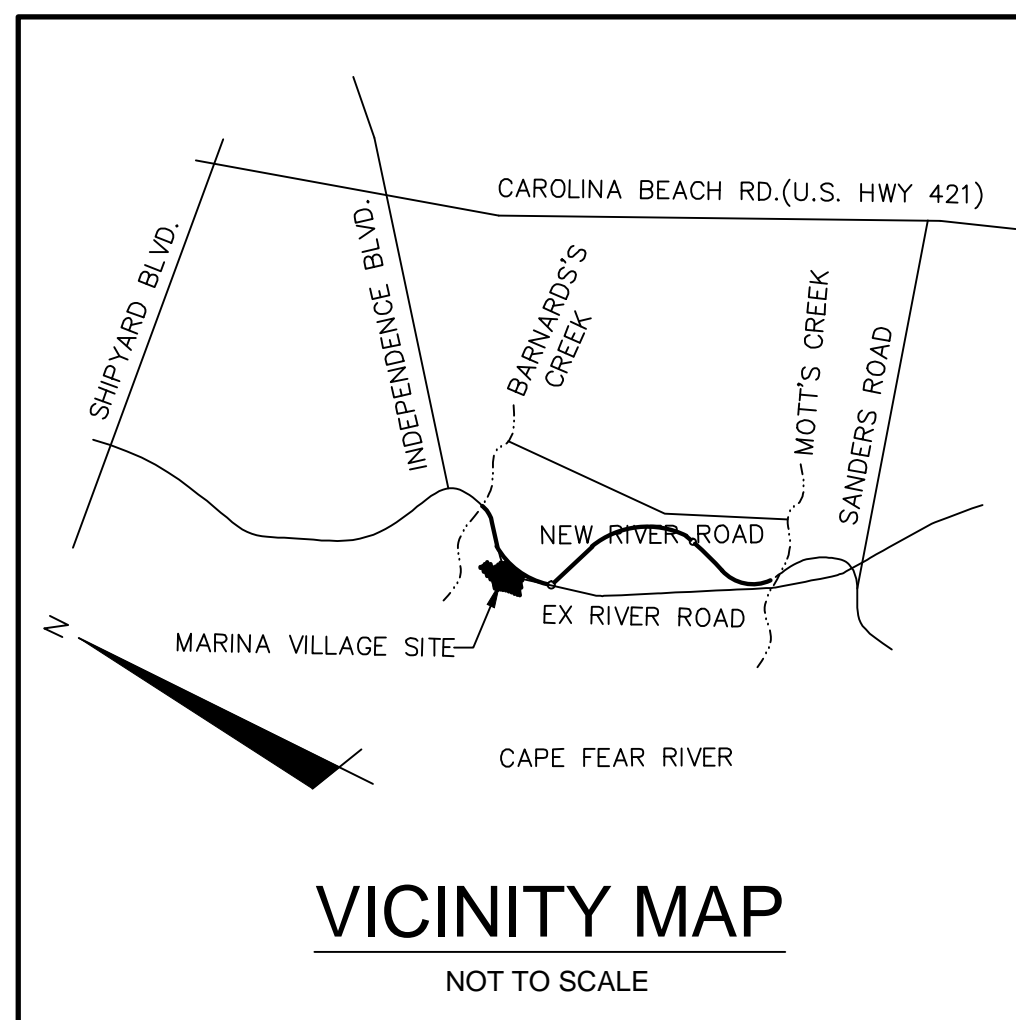


# RIVERLIGHTS MARINA VILLAGE- PHASE 1B

## CITY OF WILMINGTON, NC

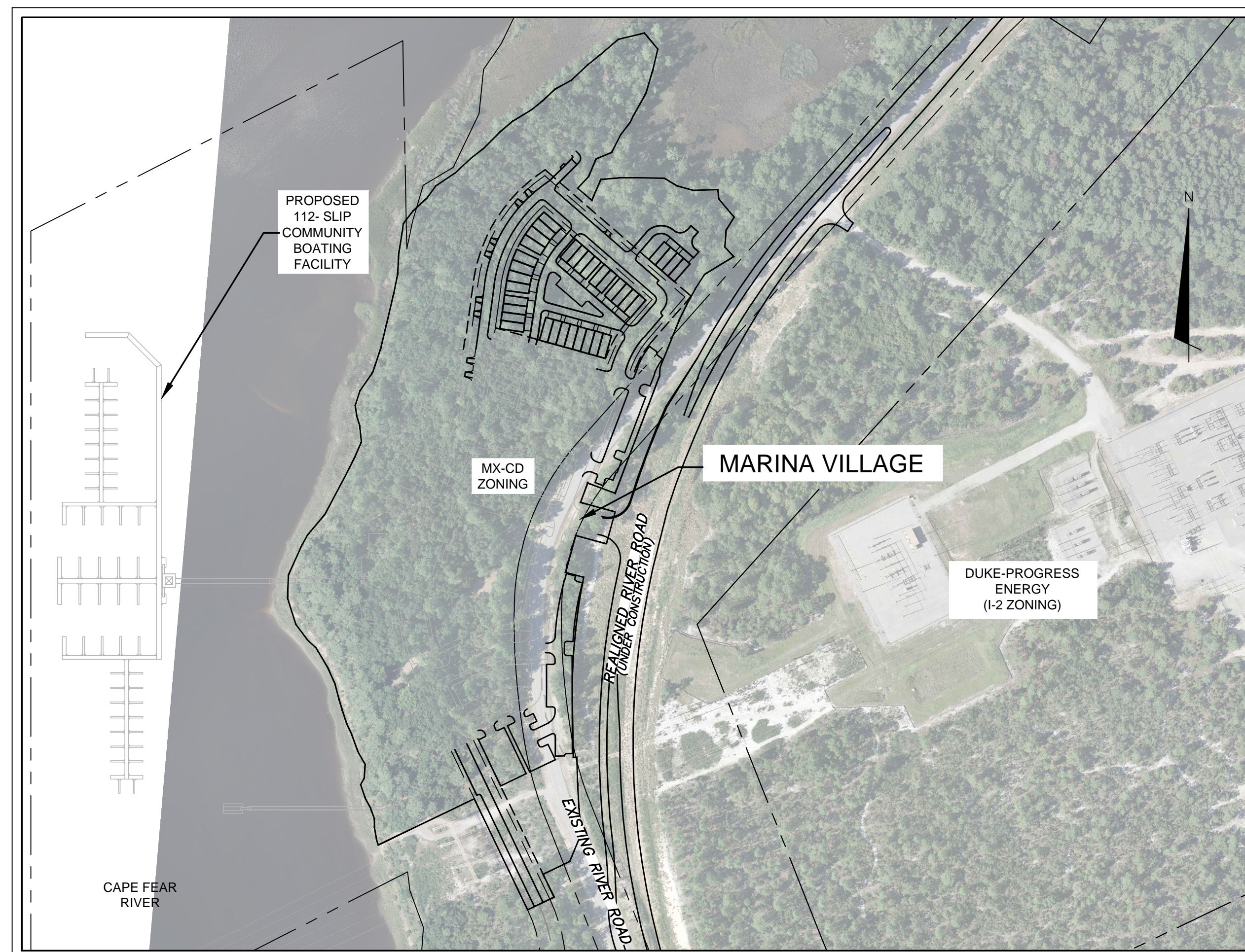
NOVEMBER 2015

### CITY OF WILMINGTON TECHNICAL REVIEW COMMITTEE



#### CITY AND AGENCY CONTACTS

- A. City of Wilmington  
Planning Department**  
102 North Third Street  
PO BOX 1810  
Wilmington, NC 28402-1810  
(910)341-7800  
Contact: Ron Satterfield  
Email: Ron.Satterfield@wilmingtonnc.gov
- B. City of Wilmington  
Engineering**  
212 Operations Center Drive  
PO BOX 1810  
Wilmington, NC 28402-1810  
(910) 341-7807  
Contact: Rob Gordon  
Email: Rob.Gordon@wilmingtonnc.gov
- C. New Hanover County  
Sediment and Erosion Control**  
230 Government Center Drive, Suite 160  
Wilmington, NC 28403  
(910) 798-7432  
Contact: Beth Wetherill  
Email: BWetherill@nhcgv.com
- D. Cape Fear Public Utility Authority**  
235 Government Center Drive  
Wilmington, NC 28403  
(910) 332-6626  
Contact: David Dailey  
Email: David.Dailey@cfpua.org
- E. NCDENR**  
Division of Environmental Health  
Public Water Supply Section  
1634 Mail Service Center  
Raleigh, NC 27699-1634  
(919) 707-9075  
Contact: Christyn Fertenbaugh  
Email: christyn.fertenbaugh@ncdenr.gov



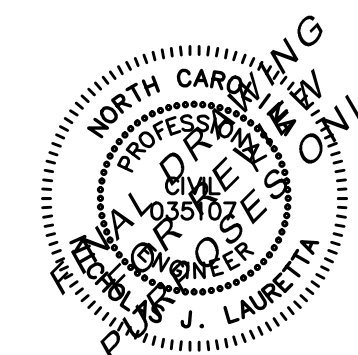
#### PROJECT DATA

**NAME OF PROJECT:**  
RIVERLIGHTS - MARINA VILLAGE PHASE 1B  
WILMINGTON, NORTH CAROLINA

**OWNER/DEVELOPER:**  
NNP IV-CAPE FEAR RIVER, LLC  
3410 RIVER ROAD, SUITE 103  
WILMINGTON, NC 28412  
PHONE: (704)813-8697  
CONTACT: DOUG BROWN

**PREPARED BY:**  
MCKIM & CREED, INC  
243 NORTH FRONT ST  
WILMINGTON, NC 28401  
PHONE: (910)343-1048  
FAX: (910)251-8282  
CONTACT: NICK LAURETTA, PE, LEED AP  
EMAIL: NLAURETTA@MCKIMCREED.COM

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Wilmington, North Carolina 28401  
Phone: (910)343-1048 , Fax: (910)251-8282  
License: F-1222  
www.mckimcreed.com



SHEET INDEX		
SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION
1	G-001	COVER
2	G-002	ABBREVIATIONS & LEGEND
3	G-003	GENERAL NOTES
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5	CX-102	TREE REMOVAL PLAN
6	CE-101	PHASE 1 SEDIMENT & EROSION CONTROL PLAN
7	CE-102	PHASE 2 SEDIMENT & EROSION CONTROL PLAN
8	CG-101	GRADING PLAN
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10	CS-100	OVERALL SITE PLAN
11	CS-101	SITE PLAN
12	CS-102	SITE PLAN NORTH
13	CS-103	SITE PLAN SOUTH
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16	CU-702	PLAN AND PROFILE
17	CU-703	PLAN AND PROFILE
18	L-160	OVERALL PLANTING PLAN SHEET REFERENCE
19	L-161	PLANTING PLAN NORTH
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21	L-501	LANDSCAPE DETAILS
22	CN-501	STORMWATER MANAGEMENT DETAILS
23	CT-301	ROADWAY SECTIONS
24	CE-501	SEDIMENT & EROSION CONTROL DETAILS
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33	SSD-1	UTILITY DETAILS
34	SSD-2	UTILITY DETAILS
35	SSD-3	UTILITY DETAILS
36	SSD-4	UTILITY DETAILS



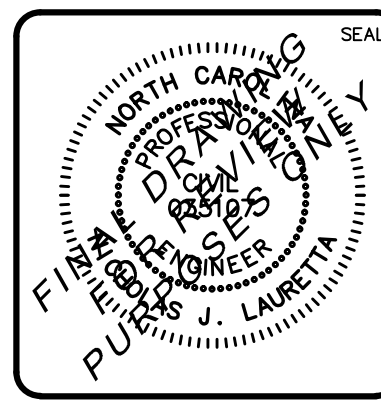
ABBREVIATIONS

ALT	ALTERNATE
AMP	AMPERE
ANCH	ANCHOR
Ac.	ACRE
BIT	BITUMINOUS
BLDG	BUILDING
BM	BEAM BENCH MARK
BOTT	BOTTOM
CB	CATCH BASIN
C/C	CENTER TO CENTER
CDI	CURB DROP INLET
CFM	CUBIC FEET PER MINUTE
C&G	CURB & GUTTER
CI	CAST IRON
CIP	CAST IN PLACE
CL	CENTERLINE CLASS
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONC	CONCRETE
CONC PVMT	CONCRETE PAVEMENT
COND	CONDUIT
CONST	CONSTRUCT, CONSTRUCTION
CTR	CENTER
CTV	CABLE TELEVISION
DB	DEED BOOK
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DISCH	DISCHARGE
DWG	DRAWING
E	EAST
EA	EACH
EAP	EXPOSED AGGREGATE PAVING
EL, ELEV	ELEVATION
ELEC	ELECTRIC, ELECTRICAL
EMER	EMERGENCY
EOP, EP	EDGE OF PAVEMENT
EQUIP	EQUIPMENT
ESMT	EASEMENT
EW	EACH WAY, END WALL
EXIST, EX	EXISTING
FL	FLOW LINE
FLG	FLANGE
FLR	FLOOR
FM	FORCE MAIN
FT	FOOT, FEET
G	GAS LINE, GUTTER
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GEN	GENERATOR
GPM	GALLONS PER MINUTE
h	HEIGHT
HP	HORSEPOWER
HWY	HIGHWAY
ID	INSIDE DIAMETER
INV	INVERT
IP	IRON PIPE, IRON PIN
IPF	IRON PIN FOUND
IR	IRON ROD
JB	JUNCTION BOX
KW	KILOWATTS
M	METER
MANUF, MFR	MANUFACTURER
MATL	MATERIAL
MAX	MAXIMUM
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MON	MONUMENT
N	NORTH
N&C	NAIL AND CAP
NEC	NATIONAL ELECTRIC CODE
NGS	NATIONAL GEODETIC SURVEY
NIC	NOT IN CONTRACT
NO., #	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PVMT	POINT OF VERTICAL CURVE PAVEMENT
QTY, QUAN	QUANTITY
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RCM	RECLAIMED WATER MAIN
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
REF	REFERENCE
REINF	REINFORCED, REINFORCING
REQ'D	REQUIRED
REV	REVISION
ROW, R/W	RIGHT OF WAY
RT	RIGHT
RU	REUSE WATER MAIN
RW	RAW WATER
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SD	STORM DRAIN
S.F.	SQUARE FEET
SHT	SHEET
SR	STATE ROUTE
STA	STATION
STD	STANDARD
S/W	SIDEWALK
TELE, TEL	TELEPHONE
TOB	TOP OF BANK
TOS	TOE OF SLOPE
TPS	TURN POINT SET
TS & V	TAPPING SLEEVE & VALVE
TYP	TYPICAL
UL	UNDERWRITERS LAB
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VC	VITRIFIED CLAY
VERT	VERTICAL
VOL	VOLUME
w	WIDTH
W	WITH
WM	WATER METER, WATER MAIN
WP	WATERPROOF, WEATHERPROOF
WSL	WATER SERVICE LINE
WV	WATER VALVE

LEGEND

DESCRIPTION	EXISTING	NEW
PROPERTY LINE	---	---
ROAD RIGHT-OF-WAY	---	---
UTILITY EASEMENT	---	---
PAVED ROADWAY	---	---
DIRT OR CRUSHED STONE ROADWAY	---	---
STORM DRAINAGE	---	---
GAS LINE	---	---
OVERHEAD ELECTRIC	---	---
OVERHEAD TELEPHONE	---	---
OVERHEAD TELEVISION	---	---
UNDERGROUND ELECTRIC	---	---
UNDERGROUND TELEPHONE	---	---
UNDERGROUND TELEVISION	---	---
DIRECTION OF FLOW	→	→
GROUND ELEVATION	7.26	7.64 (TOP OF CURB) 7.26 (EDGE OF PAVEMENT)
CONTOUR (MAJOR)	15	15
CONTOUR (MINOR)	12	12
MANHOLE	○	●
CATCH BASIN	□	□
INLETS	□	□
DROP INLET (THROAT OPENING)	□	□
UTILITY POLE	⊕	⊕
LIGHT POLE	○	○
SUPPORT POLE	○	○
LANDSCAPE LIGHTING	○	○
UTILITY PEDESTAL	□	□
GUY WIRE	---	---
BOLLARD	○ BCL	○ BCL
MAILBOX	□ MB	□ MB
SIGN	---	---
BENCHMARK	⊙	⊙
TREE LINE	---	---
SHRUB	○	○
EXISTING IRON ROD (DISTURBED)	○ EIR (D)	○ EIR (D)
EXISTING IRON ROD	○ EIR	○ EIR
LIMITS OF DISTURBANCE	LOD	LOD
SILT FENCE	SF	SF
TREE PROTECTION FENCE	TP	TP
TEMPORARY DIVERSION DITCH	>TDD	>TDD
SANITARY SEWER LINE	---	---
SANITARY SEWER MANHOLE	○	○
WATER LINE	---	---
FIRE HYDRANT	⊕	⊕
VALVE	⊕	⊕
STORMWATER PIPE	---	---
CITY OF WILMINGTON CONSERVATION RESOURCE SETBACK LINE	COD	COD
MEAN HIGH WATER	MHW	MHW
AREA OF ENVIRONMENTAL CONCERN	AEC	AEC
100-YEAR FLOODPLAIN (PRELIMINARY)	---	---
100-YEAR FLOODPLAIN (EFFECTIVE)	---	---
COASTAL MARSH LINE	---	---
35' CONSERVATION RESOURCE VEGETATED BUFFER	---	---
CAMA CLASSIFICATION BOUNDARY	---	---

REV. NO.	DESCRIPTIONS	DATE



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Wilmington, North Carolina 28401  
Phone: (910)343-1048, Fax: (910)251-8282  
License: F-1222  
www.mckimcreed.com

RIVERLIGHTS  
by  
Newland COMMUNITIES

RIVERLIGHTS MARINA VILLAGE  
PHASE 1B

ABBREVIATIONS & LEGEND

DATE:	10NOV15
MCE PROJ. #	2735-0124
DRAWN	ALM
DESIGNED	NJL
CHECKED	KCBE
PROJ. MGR.	NJL

SCALE	N/A
HORIZONTAL:	N/A
VERTICAL:	N/A
MAC FILE NUMBER	G-002
DRAWING NUMBER	2
REVISION	A

STATUS: FINAL DESIGN  
NOT FOR CONSTRUCTION

S:\2735\0124 Marina Village\0124.dwg, 11/19/2015 10:53:31 AM, rlaureta

CONSTRUCTION NOTES

- 1. CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH NEW HANOVER COUNTY AND THE CITY OF WILMINGTON STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR IS FULLY RESPONSIBLE FOR ACQUIRING THE LOCATION OF EXISTING UTILITIES FROM THE APPROPRIATE PARTIES PRIOR TO CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAGMEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
...
23. THE CONTRACTOR IS SOLELY RESPONSIBLE TO OBTAIN OFF-SITE SPOIL AREAS FOR DISPOSAL OF EXCESS AND/OR UNSUITABLE MATERIALS AS NECESSARY.

DEMOLITION NOTES

- 1. THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIARIZED WITH FIELD DEMOLITION CONDITIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL DEMOLISHED DEBRIS ASSOCIATED WITH THE PROJECT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
...
10. WETLANDS DO EXIST ON SITE AND ARE NOTED ON THE PLANS. UNLESS OTHERWISE INDICATED, THE WETLANDS SHALL NOT BE DISTURBED DURING CONSTRUCTION OF THIS PROJECT.

EXCAVATION, GRADING, AND BACKFILLING NOTES

- 1. ANY UNDERCUTTING IN GOOD SOIL SHALL BE REPLACED AND THE REPLACEMENT MATERIAL SHALL BE COMPACTED TO NINETY-FIVE (95) PERCENT OF MAXIMUM DENSITY OBTAINED AT OPTIMUM MOISTURE CONTENT.
2. BEFORE BACKFILLING IS COMMENCED OVER PIPES AND OTHER INSTALLATIONS, EARTH FILL SHALL BE SOLIDLY TAMPED AROUND AND ABOVE THE PIPE TO A DEPTH OF ONE (1) FOOT ABOVE THE TOP OF THE PIPE.
...
4. UNLESS OTHERWISE NOTED, GRADES AND SPOT ELEVATIONS NOTED ON PLANS INDICATE FINISHED GRADE OR PAVEMENT SURFACE.

STORM DRAINAGE AND GRADING NOTES

- 1. IN ACCORDANCE WITH NC GENERAL STATUTES, NPDES REGULATIONS, AND NCDENR REQUIREMENTS, STORMWATER DISCHARGE OUTFALLS SHALL BE INSPECTED BY THE CONTRACTOR. INSPECTIONS SHALL BE PERFORMED BY THE CONTRACTOR ONCE A WEEK AND WITHIN 24 HOURS OF EACH STORM EVENT OF 1/2 INCH OR GREATER.
2. INLET PROTECTION SHALL BE INSTALLED AROUND OUTFALL. DEVICES SHALL BE CONSTRUCTED TO FINAL PROPOSED CONDITION UPON STABILIZATION OF CONTRIBUTING GROUND SURFACES AND REMOVAL OF SEDIMENT FROM STORM PIPES.
...
4. UNLESS OTHERWISE NOTED, GRADES AND SPOT ELEVATIONS NOTED ON PLANS INDICATE FINISHED GRADE OR PAVEMENT SURFACE.

UTILITY NOTES

- 1. SCHEDULE A PRECONSTRUCTION MEETING WITH CAPE FEAR PUBLIC UTILITY AUTHORITY 48 HOURS PRIOR TO CONSTRUCTION OF WATER AND SEWER LINES.
2. WATER AND SANITARY SEWER UTILITY MAINS ARE CONTAINED WITH PUBLIC DRAINAGE EASEMENTS. MAINS ARE PRIVATE BEYOND THE PUBLIC UTILITY EASEMENT.
...
MATERIALS AND EASEMENT NOTES:
• ALL CATCH BASINS ARE NCDOT STD 840.01
• ALL DROP INLETS IN TRAFFIC AREAS ARE NCDOT STD 840.35.

EROSION CONTROL NOTES

- 1. ANY GRADING BEYOND THE DENUDED LIMITS SHOWN ON THE PLAN IS A VIOLATION OF THE COUNTY EROSION CONTROL ORDINANCE AND IS SUBJECT TO A FINE.
2. GRADING MORE THAN ONE ACRE WITHOUT AN APPROVED EROSION CONTROL PLAN IS A VIOLATION OF STATE LAW AND IS SUBJECT TO A FINE.
...
12. INSPECT THE SKIMMER FOR CLOGGING. PULL THE SKIMMER TO THE SIDE OF THE BASIN AND REMOVE ANY DEBRIS.

EROSION CONTROL MAINTENANCE PLAN:

- 1. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED AND REPAIRED, AS NECESSARY, EVERY SEVEN (7) DAYS AND WITHIN 24 HOURS OF EVERY ONE-HALF (0.5) INCH OR GREATER RAINFALL OCCURRENCE.
2. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED.
...
12. INSPECT THE SKIMMER FOR CLOGGING. PULL THE SKIMMER TO THE SIDE OF THE BASIN AND REMOVE ANY DEBRIS.

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.

CITY OF WILMINGTON STANDARD NOTES

- 1. CONTACT THE NORTH CAROLINA ONE CALL CENTER PRIOR TO DOING ANY DIGGING AT 1-800-632-4949.
2. PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING SHALL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
...
12. NO LAND DISTURBANCE INCLUDING TREE REMOVAL IS TO OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS.

NOTE COW(18-458)

NO EQUIPMENT IS ALLOWED ONSITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED BY THE ENGINEER.

FIRE PROTECTION NOTES

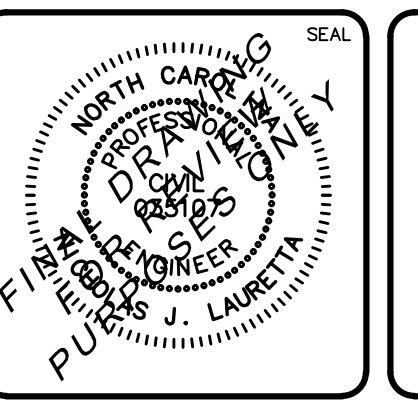
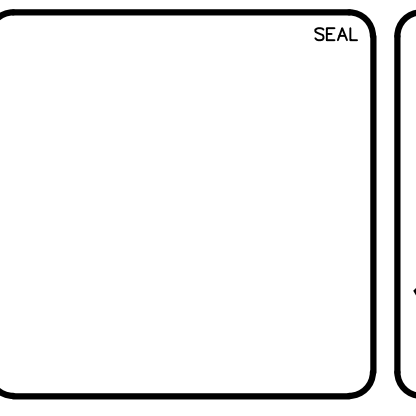
- 1. HYDRANT MUST BE WITHIN 150' OF THE FDC.
2. THE FDC MUST BE WITHIN 40' OF FIRE APPARATUS PLACEMENT.
3. LANDSCAPING OR PARKING CANNOT BLOCK OR IMPEDE THE FDC OR FIRE HYDRANTS.
...
10. TEMPORARY STREET SIGNS SHALL BE INSTALLED AT EACH STREET INTERSECTION WHEN CONSTRUCTION OF NEW ROADWAYS ALLOWS PASSAGE BY VEHICLES.

UTILITY COMPANY CONTACTS

DUKE/PROGRESS ENERGY: SID LIVINGSTON/MARK HATFIELD (910) 452-2777
DUKE ENERGY (TRANSMISSION): BILL WILDER (910) 772-4903
AT&T (BELLSOUTH): JAMES BATSON (910) 452-5300
TIME WARNER CABLE: ROBERT JOHN (910) 216-4494
PIEDMONT NATURAL GAS: PAUL GONKA (910) 512-2841

Table with 3 columns: SITE AREA DESCRIPTION, STABILIZATION TIMEFRAME, STABILIZATION TIMEFRAME EXCEPTIONS. Includes rows for perimeter ditches, high quality water zones, and slopes steeper than 3:1.

Table for revision history with columns: REV. NO., DESCRIPTIONS/REVISIONS, DATE.



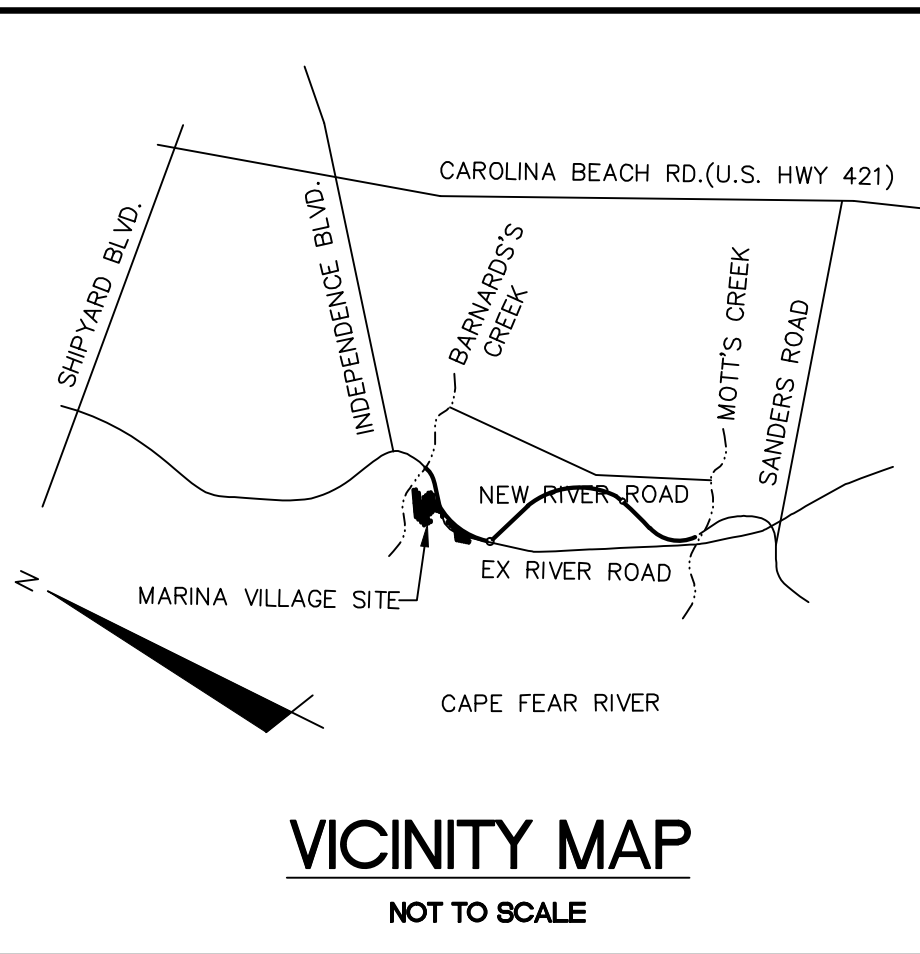
MCKIM & CREED logo and contact information: 243 North Front Street, Wilmington, NC 28401. Phone: (910) 343-1048, Fax: (910) 251-8282.

RIVERLIGHTS logo with 'by NEWLAND COMMUNITIES' and 'NASH' branding.

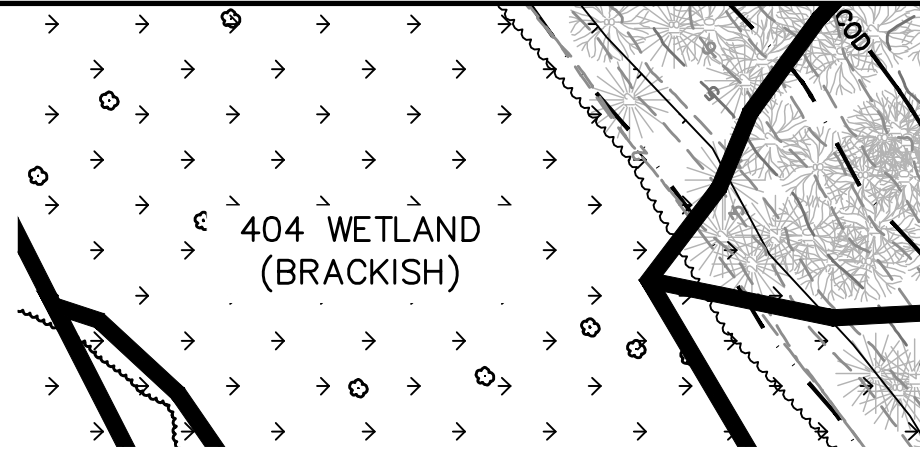
RIVERLIGHTS MARINA VILLAGE PHASE 1B GENERAL NOTES.

Project information box including DATE (10NOV15), MCE PROJ.# (2735-0124), SCALE (HORIZONTAL N/A), STATUS (FINAL DESIGN), and DRAWING NUMBER (G-003).

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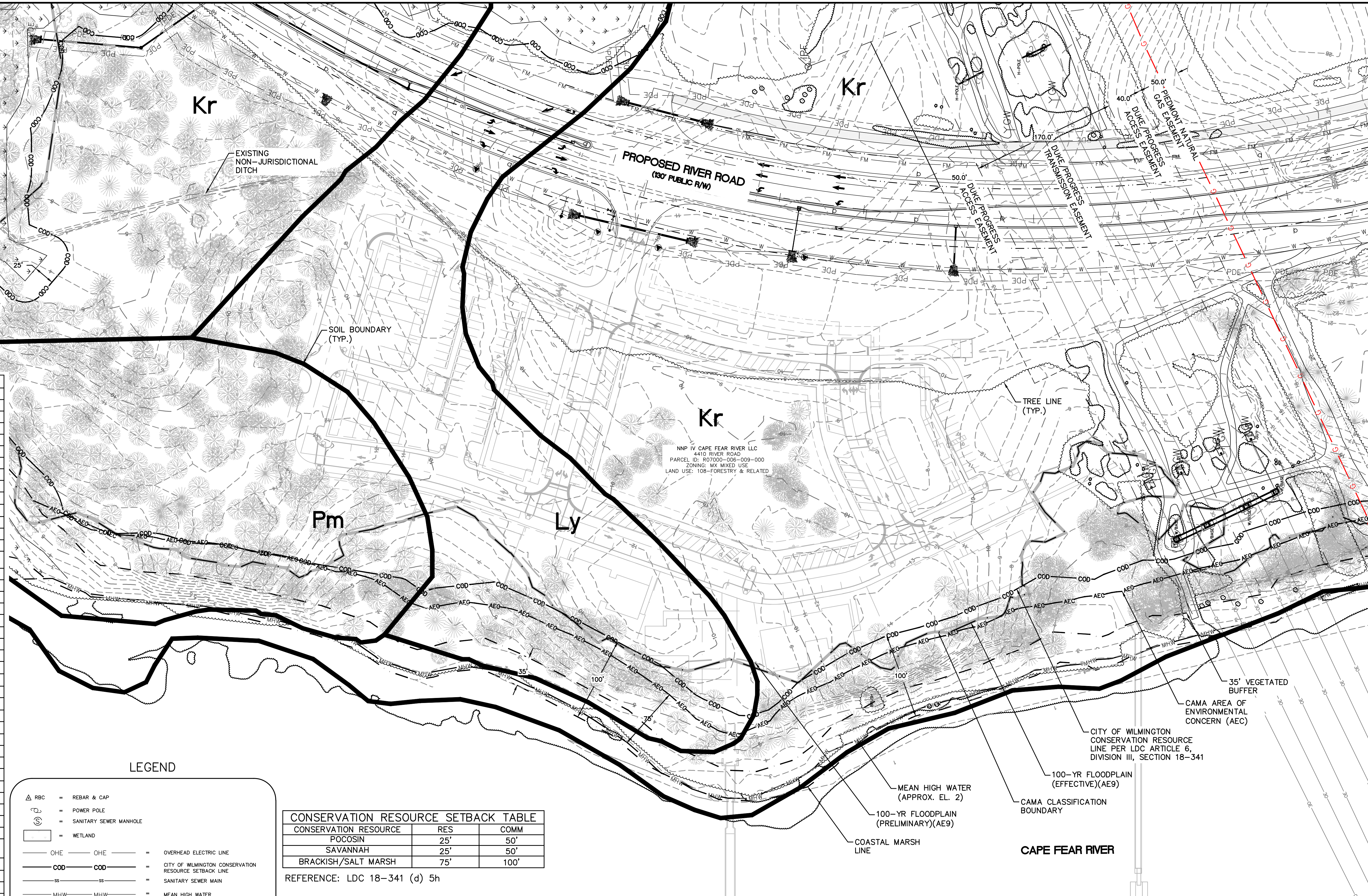


VICINITY MAP  
NOT TO SCALE



404 WETLAND  
(BRACKISH)

SITE DATA TABLE		MARINA VILLAGE - PHASE 2	
<b>GENERAL INFORMATION</b>			
APPLICANT NAME	NNP IV- CAPE FEAR RIVER, LLC		
SITE ADDRESS	4410 RIVER ROAD		
PROPERTY OWNER	NNP IV- CAPE FEAR RIVER, LLC		
DEVELOPER	NNP IV- CAPE FEAR RIVER LLC		
MAP SCALE	1"=60'		
<b>PROPERTY BOUNDARY</b>			
TAX PARCEL IDENTIFICATION NUMBER	R07000-006-009-000		
ZONING DISTRICT	MX		
TOTAL ACREAGE WITHIN THE RIVER ROAD BOUNDARY	1,329.41 ACRES ( 57,909,099.6 SF)		
TOTAL ACREAGE WITHIN THE MARINA VILLAGE BOUNDARY	38.67 ACRES (1,684,343 SF)		
<b>ADJACENT PROPERTY</b>			
ADJACENT PROPERTY	PROPERTY	ZONING	
	WATERMARK MARINA	LI	
	DUKE PROGRESS ENERGY	I-2	
<b>VICINITY</b>			
VICINITY MAP	SEE CX-101		
<b>TOPOGRAPHY AND DRAINAGE</b>			
2-FT TOPOGRAPHY MINIMUM INTERVAL	SEE CX-101		
DATE OF TOPOGRAPHY DATA	5/5/2015		
100-YR FLOODPLAIN LINE	SEE CX-101		
<b>LOCATION OF NATURAL WATER FEATURES</b>			
DITCHES	LOCATION	CLASSIFICATION	
	SEE CX-101	NON-JURISDICTIONAL	
STREAMS	N/A		
CREEKS	N/A		
FLOOD PRONE AREAS	SEE CX-101		
<b>AREAS OF NATURALLY CONCENTRATED SURFACE DRAINAGE</b>			
SOIL	N/A		
<b>SOIL TYPE(S) AND BOUNDARIES</b>			
	SEE CX-101		
<b>NORTH CAROLINA COASTAL AREA MANAGEMENT AD INFORMATION</b>			
CAMA AREA OF ENVIRONMENTAL CONCERN	SEE CX-101		
SETBACKS	75 FT		
<b>CAMA LAND USE CLASSIFICATION(S)</b>			
	TRANSITION/CONSERVATION		
<b>CONSERVATION RESOURCE REGULATIONS</b>			
PRESENCE OF CONSERVATION RESOURCE	PRESENCE; SEE CX-101		
SETBACKS	TABLE; SEE CX-101		
VEGETATED BUFFER	35' BUFFER, SEE CX-101		
<b>HISTORIC AND ARCHEOLOGICAL SITES</b>			
LOCAL, STATE, OR FEDERALLY RECOGNIZED HISTORIC STRUCTURE(S) OR ARCHEOLOGICAL RESOURCES	NOT PRESENT		
LOCATION	N/A		
<b>CEMETERIES</b>			
CEMETERIES, BURIAL SITES, OR BURIAL GROUNDS?	NOT PRESENT		
<b>FORESTED AREAS</b>			
BOUNDARIES OF FORESTED AREAS	SEE CX-101		
FOREST AREA	19.17 ACRES (835,039 SF)		
HABITAT	FORESTED WETLAND/TIDAL MARSH		
DOMINANT SPECIES	OAK, PINE		
<b>WETLANDS</b>			
404/SECTION 10 WETLAND LOCATION	PRESENCE; SEE CX-101		
METHOD OF DETERMINATION	FIELD SURVEY		
IMPACTED WETLANDS	N/A		
<b>ENDANGERED SPECIES OR HABITAT</b>			
ENDANGERED SPECIES OR HABITAT IN PROJECT AREA	NOT PRESENT		
<b>AUTOMOBILE, BICYCLE, PEDESTRIAN, OR TRANSIT FACILITIES</b>			
EXISTING OR PROPOSED THROUGHFARES, BIKE ROUTES, PEDESTRIAN SIDEWALKS OR TRAILS, AND TRANSIT FACILITIES	NOT PRESENT		



**LEGEND**

	RBC	=	REBAR & CAP
	POWER POLE	=	POWER POLE
	SANITARY SEWER MANHOLE	=	SANITARY SEWER MANHOLE
	WETLAND	=	WETLAND
	OHE	=	OVERHEAD ELECTRIC LINE
	COD	=	CITY OF WILMINGTON CONSERVATION RESOURCE SETBACK LINE
	SS	=	SANITARY SEWER MAIN
	MHW	=	MEAN HIGH WATER
	AEG	=	AREA OF ENVIRONMENTAL CONCERN
	100-YR FLOODPLAIN (PRELIMINARY)	=	100-YEAR FLOODPLAIN (PRELIMINARY)
	100-YR FLOODPLAIN (EFFECTIVE)	=	100-YEAR FLOODPLAIN (EFFECTIVE)
	COASTAL MARSH LINE	=	COASTAL MARSH LINE
	35' CONSERVATION RESOURCE VEGETATED BUFFER	=	35' CONSERVATION RESOURCE VEGETATED BUFFER
	TPF	=	TREE PROTECTION FENCE
	LOD	=	LIMITS OF DISTURBANCE
	SF	=	SILT FENCE
	>TDD	=	TEMPORARY DIVERSION DITCH
	CAMA CLASSIFICATION BOUNDARY	=	CAMA CLASSIFICATION BOUNDARY

**CONSERVATION RESOURCE SETBACK TABLE**

CONSERVATION RESOURCE	RES	COMM
POCOSIN	25'	50'
SAVANNAH	25'	50'
BRACKISH/SALT MARSH	75'	100'

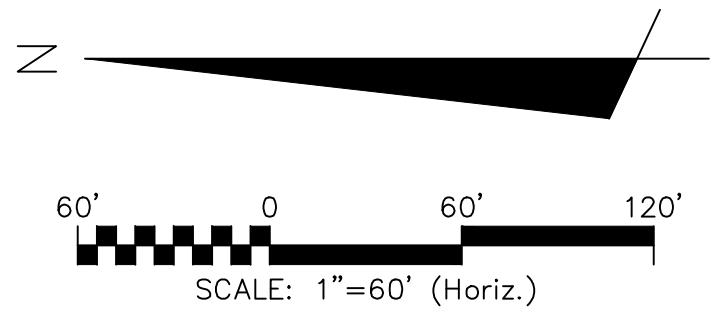
REFERENCE: LDC 18-341 (d) 5h

**TREE LEGEND**

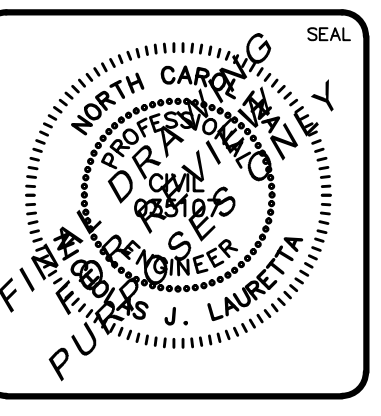
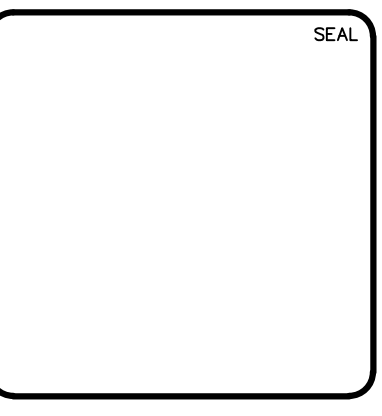
	=	CEDAR
	=	GUM
	=	HOLLY
	=	OAK
	=	MAPLE
	=	PINE

**GENERAL NOTES:**

- FLOODPLAIN INFORMATION WAS OBTAINED FROM NC FLOODPLAIN MAPPING FLOOD RISK INFORMATION SYSTEM PROGRAM. RIVERLIGHTS IS LOCATED WITHIN FIRM MAP 3720312400K, PANEL 3124 AS REVISED JUNE 02, 2006.
- ITEMS DESIGNATED AS "PROPOSED" ARE PART OF THE RIVER ROAD REALIGNMENT PROJECT THAT IS CURRENTLY UNDER CONSTRUCTION. RIVER ROAD CONSTRUCTION TO BE COMPLETE SPRING 2016.
- WETLANDS SHOWN IN THIS PORTION OF RIVERLIGHTS WERE DESCRIBED AS BRACKISH/SALT MARSH AND POCOSIN WETLANDS AND CONSERVATION RESOURCE SETBACK LINES WERE GENERATED AS 100' FOR COMMERCIAL, 75' FOR RESIDENTIAL, AND 25', RESPECTIVELY, MINIMUM OUTSIDE OF THE RESOURCE.
- FINISHED FLOOR ELEVATIONS OF ALL INHABITABLE STRUCTURES WILL BE MIN. 2'-FEET ABOVE BASE FLOOD ELEVATION



REV. NO.	DESCRIPTIONS / REVISIONS	DATE

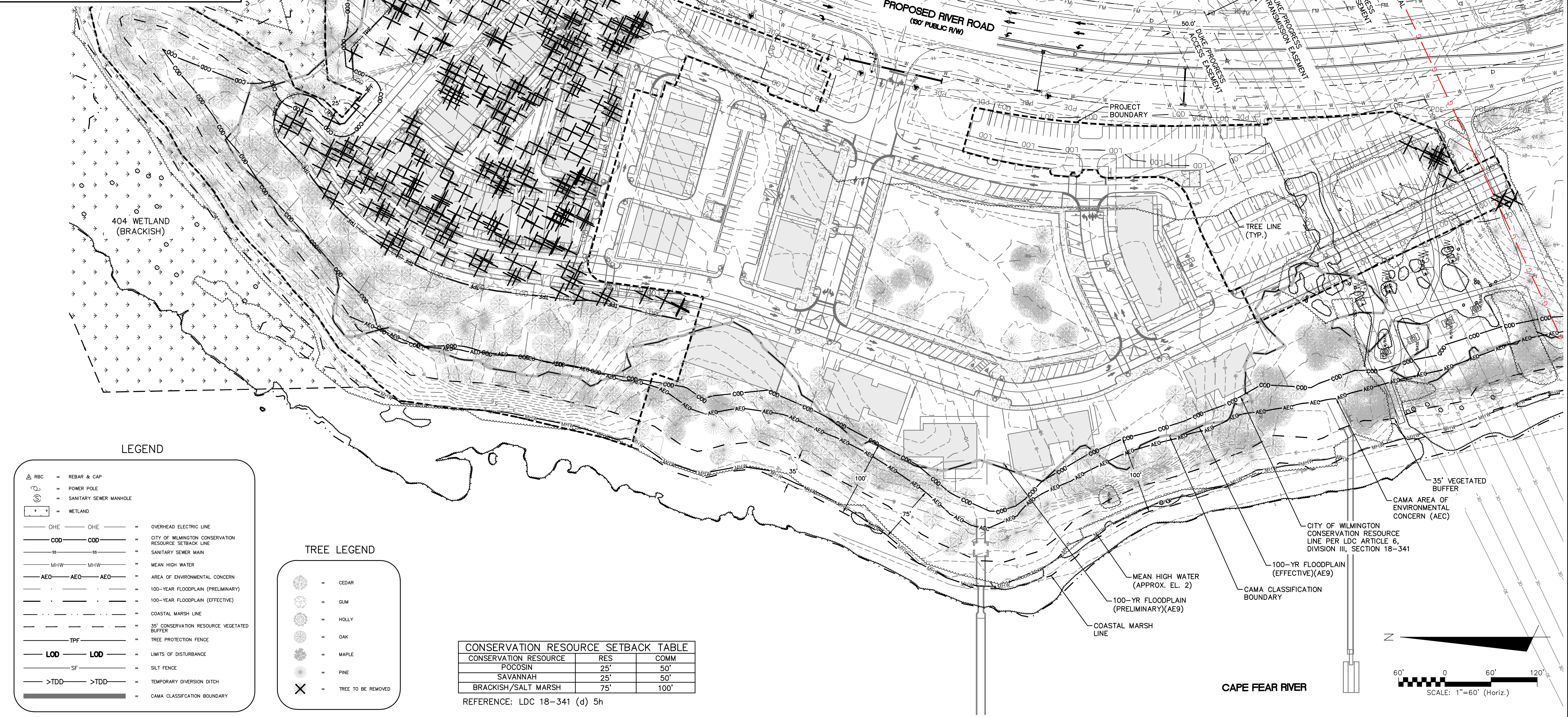
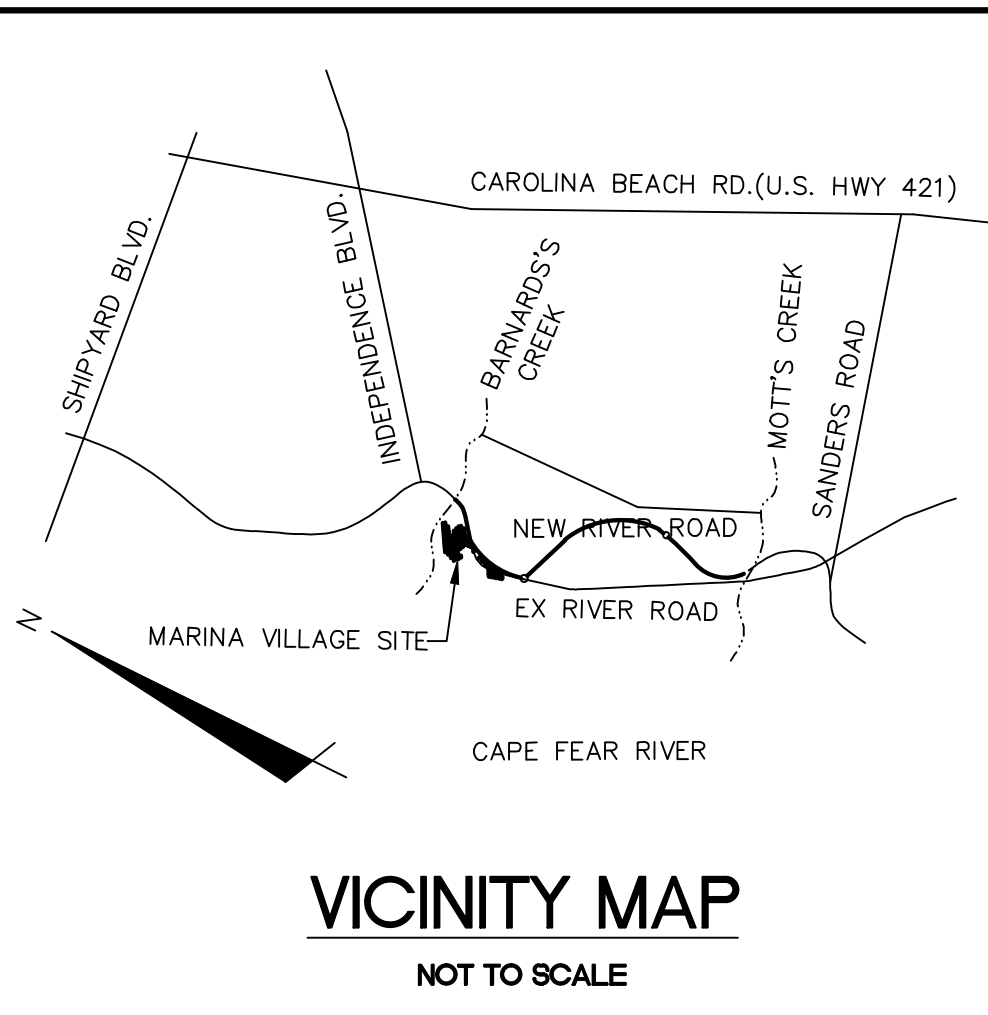


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**RIVERLIGHTS**  
 by  
 Newland COMMUNITIES

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B**  
**EXISTING CONDITIONS  
 SITE INVENTORY MAP**

DATE: 10NOV15	SCALE: HORIZONTAL: 1"=60'	MAC FILE NUMBER: CX-101
MCE PROJ. # 2735-0124	VERTICAL: N/A	DRAWING NUMBER: 4
DRAWN: ALM	DESIGNED: NUL	CHECKED: KCBE
PROJ. MGR.: NUL	REVISION: A	STATUS: FINAL DESIGN
NOT FOR CONSTRUCTION		



**LEGEND**

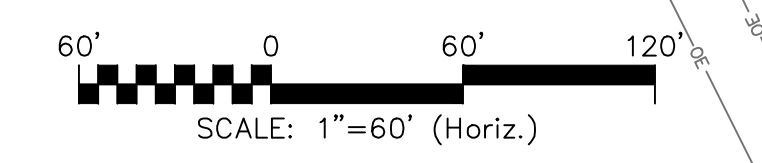
- RBC = REBAR & CAP
- POWER POLE
- SANITARY SEWER MANHOLE
- WETLAND
- OHE = OVERHEAD ELECTRIC LINE
- COD = CITY OF WILMINGTON CONSERVATION RESOURCE SETBACK LINE
- SS = SANITARY SEWER MAIN
- MHW = MEAN HIGH WATER
- AEC = AREA OF ENVIRONMENTAL CONCERN
- 100-YR FLOODPLAIN (PRELIMINARY)
- 100-YR FLOODPLAIN (EFFECTIVE)
- COASTAL MARSH LINE
- 35' CONSERVATION RESOURCE VEGETATED BUFFER
- TPF = TREE PROTECTION FENCE
- LOD = LIMITS OF DISTURBANCE
- SF = SILT FENCE
- >TDD = TEMPORARY DIVERSION DITCH
- CAMA CLASSIFICATION BOUNDARY

**TREE LEGEND**

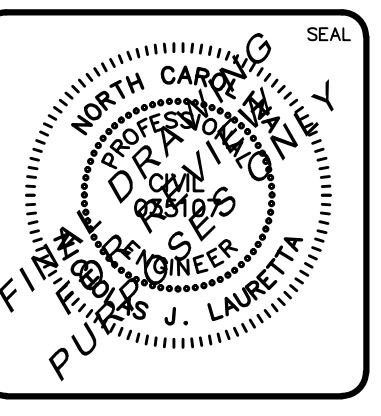
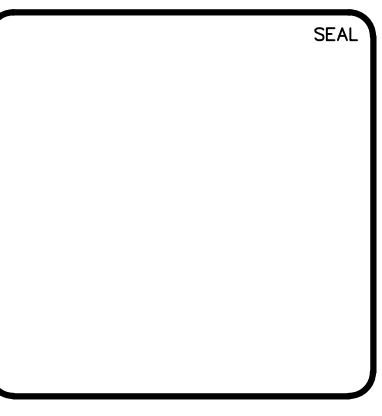
- CEDAR
- GUM
- HOLLY
- OAK
- MAPLE
- PINE
- X = TREE TO BE REMOVED

CONSERVATION RESOURCE SETBACK TABLE		
CONSERVATION RESOURCE	RES	COMM
POCOSIN	25'	50'
SAVANNAH	25'	50'
BRACKISH/SALT MARSH	75'	100'

REFERENCE: LDC 18-341 (d) 5h



REV. NO.	DESCRIPTIONS	DATE



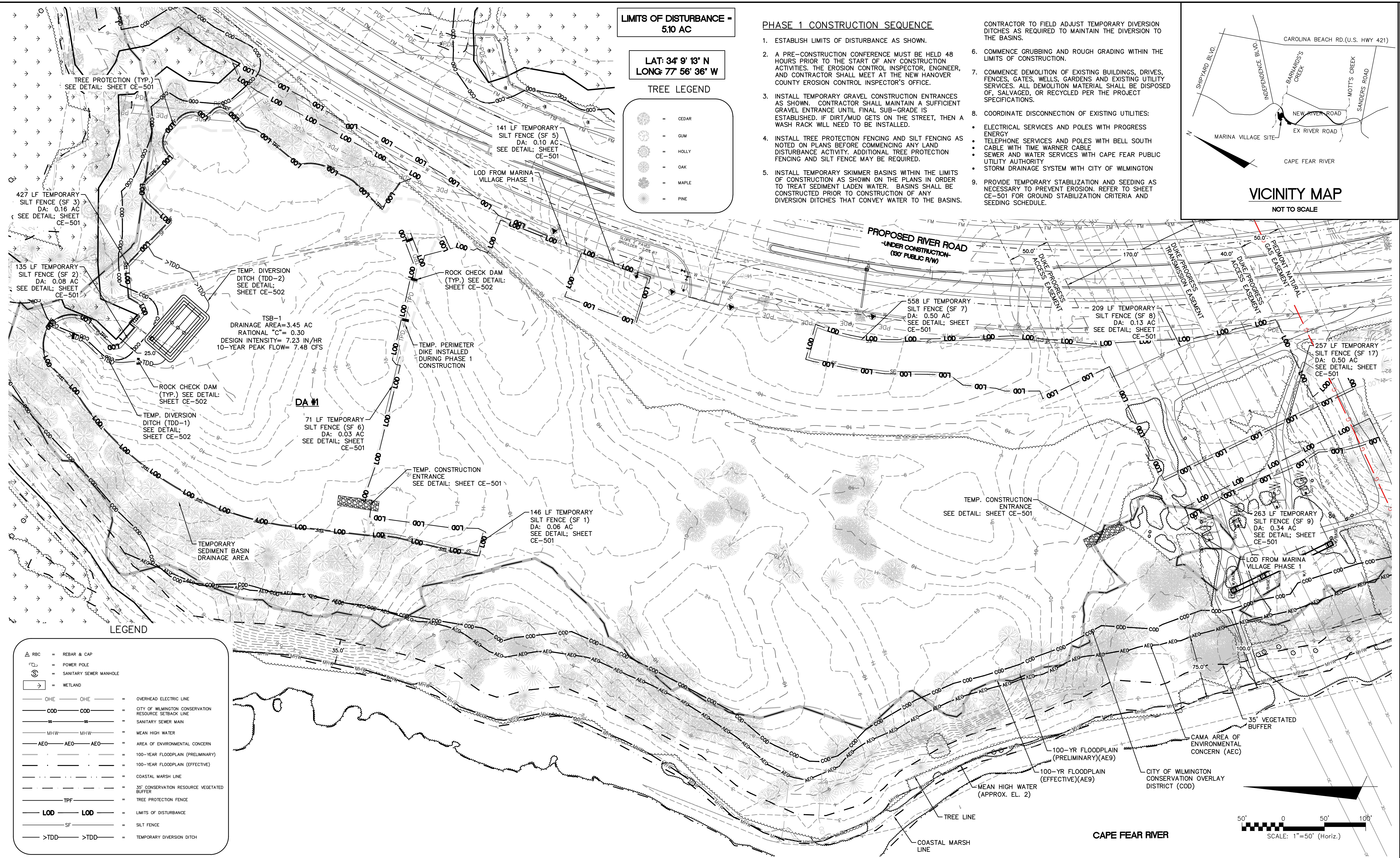
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**RIVERLIGHTS**  
 by Newland COMMUNITIES  
 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B**  
**TREE REMOVAL PLAN**

DATE: 10NOV15	SCALE: HORIZONTAL: 1"=60'	MAC FILE NUMBER: CX-102
MCE PROJ. # 2735-0124	VERTICAL: N/A	DRAWING NUMBER: 5
DRAWN: ALM		
DESIGNED: NUL		
CHECKED: KCBE		
PROJ. MGR.: NUL		
STATUS: FINAL DESIGN		REVISION: A
NOT FOR CONSTRUCTION		

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**LIMITS OF DISTURBANCE - 5.10 AC**

**LAT: 34° 9' 13" N  
LONG: 77° 56' 36" W**

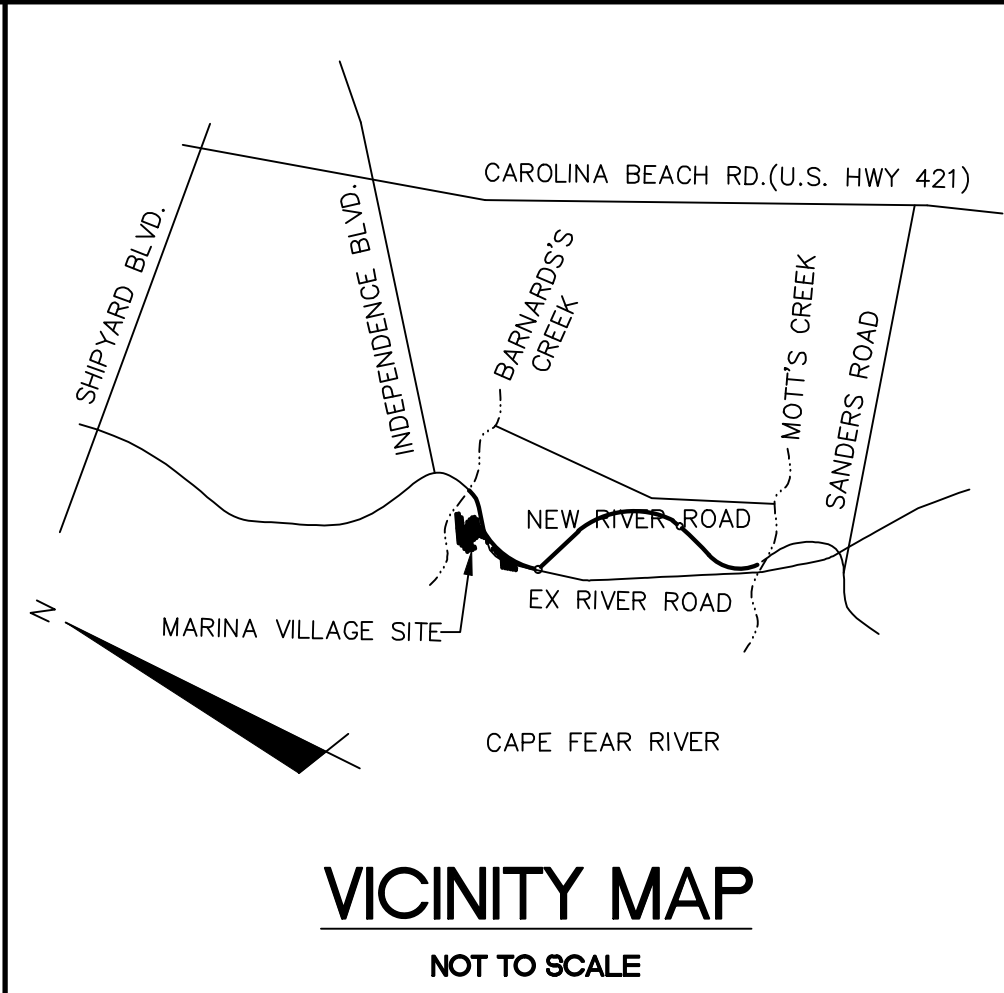
**TREE LEGEND**

- CEDAR
- GUM
- HOLLY
- OAK
- MAPLE
- PINE

**PHASE 1 CONSTRUCTION SEQUENCE**

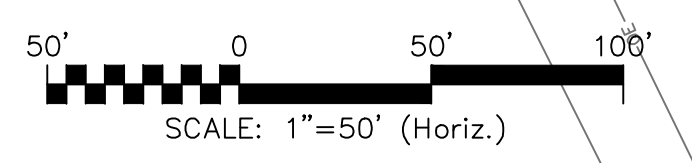
1. ESTABLISH LIMITS OF DISTURBANCE AS SHOWN.
2. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. THE EROSION CONTROL INSPECTOR, ENGINEER, AND CONTRACTOR SHALL MEET AT THE NEW HANOVER COUNTY EROSION CONTROL INSPECTOR'S OFFICE.
3. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCES AS SHOWN. CONTRACTOR SHALL MAINTAIN A SUFFICIENT GRAVEL ENTRANCE UNTIL FINAL SUB-GRADE IS ESTABLISHED. IF DIRT/MUD GETS ON THE STREET, THEN A WASH RACK WILL NEED TO BE INSTALLED.
4. INSTALLED TREE PROTECTION FENCING AND SILT FENCING AS NOTED ON PLANS BEFORE COMMENCING ANY LAND DISTURBANCE ACTIVITY. ADDITIONAL TREE PROTECTION FENCING AND SILT FENCE MAY BE REQUIRED.
5. INSTALL TEMPORARY SKIMMER BASINS WITHIN THE LIMITS OF CONSTRUCTION AS SHOWN ON THE PLANS IN ORDER TO TREAT SEDIMENT LADEN WATER. BASINS SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF ANY DIVERSION DITCHES THAT CONVEY WATER TO THE BASINS.

