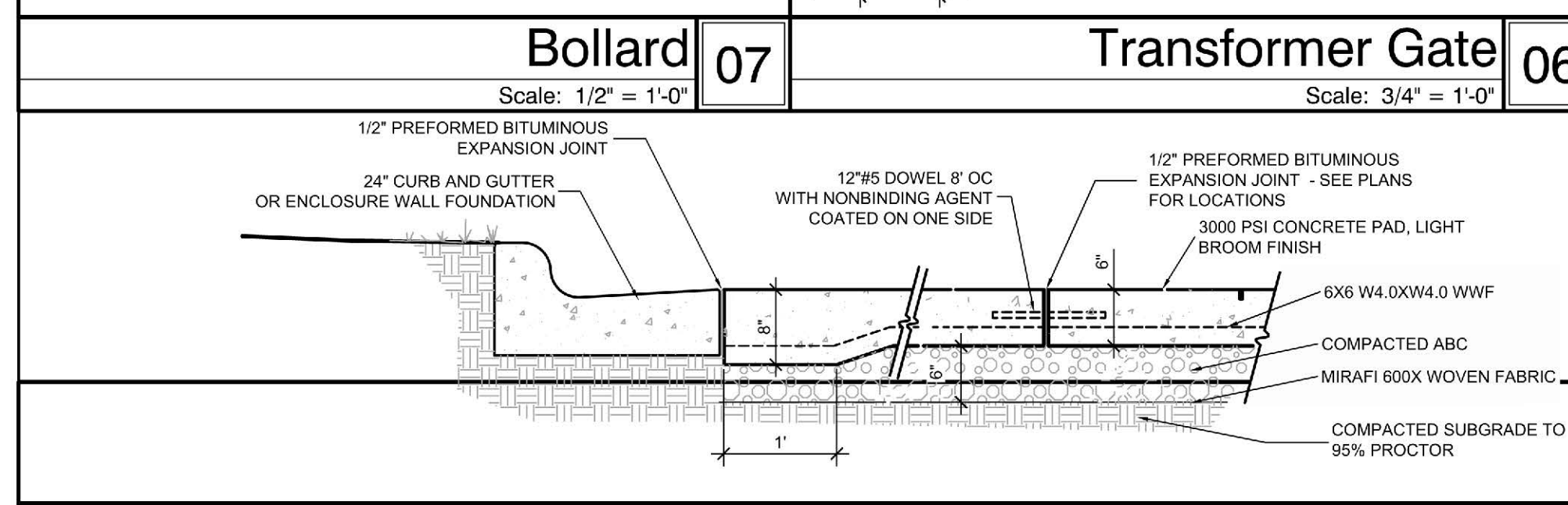
**Compactor Enclosure Throw Window 01**  
Scale: 3/4" = 1'-0"



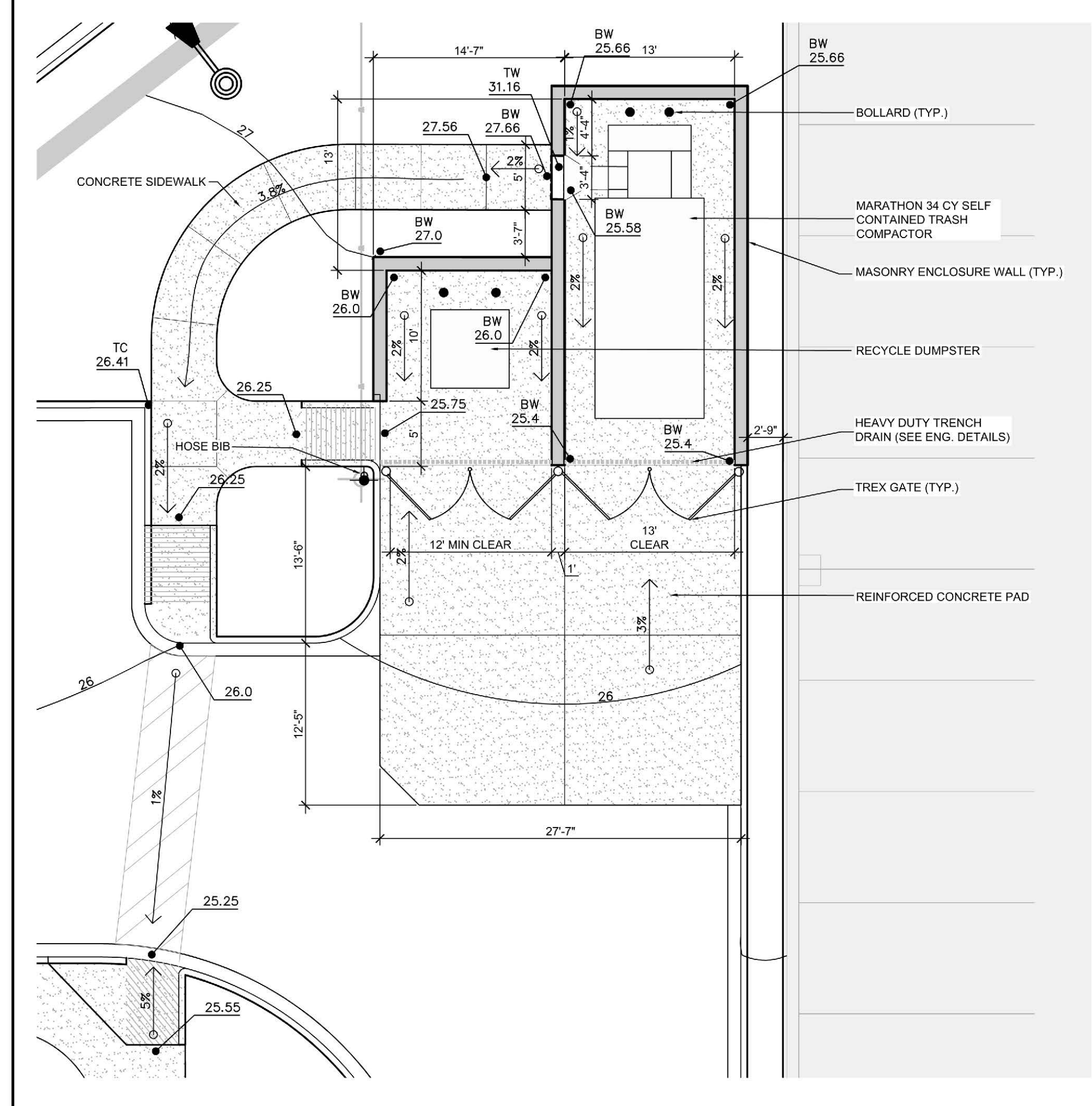
**Bollard 07**  
Scale: 1/2" = 1'-0"



**Transformer Gate 06**  
Scale: 3/4" = 1'-0"



**Reinforced Concrete Pad 05**  
Scale: 3/4" = 1'-0"



**Trash Area Layout Plan 04**  
Scale: 1/8" = 1'-0"



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STORMWATER MANAGEMENT PLAN  
**APPROVED**  
CITY OF WILMINGTON  
ENGINEERING DEPARTMENT  
DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
SIGNED \_\_\_\_\_

**Approved Construction Plan**

Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

NOTES:  
-ALL COMPACTOR SUPPORTS SHALL BE SUPPLIED BY THE COMPACTOR MANUFACTURER.  
-BREAD-BOX FOLD DOWN DOOR SHALL BE SUPPLIED BY WASTE SERVICE COMPANY.  
-OPENING TO BE 40' X 40'

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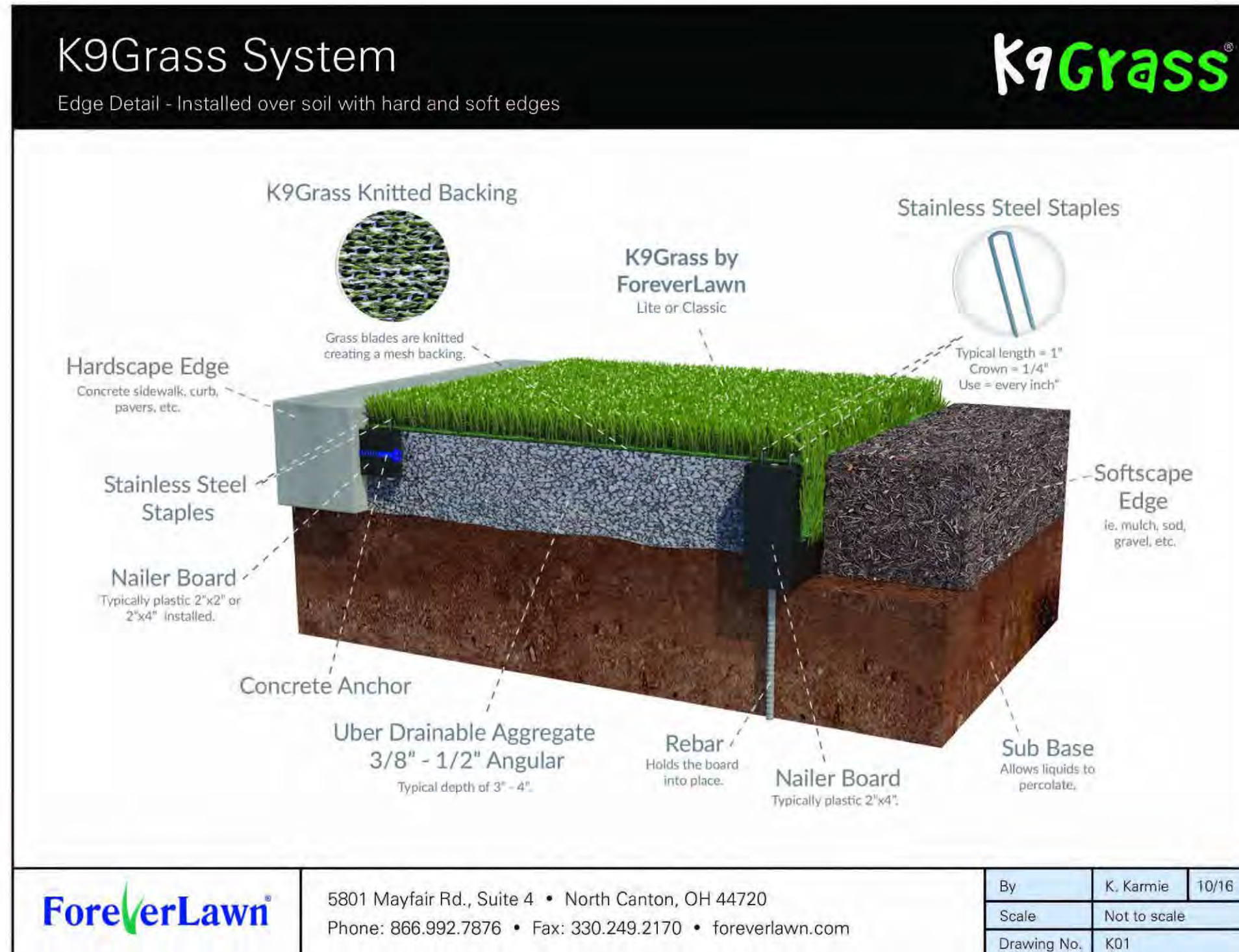


Depot-006/022/401\_2016

Item #: Depot-006/022/401  
**SQUARE CAN DOG WASTE STATIONS**



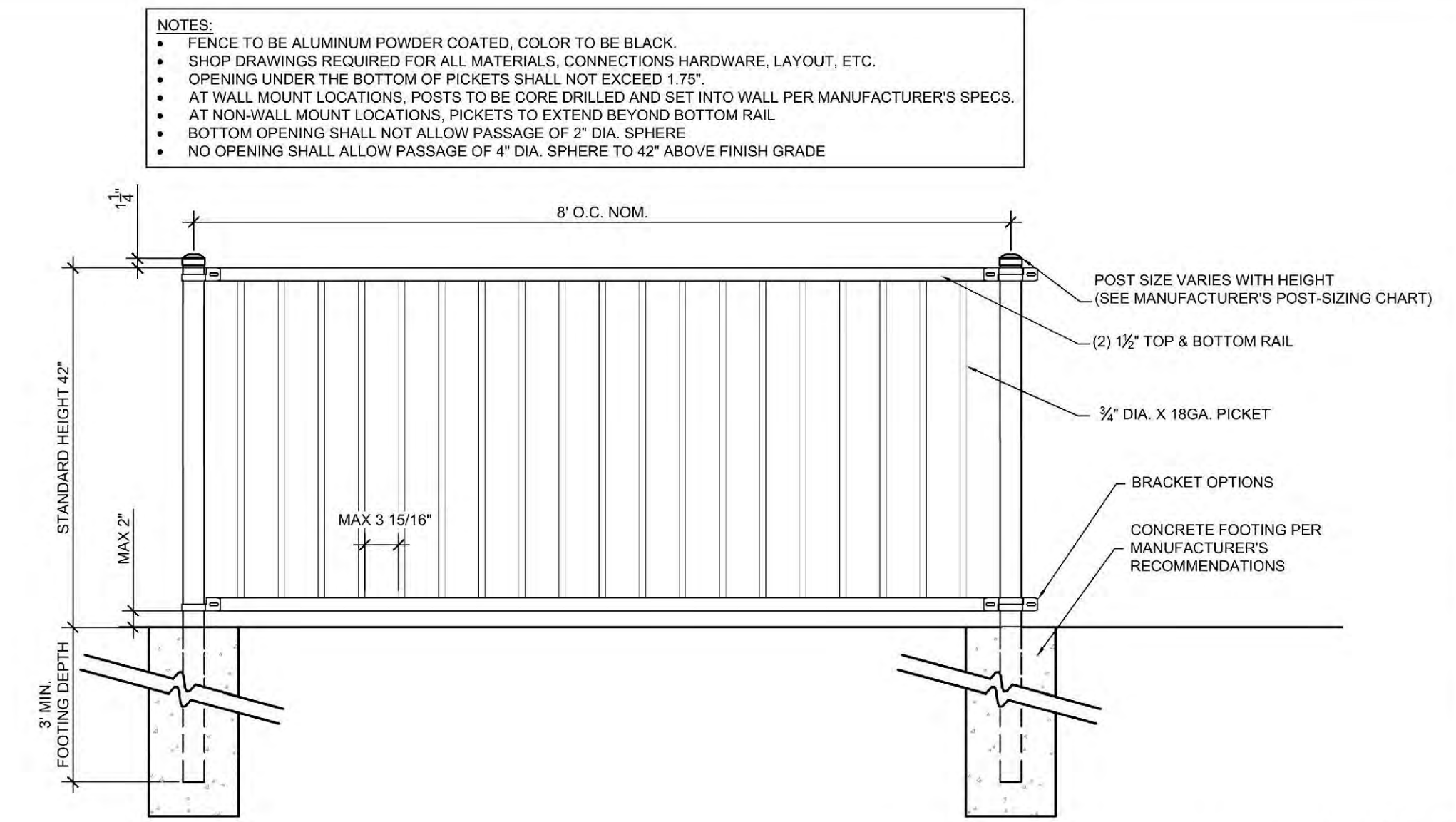
**Dog Waste Station 06**  
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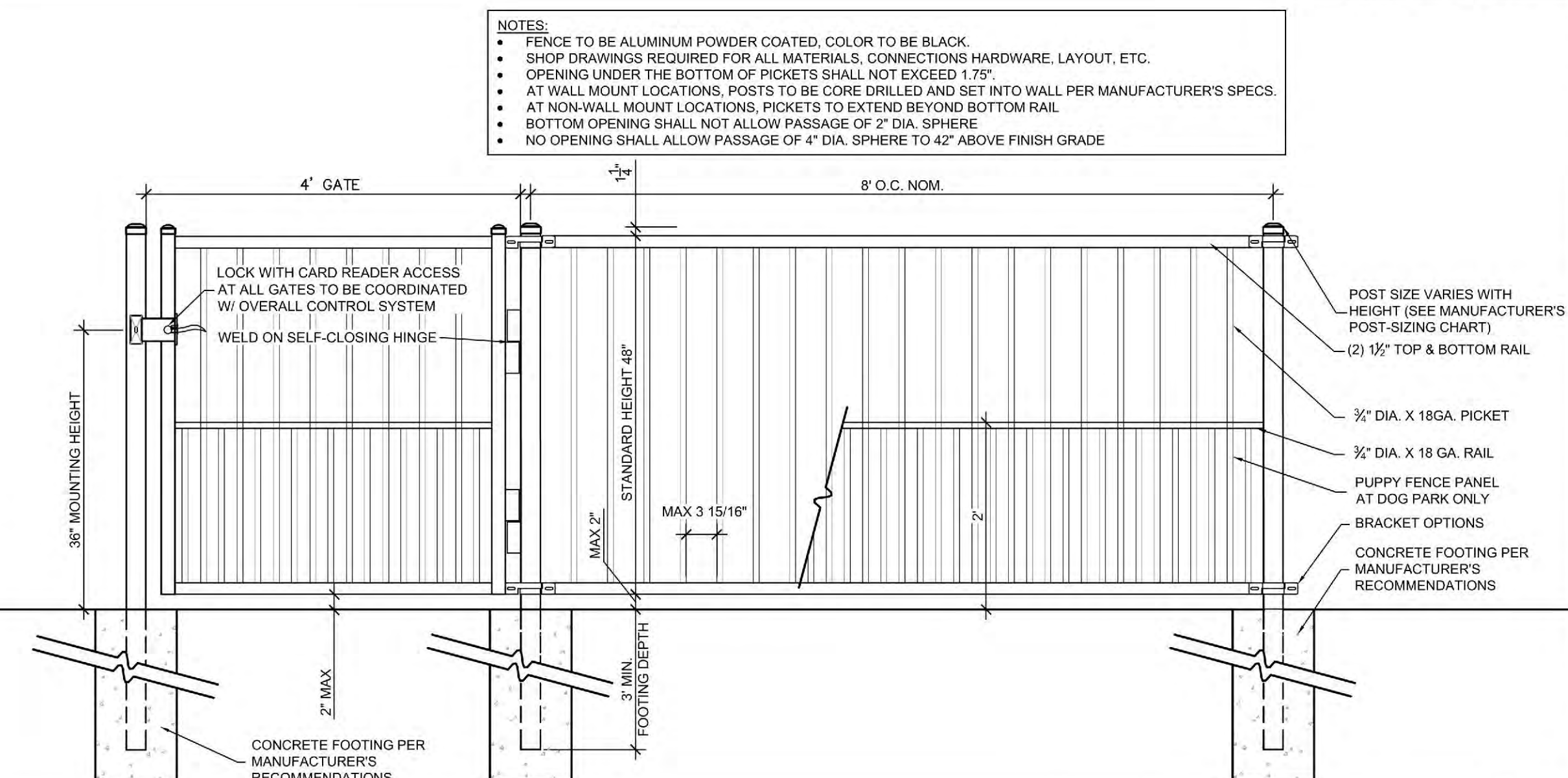
**ForeverLawn** 5801 Mayfair Rd., Suite 4 • North Canton, OH 44720  
 Phone: 866.992.7876 • Fax: 330.249.2170 • foreverlawn.com

By: K. Karmie 10/16  
 Scale: Not to scale  
 Drawing No.: K01

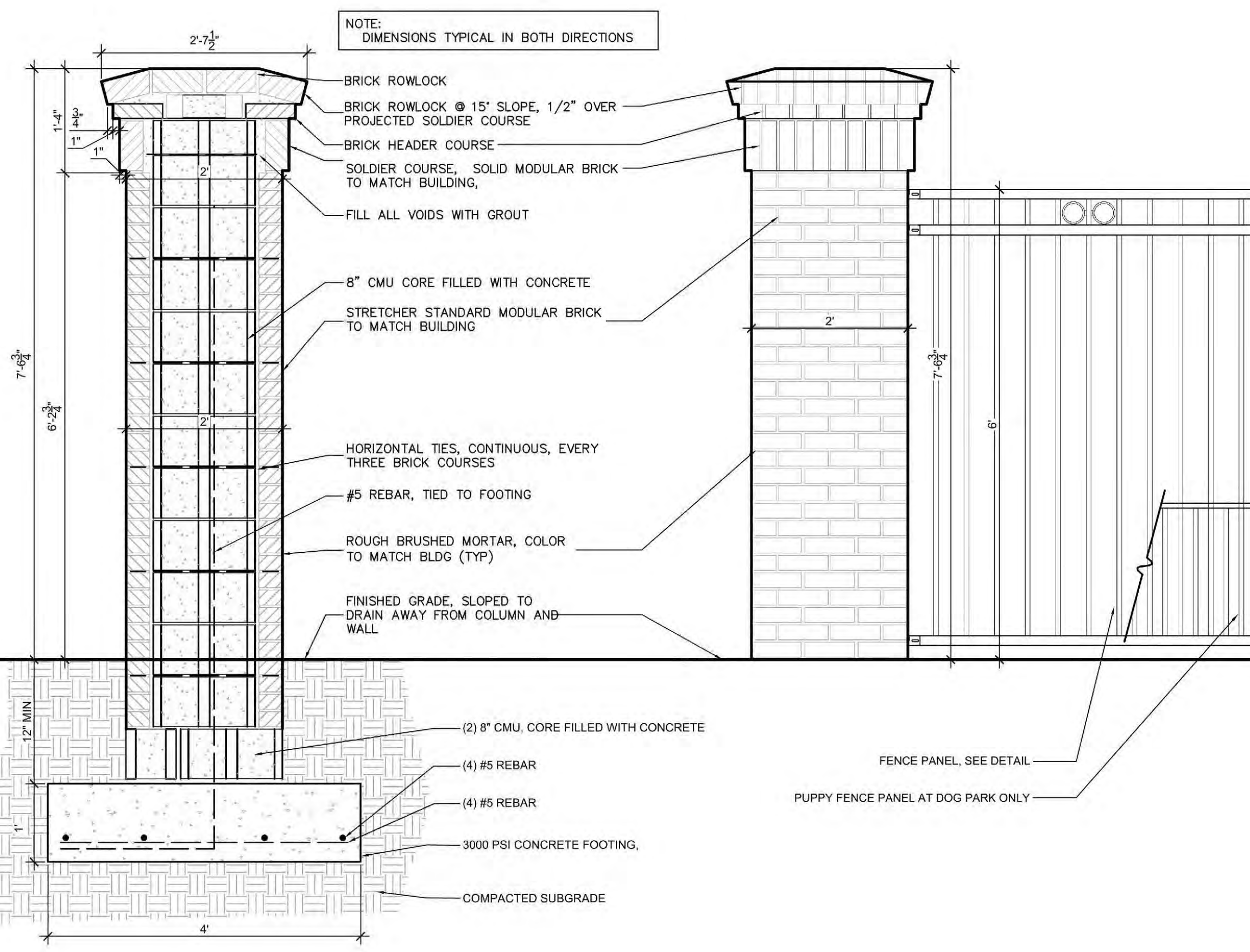
**Synthetic Turf - Dog Park 04**  
 Not to Scale



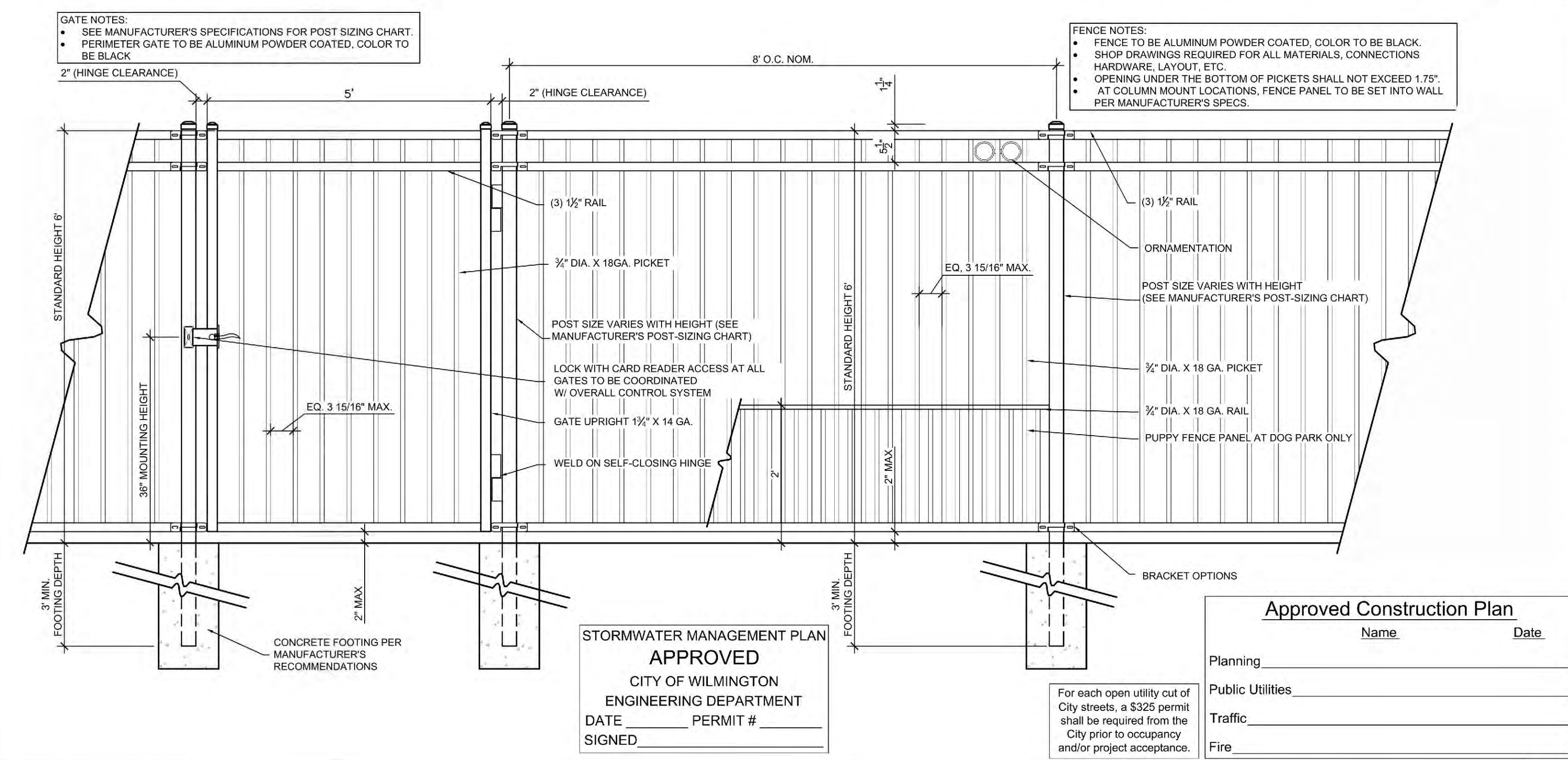
**Guardrail 03**  
 Scale: 3/4" = 1'-0"



**Dog Park Gate & Fence 02**  
 Scale: 3/4" = 1'-0"



**8' Brick Column 05**  
 Scale: 3/4" = 1'-0"



**6' Decorative Metal Fencing 01**  
 Scale: 3/4" = 1'-0"

**APPROVED**  
 CITY OF WILMINGTON  
 ENGINEERING DEPARTMENT  
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 SIGNED \_\_\_\_\_

**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_  
 Public Utilities \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

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TRC SET

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NOT FOR CONSTRUCTION

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1st TRC Sub	07.11.18
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3rd TRC Sub	11.05.18
4th TRC Sub	12.18.18

DRAWN BY: SP  
 CHECKED BY: MWL/JBM  
 Site Details



N/F SAWMILL POINT APARTMENTS OWNER, LLC  
PARID: R04712-002-003-000  
ZONING: CBD  
MULTI FAMILY

**OWNER**

DPJ RESIDENTIAL, LLC  
1539 TIPPAAH PARK COURT  
CHARLOTTE, NC 28205

**CBD, CENTRAL BUSINESS DISTRICT**

**SEC. 18-196(c)(3) STREET TREES:**

FRONT STREET, 289.5 LF  
REQUIRED TREES 10 TREES REQUIRED  
-289.5 LF X 1 TREE / 30 LF  
PROPOSED TREES 10 TREES PROPOSED

COWAN STREET, 315.7 LF  
REQUIRED TREES 11 TREES REQUIRED  
-315.7 LF X 1 TREE / 30 LF  
PROPOSED TREES 7 TREES PROPOSED\*\*  
\*\*PAYMENT-IN-LIEU: 4 TREES

NUTT STREET, 699.6 LF  
REQUIRED TREES 23 TREES REQUIRED  
-699.6 LF X 1 TREE / 30 LF  
PROPOSED TREES 20 TREES PROPOSED\*\*  
\*\*PAYMENT-IN-LIEU: 3 TREES

**ARTICLE 8**

**SEC. 18-448 (d) - GENERAL:**

REQUIRED MINIMUM TREES 79 TREES REQ. MIN.  
-5.28 AC X 15 TREES / ACRE  
PROPOSED TREES 89 TREES PROPOSED

**SEC. 18-481 - INTERIOR PARKING AREA LANDSCAPING :**

- ISLANDS 12' X 18' AND 216 SF MIN PER SINGLE TREE
- ISLANDS 12' X 36' AND 432 SF MIN PER TWO TREES
- UP TO 15% OF ISLAND MAY BE DEVOTED TO PEDESTRIAN WALKWAYS
- NO PARKING SPACE SHALL BE LOCATED MORE THAN 120' FROM AN ISLAND
- MINIMUM 20% PARKING SHALL BE SHADED BY CANOPY TREES
- ALL ISLANDS SHALL BE COVERED BY SHRUBS OR GROUNDCOVER

PARKING AREA = 41,219 SF  
REQUIRED SHADE AREA 8,244 SF SHADE AREA REQUIRED  
-41,219 SF X .20  
PROPOSED SHADE AREA 15,554 SF SHADE AREA PROPOSED  
-22 PARKING TREES X [707 SF / TREE]

**SEC. 18-483 PARKING AREA SCREENING:**

PARKING WITHIN 50' ROW = 32 LF  
REQUIRED 3' HT X 5' WIDE SCREEN  
PROPOSED 3' HT X 5' WIDE SCREEN

**SEC. 18-490 - FOUNDATION PLANTING:**

REQUIRED LANDSCAPE AREA 6,347 SF LANDSCAPE AREA  
PROPOSED LANDSCAPE AREA 7,460 SF LANDSCAPE AREA  
\*\*SEE TABLE BELOW

BUILDING FAÇADE LANDSCAPE AREAS				
BLDG FACE ADJACENT TO PARKING	FACE AREA	PERCENT	REQUIRED LANDSCAPE AREA	PROVIDED LANDSCAPE AREA
#1	8428	X 0.12 =	1011	1080
#2	3736	X 0.12 =	448	694
#3	4507	X 0.12 =	541	543
#4	14420	X 0.12 =	1730	1757
#5	3810	X 0.12 =	457	852
#6	10603	X 0.12 =	1272	1278
#7	7670	X 0.12 =	920	1256
			6351	7460
			TOTAL SF REQUIRED	TOTAL SF PROPOSED

NOTE:  
WITHIN SIGHT DISTANCE TRIANGLES, TREES WILL BE LIMBED UP TO 8' AND VEGETATION PLANTED TO PROVIDE A CLEAR VISUAL SIGHT DISTANCE BETWEEN 30" AND 8' FROM TOP OF CURB LINE.