- CONTRACTOR TO FIELD ADJUST TEMPORARY DIVERSION DITCHES AS REQUIRED TO MAINTAIN THE DIVERSION TO THE BASINS.
6. COMMENCE GRUBBING AND ROUGH GRADING WITHIN THE LIMITS OF CONSTRUCTION.
  7. COMMENCE DEMOLITION OF EXISTING BUILDINGS, DRIVES, FENCES, GATES, WELLS, GARDENS AND EXISTING UTILITY SERVICES. ALL DEMOLITION MATERIAL SHALL BE DISPOSED OF, SALVAGED, OR RECYCLED PER THE PROJECT SPECIFICATIONS.
  8. COORDINATE DISCONNECTION OF EXISTING UTILITIES:
    - ELECTRICAL SERVICES AND POLES WITH PROGRESS ENERGY
    - TELEPHONE SERVICES AND POLES WITH BELL SOUTH
    - CABLE WITH TIME WARNER CABLE
    - SEWER AND WATER SERVICES WITH CAPE FEAR PUBLIC UTILITY AUTHORITY
    - STORM DRAINAGE SYSTEM WITH CITY OF WILMINGTON
  9. PROVIDE TEMPORARY STABILIZATION AND SEEDING AS NECESSARY TO PREVENT EROSION. REFER TO SHEET CE-501 FOR GROUND STABILIZATION CRITERIA AND SEEDING SCHEDULE.

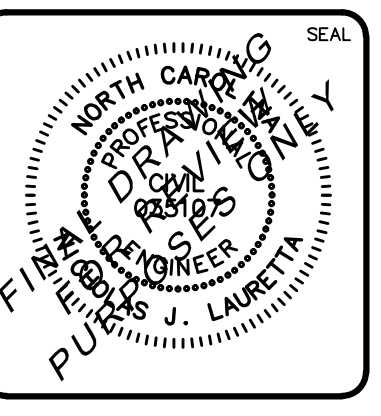
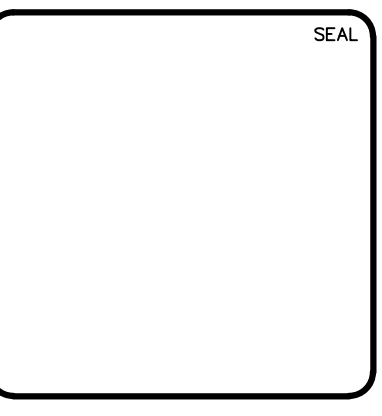


**LEGEND**

	REBAR & CAP
	POWER POLE
	SANITARY SEWER MANHOLE
	WETLAND
OHE	OVERHEAD ELECTRIC LINE
COD	CITY OF WILMINGTON CONSERVATION RESOURCE SETBACK LINE
SS	SANITARY SEWER MAIN
MHW	MEAN HIGH WATER
AEO	AREA OF ENVIRONMENTAL CONCERN
	100-YEAR FLOODPLAIN (PRELIMINARY)
	100-YEAR FLOODPLAIN (EFFECTIVE)
	COASTAL MARSH LINE
	35' CONSERVATION RESOURCE VEGETATED BUFFER
TPF	TREE PROTECTION FENCE
LOD	LIMITS OF DISTURBANCE
SF	SILT FENCE
TDD	TEMPORARY DIVERSION DITCH



REV. NO.	DESCRIPTIONS / REVISIONS	DATE



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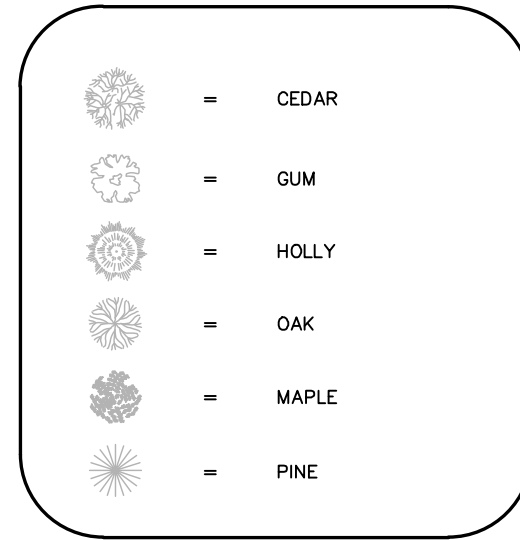
**RIVERLIGHTS**  
 by Newland COMMUNITIES  
 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B  
 PHASE 1 SEDIMENT &  
 EROSION CONTROL  
 PLAN**

DATE: 10NOV15	SCALE: HORIZONTAL: 1"=50'	MC FILE NUMBER: CE-101
MCE PROJ. # 2735-0124	DESIGNED: NUL	DRAWING NUMBER: 6
DRAWN: ALM	CHECKED: KCBE	REVISION: A
PROJ. MGR: NUL	STATUS: FINAL DESIGN	NOT FOR CONSTRUCTION

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TREE LEGEND



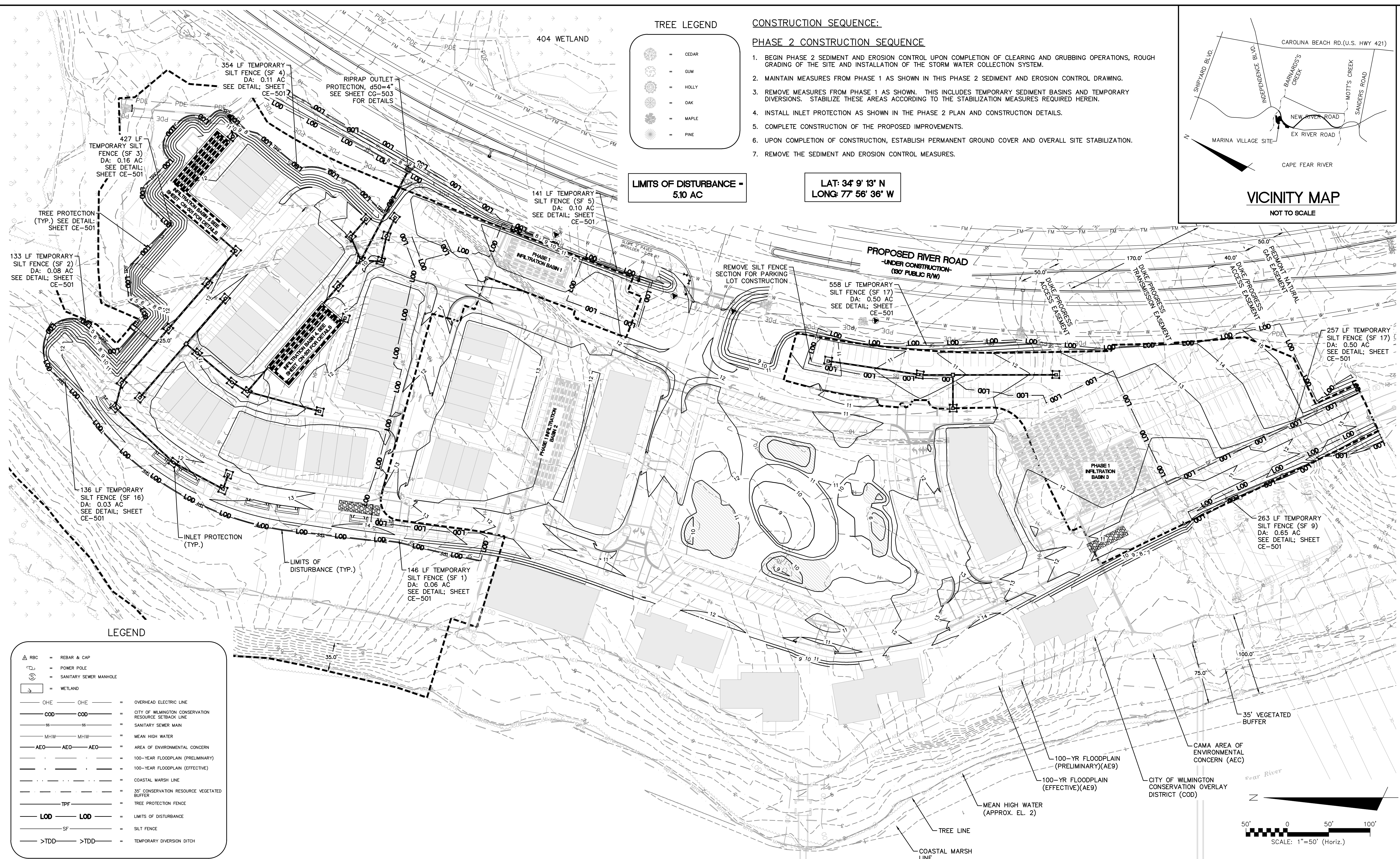
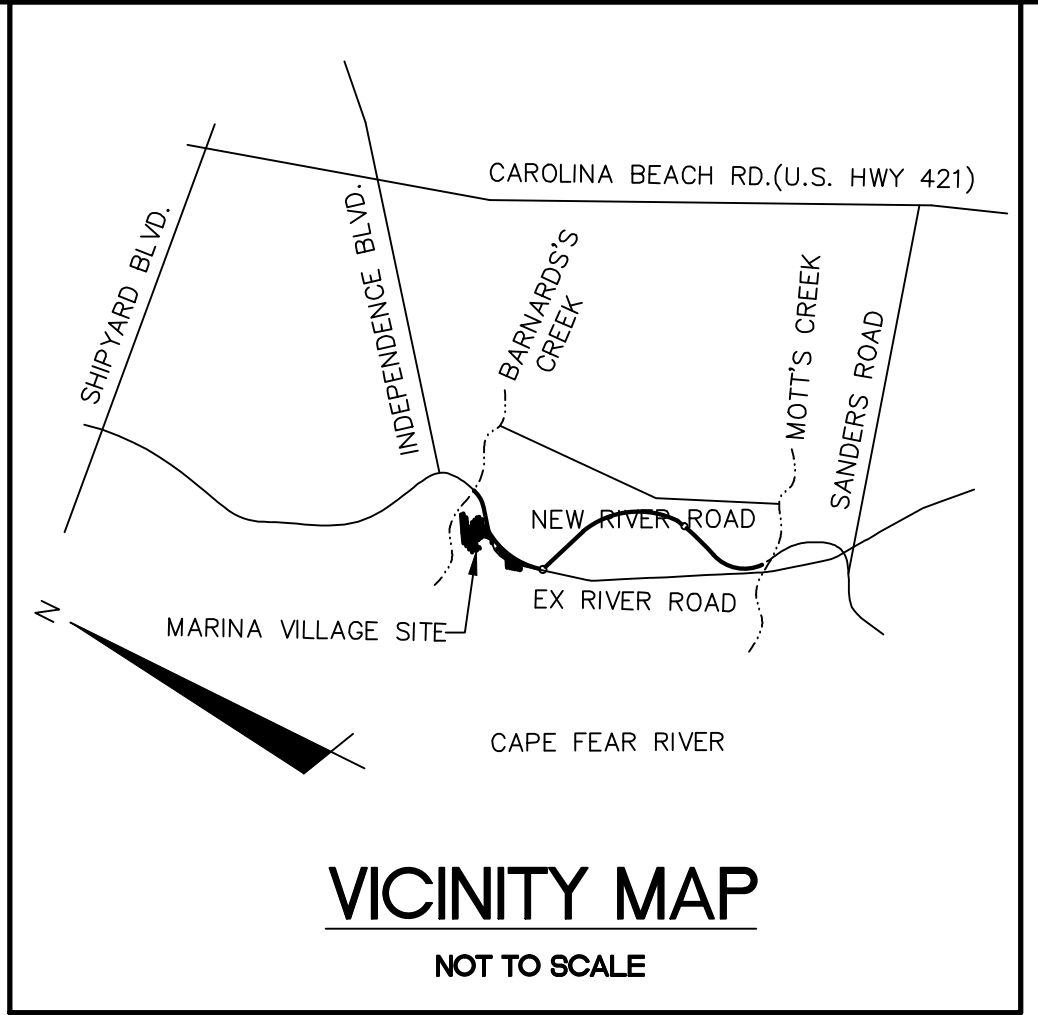
CONSTRUCTION SEQUENCE:

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. THIS INCLUDES TEMPORARY SEDIMENT BASINS AND TEMPORARY DIVERSIONS. STABILIZE THESE AREAS ACCORDING TO THE STABILIZATION MEASURES 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.

LIMITS OF DISTURBANCE = 5.10 AC

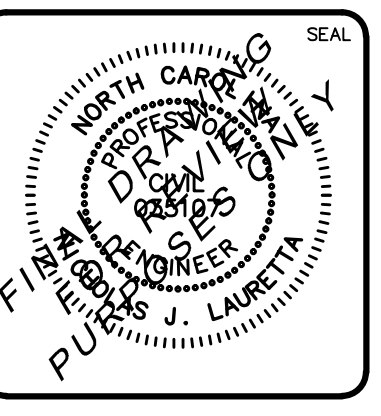
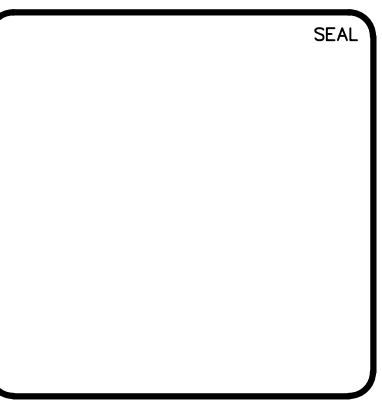
LAT: 34° 9' 13" N  
LONG: 77° 56' 36" W



LEGEND

	= REBAR & CAP
	= POWER POLE
	= SANITARY SEWER MANHOLE
	= WETLAND
	= OVERHEAD ELECTRIC LINE
	= CITY OF WILMINGTON CONSERVATION RESOURCE SETBACK LINE
	= SANITARY SEWER MAIN
	= MEAN HIGH WATER
	= AREA OF ENVIRONMENTAL CONCERN
	= 100-YEAR FLOODPLAIN (PRELIMINARY)
	= 100-YEAR FLOODPLAIN (EFFECTIVE)
	= COASTAL MARSH LINE
	= 35' CONSERVATION RESOURCE VEGETATED BUFFER
	= TREE PROTECTION FENCE
	= LIMITS OF DISTURBANCE
	= SILT FENCE
	= TEMPORARY DIVERSION DITCH

REV. NO.	DESCRIPTIONS / REVISIONS	DATE



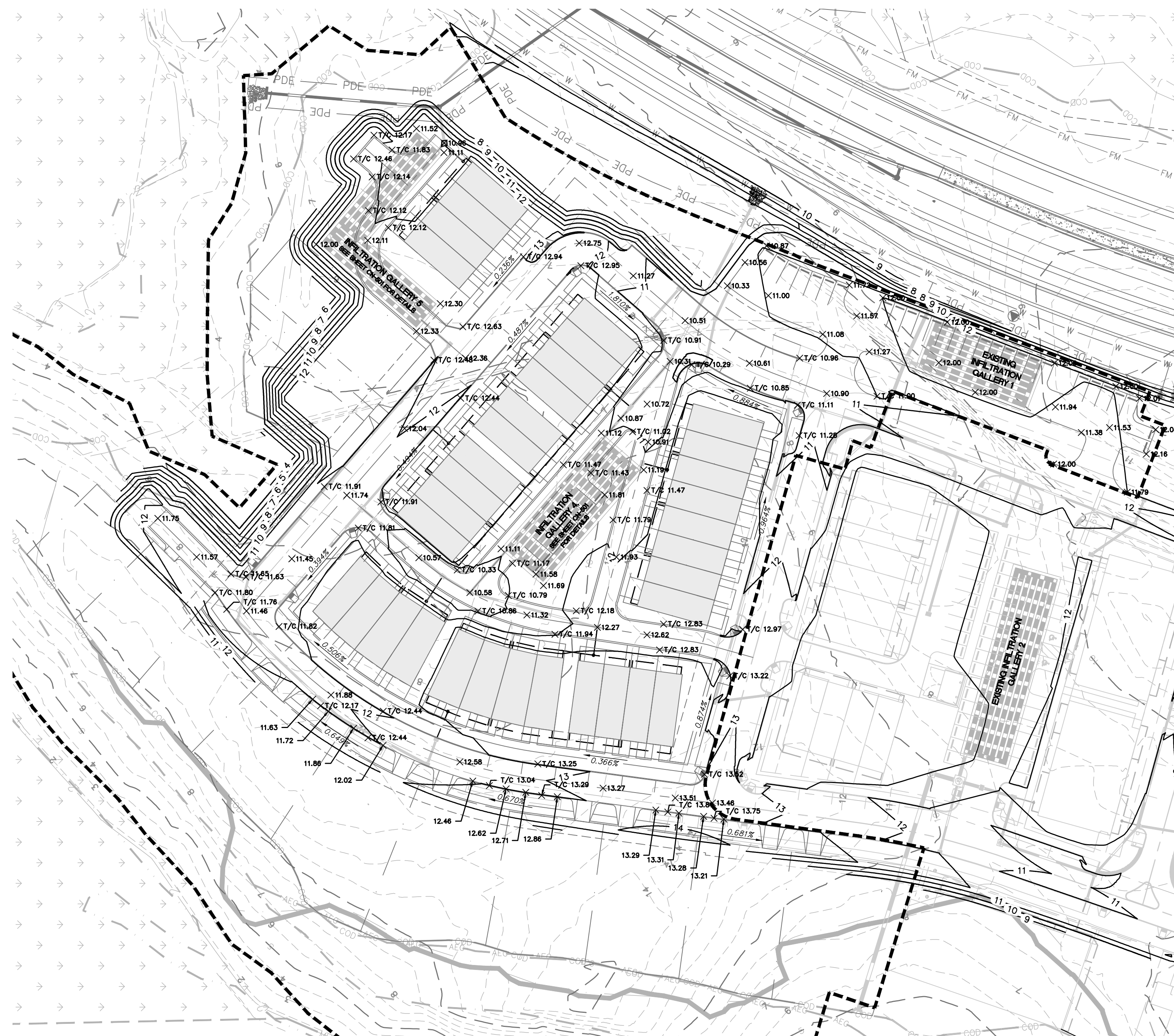
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**RIVERLIGHTS**  
by Newland COMMUNITIES  
NORTH AMERICA SEKISUI HOUSE, LLC

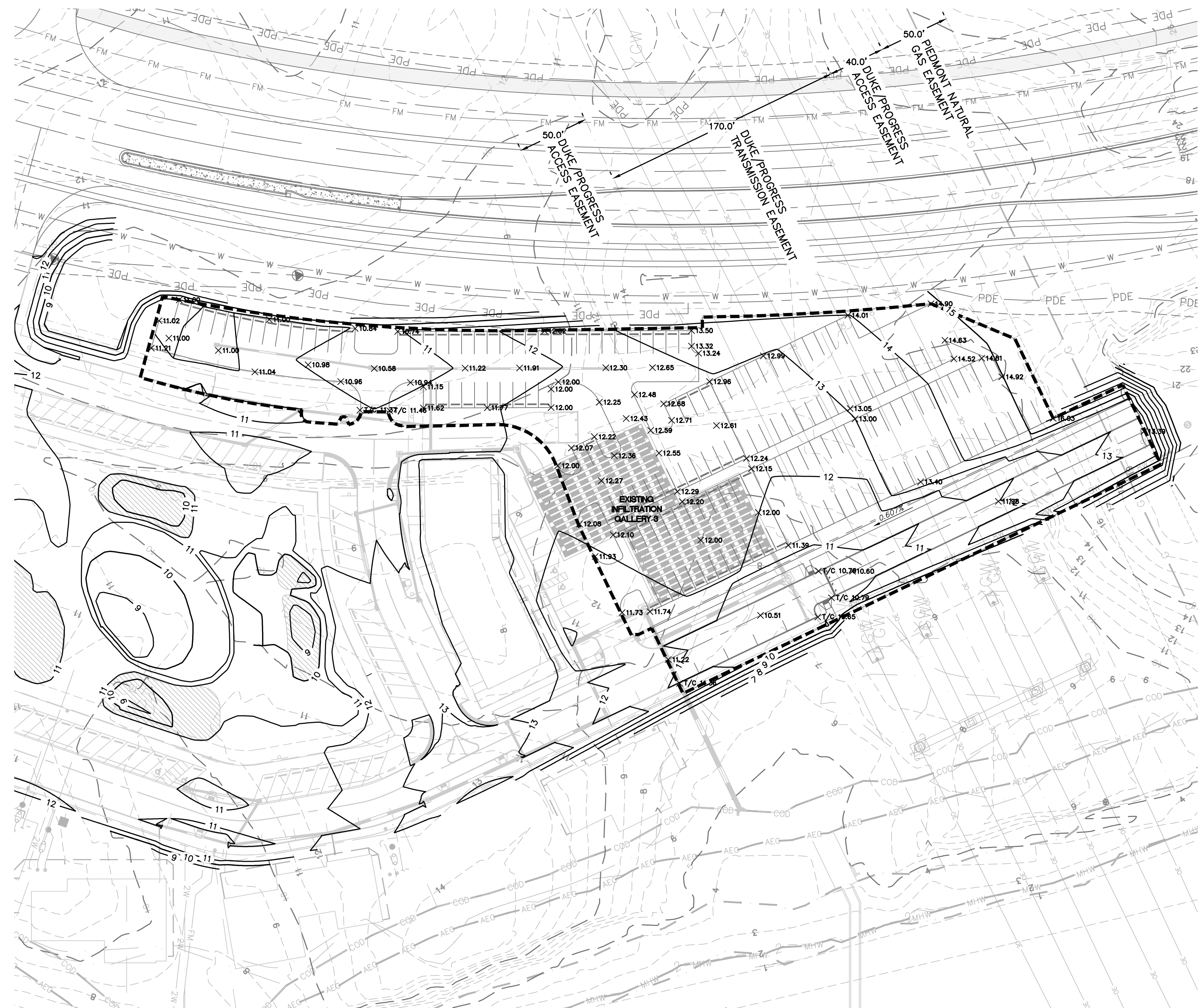
**RIVERLIGHTS MARINA VILLAGE  
PHASE 1B  
PHASE 2 SEDIMENT &  
EROSION CONTROL  
PLAN**

DATE: 10NOV15	SCALE: 1"=50'	MAC FILE NUMBER: CE-102
MCE PROJ. # 2735-0124	HORIZONTAL: 1"=50'	DRAWING NUMBER: 7
DRAWN: ALM	VERTICAL: N/A	REVISION: A
DESIGNED: NUL	STATUS: FINAL DESIGN	
CHECKED: KCBE	NOT FOR CONSTRUCTION	
PROJ. MGR.: NUL		

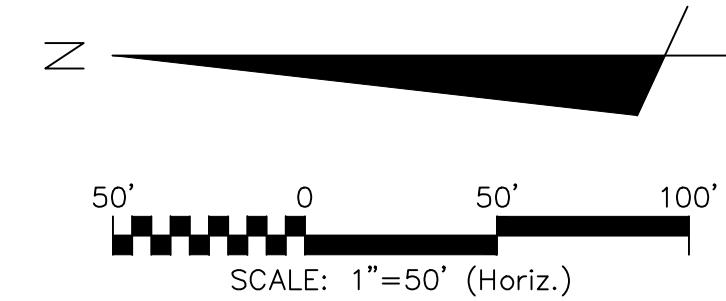
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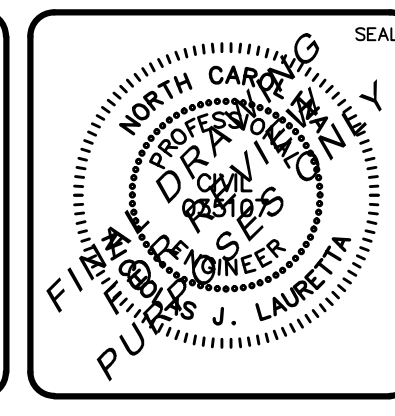
**MARINA VILLAGE - PHASE 1B NORTH**  
SCALE: 1" = 50'



**MARINA VILLAGE - PHASE 1B SOUTH**  
SCALE: 1" = 50'



REV. NO.	DESCRIPTIONS	DATE



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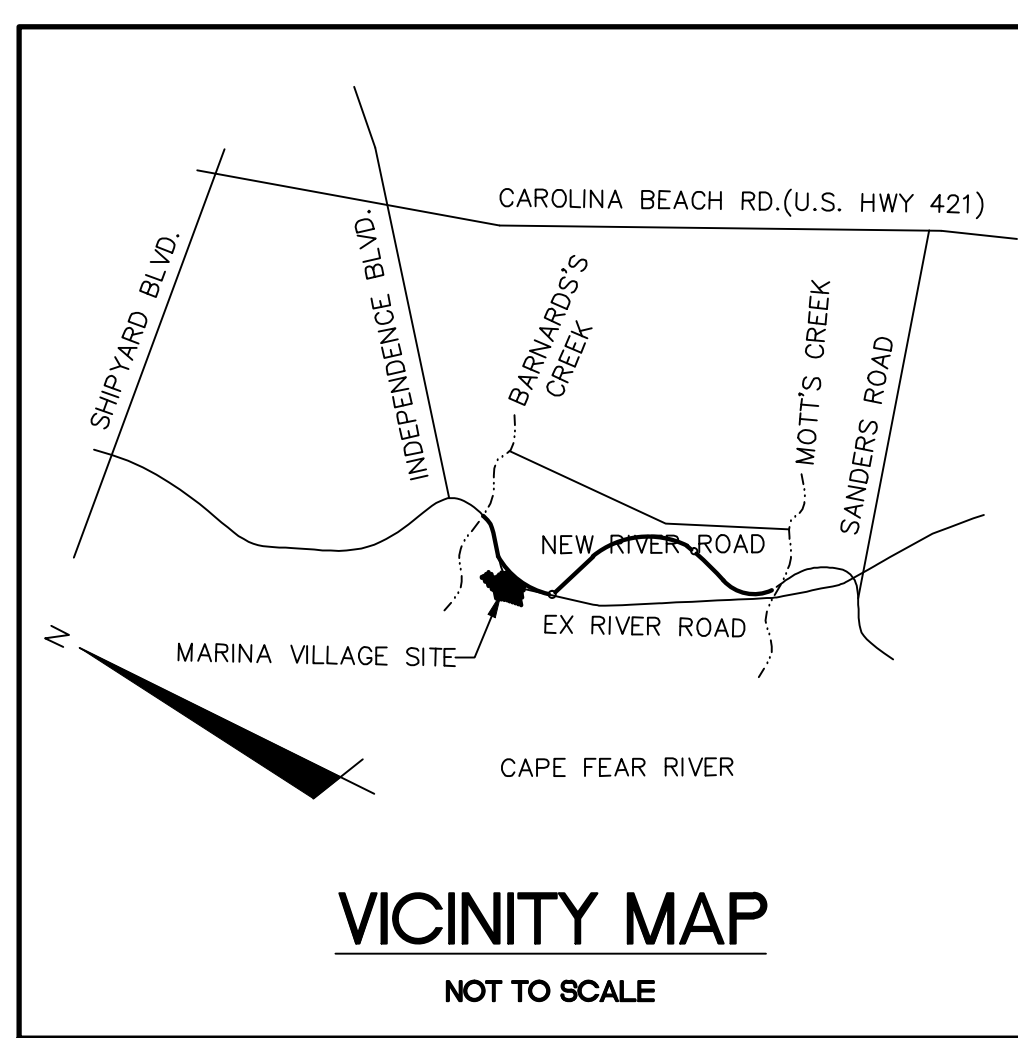
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 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B  
 GRADING PLAN**

DATE: 10NOV15	SCALE: 1" = 50'	M&C FILE NUMBER: CG-101
M&C PROJ. # 2735-0124	HORIZONTAL: 1" = 50'	DRAWING NUMBER: 8
DRAWN: ALM	VERTICAL: N/A	REVISION: A
DESIGNED: NUL		
CHECKED: KCBE		
PROJ. MGR.: NUL		
STATUS: FINAL DESIGN		
NOT FOR CONSTRUCTION		

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STRUCTURE TABLE - STRM - 14-15	
STR. NAME	DETAILS
CB-401	RIM = 12.25 INV OUT = 9.38W
CB-402	RIM = 12.25 INV IN = 9.29E INV OUT = 9.29NE
CB-403	RIM = 11.80 INV IN = 8.61SW INV OUT = 8.61NE
CB-404	RIM = 11.28 INV IN = 8.13SW INV OUT = 8.13E
CB-405	RIM = 11.11 INV IN = 7.71W INV OUT = 7.71SE
CB-405A	RIM = 11.09 INV OUT = 8.02SE
CB-406	RIM = 11.45 INV IN = 7.45NW INV OUT = 7.45SE
CB-409	RIM = 11.82 INV IN = 7.23NW INV OUT = 7.24SE

STRUCTURE TABLE - STRM - 14-15	
STR. NAME	DETAILS
CB-410	RIM = 11.82 INV OUT = 7.95NW
CB-417	RIM = 9.81 INV IN = 7.46E INV OUT = 7.46N
CB-418	RIM = 10.17 INV IN = 7.62SE INV OUT = 7.62W
CB-419	RIM = 10.40 INV IN = 7.50SE INV OUT = 7.50SW
CB-420	RIM = 10.40 INV OUT = 7.64NW
DI-407	RIM = 10.95 INV OUT = 8.08E INV OUT = 7.03NW
DI-408	RIM = 12.07 INV IN = 7.08NW INV OUT = 7.08NE
DI-411	RIM = 11.11 INV IN = 7.50NE INV OUT = 7.50SW

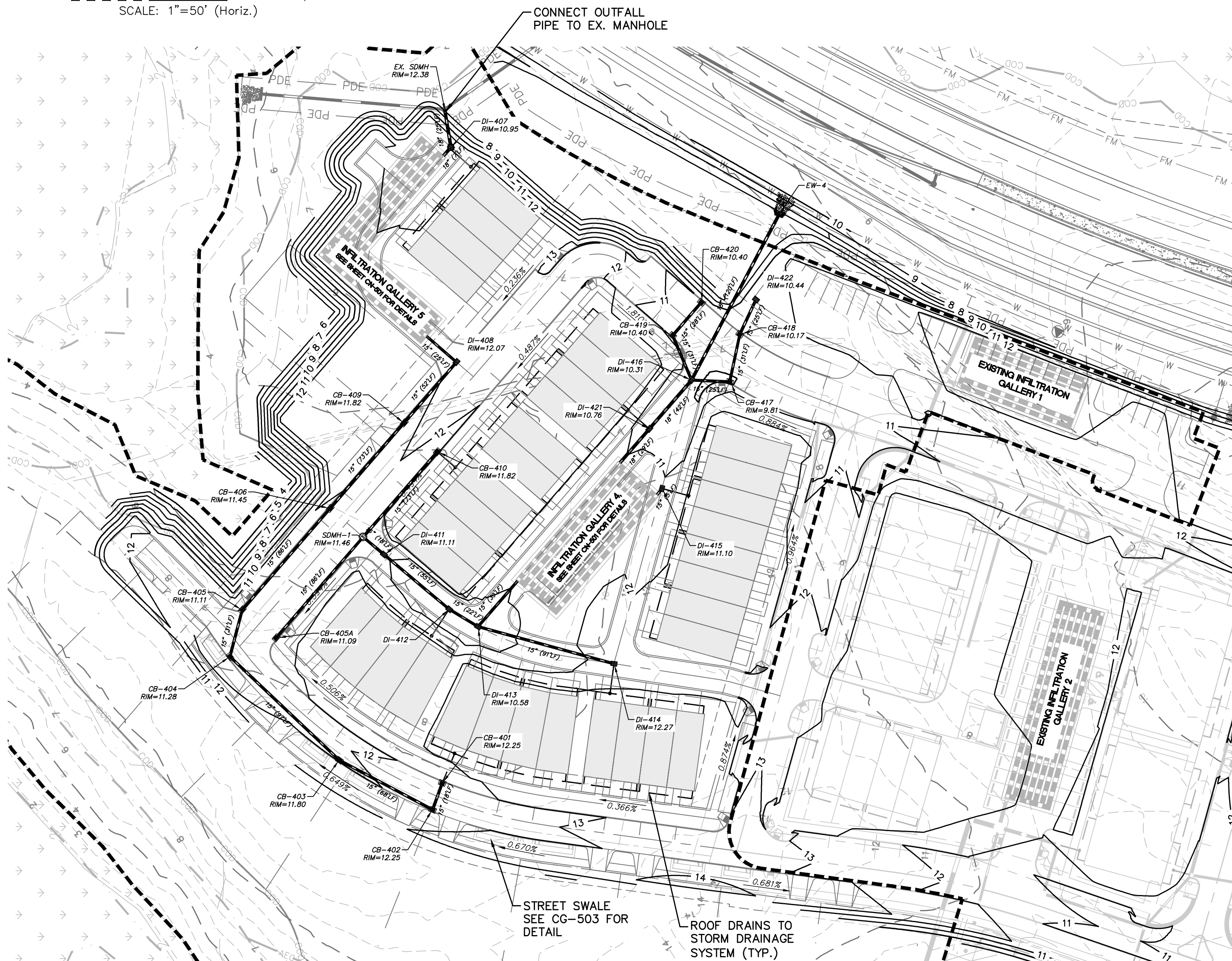
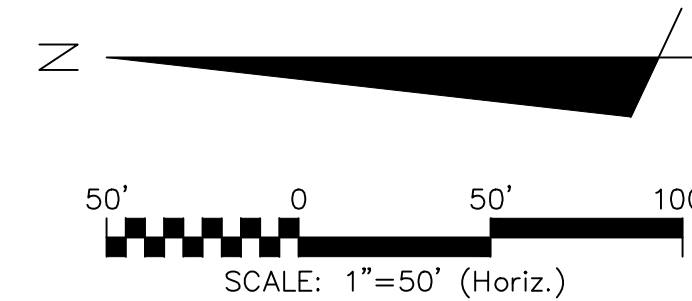
STRUCTURE TABLE - STRM - 14-15	
STR. NAME	DETAILS
DI-412	RIM = 10.48 INV IN = 7.23NE INV OUT = 7.23SW
DI-413	RIM = 10.58 INV IN = 7.16NE INV OUT = 7.16SE
DI-414	RIM = 12.27 INV OUT = 7.61N
DI-415	RIM = 11.10 INV OUT = 7.05NW
DI-416	RIM = 10.31 INV IN = 7.34NE INV OUT = 7.34NW INV OUT = 8.06SE
DI-421	RIM = 10.76 INV IN = 7.14SE INV OUT = 7.14NW
DI-422	RIM = 10.44 INV OUT = 7.74NW
EW-4	RIM = 9.91 INV IN = 7.70NW

STRUCTURE TABLE - STRM - 13B	
STR. NAME	DETAILS
DI-501	RIM = 12.11 INV OUT = 8.57N
DI-502	RIM = 10.48 INV IN = 8.14N INV OUT = 8.14S
DI-502A	RIM = 10.63 INV IN = 8.14N INV OUT = 8.14S
DI-503	RIM = 10.93 INV OUT = 8.54S
EX. CB-318	RIM = 11.45 INV IN = 7.76E

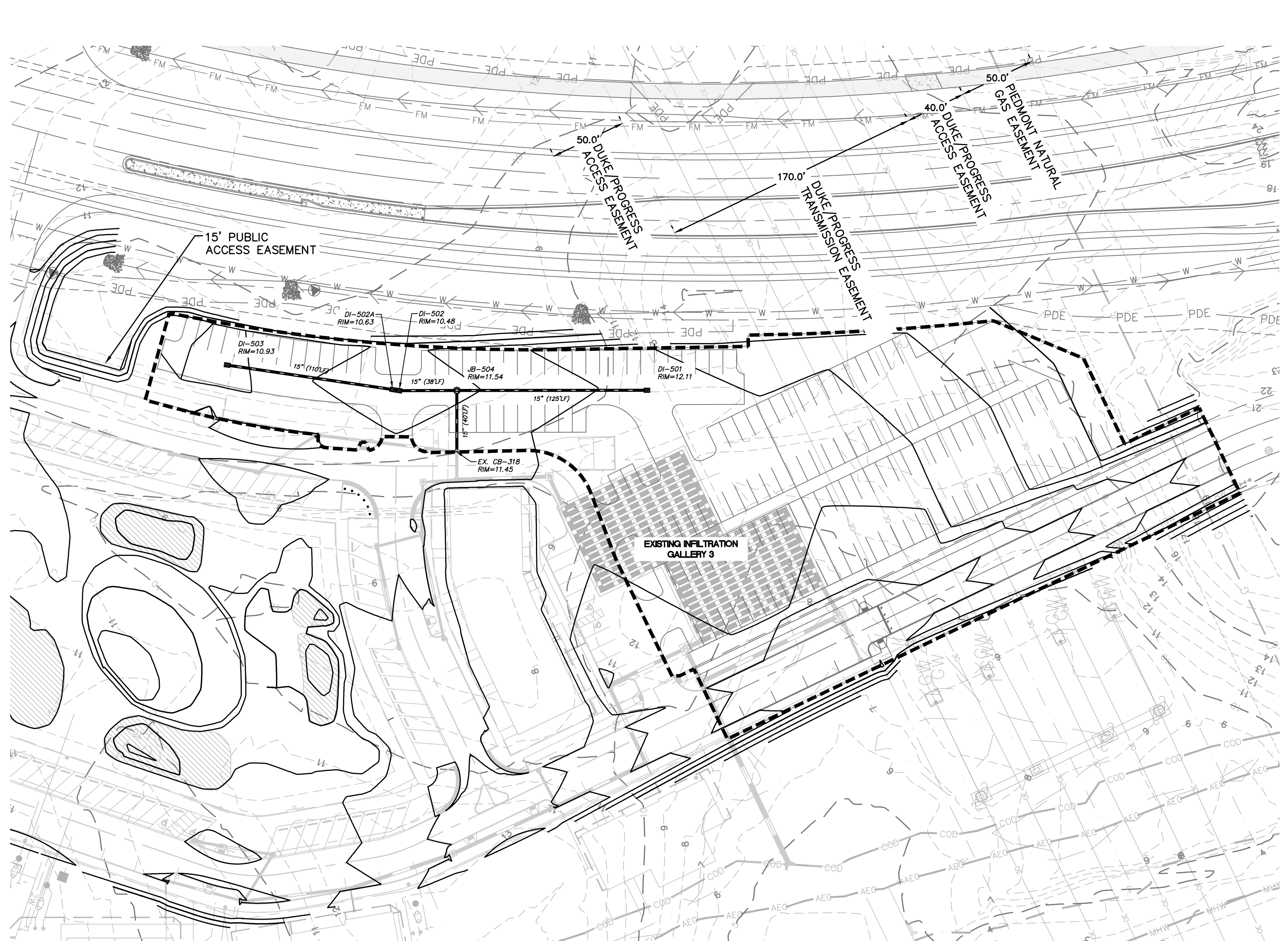
STORM DRAINAGE PIPE DATA TABLE - STRM - 14-15							
FROM	TO	LENGTH	SIZE	PIPE TYPE	SLOPE	UPSTREAM INVERT	DOWNSTREAM INVERT
SDMH-1	DI-411	17.50'	15"	RCP	0.51%	7.59'	7.50'
DI-422	CB-418	24.66'	15"	RCP	0.50%	7.74'	7.62'
DI-421	I-4C	28.59'	18"	CAP	0.49%	7.14'	7.00'
DI-416	EW-4	119.95'	18"	RCP	0.30%	8.06'	7.70'
DI-416	DI-421	41.52'	18"	RCP	0.49%	7.34'	7.14'
DI-415	I-4B	4.92'	15"	CAP	0.99%	7.05'	7.00'
DI-414	DI-413	90.58'	15"	RCP	0.50%	7.61'	7.16'
DI-413	I-4A	38.64'	15"	CAP	0.42%	7.16'	7.00'
DI-412	DI-413	21.60'	15"	RCP	0.30%	7.23'	7.16'
DI-411	DI-412	54.78'	15"	RCP	0.50%	7.50'	7.23'
DI-408	I-5A	25.15'	15"	CAP	0.32%	7.08'	7.00'
DI-407	I-5B	7.13'	18"	CAP	0.35%	7.03'	7.00'
DI-407	EX. SDMH	24.65'	18"	RCP	1.00%	8.08'	7.84'
CB-420	CB-419	28.30'	15"	RCP	0.50%	7.64'	7.50'
CB-419	DI-416	31.15'	15"	RCP	0.50%	7.50'	7.34'
CB-418	CB-417	31.25'	15"	RCP	0.50%	7.62'	7.46'
CB-417	DI-416	24.50'	15"	RCP	0.50%	7.46'	7.34'

STORM DRAINAGE PIPE DATA TABLE - STRM - 14-15							
FROM	TO	LENGTH	SIZE	PIPE TYPE	SLOPE	UPSTREAM INVERT	DOWNSTREAM INVERT
CB-410	SDMH-1	72.65'	15"	RCP	0.50%	7.95'	7.59'
CB-409	DI-408	51.59'	15"	RCP	0.30%	7.24'	7.08'
CB-406	CB-409	72.69'	15"	RCP	0.30%	7.45'	7.23'
CB-405A	SDMH-1	85.67'	15"	RCP	0.50%	8.02'	7.59'
CB-405	CB-406	86.32'	15"	RCP	0.30%	7.71'	7.45'
CB-404	CB-405	31.11'	15"	RCP	1.33%	8.13'	7.71'
CB-403	CB-404	96.86'	15"	RCP	0.50%	8.61'	8.13'
CB-402	CB-403	67.90'	15"	RCP	1.00%	9.29'	8.61'
CB-401	CB-402	18.31'	15"	RCP	0.50%	9.38'	9.29'

STORM DRAINAGE PIPE DATA TABLE - STRM - 13B							
FROM	TO	LENGTH	SIZE	PIPE TYPE	SLOPE	UPSTREAM INVERT	DOWNSTREAM INVERT
JB-504	EX. CB-318	40.27'	15"	RCP	0.48%	7.95'	7.76'
DI-503	DI-502A	109.99'	15"	RCP	0.36%	8.54'	8.14'
DI-502A	DI-502	4.01'	15"	RCP	0.00%	8.14'	8.14'
DI-502	JB-504	37.99'	15"	RCP	0.50%	8.14'	7.95'
DI-501	JB-504	124.80'	15"	RCP	0.50%	8.57'	7.95'

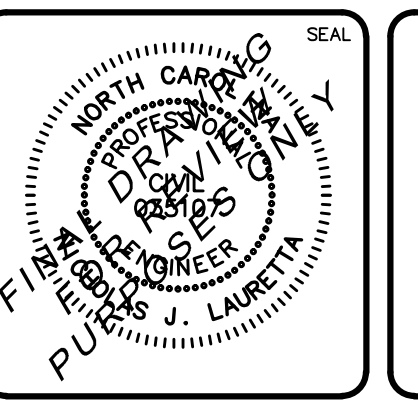
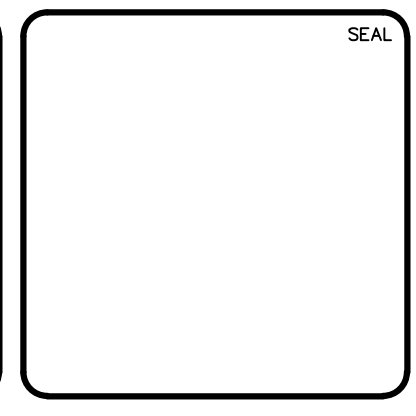


MARINA VILLAGE - PHASE 1B NORTH  
SCALE: 1" = 50'



MARINA VILLAGE - PHASE 1B SOUTH  
SCALE: 1" = 50'

REV. NO.	DESCRIPTIONS	DATE



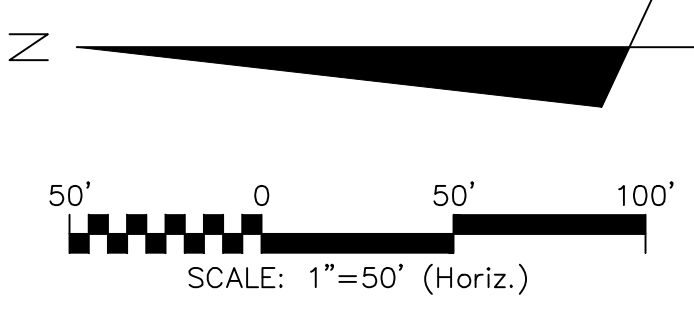
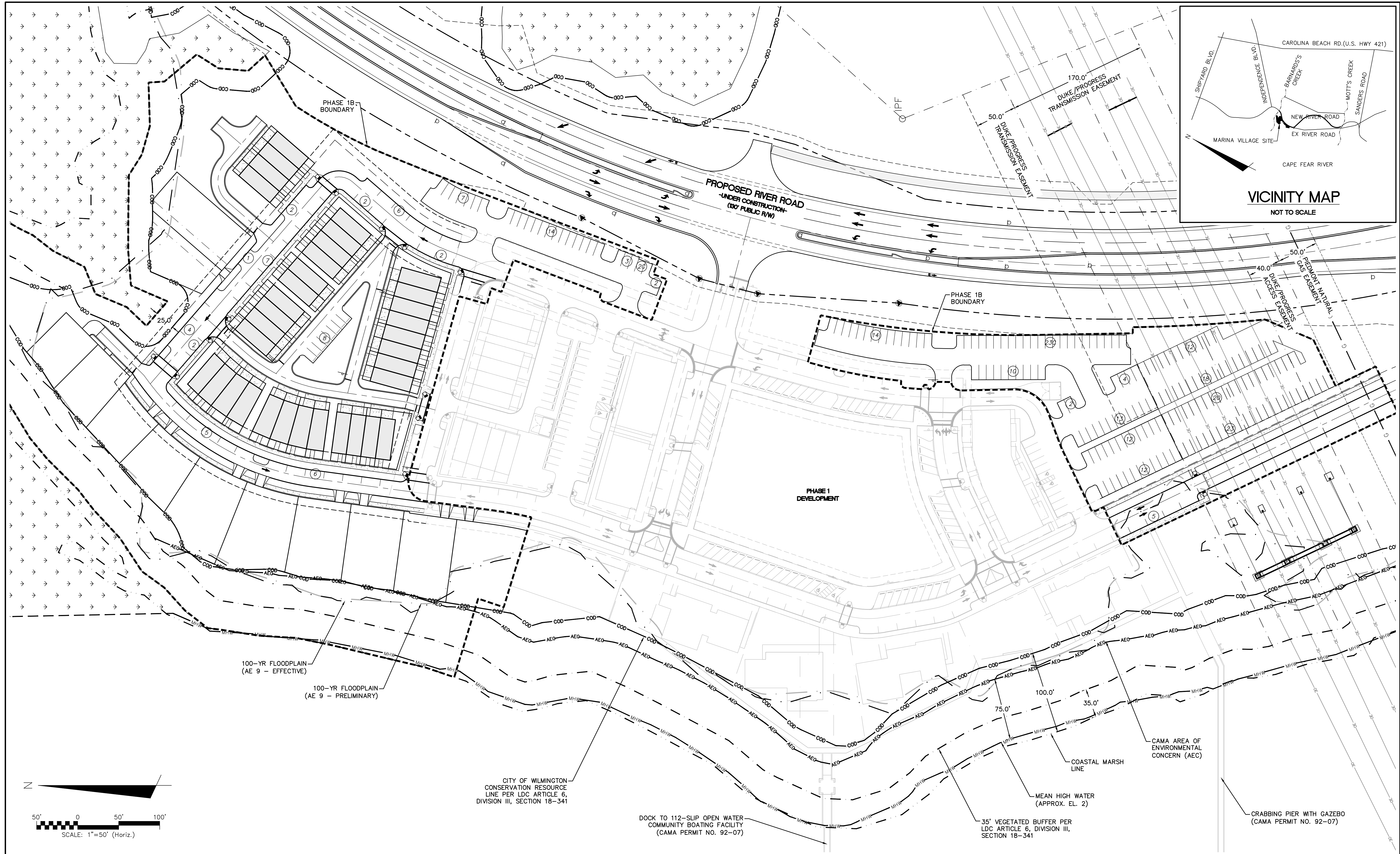
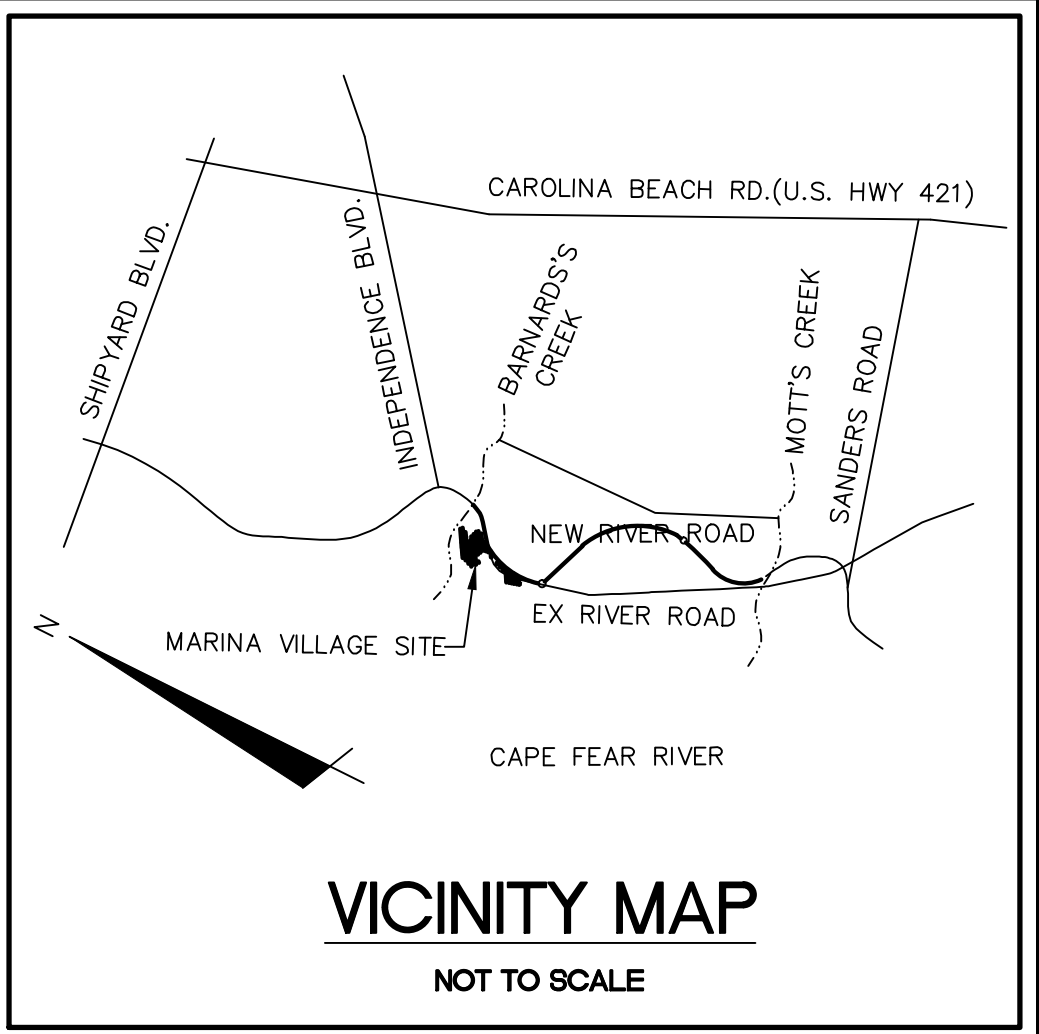
**MCKIM & CREED**  
 243 North Front Street  
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 Phone: (910)343-1048, Fax: (910)251-8282  
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**RIVERLIGHTS**  
 by Newland COMMUNITIES  
 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B  
 STORM DRAINAGE PLAN**

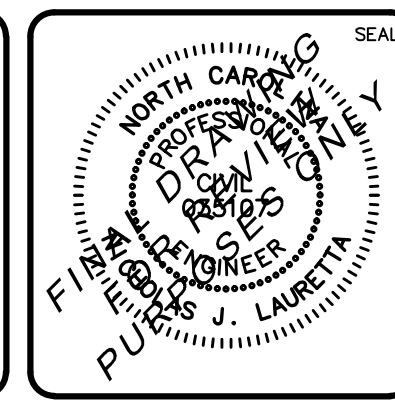
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PROJ. MGR.: NUL		

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SEAL



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**RIVERLIGHTS**  
by Newland COMMUNITIES

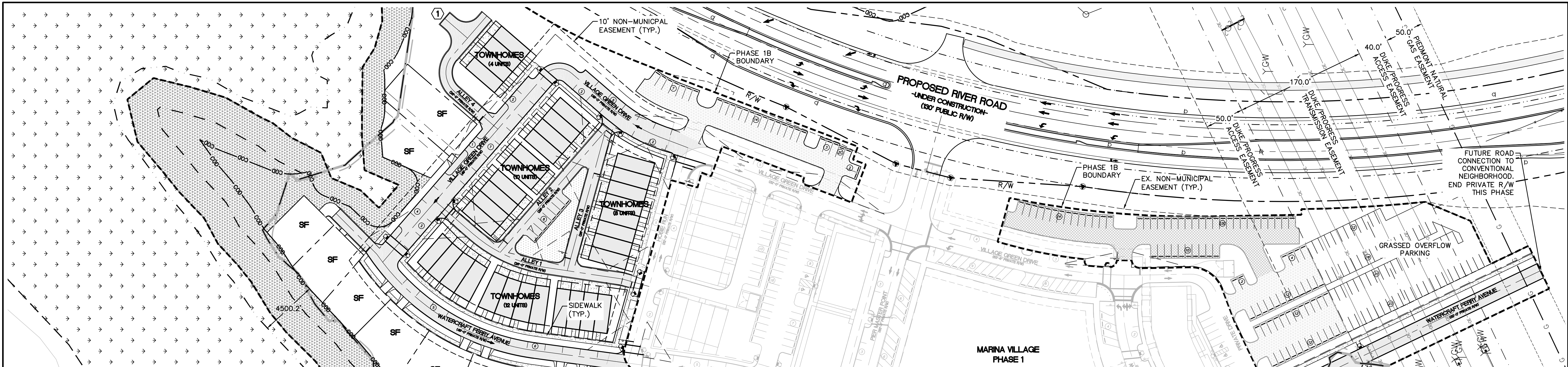
NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
PHASE 1B**

**OVERALL SITE PLAN**

DATE: 10NOV15	SCALE: 1"=50'	MAC FILE NUMBER: CS-100
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CHECKED: KCBE		
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NOT FOR CONSTRUCTION		

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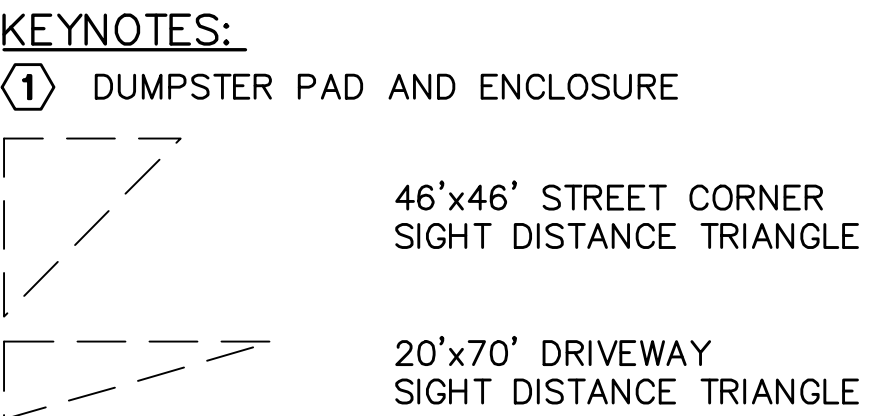
SITE DATA TABLE		MARINA VILLAGE - PHASE 1B	
PARCEL ADDRESS	4410 RIVER ROAD		
TAX PARCEL IDENTIFICATION NUMBER	R07000-006-009-000		
ZONING DISTRICT	CD-MX		
CAMA LAND USE CLASSIFICATION	TRANSITION AND CONSERVATION		
TOTAL ACREAGE WITHIN THE RIVERLIGHTS BOUNDARY	1,329.41 ACRES (57,909,100 SF)		
TOTAL ACREAGE WITHIN THE MARINA VILLAGE BOUNDARY	38.67 ACRES (1,684,343 SF)		
TOTAL ACREAGE OF COASTAL WETLANDS	14.57 ACRES (634,715 SF)		
TOTAL PROJECT AREA (STORMWATER PROJECT AREA)	23.09 ACRES (1,005,919 SF)		
TOTAL ACREAGE OF NON-COASTAL WETLANDS (ISOLATED/404)	76,797 ACRES (1.76 SF)		
TOTAL ACREAGE WITHIN THE MARINA VILLAGE - PHASE 1B	9.84 ACRES (428,668 SF)		
BUILDING SETBACKS AND SEPARATIONS (MX ZONING)	REQUIRED	PROPOSED	
FRONT	N/A	N/A	
REAR	N/A	N/A	
SIDE (INTERIOR)	N/A	N/A	
SIDE (CORNER)	N/A	N/A	
TOTAL BUILDING(S) SIZE (SQUARE FOOTAGE)	68,000 SF		
NC BUILDING CODE CONSTRUCTION TYPE	VB		
BUILDING LOT COVERAGE	16%		
NUMBER OF BUILDINGS	17 DUPLEX TOWNHOUSE		
TOTAL AMOUNT OF DISTURBED AREA	5.10 AC (220,717 SF)		
TOTAL ACRES WITHIN 100-YR FLOODPLAIN/BELOW MHW MARK	1.92 ACRES (83,846 SF)		
TOTAL ACRES WITHIN WETLANDS (DWQ PROJECT #07-1335)	N/A		

IMPERVIOUS AREA (EXISTING)		
ROOF TOPS	0	SF
ROADWAYS	11,125	SF
PARKING	0	SF
SIDEWALKS	0	SF
OTHER	0	SF
TOTAL PRE DEVELOPMENT/%	11,125/2.6	SF/%

IMPERVIOUS AREA (PROPOSED)		
ROOF TOPS	75,204	SF
ROADWAYS	48,260	SF
PARKING	41,441	SF
PERVIOUS PARKING	0	SF
PERVIOUS PARKING (75% REDUCTION)	0	SF
SIDEWALKS	18,502	SF
PERVIOUS SIDEWALK	0	SF
PERVIOUS SIDEWALK (75% REDUCTION)	0	SF
FUTURE ALLOTMENT	0	SF
OTHER	0	SF
TOTAL S.F. (ONSITE IMPERVIOUS AREA)	183,407	SF
PERCENTAGE (ONSITE IMPERVIOUS AREA/ONSITE AREA)	42.8	%
PERCENTAGE (EXIST. ONSITE IMPERVIOUS AREA/ONSITE AREA)	3.9	%
TOTAL SQUARE FOOTAGE OF IMPERVIOUS SURFACES SHOWN IN THE STREET YARD	0	SF

PARKING CALCULATIONS	
MINIMUM NUMBER OF SPACES REQUIRED	N/A
MAXIMUM NUMBER OF SPACES ALLOWED	467
(44) TOWNHOMES (2.5 SPACES/UNIT)	110
(15) APARTMENTS (2.5 SPACES/UNIT)	38
(12) SINGLE FAMILY (2.5 SPACES/UNIT)	30
RESTAURANTS (1 SPACE / 65 SF GFA)	151
ART GALLERY (1 SPACE / 250 SF GFA)	31
RIVER HOUSE (1 SPACE / 65 SF GFA)	31
RETAIL (1 SPACE / 200 SF GFA)	20
MARINA (1 SPACE / 2 WET SLIPS)	56
PARKING SPACES PROVIDED (PHASE 1B)	170
PARKING SPACES PROVIDED (PHASE 1)	183
PARKING SPACES PROVIDED (OVERFLOW)	73
PARKING SPACES PROVIDED (TOTAL)	426
BICYCLE PARKING SPACES REQUIRED	20
BICYCLE PARKING SPACES PROVIDED	20

SURFACE MATERIAL LEGEND	
[Pattern]	ASPHALT - STREET SECTION
[Pattern]	ASPHALT - DRIVE AISLE
[Pattern]	GRAVEL - PARKING LOT
[Pattern]	ROOFTOP
[Pattern]	SIDEWALK
[Pattern]	COMMON SPACE
[Pattern]	OPEN SPACE

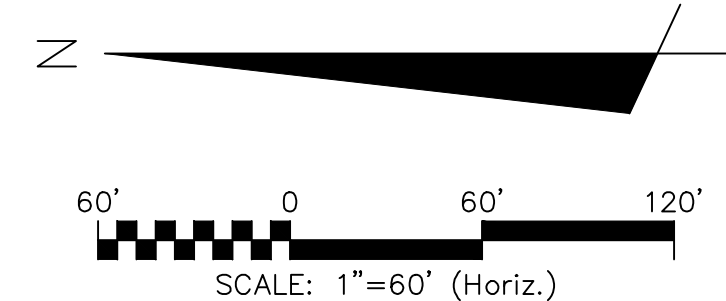


WATER & SEWER DEMAND	
WATER DEMAND	16,560 GDP
SANITARY SEWER DEMAND	16,560 GDP

TOTAL ACREAGE OF MARINA VILLAGE - PHASE 1B WITHIN COD: 2.06 ACRES (89,951 SF)

TOTAL ACREAGE OF MARINA VILLAGE - PHASE 1B ENCROACHMENT INTO THE COD: 0.08 ACRES (3,599 SF)

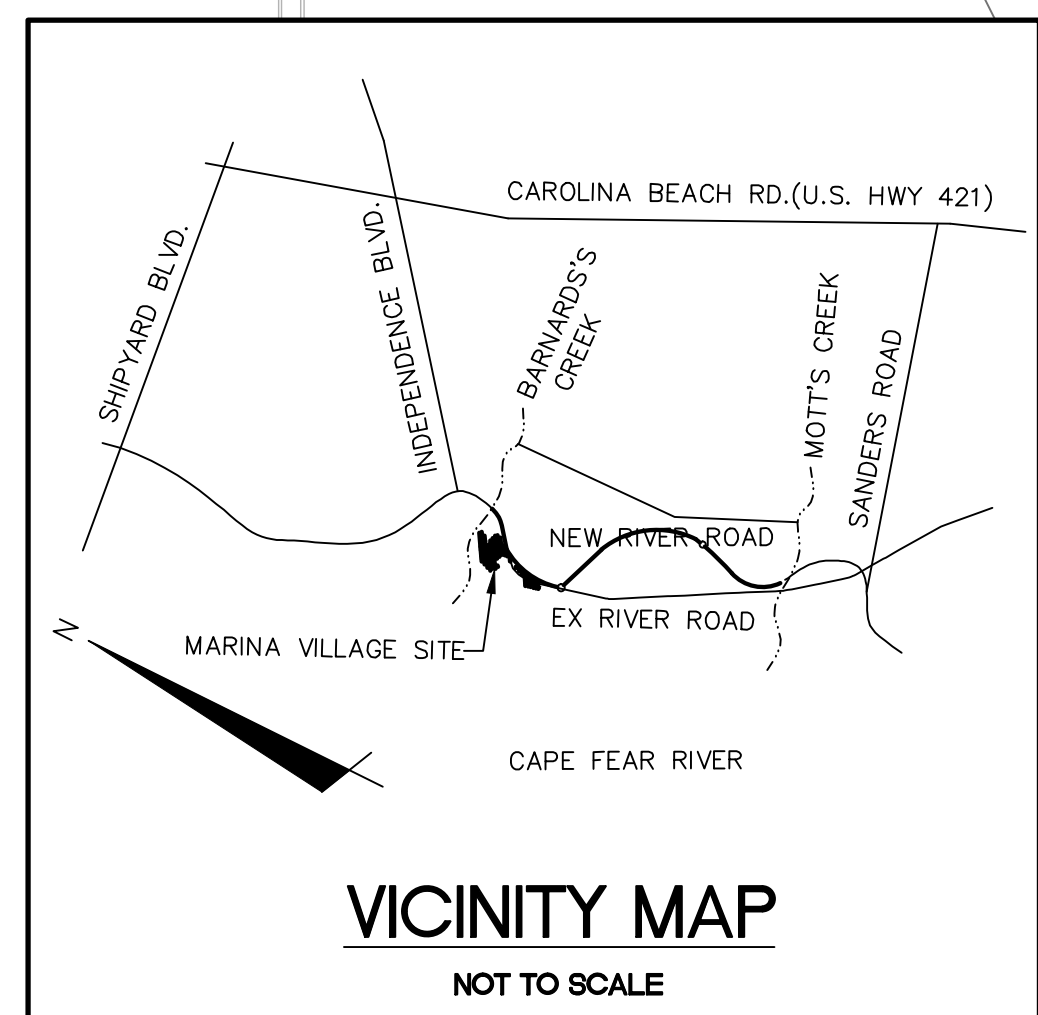
TOTAL PERCENTAGE OF COD ENCROACHMENT: 0.08 ACRES/2.06 ACRES = 4.00%



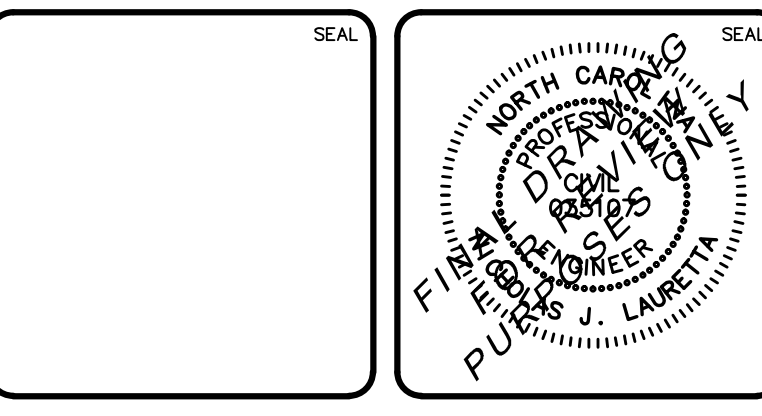
COMMON SPACE CALCULATIONS	
TOTAL COMMON SPACE REQUIRED	18.47 ACRES (804,640 SF)*
TOTAL COMMON SPACE PROPOSED	0.08 ACRES (3,634 SF)

OPEN SPACE CALCULATIONS*	
TOTAL OPEN SPACE REQUIRED	46.18 ACRES (2,011,601 SF)*
TOTAL OPEN SPACE PROPOSED	2.25 ACRES (97,995 SF)

\*PROPOSED MX-CD CLUSTER FOR ENTIRE RIVER LIGHTS DEVELOPMENT = 184.7 ACRES  
 OPEN SPACE AND COMMON SPACE ACRES REQUIRED FOR ENTIRE RIVERLIGHTS DEVELOPMENT  
 @ 25% OPEN SPACE AND 10% COMMON SPACE = 46.18 AC (OPEN) AND 18.47 AC (COMMON)



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**RIVERLIGHTS MARINA VILLAGE PHASE 1B**

**SITE PLAN**

DATE: 10NOV15	SCALE: 1"=60'	MFC FILE NUMBER: CS-101
MCE PROJ. # 2735-0124	HORIZONTAL: 1"=60'	DRAWING NUMBER: 11
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CHECKED: KCBE	NOT FOR CONSTRUCTION	
PROJ. MGR.: NUL		

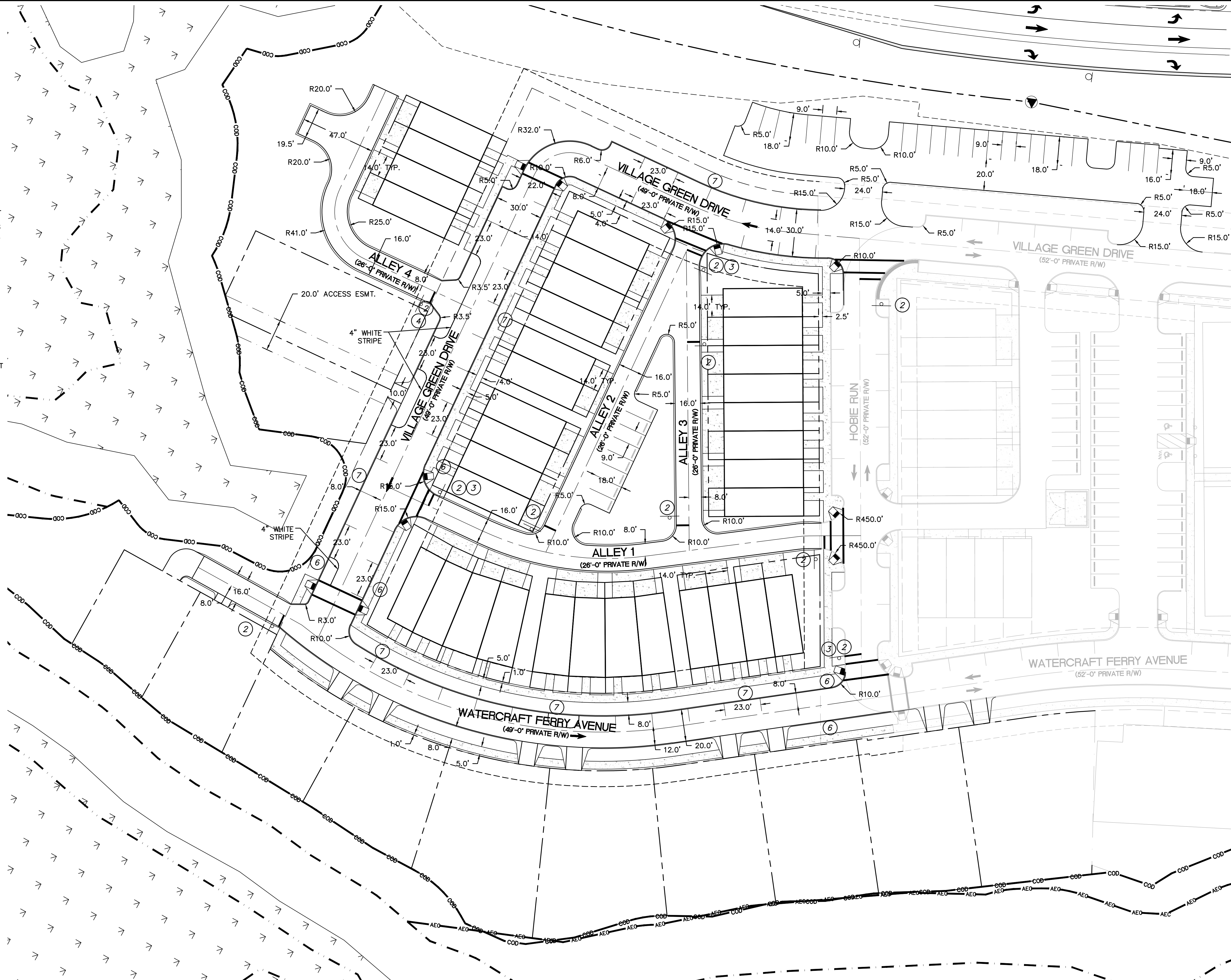
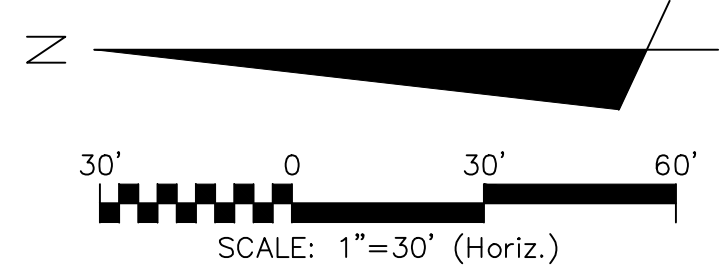
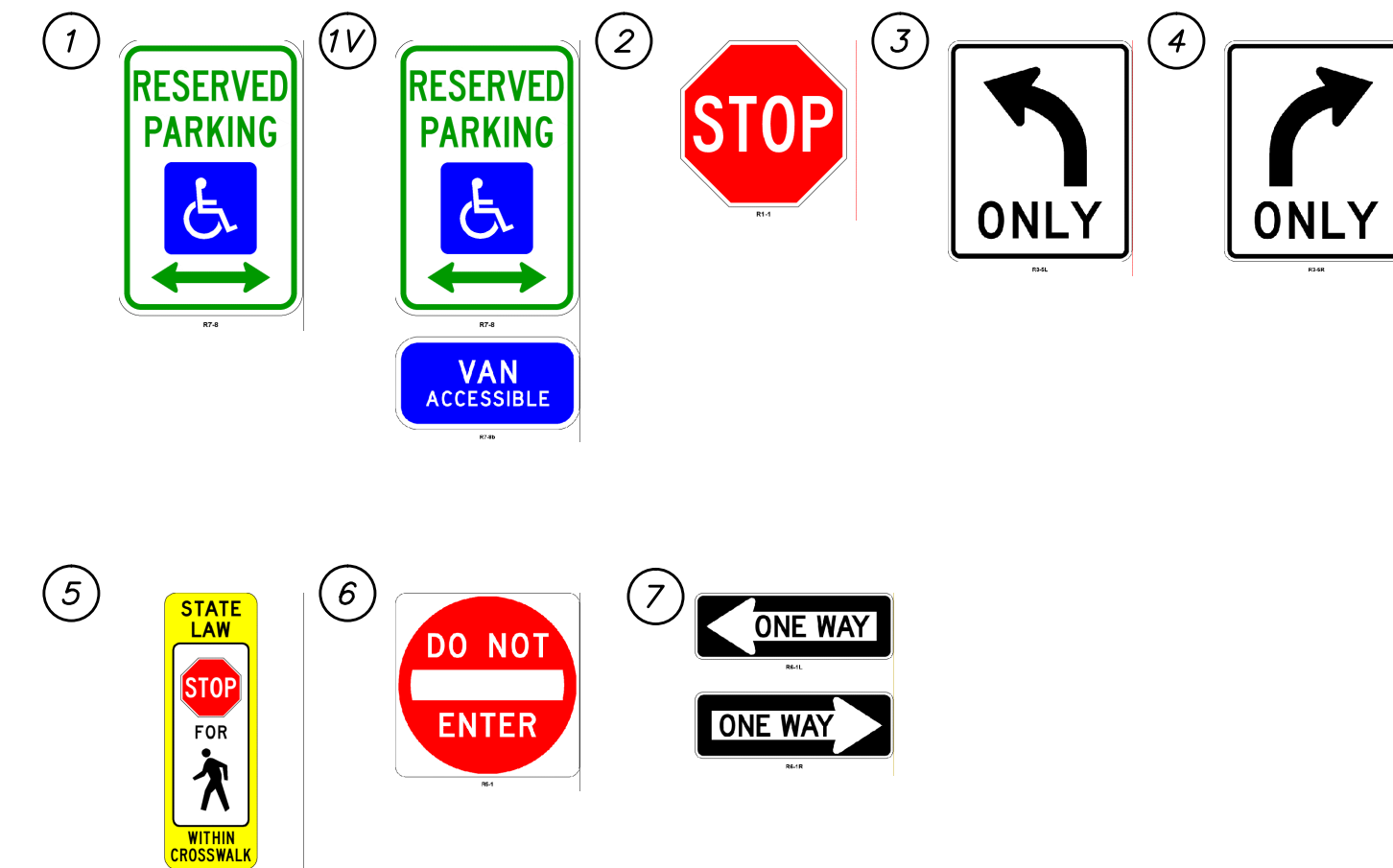
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**CITY OF WILMINGTON NOTES:**

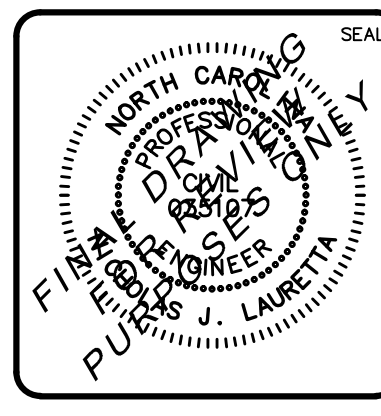
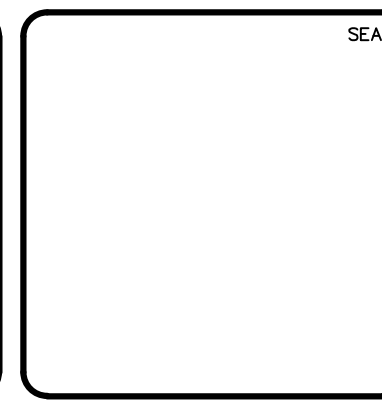
- ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
- A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET. CONTACT 341-5888 FOR MORE DETAILS. IN CERTAIN CASES AN ENTIRE RESURFACING OF THE AREA BEING OPEN CUT MAY BE REQUIRED.
- 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 REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAT.
- ZERO LOT LINES ARE PERMITTED.
- BUILDINGS LOCATED ON THE PERIPHERY OF THE MX DISTRICT SHALL BE SET BACK A MINIMUM OF 20 (TWENTY) FEET FROM THE MX DISTRICT BOUNDARY.
- ZONING AND LAND USE OF ADJACENT PROPERTIES IS AS FOLLOWS:  
 NORTH - FUTURE MX-CD / TRANSITION  
 SOUTH - FUTURE MX-CD / TRANSITION AND CONSERVATION AREA  
 WEST - FUTURE MX-CD / TRANSITION  
 EAST - 1-2 / TRANSITION AND CONSERVATION AREA
- INSTALL REFLECTORS PER CITY AND NCDOT STANDARDS. TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING LAYOUT PRIOR TO ACTUAL STRIPING.
- IT SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER TO ERECT OFFICIAL STREET NAME SIGNS AT ALL INTERSECTIONS ASSOCIATED WITH THE SUBDIVISION IN ACCORDANCE WITH THE TECHNICAL STANDARDS AND SPECIFICATION MANUAL. THE SUBDIVIDER MAY ACQUIRE AND ERECT OFFICIAL STREET NAME SIGNS OR CHOOSE TO CONTRACT WITH THE CITY TO INSTALL THE STREET SIGNS AND THE SUBDIVIDER SHALL PAY THE COSTS OF SUCH INSTALLATION. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO DISCUSS INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- CONTACT TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT OF WAY.
- IF THESE UNITS ARE SOLD AT ANY POINT, THE BUYER MUST RECEIVE A SUBDIVISION STREET DISCLOSURE STATEMENT.

**GENERAL NOTES:**

- FLOODPLAIN INFORMATION WAS OBTAINED FROM NC FLOODPLAIN MAPPING FLOOD RISK INFORMATION SYSTEM PROGRAM. RIVERLIGHTS IS LOCATED WITHIN FIRM MAP 3720312400K, PANEL 3124 AS REVISED JUNE 02, 2006.
- ITEMS DESIGNATED AS "PROPOSED" ARE PART OF THE RIVER ROAD REALIGNMENT PROJECT THAT IS CURRENTLY UNDER CONSTRUCTION. RIVER ROAD CONSTRUCTION TO BE COMPLETE SPRING 2016.
- WETLANDS SHOWN IN THIS PORTION OF RIVERLIGHTS WERE DESCRIBED AS BRACKISH/SALT MARSH AND POCOSIN WETLANDS AND CONSERVATION RESOURCE SETBACK LINES WERE GENERATED AS 100' AND 25', RESPECTIVELY, MINIMUM OUTSIDE OF THE RESOURCE.
- FINISHED FLOOR ELEVATIONS OFF ALL INHABITABLE STRUCTURES WILL BE MIN. 2- FEET ABOVE BASE FLOOD ELEVATION
- RIVERLIGHTS PHASE 1 MARINA VILLAGE COMMUNITY DOES NOT CONTAIN ANY LOCAL, STATE, OR FEDERALLY RECOGNIZED HISTORIC STRUCTURES OR ARCHEOLOGICAL SITES ON SITE. RIVERLIGHTS WAS ISSUED A NOTICE OF NO FURTHER ACTION LETTER DATED JUNE 2, 2008 FOLLOWING COMPLETION OF AN EA/SEPA DOCUMENT.
- EXISTING THOROUGHFARES, BIKE ROUTES, PEDESTRIAN SIDEWALKS OR TRAILS AND TRANSITS FACILITIES DO NOT EXIST ON SITE.



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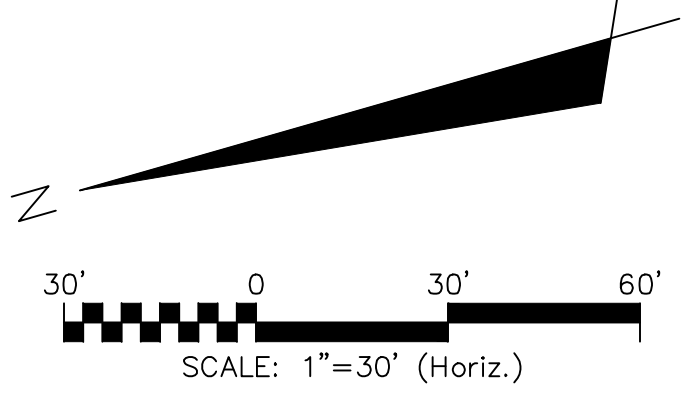
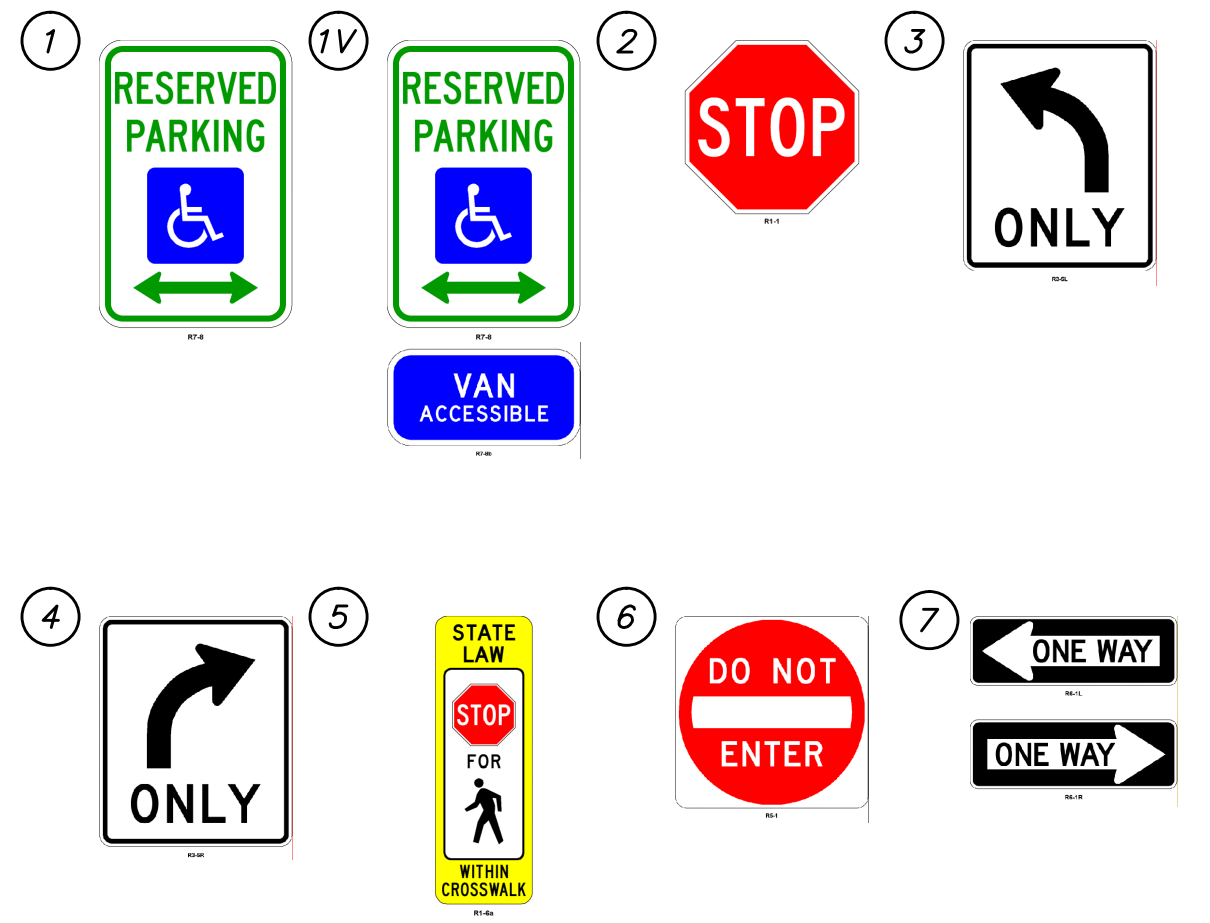
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 by Newland COMMUNITIES  
 NORTH AMERICA SEKISUI HOUSE, LLC

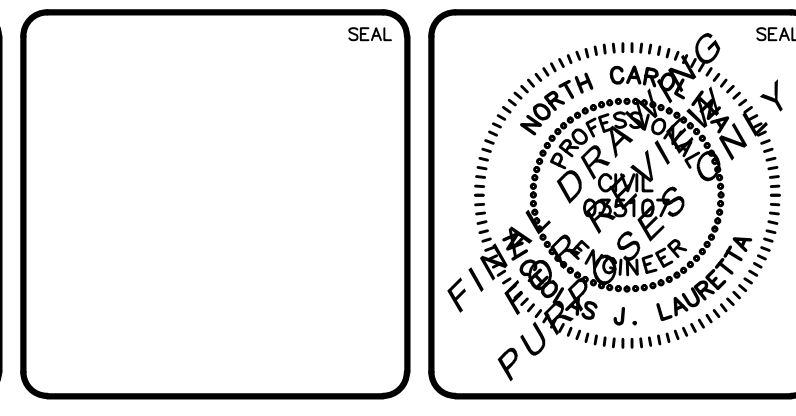
**RIVERLIGHTS MARINA VILLAGE PHASE 1B**  
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 by  
**NEWLAND COMMUNITIES**  
 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B**

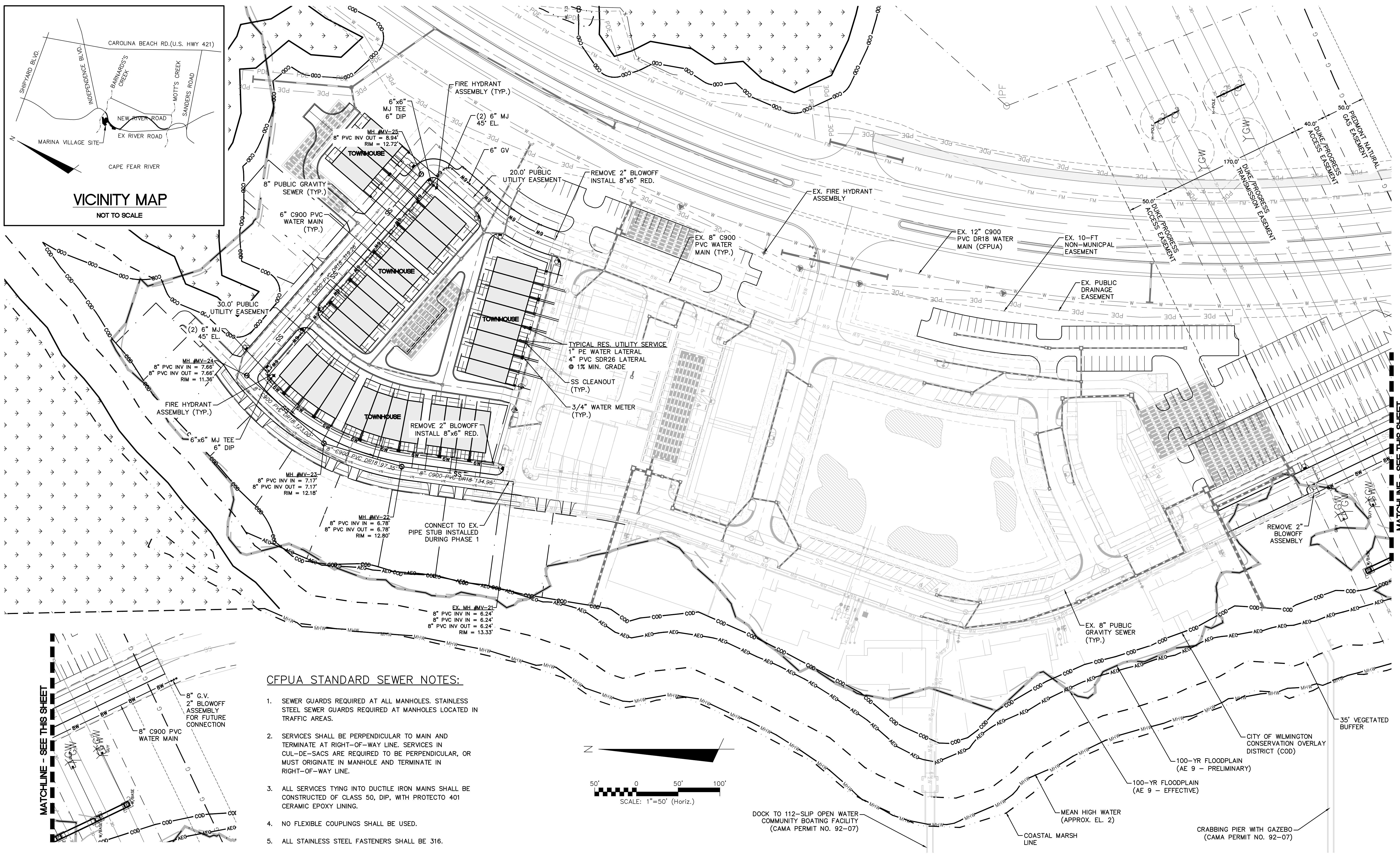
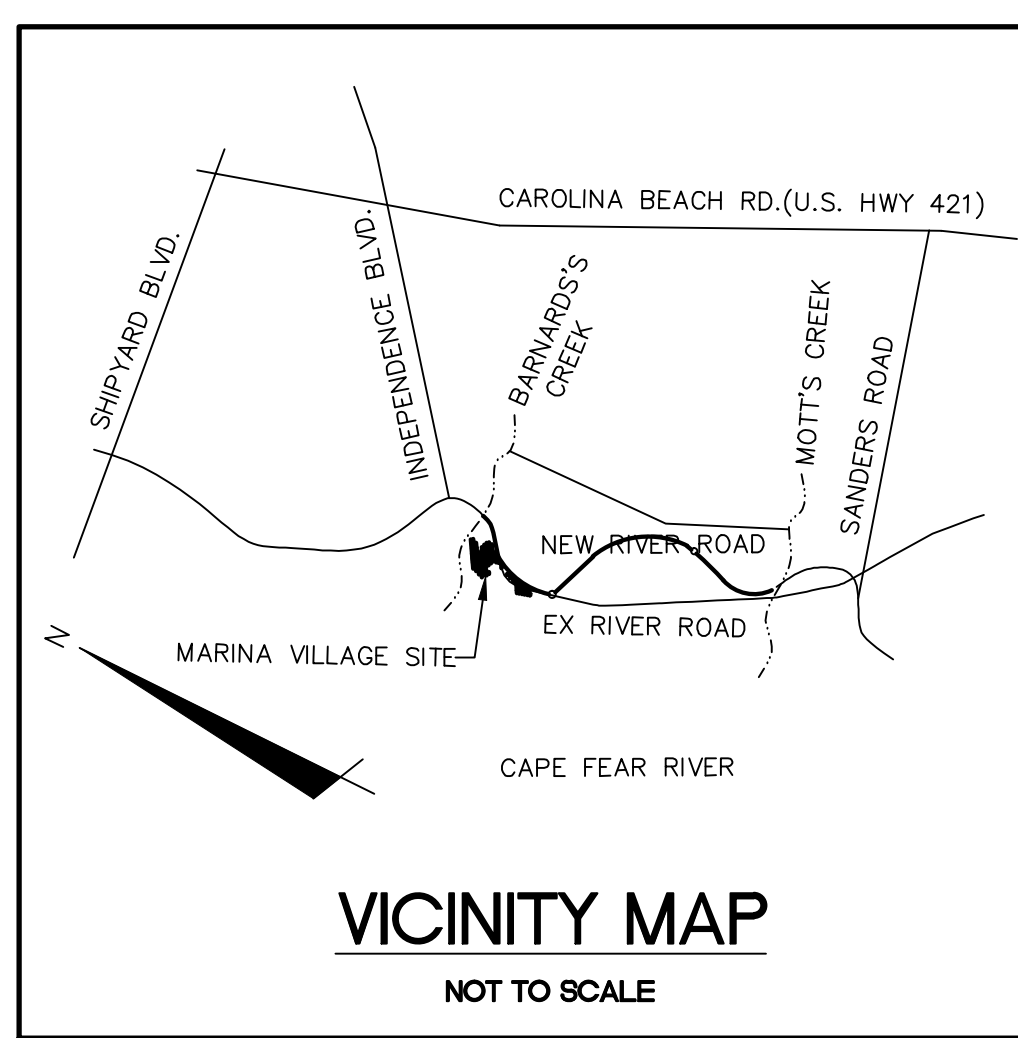
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PROJ. MGR.: NJL	

STATUS: FINAL DESIGN  
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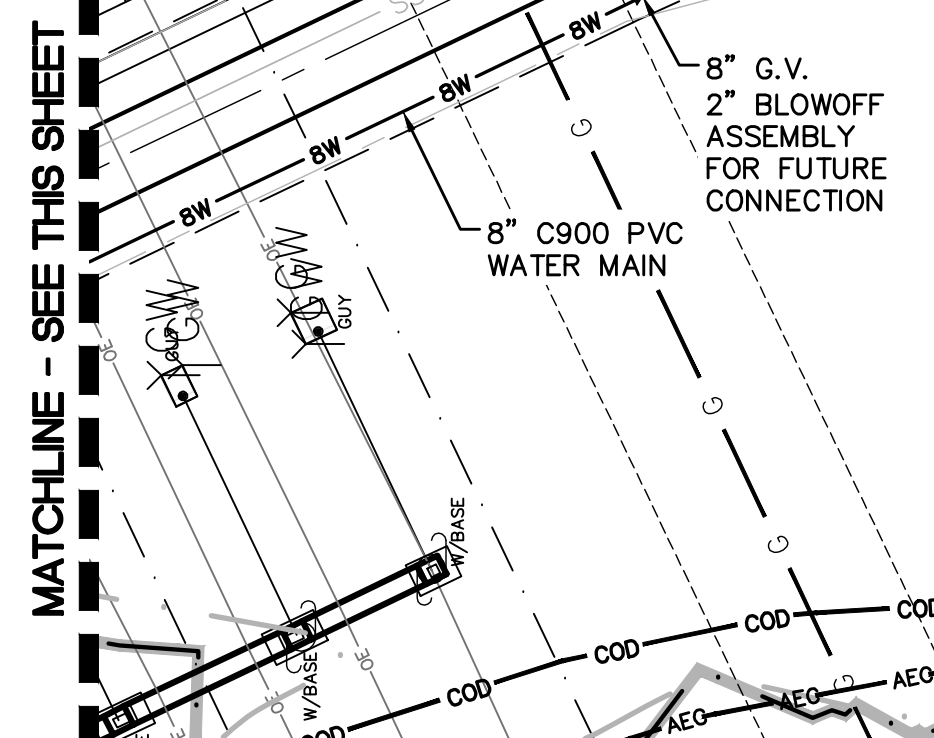
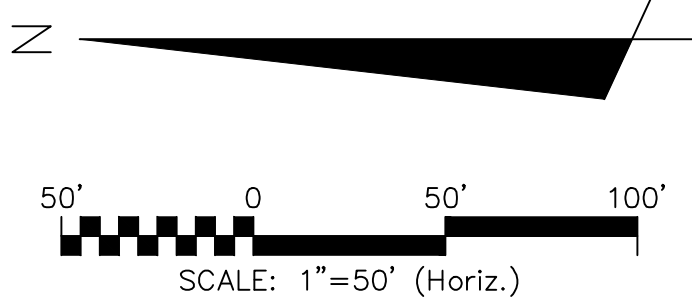
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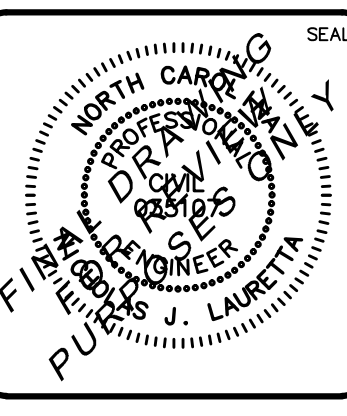
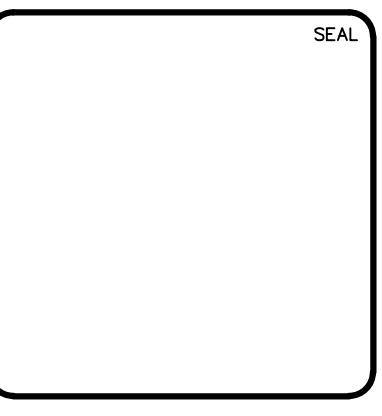
**CFPUA STANDARD SEWER NOTES:**

- SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
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- NO FLEXIBLE COUPLINGS SHALL BE USED.
- ALL STAINLESS STEEL FASTENERS SHALL BE 316.



MATCHLINE - SEE THIS SHEET

REV. NO.	DESCRIPTIONS	DATE



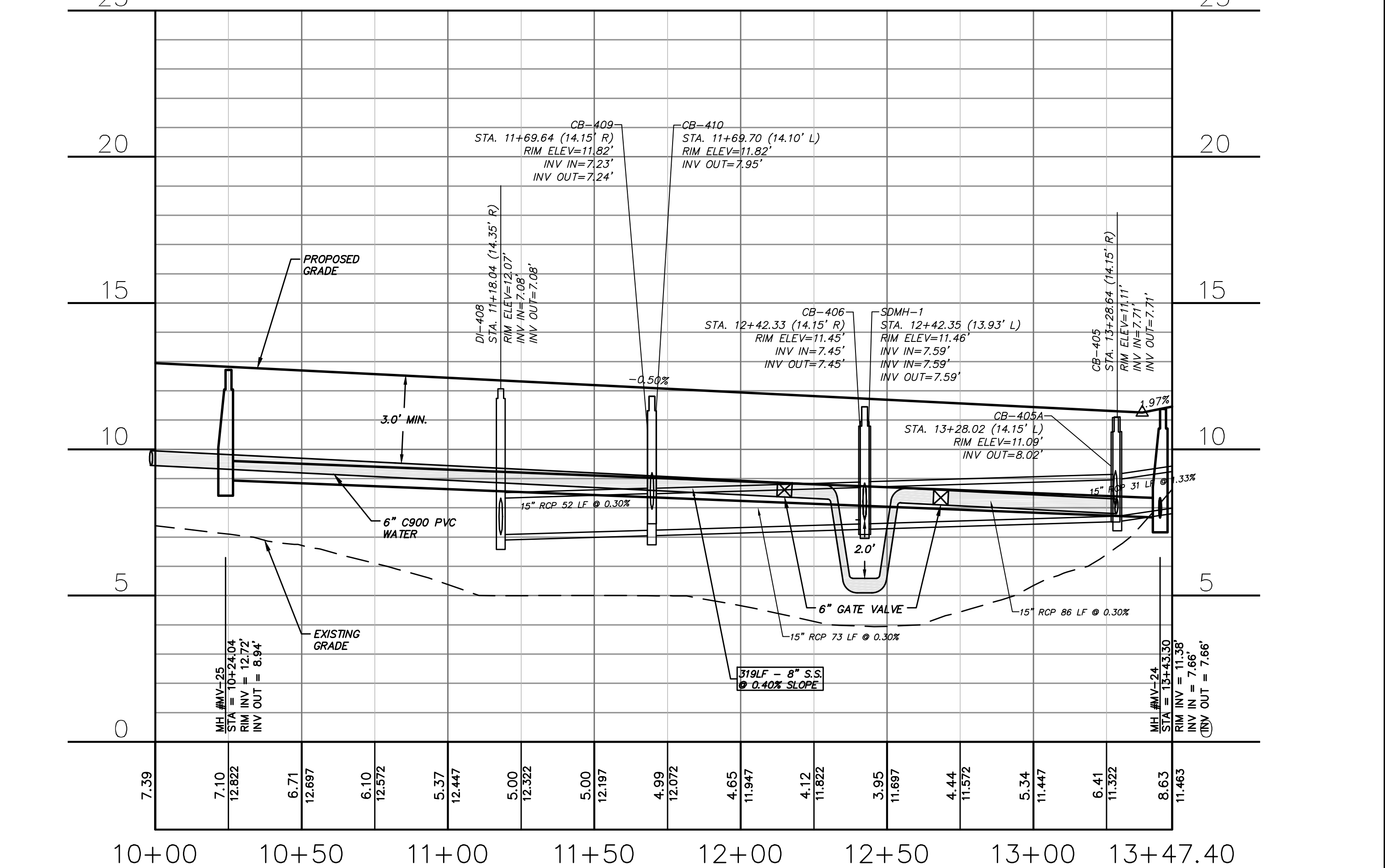
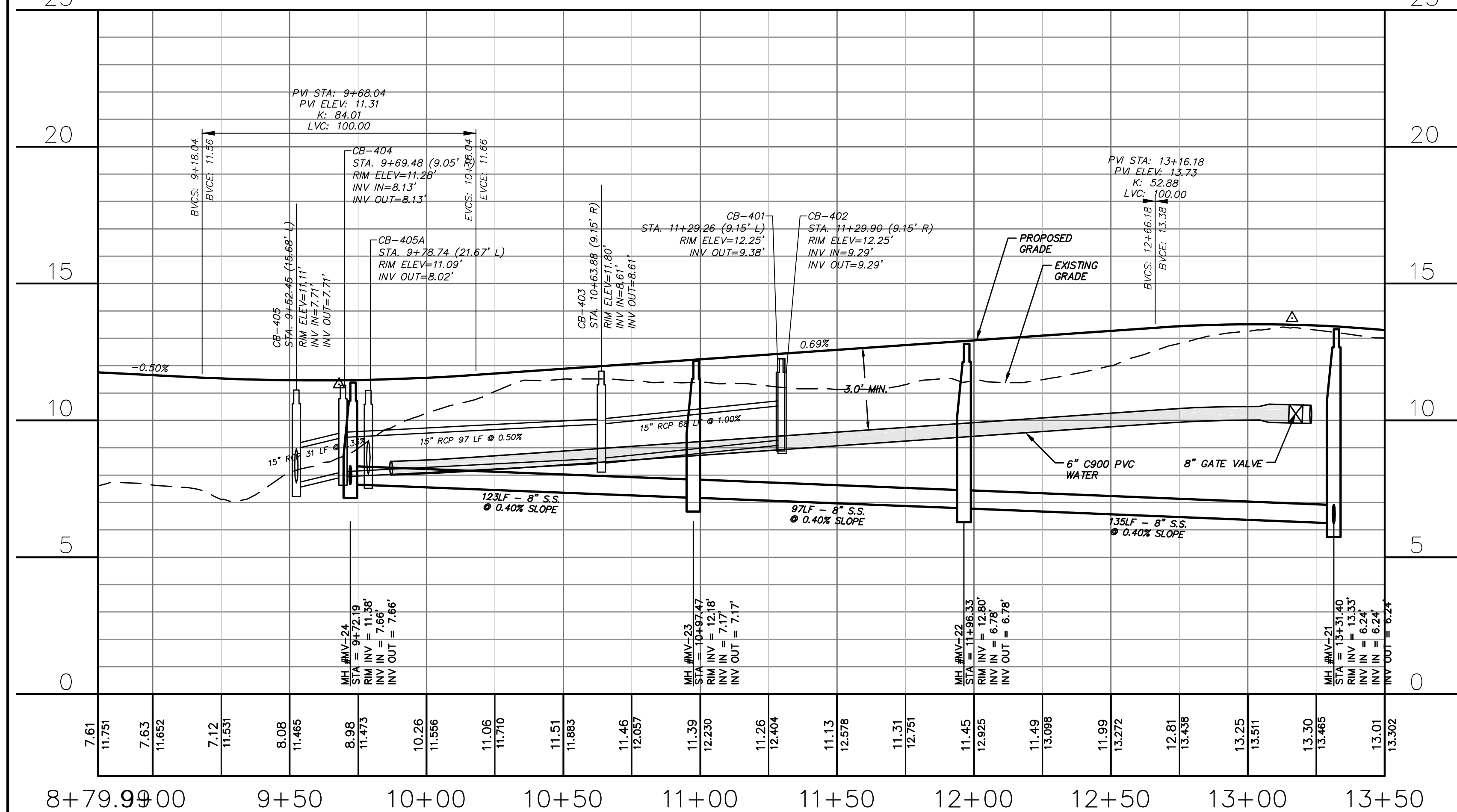
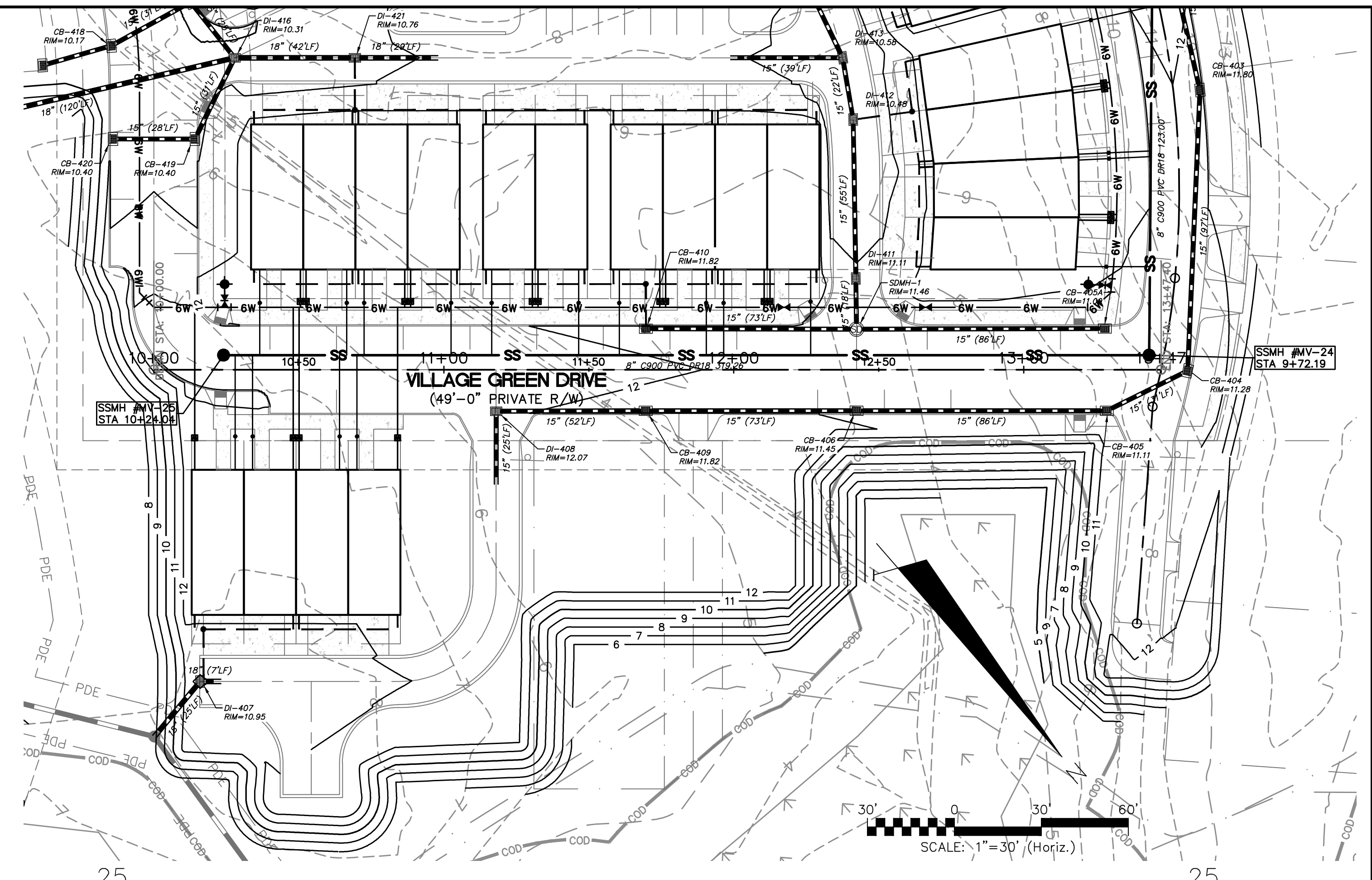
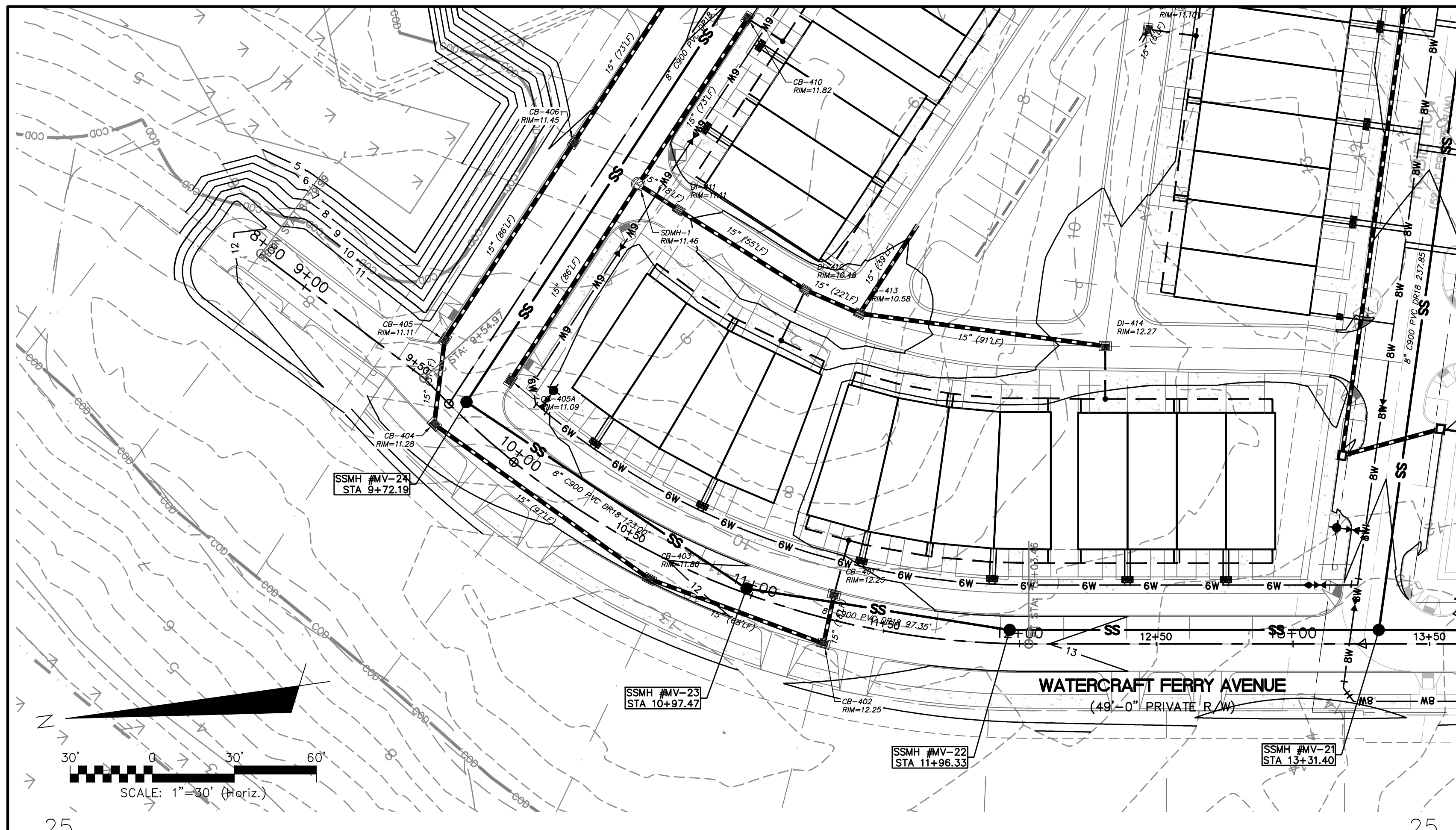
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 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B**  
**UTILITY PLAN**

DATE: 10NOV15	SCALE: HORIZONTAL: 1"=50'	MAC FILE NUMBER: CU-101
MCE PROJ. # 2735-0124	VERTICAL: N/A	DRAWING NUMBER: 14
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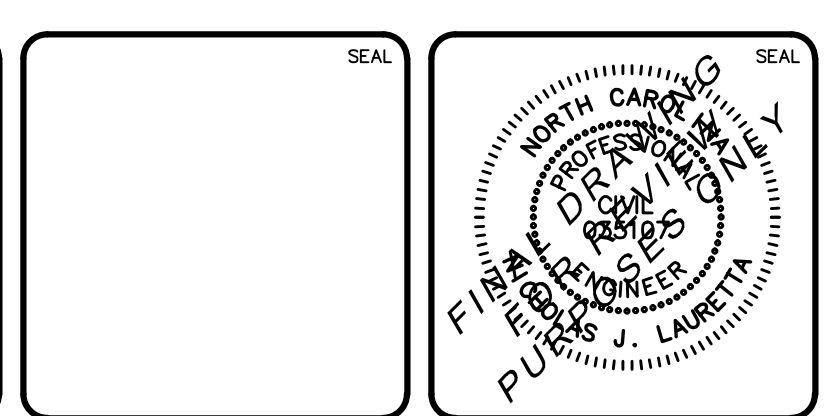
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**WATERCRAFT FERRY AVENUE**  
SCALE: HOR. 1"=30', VERT. 1"=3'

**VILLAGE GREEN DRIVE**  
SCALE: HOR. 1"=30', VERT. 1"=3'

REV. NO.	DESCRIPTIONS	DATE

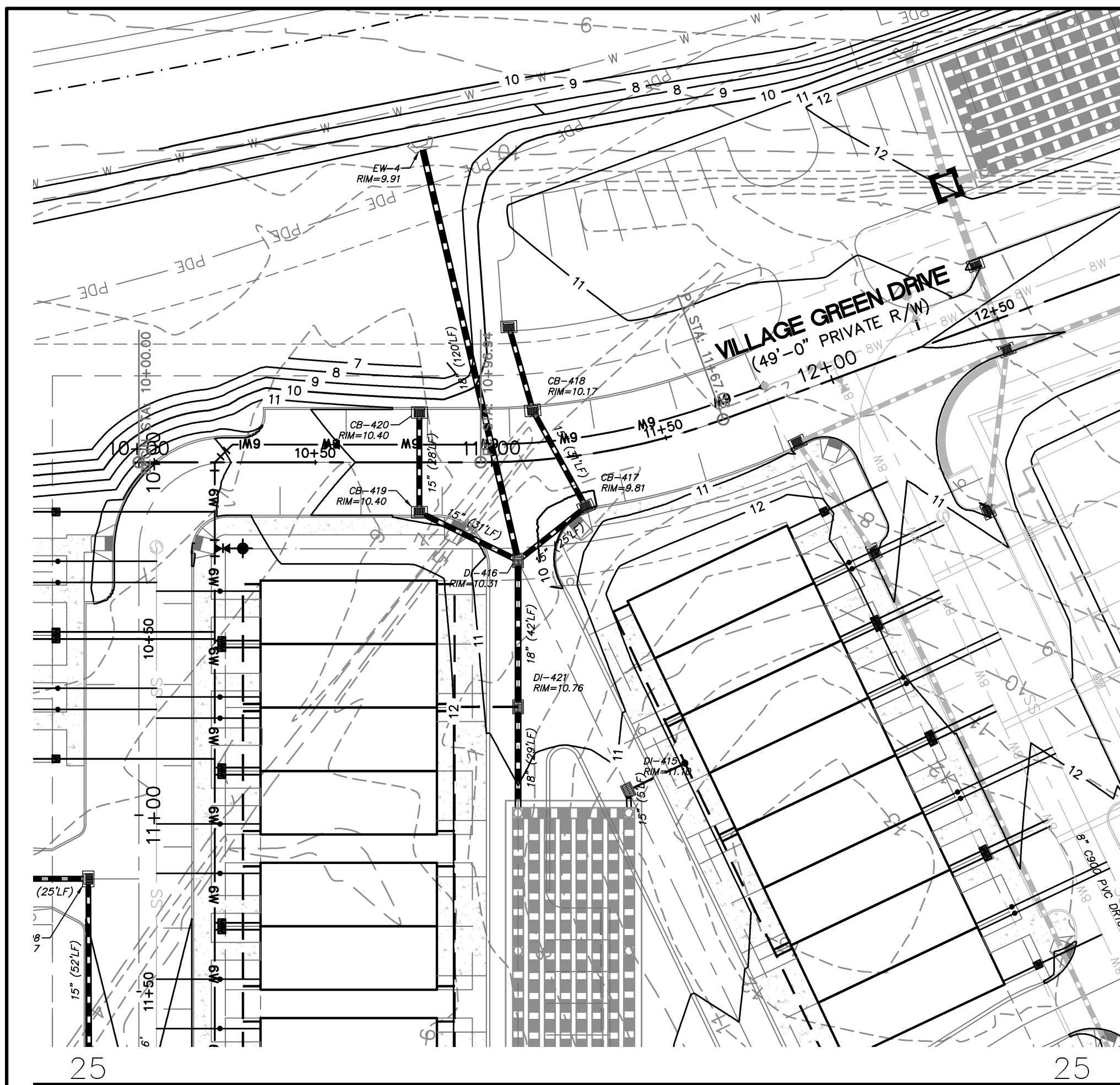


**RIVERLIGHTS MARINA VILLAGE PHASE 1B**

**PLAN AND PROFILE**

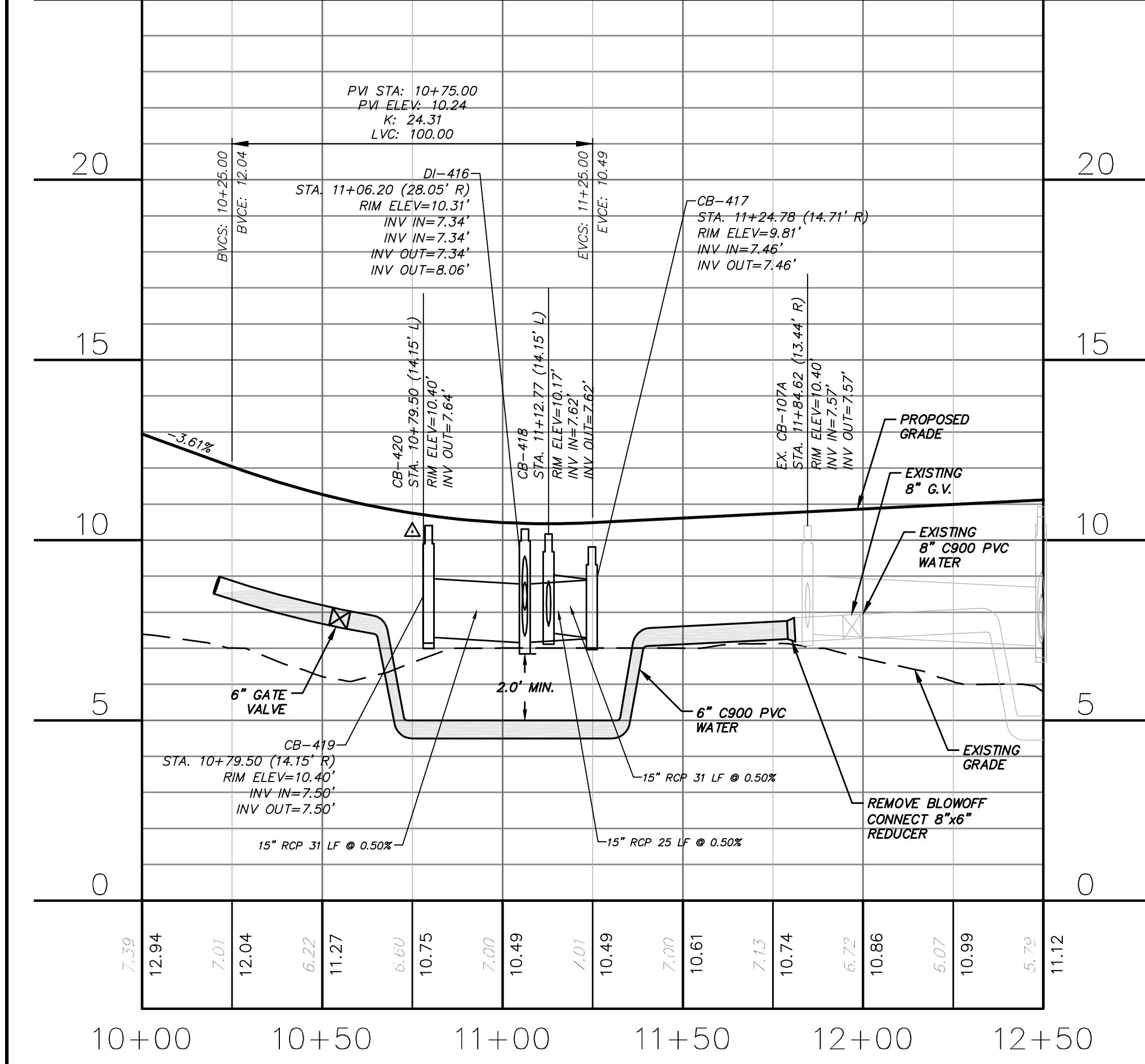
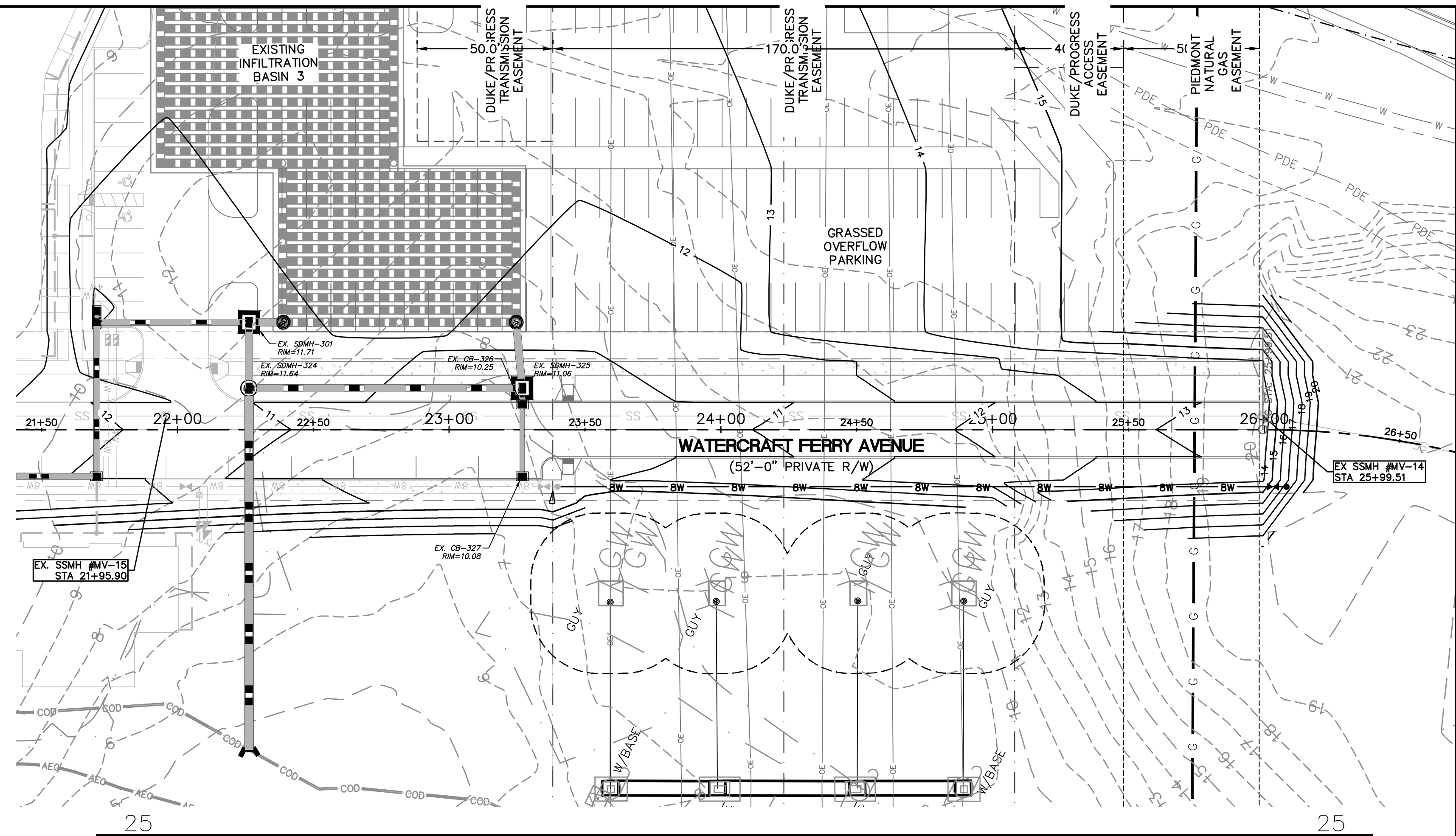
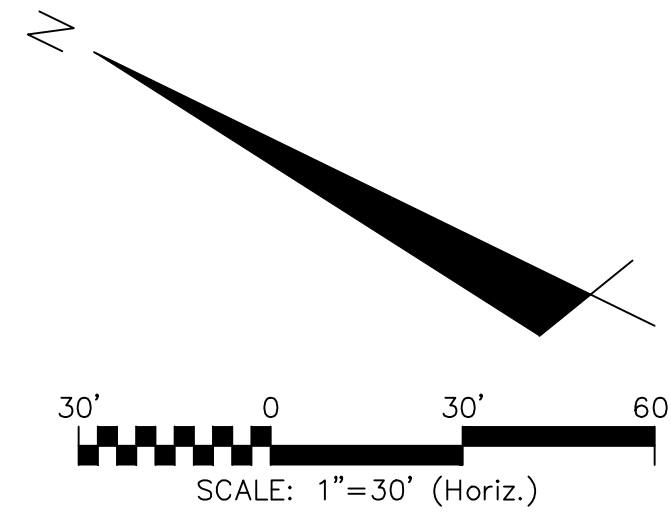
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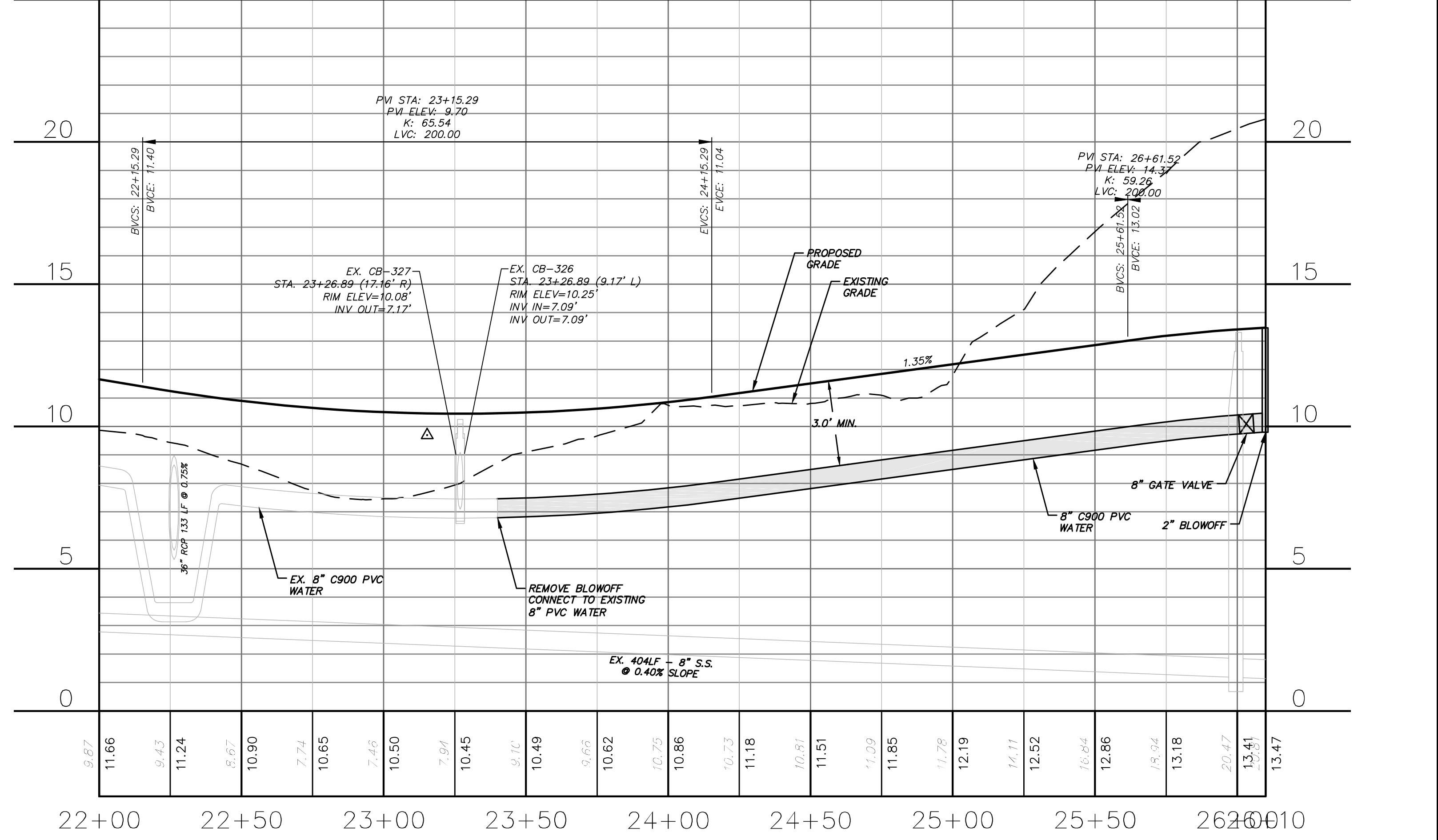


**CFPUA STANDARD SEWER NOTES:**

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5. ALL STAINLESS STEEL FASTENERS SHALL BE 316.