**BUILDING SF:**

HEATED	283,323 SF
GROSS	370,198 SF
DECK	102,454 SF

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STORMWATER MANAGEMENT PLAN  
**APPROVED**  
CITY OF WILMINGTON  
ENGINEERING DEPARTMENT  
DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
SIGNED \_\_\_\_\_

**Approved Construction Plan**

Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

DPJ Residential, LLC

**The Flats on Front**  
111 Cowan Street  
Wilmington, North Carolina

TRC SET

NOT FOR CONSTRUCTION

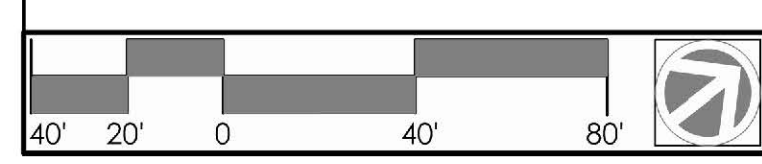
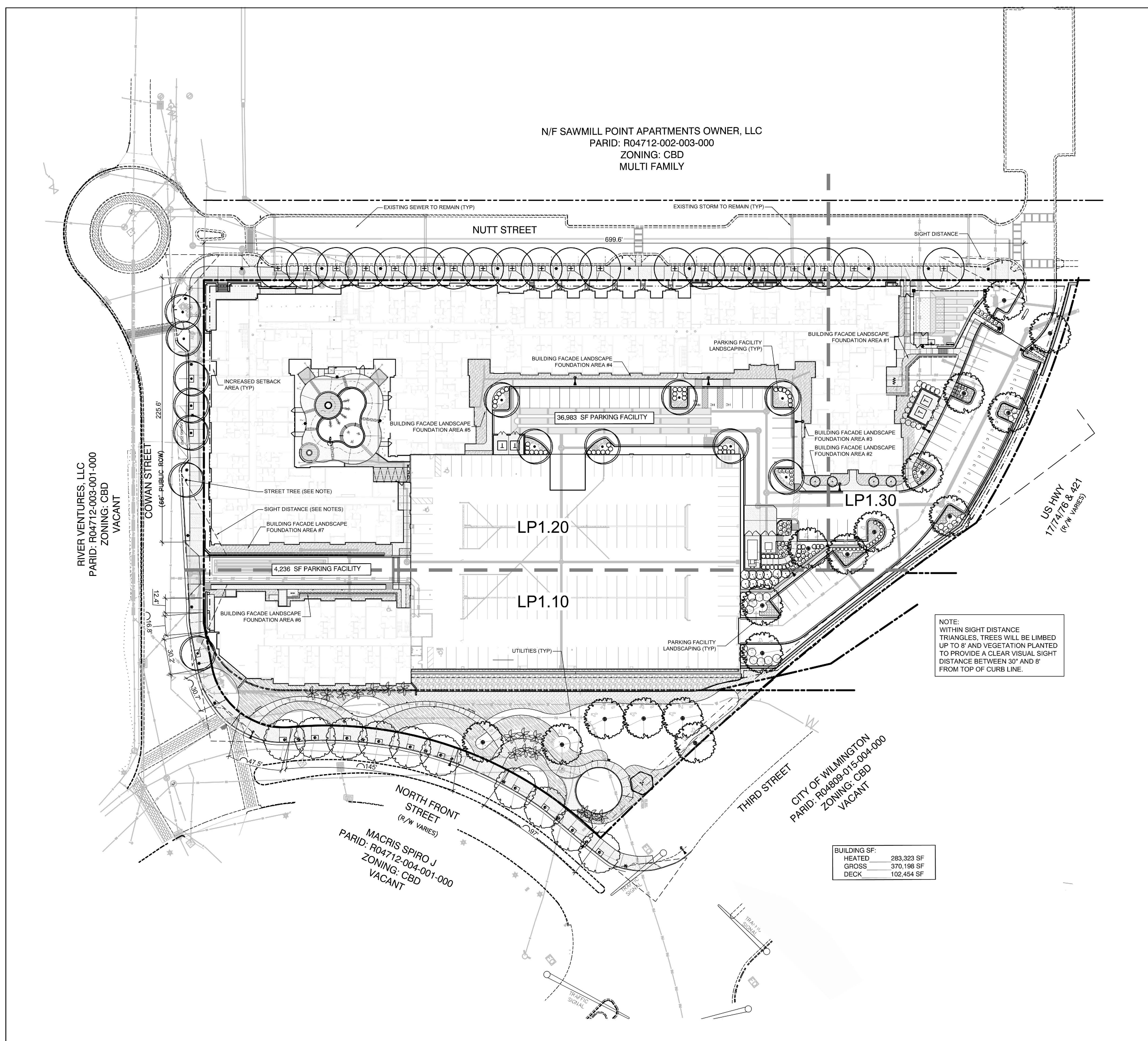
NOT FOR CONSTRUCTION

**PROJECT: 218022**

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1st TRC Sub	07.11.18
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3rd TRC Sub	11.05.18
4th TRC Sub	12.18.18

DRAWN BY: SP  
CHECKED BY: ML/JBM  
Overall Planting Plan



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DPJ Residential, LLC  
**The Flats on Front**  
111 Cowan Street  
Wilmington, North Carolina

TRC SET

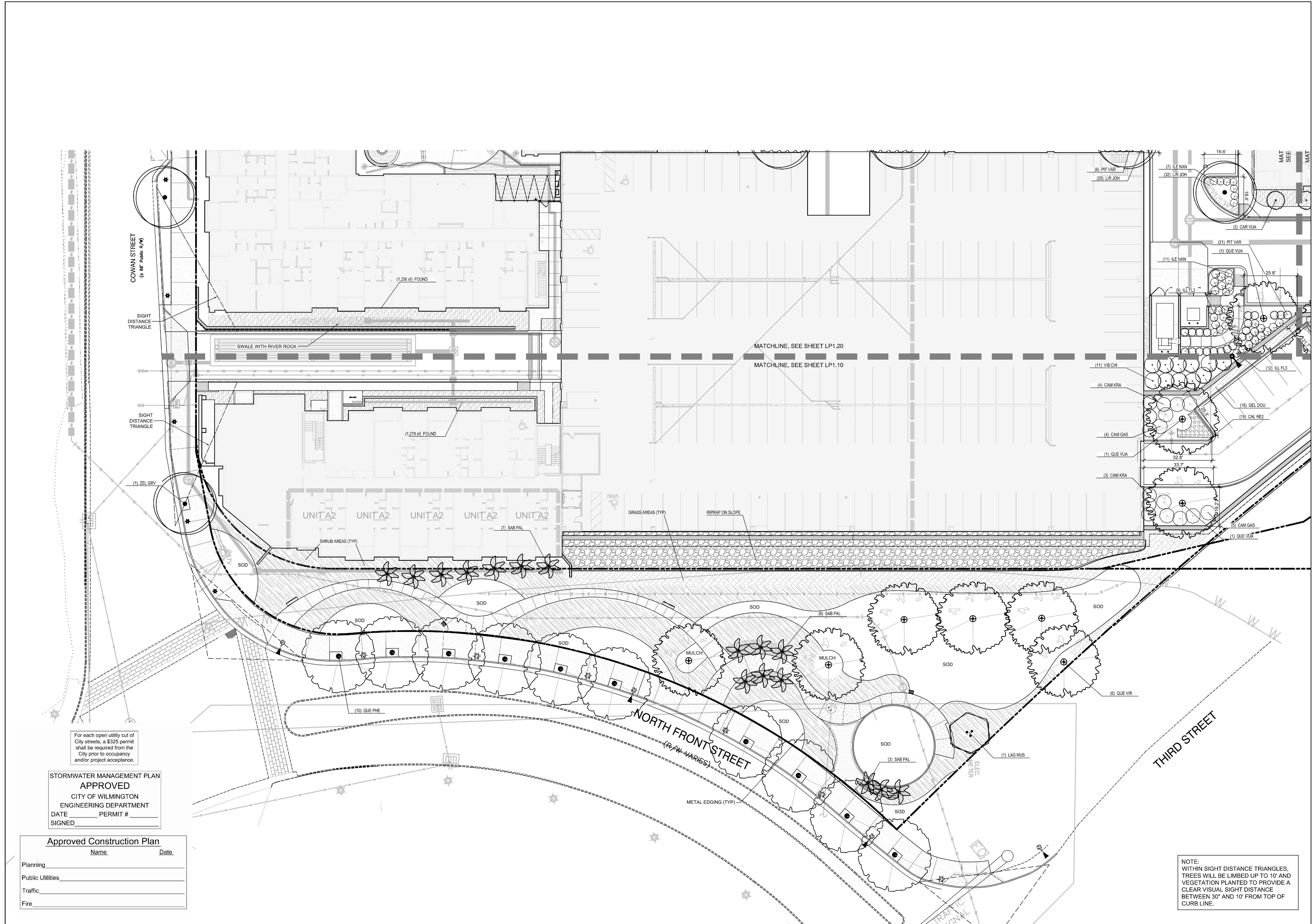
NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

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3rd TRC Sub	11.05.18
4th TRC Sub	12.18.18

DRAWN BY: SP  
CHECKED BY: ML/JBM  
Enlarged Planting Plan

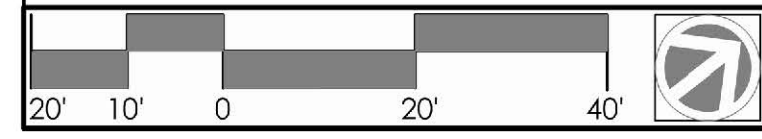


For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

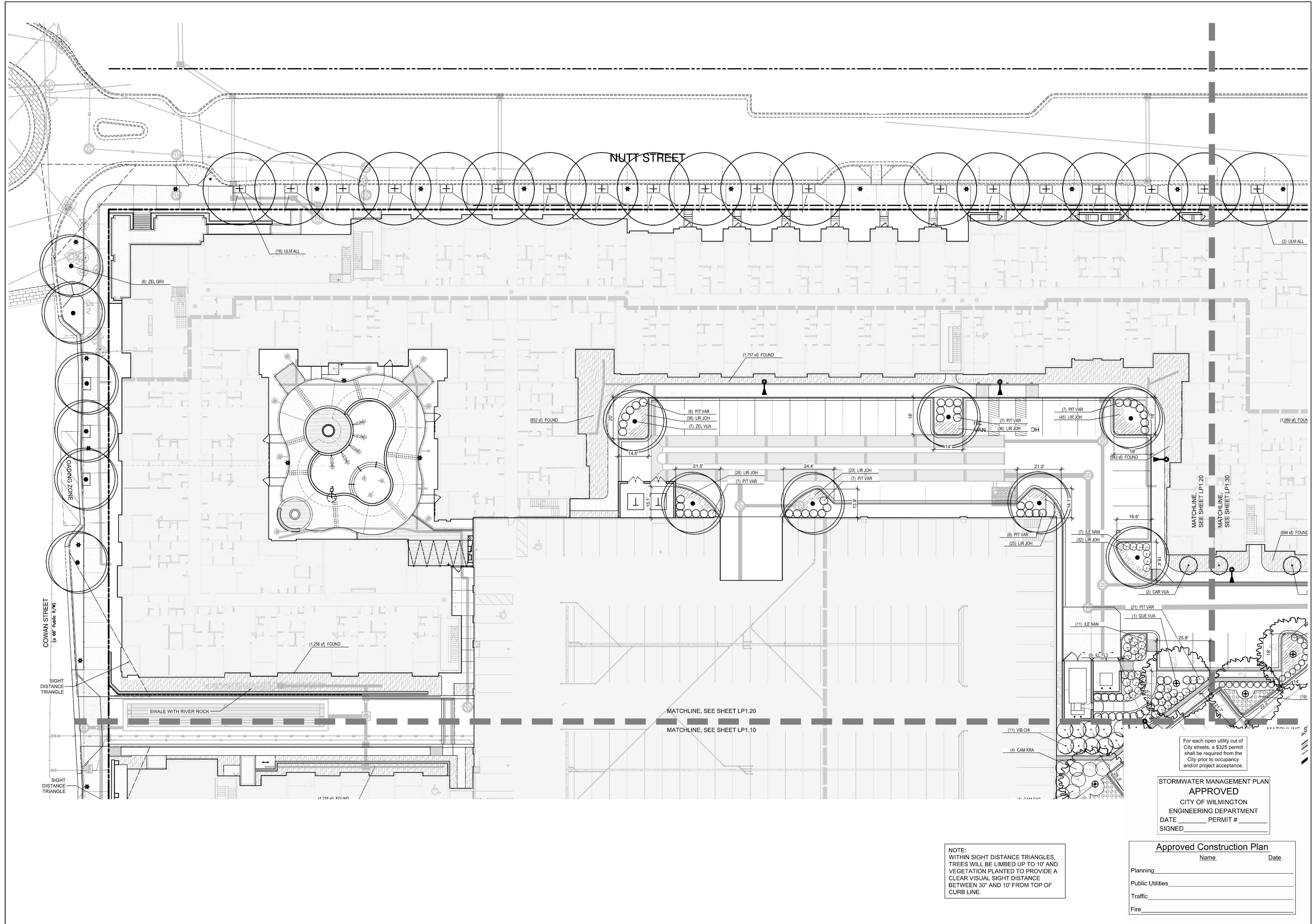
**STORMWATER MANAGEMENT PLAN APPROVED**  
CITY OF WILMINGTON  
ENGINEERING DEPARTMENT  
DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_  
SIGNED \_\_\_\_\_

**Approved Construction Plan**

Name	Date
Planning	_____
Public Utilities	_____
Traffic	_____
Fire	_____







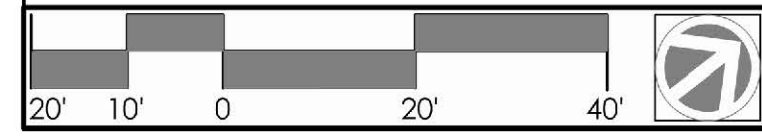
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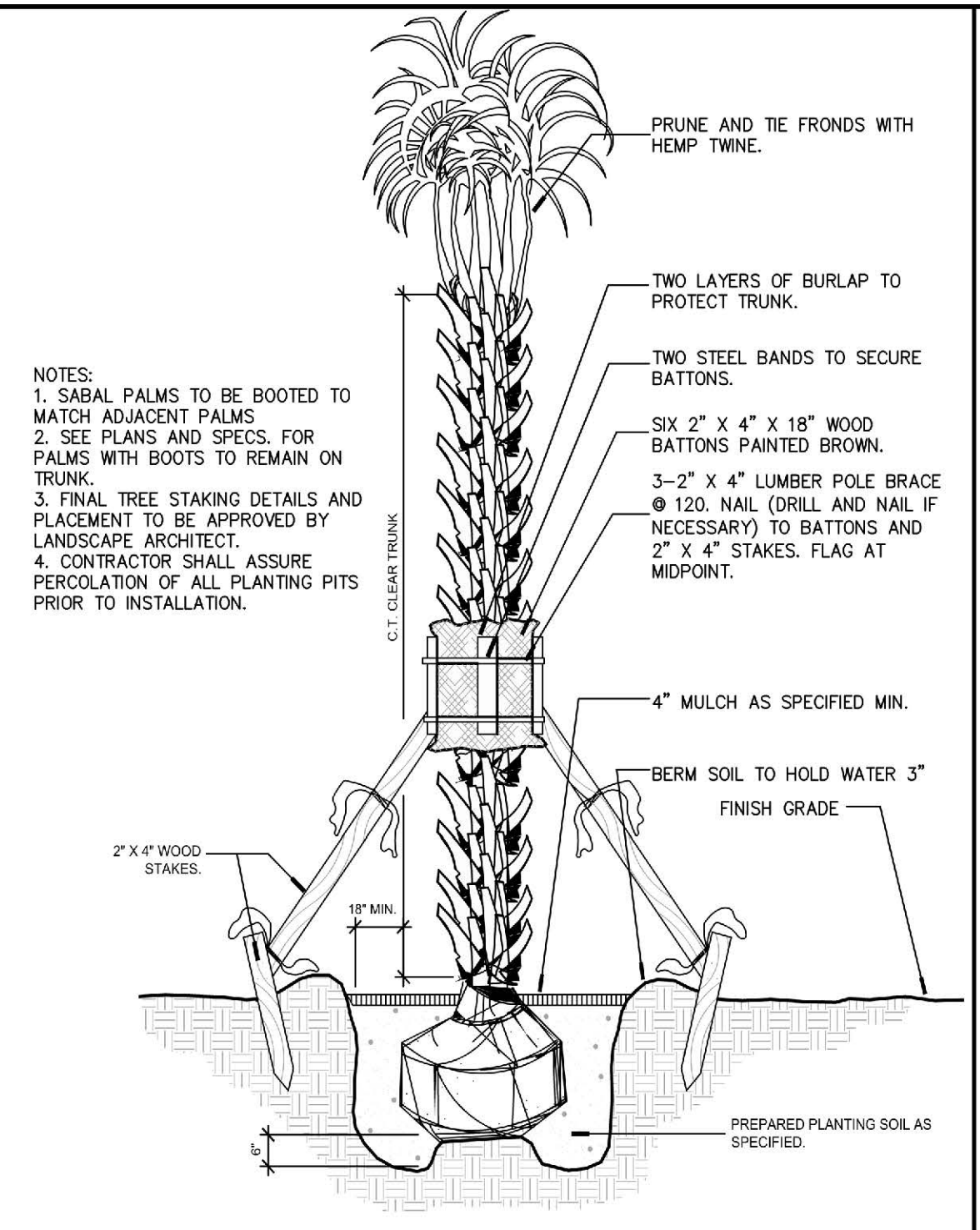
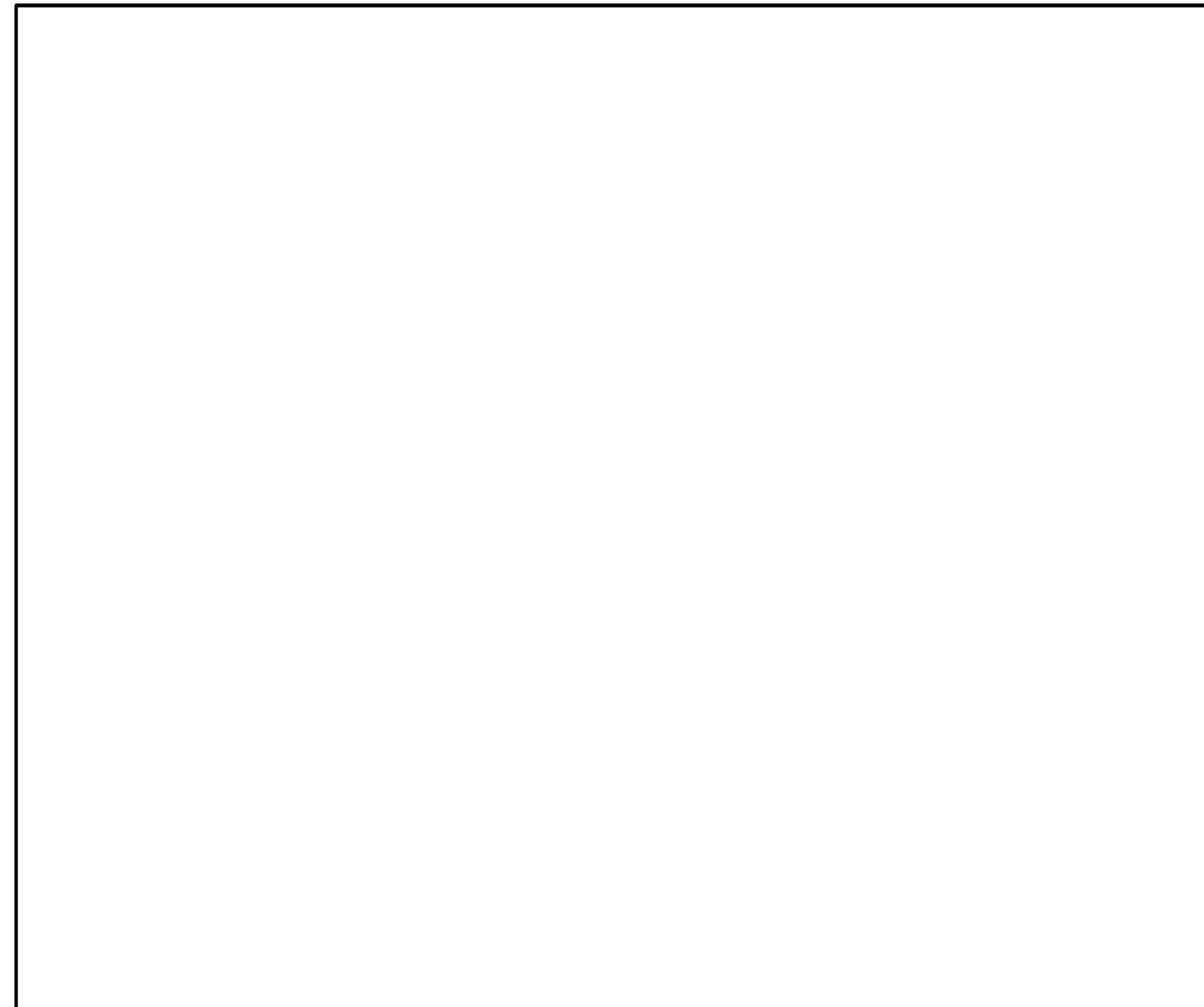
NOT FOR CONSTRUCTION











**Landscape Maintenance Notes**  
THE OWNERS OF THE PROPERTY AND THEIR AGENTS, HEIRS OR ASSIGNS SHALL BE RESPONSIBLE FOR THE INSTALLATION, PRESERVATION AND MAINTENANCE OF ALL PLANTINGS AND PHYSICAL FEATURES SHOWN ON THIS PLAN. THE OWNERS SHALL BE RESPONSIBLE FOR ANNUAL MAINTENANCE OF THE VEGETATION TO INCLUDE BUT NOT LIMITED TO:

A. Fertilization: Avoid any nitrogen fertilization of cool-season grasses, such as tall fescue, after the February application until September. Fertilize lawns three times per year September 15, October 31, and February 15 according to soil test. Fertilize warm season grasses once during growing season per soil test.

B. Pruning: Purpose of pruning is to improve health and vigor of woody plants, adjustments to the foliage and branching density for visual screens and managing competition, and improving the appearance of trees and shrubs. Pruning shall be limited to removal of dead wood or branches for trees or for sight distance/safety reasons for the first year. The ANSI A300 Tree Care Operations standards should be adhered to. The pruning of shrubs shall be limited to the pruning necessary to maintain the natural shape of the plant except for sheared hedges.

1. Shrubs in buffers allowed to remain full to ground and 6'-8' height.
2. Shrubs in streetscape buffer trimmed to continuous soft hedges below trees.
3. Shrubs in planting islands kept trimmed to 36" maximum height.

C. Pest Control: Pre-emergent weed control for lawns and shrub beds may be applied in February. Chemical treatment for insect infestation and disease may be applied and shall be specific to the problem.

D. Mulching: Mulching shall be maintained at a depth of 2'-3" in plant beds. Mulch shall be reapplied every year.

E. Mowing primary fescue lawns shall be maintained at a height of 3". Secondary turf areas may be maintained higher and less frequently. Warm season grasses shall be mowed as needed during the growing season to maintain the recommended height of the species of turf grass.

F. Plant protection: Avoid excess intrusion into the root zone area of established plantings. Install tree protection fencing as shown during construction.

G. Watering: If any irrigation system is utilized, the system shall be regulated to provide approximately 1" of rainfall per week during the growing season.

H. Maintenance notes for Bioretention Basin plant materials:

1. Visually inspect and repair erosion around bioretention areas on a monthly basis.
2. Inspect mulch cover monthly and replace any void area as needed. additional mulch shall be applied in the spring where needed.
3. Remove and replace all dead or diseased vegetation twice annually. Treat all diseased shrubs and trees as needed to insure proper growth.
4. All plant materials shall be watered by hand for two weeks after installation.
5. Replace any deficient stakes or wires whenever needed.
6. Remove all trash weekly.

**Landscape Planting Notes**  
1. Verification of total landscape material quantities as shown on the landscape plans and in the plant list shall be the responsibility of the landscape contractor. The landscape architect shall be notified of any discrepancies prior to final bidding or installation.  
2. All landscape materials shall conform to the most recent American Standards for Nursery Stock established by the American Association of Nurserymen (A.A.N.).  
3. Soil analysis shall be obtained by landscape contractor prior to planting. See Soil Preparation and Amendment Notes  
4. Shrub bed area preparation is highly preferred to individual dug holes.  
5. Trees with root flare covered by more than 1.5" of soil will be rejected prior to installation.  
6. Landscape material placed in prepared holes shall be properly backfilled prior to the end of the working day.  
7. All saucers shall be soaked with water and mulched immediately following installation.  
8. All prepared ground cover and annual bed installations shall be properly soaked and mulched prior to the end of the day.  
9. Landscape Architect shall approve any on-site plant storage area for accessibility, shade conditions, heating-in mulch material and temporary watering methods.  
10. Lift and set the tree by root ball only. Do not lift using the tree trunk. Do not use tree trunk as a lever.  
11. All root balls removed from containers shall be scarified by hand prior to placement and back filling with prepared soils. Hand tools are not to be used to scarify root balls.  
12. All rope and wrapping twine shall be cut and removed from around the upper parts of the root ball. Metal basket wires and burlap shall be pulled back and tucked under the edges of the saucer rings on all trees and large shrubs. All synthetic burlap shall be removed from plant balls prior to back filling.  
13. All plant beds or raised saucer rings shall be edged with smooth, continuous curves.  
14. All plant material shall be planted at heights as illustrated in plant details.  
15. Tree guying shall be performed within a week of planting. The landscape contractor shall be responsible for removing all tree guying strapping and stakes after the first full growing season or one year, whichever ever comes first.  
16. B & B as listed under "root" in the plant list indicates balled and burlapped.  
17. Contractor shall verify locations of underground utilities prior to planting. Any exposed or uncovered lines shall be shown to general contractor prior to backfilling.  
18. All plant beds and raised saucer rings shall be graded to provide adequate drainage and shall be mulched as specified.  
19. All materials, planting and landscape work shall conform to the current municipal authority's standard specifications and details.  
20. All landscape areas that are not planted and mulched or paved shall be seeded or sodded per owner's direction with rebel IV turf tall fescue, unless otherwise noted.  
21. Tree protection fence shall be installed, inspected and approved prior to the issuance of any grading or other permits.  
22. First year pruning of tree crown shall be limited to removal of dead & damaged wood.  
23. The owner shall be responsible for the maintenance of all required landscaping by keeping lawns mowed, all plants maintained as disease free, all planting beds groomed and kept weed free (except in areas of preserved existing natural vegetation i.e. thickets) and kept them free from trash, debris and other materials.  
24. The owner shall be responsible for the replacement of any required planting, which is removed or dies after the date of planting. Such replacement shall occur during the next planting season.  
25. Trees within Public Right-of-Way to be planted from October 1st to April 30th only.