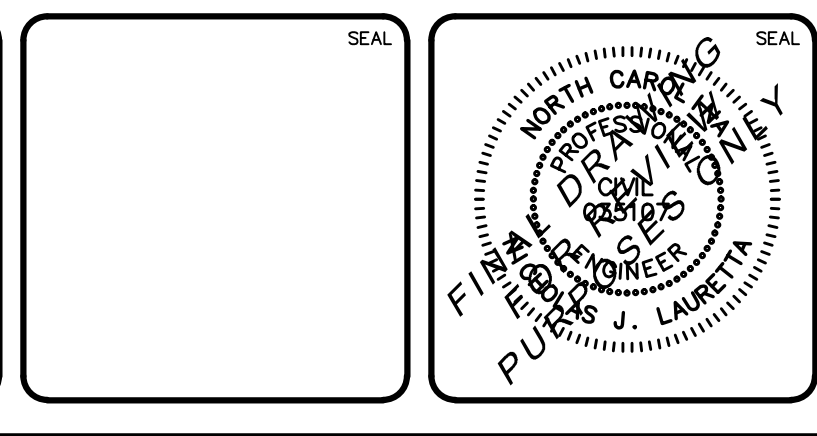


**VILLAGE GREEN DRIVE**  
SCALE: HOR. 1"=30', VERT. 1"=3'



**WATERCRAFT FERRY AVENUE**  
SCALE: HOR. 1"=30', VERT. 1"=3'

REV. NO.	DESCRIPTIONS / REVISIONS	DATE



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

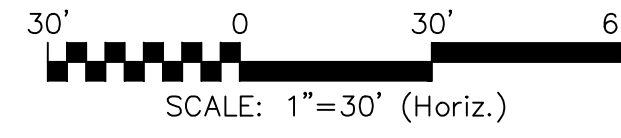
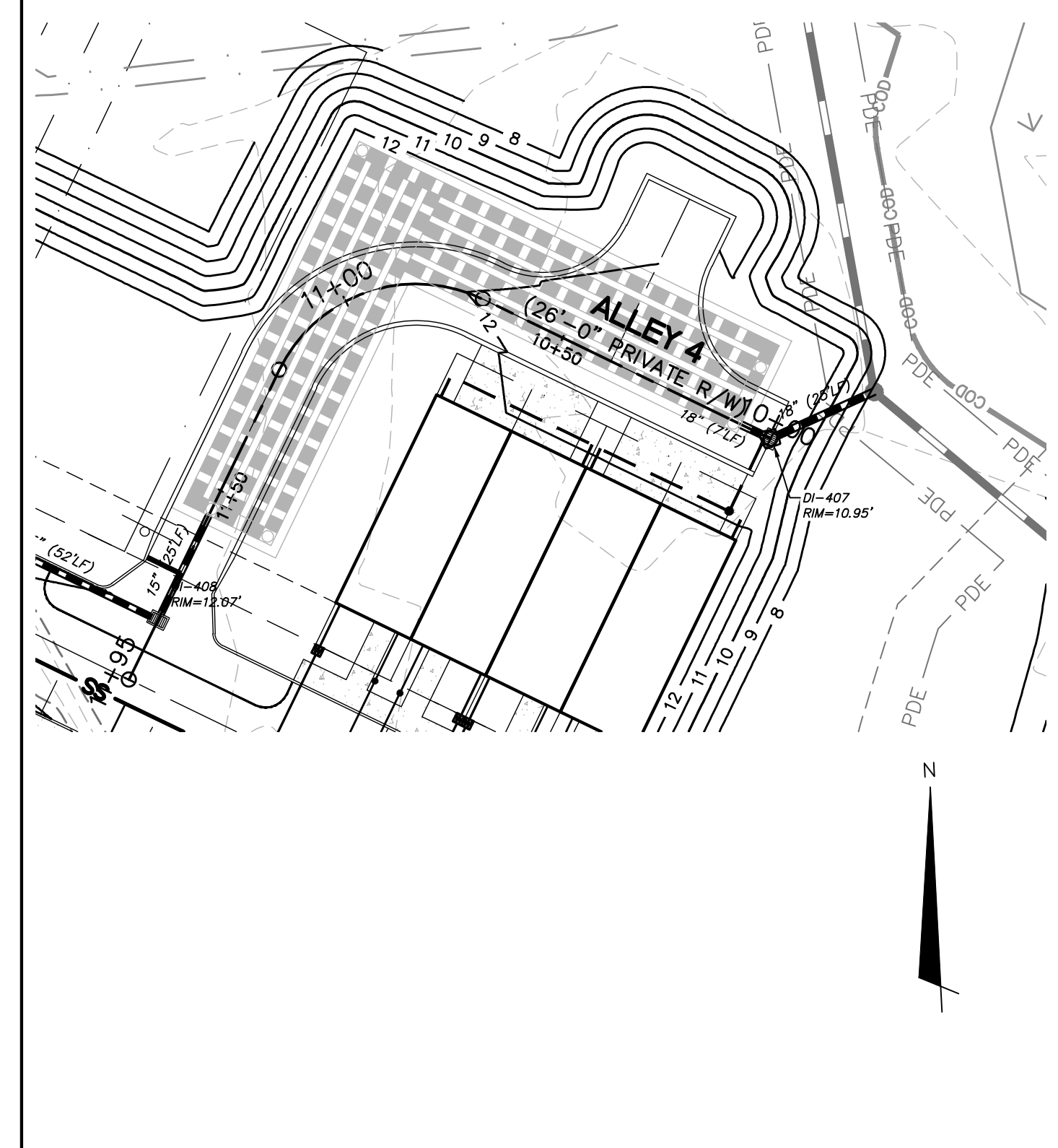
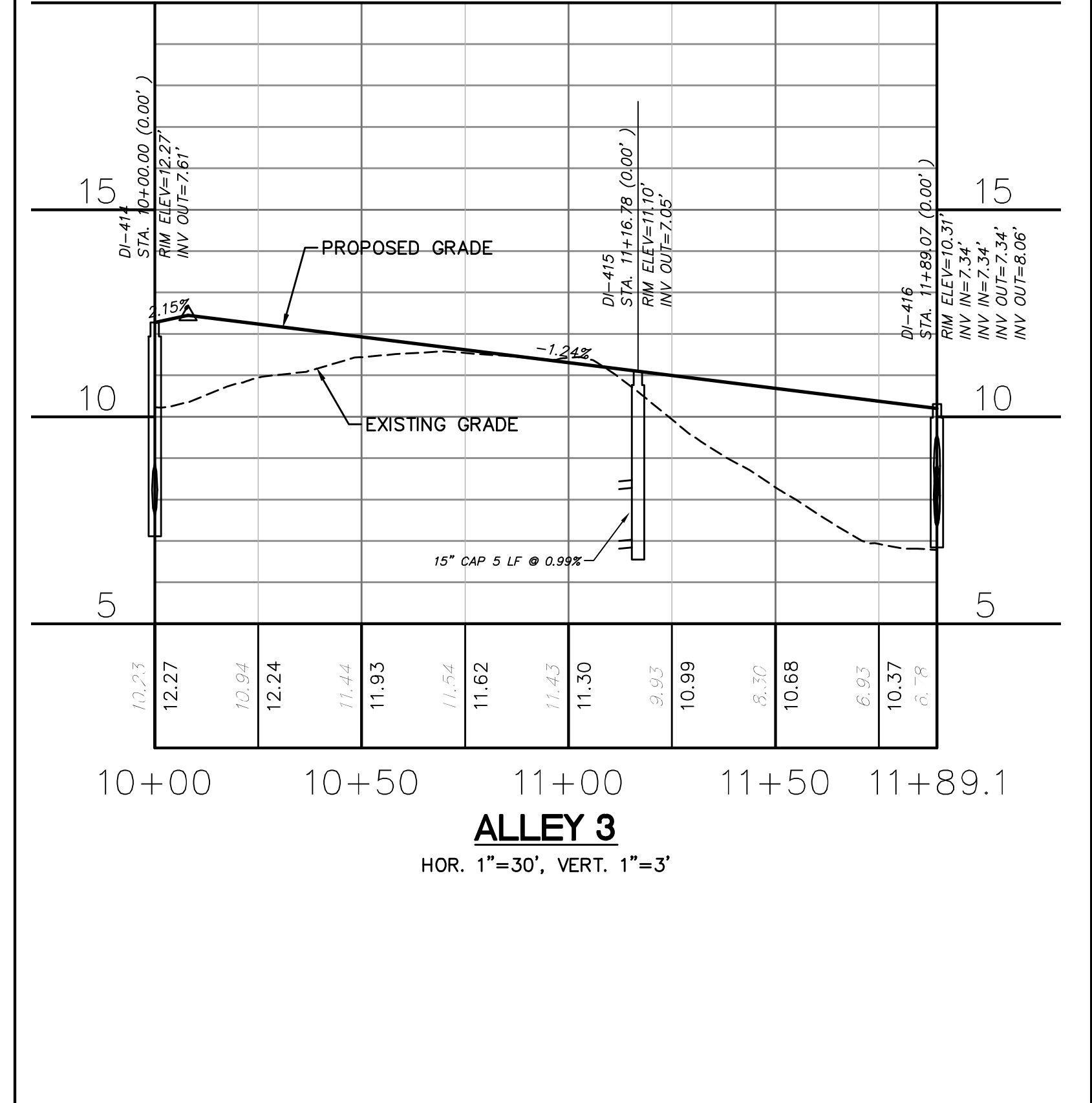
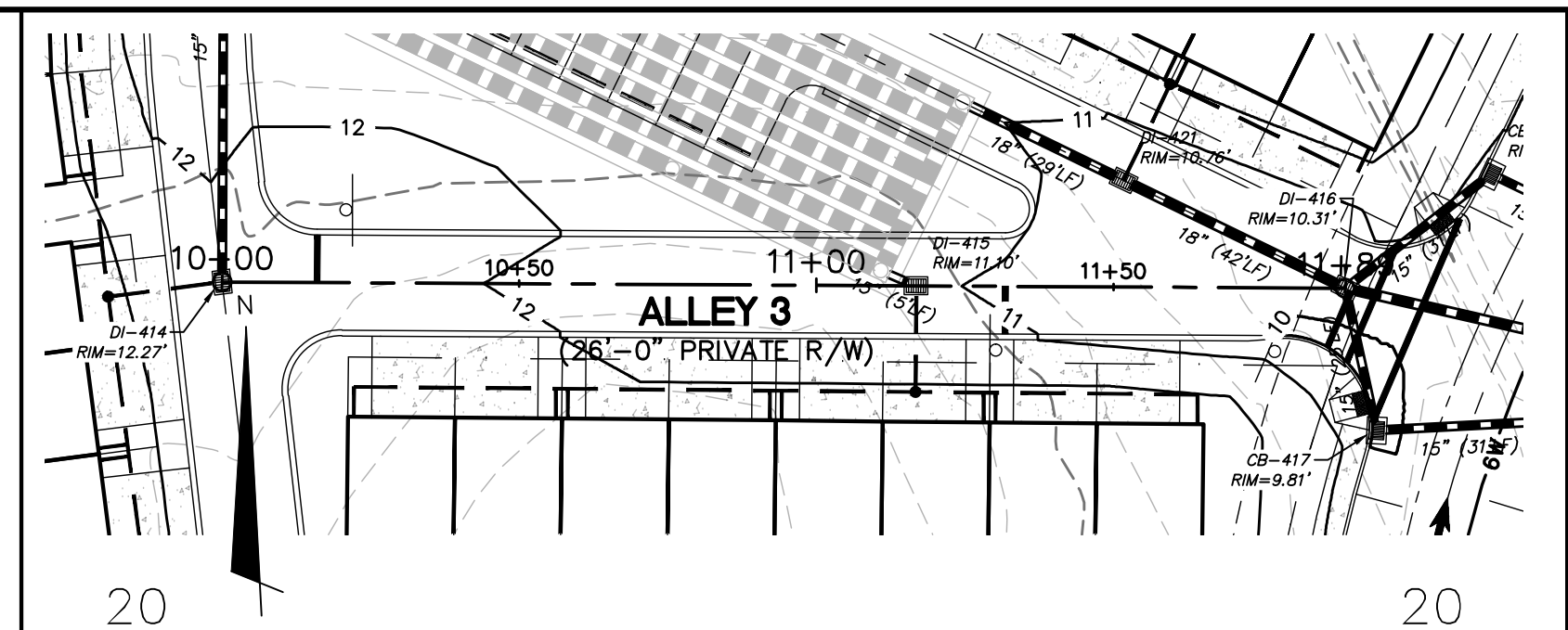
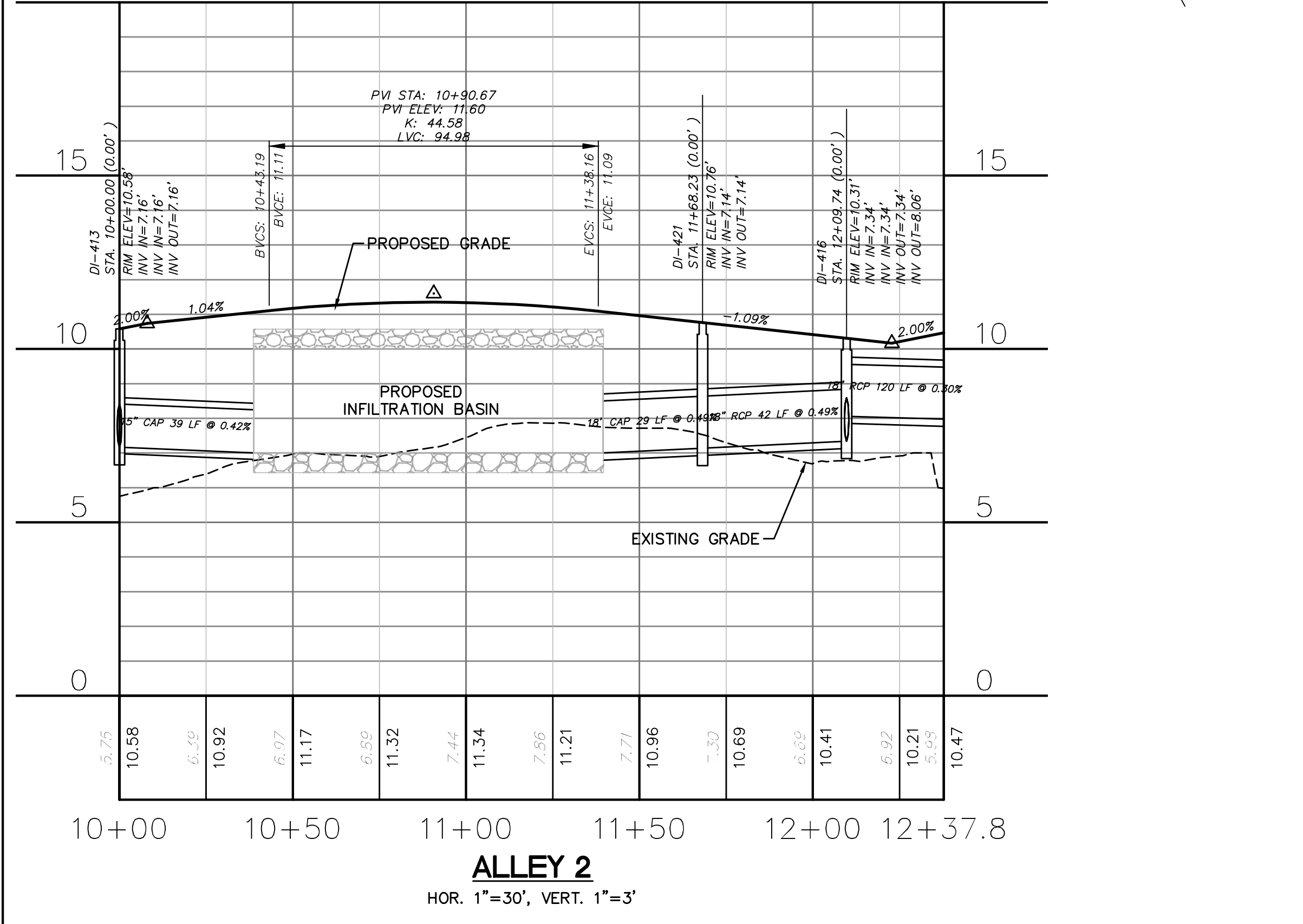
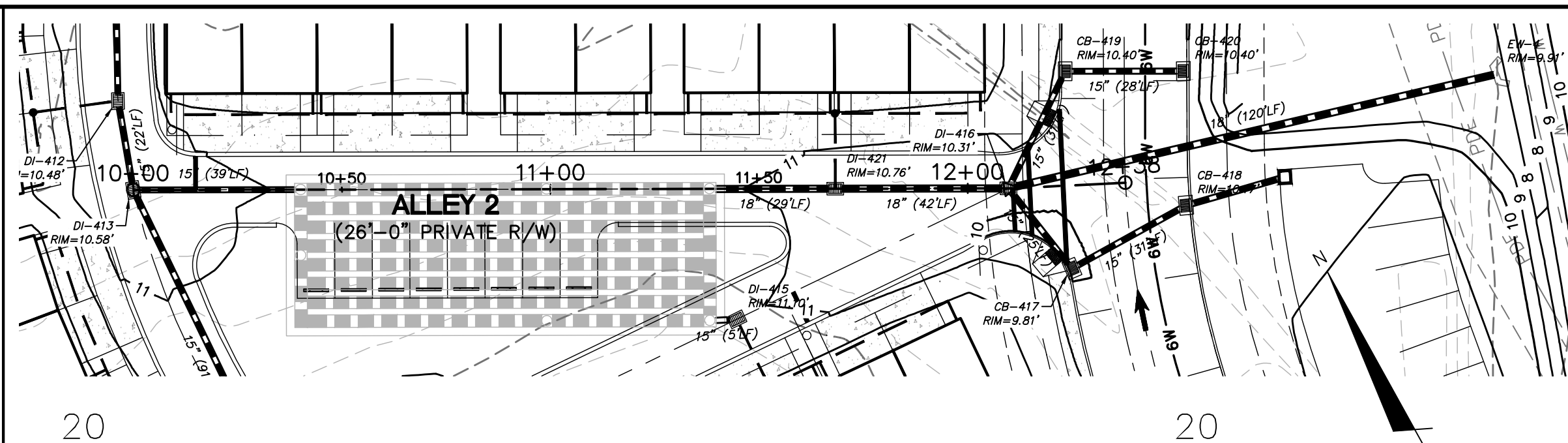
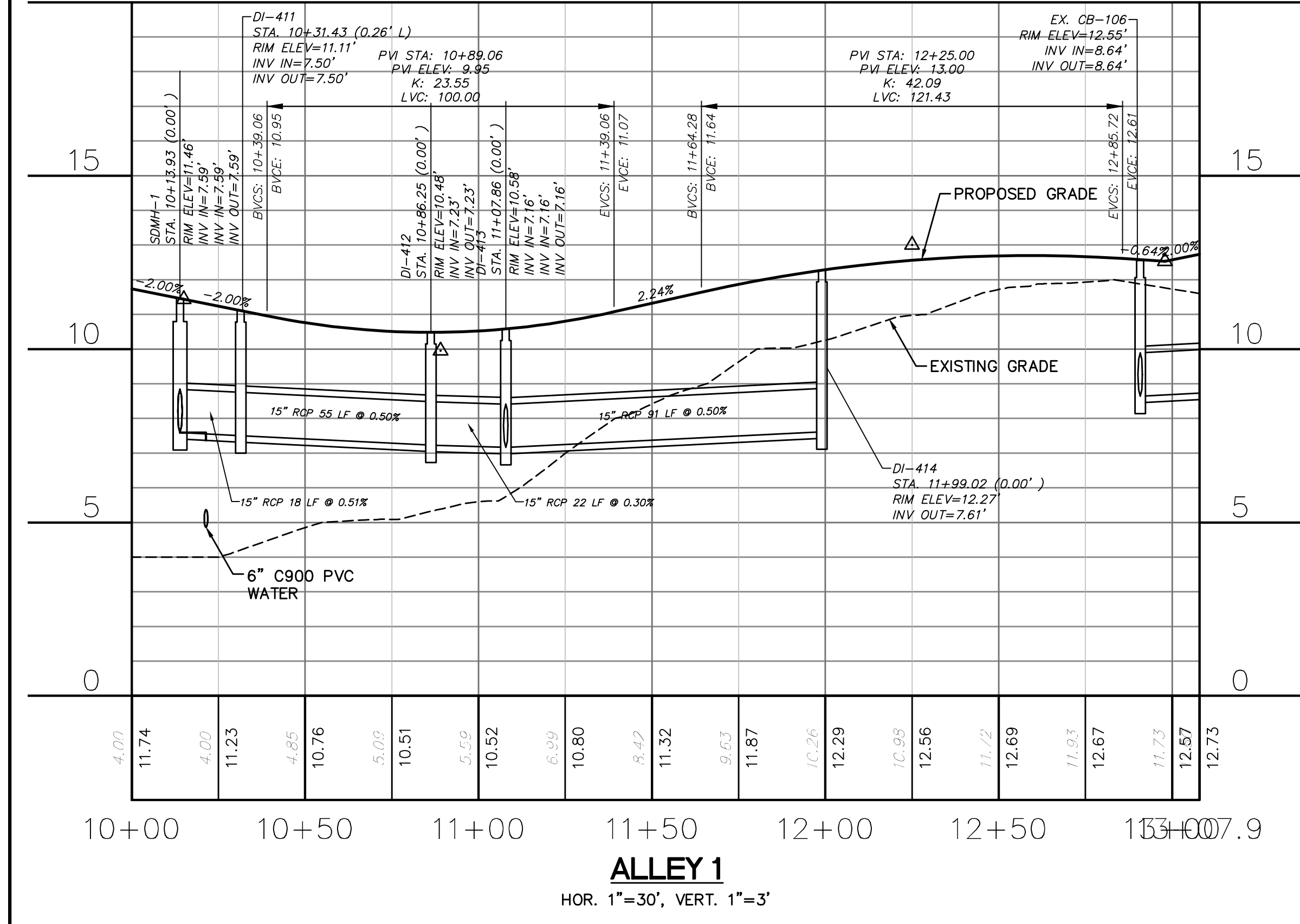
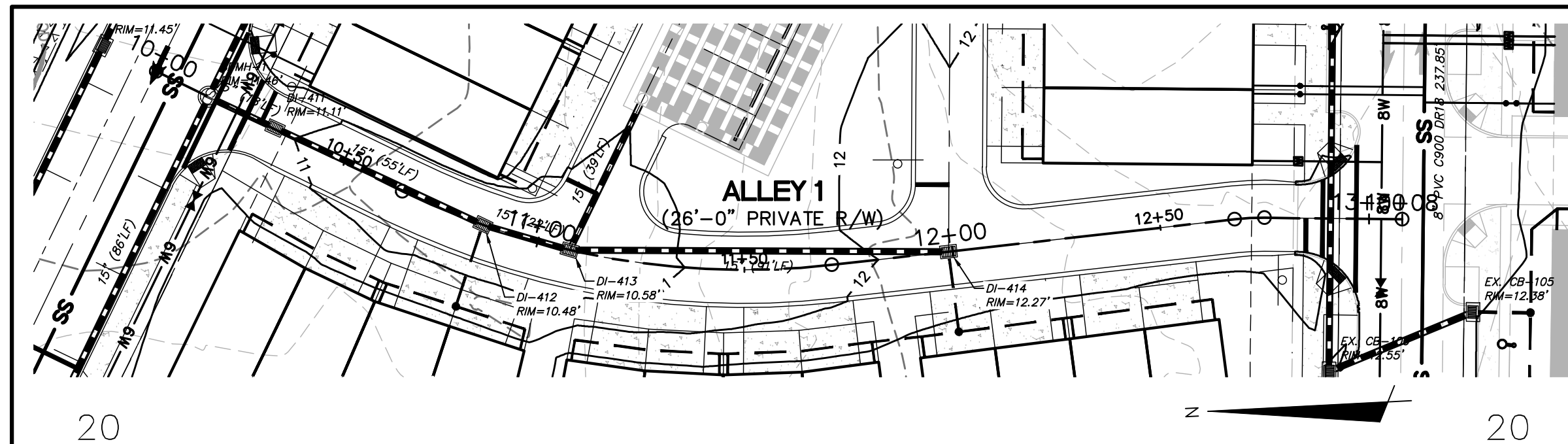
**RIVERLIGHTS**  
by Newland COMMUNITIES  
NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
PHASE 1B**  
**PLAN AND PROFILE**

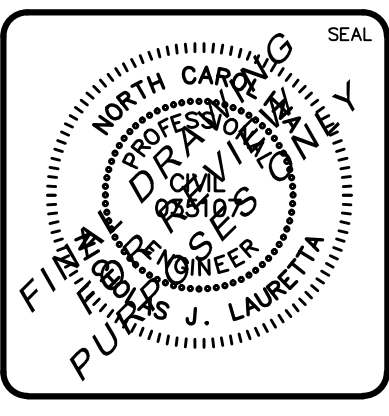
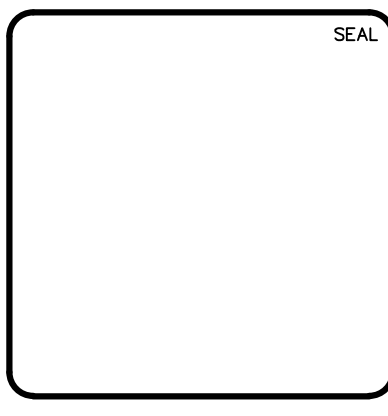
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MCE PROJ. # 2735-0124	HORIZONTAL: 1"=30'	DRAWING NUMBER: 16
DRAWN: ALM	VERTICAL: 1"=3'	
DESIGNED: NUL		
CHECKED: KCBE		
PROJ. MGR: NUL		
STATUS: FINAL DESIGN		REVISION: A
NOT FOR CONSTRUCTION		

S:\2735\0124 Marina Village\80-Drawings\Phase 1\BCU-702.dwg, 11/9/2015 12:03:28 PM, nlaurett





REV. NO.	DESCRIPTIONS / REVISIONS	DATE



**MCKIM & CREED**  
 243 North Front Street  
 Wilmington, North Carolina 28401  
 Phone: (910)343-1048, Fax: (910)251-8282  
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**RIVERLIGHTS**  
 by Newland COMMUNITIES  
 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B**  
**PLAN AND PROFILE**

DATE: 10NOV15  
 MCE PROJ. # 2735-0124  
 DRAWN: ALM  
 DESIGNED: NUL  
 CHECKED: KCBE  
 PROJ. MGR.: NUL

SCALE: HORIZONTAL: 1"=30', VERTICAL: 1"=3'

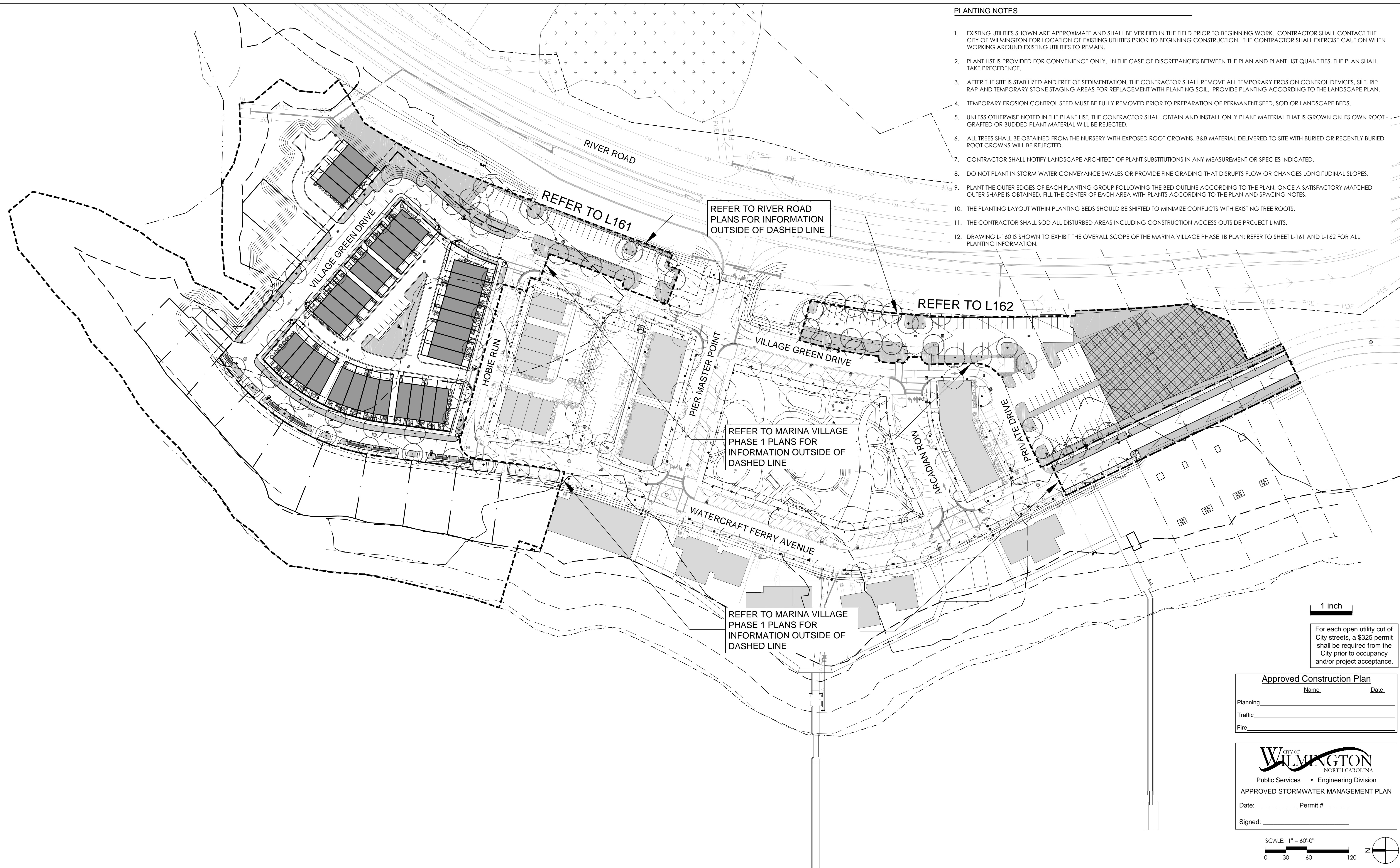
STATUS: **FINAL DESIGN**  
 NOT FOR CONSTRUCTION

MCE FILE NUMBER: **CU-703**  
 DRAWING NUMBER: **17**  
 REVISION: **A**

S:\2735\0124 Marina Village\60-Drawings\Phase 1B\CU-703.dwg, 11/19/2015 12:10:38 PM, nlaureta

**PLANTING NOTES**

- EXISTING UTILITIES SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO BEGINNING WORK. CONTRACTOR SHALL CONTACT THE CITY OF WILMINGTON FOR LOCATION OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING AROUND EXISTING UTILITIES TO REMAIN.
- PLANT LIST IS PROVIDED FOR CONVENIENCE ONLY. IN THE CASE OF DISCREPANCIES BETWEEN THE PLAN AND PLANT LIST QUANTITIES, THE PLAN SHALL TAKE PRECEDENCE.
- AFTER THE SITE IS STABILIZED AND FREE OF SEDIMENTATION, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES, SILT, RIP RAP AND TEMPORARY STONE STAGING AREAS FOR REPLACEMENT WITH PLANTING SOIL. PROVIDE PLANTING ACCORDING TO THE LANDSCAPE PLAN.
- TEMPORARY EROSION CONTROL SEED MUST BE FULLY REMOVED PRIOR TO PREPARATION OF PERMANENT SEED, SOD OR LANDSCAPE BEDS.
- UNLESS OTHERWISE NOTED IN THE PLANT LIST, THE CONTRACTOR SHALL OBTAIN AND INSTALL ONLY PLANT MATERIAL THAT IS GROWN ON ITS OWN ROOT - GRAFTED OR BUDDED PLANT MATERIAL WILL BE REJECTED.
- ALL TREES SHALL BE OBTAINED FROM THE NURSERY WITH EXPOSED ROOT CROWNS. B&B MATERIAL DELIVERED TO SITE WITH BURIED OR RECENTLY BURIED ROOT CROWNS WILL BE REJECTED.
- CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF PLANT SUBSTITUTIONS IN ANY MEASUREMENT OR SPECIES INDICATED.
- DO NOT PLANT IN STORM WATER CONVEYANCE SWALES OR PROVIDE FINE GRADING THAT DISRUPTS FLOW OR CHANGES LONGITUDINAL SLOPES.
- PLANT THE OUTER EDGES OF EACH PLANTING GROUP FOLLOWING THE BED OUTLINE ACCORDING TO THE PLAN. ONCE A SATISFACTORY MATCHED OUTER SHAPE IS OBTAINED, FILL THE CENTER OF EACH AREA WITH PLANTS ACCORDING TO THE PLAN AND SPACING NOTES.
- THE PLANTING LAYOUT WITHIN PLANTING BEDS SHOULD BE SHIFTED TO MINIMIZE CONFLICTS WITH EXISTING TREE ROOTS.
- THE CONTRACTOR SHALL SOD ALL DISTURBED AREAS INCLUDING CONSTRUCTION ACCESS OUTSIDE PROJECT LIMITS.
- DRAWING L-160 IS SHOWN TO EXHIBIT THE OVERALL SCOPE OF THE MARINA VILLAGE PHASE 1B PLAN; REFER TO SHEET L-161 AND L-162 FOR ALL PLANTING INFORMATION.



REFER TO RIVER ROAD PLANS FOR INFORMATION OUTSIDE OF DASHED LINE

REFER TO MARINA VILLAGE PHASE 1 PLANS FOR INFORMATION OUTSIDE OF DASHED LINE

REFER TO MARINA VILLAGE PHASE 1 PLANS FOR INFORMATION OUTSIDE OF DASHED LINE

1 inch

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

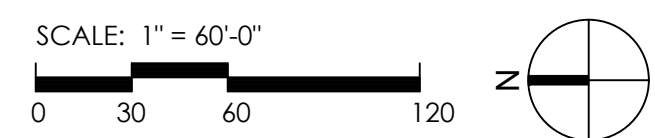
Approved Construction Plan	
Name	Date
Planning	
Traffic	
Fire	

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

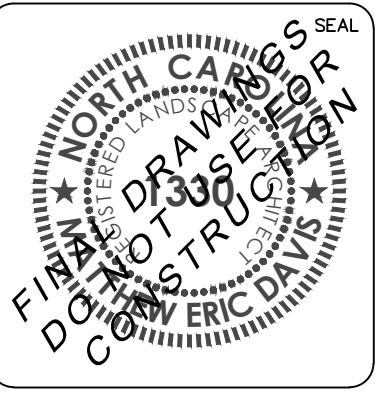
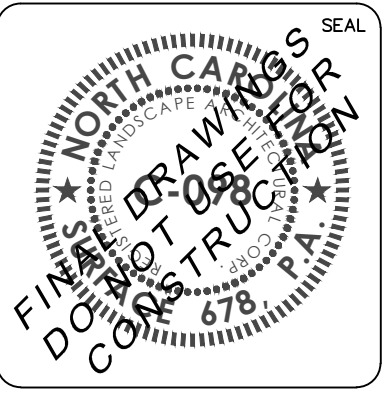
APPROVED STORMWATER MANAGEMENT PLAN

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

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



REV. NO.	DATE	DESCRIPTIONS / REVISIONS



**MCKIM & CREED**

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**Surface**

**RIVERLIGHTS**  
by Newland COMMUNITIES

Surface 678, P.A.  
215 Marina Street, Suite 100  
Durham, NC 27701  
www.surface678.com  
p: 919-418-1199  
f: 919-418-1689

**OVERALL PLANTING PLAN  
SHEET REFERENCE**

**MARINA VILLAGE PHASE 1B**

DATE: 11/03/2015	SCALE	MAC FILE NUMBER
MCE PROJ. #		
DRAWN: JL		DRAWING NUMBER
DESIGNED: ED		<b>L160</b>
CHECKED: JC, ED		
PROJ. MGR: JC		
STATUS: FINAL DESIGN		REVISION



**PARKING LOT 1 SHADE REQUIREMENT DATA TABLE:**

TOTAL PARKING SF: 12,172
REQUIRED: 25% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH
PROVIDED: 25% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH
CALCULATION: 25% OF 12,172 SF = 3,043 SF

**LEGEND**

	PARKING LOT SHADE REQUIREMENT
	ORNAMENTAL GRASSES
	SOD
<b>TREES</b>	
	QUERCUS VIRGINIANA
<b>SHRUBS</b>	
	SERENOA REPENS
	CHAMAECYPARIS OBTUSA 'NANA' GRACILLIS
	ILEX VOMITORIA OBTUSA 'NANA'
	ROSA 'RADRAZZ'
	OSMANTHUS FORTUNEI
<b>SIGHT LIGHTING</b>	
	LIGHT POLE: TYP. REFER TO DETAIL C3 / L501

1 inch

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**

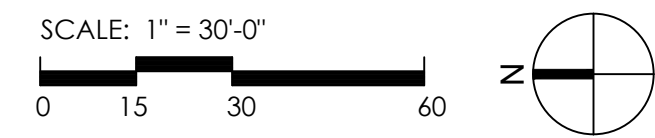
Name	Date
Planning	
Traffic	
Fire	

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

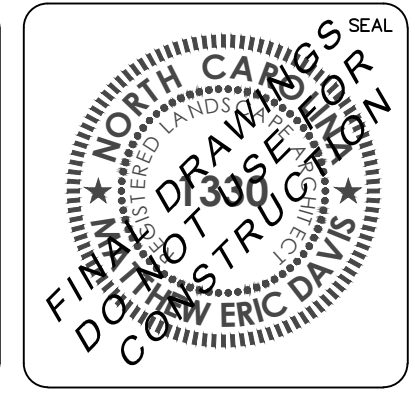
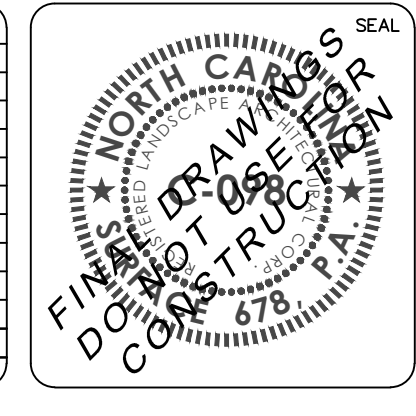
**APPROVED STORMWATER MANAGEMENT PLAN**

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

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



REV. NO.	DATE	DESCRIPTIONS / REVISIONS



**PLANTING PLAN NORTH**

**MARINA VILLAGE PHASE 1B**

DATE: 11/03/2015	SCALE	MAC FILE NUMBER
MCE PROJ. #		
DRAWN: JL		DRAWING NUMBER
DESIGNED: ED		<b>L161</b>
CHECKED: JC, ED		
PROJ. MGR.: JC		
STATUS: FINAL DESIGN		REVISION

PLANTING SCHEDULE: MARINA VILLAGE PHASE 1B

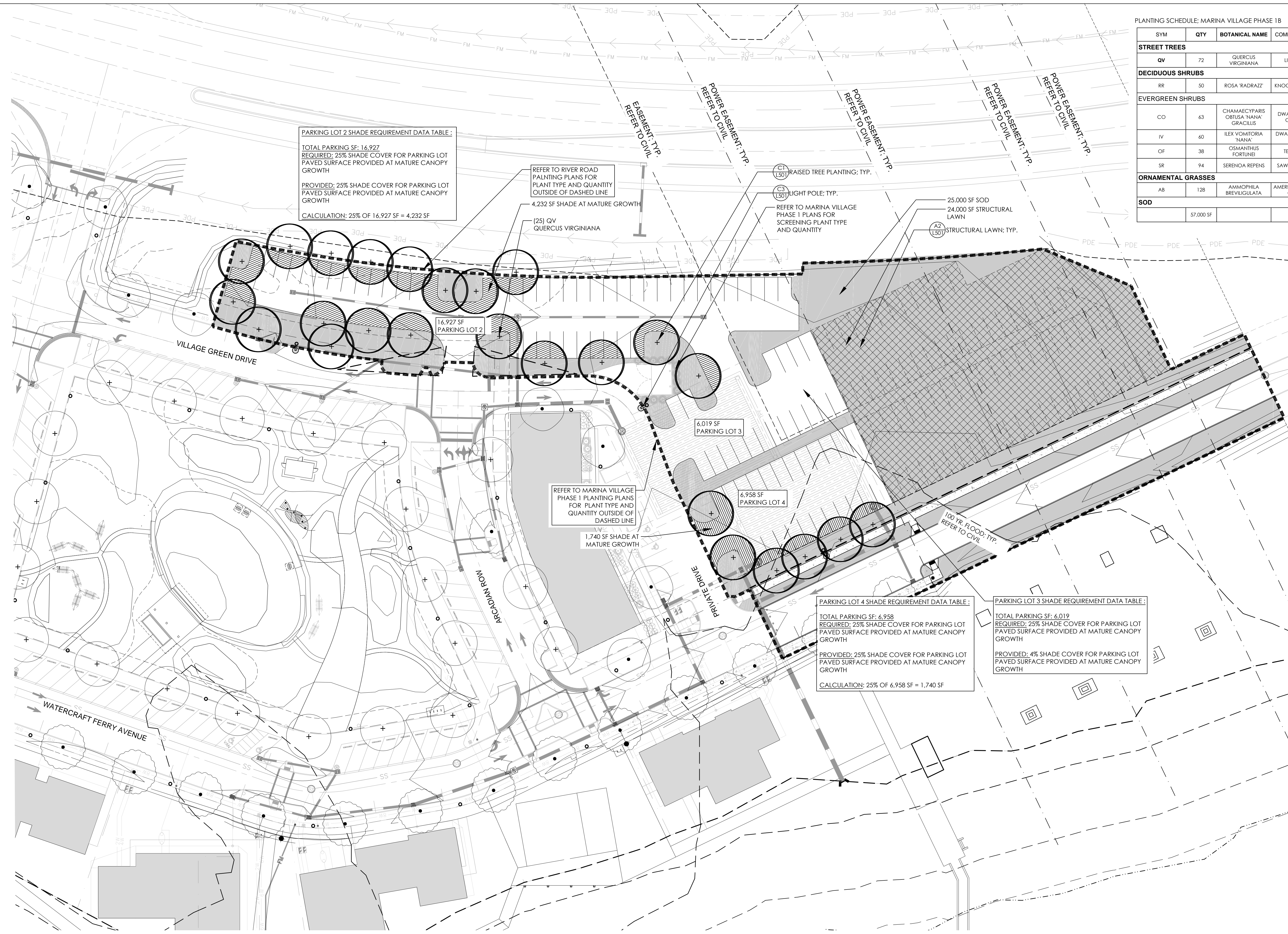
SYM	QTY	BOTANICAL NAME	COMMON NAME	CAL/RT	MIN. HT.	MIN. SPR.	REMARKS
<b>STREET TREES</b>							
QV	72	QUERCUS VIRGINIANA	LIVE OAK	2-2 1/2"	-	-	---
<b>DECIDUOUS SHRUBS</b>							
RR	50	ROSA 'RADRAZ'	KNOCKOUT ROSE	CONT	12'	12'	FULL DENSE
<b>EVERGREEN SHRUBS</b>							
CO	63	CHAMAECYPARIS OBTUSA 'NANA' GRACILLIS	DWARF HINOKI CYPRESS	CONT	12'	12'	FULL DENSE
IV	60	ILEX VOMITORIA 'NANA'	DWARF YAUPON HOLLY	CONT	12'	12'	FULL DENSE
OF	38	OSMANTHUS FORTUNEI	TEA OLIVE	CONT	12'	12'	FULL DENSE
SR	94	SERENOA REPENS	SAW PALMETTO	CONT	12'	12'	FULL DENSE
<b>ORNAMENTAL GRASSES</b>							
AB	128	AMMOPHILA BREVILIGULATA	AMERICAN BEACH GRASS	-	-	-	---
<b>SOD</b>							
	57,000 SF						419 TFWAY BERMUDA SAND BASED SOD

**PARKING LOT 2 SHADE REQUIREMENT DATA TABLE:**  
 TOTAL PARKING SF: 16,927  
 REQUIRED: 25% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH  
 PROVIDED: 25% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH  
 CALCULATION: 25% OF 16,927 SF = 4,232 SF

REFER TO RIVER ROAD PLANTING PLANS FOR PLANT TYPE AND QUANTITY OUTSIDE OF DASHED LINE  
 4,232 SF SHADE AT MATURE GROWTH  
 (25) QV QUERCUS VIRGINIANA

RAISED TREE PLANTING; TYP. (C1 L50)  
 LIGHT POLE; TYP. (C3 L50)  
 REFER TO MARINA VILLAGE PHASE 1 PLANS FOR SCREENING PLANT TYPE AND QUANTITY

25,000 SF SOD  
 24,000 SF STRUCTURAL LAWN  
 STRUCTURAL LAWN; TYP. (A2 L50)



REFER TO MARINA VILLAGE PHASE 1 PLANTING PLANS FOR PLANT TYPE AND QUANTITY OUTSIDE OF DASHED LINE  
 1,740 SF SHADE AT MATURE GROWTH

**PARKING LOT 4 SHADE REQUIREMENT DATA TABLE:**  
 TOTAL PARKING SF: 6,958  
 REQUIRED: 25% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH  
 PROVIDED: 25% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH  
 CALCULATION: 25% OF 6,958 SF = 1,740 SF

**PARKING LOT 3 SHADE REQUIREMENT DATA TABLE:**  
 TOTAL PARKING SF: 6,019  
 REQUIRED: 25% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH  
 PROVIDED: 4% SHADE COVER FOR PARKING LOT PAVED SURFACE PROVIDED AT MATURE CANOPY GROWTH

**LEGEND**

[Hatched Box]	PARKING LOT SHADE REQUIREMENT
[Cross-hatched Box]	ORNAMENTAL GRASSES
[Solid Grey Box]	SOD
<b>TREES</b>	
[Circle with +]	QUERCUS VIRGINIANA
<b>SHRUBS</b>	
[Circle with @]	SERENOA REPENS
[Circle with ⊗]	CHAMAECYPARIS OBTUSA 'NANA' GRACILLIS
[Circle with ⊕]	ILEX VOMITORIA OBTUSA 'NANA'
[Circle with ⊙]	ROSA 'RADRAZ'
[Circle with ⊗]	OSMANTHUS FORTUNEI
<b>SIGHT LIGHTING</b>	
[Circle with dot]	LIGHT POLE; TYP. REFER TO DETAIL C3 / L501

1 inch

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: \_\_\_\_\_

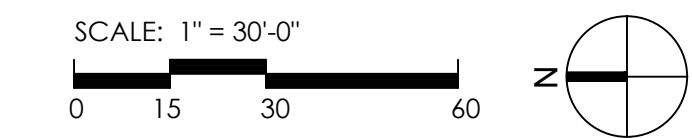
Fire: \_\_\_\_\_

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

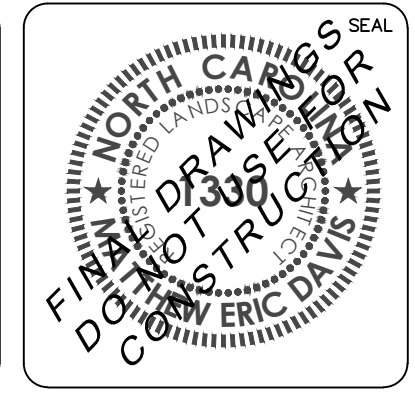
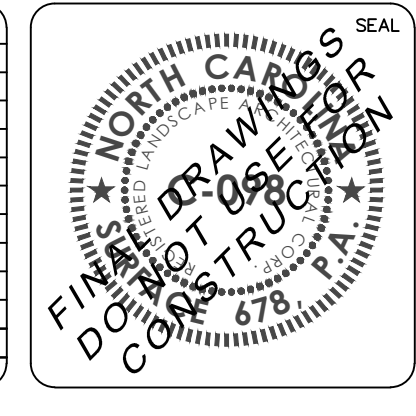
**APPROVED STORMWATER MANAGEMENT PLAN**

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

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



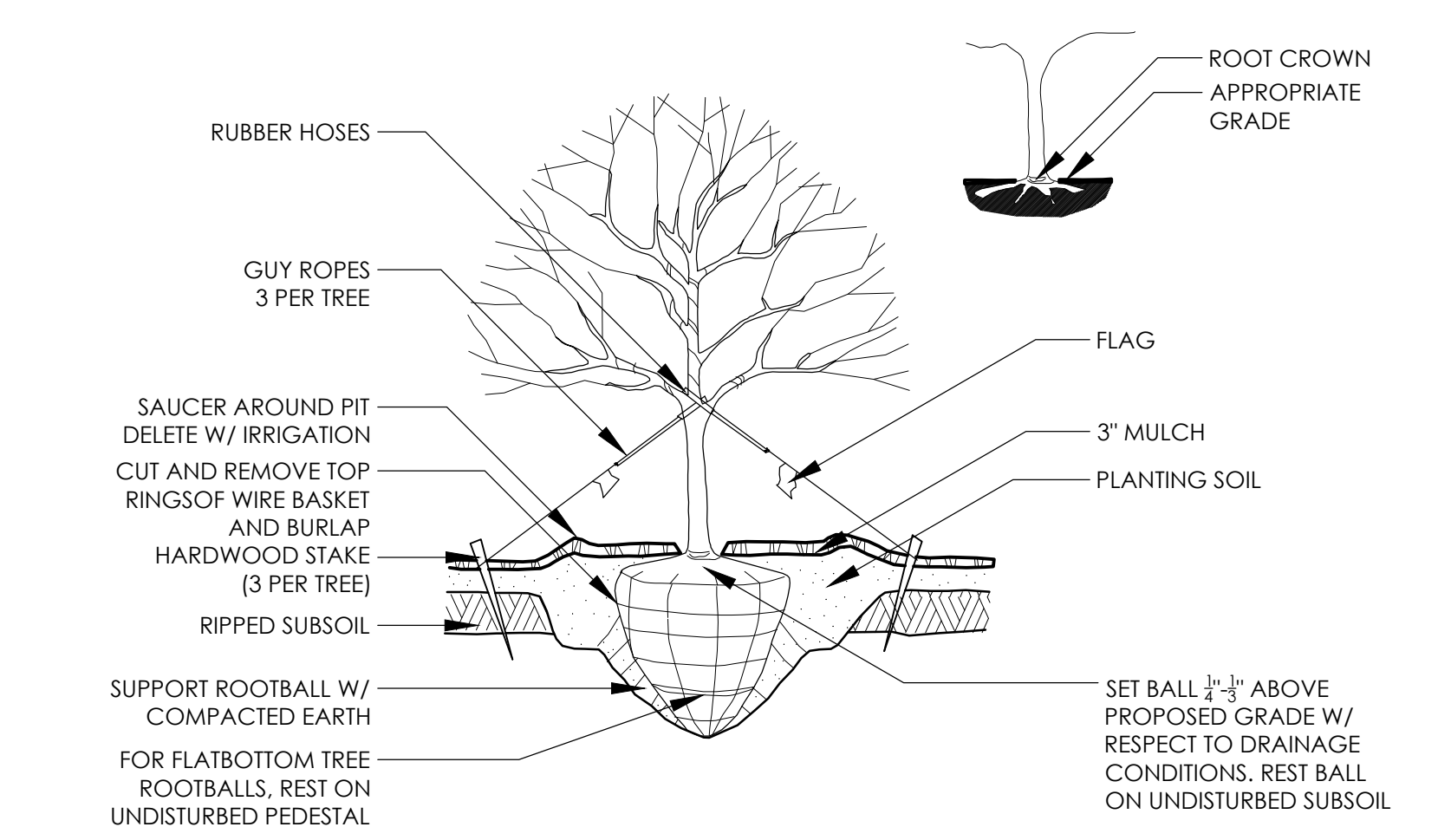
REV. NO.	DATE	DESCRIPTIONS / REVISIONS



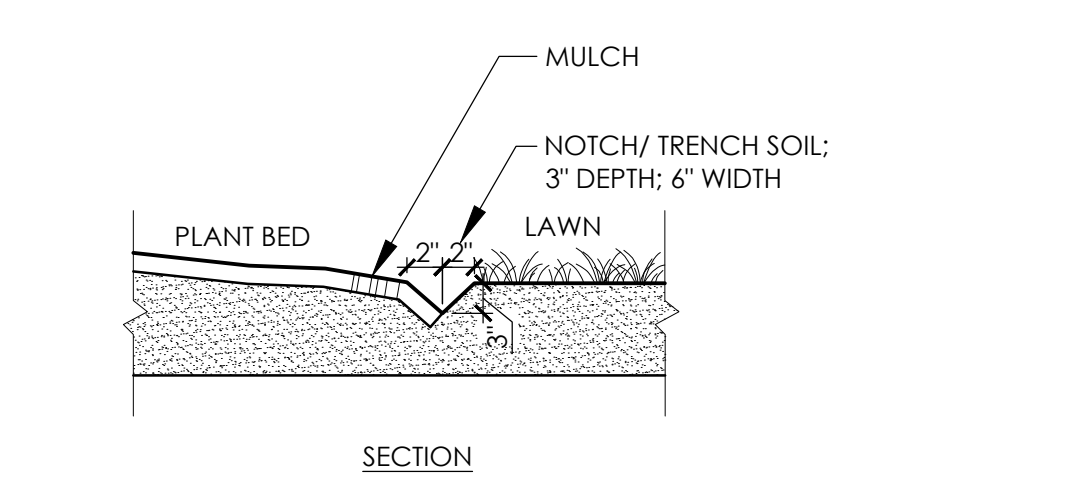
**PLANTING PLAN SOUTH**

**MARINA VILLAGE PHASE 1B**

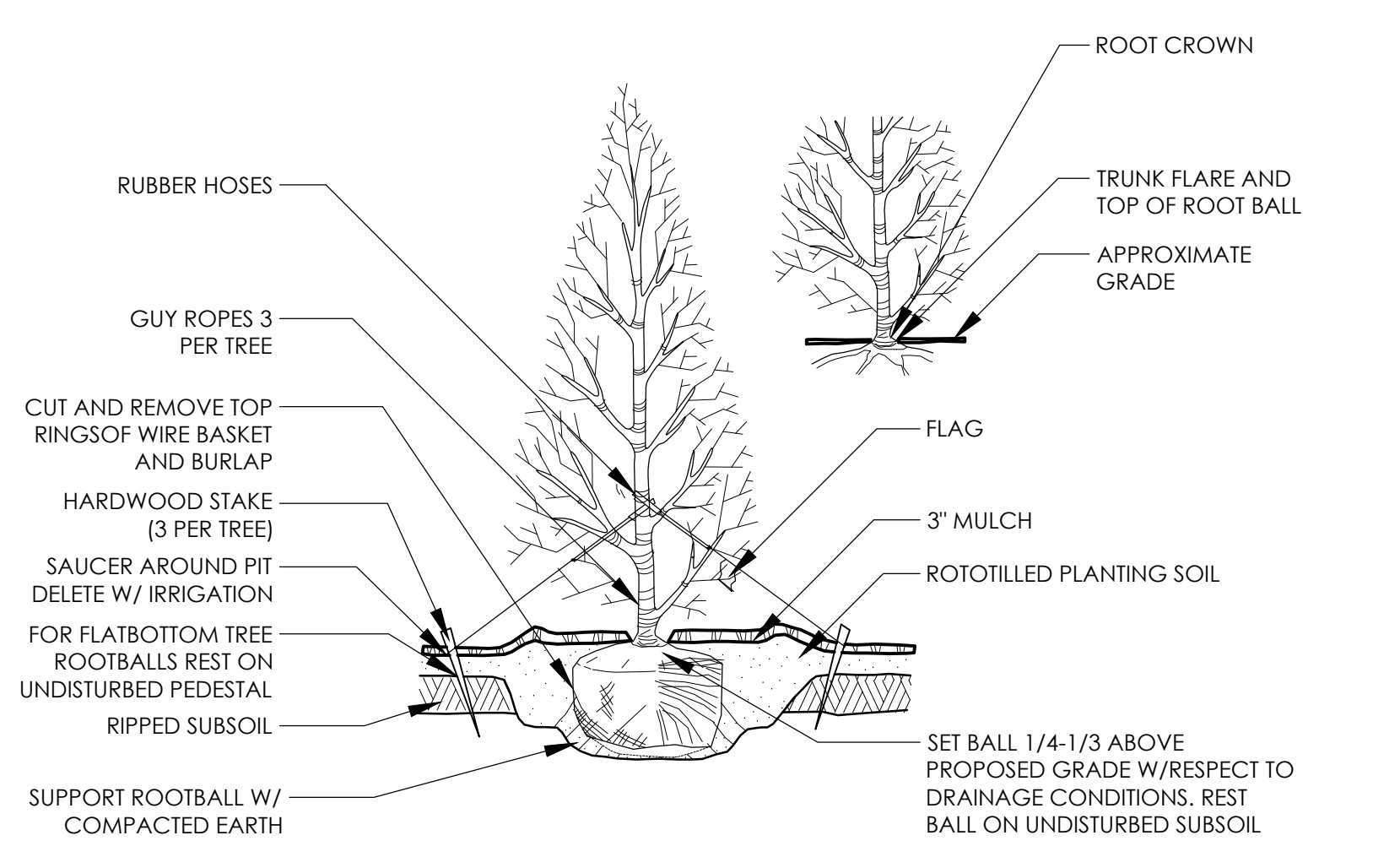
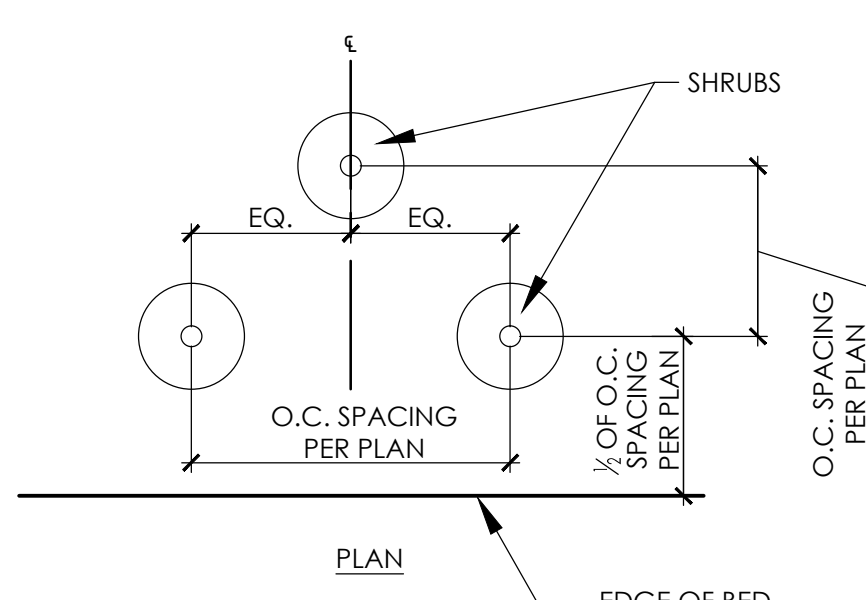
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DRAWN: JL		
DESIGNED: ED		
CHECKED: JC, ED		
PROJ. MGR.: JC		
STATUS: FINAL DESIGN		REVISION: _____



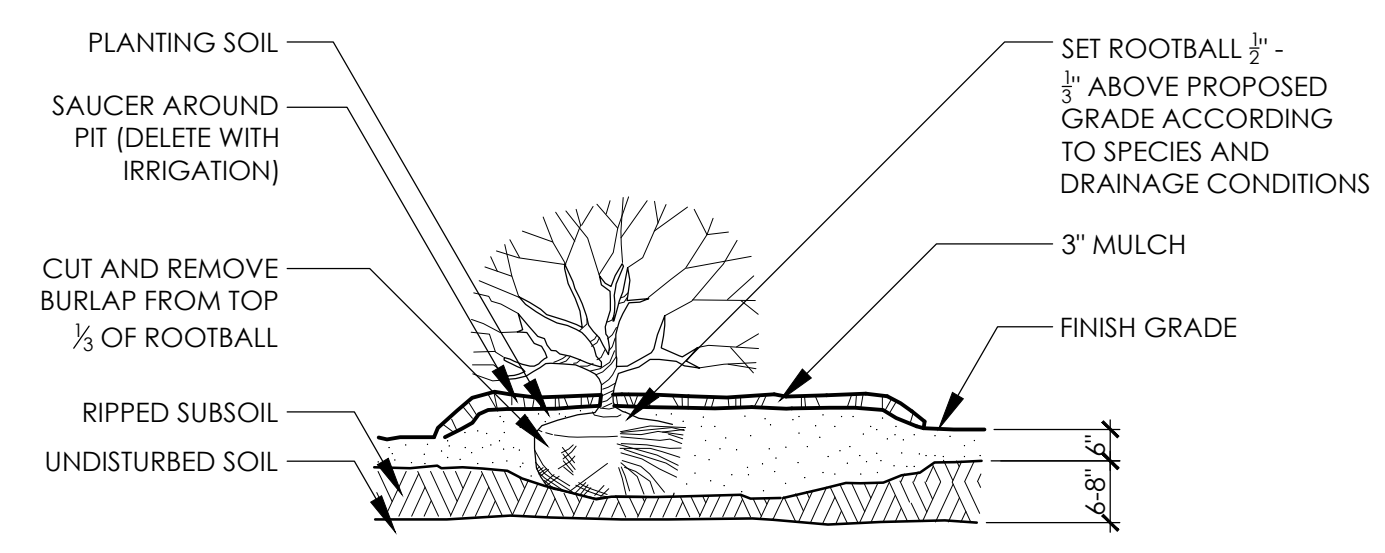
C1 RAISED TREE PLANTING SCALE: NTS



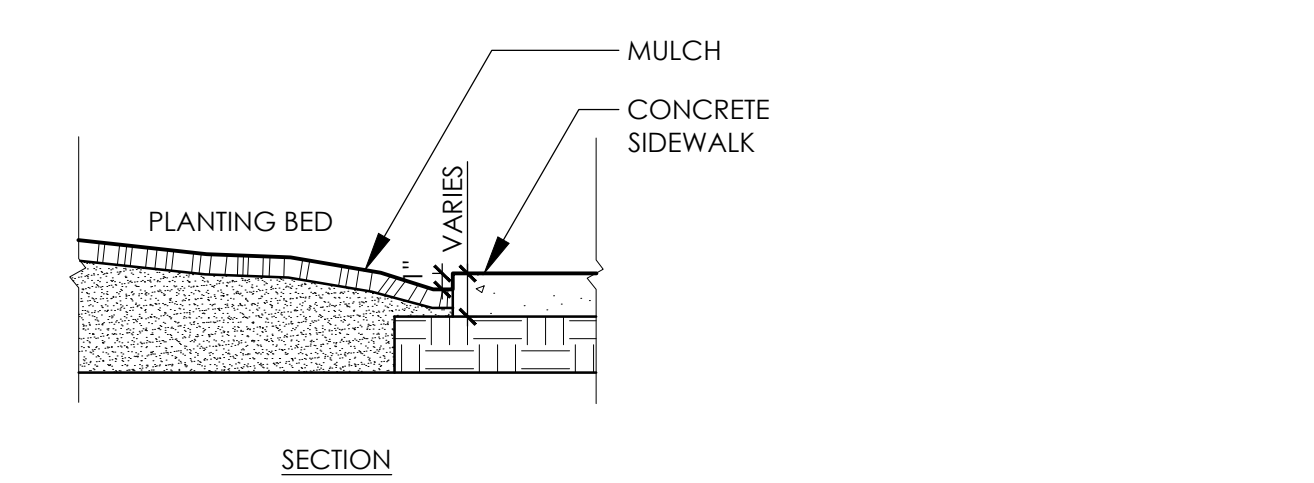
D1 LAWN/PLANT BED EDGE



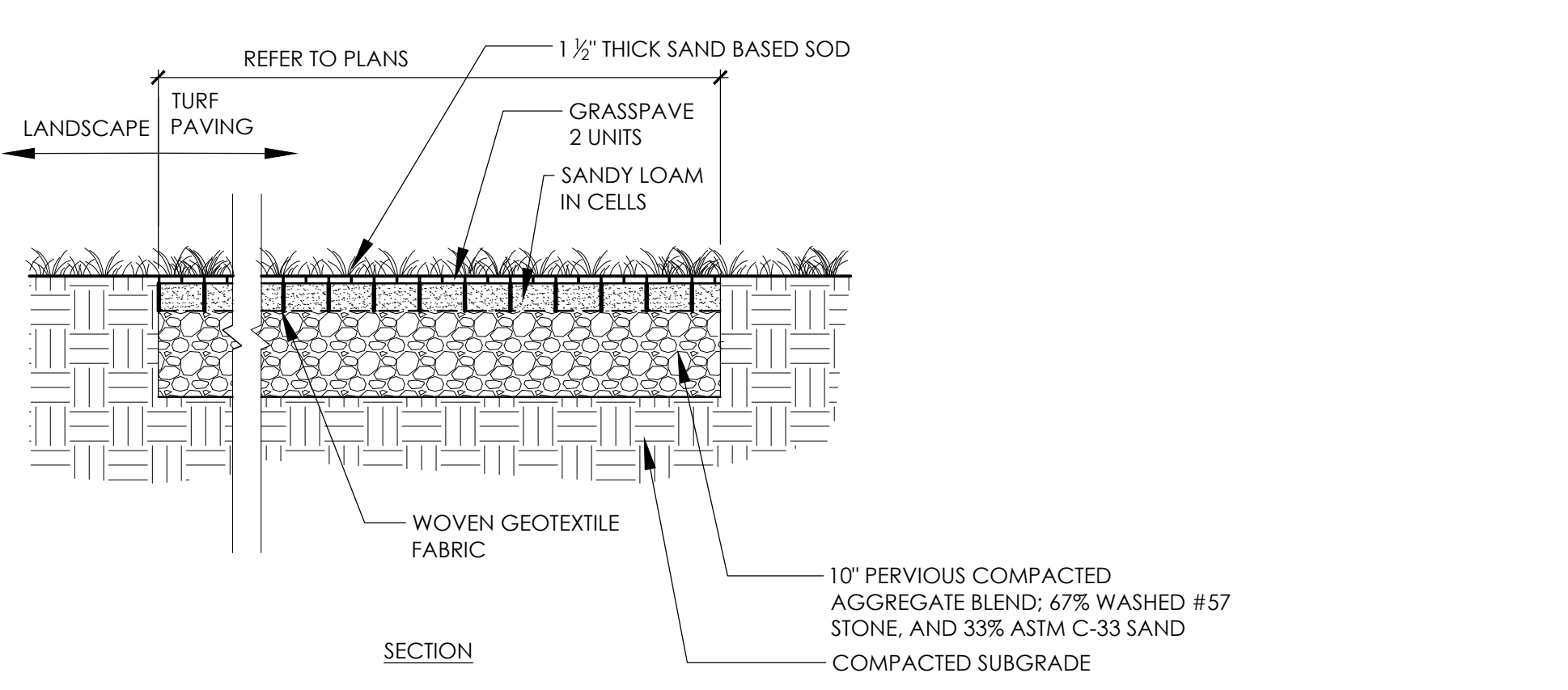
B1 EVERGREEN TREE PLANTING SCALE: NTS



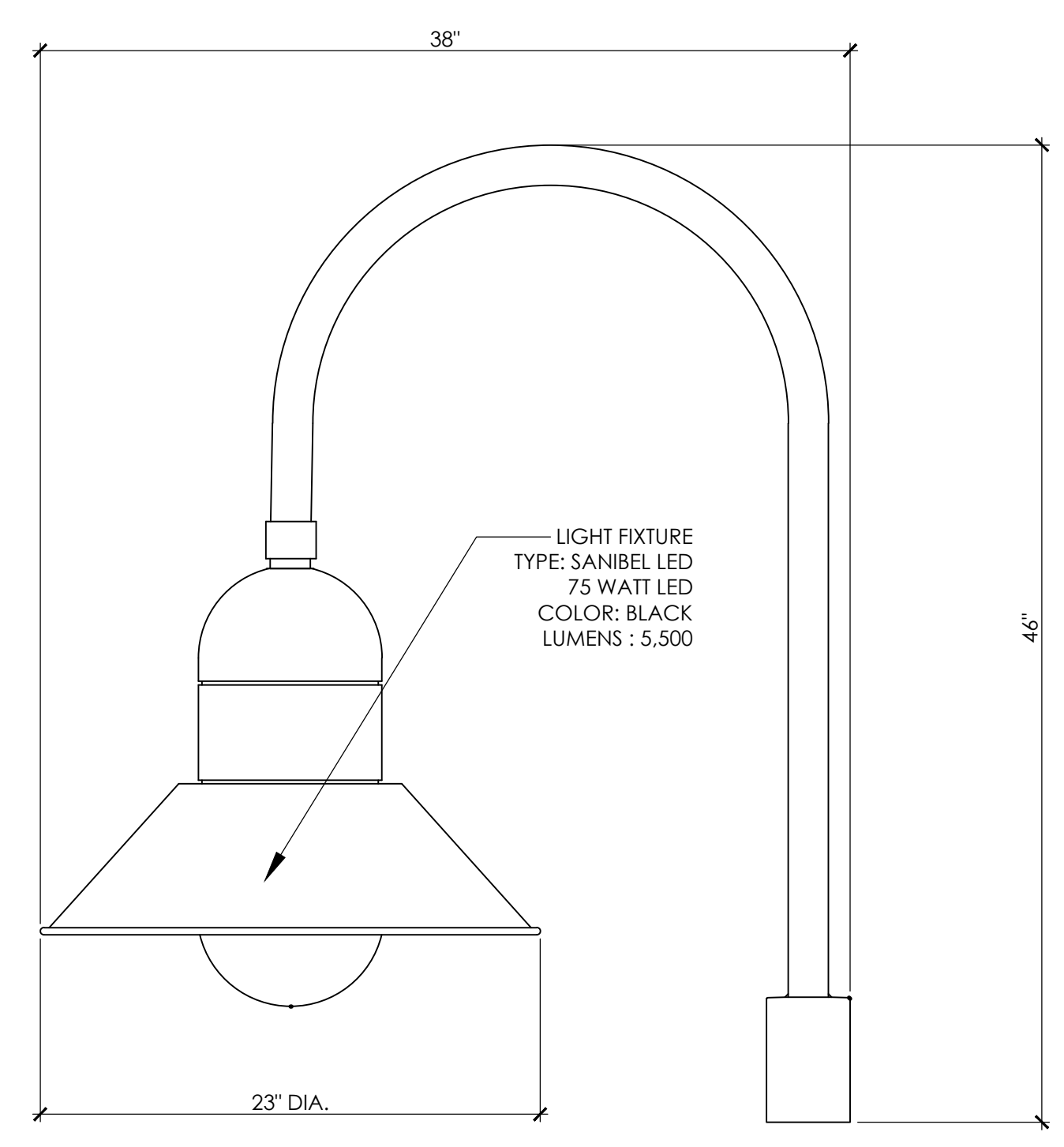
B2 RAISED SHRUB PLANTING SCALE: NTS



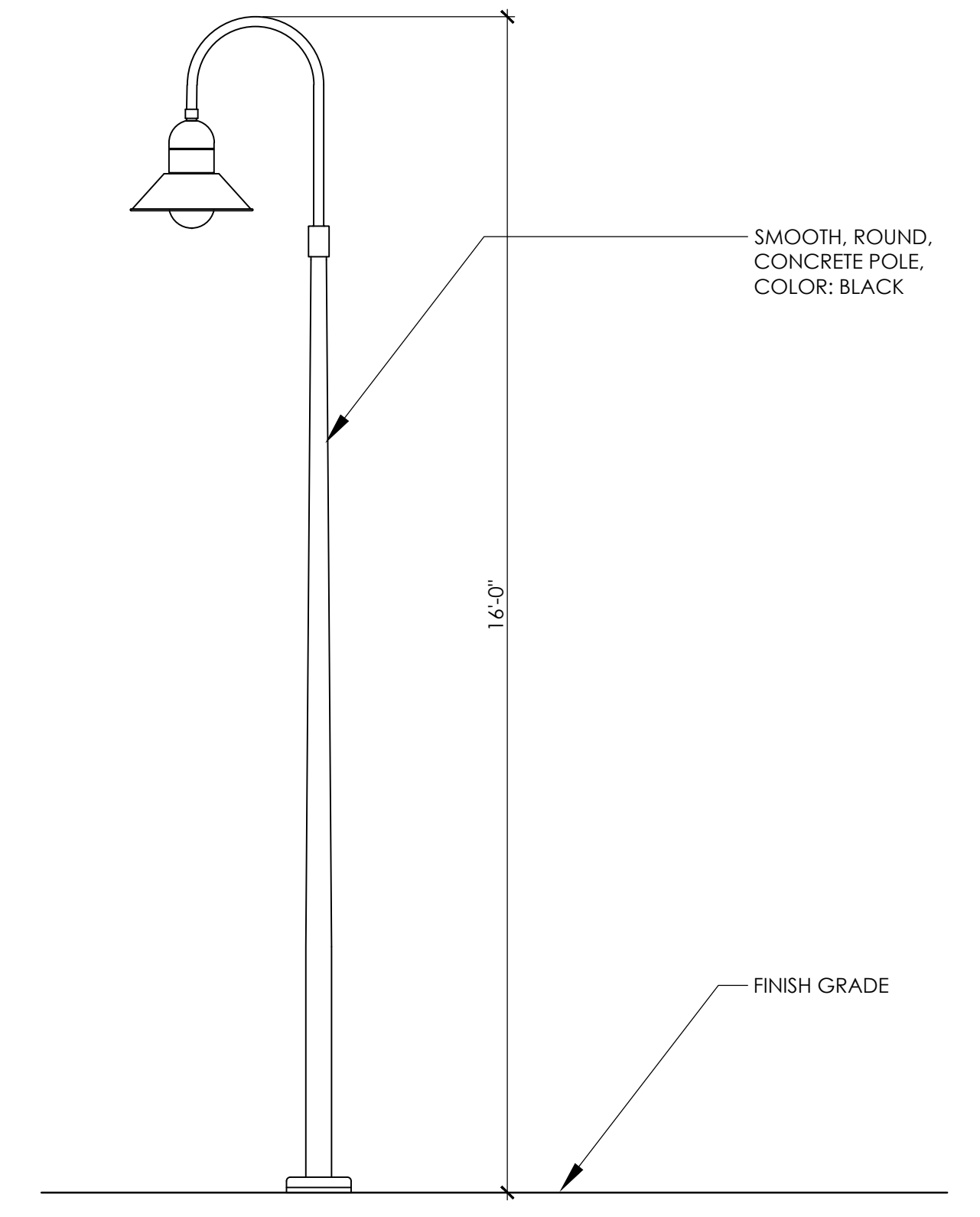
A1 CONCRETE/PLANT BED EDGE



A2 STRUCTURAL LAWN

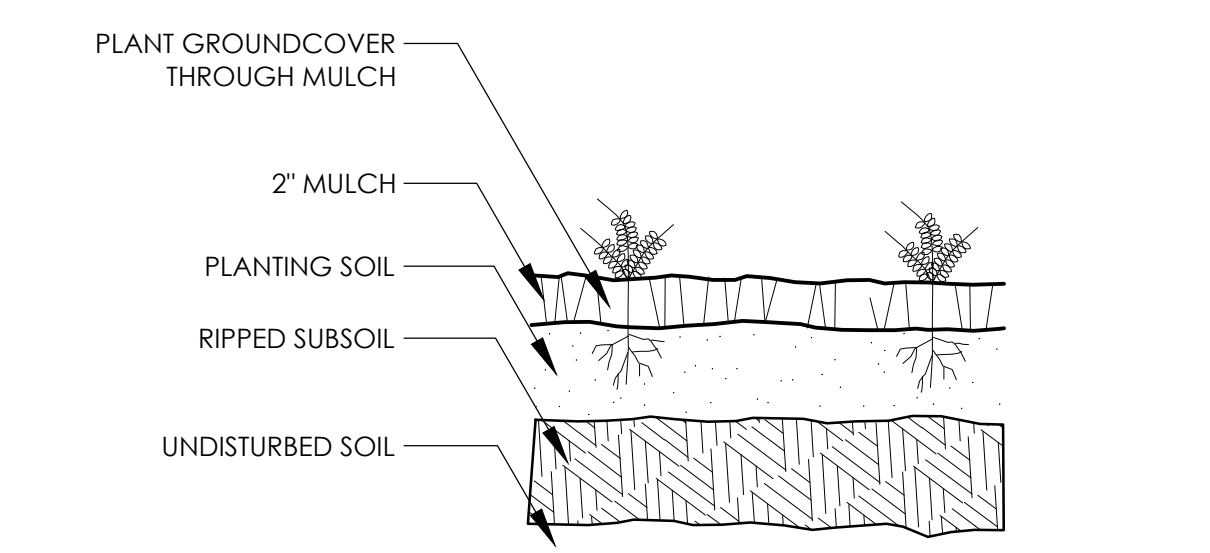
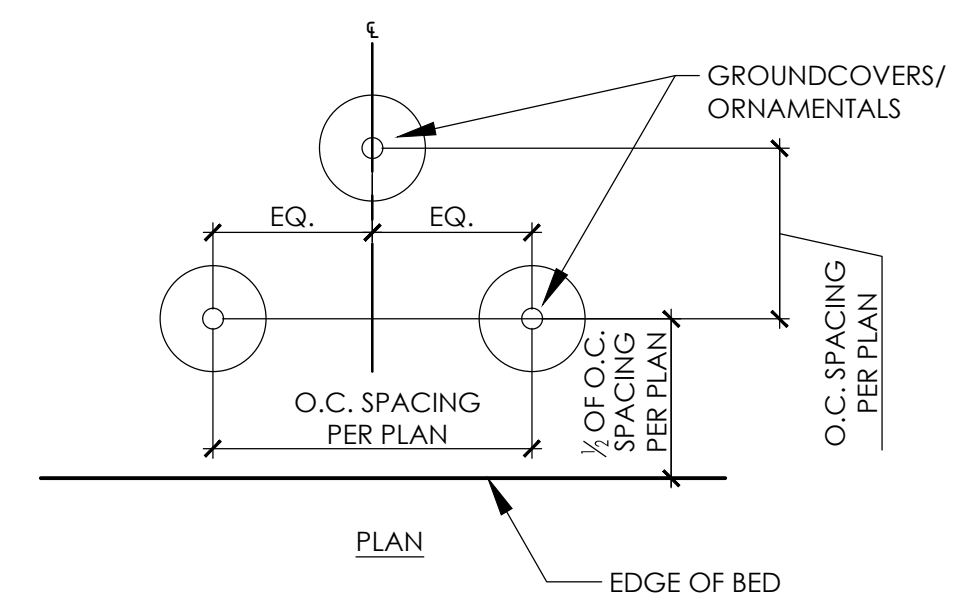


NON STANDARD LIGHT FIXTURE DETAIL



LIGHT FIXTURE POLE ELEVATION

C3 LIGHT POLE \* LIGHT POLE SHOWN FOR REFERENCE ONLY. \* LIGHT POLE TO BE SIMILAR IN STYLE, COLOR, TYPE. \* FINAL LAYOUT AND FOOT CANDLE STUDIES SHALL BE PROVIDED BY THE POWER COMPANY.



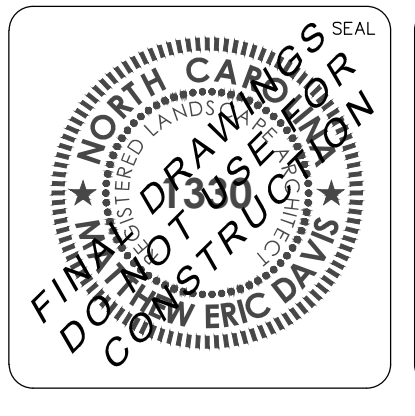
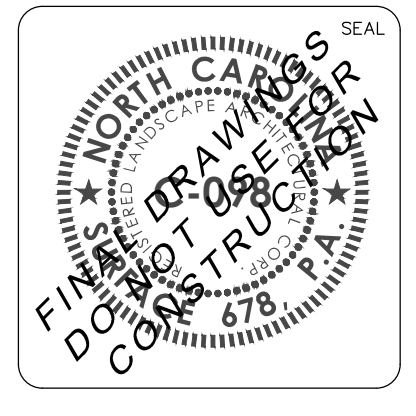
A3 GROUNDCOVER PLANTING SCALE: NTS

1 inch  
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 \_\_\_\_\_

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

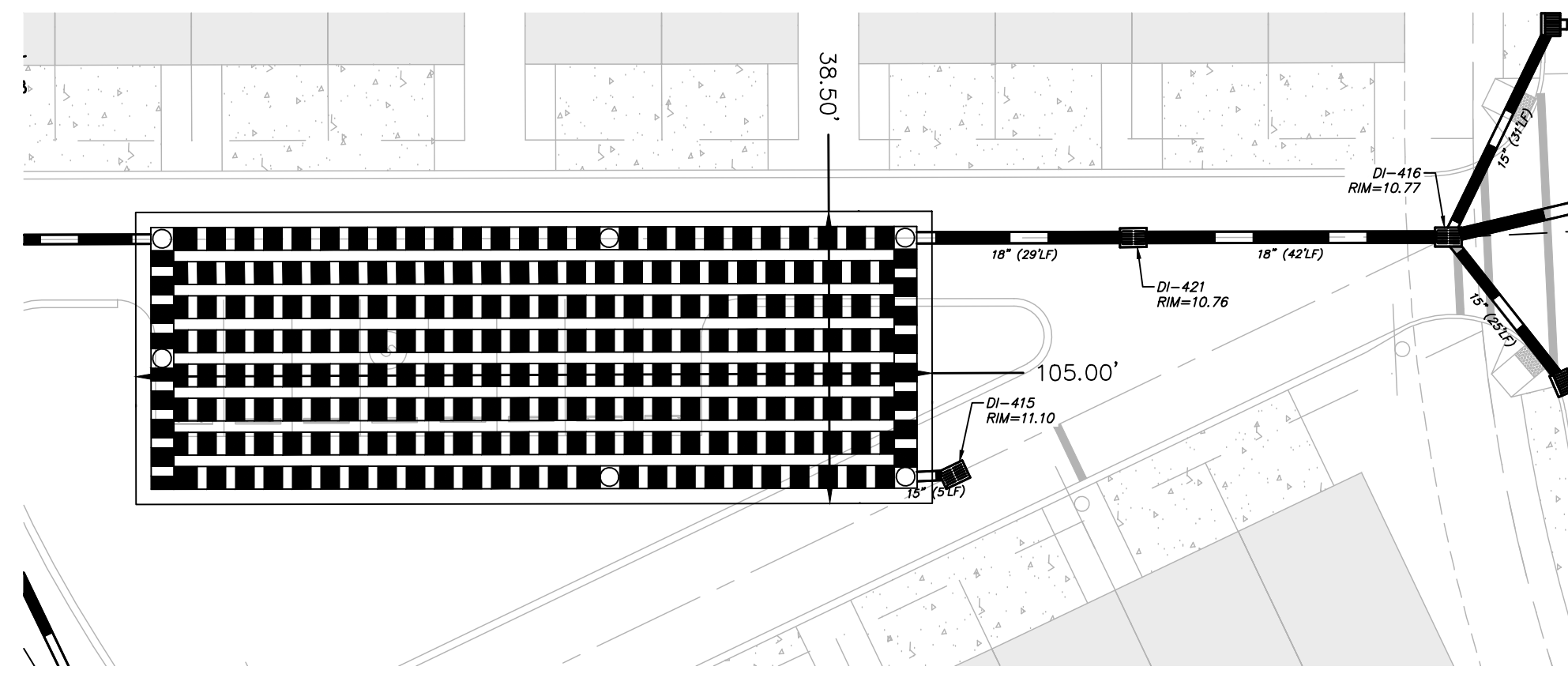
REV. NO.	DESCRIPTIONS/ REVISIONS	DATE



LANDSCAPE DETAILS  
MARINA VILLAGE PHASE 1B

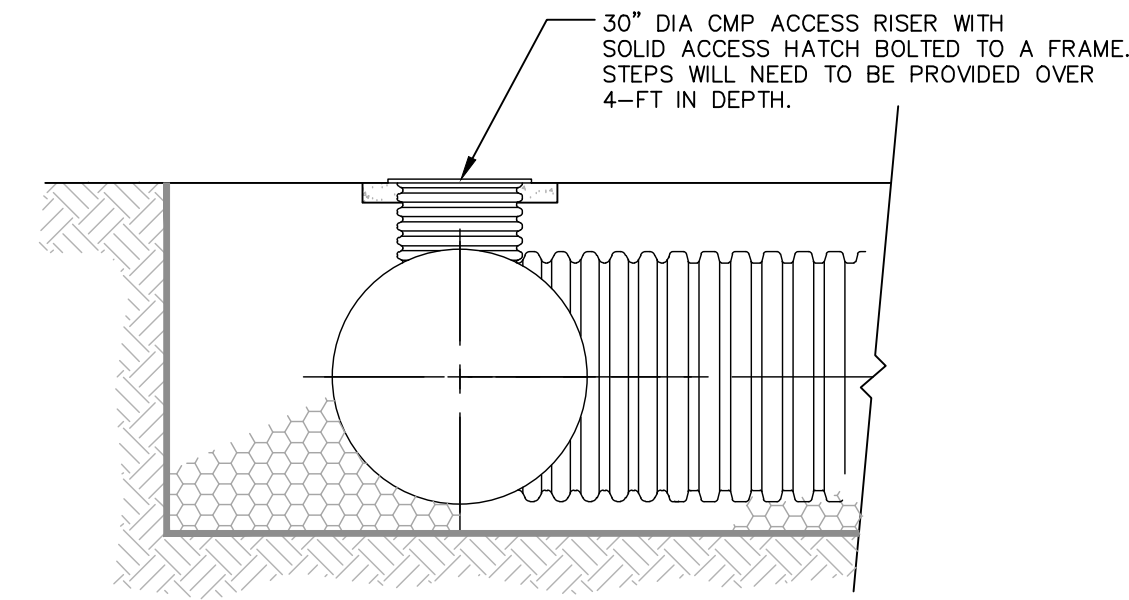
DATE: 11/03/2015	SCALE	M&C FILE NUMBER
MCE PROJ. #		
DRAWN: JI		DRAWING NUMBER
DESIGNED: ED		<b>L501</b>
CHECKED: J.C., ED		
PROJ. MGR.: J.C.		
STATUS: FINAL DESIGN		REVISION

# INFILTRATION GALLERY 4

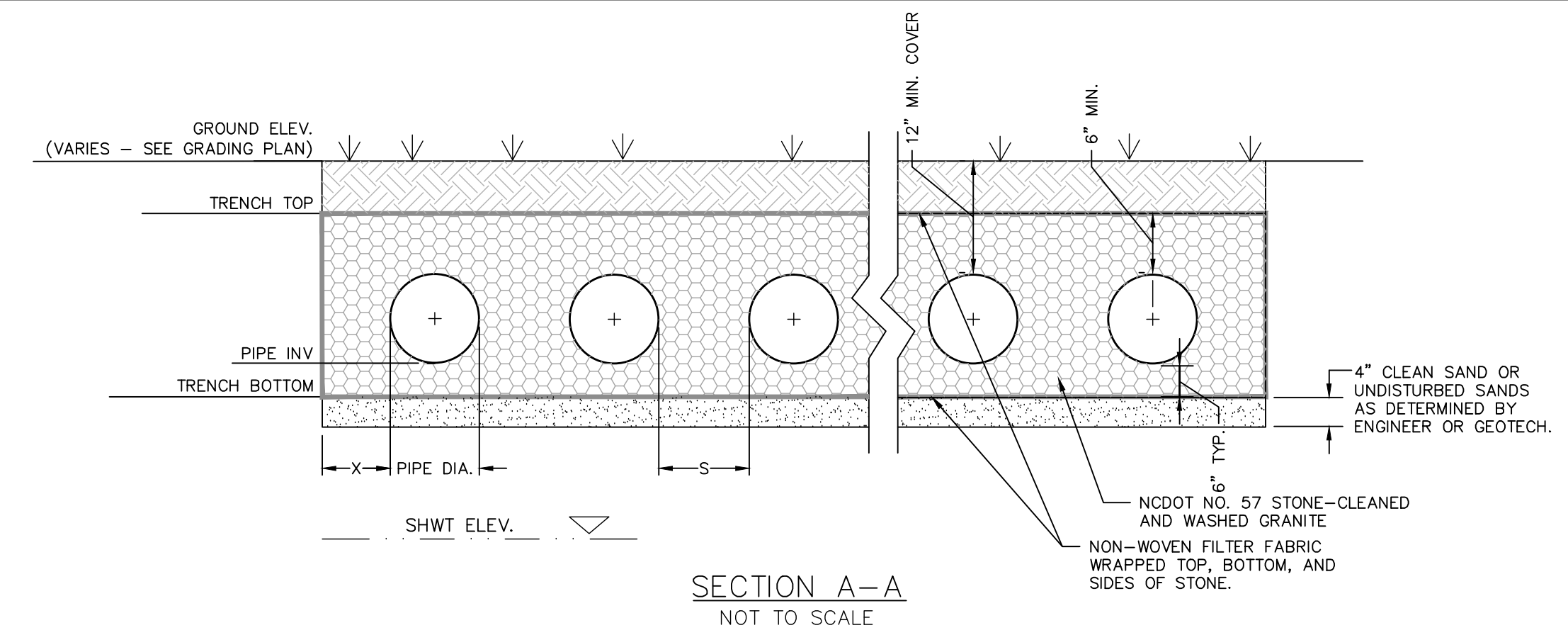


**INFILTRATION GALLERY 4**  
 DA= 188 AC  
 WOV STORAGE REQD.= 4,881 CF  
 STORAGE PROV.= 9,895 CF

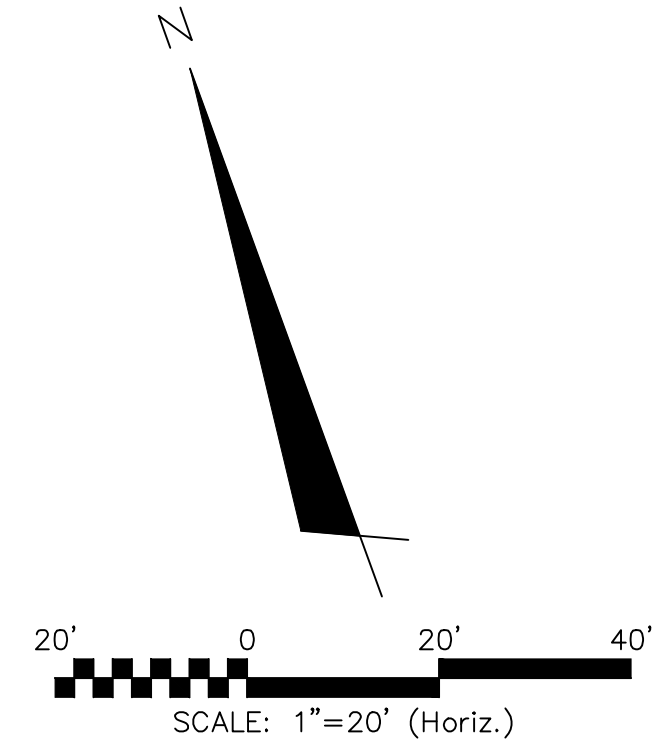
PLAN VIEW  
 SCALE: 1" = 20'



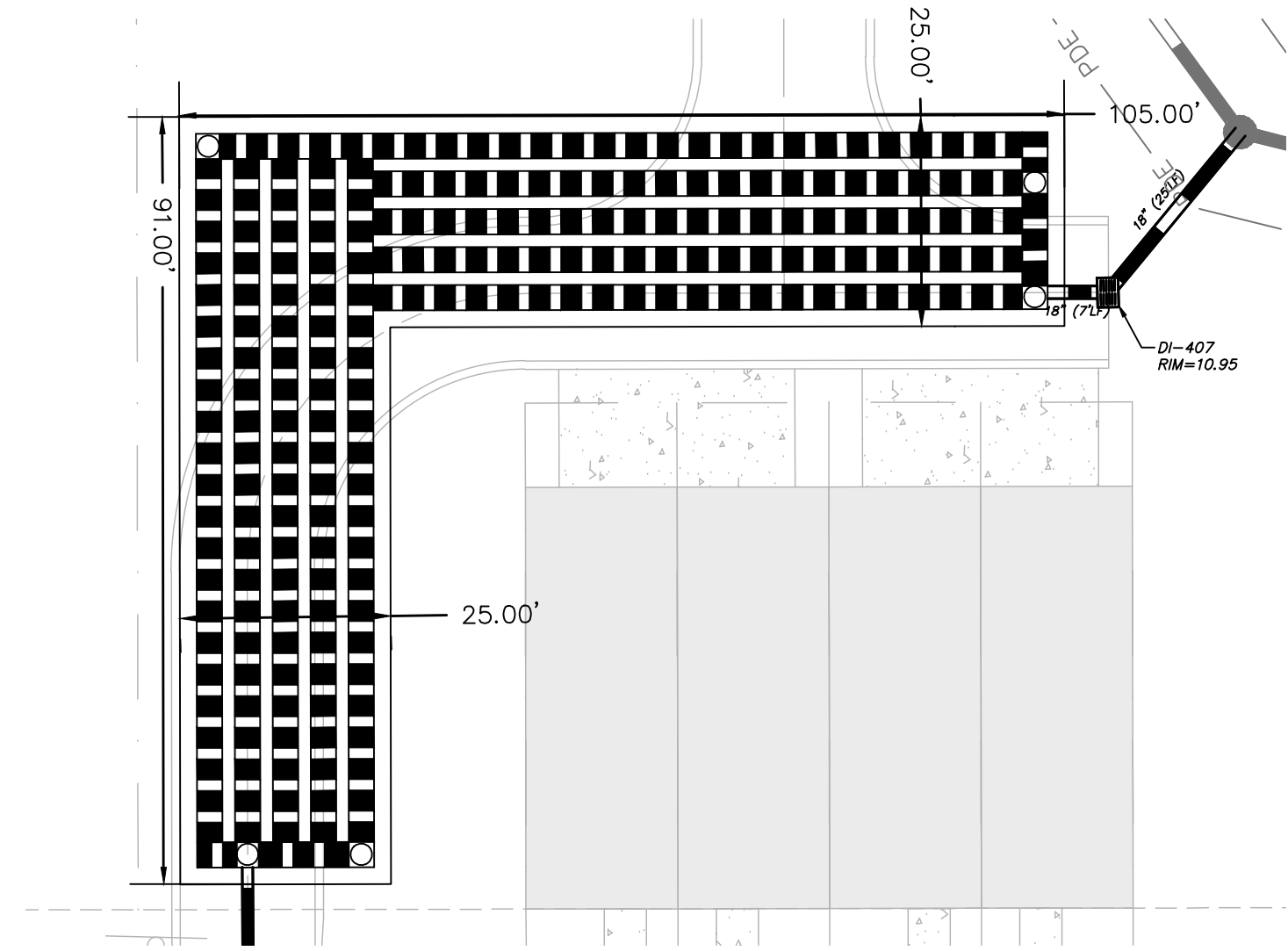
**TYP. CMP ACCESS RISER**  
 NOT TO SCALE



**SECTION A-A**  
 NOT TO SCALE



# INFILTRATION GALLERY 5

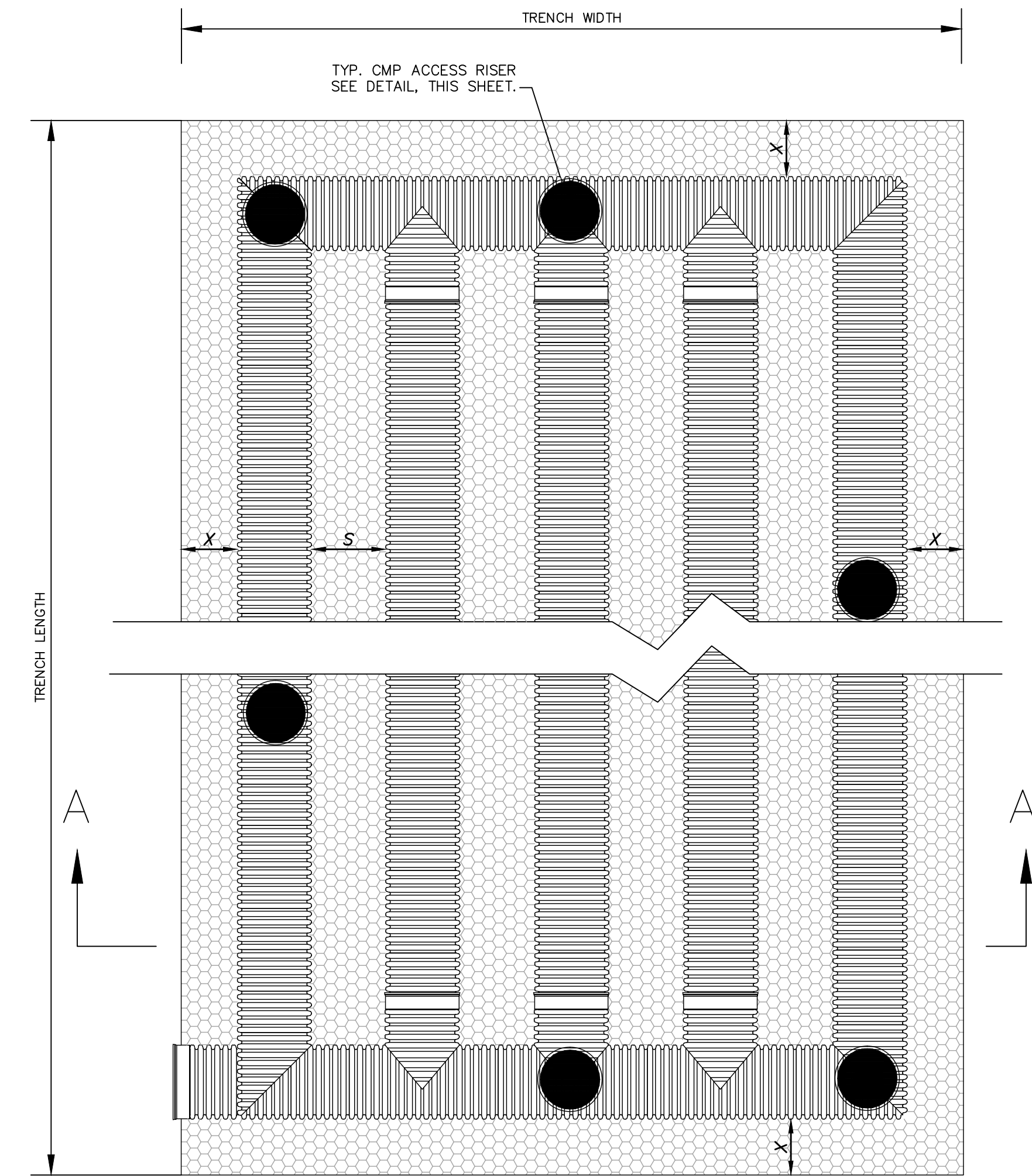


**INFILTRATION GALLERY 5**  
 DA= 191 AC  
 WOV STORAGE REQD.= 5,150 CF  
 STORAGE PROV.= 10,381 CF

PLAN VIEW  
 SCALE: 1" = 20'

DESIGN	DI-416	DI-407
RIM ELEVATION	10.31'	10.95'
WEIR ELEVATION	9.00'	9.25'
SUMP ELEVATION	7.34'	7.03'
OUTFALL PIPE INVERT	8.06'	8.08'

DESIGN	INFILTRATION GALLERY 4	INFILTRATION GALLERY 5
# OF RUNS	8	5
LENGTH PER RUN	101'	167'
PIPE DIAMETER (IN)	36" CAP	36" CAP
MIN. X (IN)	2'	2'
MIN. S (IN)	1/2 DIA. OF PIPE	1/2 DIA. OF PIPE
TRENCH WIDTH (FT)	38.5'	25.0'
TRENCH LENGTH (FT)	105'	171'
SHWT ELEVATION	4.50'	4.50'
TRENCH BOTTOM ELEVATION	6.50'	6.50'
PIPE TRENCH INVERT	7.00'	7.00'
TRENCH TOP ELEVATION	10.50'	10.50'
10-YR WSEL	9.35'	9.62'

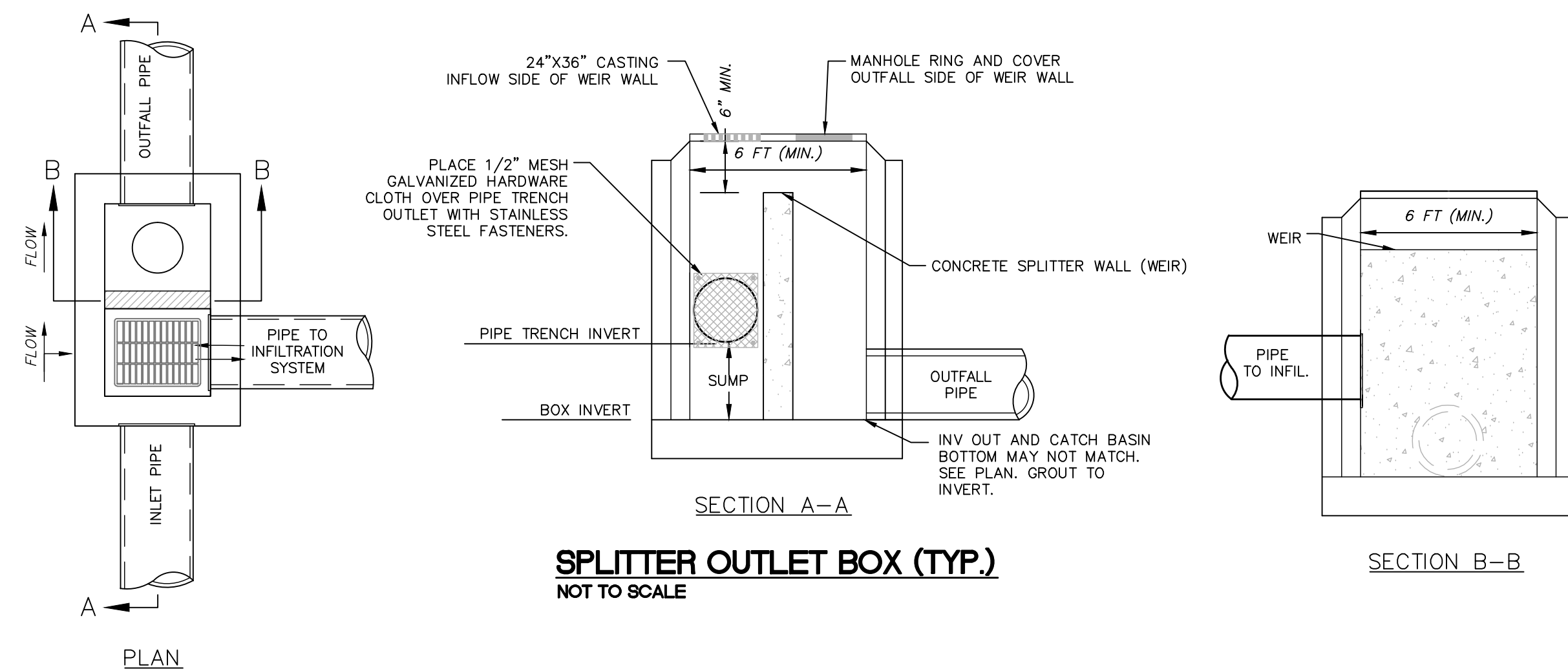


**PLAN VIEW**  
 NOT TO SCALE

**NOTES:**

- INFILTRATION TRENCH PIPE SHALL BE CONTECH PERFORATED ALUMINIZED OR ALUMINUM CMP PIPE MEETING AASHTO M-36, CLASS 2 PERFORATIONS (3/8" DIA); OR PERFORATED HDPE MEETING AASHTO CLASS 2, TYPE S PERFORATIONS. CONTRACTOR TO SUBMIT INFILTRATION TRENCH SPECIFICATION FOR ENGINEER APPROVAL.
- CMP OR HDPE PIPE TO BE INSTALLED PER ASTM & MANUFACTURER'S RECOMMENDATIONS. PIPE JOINTS TO BE PER MANUFACTURER'S RECOMMENDATIONS AS AN UNDERGROUND INFILTRATION SYSTEM.
- SEE TABLE FOR NUMBER OF PIPE RUNS AND DIMENSIONS.
- IT IS IMPORTANT THAT FILL MATERIAL FOR THE INFILTRATION TRENCHES SHALL BE SAME MATERIAL AS EXISTING SOILS UNDERLYING THE TRENCH. BE SURE NOT TO COMPACT THE SAND UNDER THE TRENCH SO THAT PROPER INFILTRATION RATES CAN OCCUR BELOW THE TRENCHES.

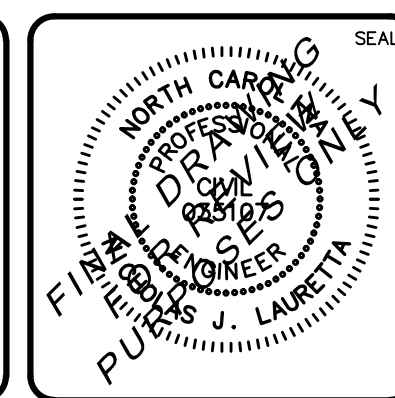
**TYP. INFILTRATION TRENCH SYSTEM**  
 NOT TO SCALE



**SPLITTER OUTLET BOX (TYP.)**  
 NOT TO SCALE

REV. NO.	DESCRIPTIONS / REVISIONS	DATE

SEAL



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 Wilmington, North Carolina 28401  
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**RIVERLIGHTS**  
 by Newland COMMUNITIES  
 NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE PHASE 1B**  
**STORMWATER MANAGEMENT DETAILS**

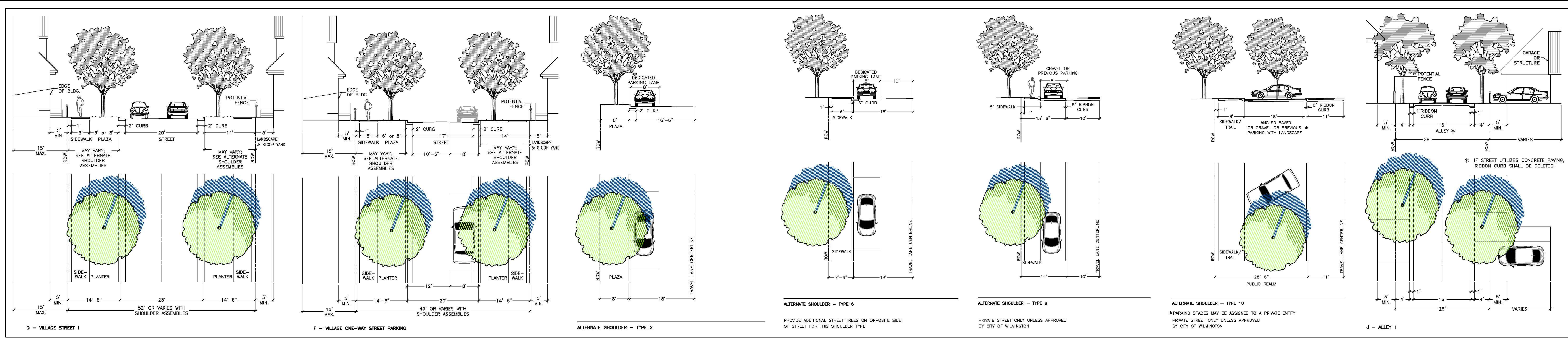
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 MCE PROJ. # 2735-0124  
 DRAWN: ALM  
 DESIGNED: NUL  
 CHECKED: KCBE  
 PROJ. MGR.: NUL

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 HORIZONTAL: 1"=20'  
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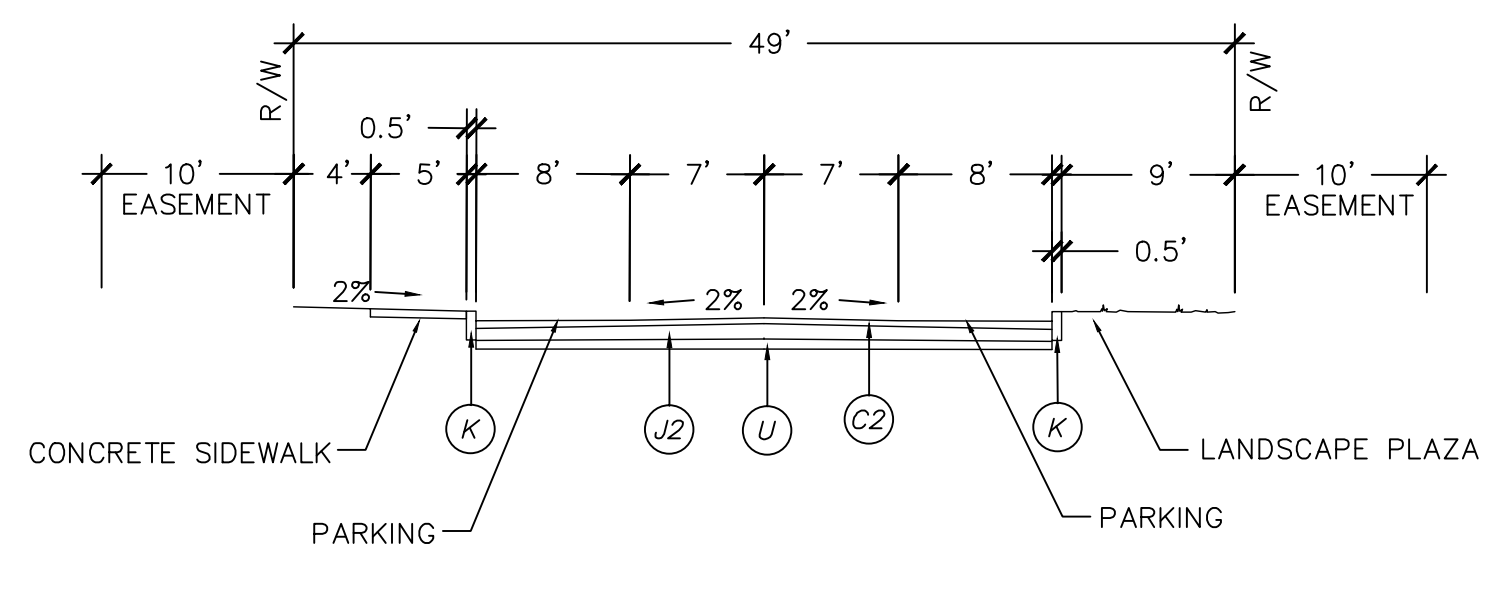
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 REVISION: ---

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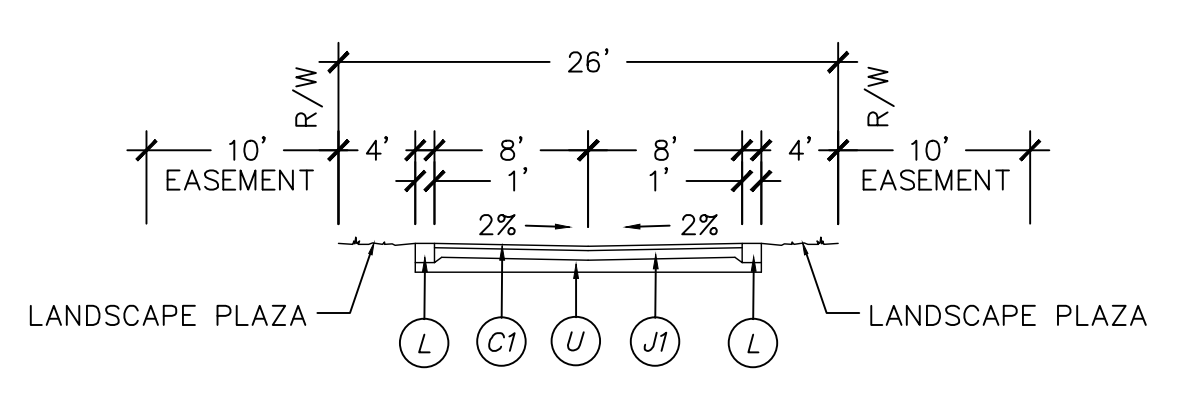
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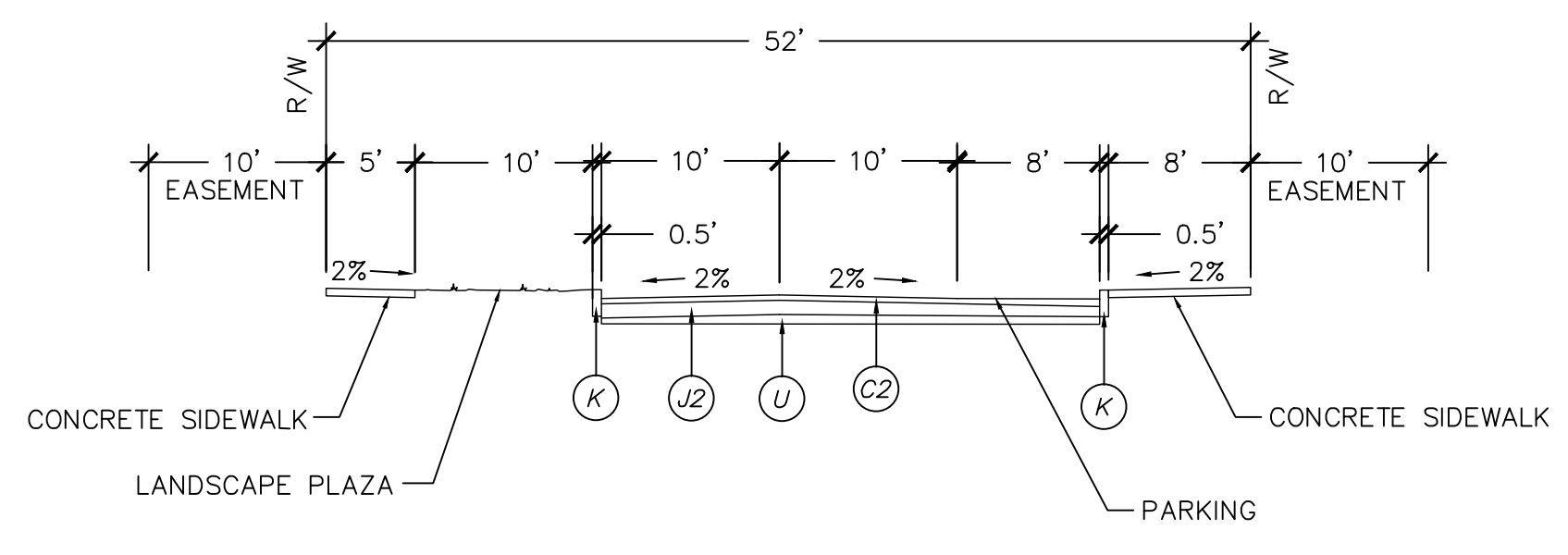
**ILLUSTRATIVE STREET SECTIONS FROM DEVELOPMENT AGREEMENT**



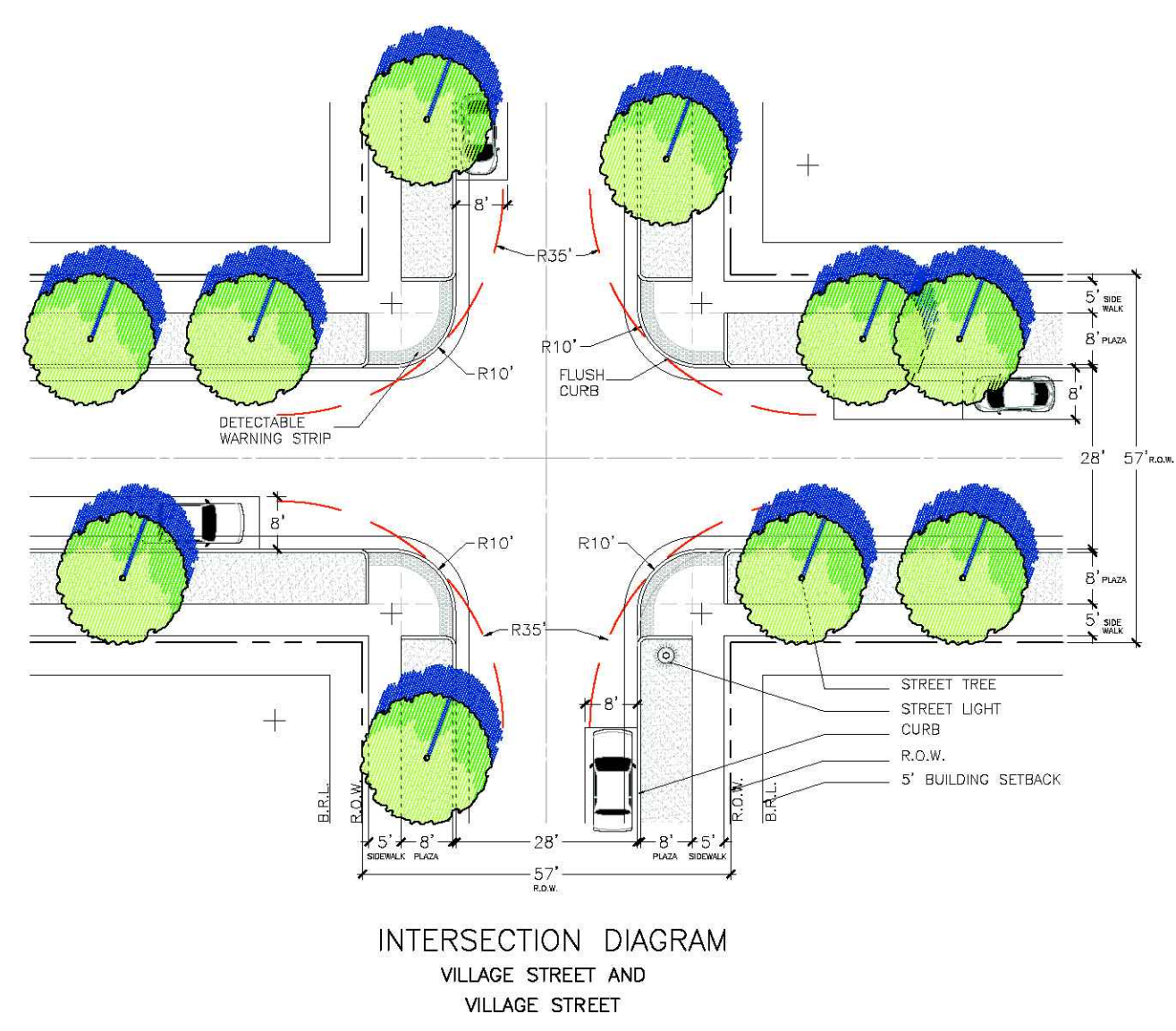
**UNDIVIDED TYPICAL SECTION  
VILLAGE ONE WAY STREET PARKING  
49' PUBLIC R/W  
NOT TO SCALE**



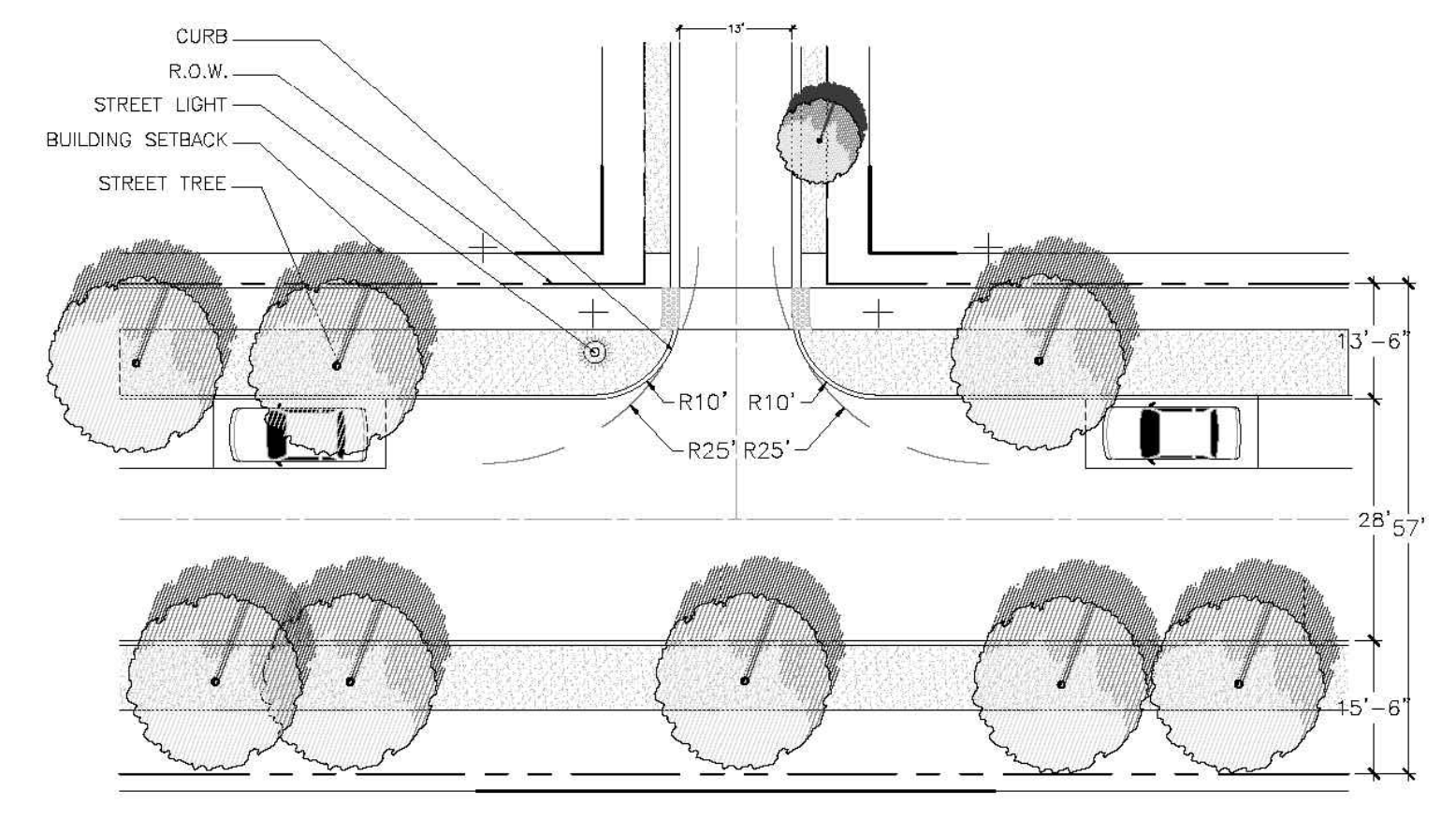
**ALLEY TYPICAL SECTION  
26' PUBLIC R/W  
NOT TO SCALE**



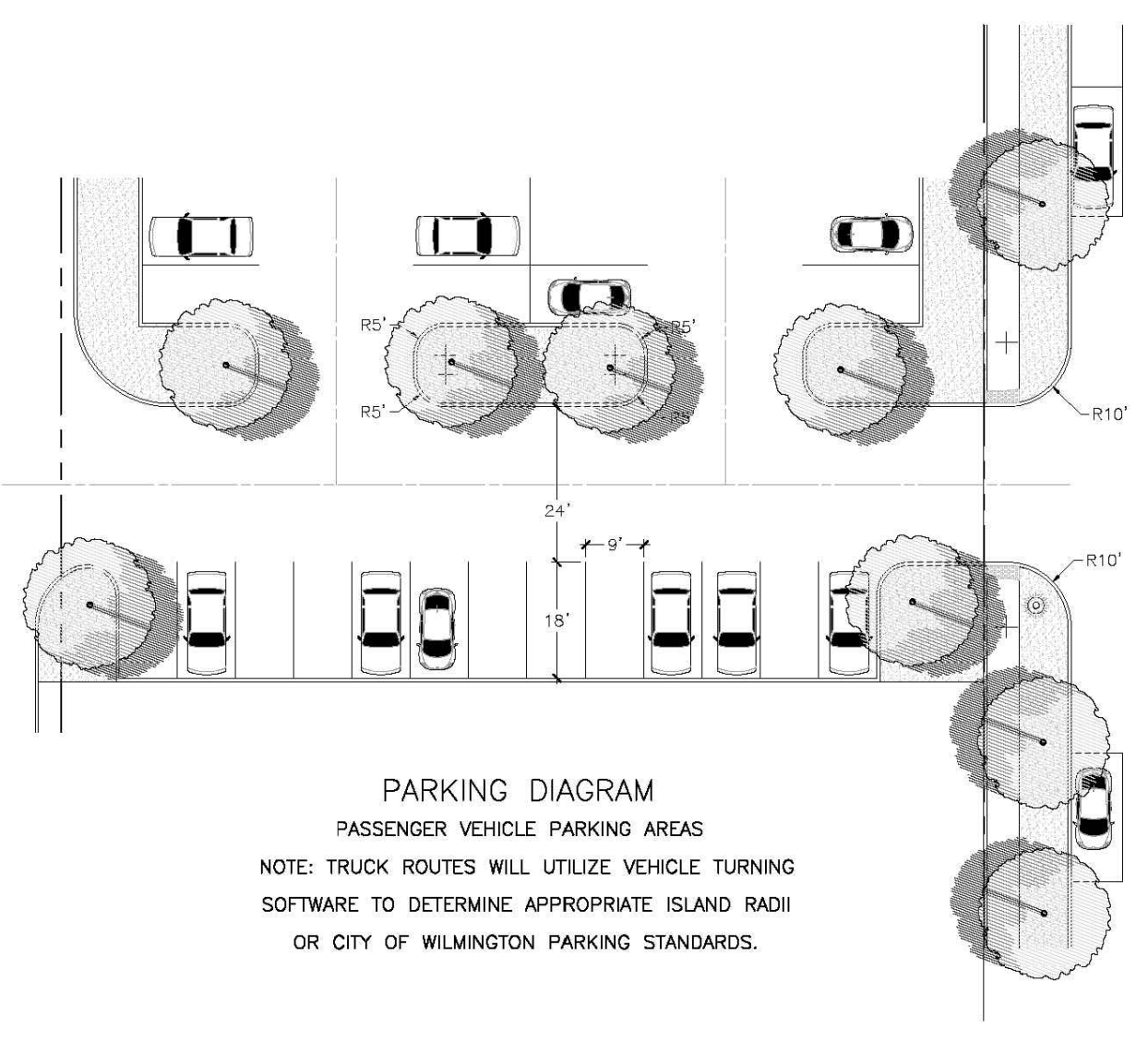
**UNDIVIDED TYPICAL SECTION  
VILLAGE STREET 1 W/ALTERNATE SHOULDER 4 + 6  
52' PRIVATE R/W  
NOT TO SCALE**



**INTERSECTION DIAGRAM  
VILLAGE STREET AND  
VILLAGE STREET**



**INTERSECTION DIAGRAM  
VILLAGE (RESIDENTIAL)  
AND ALLEY II**



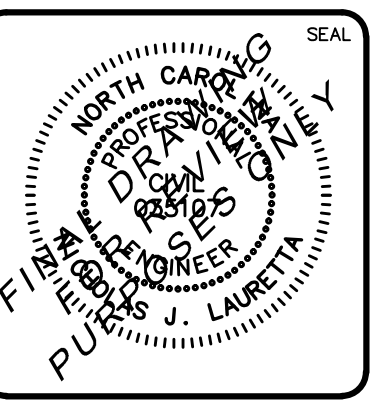
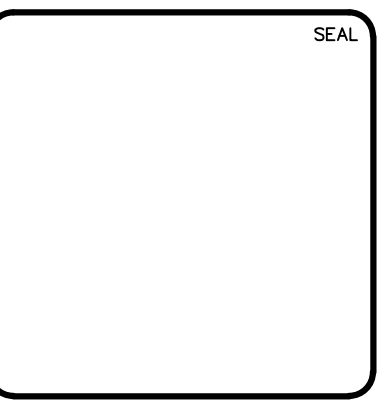
**PARKING DIAGRAM  
PASSENGER VEHICLE PARKING AREAS  
NOTE: TRUCK ROUTES WILL UTILIZE VEHICLE TURNING  
SOFTWARE TO DETERMINE APPROPRIATE ISLAND RADII  
OR CITY OF WILMINGTON PARKING STANDARDS.**

PAVEMENT SCHEDULE	
(C1)	2" ASPHALT CONCRETE SURFACE COARSE, TYPE S9.5B AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(C2)	3" ASPHALT CONCRETE SURFACE COARSE, TYPE S9.5B AT AN AVERAGE RATE OF 336 LBS. PER SQ. YD.
(J1)	6.0" COMPACTED ABC STONE BASE COURSE
(J2)	8.0" COMPACTED ABC STONE BASE COURSE
(K)	6.0" EXTRUDED CURB
(L)	12.0" RIBBON CURB
(U)	COMPACTED SUBGRADE

\* SEE SHEET CS-501 (14) FOR ADDITIONAL DETAILS AND SECTIONS FOR CURBING, PAVEMENT, STONE, AND SUBGRADE.