**Soil Preparation and Amendment Notes**

1. Soil samples shall be taken and submitted for soil analysis.
2. Per recommendation of soils report; landscape contractor to supplement soil with lime, macronutrients and micronutrients.
3. Contractor to amend soil with organic material and/or sand to yield the final soil ratio:  
33.3% Sand/Silt  
33.3% Clay  
33.3% Organic Material \*

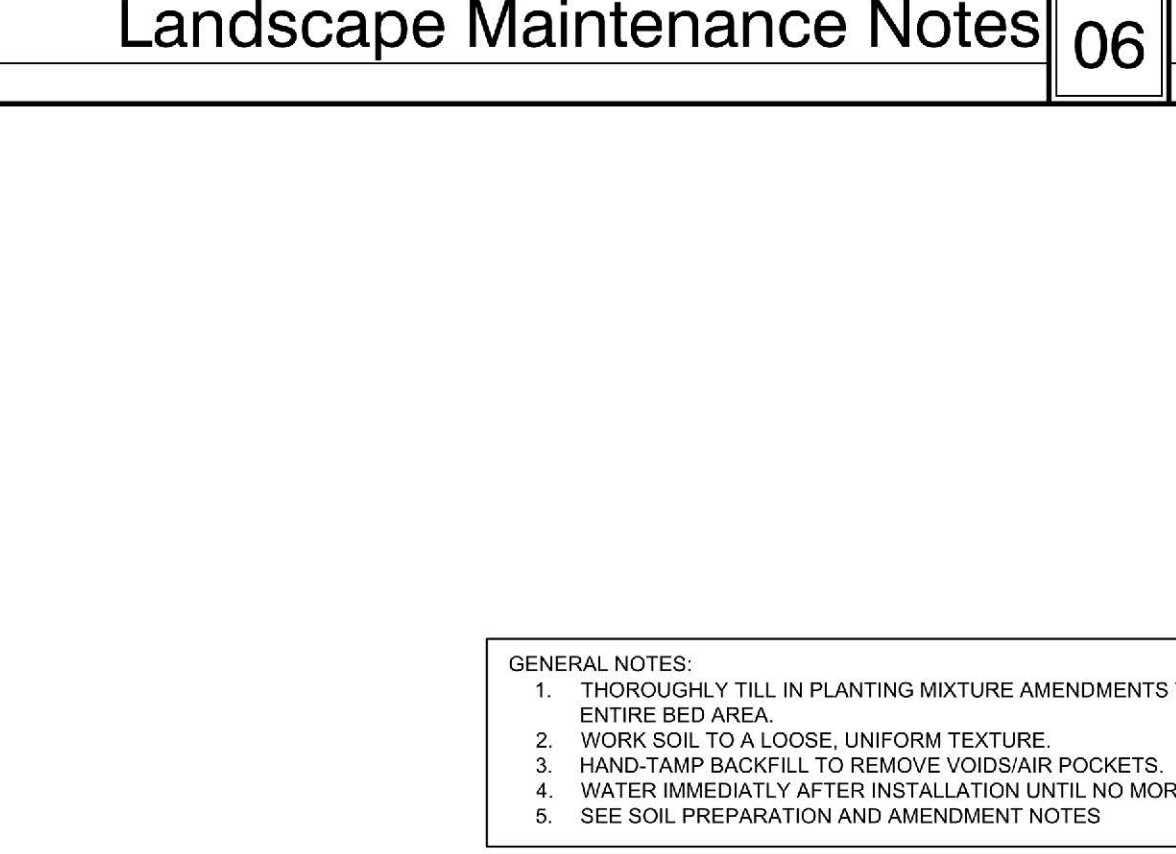
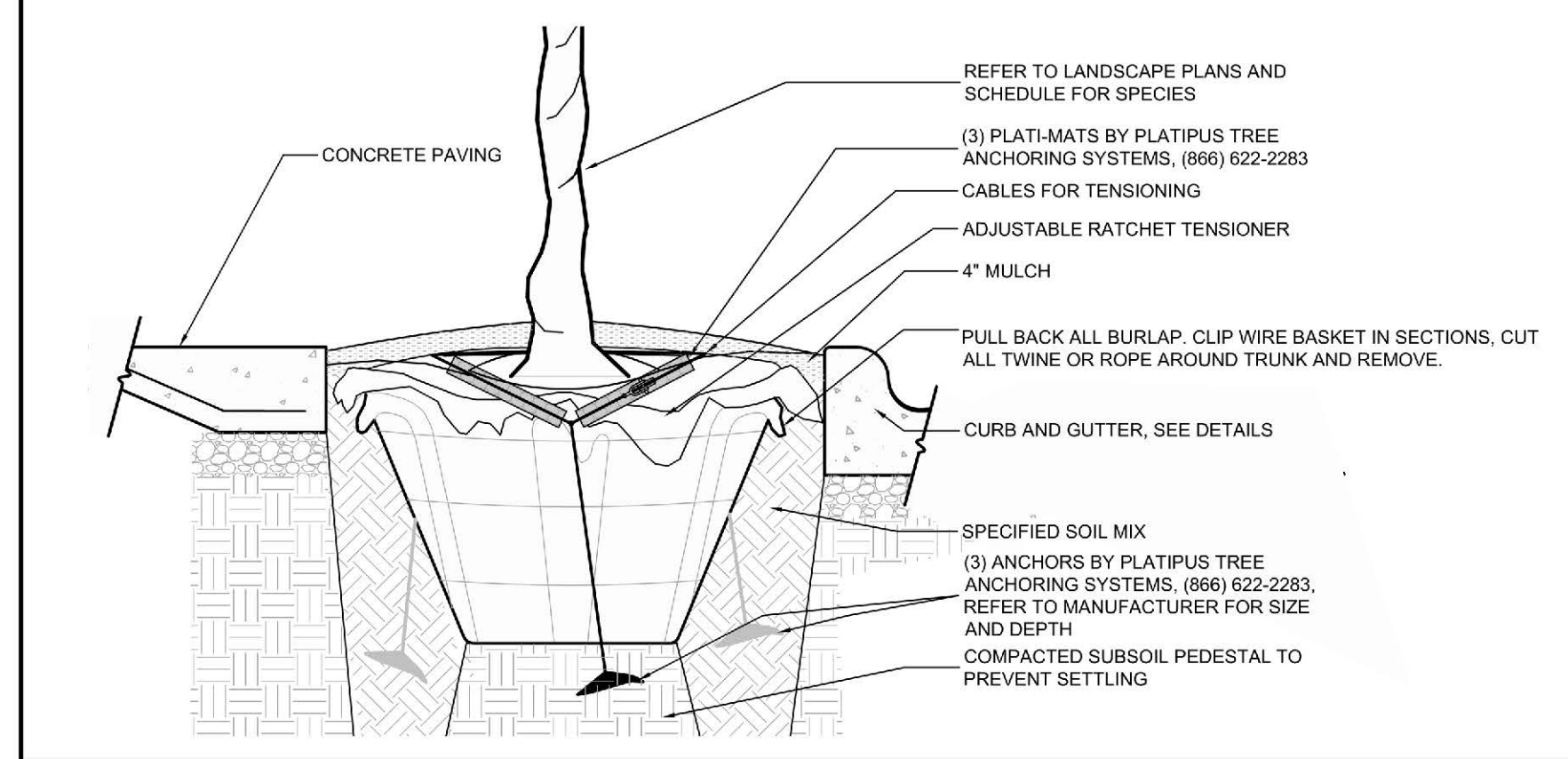
\* Organic material to be Compost made solely from plant-based products. Peat moss is allowed in sandy soils

4. Native soil, Lime, Nutrients and Amendments to be tilled to a minimum width of 3-5 x root ball for trees. Shrub and groundcover planting areas shall be tilled to a minimum 4" below rootball or a minimum 12" deep.

**Landscape Maintenance Notes 06**

**Landscape Maintenance Notes 03**

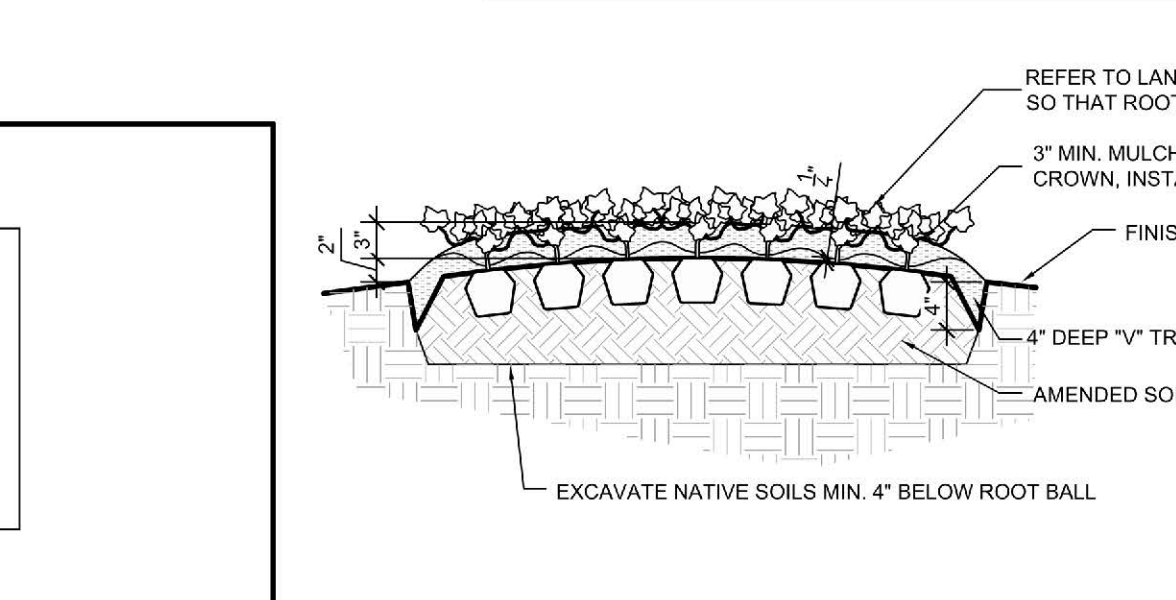
**Planting and Soil Notes 02**



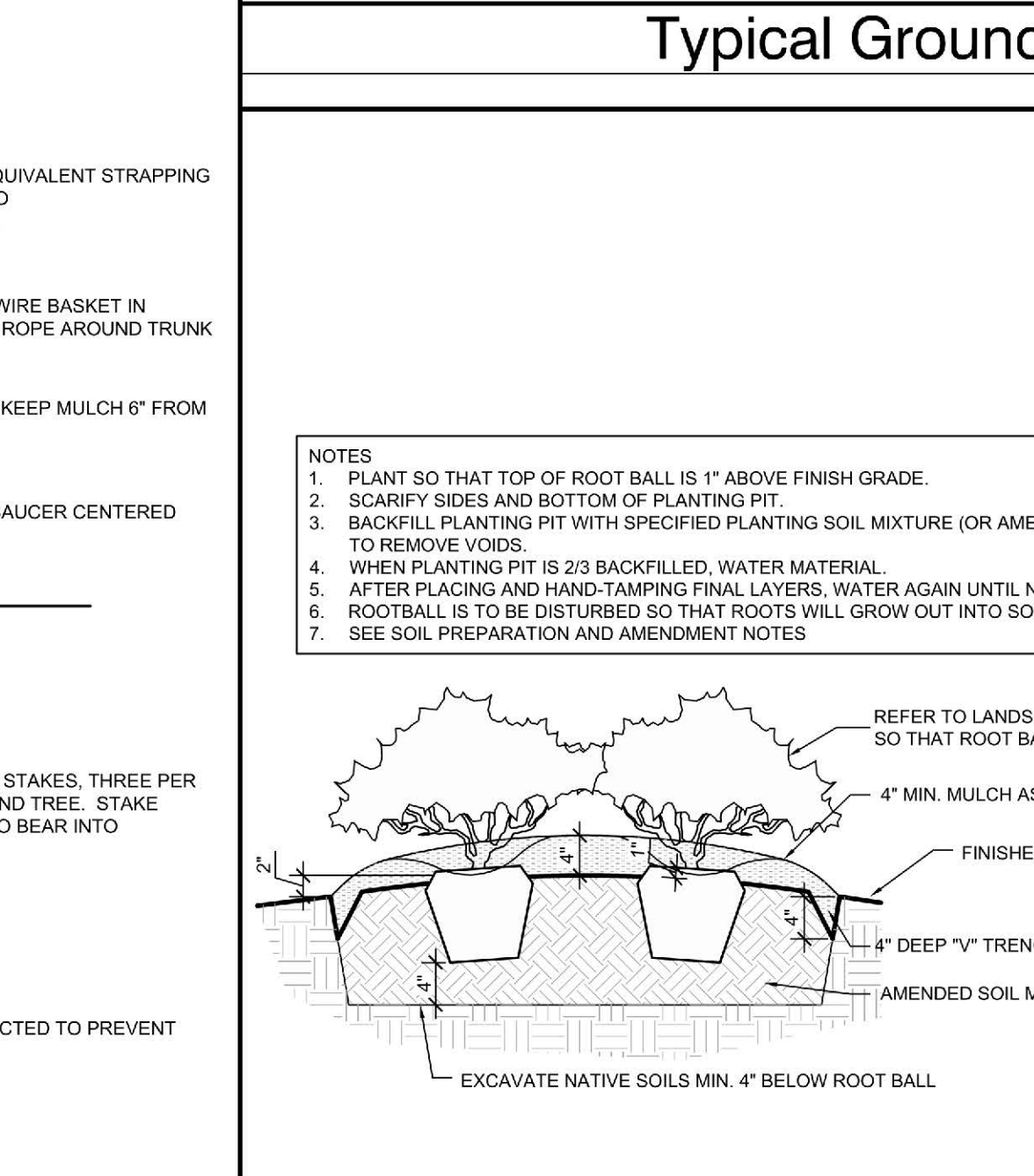
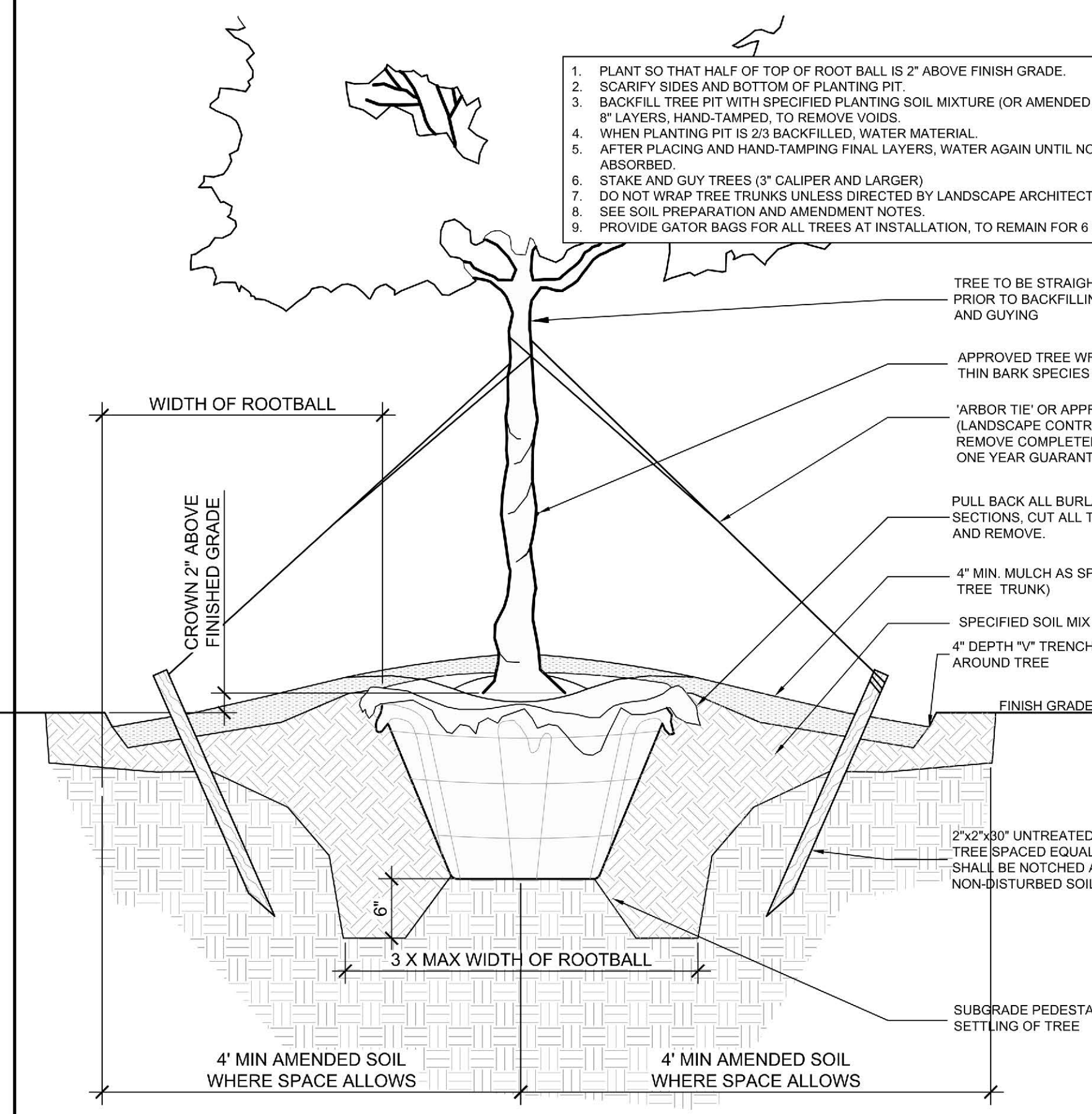
**PLANT SCHEDULE**

TREES	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPR.	REMARKS
QUE VIR	6	QUERCUS VIRGINIANA SOUTHERN LIVE OAK	4"	16-18'	8-10'	FULL HEAD, MATCHED
SAB PAL	16	SABAL PALMETTO SABAL PALMETTO PALM	-	8-10'	3-5'	FULL, MATCHED
STREET TREES	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPR.	REMARKS
QUE PHE	10	QUERCUS PHELLOS WILLOW OAK	2.5-3"	12-14'	6-7'	FULL, MATCHED
ULM ALL	20	ULMUS PARVIFOLIA 'UPMIF'	2.5-3"	12-14'	6-7'	FULL HEAD, MATCHED
ZEL GRV	7	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE ZELKOVA	2.5-3"	12-14'	6-7'	FULL, MATCHED
UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPR.	REMARKS
LAG MUS	1	LAGERSTROEMIA FAURIEI 'MUSKOGEE' MUSKOGEE 'CRAPE MYRTLE'	-	8-10'	6-8'	FULL HEAD, MATCHED, 3 TRUNK, MIN. LIMBED UP
VEHICULAR TREES	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPR.	REMARKS
CAR VUA	4	CARPINUS BETULUS 'FRANS FONTAINE' PYRAMIDAL EUROPEAN HORNBEAN	2"	10-12'	3-5'	FULL
QUE VUA	11	QUERCUS VIRGINIANA SOUTHERN LIVE OAK	2.5-3"	12-14'	6-8'	FULL HEAD, MATCHED
ZEL VUA	7	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE ZELKOVA	2.5-3"	12-14'	6-7'	FULL, MATCHED
SHRUBS	QTY	BOTANICAL / COMMON NAME	HT.	SPR.	REMARKS	
CAM KAS	7	CAMELLIA JAPONICA 'KRAMER'S SUPREME' TM KRAMER'S SUPREME CAMELLIA	24-36"	15-20"	FULL	
CAM GAS	9	CAMELLIA SASANQUA 'SHISHI GASHIRA' SHISHI GASHIRA CAMELLIA	18-24"	24-30"	FULL	
ILE BUR	11	ILEX CORNUTA 'BURFORDI NANA' DWARF 'BURFORD' HOLLY	36"-42"	24-28"	FULL	
ILE NAN	41	ILEX VOMITORIA 'NANA' DWARF 'YAUPON'	18" MIN.	12"	FULL	
ILL FL3	21	ILICLIUM PARVIFLORUM 'FLORIDA SUNSHINE' FLORIDA SUNSHINE ILICLIUM	18-24"	12-18"	FULL	
JAS FLO	19	JASMINUM FLORIDUM SHOWY JASMINE	18"	15"	FULL	
LOR EVE	11	LOROPETALUM CHINENSE 'EVER RED' EVER RED LOROPETALUM	18-24"	12-18"	FULL	
OSM FRA	15	OSMANTHUS FRAGRANS SWEET TEA OLIVE	24-36"		FULL	
PIT VAR	61	PITISPORUM TOBIRA 'VARIEGATA' VARIEGATED MOCK ORANGE	18-24"	12-18"	FULL	
VIB CHI	11	VIBURNUM AWABUKI 'CHINDO'	36"-48"	24-30"	FULL	
SHRUB AREAS	QTY	BOTANICAL NAME / COMMON NAME	CONT.	SPACING	REMARKS	
FOUND	7,460 SF	FOUNDATION LANDSCAPE / FOUNDATION LANDSCAPE	-	VARIETY OF SHRUBS AND GROUNDCOVERS		
GRASS	259	GRASS AREAS / GRASSES	1 GAL	36" o.c.	FULL	
PARK	8,969 SF	PARK SHRUB AREAS / MIXED SHRUBS	VARIES	VARIETY OF SHRUBS AND GROUNDCOVERS		
GRASS AREAS	QTY	BOTANICAL / COMMON NAME	CONT.	HT.	SPR.	REMARKS
CAL RE2	112	CALAMAGROSTIS BRACHYTRICHA KOREAN FEATHER REED GRASS	1 GAL			36" o.c. FULL
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CONT.	HT.	SPR.	REMARKS
GEL DOU	34	GELSEMIUM SEMPERVIRENS & RANKINII DOUBLE SHOT DOUBLE SHOT JESSAMINE	1 GAL	3-5"	36" RUNNERS	42" o.c. 36" RUNNERS TIED TO FENCE OR WALL FULL
LIR JOH	282	LIRIOPE MUSCARI 'JOHN BURCH' LILY TURF	1 GAL	4-6"	4-6"	18" o.c. FULL
SOD		ZOYSIA DOUBLE SHREDDED HARDWOOD				

**Tree Well Anchoring 08**  
Scale: 3/4" = 1'-0"



**Typical Groundcover Planting 05**  
Scale: 3/4" = 1'-0"



**Typical Shrub Planting 04**  
Scale: 3/4" = 1'-0"

**Plant Schedule 01**

TREES	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPR.	REMARKS
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LIR JOH	282	LIRIOPE MUSCARI 'JOHN BURCH' LILY TURF	1 GAL	4-6"	4-6"	18" o.c. FULL
SOD		ZOYSIA DOUBLE SHREDDED HARDWOOD				

**Typical Tree Planting (Sandy Soils) 07**  
Scale: 1" = 10'

**Typical Shrub Planting 04**  
Scale: 3/4" = 1'-0"

**Plant Schedule 01**

**Approved Construction Plan**

STORMWATER MANAGEMENT PLAN APPROVED

CITY OF WILMINGTON ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

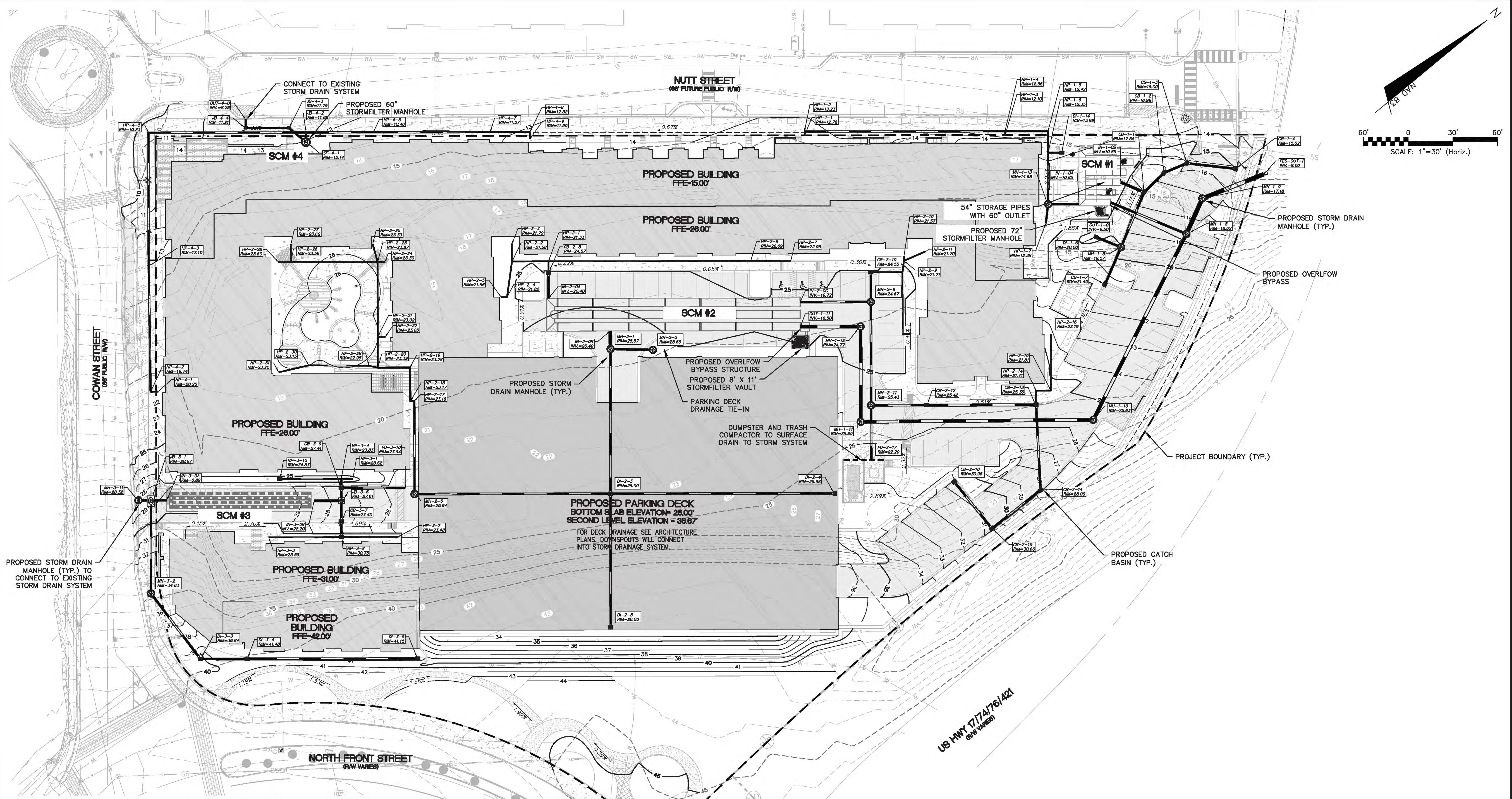
Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.





For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

1 inch

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

**Approved Construction Plan**

Name	Date
Planning	
Traffic	
Fire	

REV.	DESCRIPTION	DATE
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/11/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	10/25/2018
C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	11/07/2018
D	NEW HANOVER COUNTY SEDIMENT & EROSION CONTROL SUBMITTAL	11/13/2018
E	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITTAL	11/26/2018
F	CONTRACTOR BIDDING SET	12/12/2018
G	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	12/20/2018

FINAL DRAWING FOR REVIEW PURPOSES ONLY

SEAL

**MCKIM & CREED**  
243 North Front Street  
Wilmington, North Carolina 28401  
Phone: (910)343-1048, Fax: (910)251-8282  
License: F-1222  
www.mckimcreed.com

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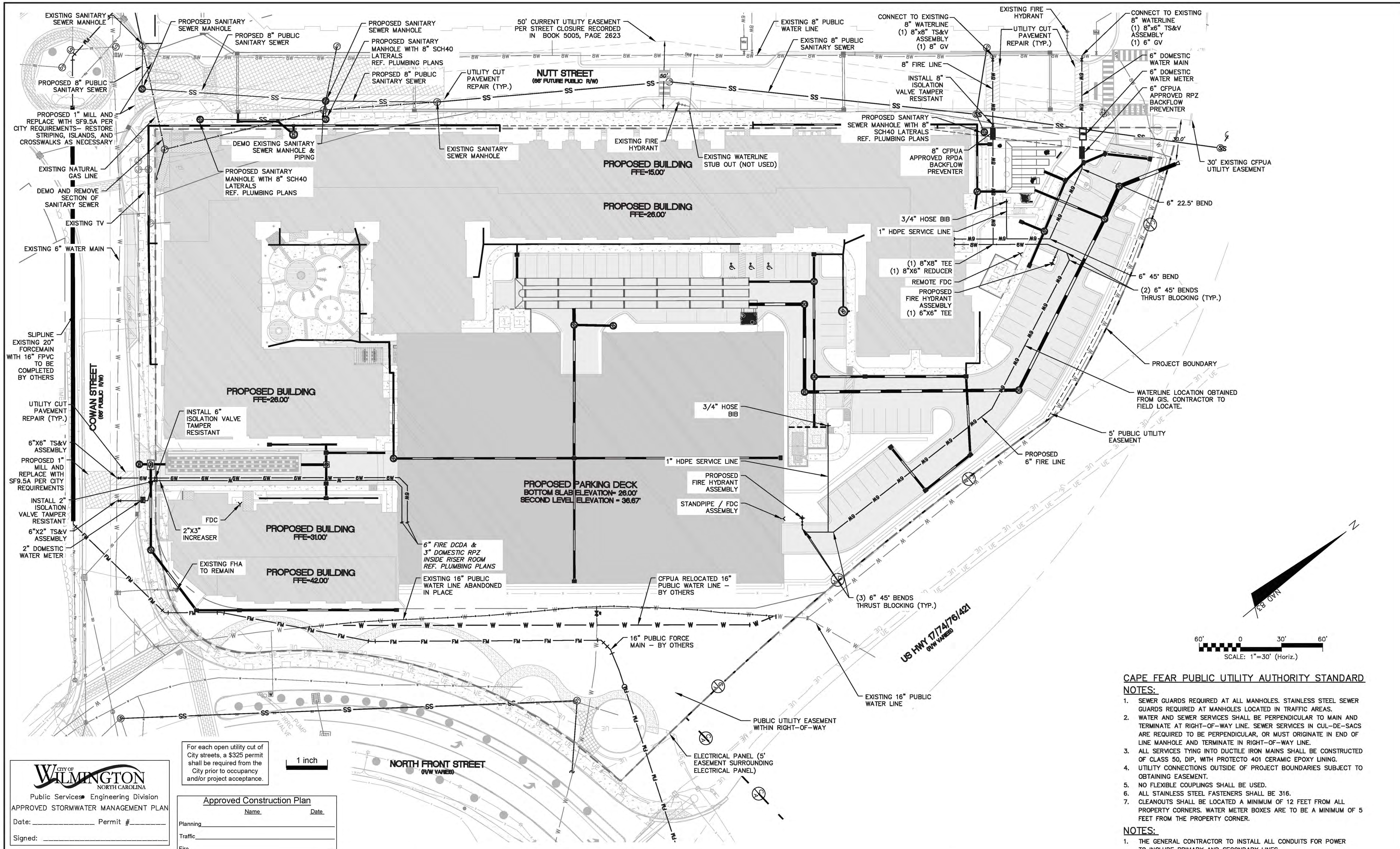
**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA  
**GRADING AND STORMWATER PLAN**

DATE: 12/20/2018	SCALE: 1"=30'	MAC FILE NUMBER: CG-100
MCE PROJ. # 7402-0001	HORIZONTAL: 1"=30'	DRAWING NUMBER: 21
DRAWN: ALM/KCE	VERTICAL: N/A	REVISION: G
DESIGNED: ALM		
CHECKED: RMC		
PROJ. MGR: KCE		
STATUS: PRELIMINARY DESIGN ISSUED FOR PERMITTING		

- NOTES:**
1. THE GENERAL CONTRACTOR TO SHORE ANY WALLS OR EXCAVATIONS FOR THE CONSTRUCTION OF ANY NEW WALLS THROUGHOUT THE PROJECT. ANY COSTS ASSOCIATED WITH SHORING IS THE RESPONSIBLE OF THE GENERAL CONTRACTOR.
  2. THE GENERAL CONTRACTOR TO PAINT ALL MANHOLES AND CURB INLETS BLACK BEFORE INSTALLATION.