**ILLUSTRATIVE INTERSECTION DIAGRAMS FROM DEVELOPMENT AGREEMENT**

REV. NO.	DESCRIPTIONS	DATE



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**RIVERLIGHTS**  
by  
Newland COMMUNITIES

**RIVERLIGHTS MARINA VILLAGE  
PHASE 1B**  
**ROADWAY SECTIONS**

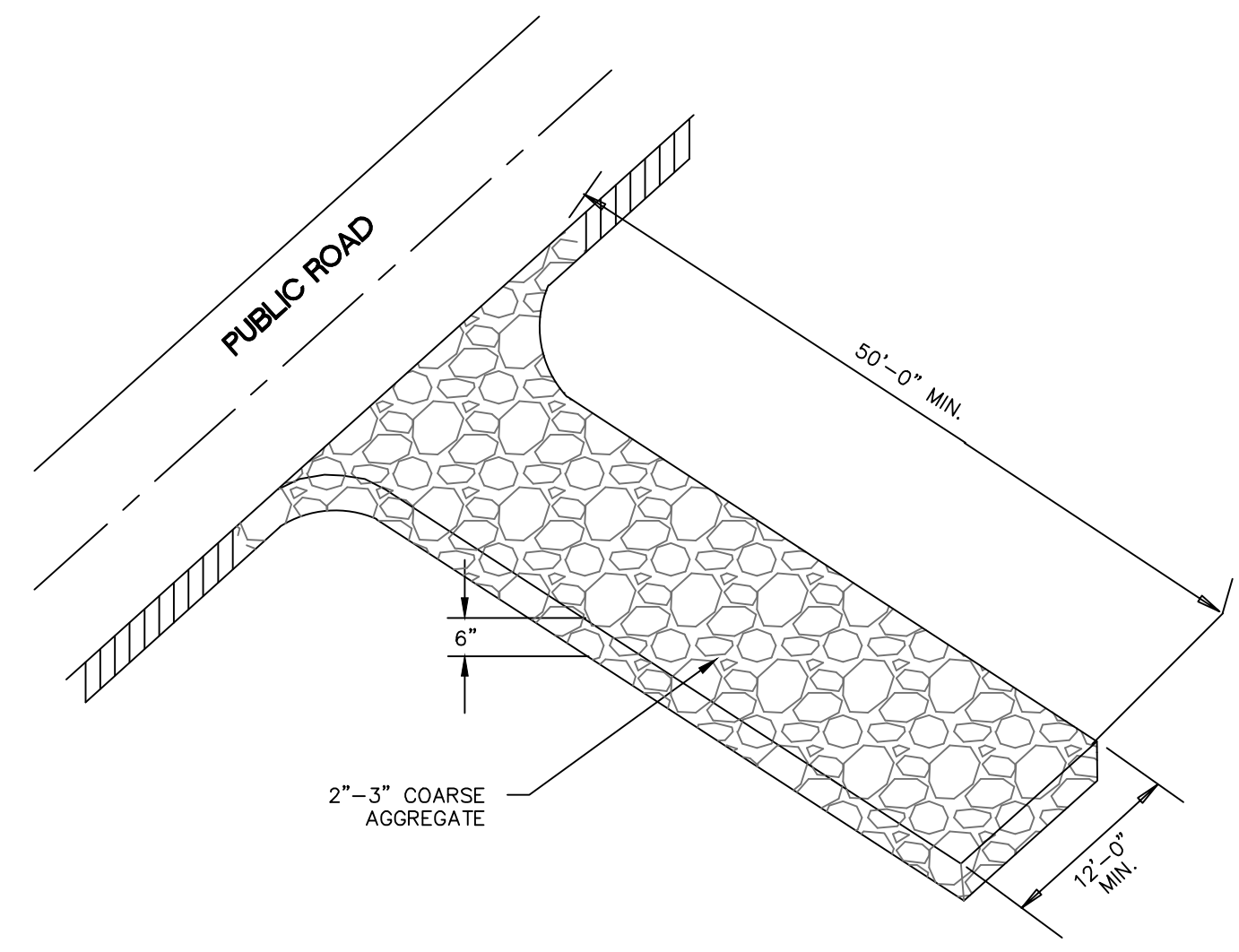
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MCE PROJ. # 2735-0124  
DRAWN: ALM  
DESIGNED: N.J.L.  
CHECKED: KCBE  
PROJ. MGR.: N.J.L.

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

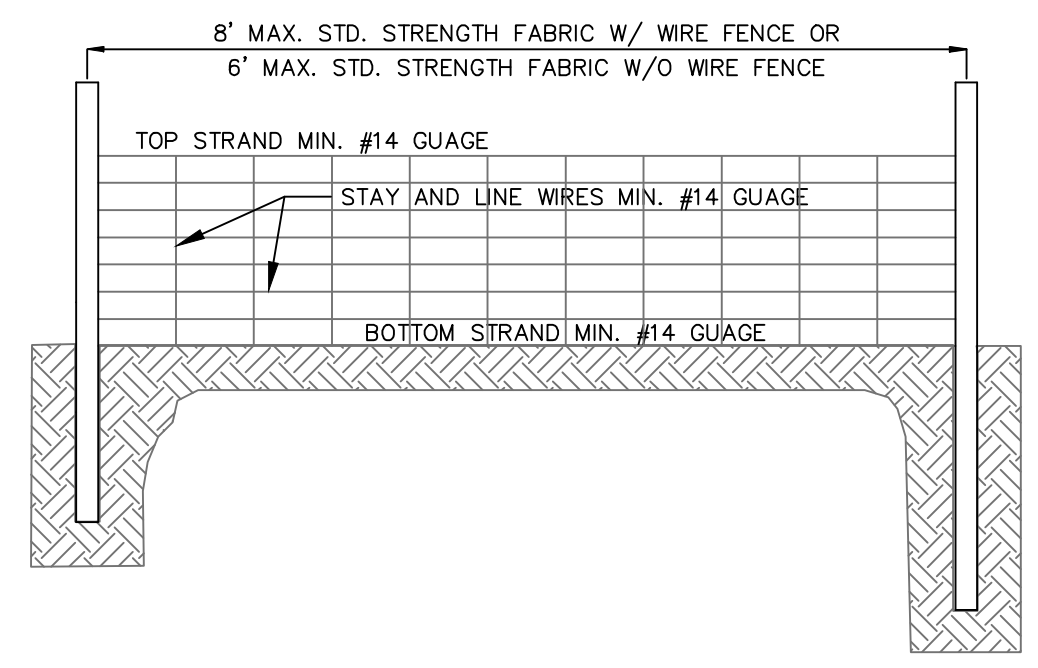
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REVISION: ----

STATUS: FINAL DESIGN  
NOT FOR CONSTRUCTION

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CONSTRUCTION ENTRANCE/EXIT  
SD 13-03  
NOT TO SCALE



TEMPORARY SILT FENCE  
NOT TO SCALE

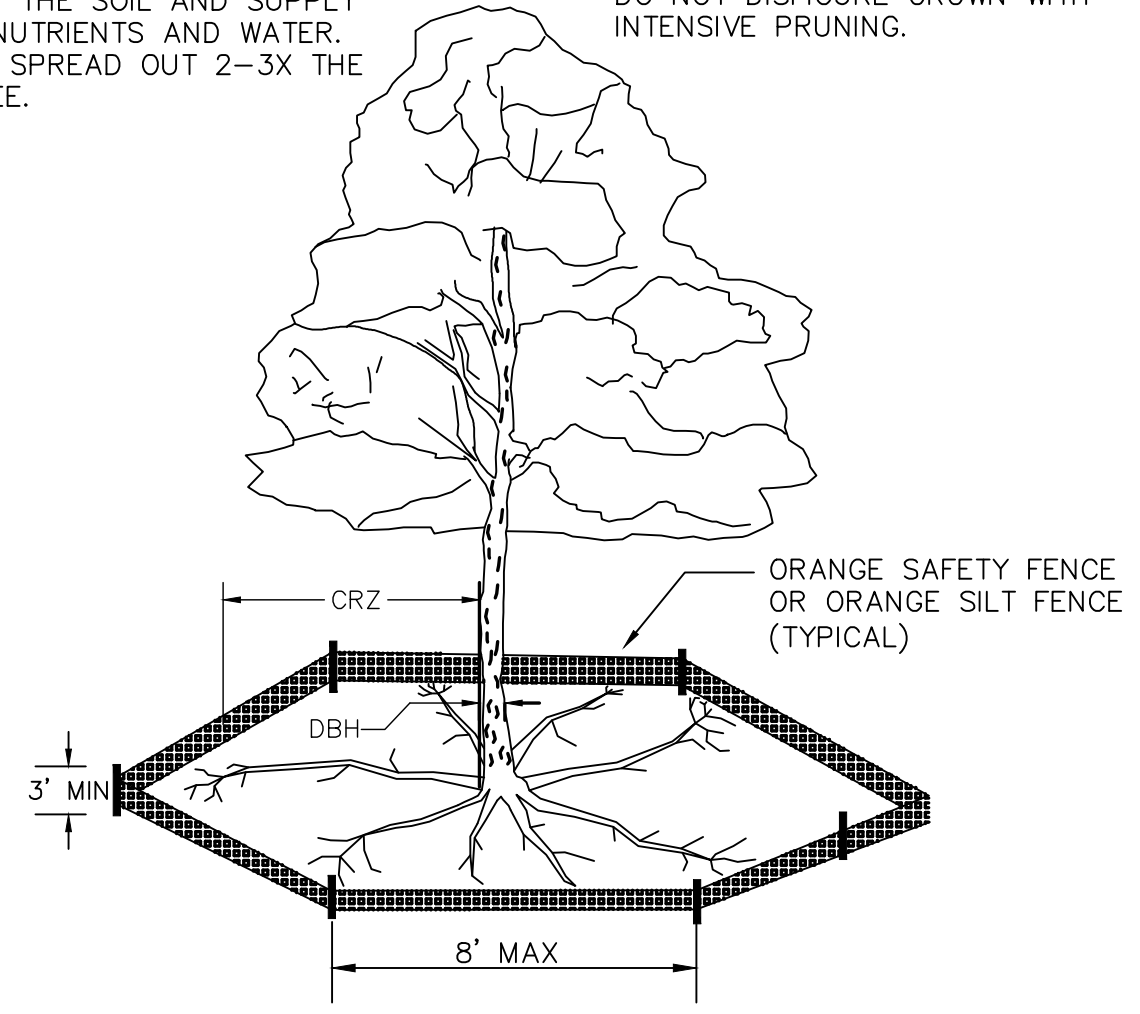
**SILT FENCE CALCULATION TABLE**

SILT FENCE No.	Drainage Area SF	Drainage Area ac	Length ft	Acres per 100 ft	0.25 Acre per 100 ft YES/NO
SF 1	2770	0.06	146.00	0.04	YES
SF 2	3451	0.08	133.00	0.06	YES
SF 3	7083	0.16	427.00	0.04	YES
SF 4	4725	0.11	250.00	0.04	YES
SF 5	4553	0.10	141.00	0.07	YES
SF 6	1294	0.03	71.00	0.04	YES
SF 7	21990	0.50	558.00	0.09	YES
SF 8	5785	0.13	209.00	0.06	YES
SF 9	14599	0.34	263.00	0.13	YES
SF 16	1515	0.03	136.00	0.03	YES
SF 17	21658	0.50	257.00	0.19	YES
SF 18	6546	0.15	361.00	0.04	YES

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

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.

NOTE: CROWN OF THE TREE IS NEEDED FOR LEAF GROWTH TO PRODUCE OXYGEN, FILTER THE AIR, REDUCE WIND AND SOFTEN NOISE. DO NOT DISFIGURE CROWN WITH INTENSIVE PRUNING.



- NOTES:
1. PROTECT CRITICAL ROOT ZONE (CRZ) OF TREES PRIOR TO CONSTRUCTION. CLEARLY MARK THE TREES AND ERECT A PROTECTIVE BARRIER AT THE CRZ. BARRIER SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
  2. CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).
  3. IF CONSTRUCTION OCCURS WITHIN THE CRZ, AT LEAST 12" OF MULCH AND/OR LOGGING MATS SHALL BE PLACED WHERE MACHINERY MANEUVERS TO REDUCE SOIL COMPACTION IN THIS ZONE.
  4. WHERE SIDEWALKS AND PATHWAYS PASS WITHIN CRZ, EXTRA CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE ROOTS. ALTERNATE CONSTRUCTION METHODS, SUCH AS A REINFORCED SIDEWALK, SHALL BE IMPLEMENTED AS NECESSARY.
  5. FOR ALL TREES, CUTTING OF LARGE STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK IS PROHIBITED. DO NOT COMPACT SOIL BENEATH TREES. NO VEHICLE SHALL BE ALLOWED TO PARK UNDER TREES. NO MATERIALS OR EQUIPMENT SHALL BE STORED BENEATH TREES. DAMAGING THE BARK WITH LAWNMOWERS, CONSTRUCTION EQUIPMENT, OR ANYTHING ELSE IS PROHIBITED. CONTRACTOR SHALL REPAIR DAMAGE TO TREES.
  6. FAILING TO INSTALL OR MAINTAIN PROTECTION MEASURES SHALL RESULT IN A STOP WORK ORDER AND FINE OF \$500/DAY. DISTURBANCE OTHER THAN THAT ALLOWED ON THE APPROVED PLAN WILL REQUIRE OWNER TO POST A LETTER OF CREDIT FOR 3 YRS FOR TREE MITIGATION.

METHOD OF TREE PROTECTION DURING CONSTRUCTION

SD 15-09  
NOT TO SCALE

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 SEEDED 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:

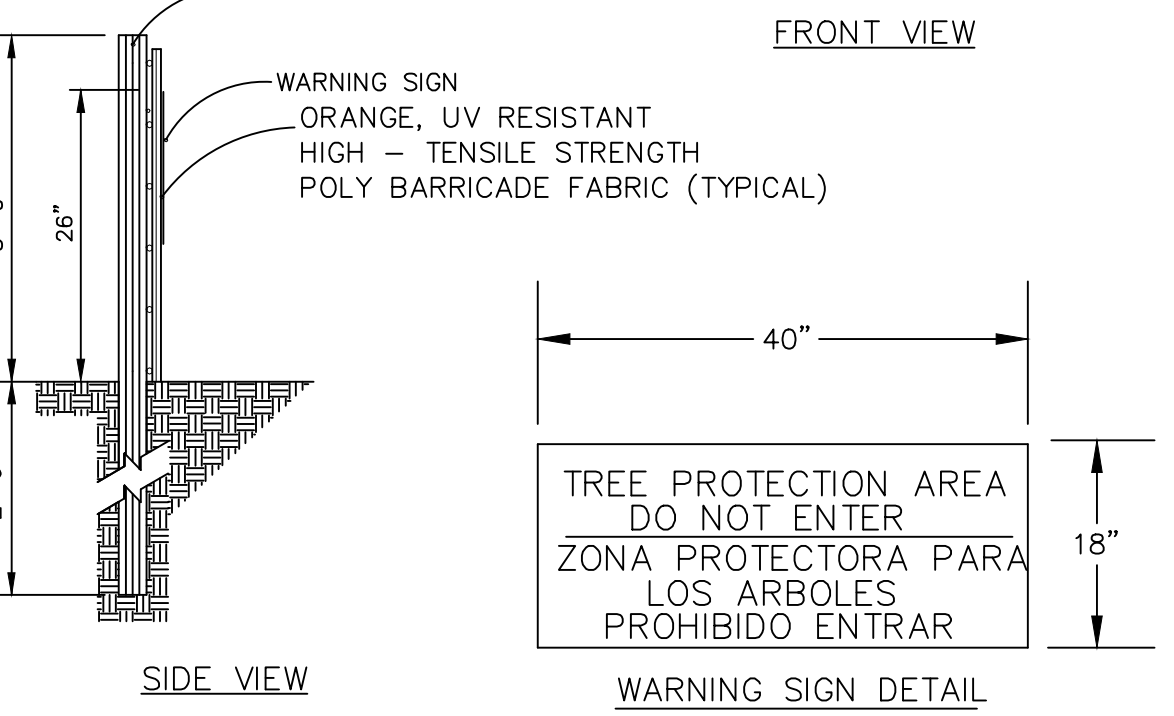
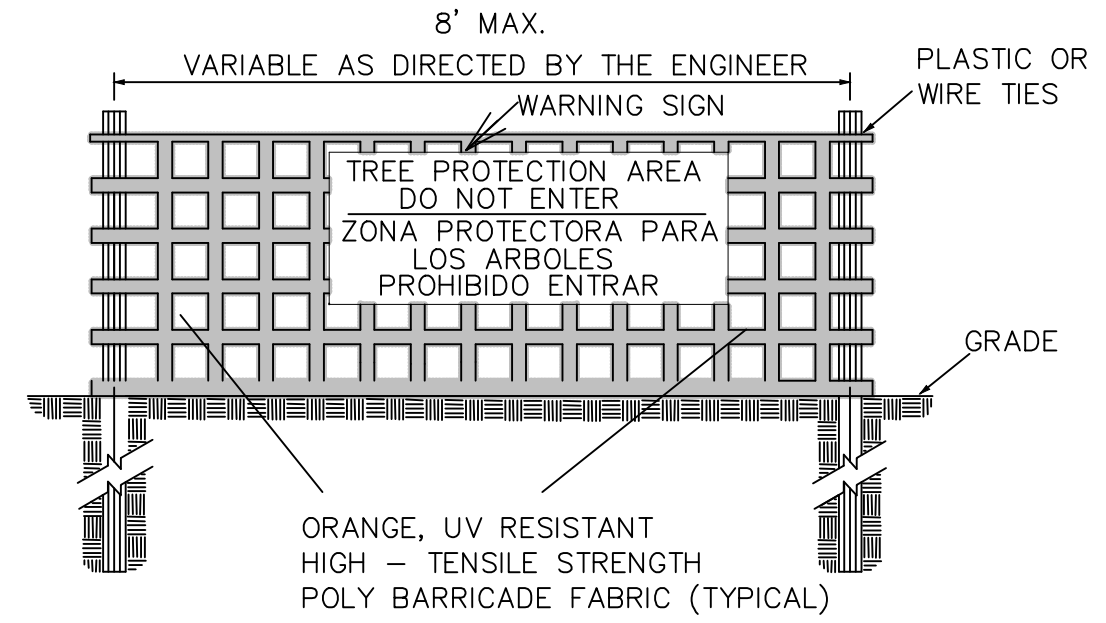
1. NO LAND DISTURBANCE INCLUDING TREE REMOVAL IS TO OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS. [18-457(b)]
2. PROTECTIVE FENCING IS TO BE PROPERLY MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. [18-458]
3. LAND CLEARING AND CONSTRUCTION CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION 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.

**TEMPORARY SEEDING**

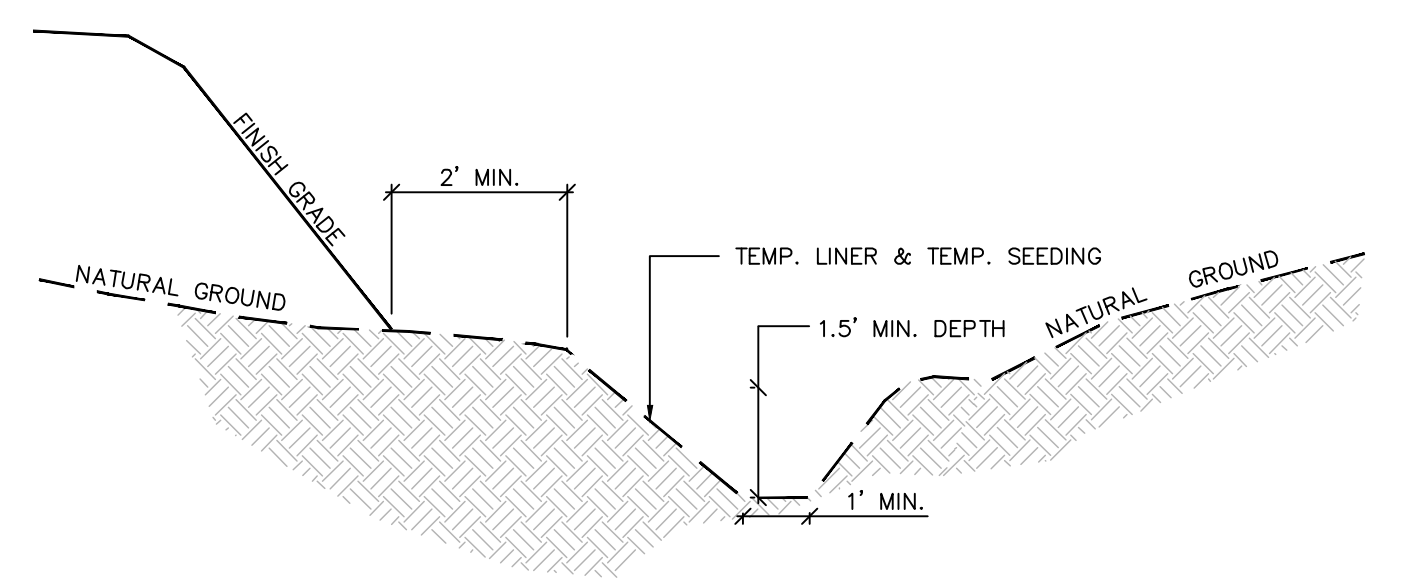
GRASS TYPE	AMOUNT/1000 S.F.	TIME OF SEEDING	INITIAL
RYE GRASS	1-2 LBS.	APRIL - JUNE	25 LBS. 10-10-10
BROWNTOP MILLET	1-2 LBS	JUNE - AUGUST	25 LBS 10-10-10

**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
SERICA LESPEDeza (SLOPES)	1-2 LBS	MARCH - APRIL	25 LBS 10-10-10



- 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, WEATHERPROOF 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.



**Temporary Perimeter Dike Calculations**

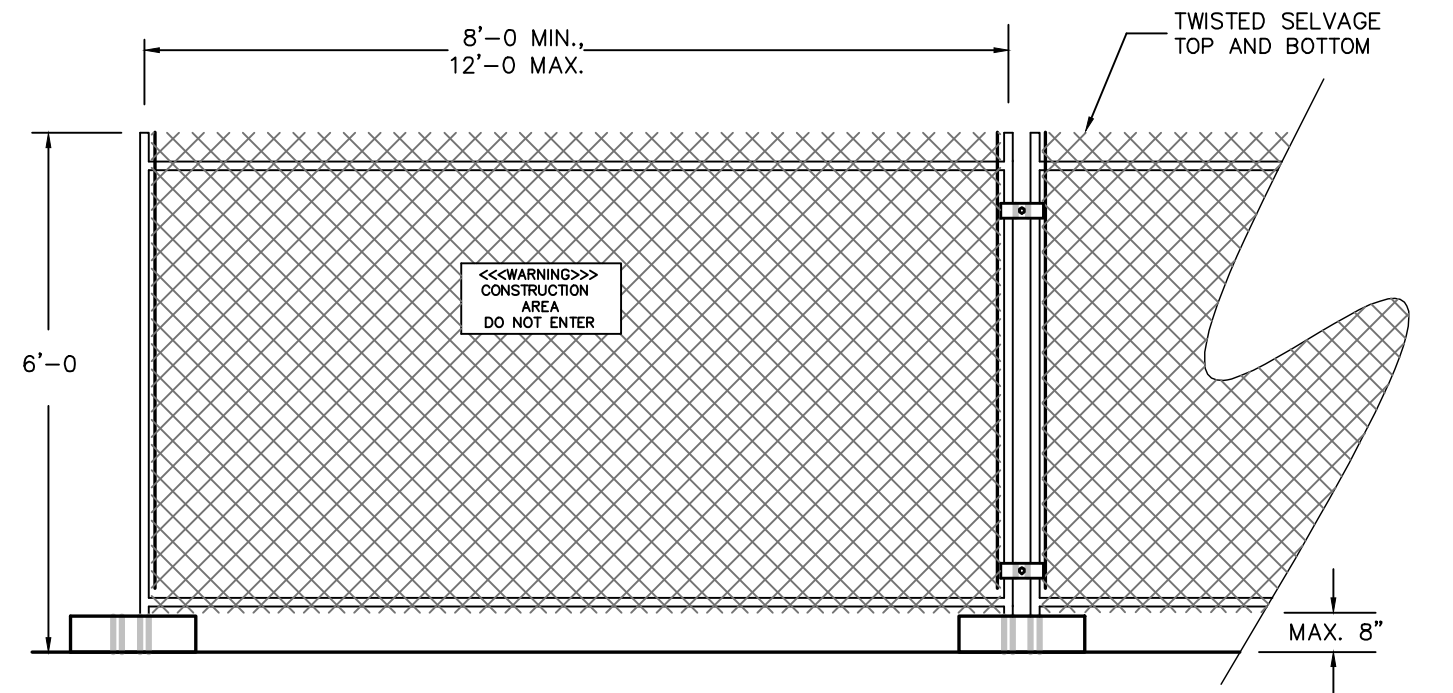
Perm Dike NUMBER	LENGTH (FT)	HIGH (FT)	LOW (FT)	ELEVATION DIFF. (FT)	SLOPE (%)	VELOCITY (FPS)	LINING	Manning n	TEMPORARY ROCK CHECK DAMS		
									CHECK DAM SPACING (FT)	NUMBER REQUIRED	NUMBER PROVIDED
1	156	12.00	7.00	5.00	3.21	0.70	GRASS	0.035	62	3	3

**TEMPORARY CHANNEL LINER SPECIFICATION:**  
1. SEE TEMPORARY PERIMETER DIKE CHART FOR LINER TYPE AND CHECK DAM SPACING.  
2. MIN. SHEAR STRENGTH: STRAW WITH NET (OR APPROVED EQUAL) - 1.45 LBS/FT<sup>2</sup>  
\* ALL RATINGS ABOVE ARE MINIMUM SHEAR STRENGTH REQUIREMENTS FOR THE LINER BASED ON UNVEGETATED CONDITIONS.

**CONSTRUCTION SPECIFICATION**  
1. GRADE THE SURFACE OF INSTALLATION AREAS SO THAT THE GROUND IS SMOOTH AND LOOSE.  
2. WHEN SEEDING PRIOR TO INSTALLATION, FOLLOW THE STEPS FOR SEED BED PREPARATION, SOIL AMENDMENTS, AND SEEDING AS NOTED IN "SURFACE STABILIZATION 6.1" (GENERAL NOTES) AND AS PER NCDENR STANDARDS.  
3. SPREAD SEED BEFORE TEMPORARY LINER IS INSTALLED.  
4. LINER SHALL BE INSTALLED FROM TOP OF BANK TO TOP OF BANK ALONG DIKE WITHIN DENUDED LIMITS.

**MAINTENANCE**  
1. ALL EROSION CONTROL LINING SHALL BE INSPECTED EVERY SEVEN (7) DAYS OR AFTER EACH RAINFALL OCCURRENCE THAT EXCEEDS ONE-HALF (0.5) INCH.

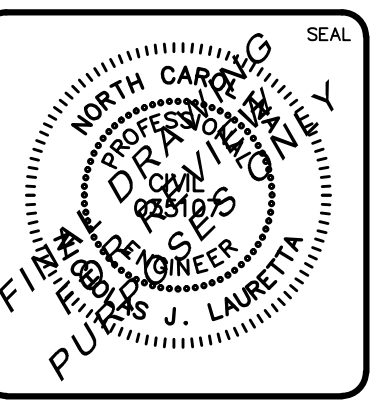
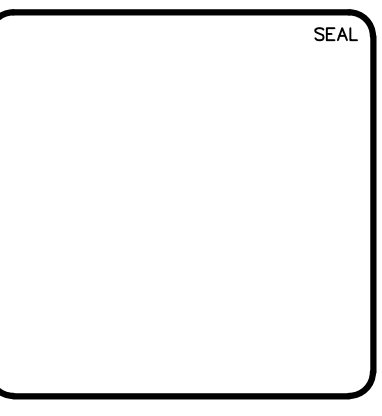
TEMPORARY PERIMETER DIKE  
NOT TO SCALE



- NOTES:
1. CHAIN LINK FABRIC TO BE MIN. 11 GAUGE, GALVANIZED. NO RUSTED OR EXCESSIVELY MALFORMED FABRIC.
  2. FENCE BASES SHALL BE OF SUFFICIENT WEIGHT and/or SPREAD TO ADEQUATELY SUPPORT EACH PANEL.
  3. PANEL-TO-PANEL CONNECTIONS SHALL BE MADE AT A MIN. TWO LOCATIONS PER CONNECTION UNLESS OTHERWISE APPROVED.
  4. PROVIDE CONSTRUCTION WARNING SIGNAGE 50' O.C. ALONG FENCING INSTALLATION.

TEMPORARY CONSTRUCTION FENCING  
NOT TO SCALE

REV. NO.	DESCRIPTIONS/REVISIONS	DATE



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**RIVERLIGHTS MARINA VILLAGE  
PHASE 1B**  
**SEDIMENT & EROSION CONTROL  
DETAILS**

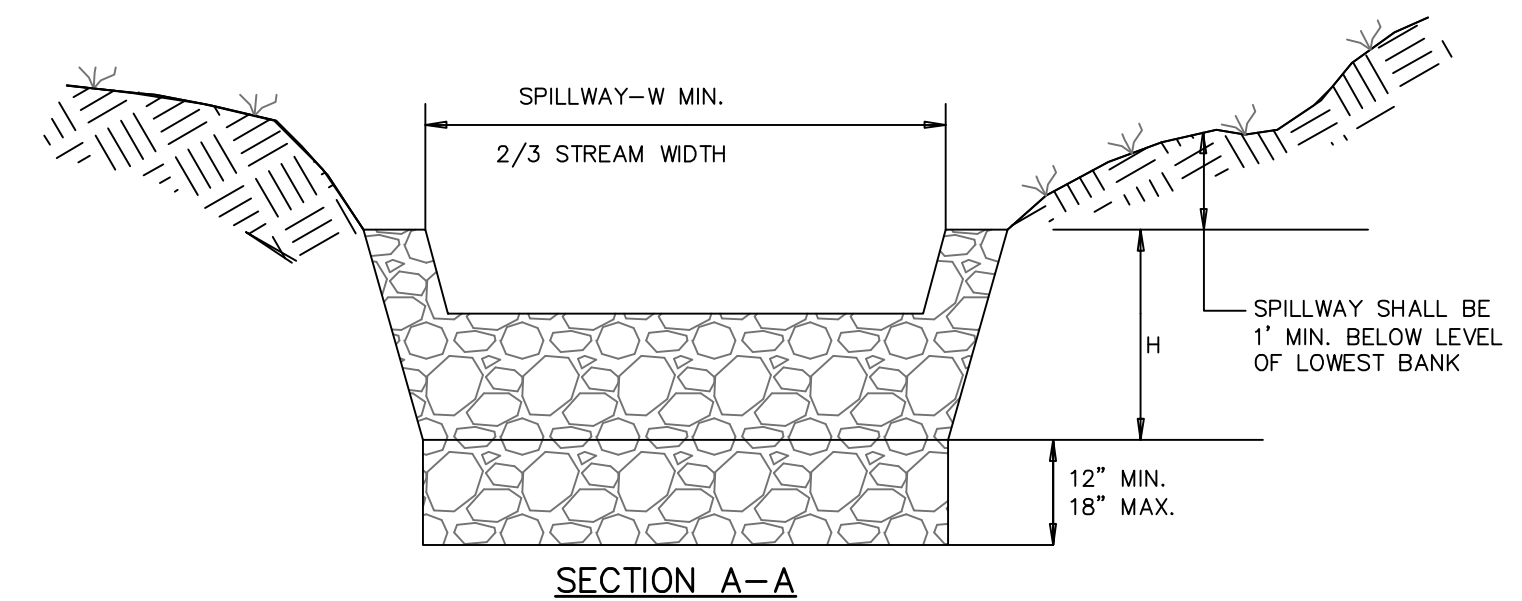
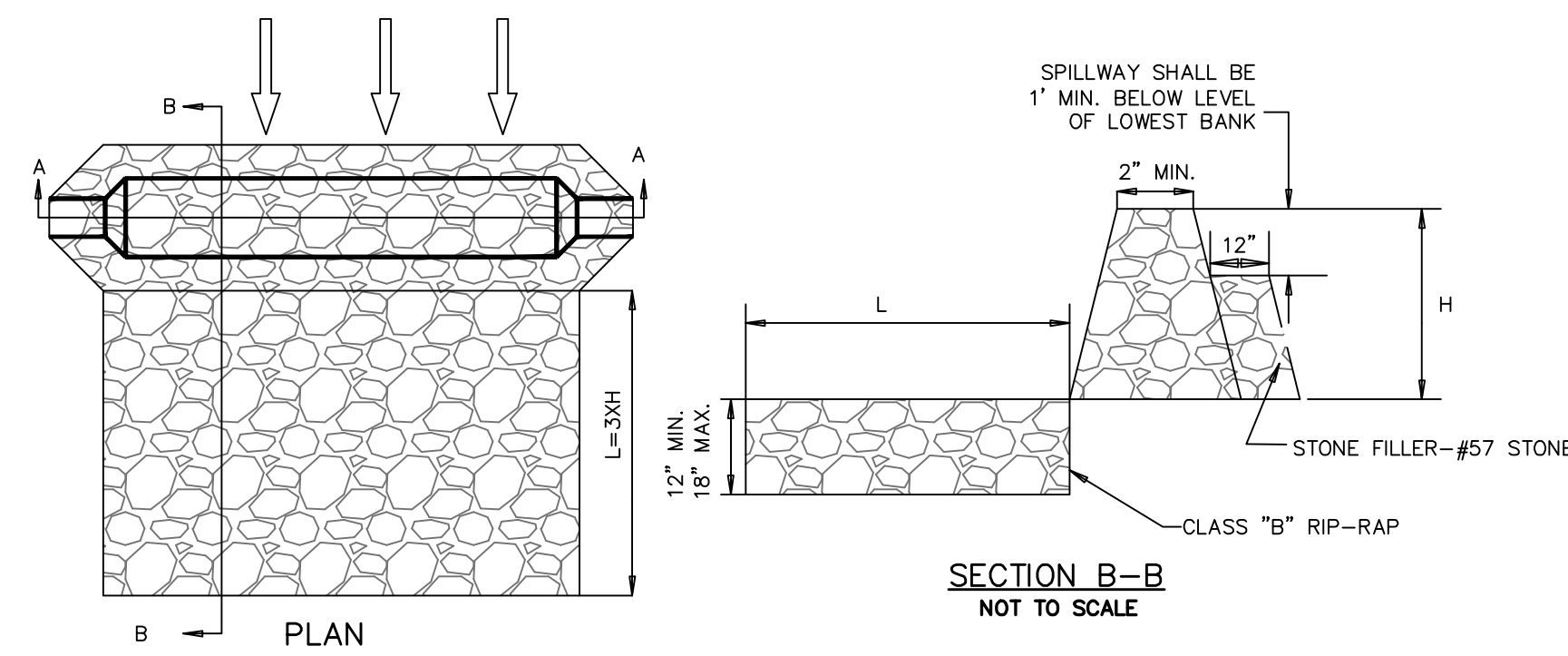
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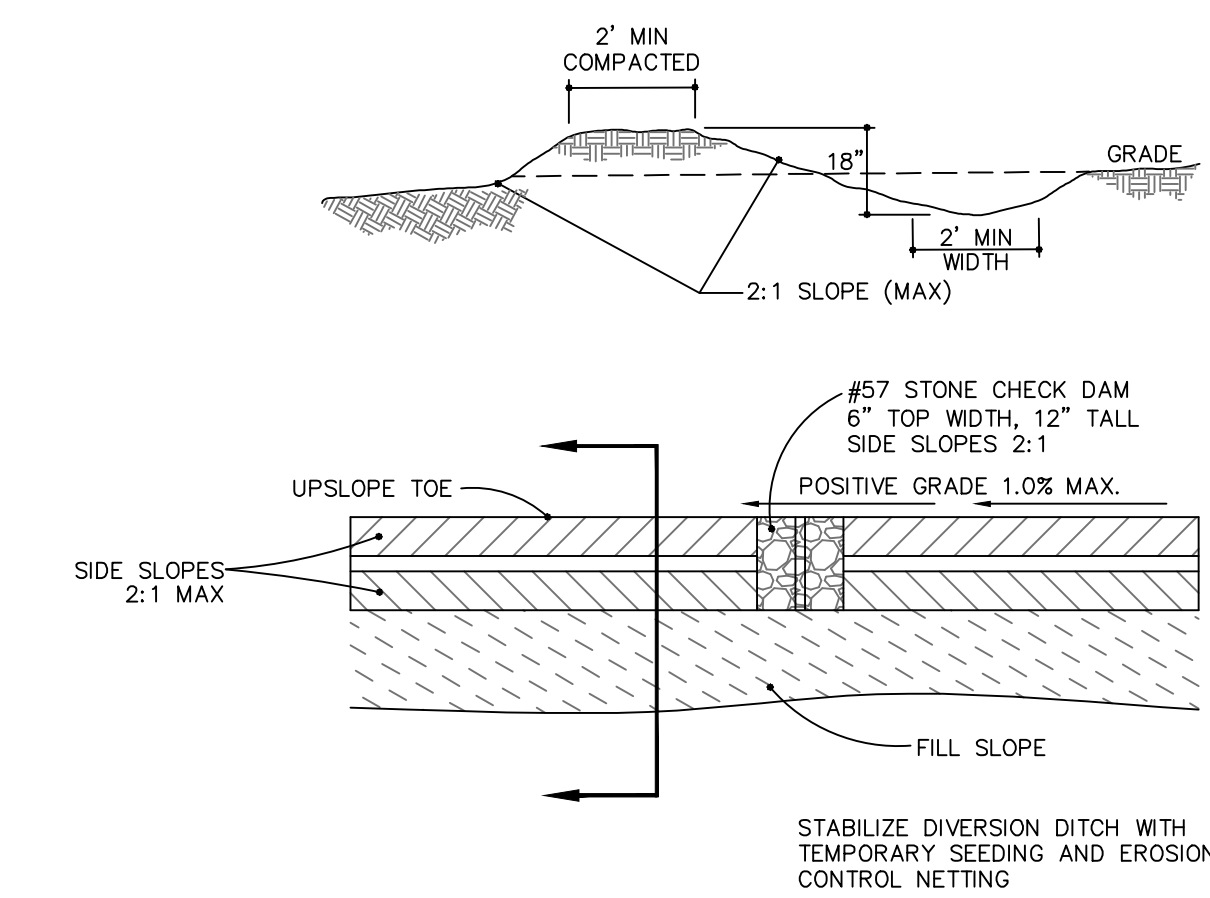
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DRAWING NUMBER: 24

STATUS: FINAL DESIGN  
NOT FOR CONSTRUCTION





**DITCH CHECK DAM**  
SD 13-04  
NOT TO SCALE



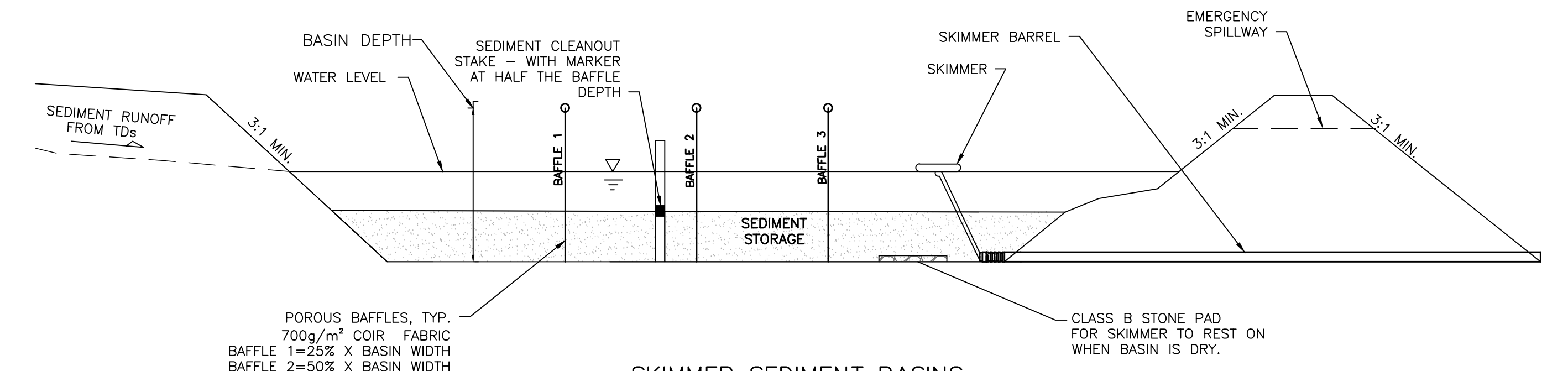
**TEMPORARY DIVERSION DITCH**  
NOT TO SCALE

TEMPORARY DIVERSION DITCH CALCULATION TABLE											
TDD NUMBER	DA (AC)	Q10 (CFS)	LENGTH (FT)	HIGH (FT)	LOW (FT)	ELEVATION DIFF. (FT)	SLOPE (%)	INITIAL LINING	MANNING n	VELOCITY (FPS)	COMMENT
TDD1	0.25	0.5	158	8.00	4.00	4.00	2.53	BARE EARTH	0.020	5.01	LINING REQ
TDD2	1.22	2.6	231	5.45	4.57	0.88	0.38	BARE EARTH	0.020	24.46	LINING REQ

TEMPORARY ROCK CHECK DAMS/WATLES									
TDD NUMBER	SECONDARY LINING	MANNING n	VELOCITY (FPS)	COMMENT	DEPTH in	MIN. DEPTH in	CHECK DAM SPACING (FT)	NUMBER REQUIRED	NUMBER PROVIDED
TDD1	LINING REQ	0.035	3.43	EXCELSIOR OK	1.4	18	79	2	2
TDD2	LINING REQ	1.035	16.74	NEW LINING REQ	1.4	19	525	0	0

- Notes:
- Q10 taken from Rational Method.
  - Manning n value for bare earth = 0.020 per NC ESC Manual Table 8.05f
  - Manning n value for excelsior (curled wood) matting = 0.035 per NC ESC Manual Table 8.05f
  - Tractive Force (Shear Stress) was also evaluated and found to be sufficient for the proposed lining.



**SKIMMER SEDIMENT BASINS**  
PHASE 1: SB-1, 2, 3, 4 AND 5  
PHASE 2: SB-1 AND 5

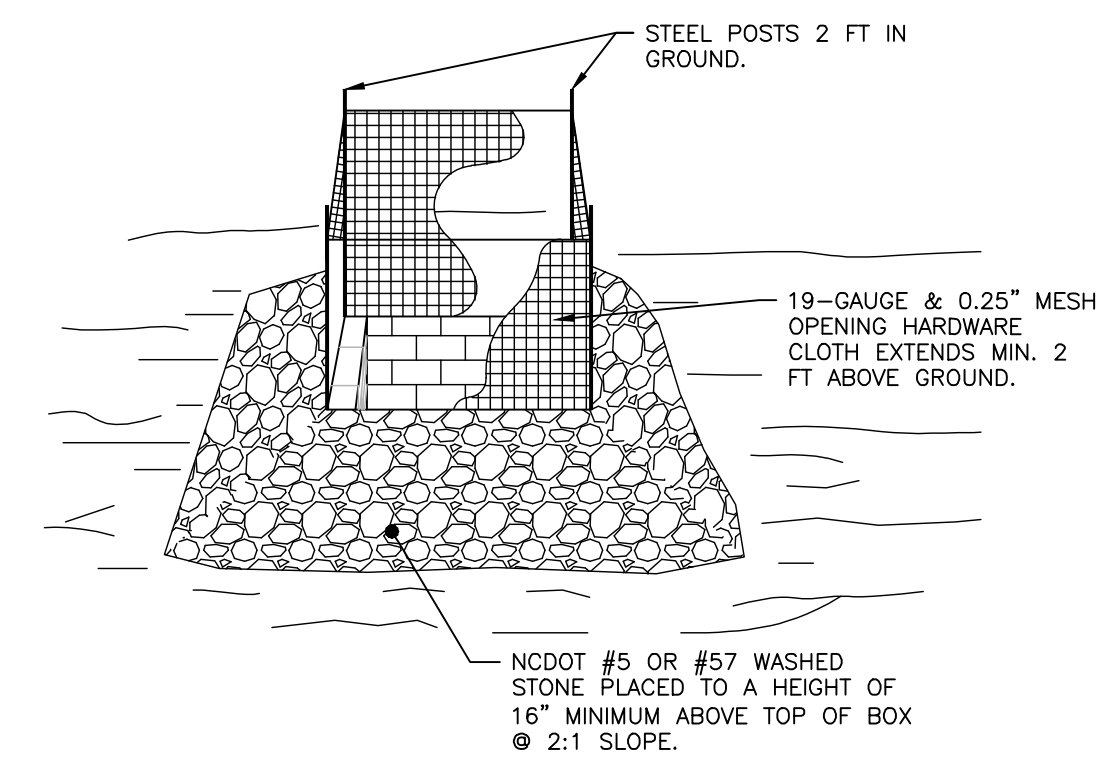
- NOTES:**
- BAFFLE MATERIAL SHALL BE MATERIALS SUCH AS 700 G/M COIR EROSION BLANKET OR COIR MESH
  - THE BAFFLE MATERIAL NEEDS TO BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
  - LOCATE THE EMERGENCY SPILLWAY ON NATURAL SOILS. AVOID PLACING IT THROUGH FILL MATERIAL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

Skimmer No.	Drainage Area ac	Rational C Runoff Coeff.	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	3.45	0.30	7.23	7.48	2,432	2,584	6,210	6,920	3.00	4,007	8.0

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	3	1,336	2.0	1.6	0.8	6.9	4.0

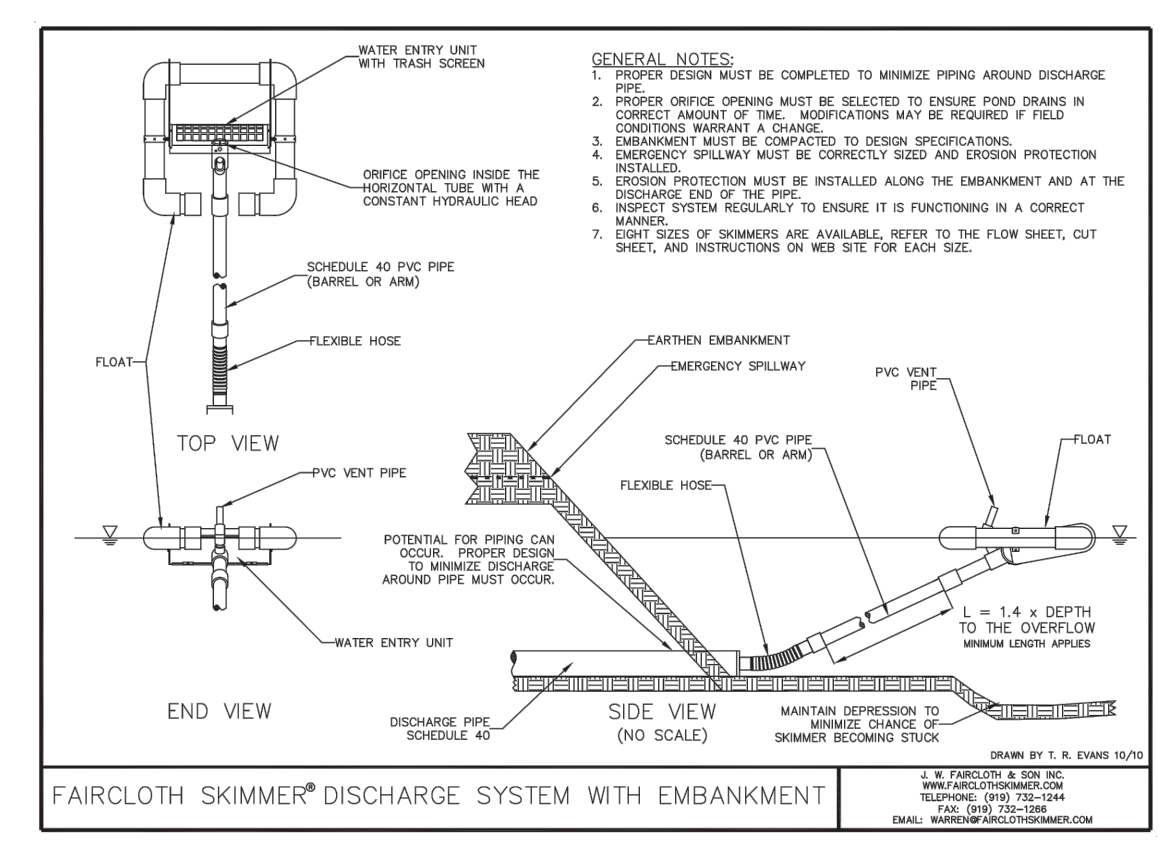
Skimmer Size in	Outflow Qmax cf/day	Head ft
1.5	1,728	0.125
2	3,283	0.167
2.5	6,234	0.208
3	9,774	0.250
4	20,109	0.333
5	32,832	0.333

- NOTES:**
- Q10 Peak Flow were taken from Rational Method.
  - Required Surface Areas and Volumes were taken from NCDENR ESC Manual.
  - Faircloth Skimmer Selection Table taken from Table 4-2, NCDOT Level III-A Design of Sediment & Erosion Control Plans Manual
  - Emergency Weir Width taken from Skimmer Basin Criteria Section of NCDENR ESC Manual Table and/or Hydraulic Routing of the basin to ensure non-erosive velocity.
  - Minimum Barrel Pipe on the Skimmer is 4-inches. (On a 1% slope the capacity is 100 GPM)
  - Skimmer Orifice Diameter/Radius were obtained using the Faircloth Skimmer sizing spreadsheet (obtained from their website: <http://www.fairclothskimmer.com/skimmer-sizing>)



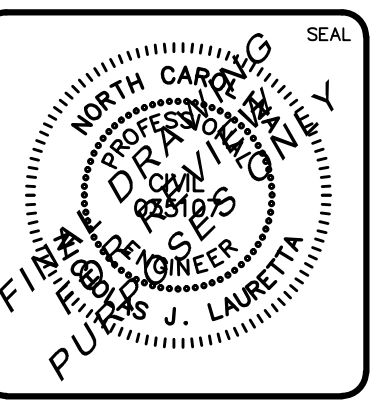
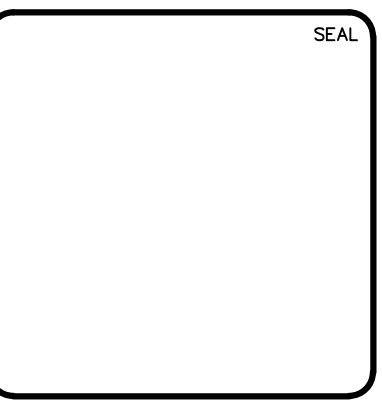
- NOTES:**
- DRIVE 5-FOOT STEEL POSTS (1.25 lb/ft steel) 2 FEET INTO THE GROUND SURROUNDING THE INLET. SPACE POSTS EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4 FEET APART.
  - SURROUND THE POSTS WITH AT LEAST 19-GAUGE HARDWARE CLOTH WITH A 1/4-INCH MESH OPENING. SECURE THE WIRE MESH TO THE STEEL POSTS AT THE TOP, MIDDLE, AND BOTTOM FOR A MIN. 2 FEET ABOVE THE GROUND. PLACING A 2-FOOT FLAP OF THE WIRE MESH UNDER THE GRAVEL FOR ANCHORING AND REMOVAL IS RECOMMENDED.
  - UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET. THE TOP ELEVATION OF THE STRUCTURE MUST BE AT LEAST 12-INCHES LOWER THAN THE SURROUNDING GROUND ELEVATION DOWNSLOPE FROM THE INLET TO ENSURE THAT STORM FLOWS GET INTO THE INTENDED INLET; UNLESS OTHER SEDIMENT-CONTROL DEVICES ARE INSTALLED TO PREVENT OFF-SITE SEDIMENT-RUNOFF.

**TEMP. STORM DRAIN INLET PROTECTION**  
NOT TO SCALE



**SKIMMER DETAIL WITH EMBANKMENT**  
NOT TO SCALE

REV. NO.	DESCRIPTIONS / REVISIONS	DATE



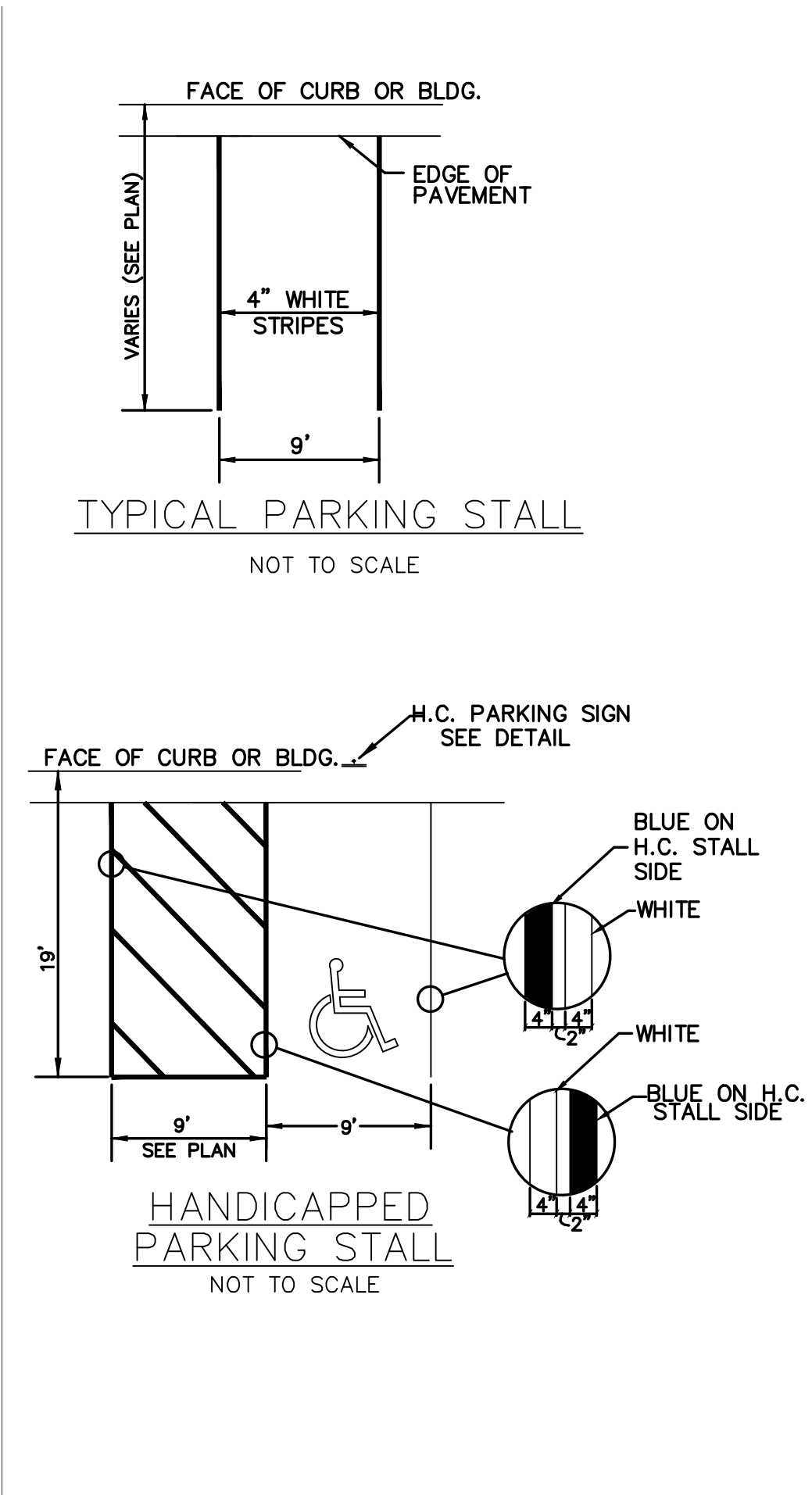
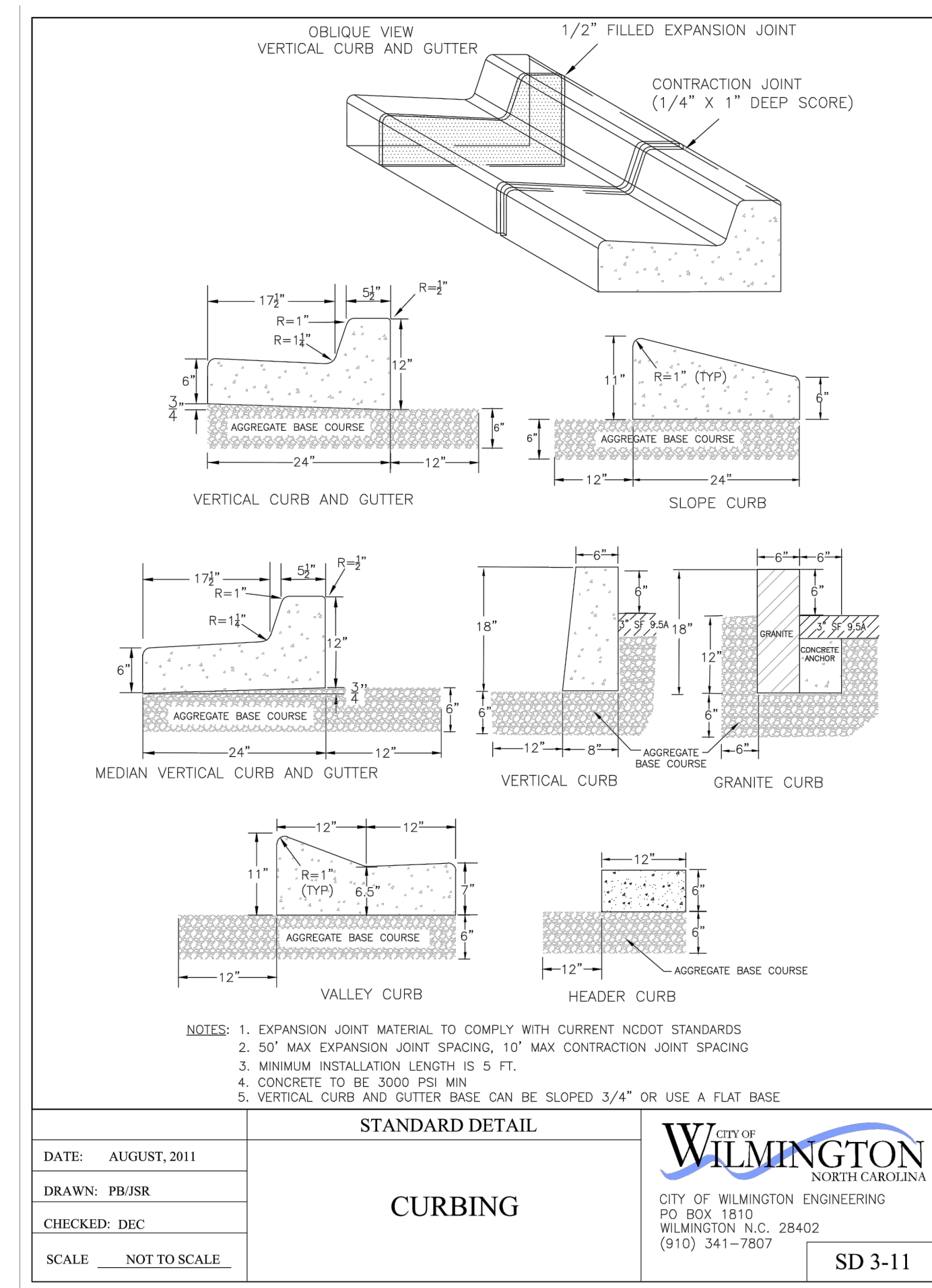
**MCKIM & CREED**  
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**RIVERLIGHTS**  
by Newland COMMUNITIES  
NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE PHASE 1B**  
**SEDIMENT & EROSION CONTROL DETAILS**

DATE: 10NOV15	SCALE: CE-502
MCE PROJ. # 2735-0124	HORIZONTAL: N/A
DRAWN: ALM	VERTICAL: N/A
DESIGNED: NUL	REVISION: ---
CHECKED: KCBE	STATUS: FINAL DESIGN
PROJ. MGR.: NUL	NOT FOR CONSTRUCTION

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**GENERAL NOTES**

1. 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.
2. WHEELCHAIR RAMPS SHALL BE LOCATED AS INDICATED IN DETAIL DRAWINGS; HOWEVER, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. MAY AFFECT PLACEMENT.
3. CURB RAMPS SHALL HAVE DETECTABLE WARNINGS EXTENDING THE FULL WIDTH OF THE RAMP AND A MINIMUM OF 2'-FT. IN LENGTH.

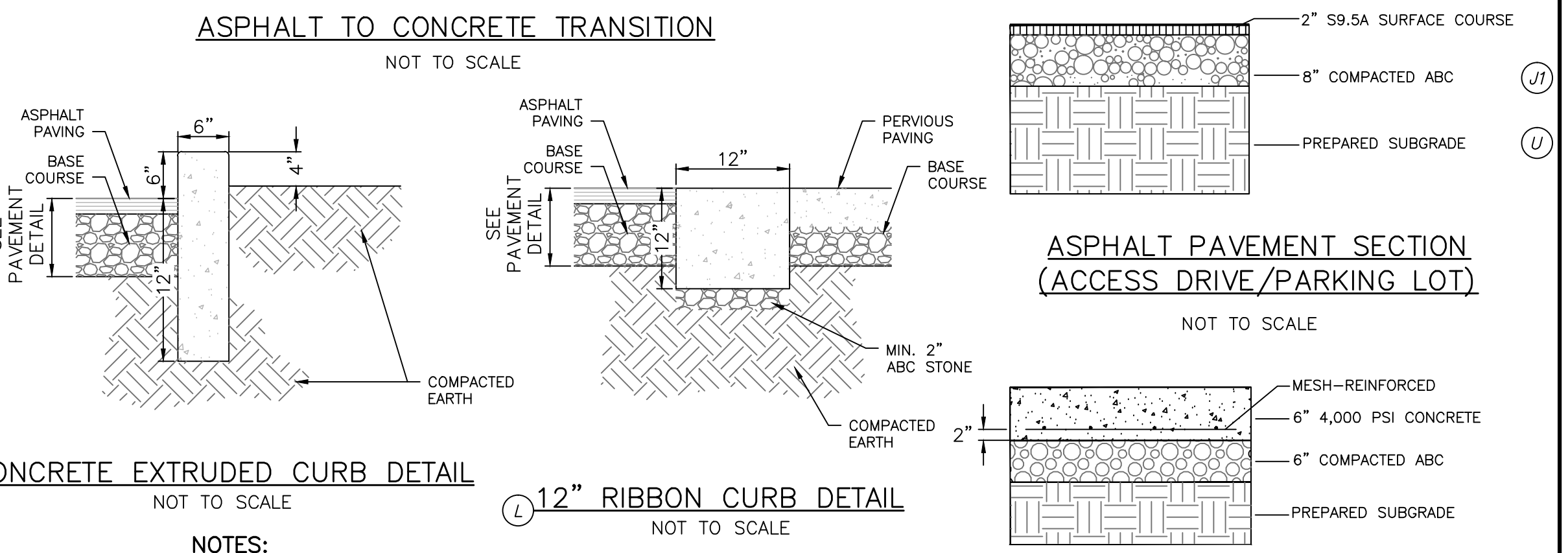
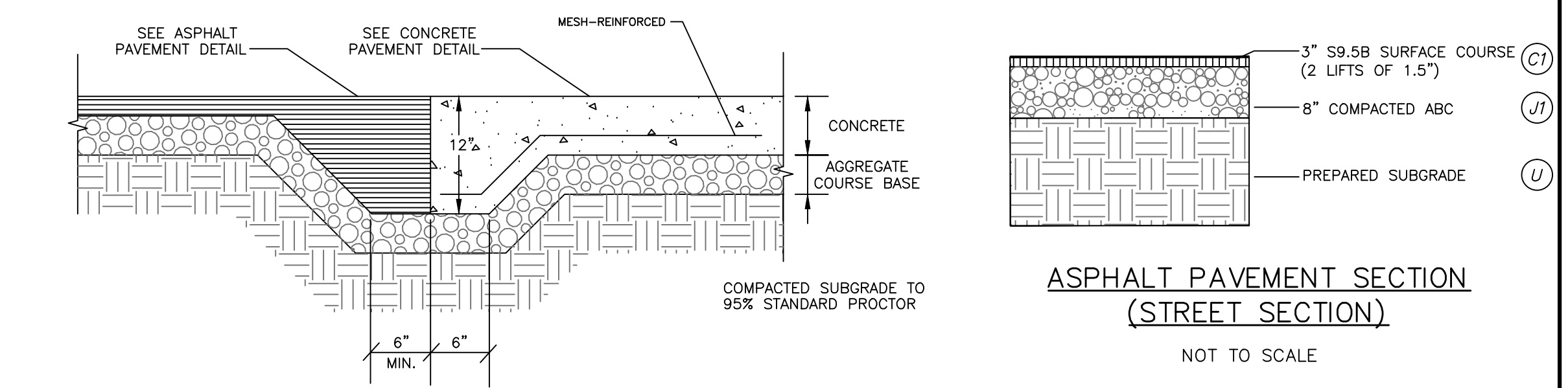
**CONSTRUCTION NOTES**

1. CONSTRUCTION SHALL CONFORM WITH CONSTRUCTION STANDARDS OF THE GOVERNING BODY WHICH HAS JURISDICTION OF THE PARTICULAR STREET.
2. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE WITH THE SURFACE HAVING A ROUGH, NON-SKID TYPE FINISH.
3. A 1/2"-IN. EXPANSION JOINT SHALL BE REQUIRED WHERE THE CONCRETE WHEELCHAIR RAMP JOINS ANY RIGID PAVEMENT OR STRUCTURE.
4. 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.
5. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
6. THE MAXIMUM SLOPE ON THE CURB RAMP RUN IS 1:12.
7. THE MAXIMUM CROSS SLOPE OF THE CURB RAMP IS 1:50.
8. MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP, OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20.
9. 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.
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.

**ADDITIONAL NOTES**

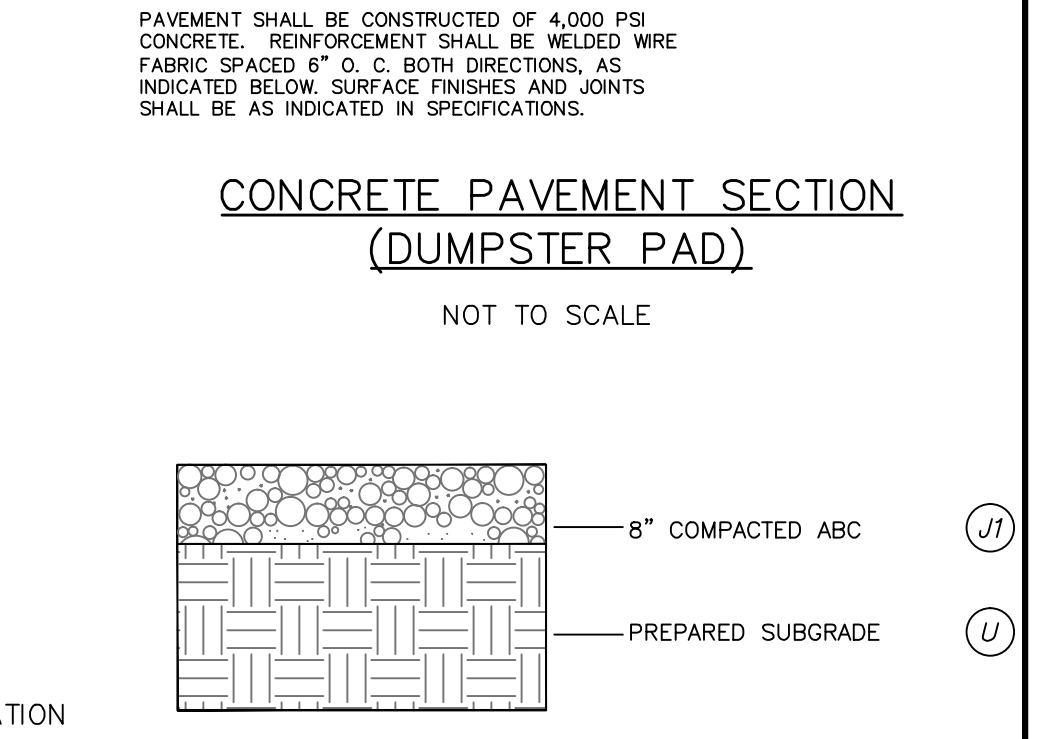
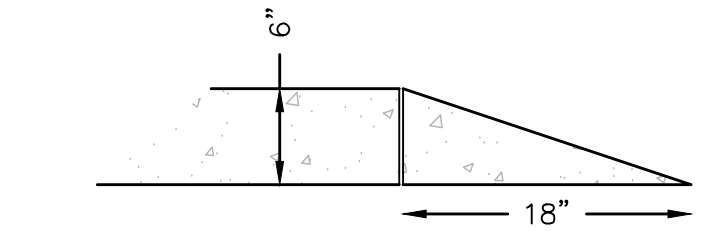
1. STOP BARS SHALL BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT.
2. PARKING SHALL BE ELIMINATED A MINIMUM OF 20 FEET BACK OF THE PEDESTRIAN CROSSWALK.
3. ALL PAVEMENT MARKINGS SHALL 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.
4. CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
5. THE BOTTOM OF DIAGONAL (CORNER TYPE) CURB RAMPS AT MARKED CROSSINGS SHALL HAVE 48"-IN. MINIMUM CLEAR SPACE WITHIN THE MARKINGS.
6. 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.

SD 8-09

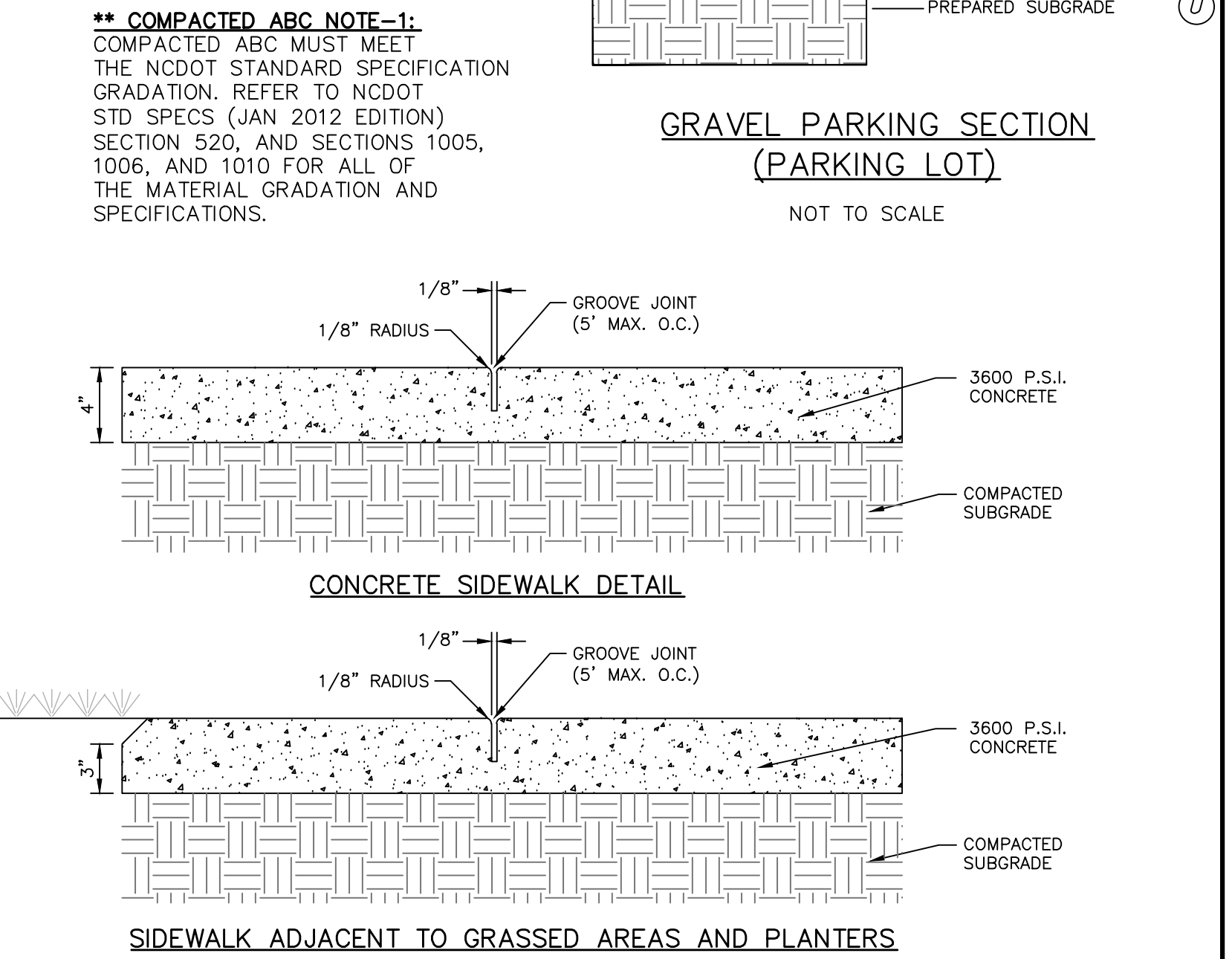
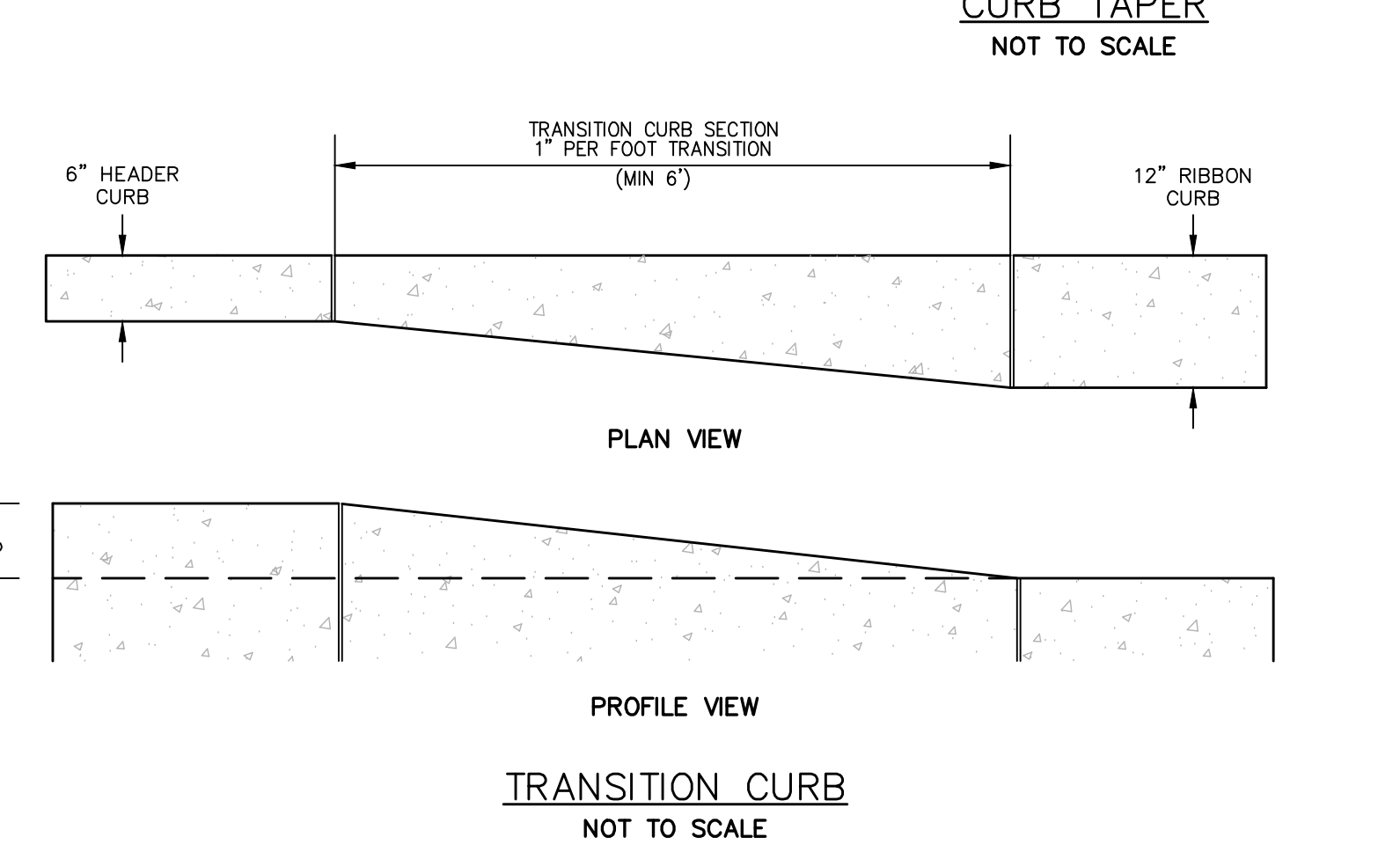
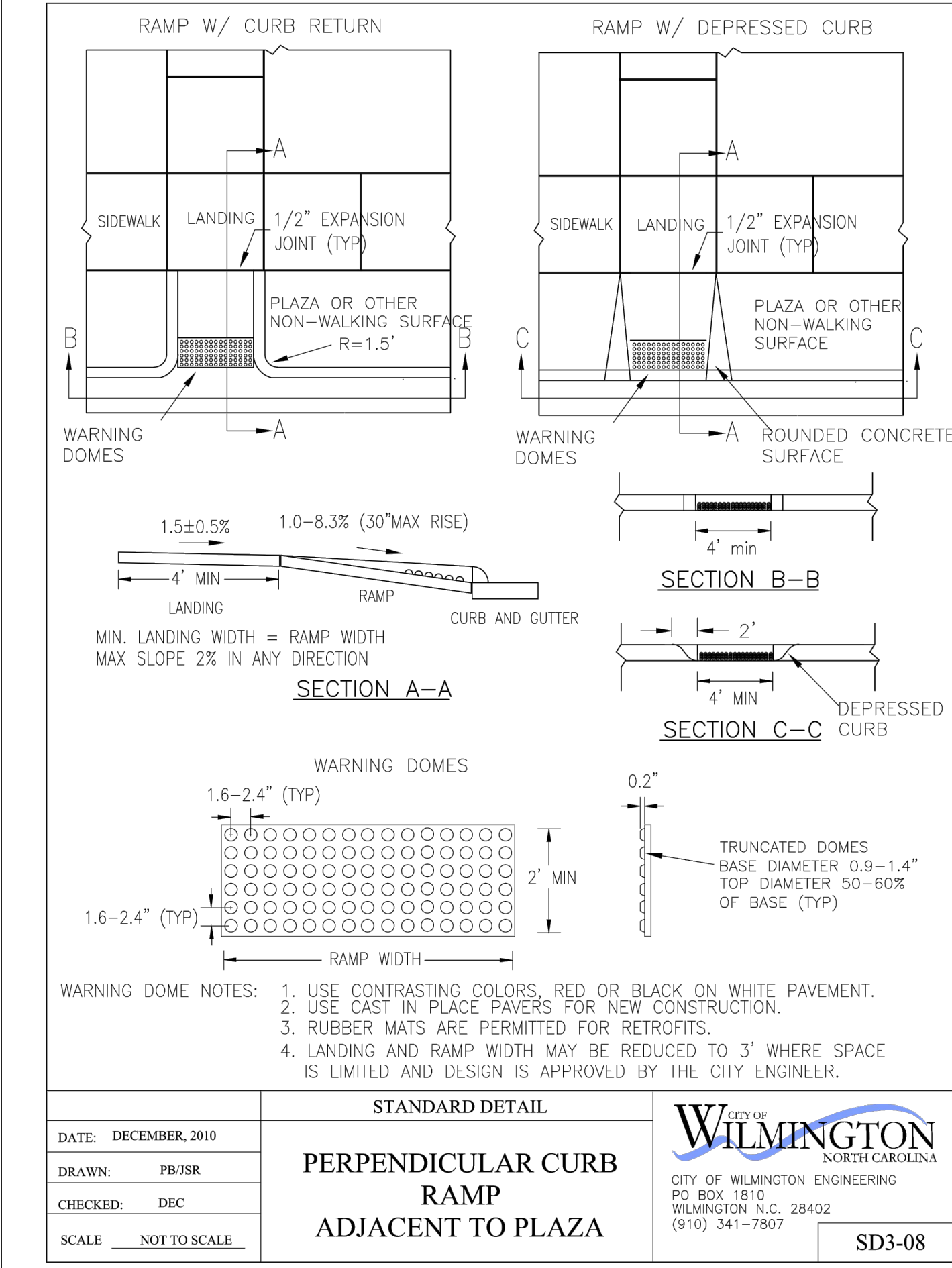
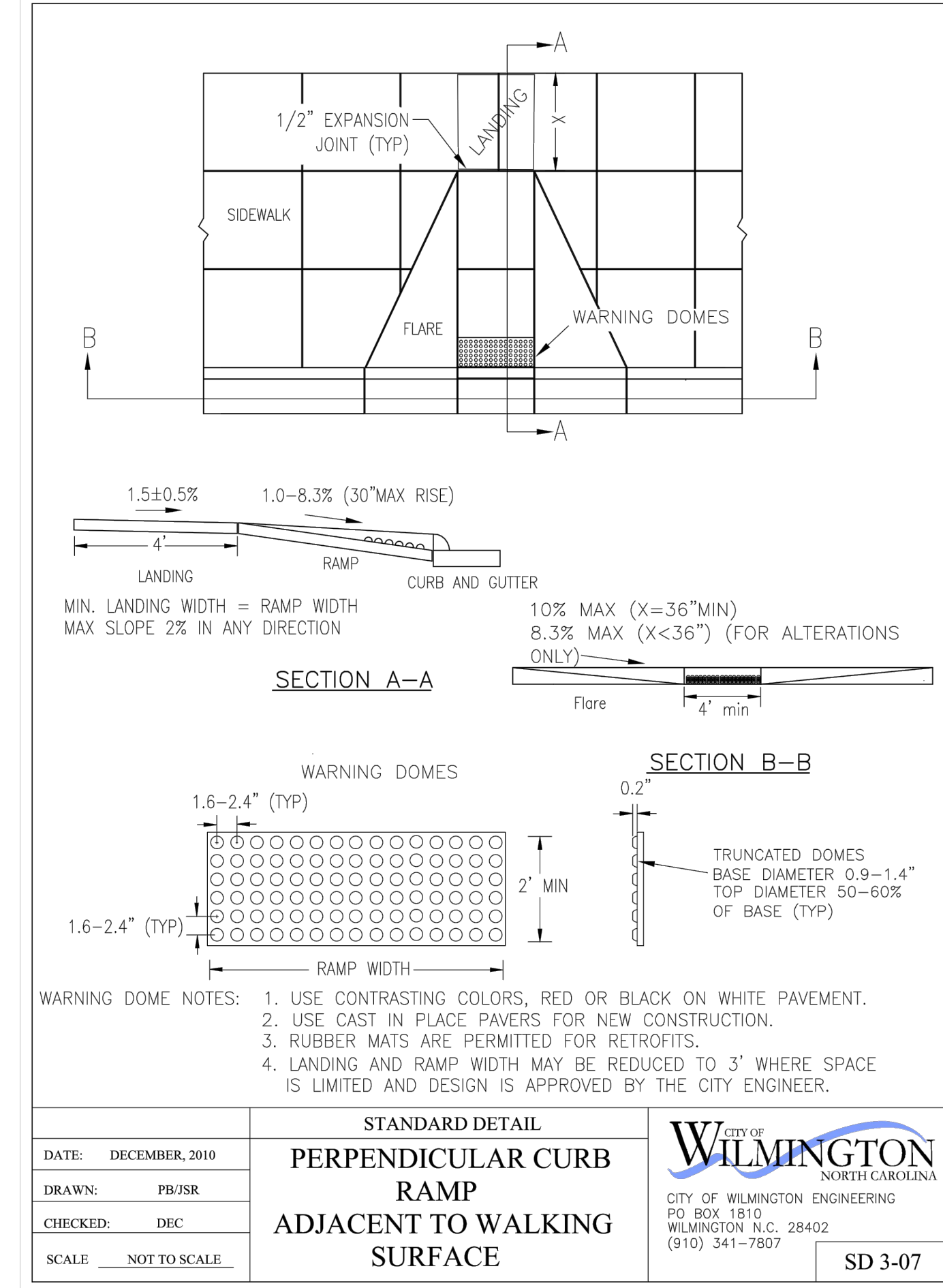


**NOTES:**

1. CURB TO BE CONSTRUCTED IN 10 FT. LENGTHS.
2. 1/2" EXPANSION JOINTS SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 50 FEET, AT THE ENDS AND MID-POINT OF RETURNS AND AT ANY OTHER POINT WHERE THE NEW CURB AND GUTTER ABUTS OTHER CONCRETE SURFACES.



**\*\* 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.

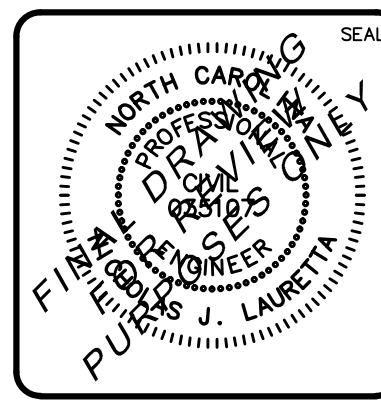


**GENERAL NOTES:**

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADI SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS.
2. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS.
3. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK ABUTS ANY CURB AND GUTTER AND ANY RIGID STRUCTURES.
4. IN SIDEWALKS AND PLAZA AREAS EXPANSION JOINTS ARE REQUIRED AT NO GREATER THAN 30' INTERVALS.
5. CONCRETE SHALL BE 3600 PSI. IN 28 DAYS.

**CONCRETE SIDEWALK DETAIL**  
NOT TO SCALE

REV. NO.	DESCRIPTIONS / REVISIONS	DATE



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**RIVERLIGHTS**  
 by Newland COMMUNITIES

North America Sekisui House, LLC

**RIVERLIGHTS MARINA VILLAGE PHASE 1B**

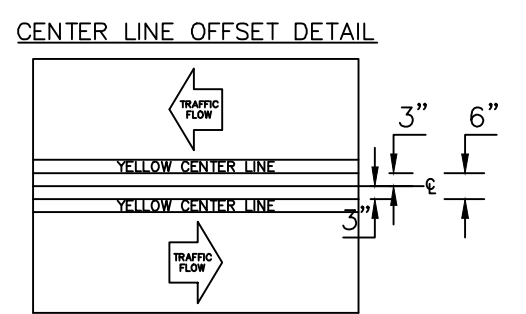
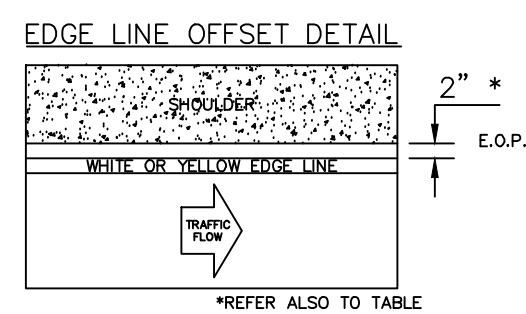
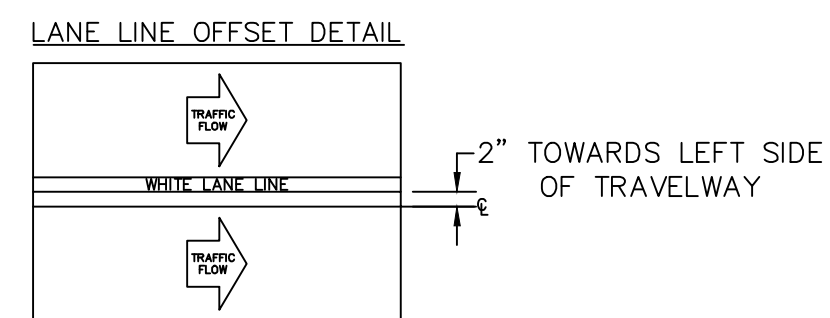
**SITE DETAILS**

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 MCE PROJ. # 2735-0124  
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 DESIGNED: NUL  
 CHECKED: KCBE  
 PROJ. MGR.: NUL

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

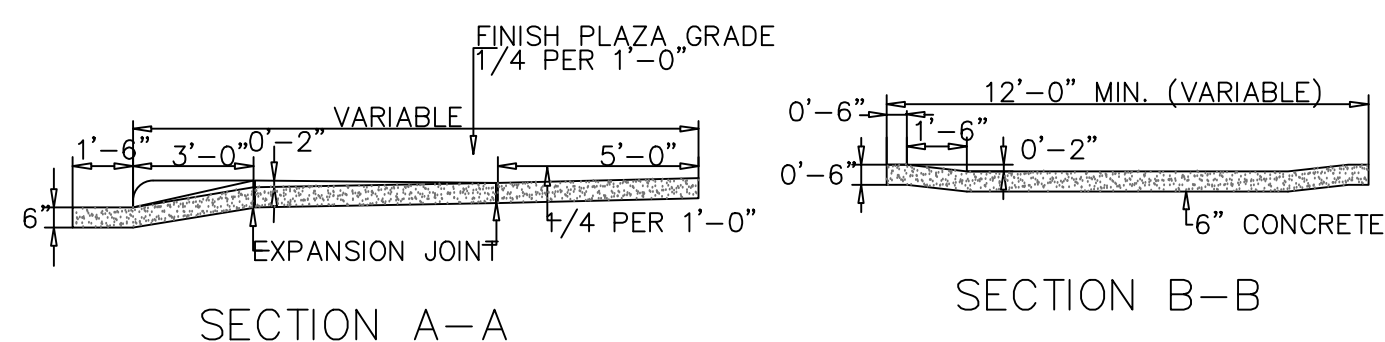
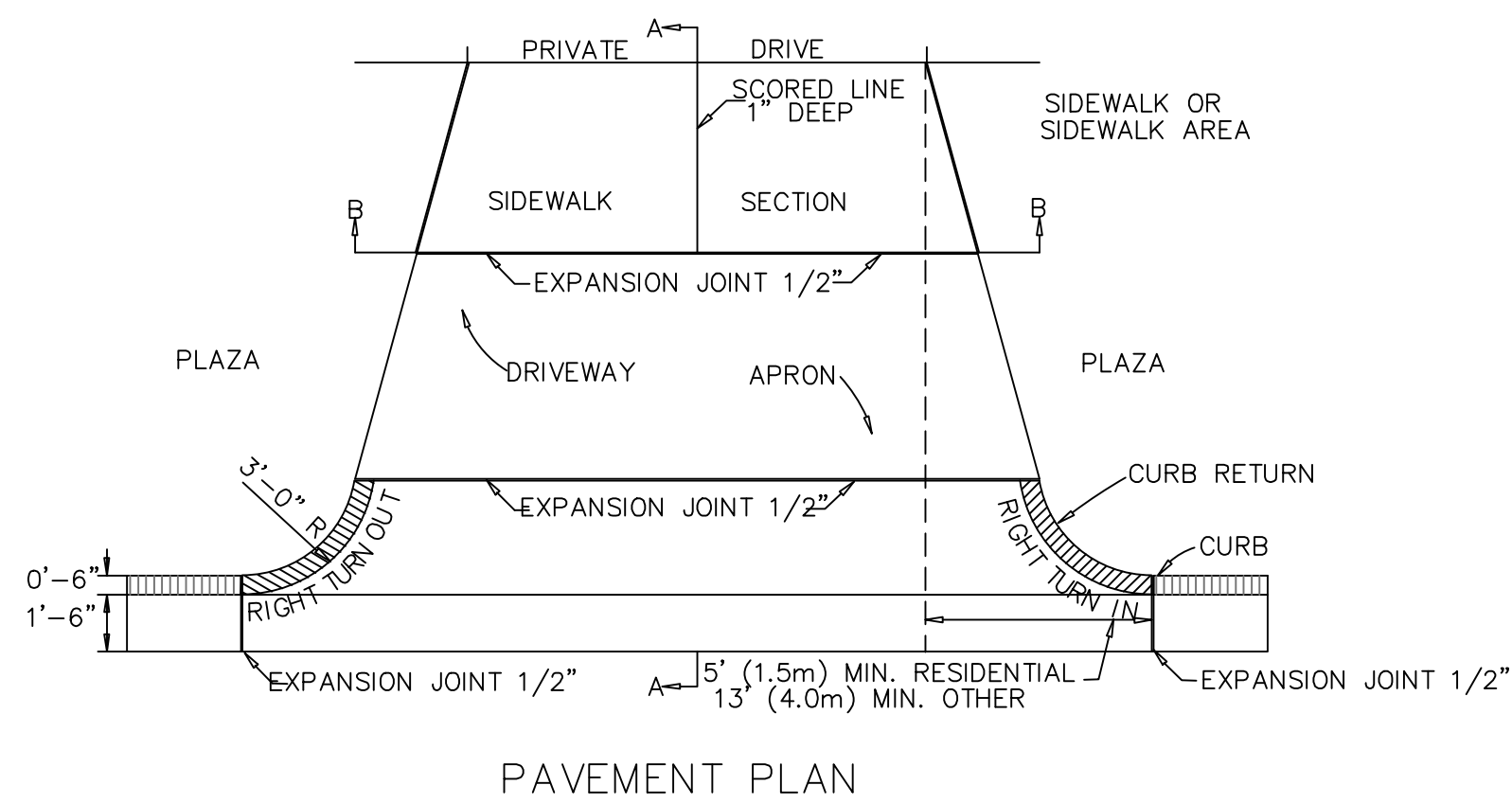
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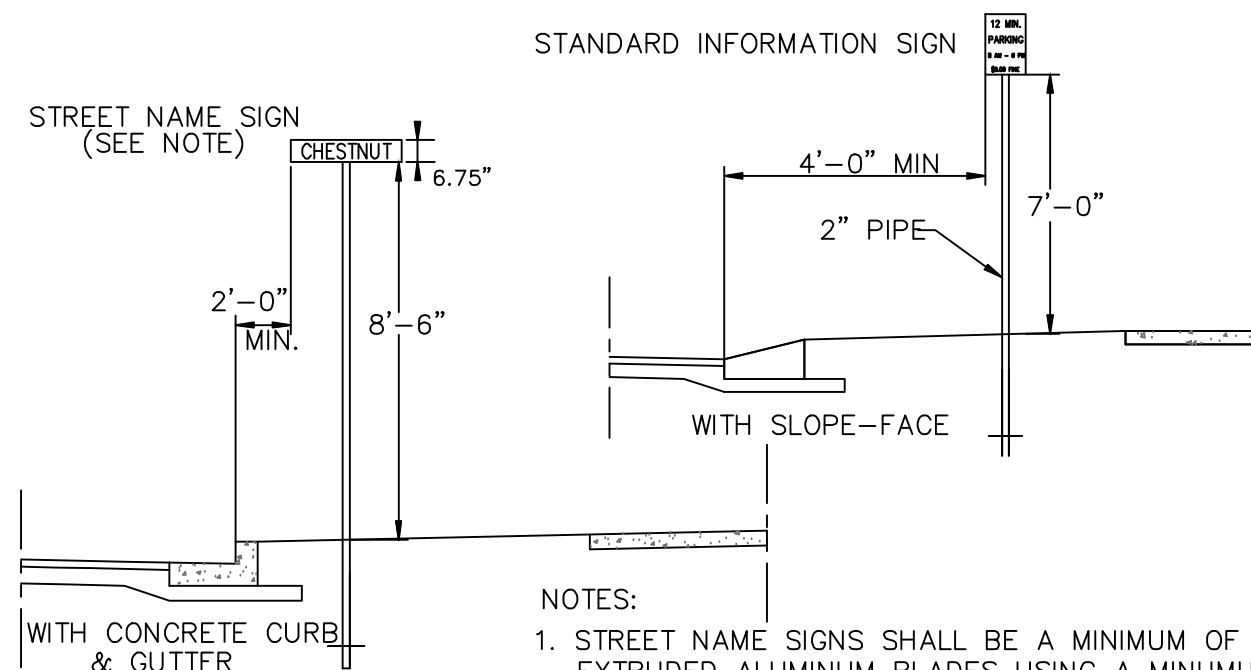
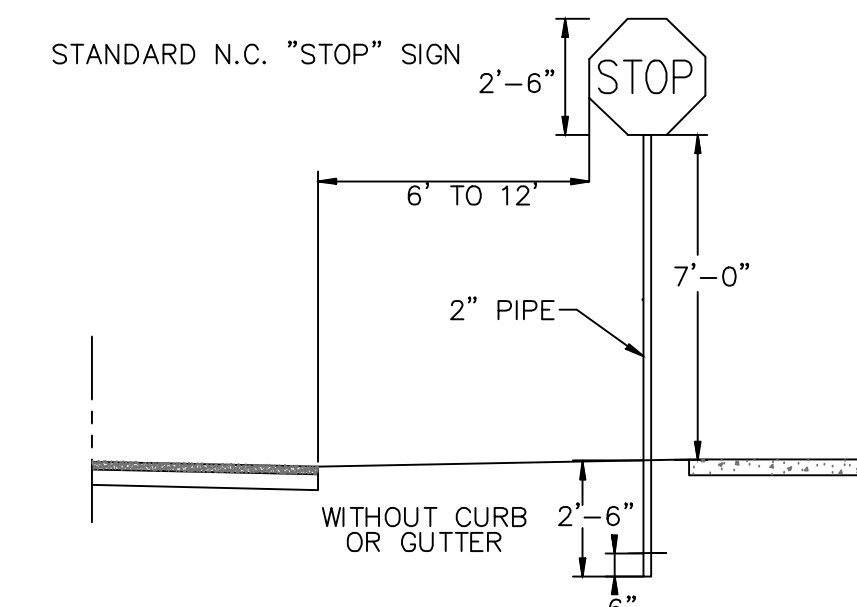


**PAVEMENT MARKINGS OFFSETS**  
SD 11-02

WIDTH OF TRAVEL PAVEMENT	MAX. EDGE LINE OFFSET FROM E. O. P.	MINIMUM LANE WIDTH
16' - 20'	2'	8' - 10'
22'	2'	11'
24'	1'	11'
26'	2'	11'
28'	3'	12'
30'	3'	12'
32'	4'	12'

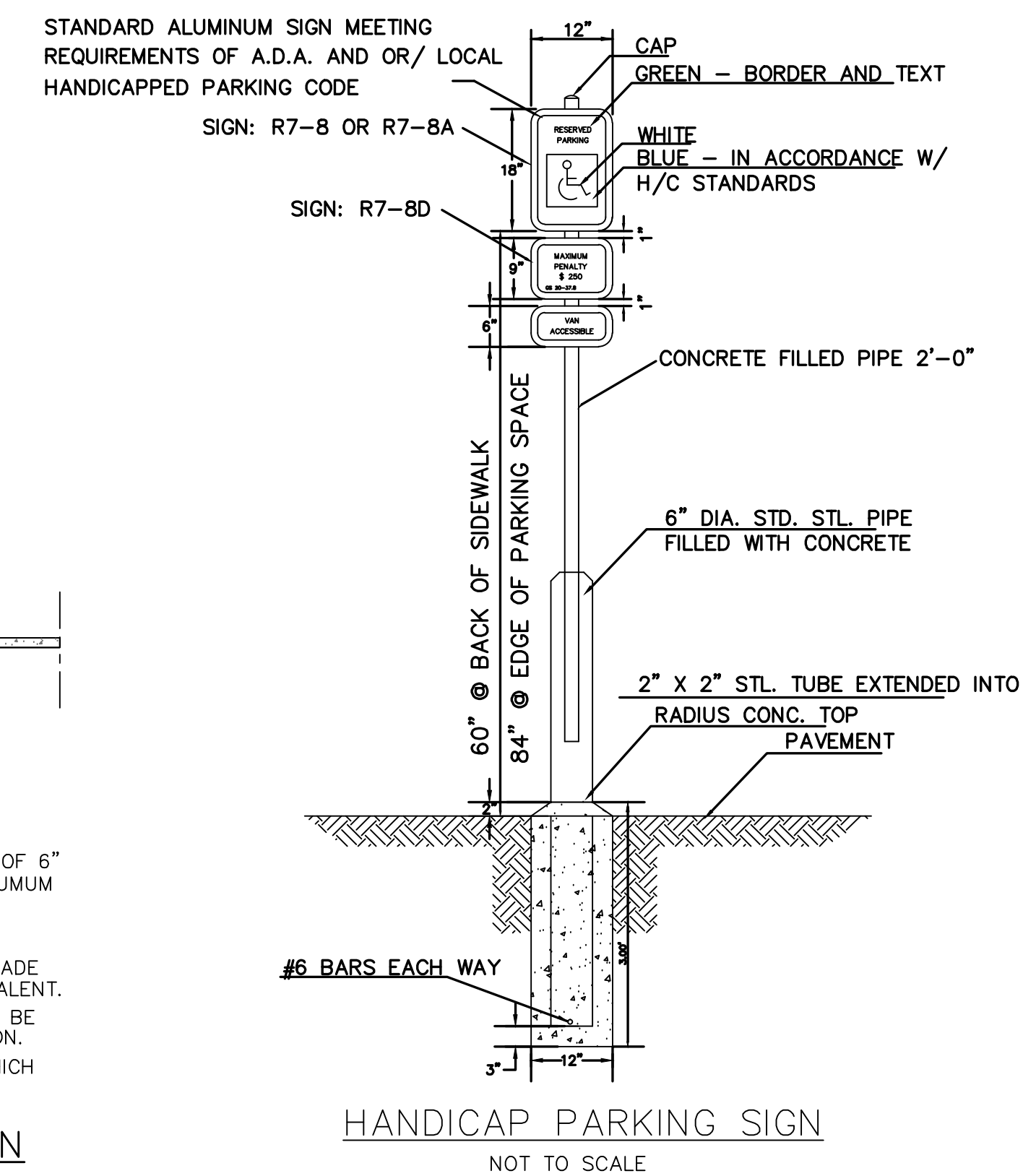


**STANDARD DRIVEWAY DETAIL**  
SD 8-02  
NOT TO SCALE

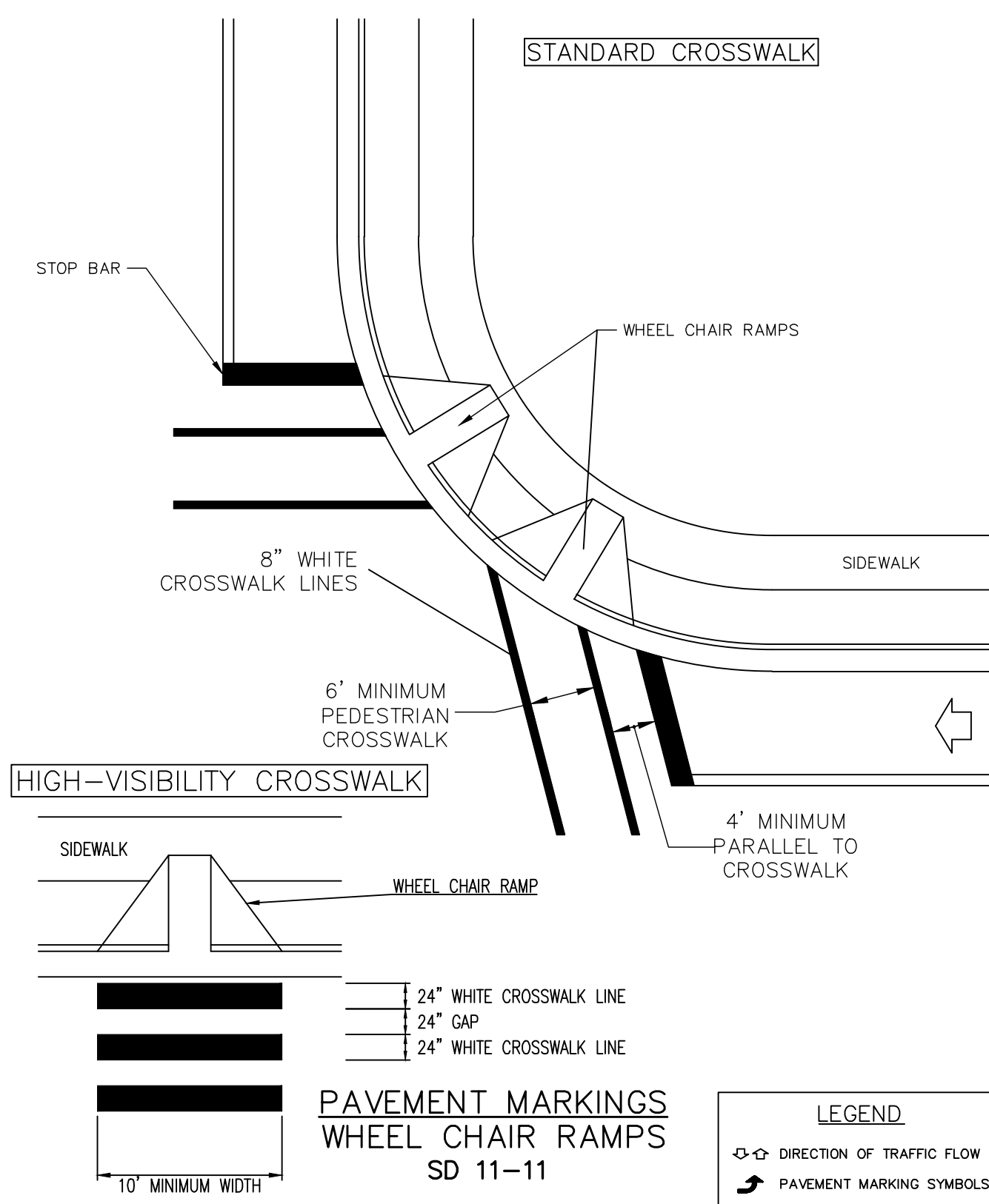


- NOTES:
1. STREET NAME SIGNS SHALL BE A MINIMUM OF 6" EXTRUDED ALUMINUM BLADES USING A MINIMUM OF 4" C SERIES LETTERING IN REFLECTIVE SILVER & REFLECTIVE GREEN BACKGROUND.
  2. ALL REFLECTIVE SIGNS SHALL BE MADE OF ENGINEERING GRADE OR HIGH INTENSITY GRADE REFLECTIVE SHEETING OR APPROVED EQUIVALENT.
  3. ALL SIGNS PLACED IN RIGHT-OF-WAY WILL BE APPROVED BY TRAFFIC ENGINEERING DIVISION.
  4. ALL FOOTINGS TYPICAL FOR ALL SIGNS, WHICH NEED TO BE ANCHORED IN CONCRETE.

**STANDARD SIGN INSTALLATION LOCATION**  
SD 15-04  
NOT TO SCALE

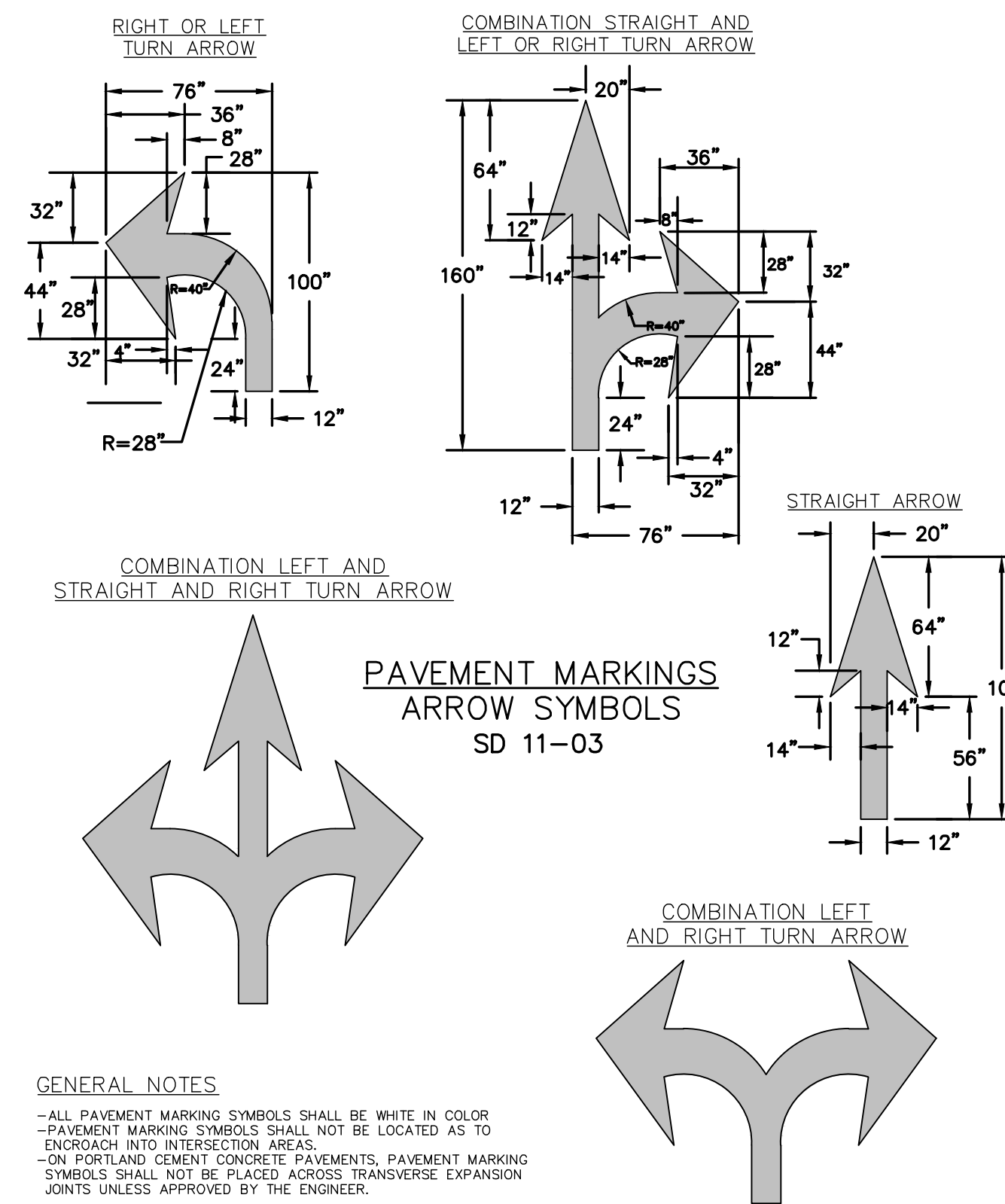


**HANDICAP PARKING SIGN**  
NOT TO SCALE



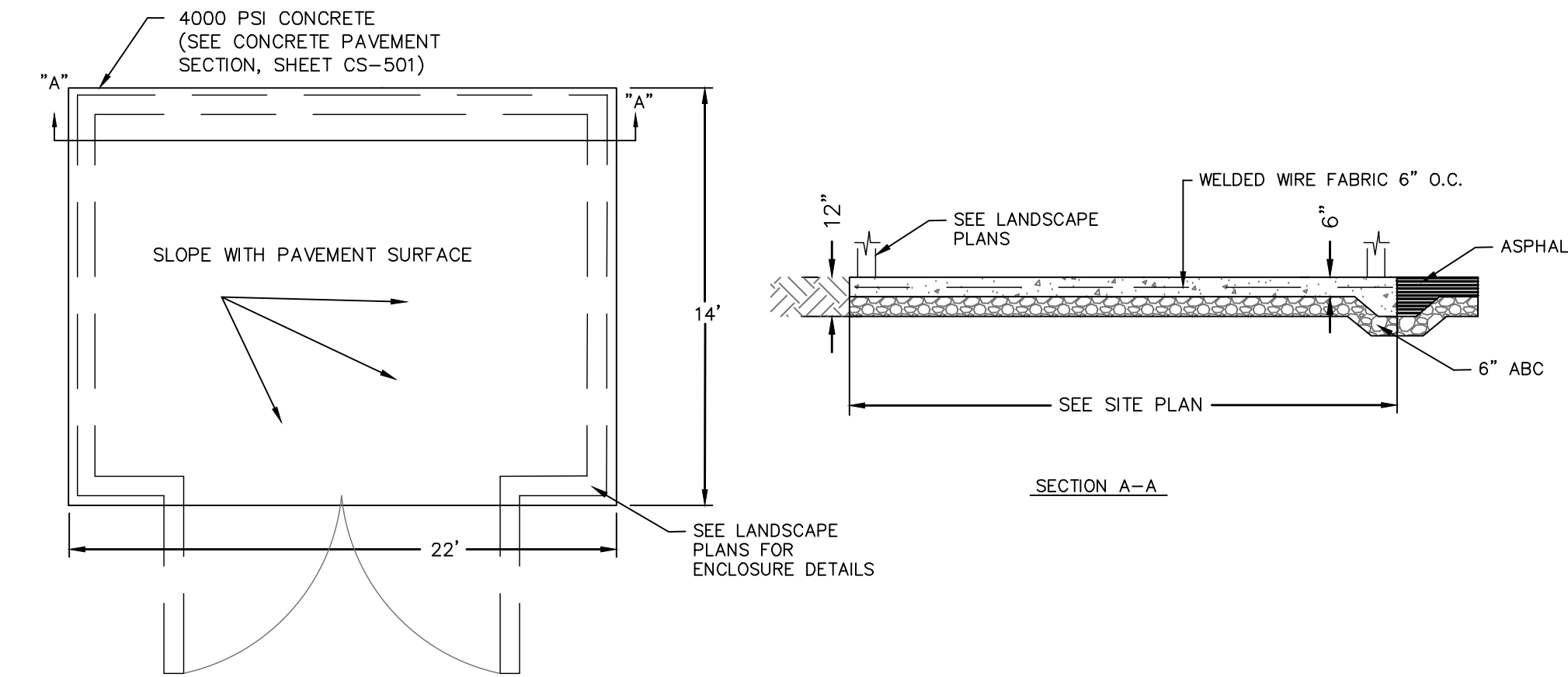
**PAVEMENT MARKINGS WHEEL CHAIR RAMP**  
SD 11-11

	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS



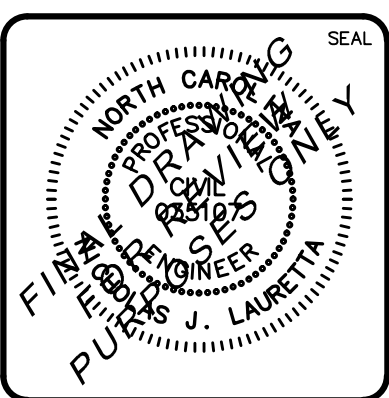
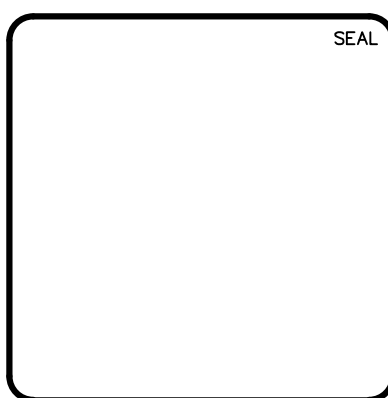
**PAVEMENT MARKINGS ARROW SYMBOLS**  
SD 11-03

- GENERAL NOTES
- ALL PAVEMENT MARKING SYMBOLS SHALL BE WHITE IN COLOR
  - PAVEMENT MARKING SYMBOLS SHALL NOT BE LOCATED AS TO ENCRUSH INTO INTERSECTION AREAS.
  - ON PORTLAND CEMENT CONCRETE PAVEMENTS, PAVEMENT MARKING SYMBOLS SHALL NOT BE PLACED ACROSS TRANSVERSE EXPANSION JOINTS UNLESS APPROVED BY THE ENGINEER.