**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services - Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

**Approved Construction Plan**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Planning: \_\_\_\_\_

Traffic: \_\_\_\_\_

Fire: \_\_\_\_\_

REVNO.	DESCRIPTIONS	DATE
G	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	12/20/2018
F	CONTRACTOR BRING SET	12/12/2018
E	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITTAL	11/29/2018
D	NEW HANOVER COUNTY SEGMENT & EROSION CONTROL SUBMITTAL	11/13/2018
C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	11/07/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	10/03/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/11/2018

**FINAL DRAWING - FOR REVIEW PURPOSES ONLY**

SEAL

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**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

**OVERALL UTILITY PLAN**

DATE: 12/20/2018  
MCE PROJ. #: 7402-0001  
DRAWN: ALM/KCE  
DESIGNED: ALM  
CHECKED: RMC  
PROJ. MGR.: KCE

SCALE: HORIZONTAL: 1"=50'  
VERTICAL: N/A

MAC FILE NUMBER: CU-100  
DRAWING NUMBER: 22

STATUS: **PRELIMINARY DESIGN**  
ISSUED FOR PERMITTING

REVISION: G

- CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:**
- SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
  - WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE IN RIGHT-OF-WAY LINE.
  - ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
  - UTILITY CONNECTIONS OUTSIDE OF PROJECT BOUNDARIES SUBJECT TO OBTAINING EASEMENT.
  - NO FLEXIBLE COUPLINGS SHALL BE USED.
  - ALL STAINLESS STEEL FASTENERS SHALL BE 316.
  - CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
- NOTES:**
- THE GENERAL CONTRACTOR TO INSTALL ALL CONDUITS FOR POWER TO INCLUDE PRIMARY AND SECONDARY LINES.



**SEEDBED PREPARATION:**

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTRANCE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL. (SEE BELOW).
5. CONTINUE TILLAGE UNTIL A WELL - PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDING AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.
10. APPLY:  
 AGRICULTURAL LIMESTONE - 2 TONS/ACRE  
 FERTILIZER - 1000 LBS/ACRE (10-10-10)  
 SUPERPHOSPHATE - 500 LBS/ACRE (20%)  
 MULCH - 2 TONS/ACRE (SMALL GRAIN STRAW)  
 ANCHOR - ASPHALT EMULSION AT 450 GAL/ACRE

**TREE PROTECTION NOTES:**

1. NO LAND DISTURBANCE INCLUDING TREE REMOVAL IS TO OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS. [18-457(b)]
2. PROTECTIVE FENCING IS TO BE PROPERLY MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. [18-458]
3. LAND CLEARING AND CONSTRUCTION CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION REQUIREMENTS AND METHODS. [18-457(d)]
4. ANY TREES AND/OR AREAS DESIGNATED TO BE PROTECTED MUST PROPERLY BARRICADED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING AND GRADING OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS. [18-458]
5. NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED. [18-458]
6. REGULATED AND SIGNIFICANT TREES IN THE STREET YARD [18-456(c)] AND ANY TREES IN ANY REQUIRED BUFFERS [18-456(b)] ARE REQUIRED TO BE RETAINED.

**6 GENERAL NOTES**

N/A

**GROUND STABILIZATION CRITERIA**

SITE AREA DESCRIPTION	STABILIZATION TIMEFRAME	STABILIZATION TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10 FT OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50 FT IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HQW ZONES)

**PERMANENT SEEDING**

GRASS TYPE	AMOUNT/1000 S.F.	TIME OF SEEDING	INITIAL
BERMUDA, COMMON	1-2 LBS.	APRIL - JUNE	25 LBS. 10-10-10
FESCUE, TALL (KENTUCKY 31)	5-7 LBS	JUNE - AUGUST FEB. - OCT.	25 LBS 10-10-10
SERICEA LESPEDEZA (SLOPES)	1-2 LBS	MARCH - APRIL	25 LBS 10-10-10

**TEMPORARY SEEDING**

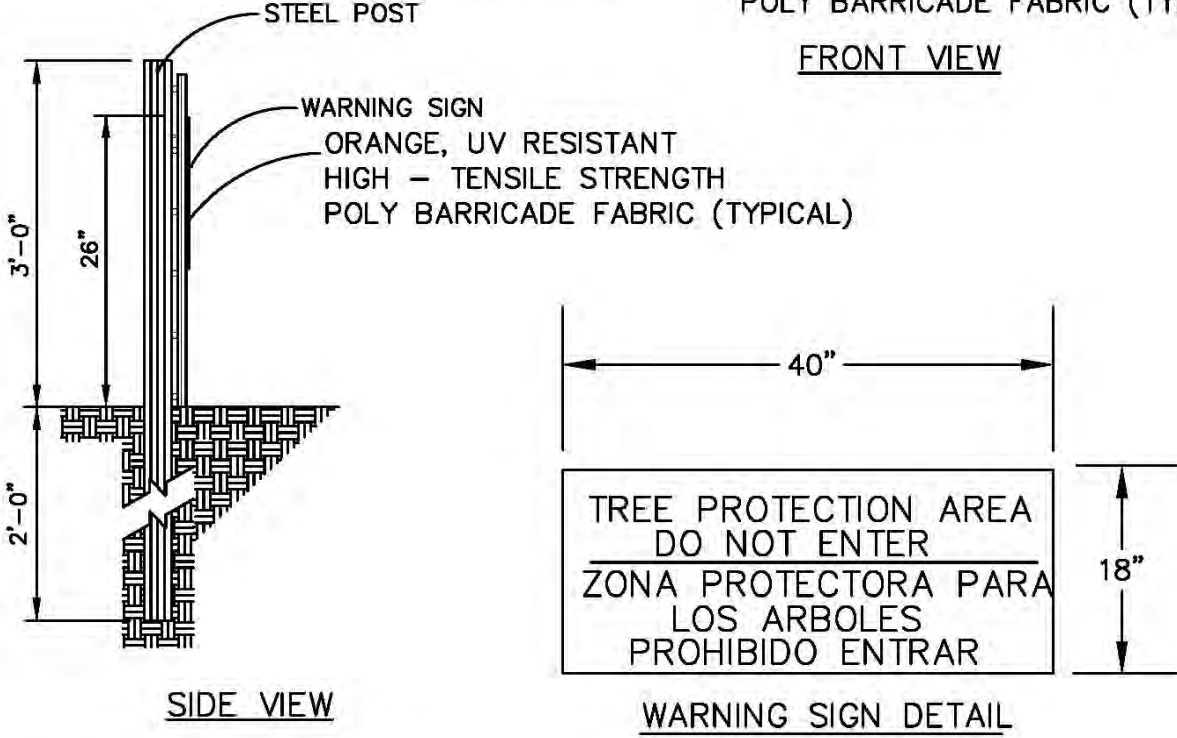
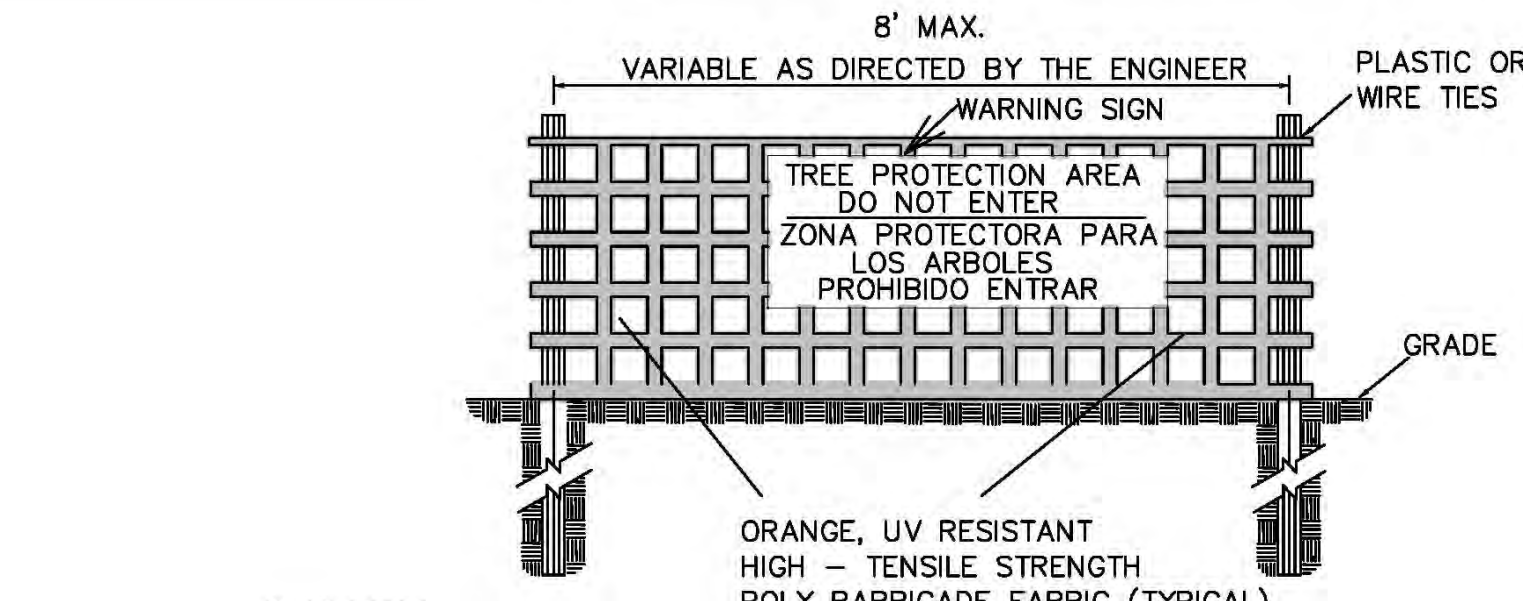
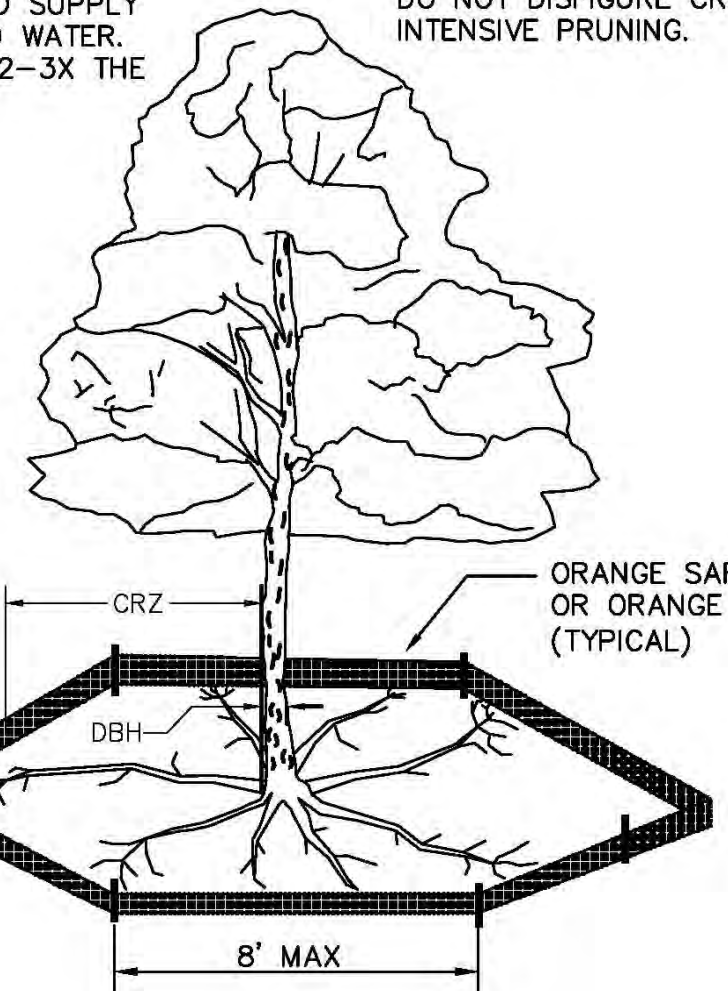
GRASS TYPE	AMOUNT/1000 S.F.	TIME OF SEEDING	INITIAL
RYE GRAIN	1-2 LBS.	APRIL - JUNE	25 LBS. 10-10-10
BROWNTOP MILLET	1-2 LBS	JUNE - AUGUST	25 LBS 10-10-10

**NOTE (G.S. 113A-57 (2))**  
 THE ANGLE FOR GRADED SLOPES AND FILLS SHALL BE NO GREATER THAN THE ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER OR OTHER ADEQUATE EROSION CONTROL DEVICES OR STRUCTURES. IN ANY EVENT, SLOPES LEFT EXPOSED WILL, WITHIN 21 CALENDAR DAYS OF COMPLETION OF ANY GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

**5 GENERAL NOTES**

N/A

**NOTE:** THE CRITICAL ROOT ZONE (CRZ) OF A TREE IS WHERE THE MAJORITY OF A TREE'S ROOTS LAY. 85% OF MOST TREE ROOTS ARE FOUND IN THE TOP 24" OF THE SOIL AND SUPPLY THE MAJORITY OF NUTRIENTS AND WATER. GENERALLY, ROOTS SPREAD OUT 2-3X THE HEIGHT OF THE TREE.



- NOTES:**
1. THE TREE PROTECTION FENCING SHALL NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.
  2. WARNING SIGNS TO BE MADE OF DURABLE, WEATHER-PROOF MATERIAL. LETTERS TO BE 3" HIGH, MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
  3. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER. FOR TREE PROTECTION AREAS LESS THAN 100' IN PERIMETER, PROVIDE NO LESS THAN TWO SIGNS PER PROTECTION AREA.
  4. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. MAINTAIN TREE PROTECTION FENCE AND SIGNS THROUGHOUT DURATION OF PROJECT.
  5. TREE PROTECTION FENCING AND SIGNAGE SHALL BE REMOVED AFTER CONSTRUCTION.
  6. ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF WILMINGTON, BASED ON ACTUAL FIELD CONDITIONS.

**METHOD OF TREE PROTECTION DURING CONSTRUCTION**  
 SD 15-09

**7 TREE SAVE**

N/A

REV. NO.	DESCRIPTIONS	DATE
G	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	12/20/2018
F	CONTRACTOR BIDDING SET	12/12/2018
E	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITTAL	11/26/2018
D	NEW HANOVER COUNTY SEDIMENT & EROSION CONTROL SUBMITTAL	11/13/2018
C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	11/07/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	10/03/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/11/2018

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**THE FLATS ON FRONT**  
 WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

**SEDIMENT AND EROSION CONTROL DETAILS**

DATE: 12/20/2018  
 MCE PROJ. # 7402-0001  
 DRAWN: ALM/KCE  
 DESIGNED: ALM  
 CHECKED: RMC  
 PROJ. MGR. KCE

SCALE: HORIZONTAL: N/A  
 VERTICAL: N/A

MFC FILE NUMBER: CE-501  
 DRAWING NUMBER: 28

STATUS: PRELIMINARY DESIGN  
 ISSUED FOR PERMITTING

REVISION: G

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**DANDY SACK™**

**REGULAR FLOW DANDY SACK™ (BLACK)**

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	lb (kg)	1.78 (400) x 1.40 (210)
Grab Tensile Elongation	ASTM D 4632	%	15 x 15
Puncture Strength	ASTM D 4633	lb (kg)	0.07 (150)
Mullen Burst Strength	ASTM D 3786	psi (kpa)	5000 (600)
Trapezoid Tear Strength	ASTM D 4355	lb (kg)	0.87 (150) x 0.73 (163)
UV Resistance	ASTM D 4355	hr (hr)	6
Apparent Opening Size	ASTM D 4751	mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4481	l/min/ft² (gal/min/ft²)	2802 (70)
Permeability	ASTM D 4481	Sec	0.60

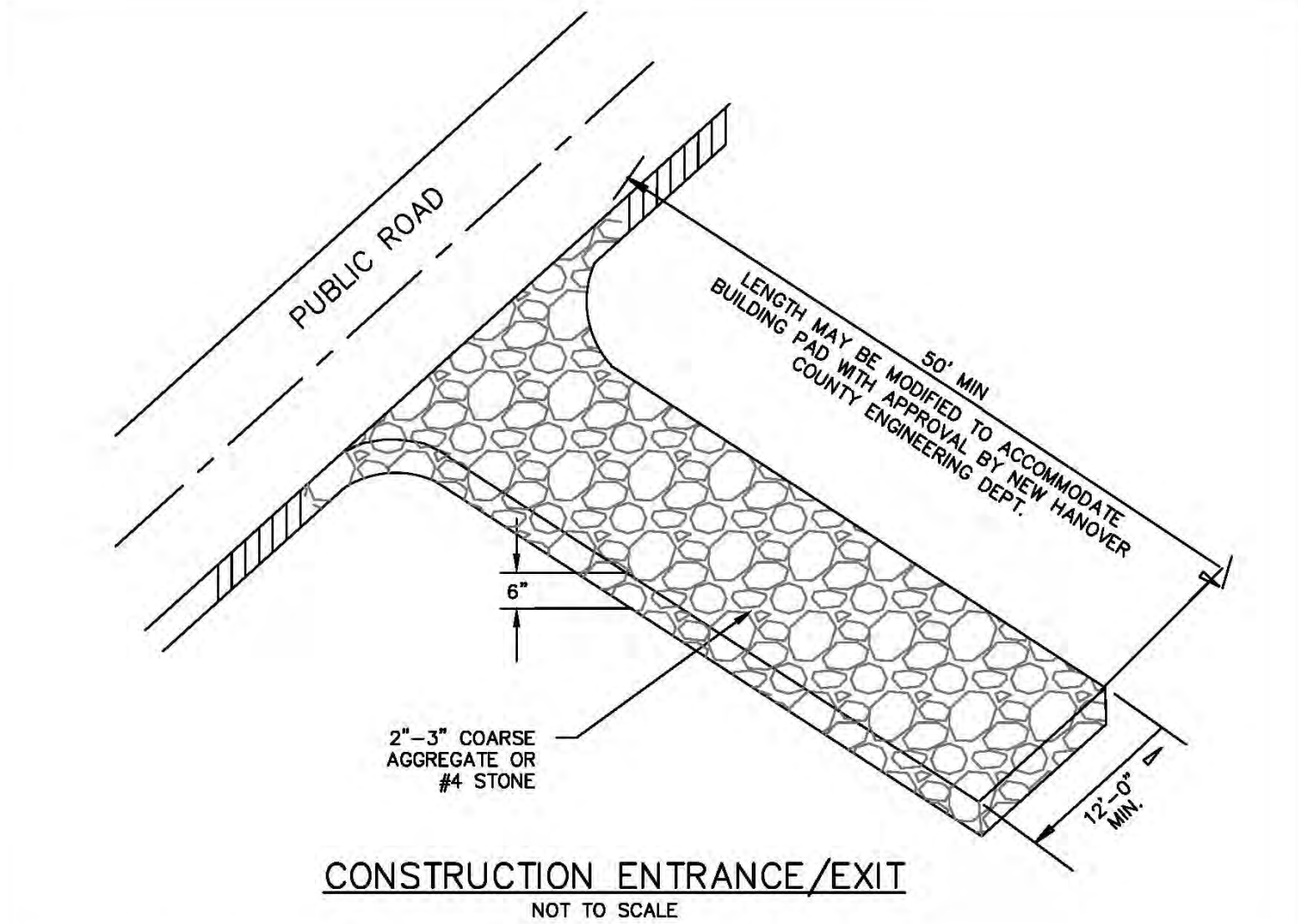
**HI-FLOW DANDY SACK™ (SAFETY ORANGE)**

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	lb (kg)	1.82 (365) x 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	14 x 10
Puncture Strength	ASTM D 4633	lb (kg)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	psi (kpa)	2097 (450)
Trapezoid Tear Strength	ASTM D 4355	lb (kg)	0.91 (155) x 0.33 (78)
UV Resistance	ASTM D 4355	hr (hr)	6
Apparent Opening Size	ASTM D 4751	mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4481	l/min/ft² (gal/min/ft²)	5807 (145)
Permeability	ASTM D 4481	Sec	2.1

**TEMPORARY DANDY SACK® INLET PROTECTION**  
 NOT TO SCALE

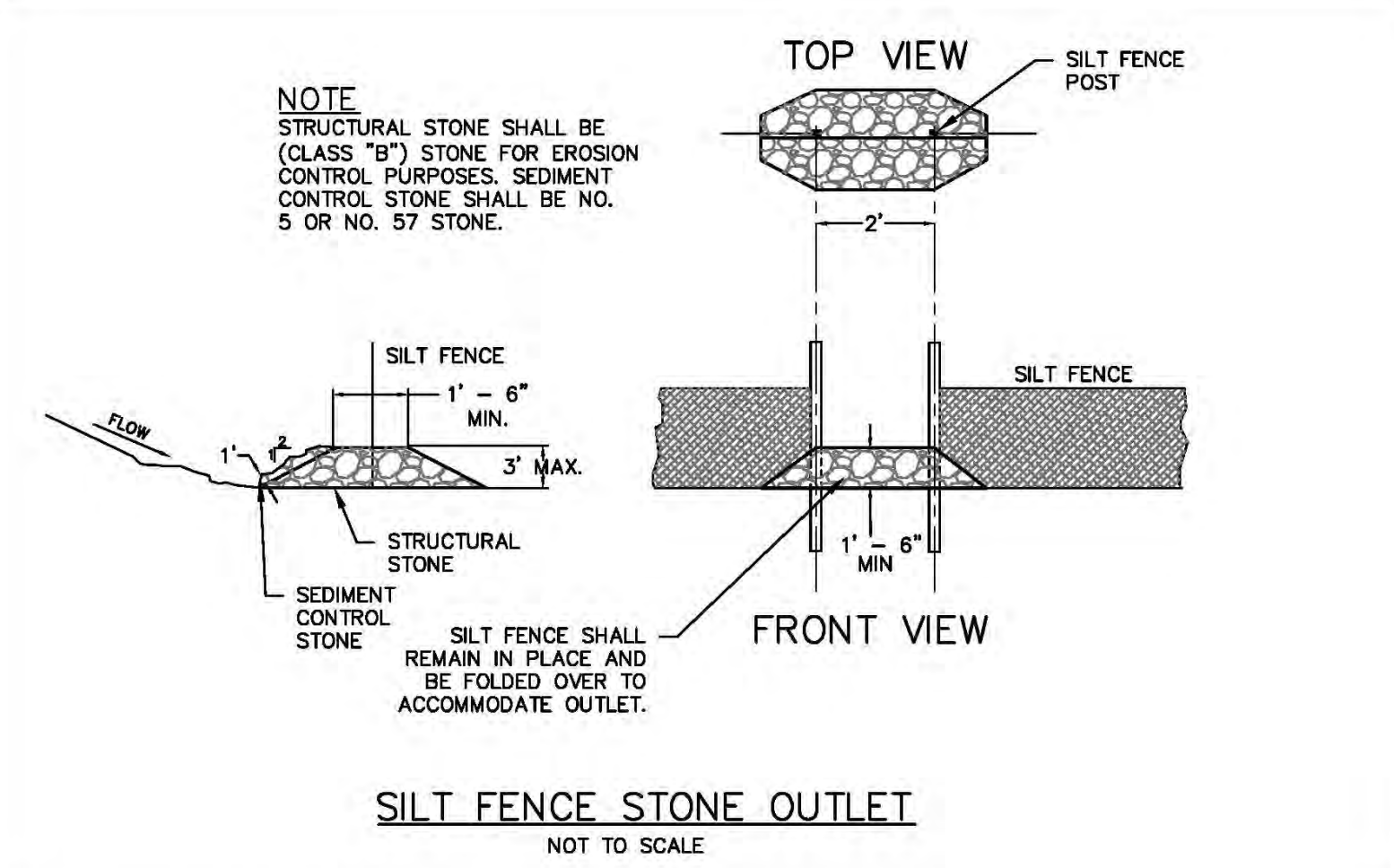
**1 INLET PROTECTION**

NOT TO SCALE



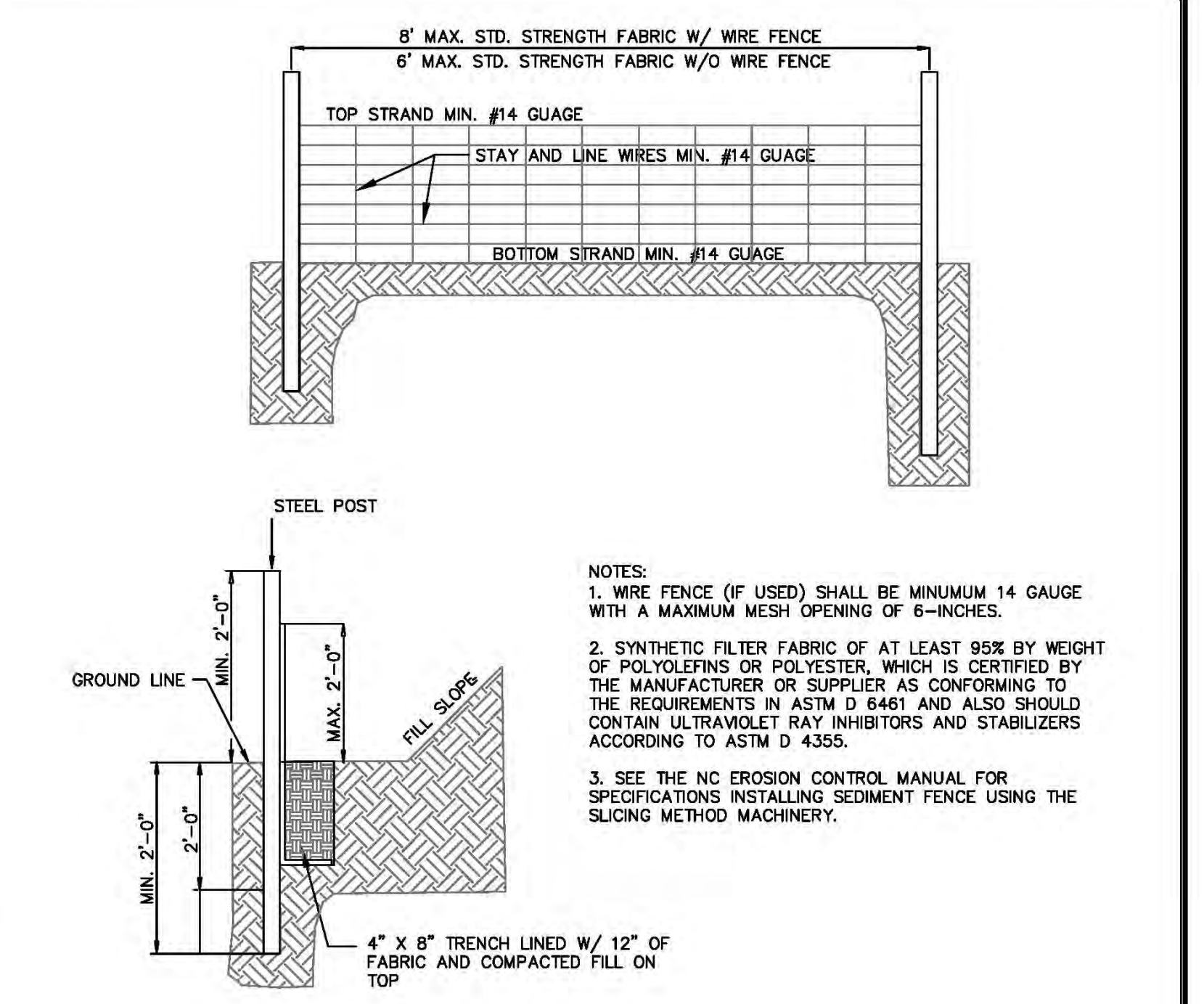
**3 CONSTRUCTION ENTRANCE**

NOT TO SCALE



**4 SILT FENCE OUTLET**

NOT TO SCALE



**2 TEMPORARY SILT FENCE**

NOT TO SCALE

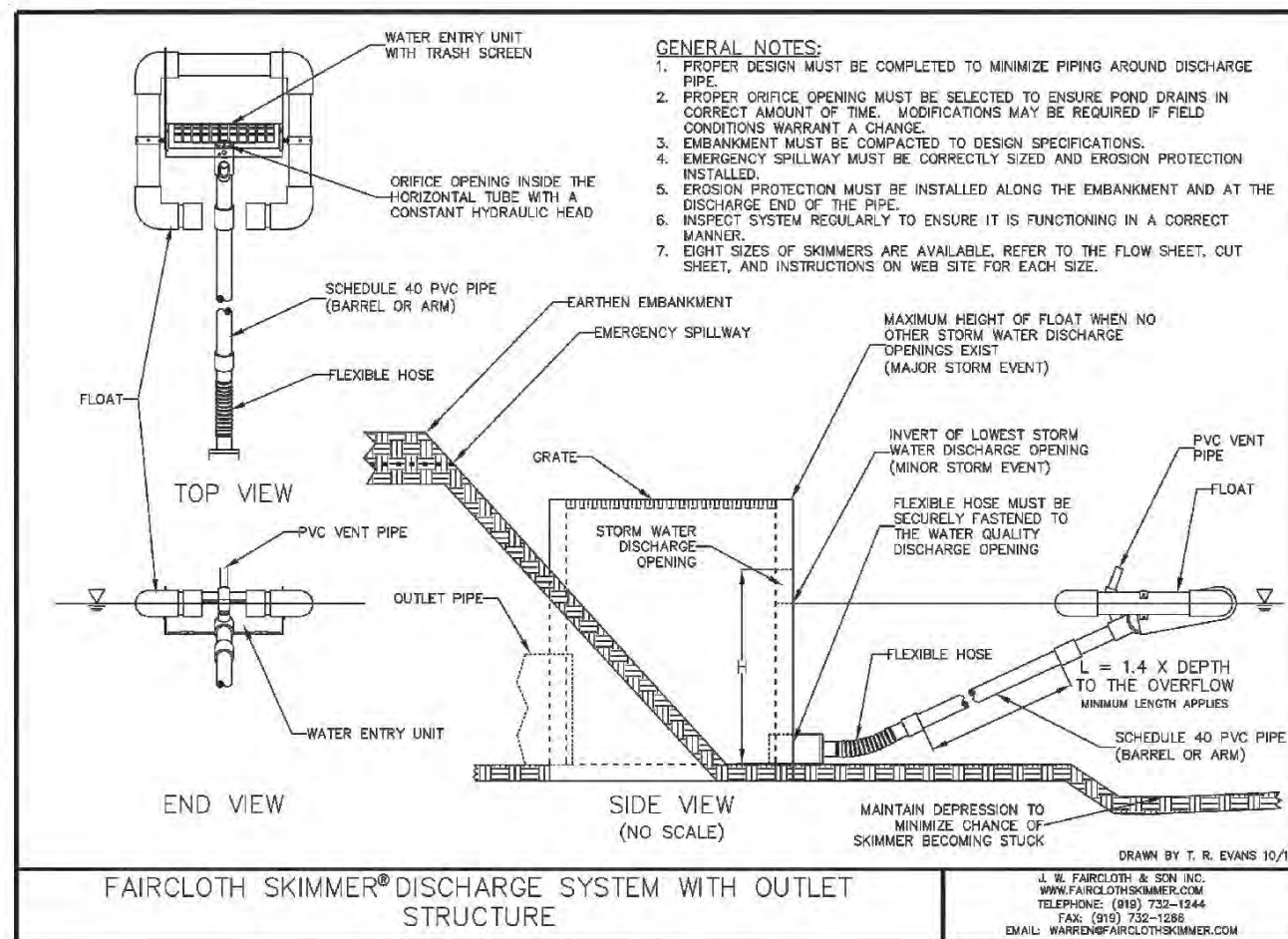
SILT FENCE No.	Drainage Area ac	Length ft	Acre per 100 ft	0.25 Acre per 100 ft	YES/NO
PHASE 1 AND 2 SILT FENCE					
SF1	2.41	973.00	0.25	YES	YES
SF2	0.12	131.00	0.09	YES	YES

**NOTES:**  
 1. Calculation taken from Table 6.62a of the NCDENR ESC Manual for slopes < 2% only.

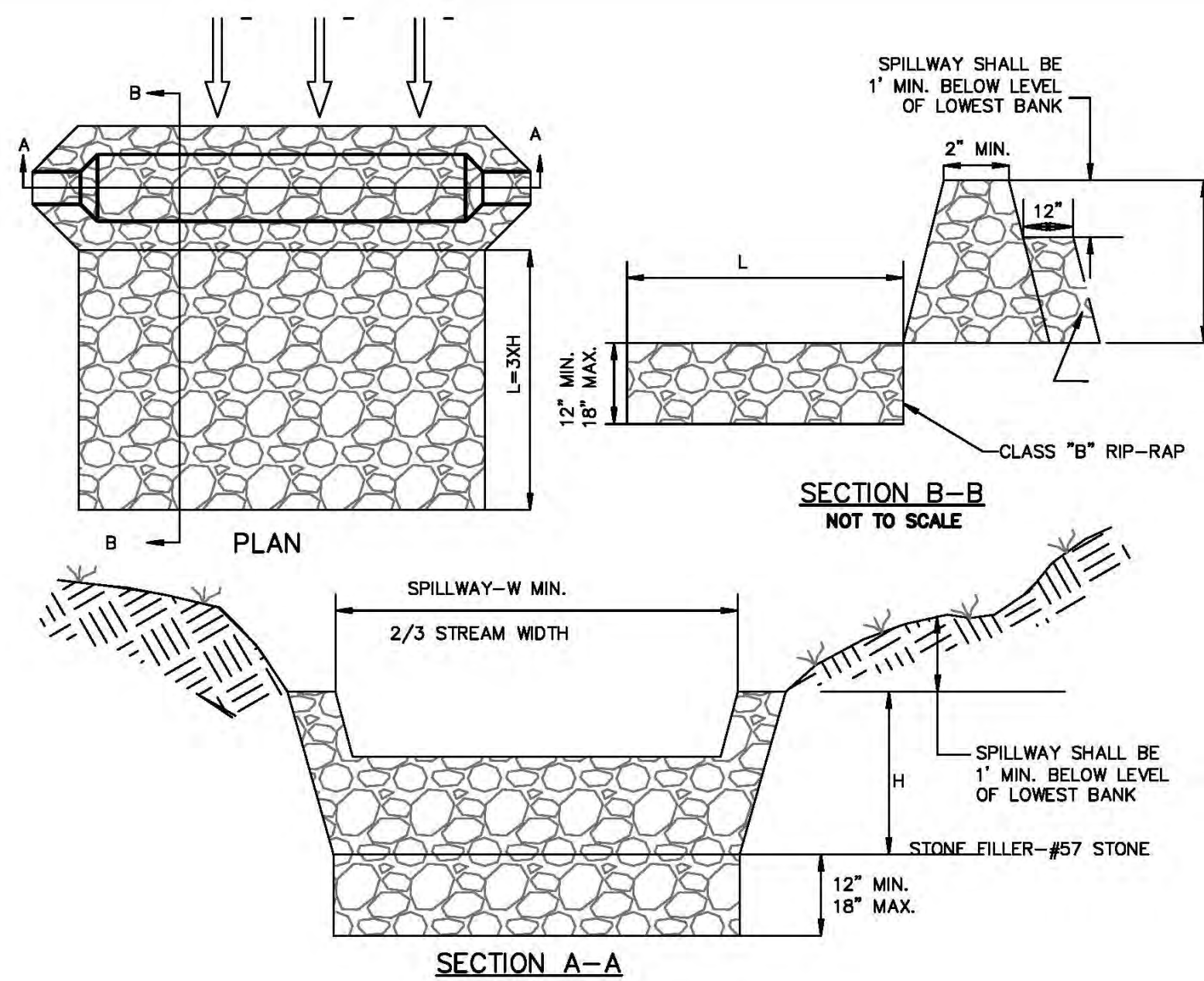
**TEMPORARY SILT FENCE**

NOT TO SCALE

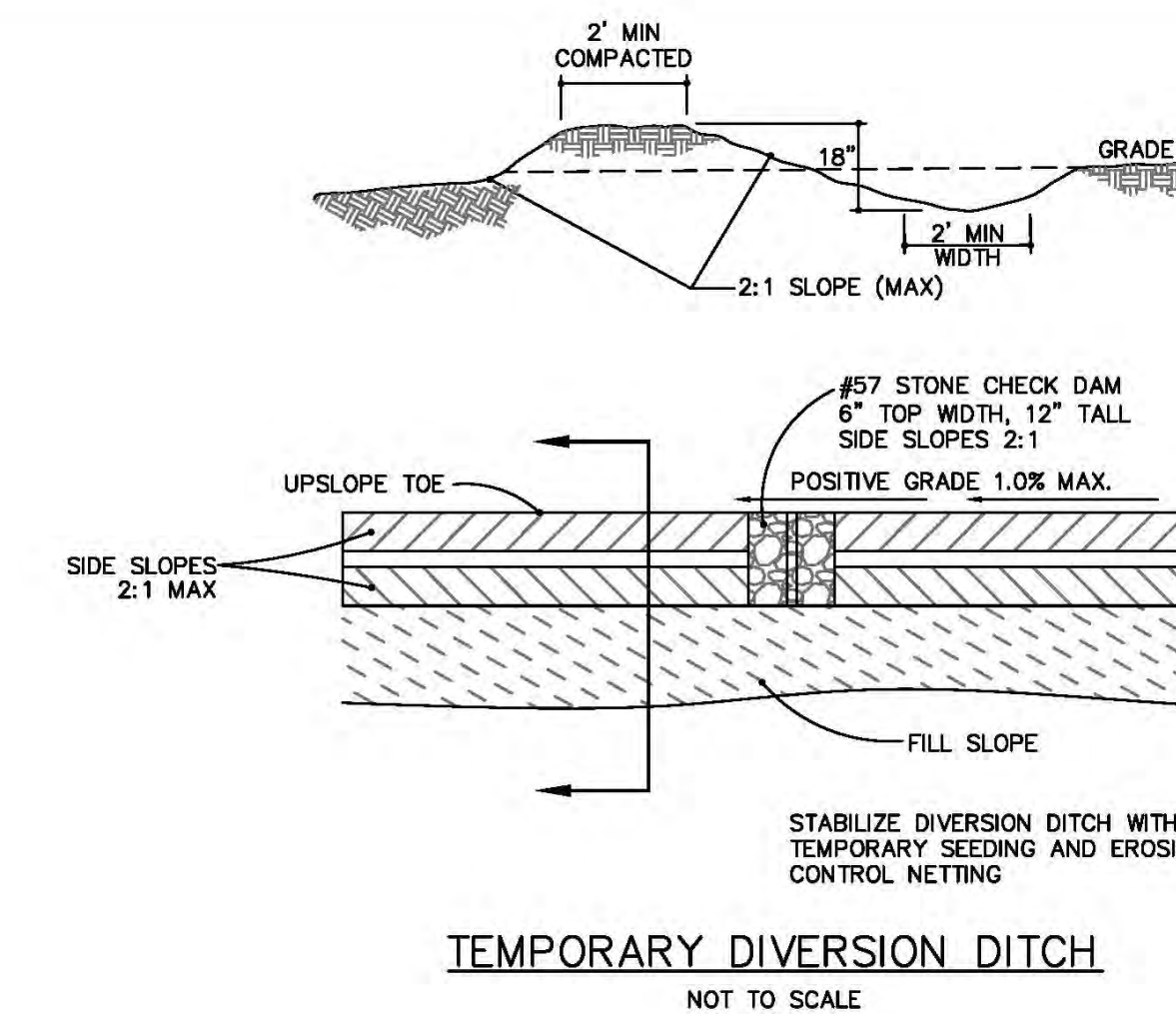




SKIMMER DETAIL WITH OUTLET STRUCTURE  
NOT TO SCALE



DITCH CHECK DAM  
SD 13-04  
NOT TO SCALE



TEMPORARY DIVERSION DITCH  
NOT TO SCALE

TDD NUMBER	DA (AG)	Q10 (CFS)	LENGTH (FT)	HIGH (FT)	LOW (FT)	ELEVATION DIFF. (FT)	SLOPE (%)	INITIAL LINING	MANNING n	VELOCITY (FPS)	COMMENT	BMP #
TDD1	2.87	6.2	450	17.00	14.00	3.00	0.67	BARE EARTH	0.020	3.17	LINING RRQ	SB-1

TDD NUMBER	SECONDARY LINING	MANNING n	VELOCITY (FPS)	COMMENT	DEPTH in	MIN. DEPTH in	TEMPORARY ROCK CHECK DAMS/WATTLES			BMP #
							CHECK DAM SPACING (FT)	NUMBER REQUIRED	NUMBER PROVIDED	
TDD1	EXCELSIOR	0.035	2.06	EXCELSIOR OK	10.2	18	300	1	1	SB-1

3 SKIMMER OUTLET STRUCTURE

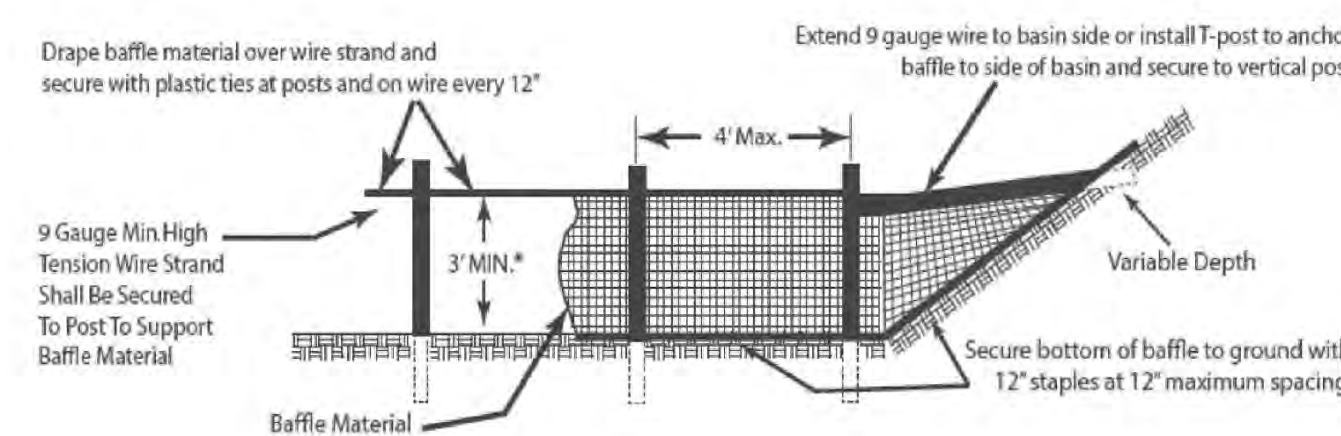
NTS

2 DITCH CHECK DAM

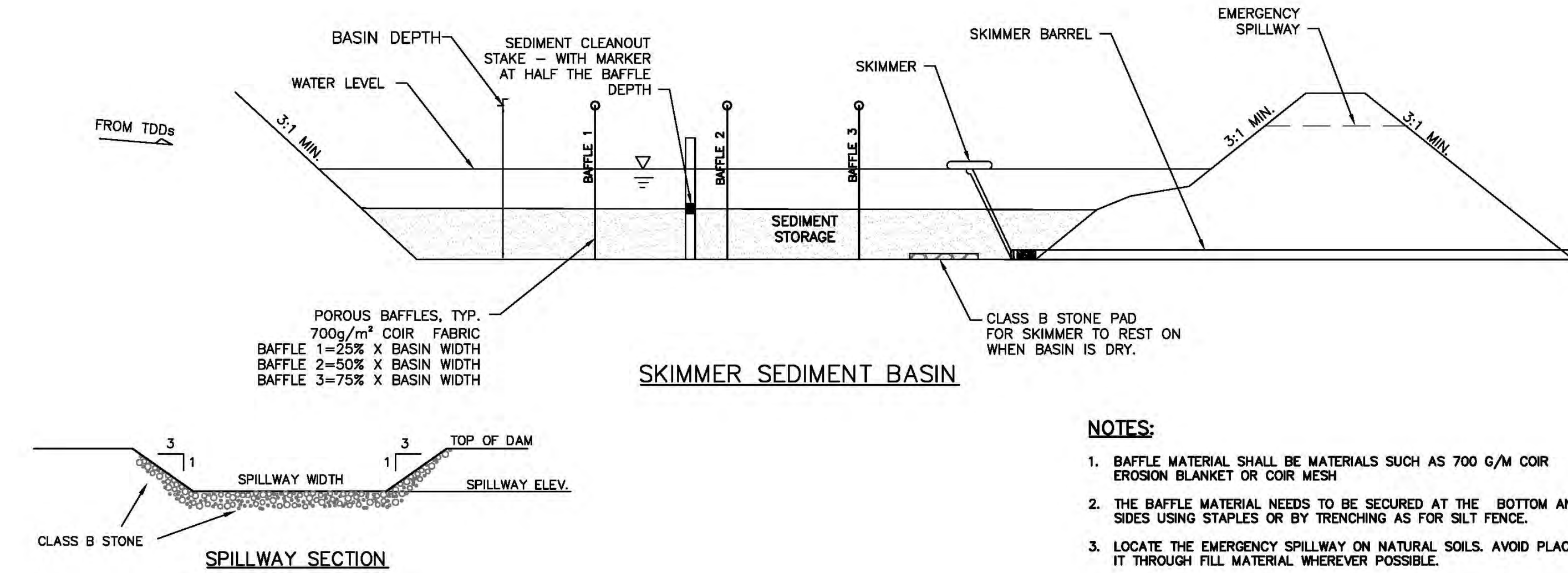
N/A

1 TEMPORARY DIVERSION DITCH DETAIL

N/A



5 COIR BAFFLE DETAIL  
NTS



SKIMMER SEDIMENT BASIN

NOTES:

- BAFFLE MATERIAL SHALL BE MATERIALS SUCH AS 700 G/M COIR EROSION BLANKET OR COIR MESH.
- THE BAFFLE MATERIAL NEEDS TO BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
- LOCATE THE EMERGENCY SPILLWAY ON NATURAL SOILS. AVOID PLACING IT THROUGH FILL MATERIAL WHEREVER POSSIBLE.
- ALL RUNOFF MUST DISCHARGE TO THE INLET SIDE OF THE BASIN. DISCHARGE RUNOFF INTO THE BASIN IN A MANNER THAT MINIMIZES EROSION.

NOTES:

ORIFICE SIZES ARE FOR THE FAIRCLOTH SKIMMER. IF ANOTHER TYPE OF SKIMMER IS USED THE DEVICE MUST BE ABLE TO DRAIN THE BASIN WITHIN 24 - 72 HOURS.

Skimmer No.	Drainage Area ac	Rational C	I10 Intensity in/hr	Q10 Peak Flow cfs	Required SA (325 x Q10) sf	Provided SA sf	Required Vol (1800cf/ac x DA) cf	Provided Vol cf	Storage Depth ft	Storage Vol Drained cf	Weir Width ft
SB-1	3.46	0.30	7.23	7.50	2,438	2,474	6,228	10,589	3.00	7,785	8.0

FAIRCLOTH SKIMMER SIZE CALCULATION

Skimmer No.	Dewatering Time (days)	Skimmer Outflow cf/day	Skimmer Size in	Orifice Diameter in	Orifice Radius in	Barrel Outflow gpm	Barrel Pipe in
SB-1	5	1,557	2.0	1.50	0.75	8.1	4.0

4 SEDIMENT BASIN

N/A

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
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Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

REVNO.	DESCRIPTIONS	DATE
G	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITAL	12/20/2018
F	CONTRACTOR BIDDING SET	12/12/2018
E	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITAL	11/26/2018
D	NEW HANOVER COUNTY SEDIMENT & EROSION CONTROL SUBMITAL	11/13/2018
C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITAL	11/07/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITAL	10/03/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITAL	07/11/2018

FINAL DRAWING - FOR REVIEW PURPOSES ONLY

SEAL

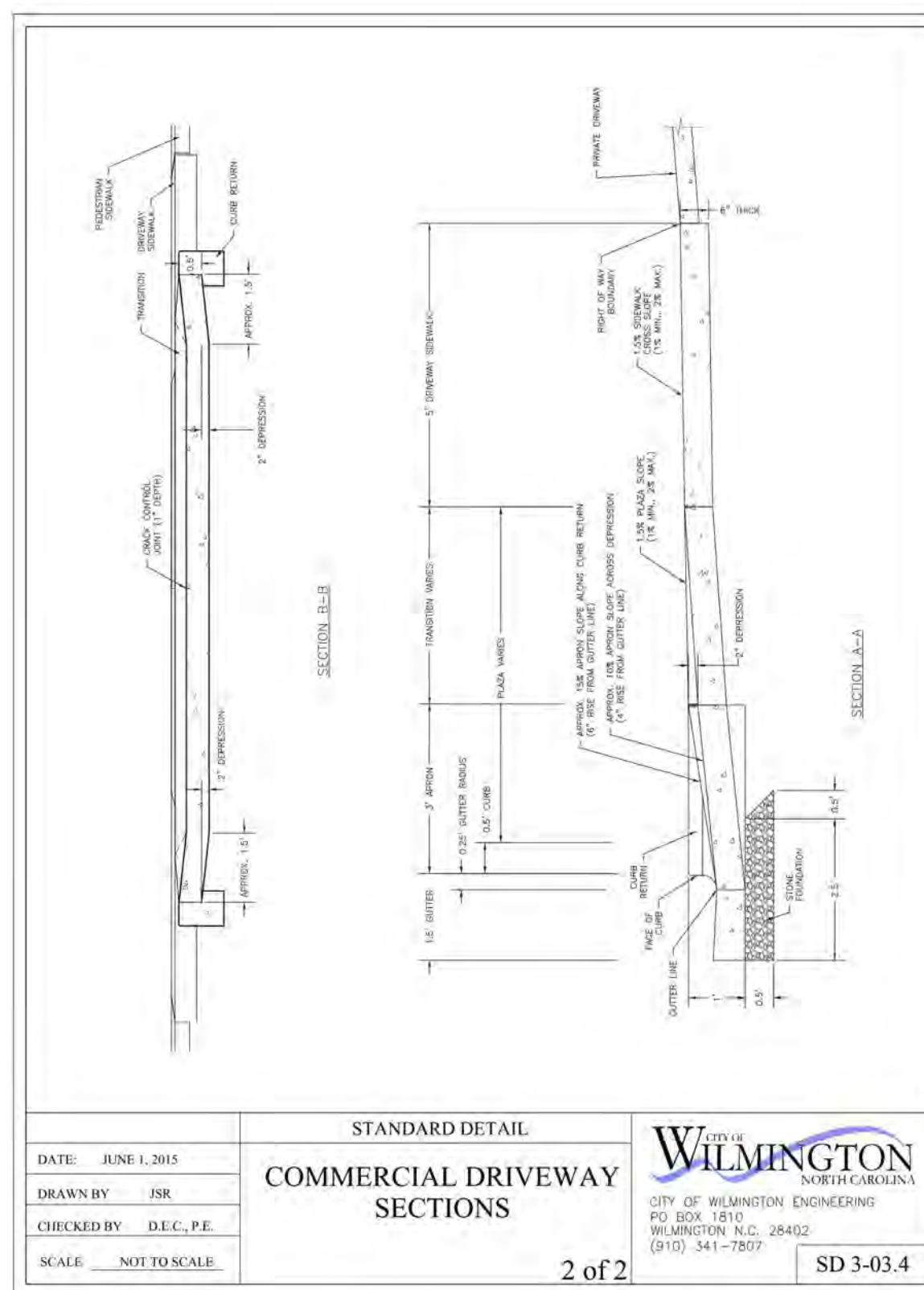
**MCKIM & CREED**  
243 North Front Street  
Wilmington, North Carolina 28401  
Phone: (910)343-1048, Fax: (910)251-8282  
License: F-1222  
www.mckimcreed.com

**doj** RESIDENTIAL  
**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA  
**SEDIMENT AND EROSION CONTROL DETAILS**

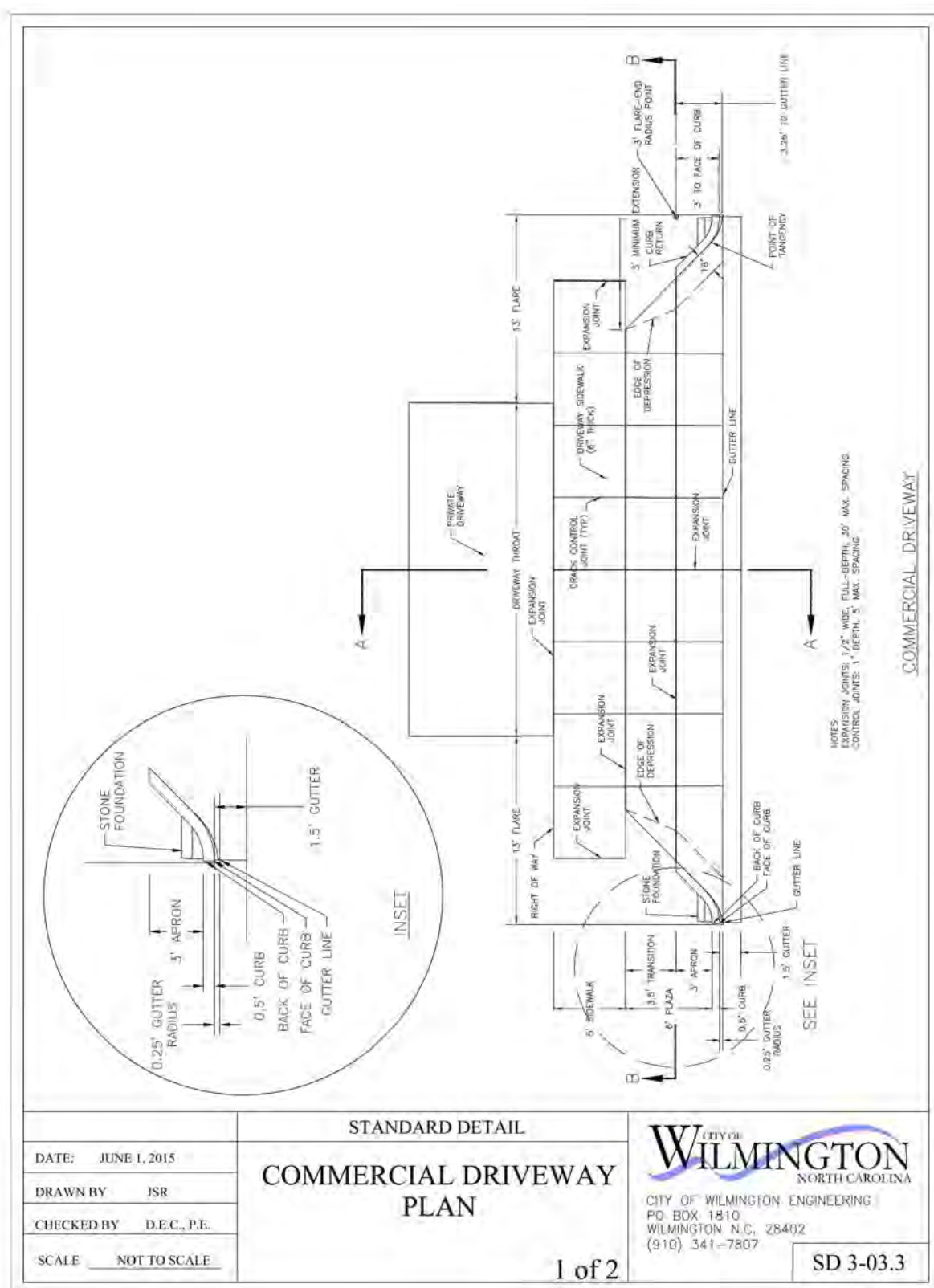
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MCE PROJ. # 7402-0001  
DRAWN: ALM/KCE  
DESIGNED: ALM  
CHECKED: RMC  
PROJ. MGR.: KCE  
SCALE: HORIZONTAL: N/A, VERTICAL: N/A  
MAC FILE NUMBER: CE-502  
DRAWING NUMBER: 29  
STATUS: PRELIMINARY DESIGN  
ISSUED FOR PERMITTING  
REVISION: G





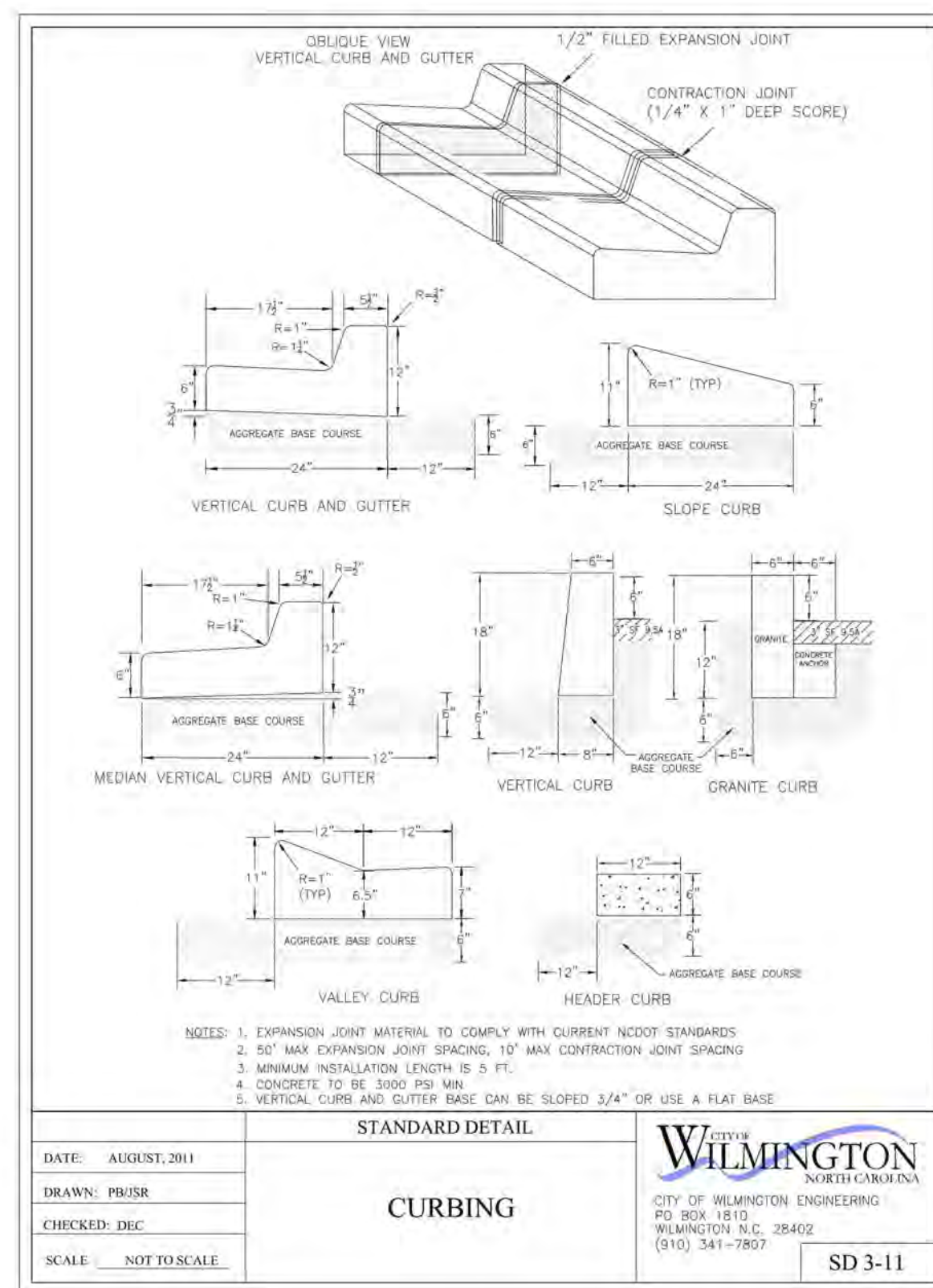
DATE: JUNE 1, 2015	STANDARD DETAIL	
DRAWN BY: JSR	COMMERCIAL DRIVEWAY SECTIONS	
CHECKED BY: D.E.C. P.E.	2 of 2	
SCALE: NOT TO SCALE	SD 3-03.4	

4 COMMERCIAL DRIVEWAY DETAIL N/A



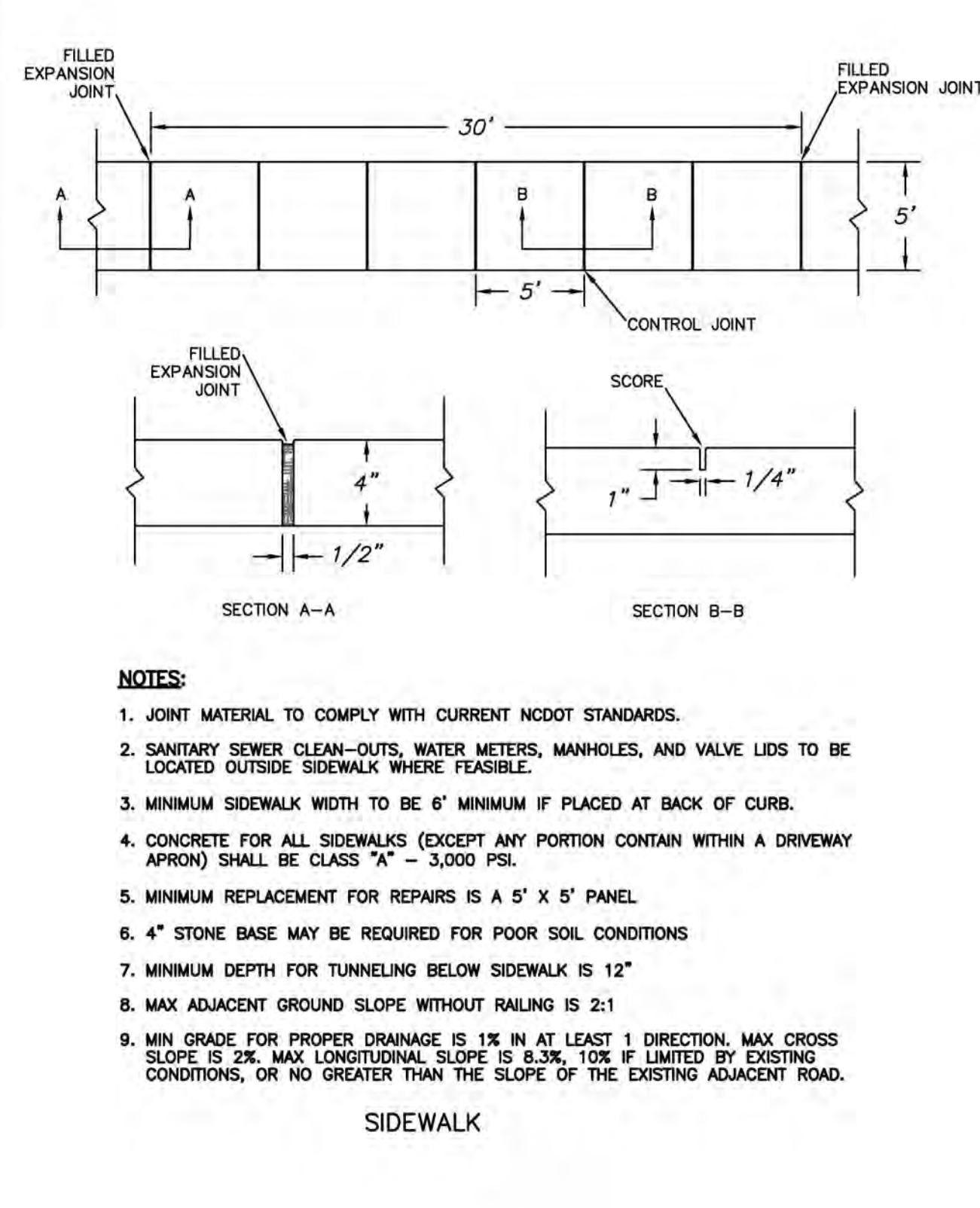
DATE: JUNE 1, 2015	STANDARD DETAIL	
DRAWN BY: JSR	COMMERCIAL DRIVEWAY PLAN	
CHECKED BY: D.E.C. P.E.	1 of 2	
SCALE: NOT TO SCALE	SD 3-03.3	

3 COMMERCIAL DRIVEWAY DETAIL N/A



DATE: AUGUST, 2011	STANDARD DETAIL	
DRAWN BY: PRJ/SR	CURBING	
CHECKED BY: D.E.C.	SD 3-11	
SCALE: NOT TO SCALE		

2 CURBING NOT TO SCALE



DATE: AUGUST, 2011	STANDARD DETAIL	
DRAWN BY: PRJ/SR	SIDEWALK	
CHECKED BY: D.E.C.	SD 3-11	
SCALE: NOT TO SCALE		

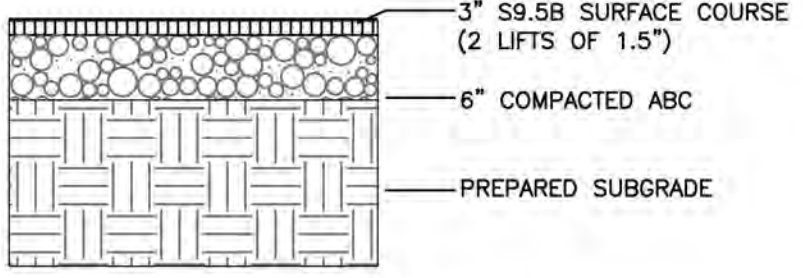
1 SIDEWALK DETAIL N/A

- GENERAL NOTES**
- IN ACCORDANCE WITH N.C.G.S. 136-44.14, ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY HANDICAPPED ON EACH SIDE OF ANY STREET OR ROAD, WHERE CURBS AND SIDEWALKS ARE PROVIDED AND AT OTHER MAJOR POINTS OF PEDESTRIAN FLOW.
  - WHEELCHAIR RAMPS SHALL BE LOCATED AS INDICATED IN DETAIL DRAWINGS; HOWEVER, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. MAY AFFECT PLACEMENT.
  - CURB RAMPS SHALL HAVE DETECTABLE WARNINGS EXTENDING THE FULL WIDTH OF THE RAMP AND A MINIMUM OF 2-FT. IN LENGTH.

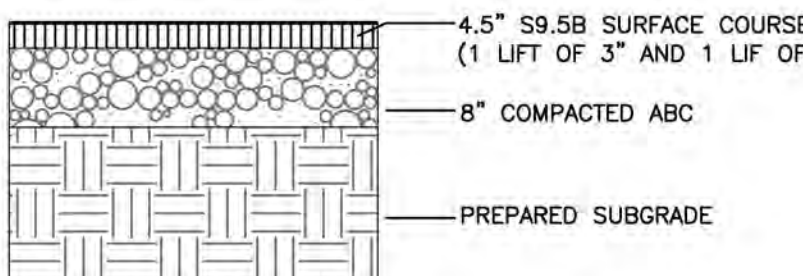
- CONSTRUCTION NOTES**
- CONSTRUCTION SHALL CONFORM WITH CONSTRUCTION STANDARDS OF THE GOVERNING BODY WHICH HAS JURISDICTION OF THE PARTICULAR STREET.
  - WHEELCHAIR RAMPS SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE WITH THE SURFACE HAVING A ROUGH, NON-SKID TYPE FINISH.
  - A 1/2-IN. EXPANSION JOINT SHALL BE REQUIRED WHERE THE CONCRETE WHEELCHAIR RAMP JOINS ANY RIGID PAVEMENT OR STRUCTURE.
  - IN NO CASE SHALL THE WIDTH OF A CURB RAMP OR CURB CUT BE LESS THAN 40-IN. (3-FT, 4-IN.), NOT INCLUDING THE FLARED SIDES.
  - TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
  - THE MAXIMUM SLOPE ON THE CURB RAMP RUN IS 1:12.
  - THE MAXIMUM CROSS SLOPE OF THE CURB RAMP IS 1:50.
  - MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP, OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20.
  - ANY RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 48-IN. LONG BETWEEN THE CURB RAMPS.

- ADDITIONAL NOTES**
- STOP BARS SHALL BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT.
  - PARKING SHALL BE A MINIMUM OF 20 FEET BACK OF THE PEDESTRIAN CROSSWALK.
  - ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION. THIS DOCUMENT IS AVAILABLE FROM THE SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402.
  - INSTALL REFLECTORS PER CITY AND NCDOT STANDARDS. TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING LAYOUT PRIOR TO ACTUAL STRIPING.
  - CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
  - THE BOTTOM OF DIAGONAL (CORNER TYPE) CURB RAMPS AT MARKED CROSSINGS SHALL HAVE 48-IN. MINIMUM CLEAR SPACE WITHIN THE MARKINGS.
  - IF DIAGONAL CURB RAMPS HAVE FLARED SIDES, THEY SHALL HAVE AT LEAST A 24-IN. LONG SEGMENT OF STRAIGHT CURB LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING.

- 10. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9-IN., A HEIGHT OF NOMINAL 0.2-IN. AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35-IN. AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.**



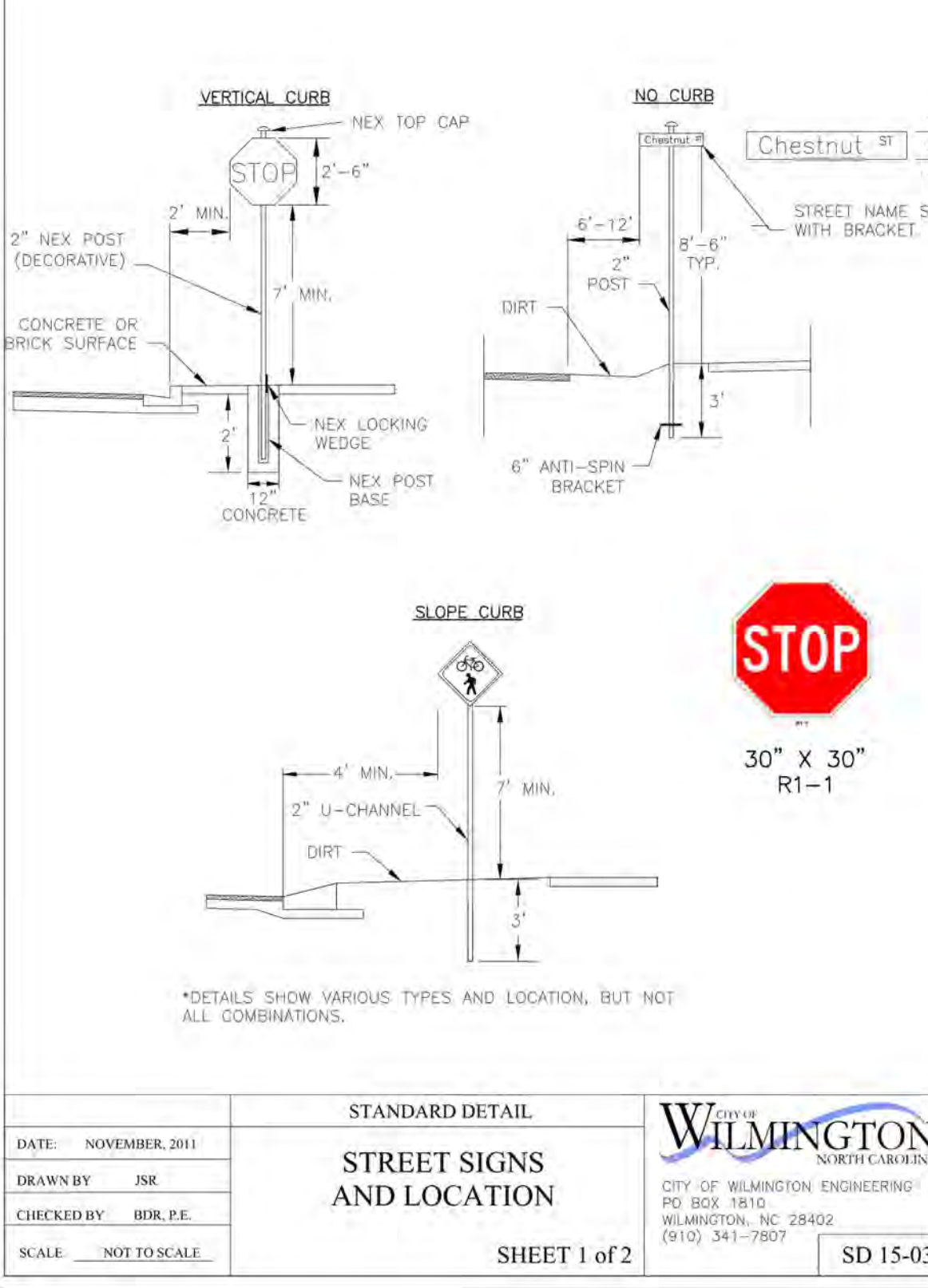
ASPHALT PAVEMENT SECTION (PARKING STALL SECTION) NOT TO SCALE



ASPHALT PAVEMENT SECTION (DRIVE AISLE SECTION) NOT TO SCALE

- \*\* COMPACTED ABC NOTE-1:**  
COMPACTED ABC MUST MEET THE NCDOT STANDARD SPECIFICATION GRADATION. REFER TO NCDOT STD SPECS (JAN 2012 EDITION) SECTION 520, AND SECTIONS 1005, 1006, AND 1010 FOR ALL OF THE MATERIAL GRADATION AND SPECIFICATIONS.
- \*\* COMPACTED ABC NOTE-2:**  
GRANITE BASED ABC IS NOT REQUIRED FOR THIS PROJECT. THE FOLLOWING TYPE OF MATERIALS MAY BE USED FOR ABC:  
1. MARL - 6" IN DEPTH;  
2. CRUSHED CONCRETE - CAN REDUCE TO 4" IN DEPTH;  
3. ASPHALT MILLING CRUSHED TO 1/2" DIAMETER - 6" IN DEPTH.

7 PAVEMENT SECTIONS NOT TO SCALE



DATE: NOVEMBER, 2011	STANDARD DETAIL	
DRAWN BY: JSR	STREET SIGNS AND LOCATION	
CHECKED BY: BOK, P.E.	SHEET 1 of 2	
SCALE: NOT TO SCALE	SD 15-03	

6 STREET SIGN LOCATIONS NOT TO SCALE

- SIGNS**
- All signs shall meet the requirements of MUTCD and City Traffic Engineering in effect at the time of construction.
  - All Traffic Control Signs including multi-use paths shall be fabricated with 0.080 inch aluminum blanks using high intensity prismatic reflective sheeting Type IV or better. STOP signs shall be a minimum of 30"x30".
  - SPECIAL DESIGNATION signs by location and type shall adhere to City of Wilmington signage plan (i.e. downtown, historic, cross-city trail, parks, riverfront, scenic by-way, parking, etc.) and all associated policies.
  - POST MOUNTED STREET NAME SIGNS shall be fabricated with 9" extruded aluminum street name sign blanks using a standard cut-out. Minimum sign length is 18" long and increasing in 6" increments to 54" maximum as dictated by the number of letters in the name. The color scheme shall be white letters on a green background without a border. Generally, in the downtown and historic areas or as designated in the City of Wilmington signage plan the background shall be blue and contain a topper.
  - Decorative sign posts shall consist of the NEX sign support system, 2" octagonal tube, 14 gauge, powder coated glossy black and include cap, post, base and wedge.
  - All other sign posts shall be u-channel posts made of galvanized steel with 8' posts 2lbs/ft or 12' posts 3lbs/ft. Galvanized NEX post may be substituted with approval from the City Signs and Markings Engineer.
  - OVERHEAD STREET NAME SIGNS shall be fabricated with 0.080 inch aluminum flat sign blanks 18" in height using a standard cut-out. Sign length will be dictated by the number of letters in the name. For mast-arm type traffic signal supports and other overhead support systems refer to the design plans for maximum sign length.
  - All sign lettering, colors and fonts shall adhere to the MUTCD in effect at the time of construction. Fluorescent Yellow-Green shall be used on signs, in place of Yellow, when listed as an optional color in the MUTCD. Generally, the font will be FHWA series fonts (Highway Gothic). Other font types require prior City Signs and Markings Engineer approval.
- LOCATION**
- Sign locations depend on the edge of road condition. Generally, signs shall be a minimum 2' from face of a vertical curb, 4' from front of slope face curb, and 6' from edge of pavement without curb. Signs shall not be located more than 12' from any of these locations.
  - Sign posts installed in dirt shall be buried a minimum of 36". Octagonal posts shall utilize an anti-spin device, 6" in length minimum. Sign posts installed in concrete or brick shall utilize a base cast in concrete 24" x 12" diameter.
  - Street name signs shall be installed 8'-6" from the ground to the bottom of the sign. Street name signs co-located with STOP signs shall be installed above the STOP sign. A 6" space shall be maintained between the STOP sign and a Street name sign that is parallel to the STOP sign face. All other signs should be mounted per MUTCD guidelines for Urban Areas.

DATE: NOVEMBER, 2011	STANDARD DETAIL	
DRAWN BY: JSR	STREET SIGNS AND LOCATION	
CHECKED BY: BOK, P.E.	SHEET 2 of 2	
SCALE: NOT TO SCALE	SD 15-03	

5 STREET SIGN LOCATIONS NOT TO SCALE

**CITY OF WILMINGTON**  
Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_

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**Approved Construction Plan**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

REVNO.	DESCRIPTIONS	DATE
G	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	12/20/2018
F	CONTRACTOR BIDDING SET	12/12/2018
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D	NEW HANOVER COUNTY SEDIMENT & EROSION CONTROL SUBMITTAL	11/13/2018
C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	11/07/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	10/25/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/11/2018

FINAL DRAWING FOR REVIEW PURPOSES ONLY

SEAL

**MCKIM & CREED**

243 North Front Street  
Wilmington, North Carolina 28401  
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**dpj** RESIDENTIAL

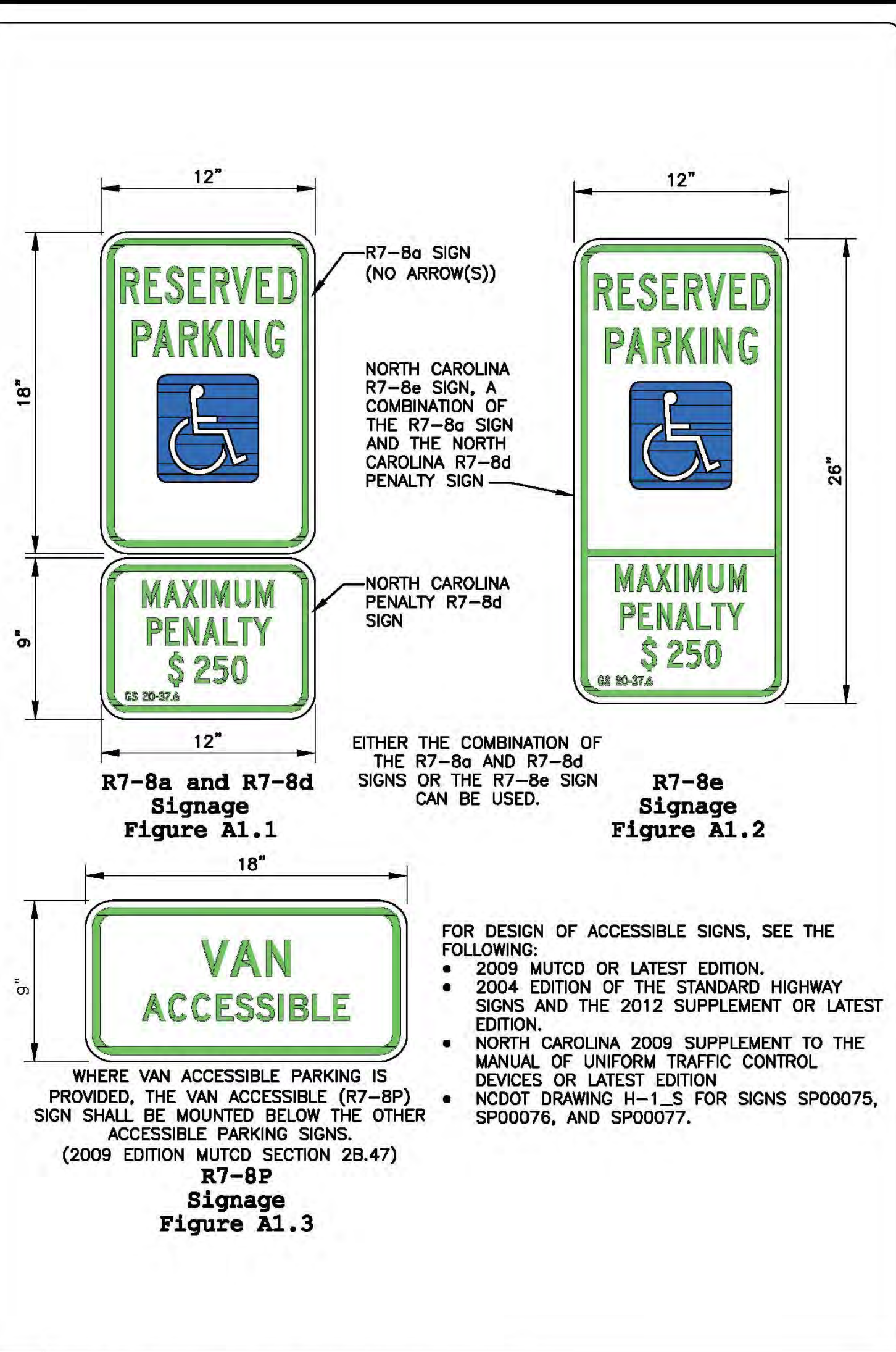
**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

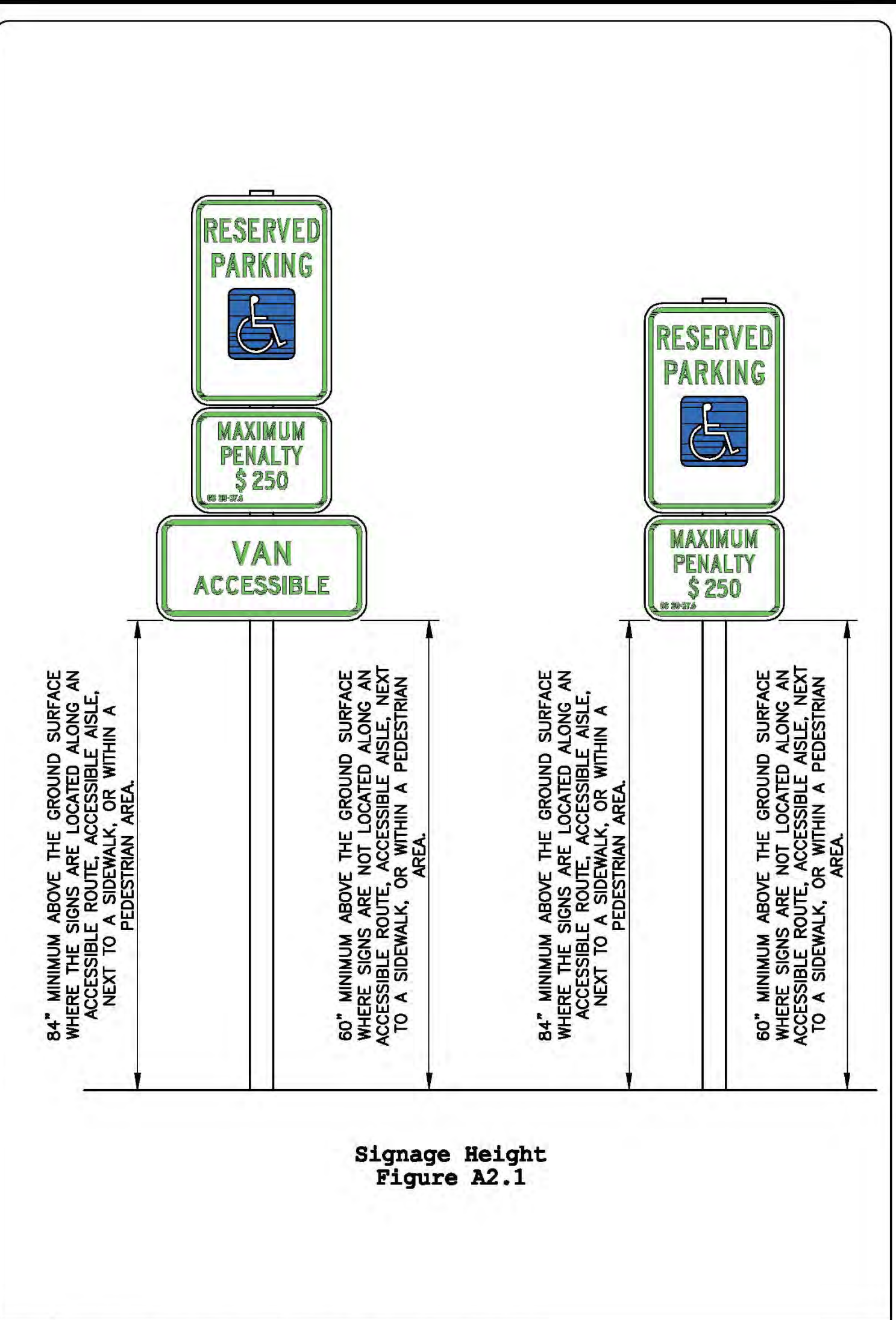
**SITE DETAILS**

DATE: 12/20/2018	SCALE	MAC FILE NUMBER
MCE PROJ. # 7402-0001	HORIZONTAL: N/A	CS-501
DRAWN: ALM/KCE	VERTICAL: N/A	DRAWING NUMBER
DESIGNED: ALM		30
CHECKED: RMC		
PROJ. MGR. KCE		
STATUS: PRELIMINARY DESIGN	REVISION	
ISSUED FOR PERMITTING	G	

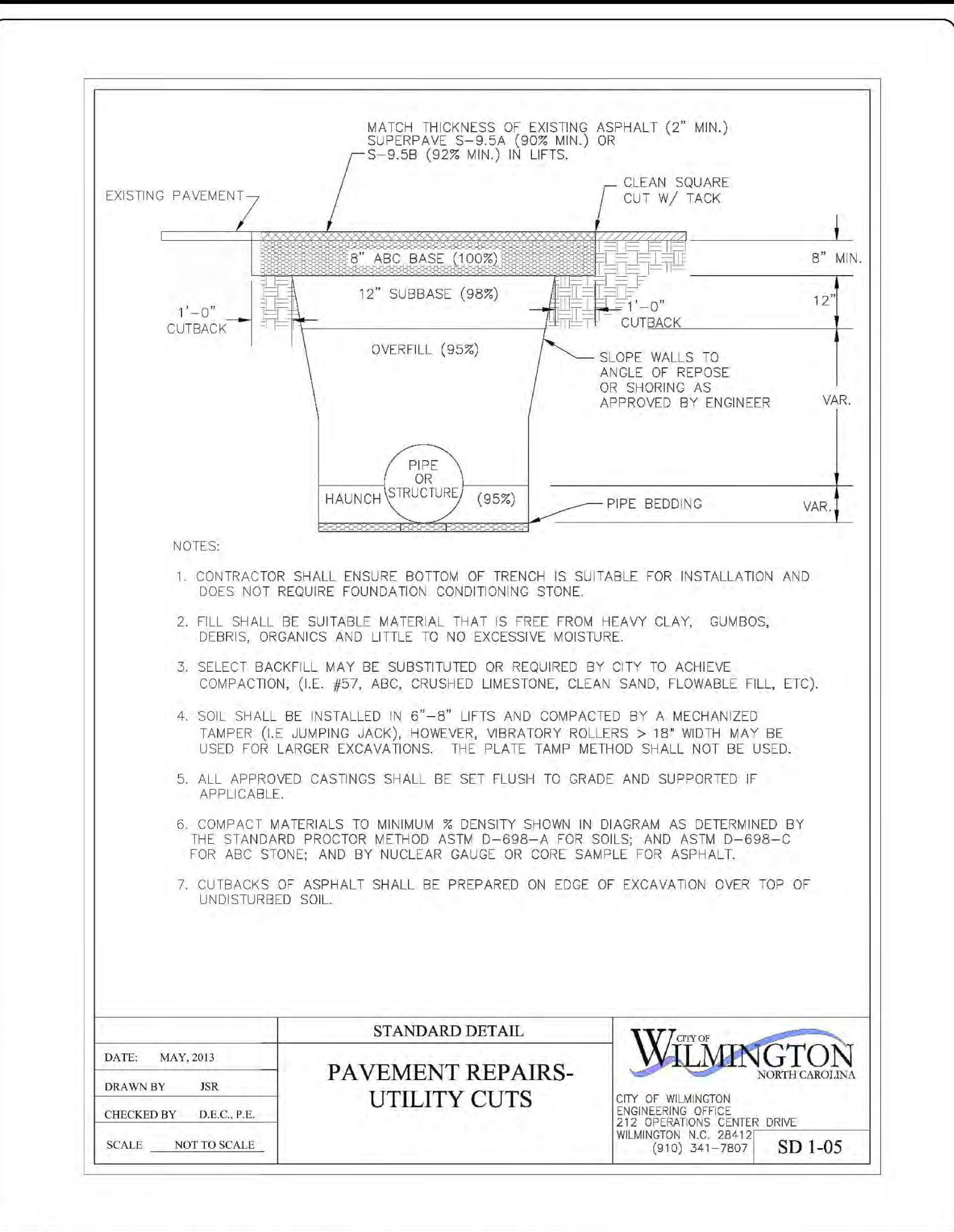




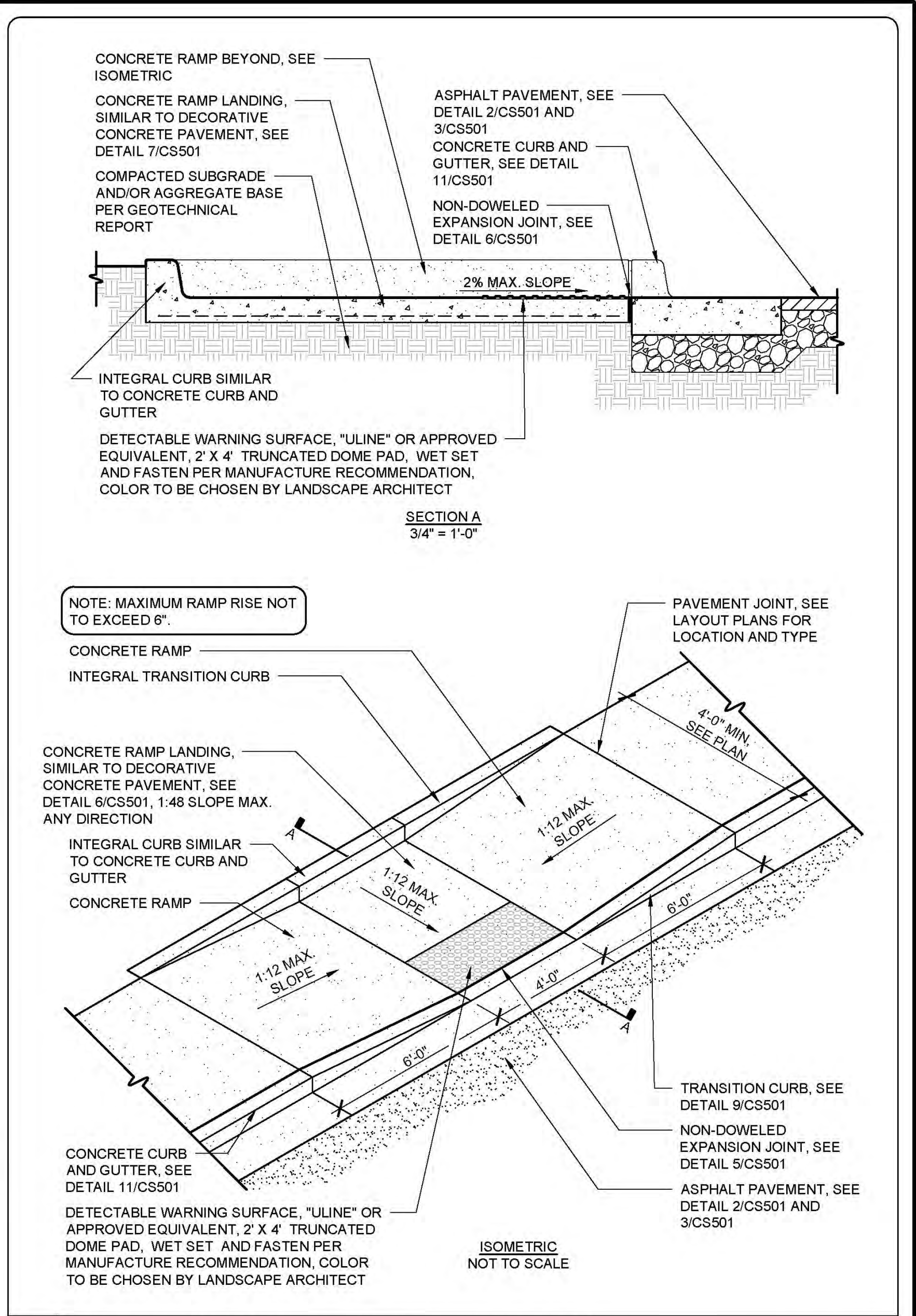
5 ACCESSIBLE PARKING SIGNS N/A



4 ACCESSIBLE PARKING SIGNS N/A



3 PAVEMENT REPAIRS UTILITY CUTS NOT TO SCALE



1 CURBED HANDICAP ACCESSIBLE RAMP NOT TO SCALE

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN

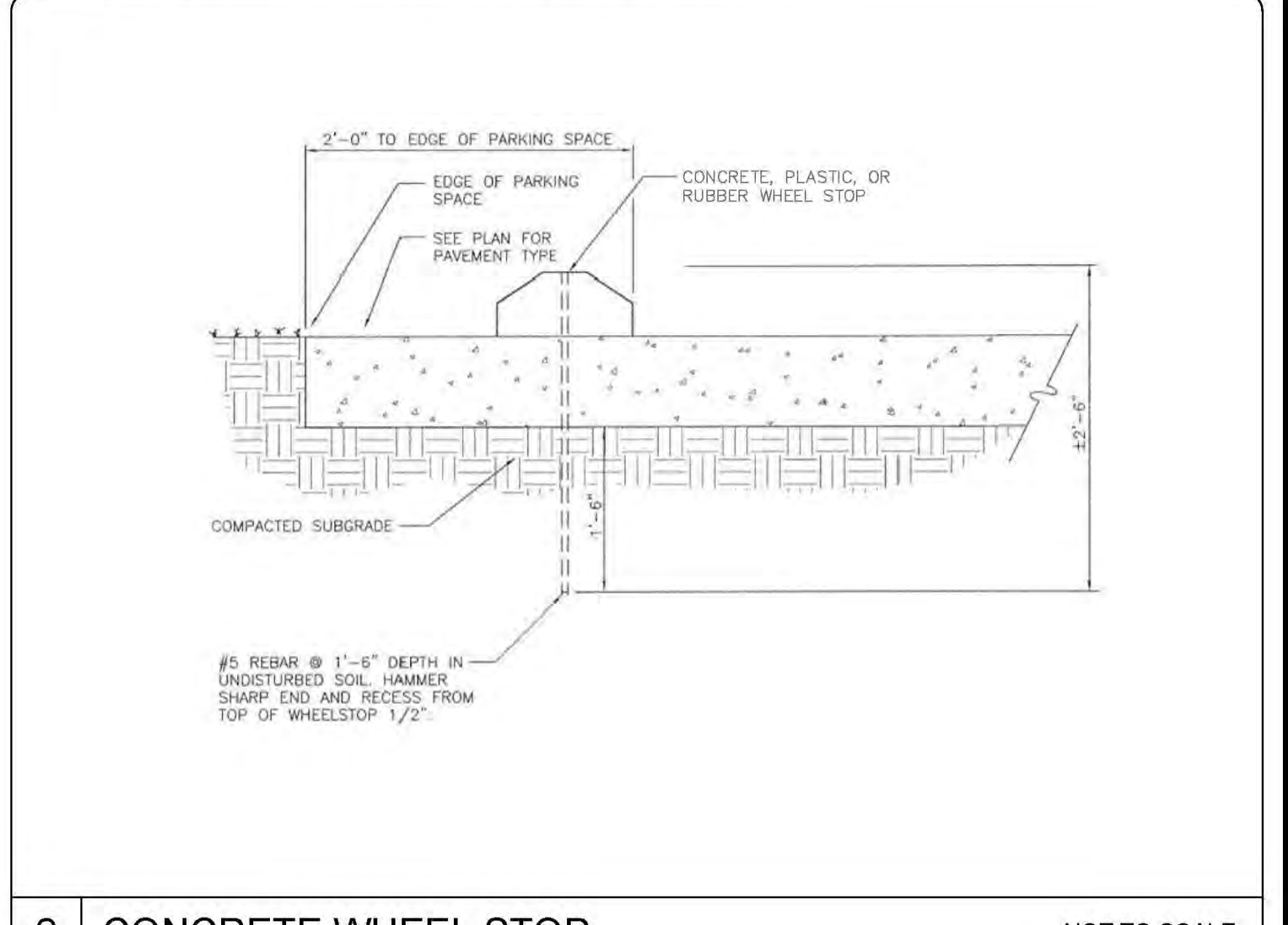
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1 inch

Approved Construction Plan

Name	Date
Planning	_____
Traffic	_____
Fire	_____



2 CONCRETE WHEEL STOP NOT TO SCALE

REVNO.	DESCRIPTIONS	DATE
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C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	11/07/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE RESUBMITTAL	10/30/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/11/2018

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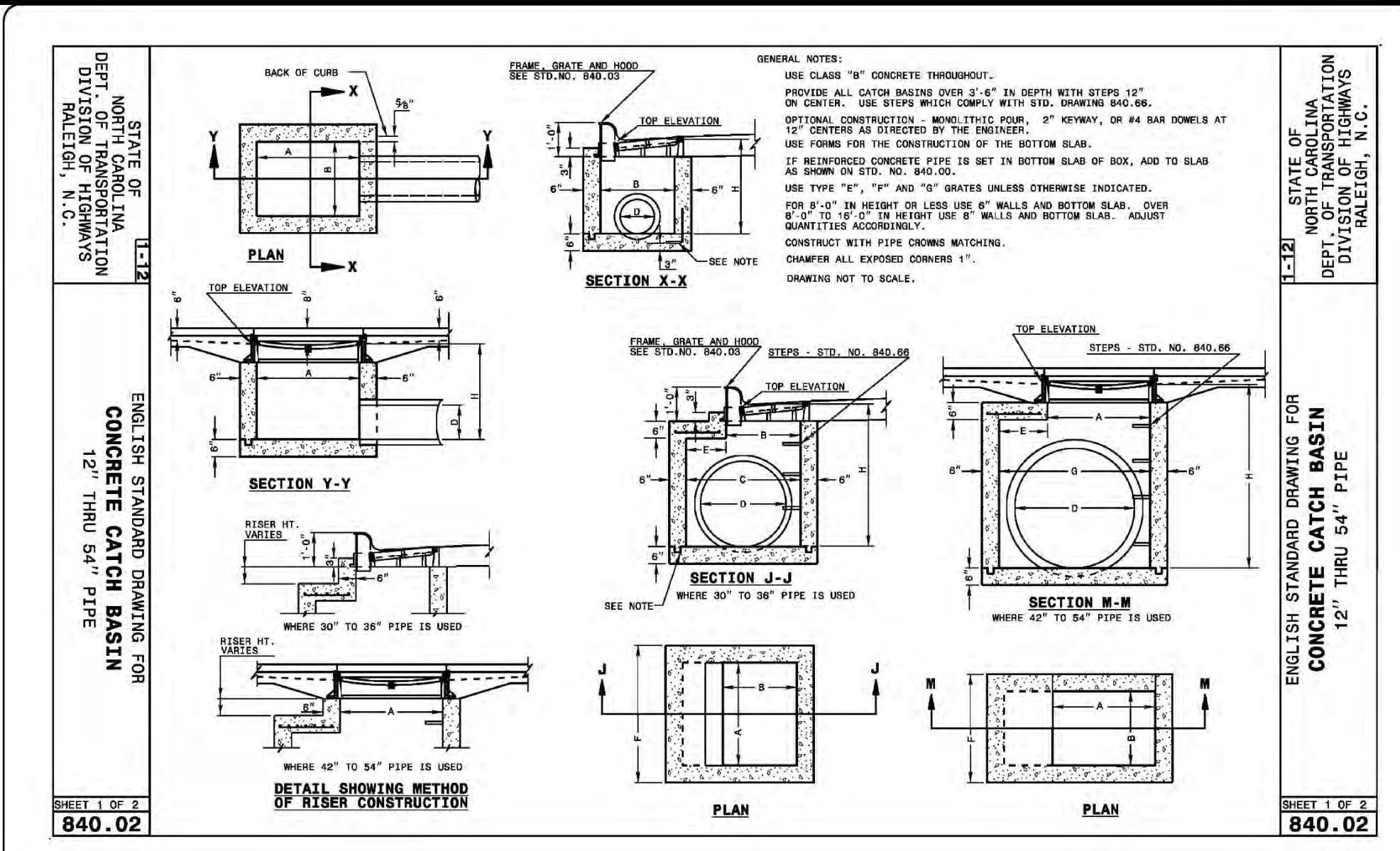
**dipj** RESIDENTIAL  
**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA  
**SITE DETAILS**

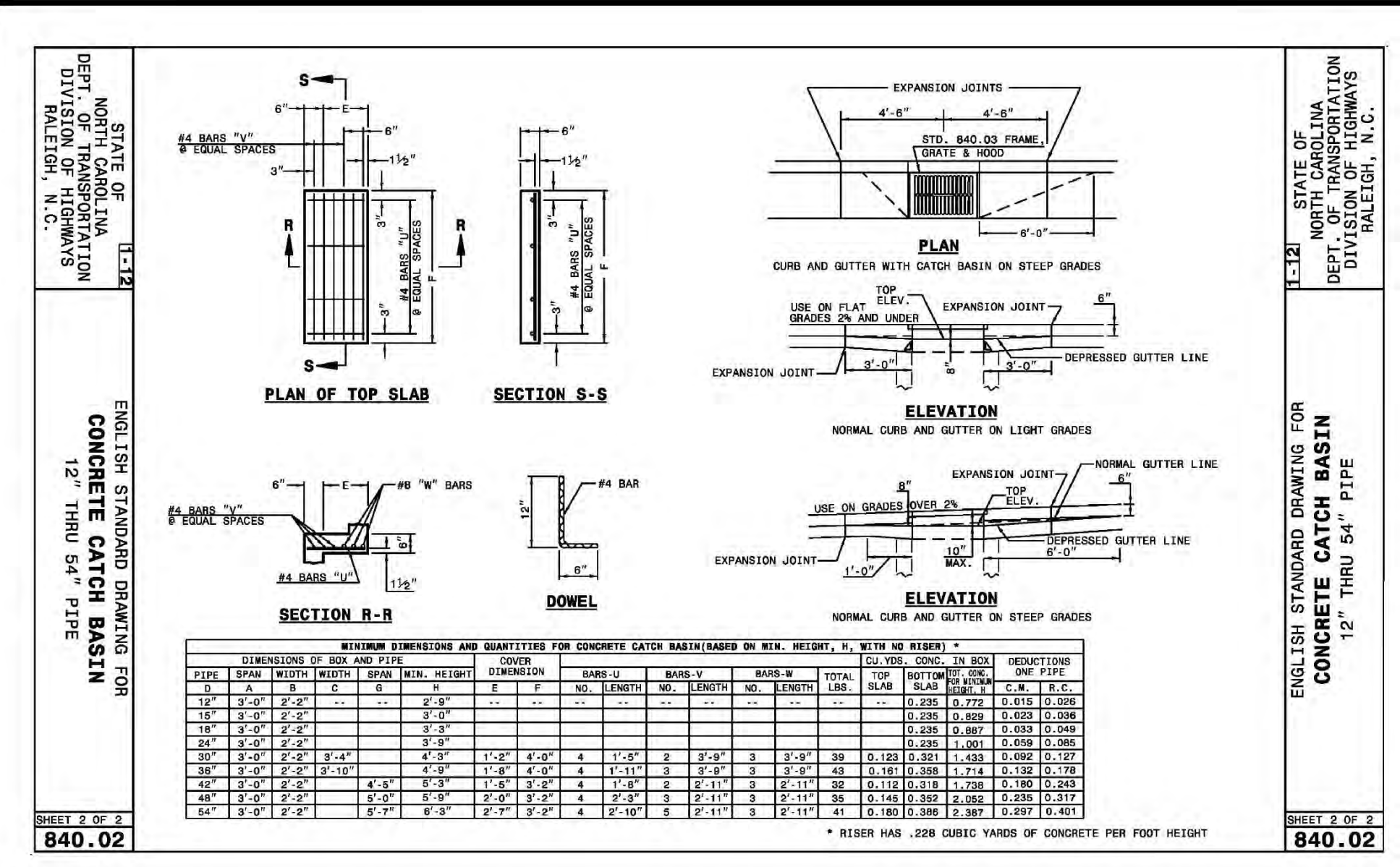
DATE: 12/20/2018	SCALE: N/A	MAC FILE NUMBER: CS-502
MCE PROJ. # 7402-0001	HORIZONTAL: N/A	DRAWING NUMBER: 31
DRAWN: ALM/KCE	VERTICAL: N/A	
DESIGNED: ALM		
CHECKED: RMC		
PROJ. MGR.: KCE		

STATUS: PRELIMINARY DESIGN  
ISSUED FOR PERMITTING

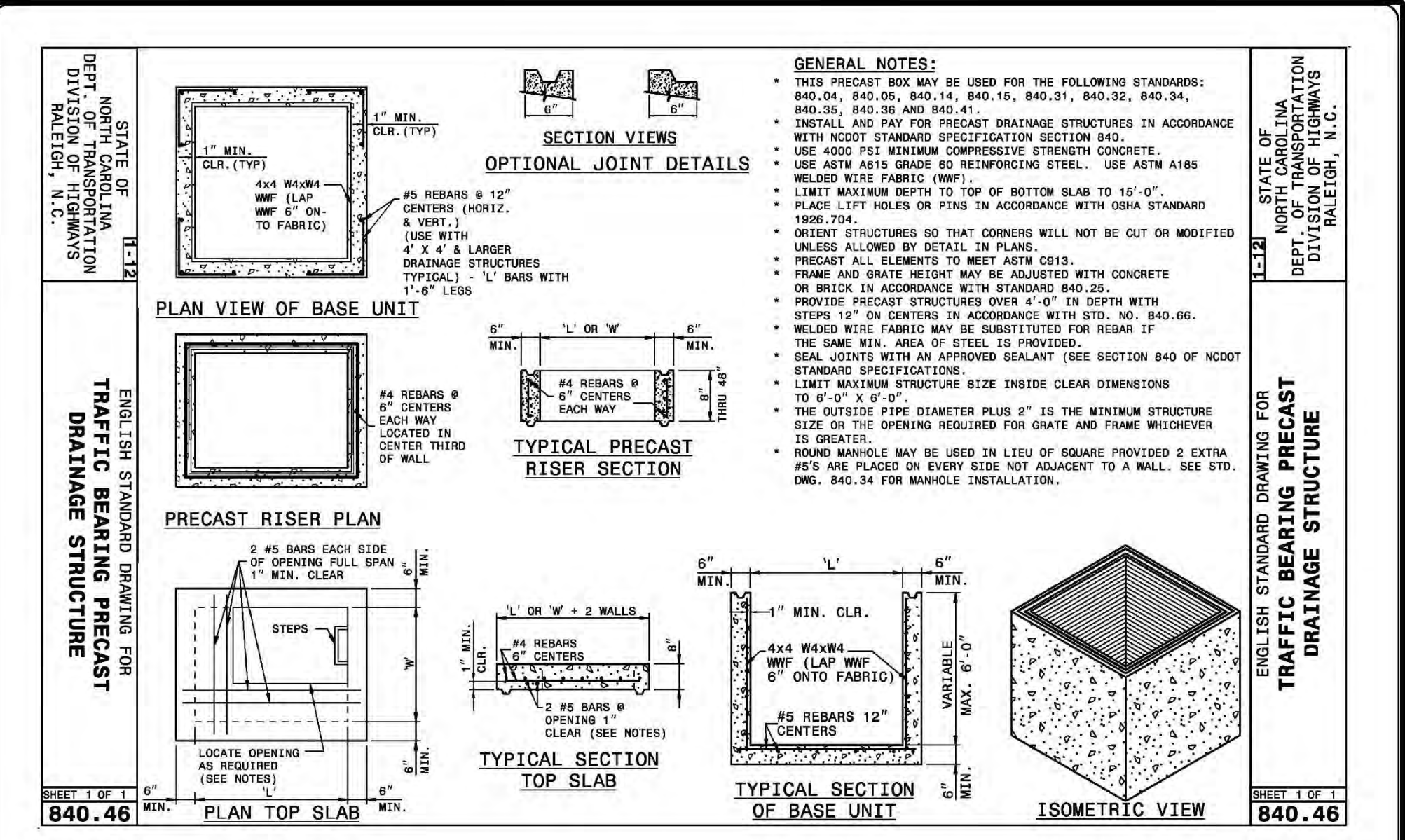




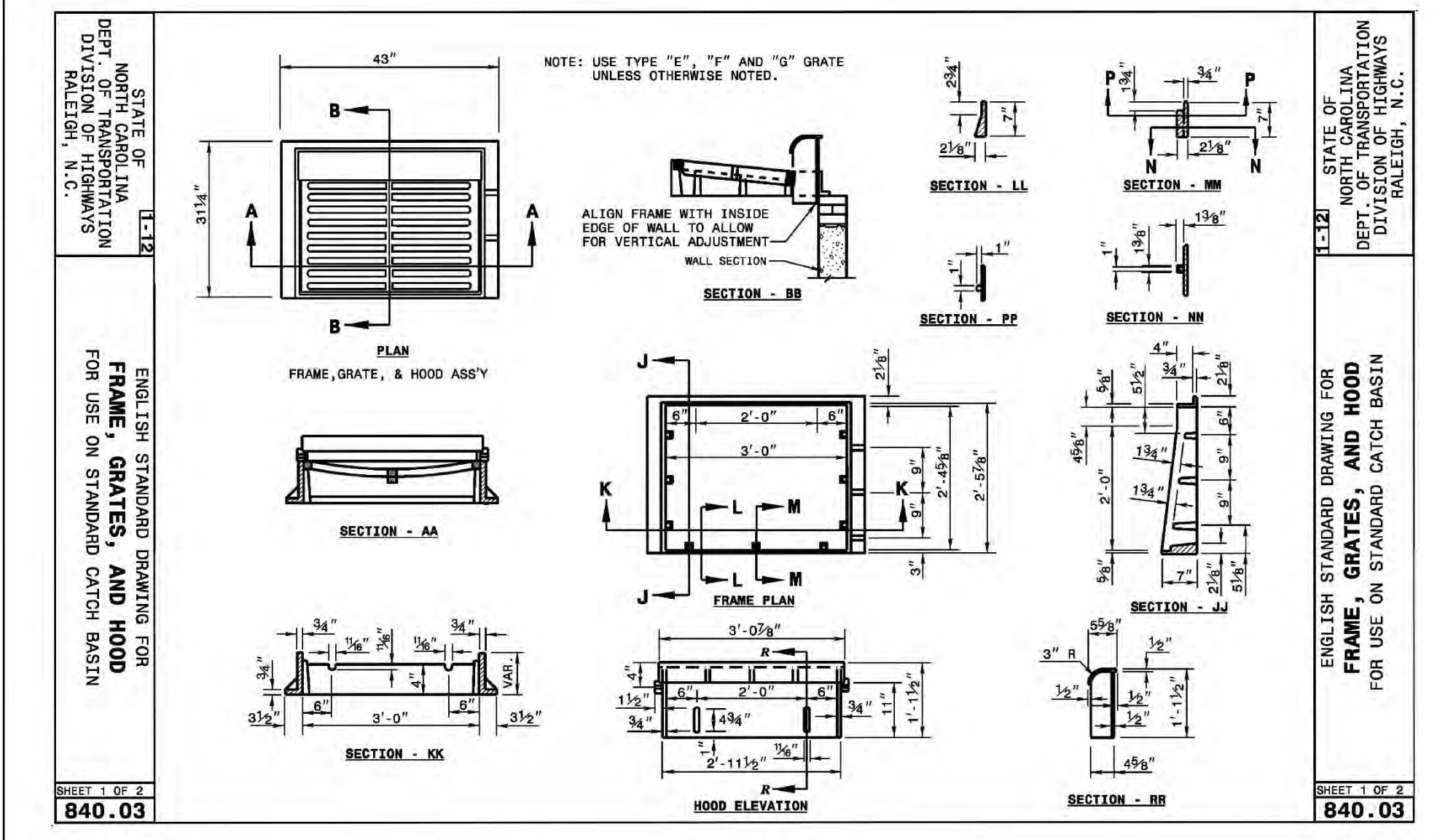
7 CONCRETE CATCH BASIN NOT TO SCALE



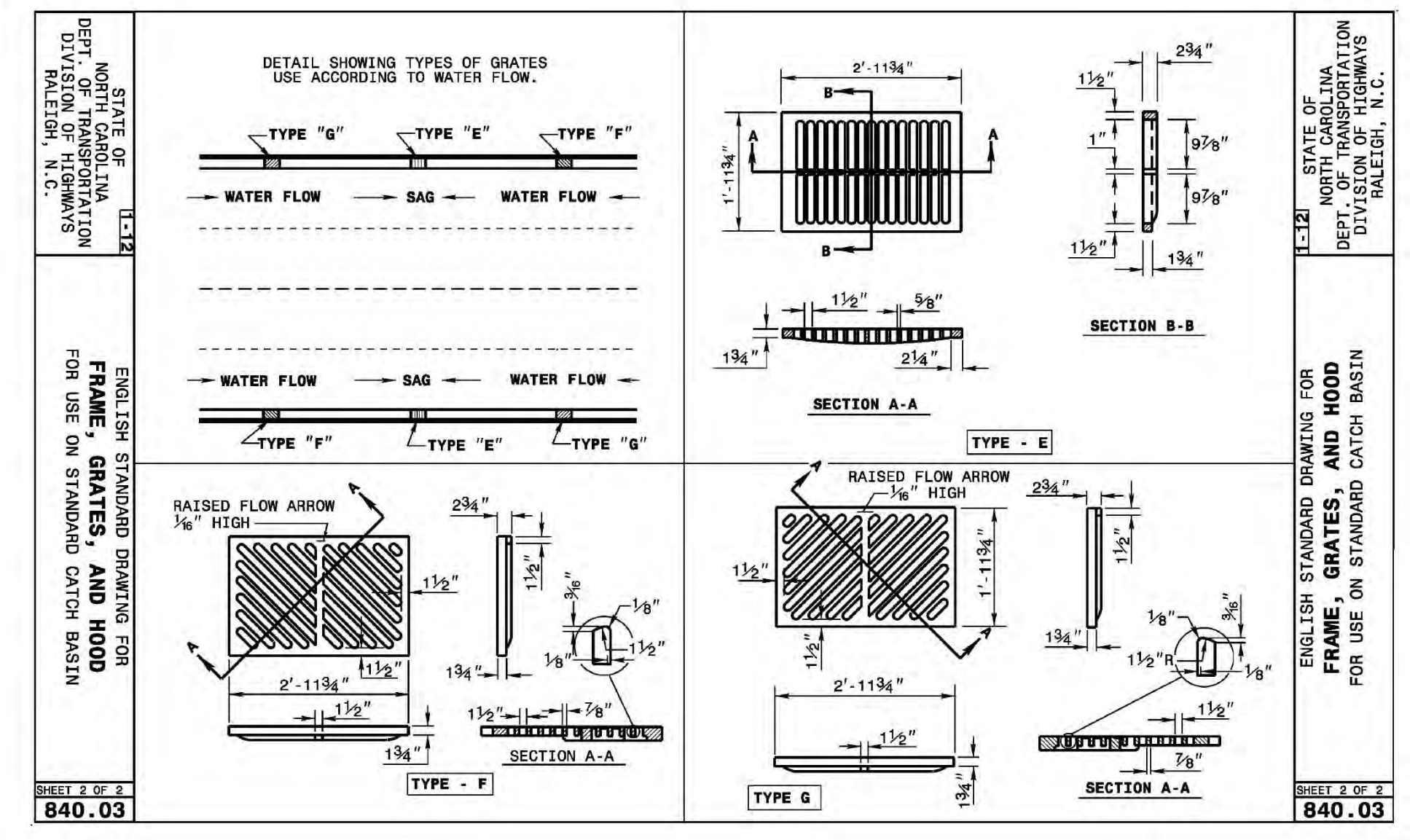
4 CONCRETE CATCH BASIN NOT TO SCALE



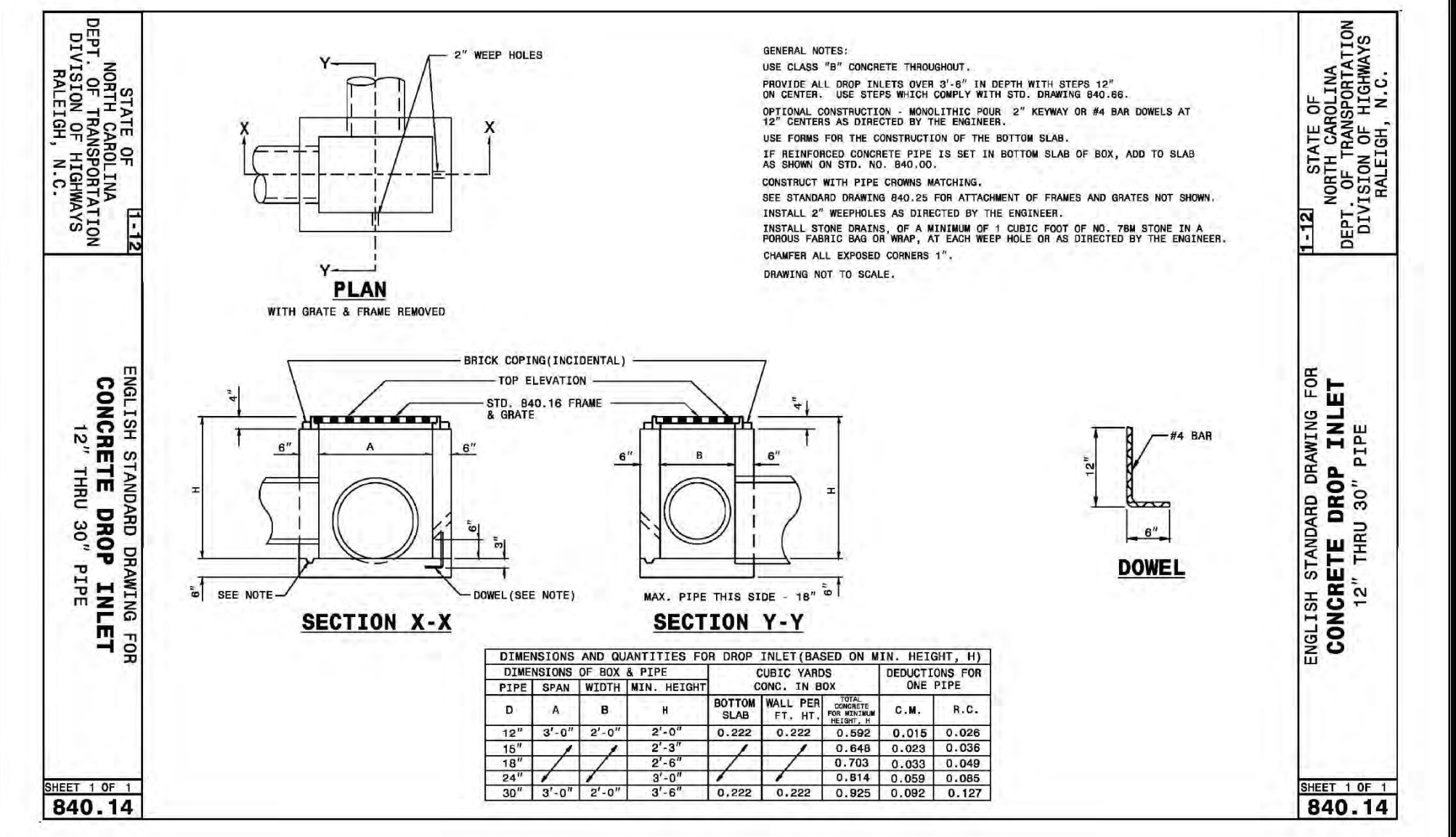
1 TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE NOT TO SCALE



8 FRAMES, GRATES, AND HOOD NOT TO SCALE



5 FRAME, GRATES, AND HOOD NOT TO SCALE

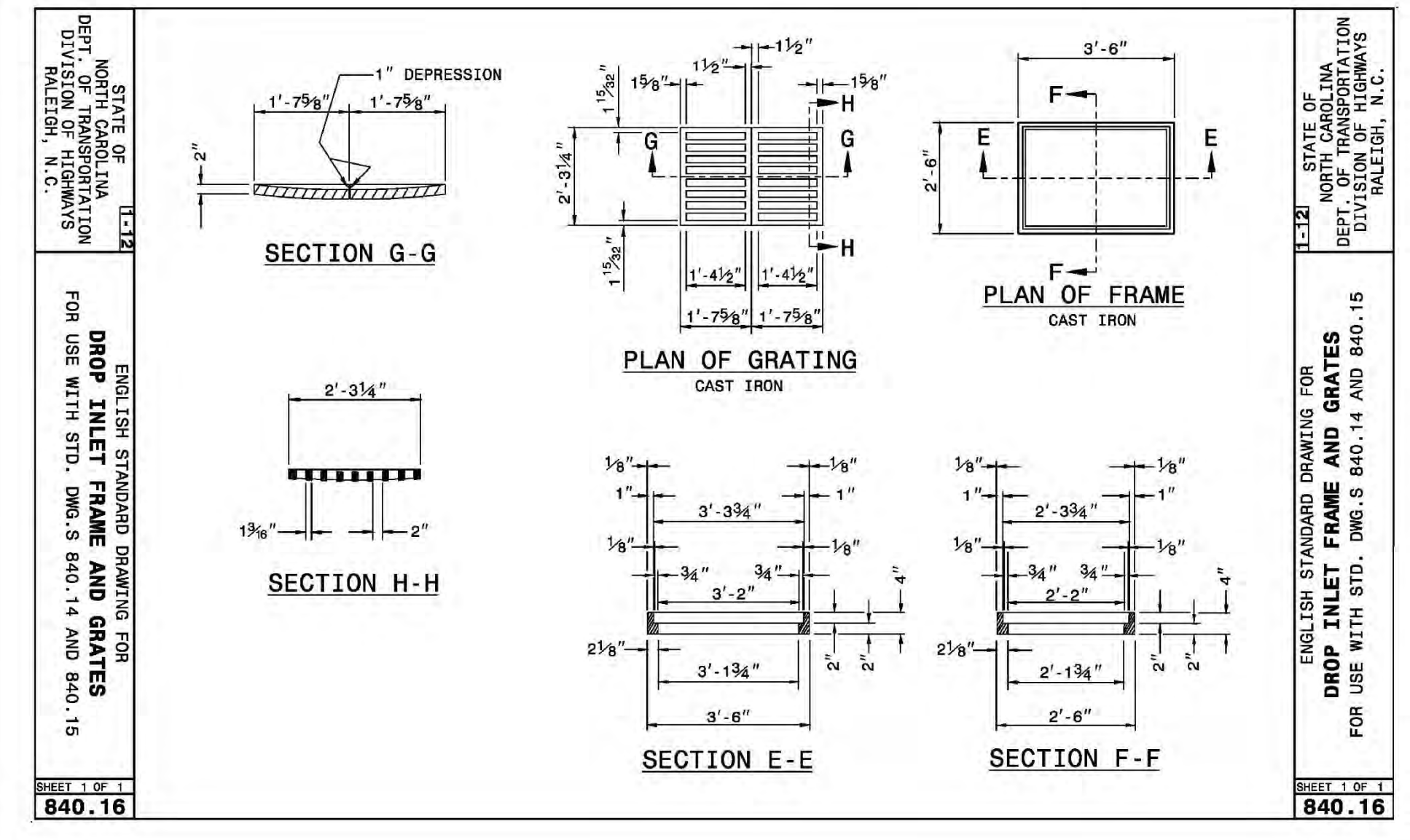


2 CONCRETE DROP INLET NOT TO SCALE

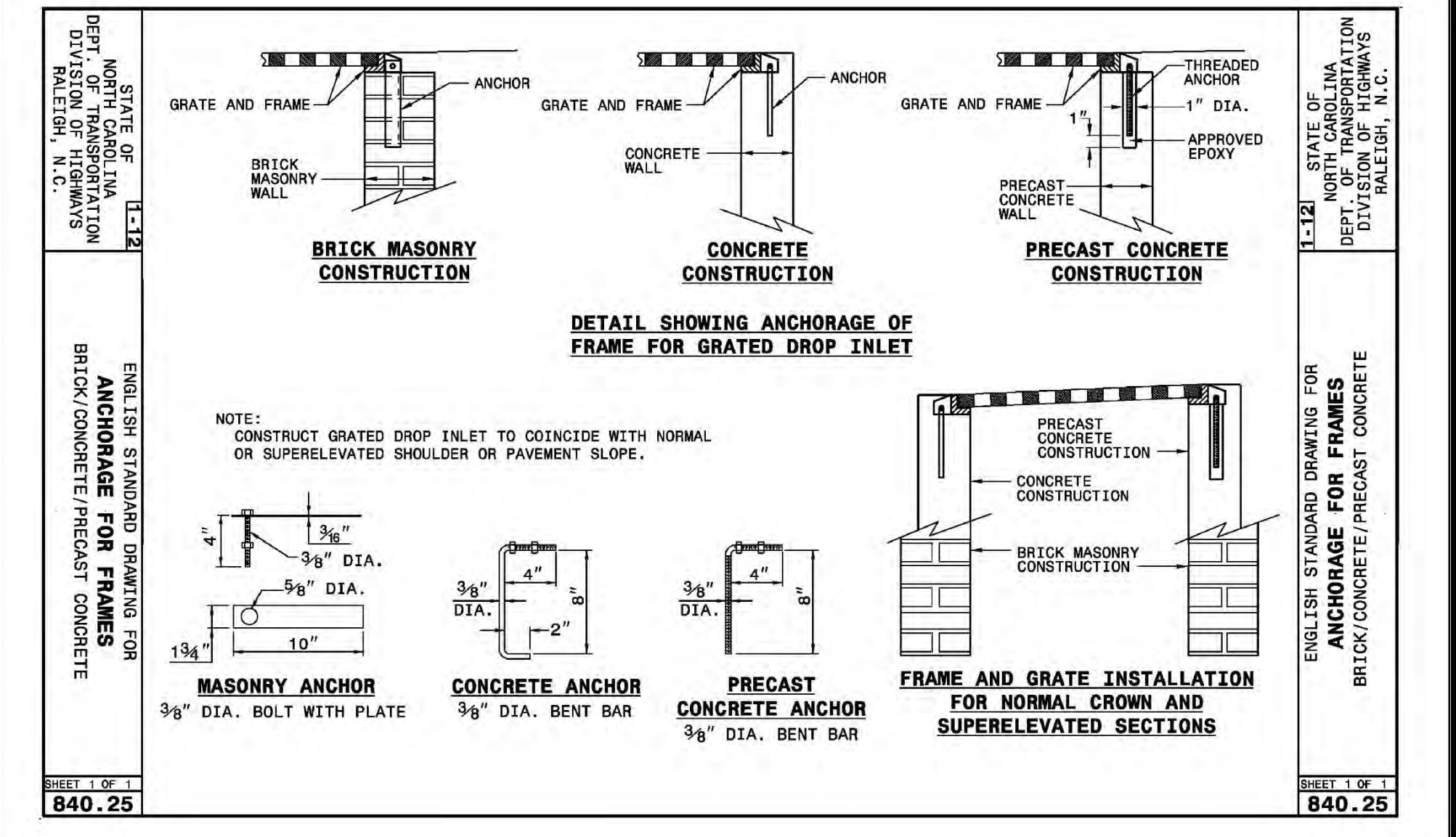
**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_



6 DROP INLET FRAME AND GRATES NOT TO SCALE



3 ANCHORAGE FOR FRAMES NOT TO SCALE

REV.	DESCRIPTION	DATE
G	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	12/20/2018
F	CONTRACTOR REVISION SET	12/12/2018
E	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITTAL	11/26/2018
D	NEW HANOVER COUNTY SEDIMENT & EROSION CONTROL SUBMITTAL	11/13/2018
C	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	11/07/2018
B	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	10/30/2018
A	CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE SUBMITTAL	07/11/2018

FINAL DRAWING - FOR REVIEW PURPOSES ONLY

**MCKIM & CREED**  
243 North Front Street  
Wilmington, North Carolina 28401  
Phone: (910)343-1048, Fax: (910)251-8282  
License: F-1222  
www.mckimcreed.com

**dpj** RESIDENTIAL  
**CLINE DESIGN**

**THE FLATS ON FRONT**  
WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA  
**STORM DRAINAGE DETAILS**

DATE: 12/20/2018  
MCE PROJ. # 7402-0001  
DRAWN ALM/KCE  
DESIGNED ALM  
CHECKED RMC  
PROJ. MGR. KCE

SCALE: HORIZONTAL: 1"=30'  
VERTICAL: N/A

MAC FILE NUMBER: CG-501  
DRAWING NUMBER: 36

STATUS: PRELIMINARY DESIGN  
ISSUED FOR PERMITTING















STRUCTURE TABLE	
STRUCTURE NAME	DETAILS
CB-1-1	RIM = 17.84 INV IN = 11.01 INV IN = 13.40 INV OUT = 11.01
CB-1-2	RIM = 16.98 INV IN = 11.10 INV OUT = 11.10
CB-1-3	RIM = 16.00 INV IN = 11.18 INV OUT = 11.18
CB-1-4	RIM = 15.02 INV OUT = 11.34
CB-1-7	RIM = 21.49 INV OUT = 17.05
CB-2-8	RIM = 24.57 INV IN = 20.50 INV OUT = 20.50
CB-2-10	RIM = 24.55 INV IN = 20.50 INV OUT = 20.50
CB-2-12	RIM = 25.42 INV IN = 20.50 INV OUT = 20.50
CB-2-13	RIM = 25.36 INV IN = 20.86 INV IN = 20.86 INV OUT = 20.86
CB-2-14	RIM = 28.00 INV IN = 23.56 INV OUT = 23.56
CB-2-15	RIM = 30.66 INV IN = 26.32 INV OUT = 26.32
CB-2-16	RIM = 30.96 INV OUT = 26.52
CB-3-7	RIM = 27.40 INV IN = 22.31 INV OUT = 22.31
CB-3-9	RIM = 27.41 INV IN = 22.29 INV IN = 22.29 INV OUT = 22.29
DI-1-6	RIM = 20.00 INV OUT = 13.58
DI-1-14	RIM = 13.96 INV OUT = 11.20
DI-2-3	RIM = 26.00 INV IN = 20.96 INV IN = 20.96 INV IN = 20.96 INV OUT = 20.96
DI-2-4	RIM = 26.98 INV OUT = 21.71
DI-2-5	RIM = 26.00 INV OUT = 21.41
DI-3-3	RIM = 39.84 INV IN = 35.25 INV OUT = 35.25
DI-3-4	RIM = 41.48 INV IN = 35.56 INV OUT = 35.56
DI-3-5	RIM = 41.15 INV OUT = 36.71
FD-2-17	RIM = 22.20 INV OUT = 20.68
FD-3-10	RIM = 23.94 INV OUT = 22.42
FES-OUT-1	RIM = 11.88 INV IN = 9.00
HP-1-1	RIM = 12.78 INV OUT = 12.03
HP-1-2	RIM = 13.23 INV IN = 12.00 INV OUT = 12.00
HP-1-3	RIM = 12.10 INV OUT = 11.35
HP-1-4	RIM = 12.56 INV IN = 11.33 INV IN = 11.33 INV OUT = 11.33

STRUCTURE TABLE	
STRUCTURE NAME	DETAILS
HP-1-5	RIM = 12.42 INV IN = 11.19 INV OUT = 11.19
HP-1-6	RIM = 12.35 INV IN = 11.12 INV IN = 11.12 INV OUT = 11.12
HP-1-7	RIM = 12.38 INV OUT = 11.15
HP-2-1	RIM = 21.33 INV IN = 20.58 INV IN = 20.58 INV OUT = 20.58
HP-2-2	RIM = 21.58 INV IN = 20.83 INV IN = 20.83 INV OUT = 20.83
HP-2-3	RIM = 21.70 INV OUT = 20.95
HP-2-4	RIM = 21.82 INV IN = 21.07 INV OUT = 21.07
HP-2-5	RIM = 21.86 INV OUT = 21.11
HP-2-6	RIM = 22.69 INV IN = 21.94 INV OUT = 21.94
HP-2-7	RIM = 22.96 INV OUT = 22.21
HP-2-8	RIM = 21.46 INV IN = 20.71 INV IN = 20.71 INV OUT = 20.71
HP-2-9	RIM = 21.71 INV IN = 20.79 INV IN = 20.79 INV OUT = 20.95
HP-2-10	RIM = 21.57 INV OUT = 20.82
HP-2-11	RIM = 21.70 INV OUT = 20.95
HP-2-12	RIM = 24.98 INV IN = 20.71 INV OUT = 21.12
HP-2-13	RIM = 21.92 INV OUT = 21.17
HP-2-14	RIM = 21.71 INV IN = 20.96 INV IN = 20.96 INV OUT = 20.96
HP-2-15	RIM = 21.81 INV IN = 21.06 INV OUT = 21.06
HP-2-16	RIM = 22.19 INV OUT = 21.44
HP-2-17	RIM = 23.16 INV IN = 21.93 INV OUT = 21.93
HP-2-18	RIM = 23.17 INV IN = 21.94 INV IN = 21.94
HP-2-19	RIM = 23.28 INV IN = 22.05 INV OUT = 22.05
HP-2-20	RIM = 23.39 INV IN = 22.16 INV IN = 22.16 INV OUT = 22.16
HP-2-21	RIM = 23.02 INV IN = 22.27 INV IN = 22.27 INV OUT = 22.27
HP-2-22	RIM = 23.05 INV OUT = 22.30
HP-2-23	RIM = 23.27 INV IN = 22.52 INV IN = 22.52 INV IN = 22.52 INV OUT = 22.52
HP-2-24	RIM = 23.30 INV OUT = 22.55
HP-2-25	RIM = 23.33 INV OUT = 22.58
HP-2-26	RIM = 23.56 INV IN = 22.81 INV IN = 22.81 INV OUT = 22.81

STRUCTURE TABLE	
STRUCTURE NAME	DETAILS
HP-2-27	RIM = 23.62 INV OUT = 22.87
HP-2-28	RIM = 23.60 INV OUT = 22.85
HP-2-29	RIM = 22.95 INV IN = 22.20 INV OUT = 22.20
HP-2-30	RIM = 23.15 INV IN = 22.40 INV OUT = 22.40
HP-2-31	RIM = 23.25 INV OUT = 22.50
HP-3-1	RIM = 23.62 INV OUT = 22.39
HP-3-2	RIM = 23.48 INV OUT = 22.73
HP-3-3	RIM = 23.59 INV OUT = 22.84
HP-3-4	RIM = 23.83 INV IN = 22.31 INV IN = 22.31 INV OUT = 22.31
HP-4-1	RIM = 20.25 INV OUT = 19.50
HP-4-2	RIM = 19.74 INV IN = 18.51 INV OUT = 18.51
HP-4-3	RIM = 12.10 INV OUT = 11.35
HP-4-4	RIM = 11.58 INV IN = 10.35 INV IN = 10.35 INV OUT = 10.35
HP-4-5	RIM = 10.23 INV IN = 9.00 INV OUT = 9.00
HP-4-6	RIM = 10.46 INV IN = 9.22 INV OUT = 9.22
HP-4-7	RIM = 11.27 INV IN = 10.04 INV OUT = 10.04
HP-4-8	RIM = 12.32 INV IN = 11.09 INV OUT = 11.09
HP-4-9	RIM = 11.90 INV OUT = 11.15
IN-1-0A	RIM = 12.37 INV IN = 10.85
IN-1-0B	RIM = 12.65 INV IN = 10.85
IN-2-0A	RIM = 21.92 INV IN = 20.40
IN-2-0B	RIM = 22.78 INV IN = 20.40
IN-2-0C	RIM = 21.24 INV IN = 19.72
IN-3-0A	RIM = 24.32 INV IN = 22.80
IN-3-0B	RIM = 24.00 INV IN = 22.20
JB-3-1	RIM = 29.17 INV IN = 22.90 INV OUT = 22.90
JB-3-6	RIM = 27.61 INV IN = 22.26 INV IN = 22.26 INV OUT = 22.26
JB-4-2	RIM = 11.88 INV IN = 8.45 INV IN = 8.45 INV OUT = 8.45
JB-4-3	RIM = 11.79 INV IN = 8.37 INV OUT = 8.37

STRUCTURE TABLE	
STRUCTURE NAME	DETAILS
JB-4-4	RIM = 11.21 INV IN = 8.28 INV OUT = 8.28
MH-1-5	RIM = 19.57 INV IN = 13.40 INV IN = 15.50 INV OUT = 15.50
MH-1-8	RIM = 18.62 INV IN = 9.64 INV IN = 9.32 INV OUT = 9.32
MH-1-9	RIM = 17.18 INV IN = 9.22 INV OUT = 9.22
MH-1-10	RIM = 25.63 INV IN = 15.20 INV OUT = 15.20
MH-1-11	RIM = 25.65 INV IN = 15.98 INV OUT = 15.98
MH-1-12	RIM = 24.72 INV IN = 16.30 INV OUT = 16.30
MH-1-13	RIM = 14.68 INV IN = 10.95 INV IN = 10.95 INV OUT = 10.95
MH-2-1	RIM = 25.57 INV IN = 20.50 INV IN = 20.50 INV OUT = 20.50
MH-2-2	RIM = 25.66 INV OUT = 20.70
MH-2-6	RIM = 25.94 INV IN = 21.60 INV OUT = 21.60
MH-2-9	RIM = 24.67 INV IN = 19.96 INV IN = 19.96 INV OUT = 19.96
MH-2-11	RIM = 25.43 INV IN = 20.31 INV IN = 20.31 INV OUT = 20.31
MH-3-2	RIM = 34.63 INV IN = 30.19 INV OUT = 30.19
MH-3-11	RIM = 28.49 INV IN = 24.05
NP-3-8	RIM = 30.75 INV IN = 22.35 INV IN = 22.35 INV OUT = 22.35
NP-3-10	RIM = 24.83 INV OUT = 22.72
OUT-1-0	RIM = 11.02 INV OUT = 9.50
OUT-1-11	RIM = 18.88 INV OUT = 16.50
OUT-4-0	RIM = 9.49 INV IN = 8.26
SF-4-1	RIM = 12.14 INV IN = 8.42 INV OUT = 8.42

STORM DRAINAGE PIPE DATA TABLE							
FROM	TO	LENGTH	SIZE	PIPE TYPE	SLOPE	UPSTREAM INVERT	DOWNSTREAM INVERT
SF-4-1	JB-4-3	14.84'	12"	HDPE	0.34%	8.42	8.37
OUT-1-11	MH-1-12	40.47'	24"	RCP	0.49%	16.50	16.30
OUT-1-0	MH-1-8	55.12'	15"	CL IV RCP	0.33%	9.50	9.32
NP-3-10	HP-3-4	41.26'	12"	HDPE	0.99%	22.72	22.31
NP-3-8	CB-3-7	10.83'	15"	CL IV RCP	0.37%	22.35	22.31
MH-3-2	JB-3-1	56.52'	15"	RCP	12.90%	30.19	22.90
MH-2-11	MH-2-9	69.36'	15"	RCP	0.50%	20.31	19.96
MH-2-9	IN-2-0C	47.48'	15"	RCP	0.50%	19.96	19.72
MH-2-6	DI-2-3	131.65'	15"	RCP	0.49%	21.60	20.96
MH-2-2	MH-2-1	28.49'	15"	RCP	0.70%	20.70	20.50
MH-2-1	IN-2-0B	12.04'	24"	RCP	0.83%	20.50	20.40
MH-1-13	IN-1-0A	20.74'	15"	RCP	0.50%	10.95	10.85
MH-1-12	MH-1-11	64.00'	24"	RCP	0.50%	16.30	15.98
MH-1-11	MH-1-10	156.23'	24"	RCP	0.50%	15.98	15.20
MH-1-10	MH-1-8	139.52'	24"	RCP	3.99%	15.20	9.64
MH-1-9	FES-OUT-1	44.11'	30"	CL IV RCP	0.50%	9.22	9.00
MH-1-8	MH-1-9	26.10'	30"	RCP	0.37%	9.32	9.22
MH-1-5	CB-1-1	40.07'	15"	RCP	5.24%	15.50	13.40
JB-4-4	OUT-4-0	5.87'	12"	HDPE	0.34%	8.28	8.26
JB-4-3	JB-4-4	29.08'	12"	HDPE	0.31%	8.37	8.28
JB-4-2	SF-4-1	6.51'	12"	HDPE	0.46%	8.45	8.42
JB-3-6	IN-3-0B	18.21'	18"	RCP	0.33%	22.26	22.20
JB-3-1	IN-3-0A	10.65'	15"	RCP	0.94%	22.90	22.80
JB-3-1	MH-3-11	8.32'	15"	RCP	14.42%	25.25	24.05
HP-4-9	HP-4-8	4.64'	8"	HDPE	1.29%	11.15	11.09
HP-4-8	HP-4-7	26.72'	12"	HDPE	3.93%	11.09	10.04
HP-4-7	HP-4-6	78.49'	12"	HDPE	1.04%	10.04	9.22
HP-4-6	JB-4-2	45.18'	12"	HDPE	1.71%	9.22	8.45
HP-4-5	JB-4-2	105.74'	12"	HDPE	0.52%	9.00	8.45
HP-4-4	HP-4-5	85.81'	12"	HDPE	1.57%	10.35	9.00
HP-4-3	HP-4-4	6.27'	8"	HDPE	15.96%	11.35	10.35
HP-4-2	HP-4-4	88.16'	12"	HDPE	9.26%	18.51	10.35
HP-4-1	HP-4-2	5.03'	8"	HDPE	19.69%	19.50	18.51
HP-3-4	CB-3-9	6.05'	15"	CL IV RCP	0.33%	22.31	22.29
HP-3-3	NP-3-8	48.81'	8"	HDPE	1.00%	22.84	22.35
HP-3-2	NP-3-8	37.77'	8"	HDPE	1.01%	22.73	22.35
HP-3-1	HP-3-4	7.84'	12"	HDPE	1.02%	22.39	22.31
HP-2-31	HP-2-30	20.75'	8"	HDPE	0.48%	22.50	22.40
HP-2-30	HP-2-29	40.33'	8"	HDPE	0.50%	22.40	22.20
HP-2-29	HP-2-20	6.19'	8"	HDPE	0.65%	22.20	22.16
HP-2-28	HP-2-26	8.37'	8"	HDPE	0.48%	22.85	22.81
HP-2-27	HP-2-26	12.06'	8"	HDPE	0.50%	22.87	22.81
HP-2-26	HP-2-23	58.23'	8"	HDPE	0.50%	22.81	22.52
HP-2-25	HP-2-23	12.47'	8"	HDPE	0.48%	22.58	22.52
HP-2-24	HP-2-23	5.03'	8"	HDPE	0.60%	22.55	22.52
HP-2-23	HP-2-21	50.28'	8"	HDPE	0.50%	22.52	22.27
HP-2-22	HP-2-21	5.03'	8"	HDPE	0.60%	22.30	22.27
HP-2-21	HP-2-20	20.79'	8"	HDPE	0.53%	22.27	22.16
HP-2-20	HP-2-19	21.48'	12"	HDPE	0.51%	22.16	22.05
HP-2-19	HP-2-18	22.38'	12"	HDPE	0.49%	22.05	21.94

STORM DRAINAGE PIPE DATA TABLE							
FROM	TO	LENGTH	SIZE	PIPE TYPE	SLOPE	UPSTREAM INVERT	DOWNSTREAM INVERT
HP-2-18	HP-2-17	2.61'	12"	HDPE	0.38%	21.94	21.93
HP-2-17	MH-2-6	62.46'	12"	HDPE	0.53%	21.93	21.60
HP-2-16	HP-2-15	37.62'	8"	HDPE	1.01%	21.44	21.06
HP-2-15	HP-2-14	10.03'	8"	HDPE	1.00%	21.06	20.96
HP-2-14	CB-2-13	9.59'	8"	HDPE	1.04%	20.96	20.86
HP-2-13	HP-2-12	4.76'	8"	HDPE	9.65%	21.17	20.71
HP-2-12	HP-2-8	41.56'	8"	HDPE	0.99%	21.12	20.71
HP-2-11	HP-2-9	15.73'	8"	HDPE	1.02%	20.95	20.79
HP-2-10	HP-2-9	3.02'	8"	HDPE	0.99%	20.82	20.79
HP-2-9	HP-2-8	7.75'	8"	HDPE	3.10%	20.95	20.71
HP-2-8	CB-2-10	21.24'	8"	HDPE	0.99%	20.71	20.50
HP-2-7	HP-2-6	26.94'	8"	HDPE	1.00%	22.21	21.94
HP-2-6	HP-2-1	135.76'	8"	HDPE	1.00%	21.94	20.58
HP-2-5	HP-2-4	4.04'	8"	HDPE	0.99%	21.11	21.07
HP-2-4	HP-2-2	24.14'	8"	HDPE	0.99%	21.07	20.83
HP-2-3	HP-2-2	11.84'	8"	HDPE	1.01%	20.95	20.83
HP-2-2	HP-2-1	24.48'	8"	HDPE	1.02%	20.83	20.58
HP-2-1	CB-2-8	7.71'	8"	HDPE	1.04%	20.58	20.50
HP-1-7	MH-1-13	12.84'	12"	HDPE	1.56%	11.15	10