**DUMPSTER PAD**  
NOT TO SCALE

REV. NO.	DESCRIPTIONS	DATE



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**RIVERLIGHTS**  
by Newland COMMUNITIES  
NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE PHASE 1B**  
SITE DETAILS

DATE: 10NOV15	SCALE: N/A	MAC FILE NUMBER: CS-502
MCE PROJ. # 2735-0124	HORIZONTAL: N/A	DRAWING NUMBER: 27
DRAWN: ALM	VERTICAL: N/A	
DESIGNED: NUL		
CHECKED: KCBE		
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STATUS: FINAL DESIGN		
NOT FOR CONSTRUCTION		

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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN FOR 12" THRU 54" PIPE

SECTION X-X, SECTION Y-Y, SECTION J-J, SECTION M-M, PLAN, DETAIL SHOWING METHOD OF RISER CONSTRUCTION

GENERAL NOTES:  
 USE CLASS "B" CONCRETE THROUGHOUT.  
 PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 15" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
 OPTIONAL CONSTRUCTION: MONOLITHIC FLOOR, 2" KEYWAY, OR #4 BAR DOMELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.05.  
 USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.  
 FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.  
 CONTRACT WITH PIPE CHAINS MATCHING CHAINS ALL EXPOSED CORNERS 1".  
 DRAWING NOT TO SCALE.

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN FOR 12" THRU 54" PIPE

840.02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN FOR 12" THRU 54" PIPE

PLAN OF TOP SLAB, SECTION S-S, SECTION R-R, DOWEL, ELEVATION, ELEVATION

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER)

PIPE DIA.	SPAN	WIDTH	DEPTH	MIN. HEIGHT	NO. BARS	NO. LENGTH	NO. WIDTH	NO. DEPTH	NO. TOTAL	NO. CONCRETE	NO. ONE PIPE
12"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
15"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
18"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
24"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
30"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
36"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
42"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
48"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015
54"	3'-0"	2'-2"	2'-2"	2'-2"	4	11'-2"	3	3'-0"	30	0.238	0.015

\* RISER HAN. 228 QUBIC YARDS OF CONCRETE PER FOOT HEIGHT

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN FOR 12" THRU 54" PIPE

840.02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE

OPTIONAL JOINT DETAILS, PRECAST RISER PLAN, PLAN VIEW OF BASE UNIT, TYPICAL PRECAST RISER SECTION, TYPICAL SECTION TOP SLAB, TYPICAL SECTION OF BASE UNIT, ISOMETRIC VIEW

GENERAL NOTES:  
 THIS PRECAST BOX MAY BE USED FOR THE FOLLOWING STANDARDS: 840.04, 840.05, 840.14, 840.15, 840.51, 840.52, 840.54, 840.55, 840.56 AND 840.41.  
 INSTALL AND PAY FOR PRECAST DRAINAGE STRUCTURES IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATION SECTION 840.  
 USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.  
 USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A185 WELDED WIRE FABRIC (WFF).  
 LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB TO 15'-0".  
 PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.  
 ORIENT STRUCTURES SO THAT CORNERS WILL NOT BE CUT OR MODIFIED UNLESS ALLOWED BY DETAIL IN PLANS.  
 PRECAST ALL ELEMENTS TO MEET ASTM C913.  
 FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH CONCRETE OR BRICK IN ACCORDANCE WITH STANDARD 840.25.  
 PROVIDE PRECAST STRUCTURES OVER 4'-0" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.  
 WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR IF THE SAME MIN. AREA OF STEEL IS PROVIDED.  
 SEAL JOINTS WITH AN APPROVED SEALANT (SEE SECTION 840 OF NCDOT STANDARD SPECIFICATIONS).  
 LIMIT MAXIMUM STRUCTURE SIZE INSIDE CLEAR DIMENSIONS TO 6'-0" X 6'-0".  
 THE OUTSIDE PIPE DIAMETER PLUS 2" IS THE MINIMUM STRUCTURE SIZE OR THE OPENING REQUIRED FOR GRATE AND FRAME WHICHEVER IS GREATER.  
 ROUND MANHOLE MAY BE USED IN LIEU OF SQUARE PROVIDED 2 EXTRA RISERS ARE PLACED ON EVERY SIDE NOT ADJACENT TO A WALL. SEE STD. DWS. 840.34 FOR MANHOLE INSTALLATION.

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE

840.46

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

SECTION AA, SECTION BB, SECTION PP, SECTION NN, SECTION JJ, SECTION KK, SECTION RR, HOOD ELEVATION

NOTE: USE TYPE "E", "F" AND "G" GRATE UNLESS OTHERWISE NOTED.

ALIGN FRAME WITH INSIDE EDGE OF WALL TO ALLOW FOR VERTICAL ADJUSTMENT FOR WALL SECTION

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

840.03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

DETAIL SHOWING TYPES OF GRATES USE ACCORDING TO WATER FLOW. TYPE "G", TYPE "E", TYPE "F", TYPE "F", TYPE "E", TYPE "G", RAISED FLOW ARROW, SECTION A-A, SECTION B-B, SECTION A-A, SECTION A-A, SECTION A-A

DETAIL SHOWING TYPES OF GRATES USE ACCORDING TO WATER FLOW.

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

840.03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR MEDIAN CURB FOR CATCH BASIN (FOR USE WITH 1'-6" CURB AND GUTTER)

SECTION AA, SECTION BB, SECTION CC

ENGLISH STANDARD DRAWING FOR MEDIAN CURB FOR CATCH BASIN (FOR USE WITH 1'-6" CURB AND GUTTER)

852.05

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE - 90° SKEN

ELEVATION, SIDE, PLAN

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 8" CTS. THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.

ENDWALL DIMENSIONS		MIN. / MAX.		MIN. / MAX.		MIN. / MAX.	
PIPE DIA.	BAR SIZE	H1 (FT.)	H2 (FT.)	D (FT.)	W1	W2	
1.0	#5 @ 8"	1.25/2.00	2.00/3.75	1.25/1.75	3.00/3.75	5.50/6.00	
1.25	#5 @ 8"	1.25/2.00	3.00/3.75	1.25/2.00	3.50/3.75	6.50/6.75	
1.50	#5 @ 8"	1.25/2.00	3.00/4.25	1.50/2.50	3.50/3.75	6.50/6.75	
2.0	#5 @ 8"	1.50/2.50	4.00/4.75	1.75/2.50	4.00/4.25	7.50/8.25	
2.5	#5 @ 8"	2.50/3.50	4.00/6.00	2.00/3.00	4.50/5.50	10.00/11.50	
3.0	#5 @ 8"	3.00/3.50	5.00/6.00	2.75/3.50	5.25/5.75	11.50/11.75	
3.5	#5 @ 8"	3.25/4.50	6.00/6.75	3.25/3.50	6.00/6.75	12.00/13.25	
4.0	#5 @ 8"	3.50/4.50	6.50/7.00	3.25/3.50	6.50/6.75	13.00/13.25	
4.5	#5 @ 8"	4.00/5.00	6.50/8.50	3.25/4.00	7.00/9.25	13.50/15.75	
5.0	#5 @ 8"	4.50/5.00	7.00/8.50	3.25/4.00	7.25/9.25	13.75/15.75	
5.5	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.25/9.25	14.00/15.75	
6.0	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.75/9.25	14.75/16.75	

ENGLISH STANDARD DRAWING FOR PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE - 90° SKEN

838.80

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE - 90° SKEN

ELEVATION, SIDE, PLAN

NOTE: THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.  
 INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.  
 USE 4000 PSI CONCRETE.  
 PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.  
 PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.  
 PIPE TO BE GRouted INTO HEADWALL AT JOB SITE BY CONTRACTOR.  
 ALL ELEMENTS PRECAST TO MEET ASTM C913.  
 WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.  
 CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

ENGLISH STANDARD DRAWING FOR PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE - 90° SKEN

838.80

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS

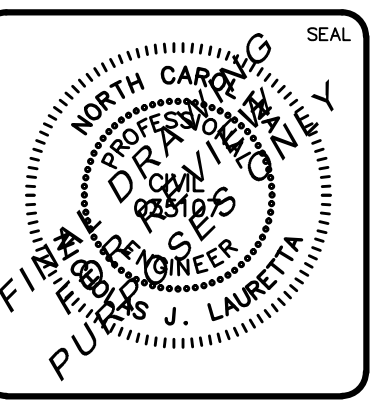
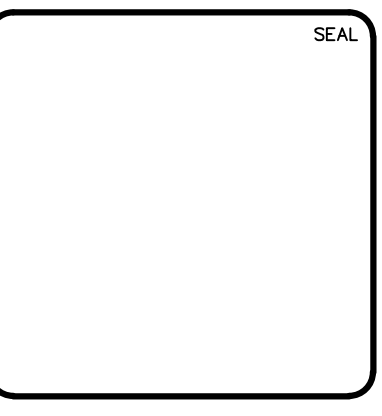
PLAN, SIDE ELEVATION, PLAN, SIDE ELEVATION, PLAN, SIDE ELEVATION, PLAN, SIDE ELEVATION

NOTE: INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL. STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

ENGLISH STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS

840.66

REV. NO.	DESCRIPTIONS	DATE



**MCKIM & CREED**

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

**RIVERLIGHTS**

by Newland COMMUNITIES

NORTH AMERICA SEKISUI HOUSE, LLC

RIVERLIGHTS MARINA VILLAGE  
 PHASE 1B

STORMWATER DRAINAGE DETAILS

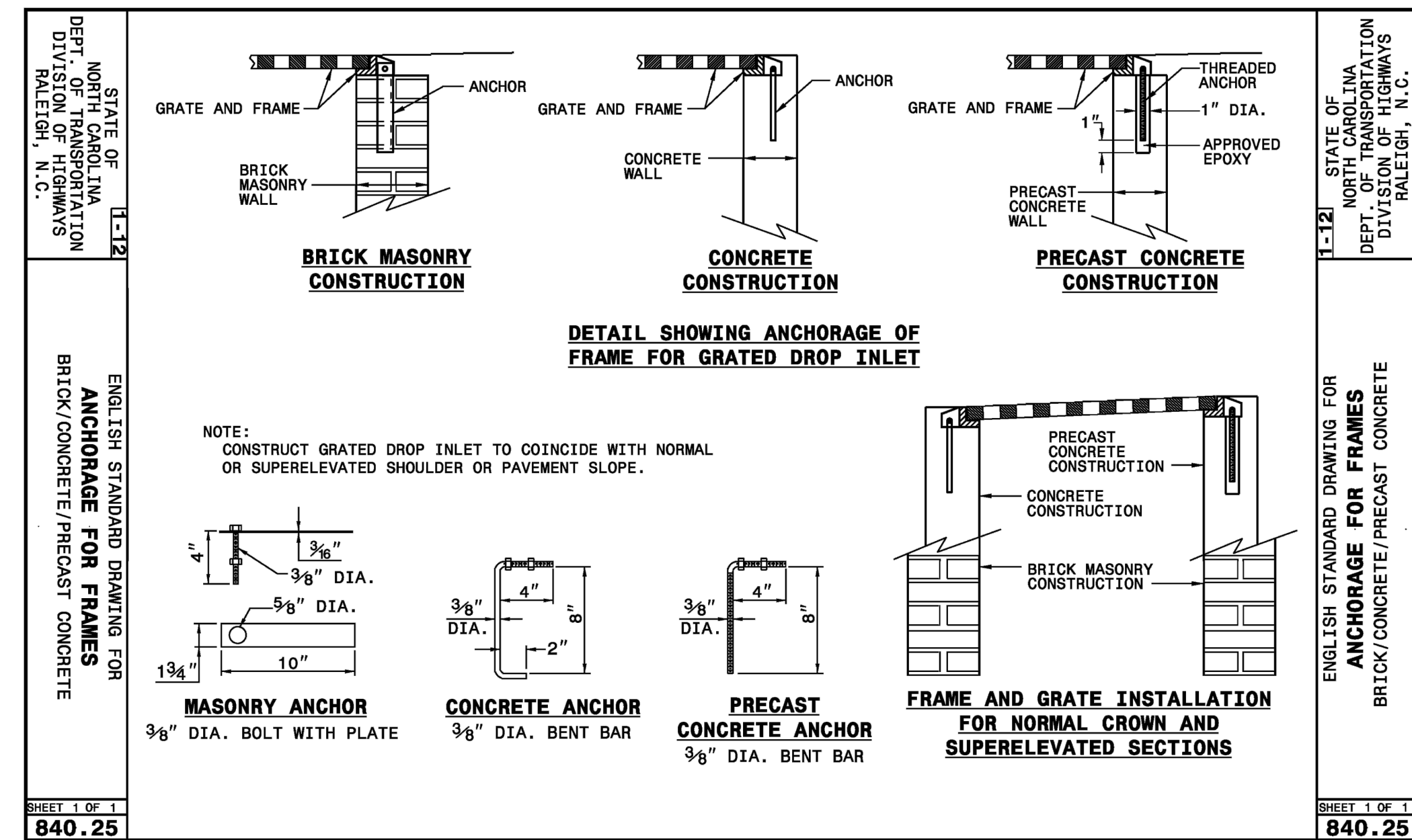
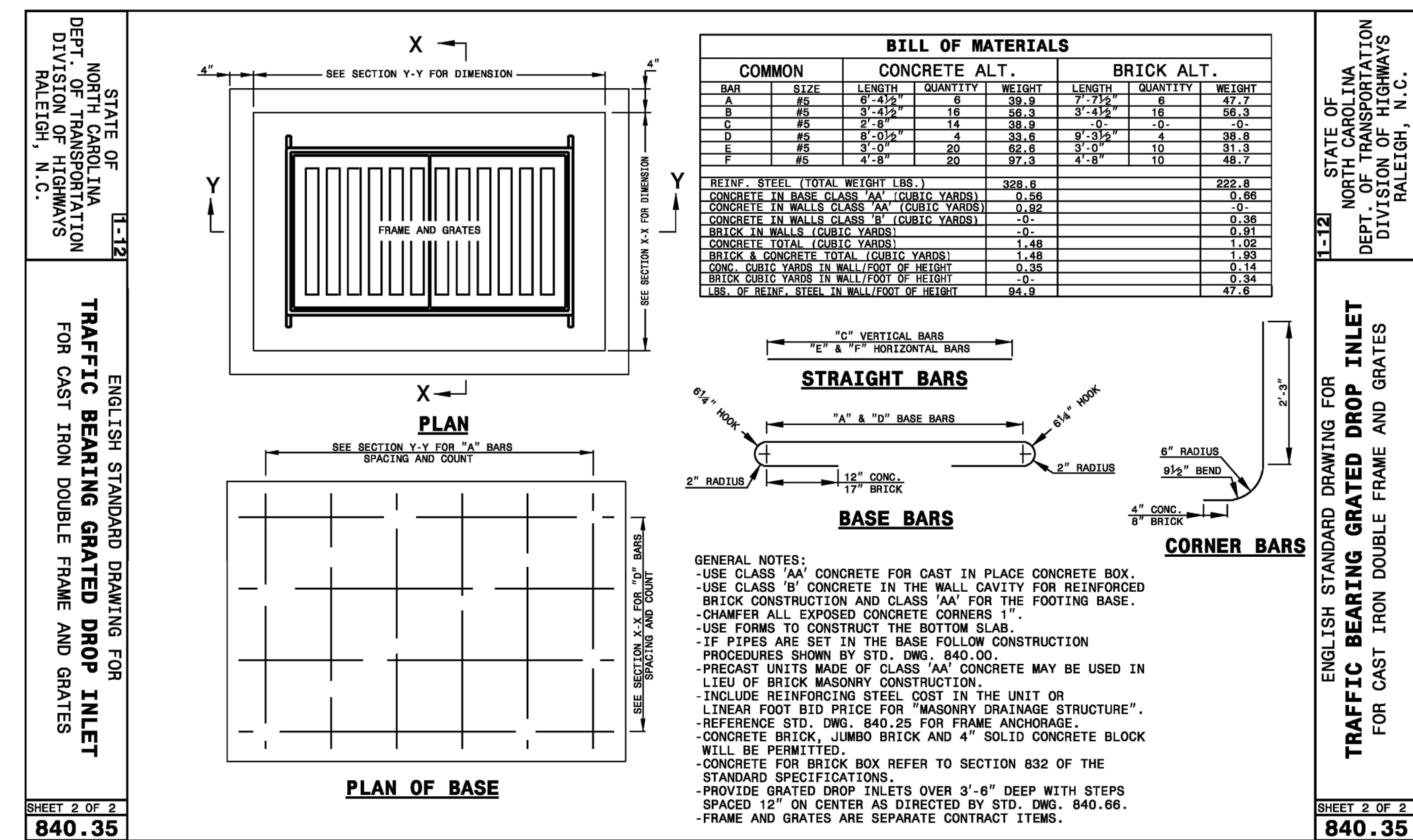
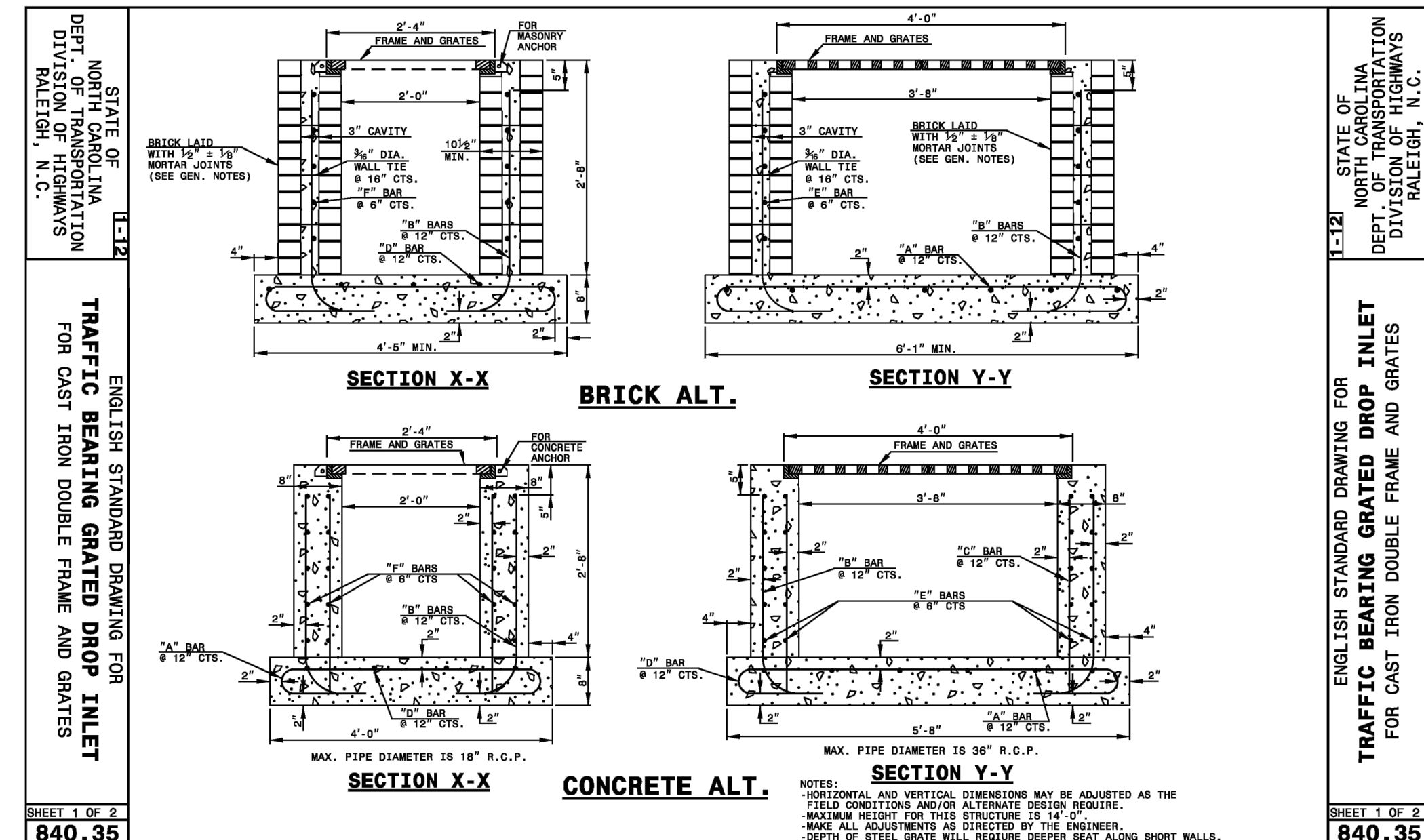
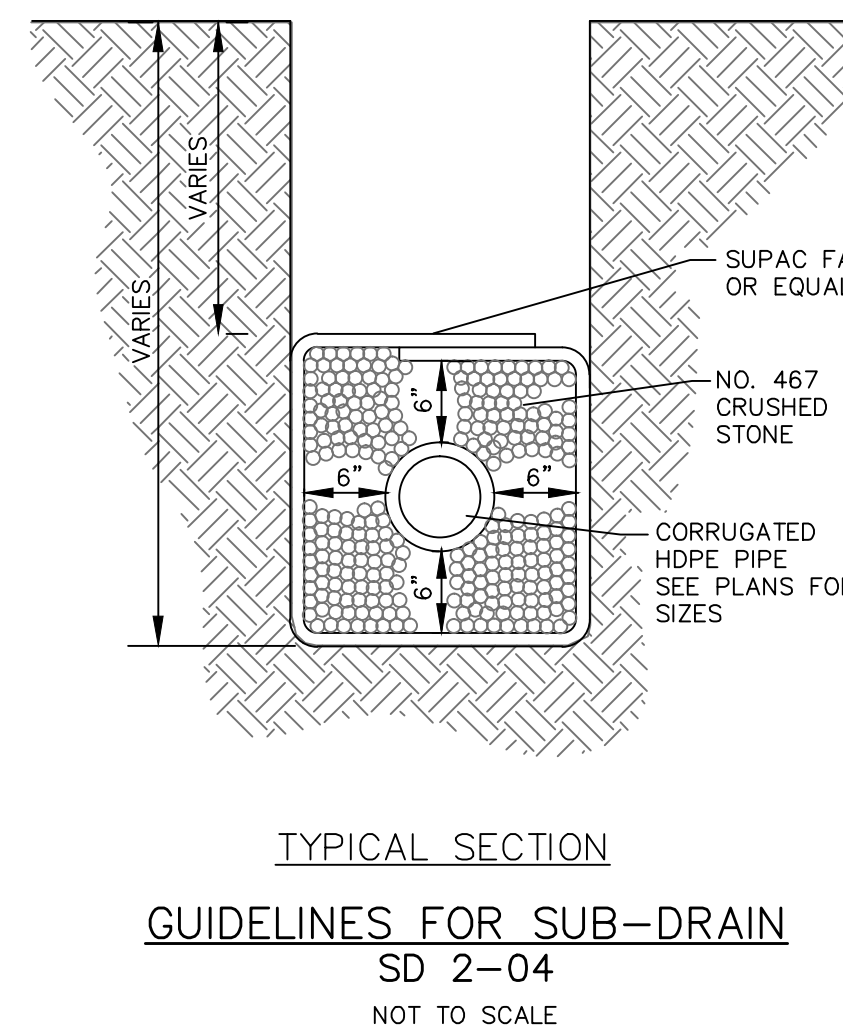
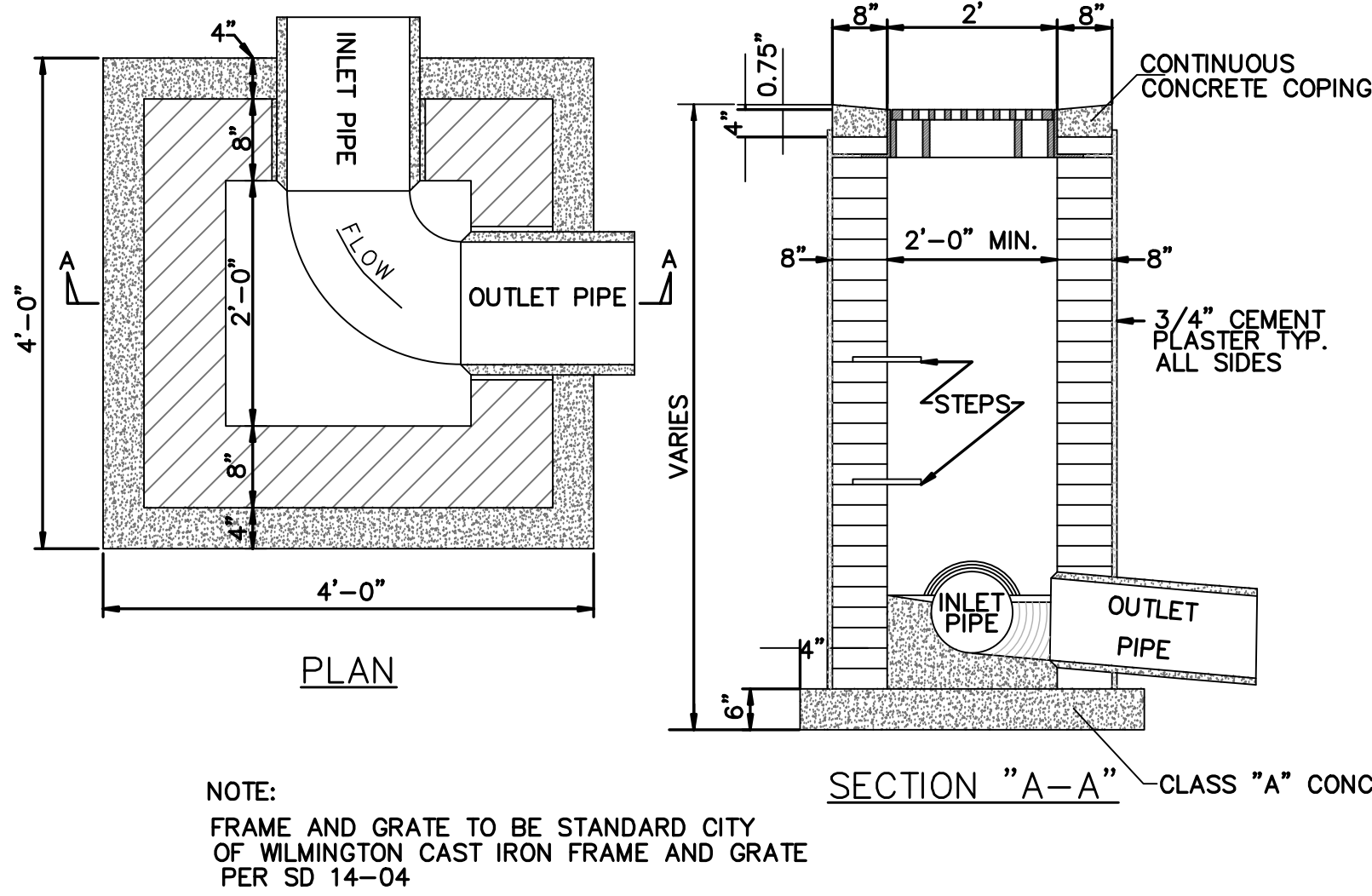
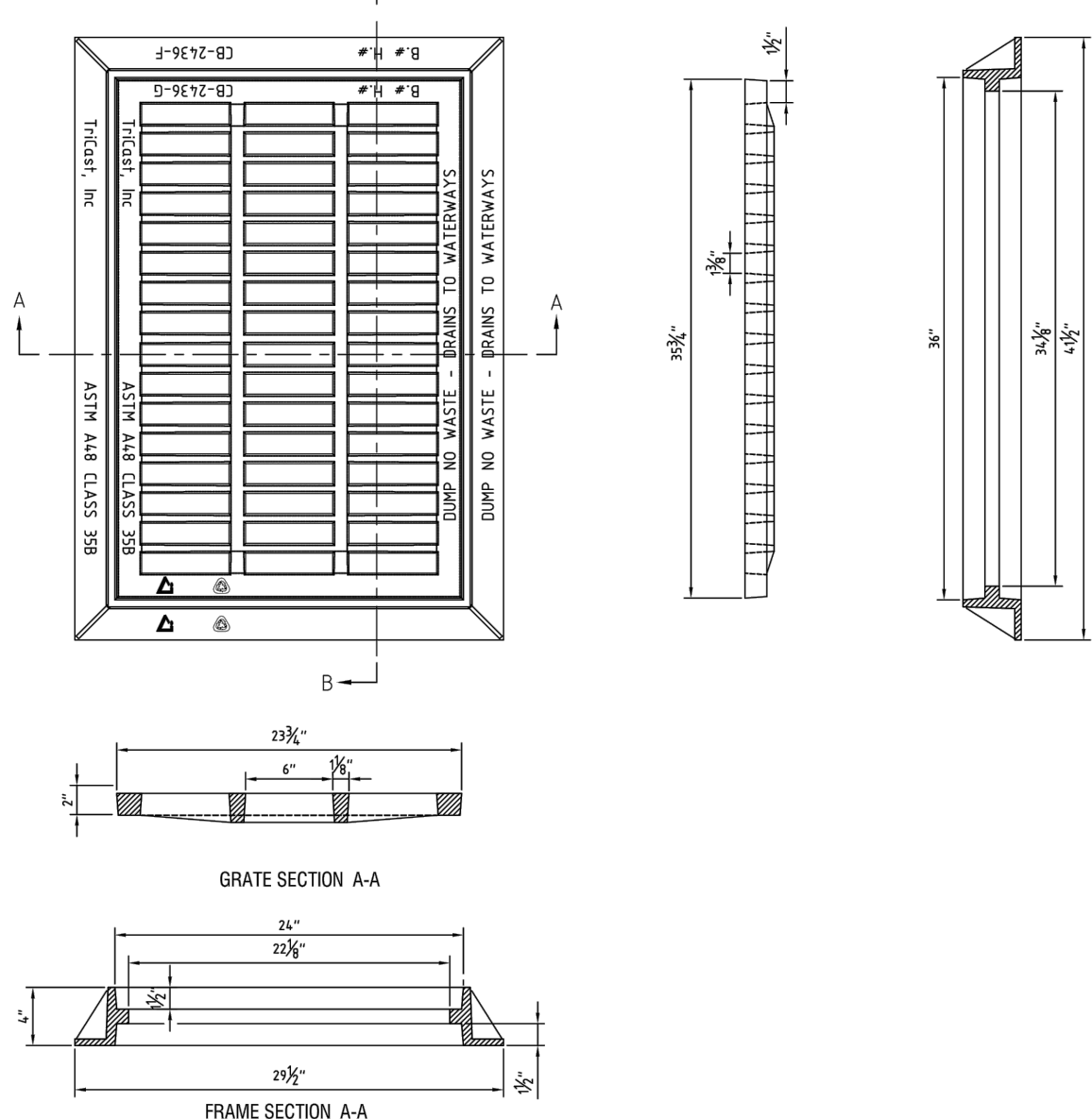
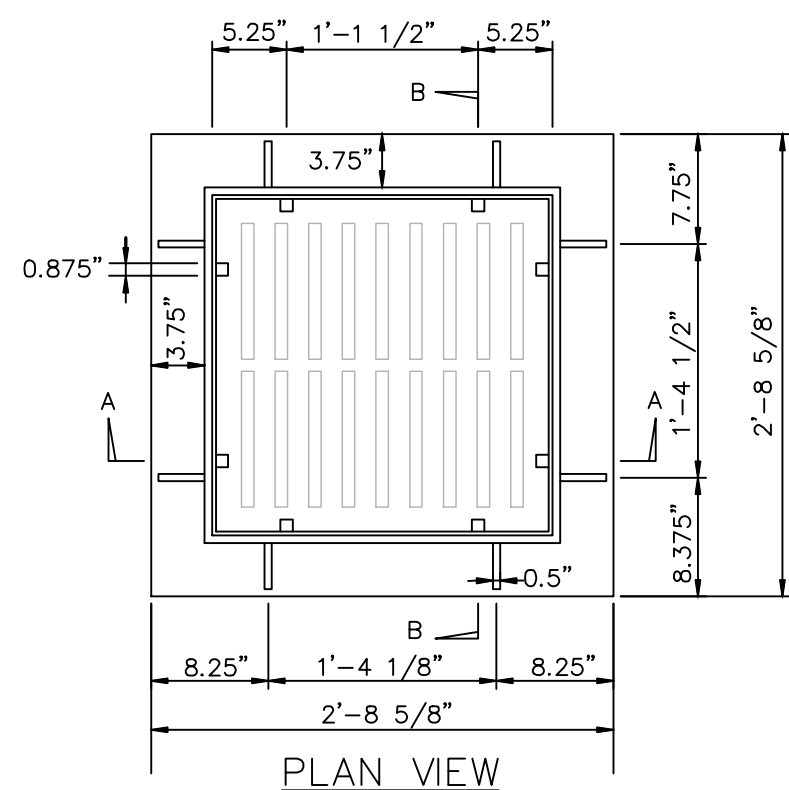
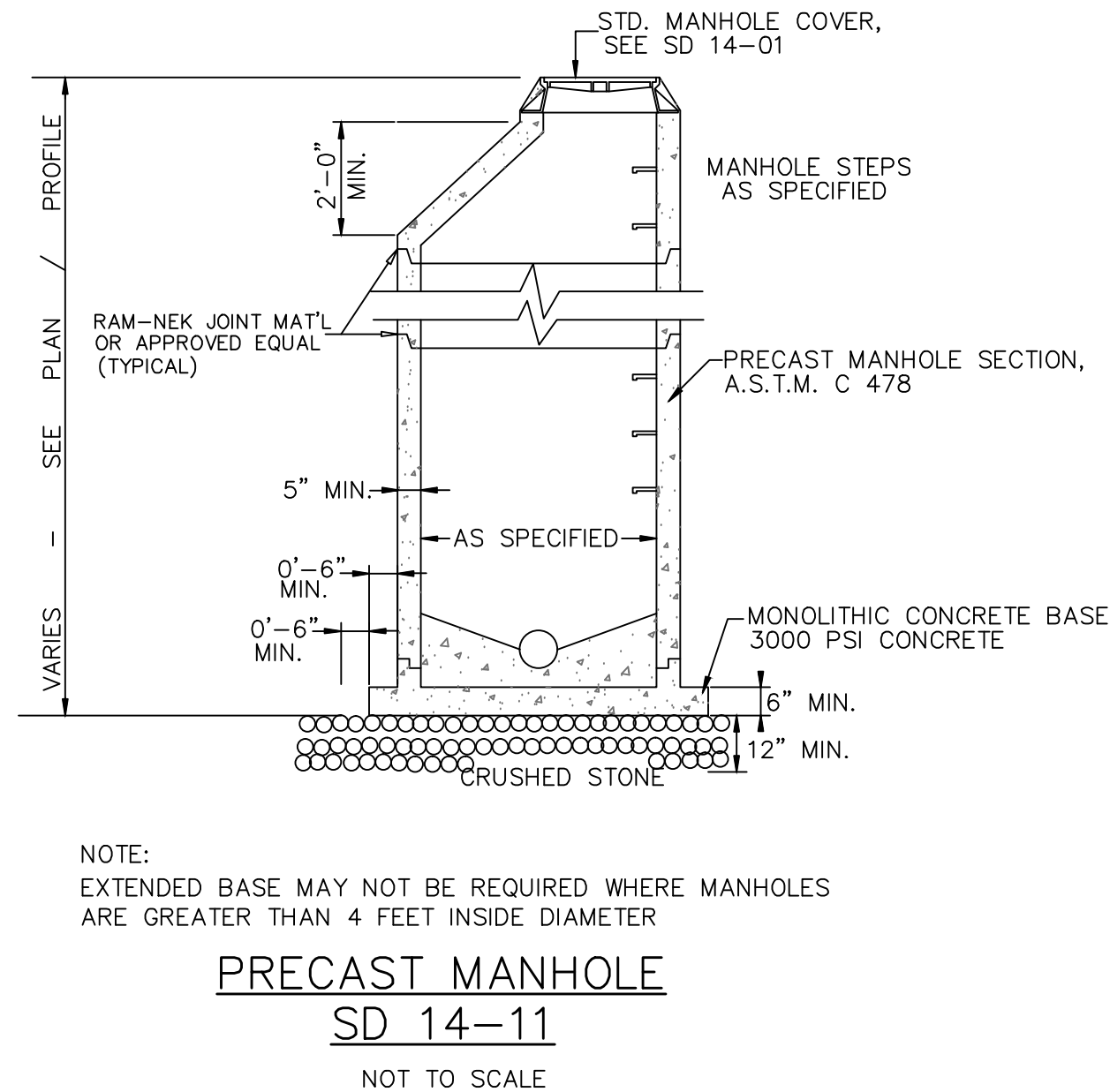
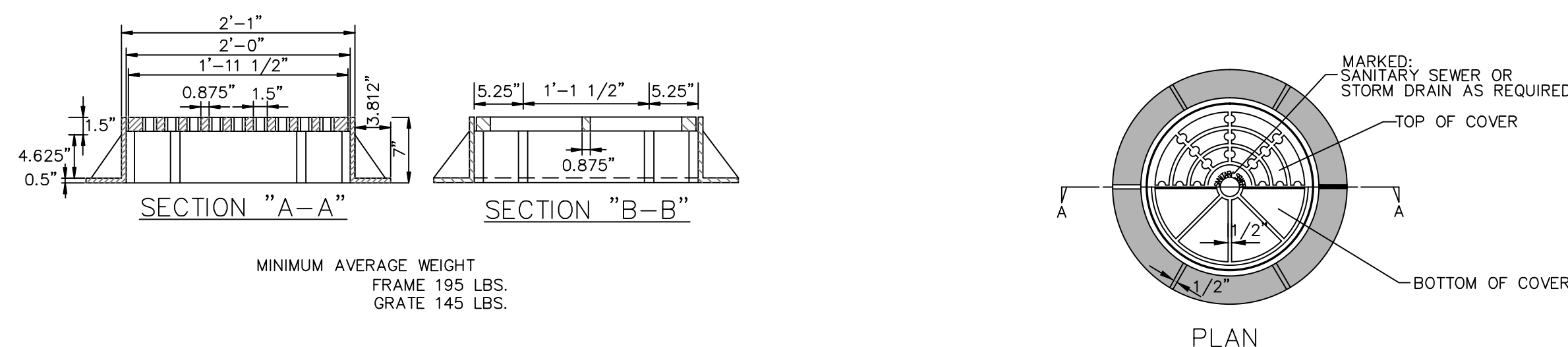
STATUS: FINAL DESIGN  
 NOT FOR CONSTRUCTION

DATE: 10NOV15  
 MCE PROJ. # 2735-0124  
 DRAWN: ALM  
 DESIGNED: NUL  
 CHECKED: KCBE  
 PROJ. MGR: NUL

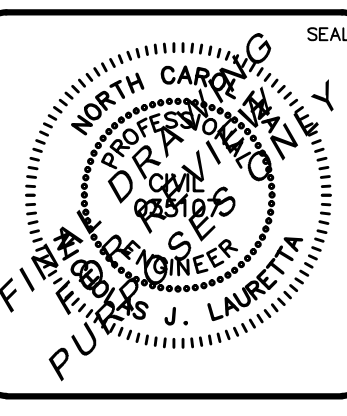
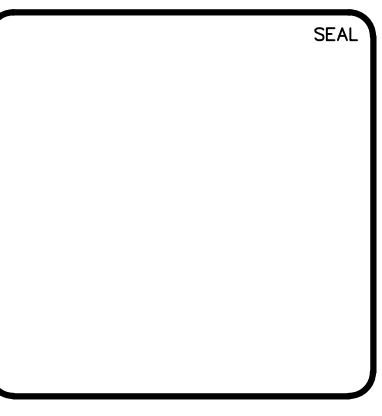
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MAC FILE NUMBER: CG-501  
 DRAWING NUMBER: 28

REVISION: ---



REV. NO.	DESCRIPTIONS / REVISIONS	DATE



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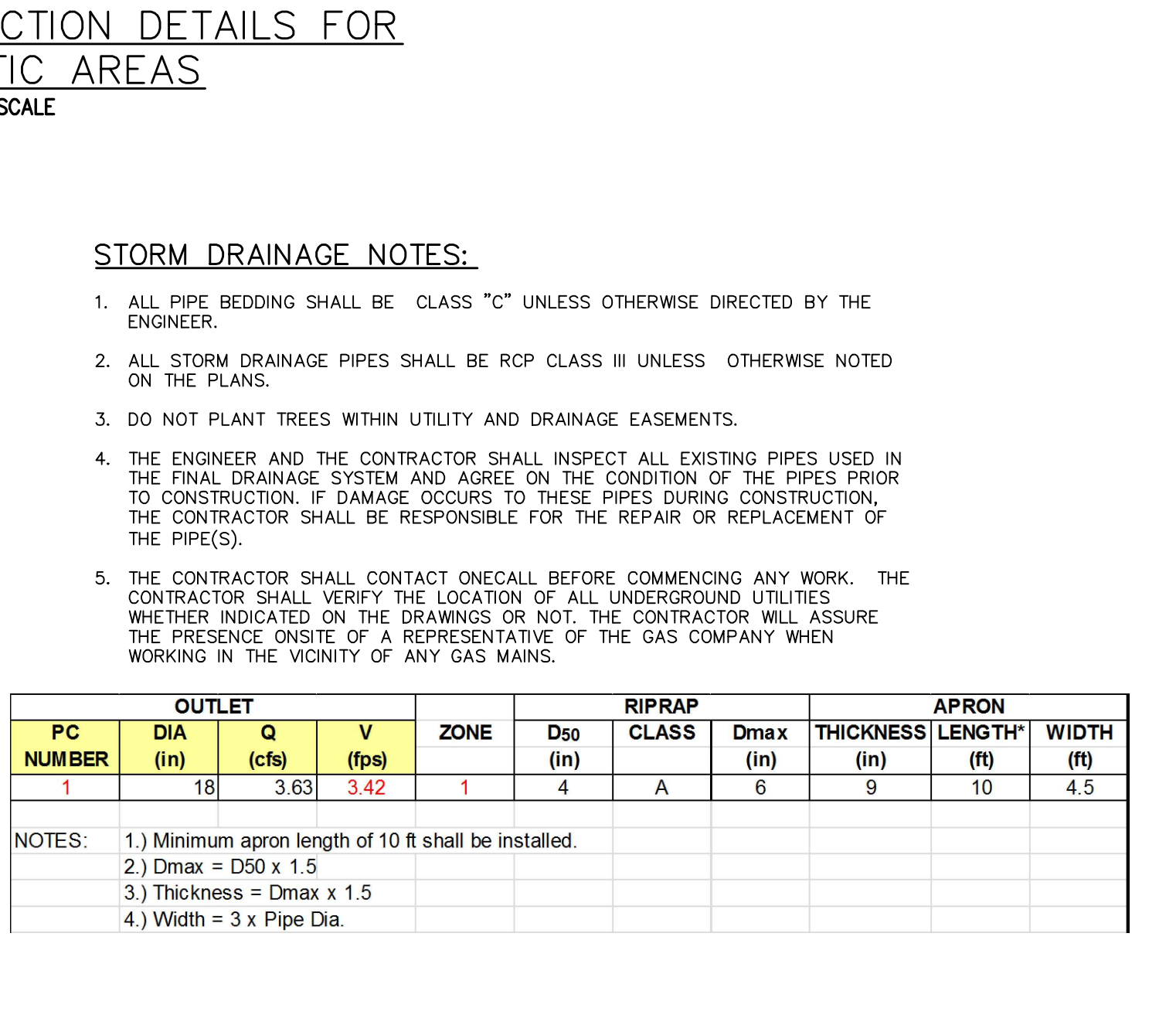
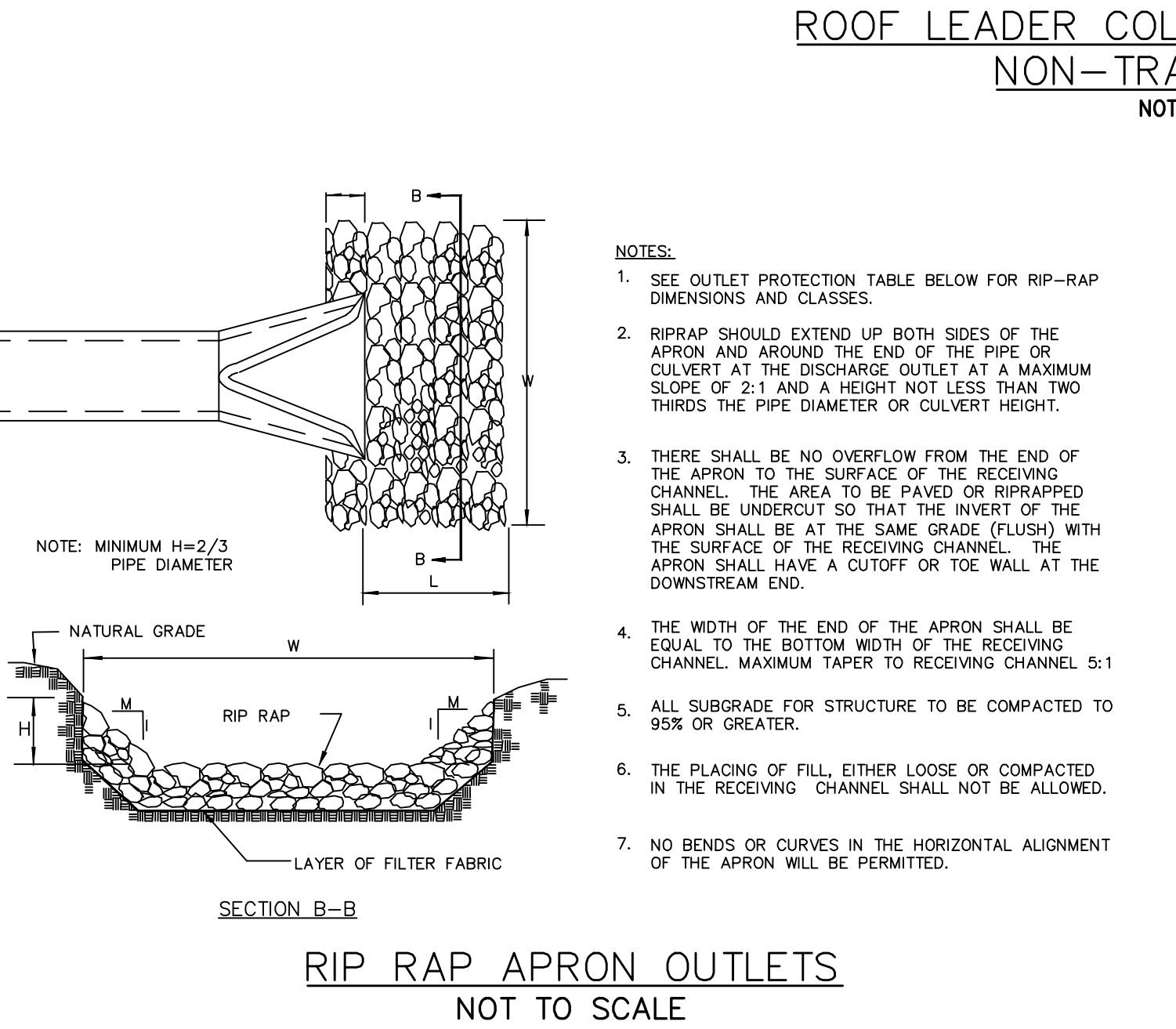
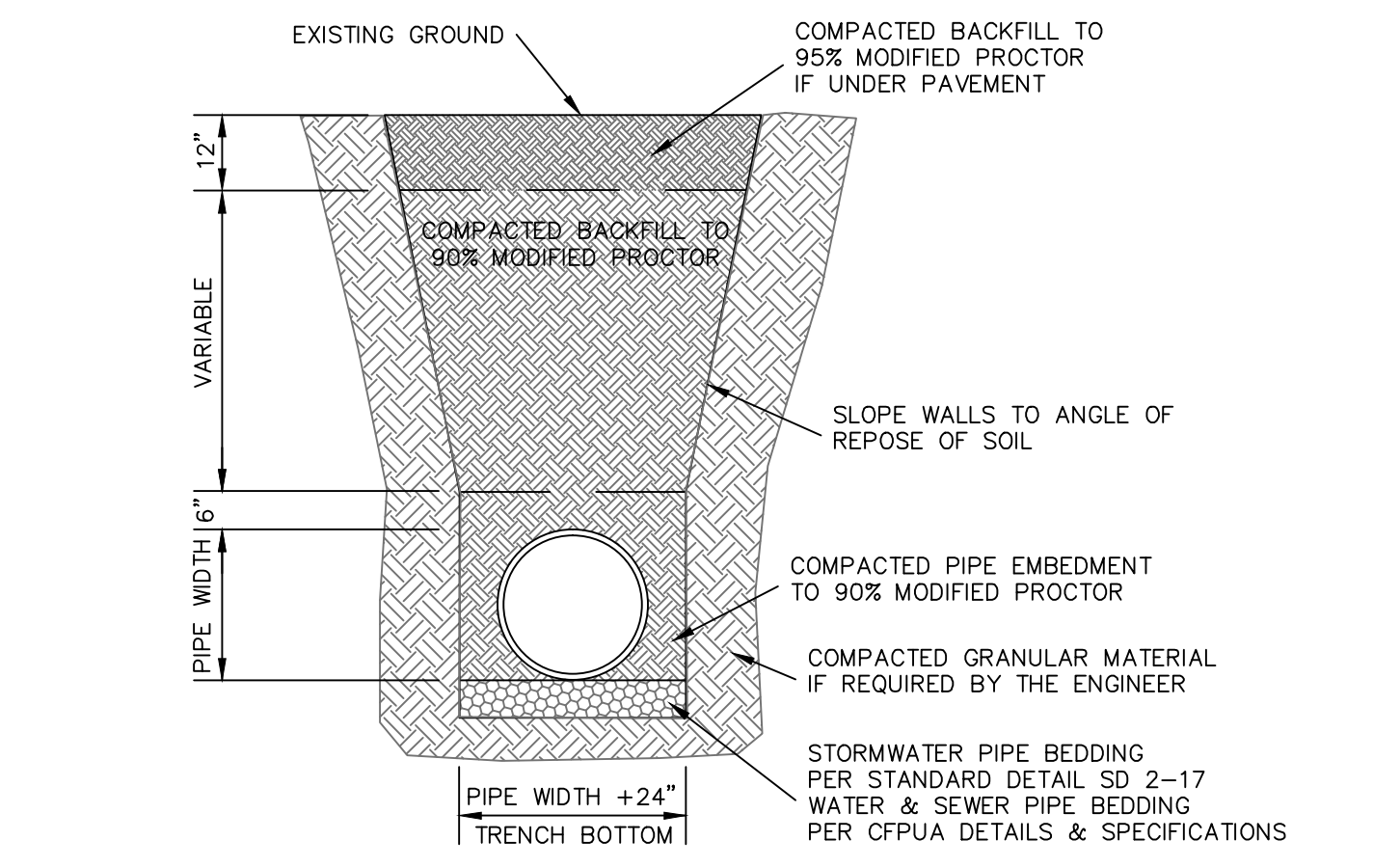
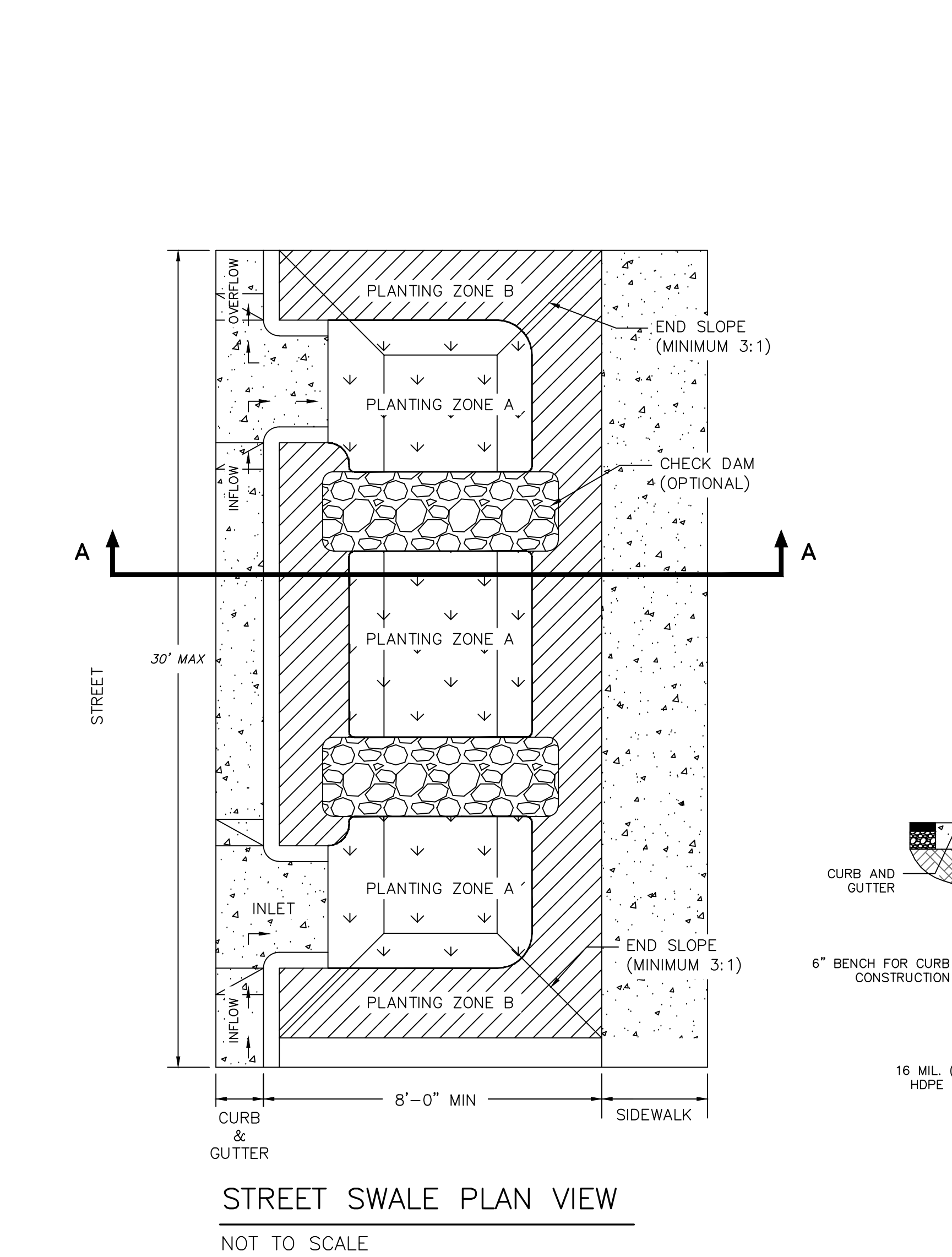
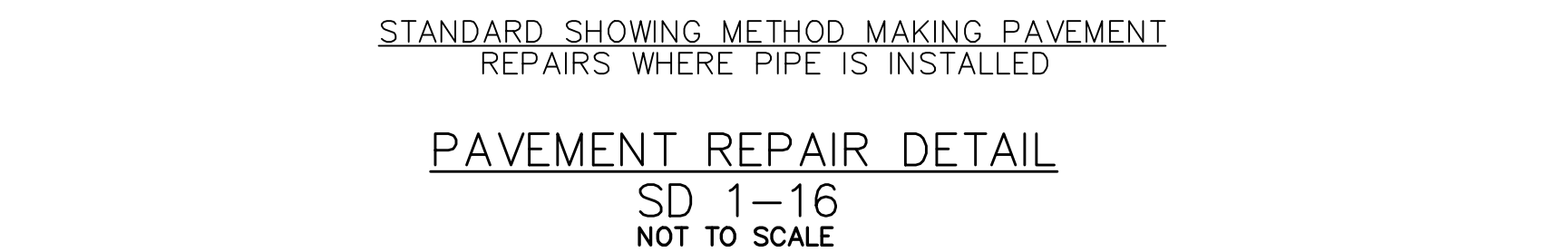
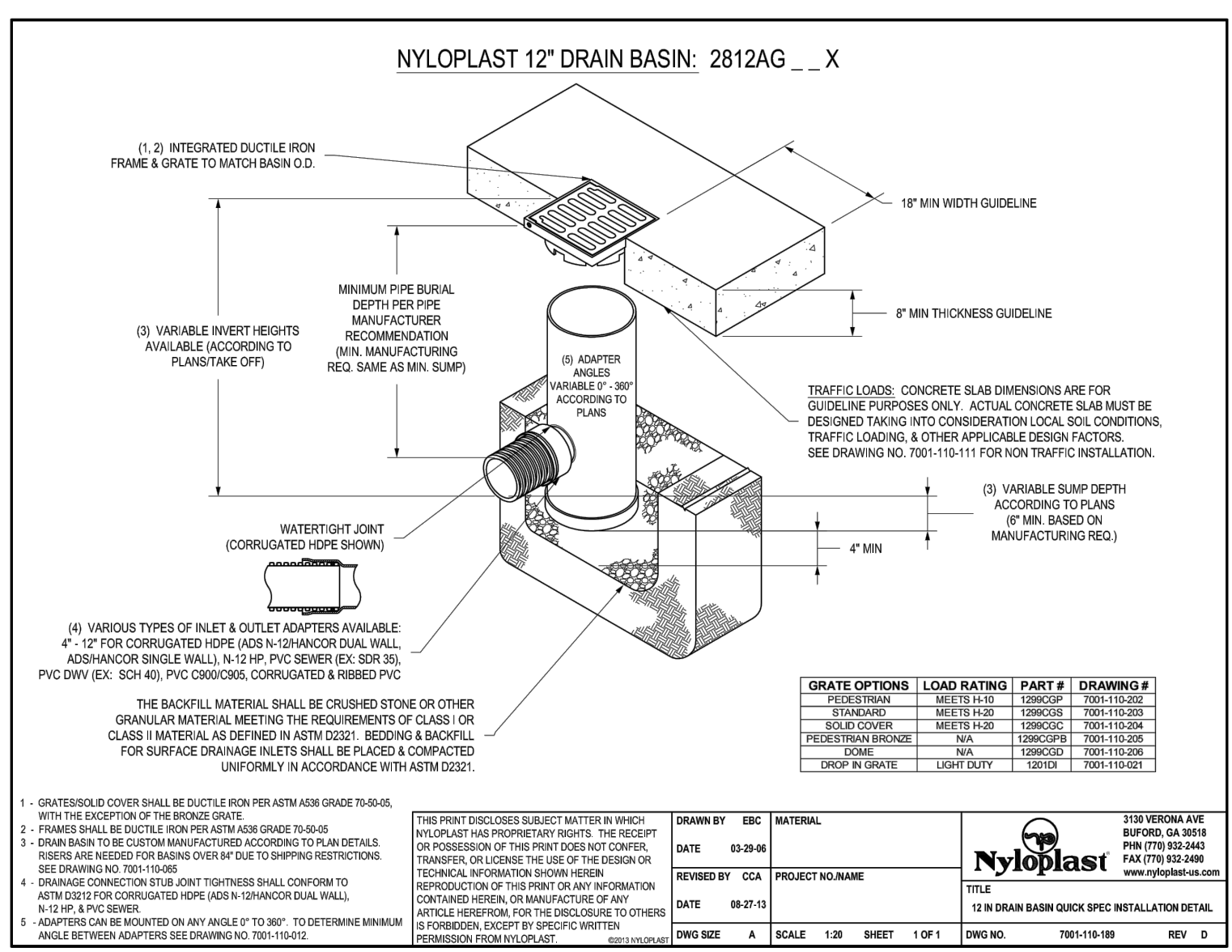
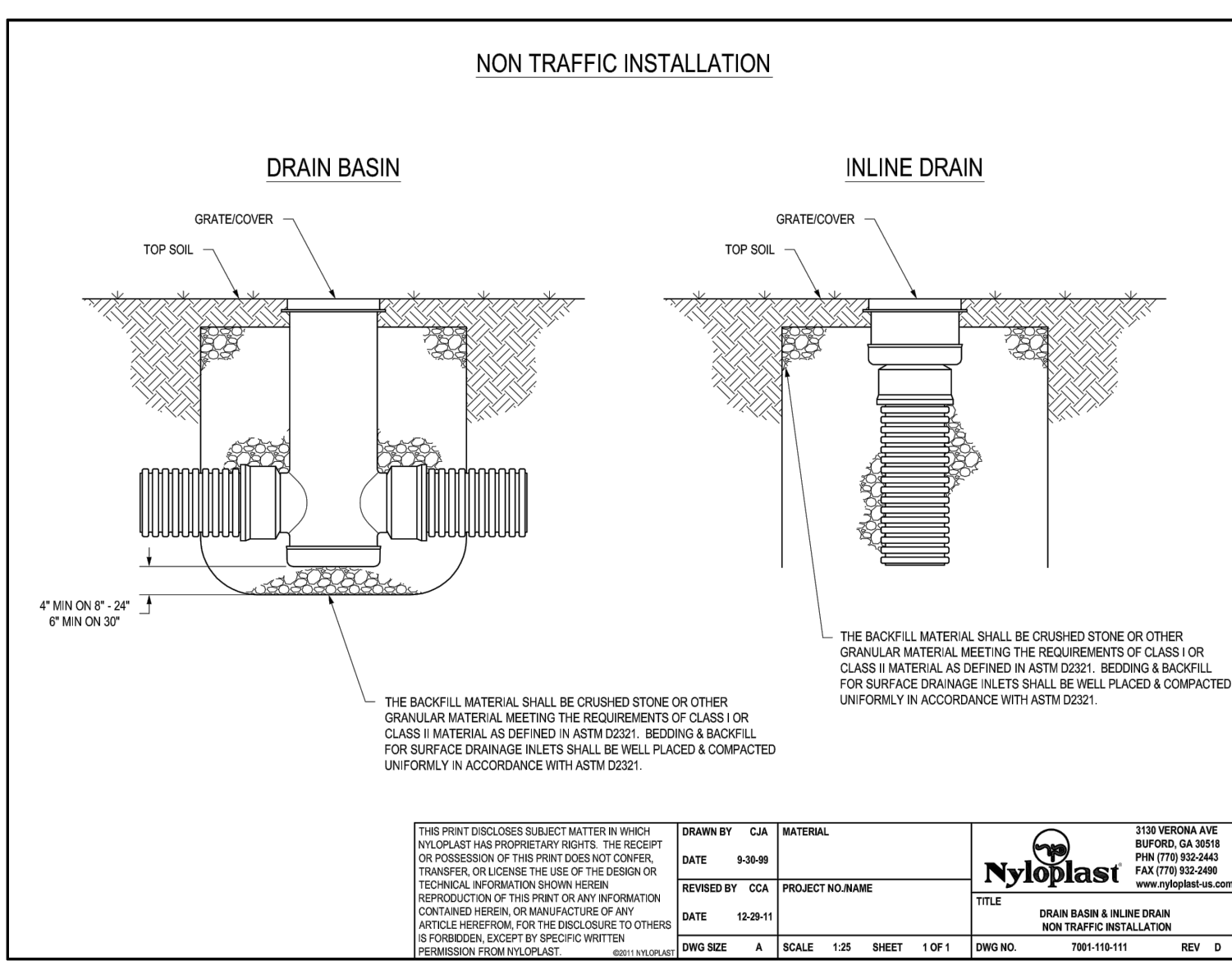
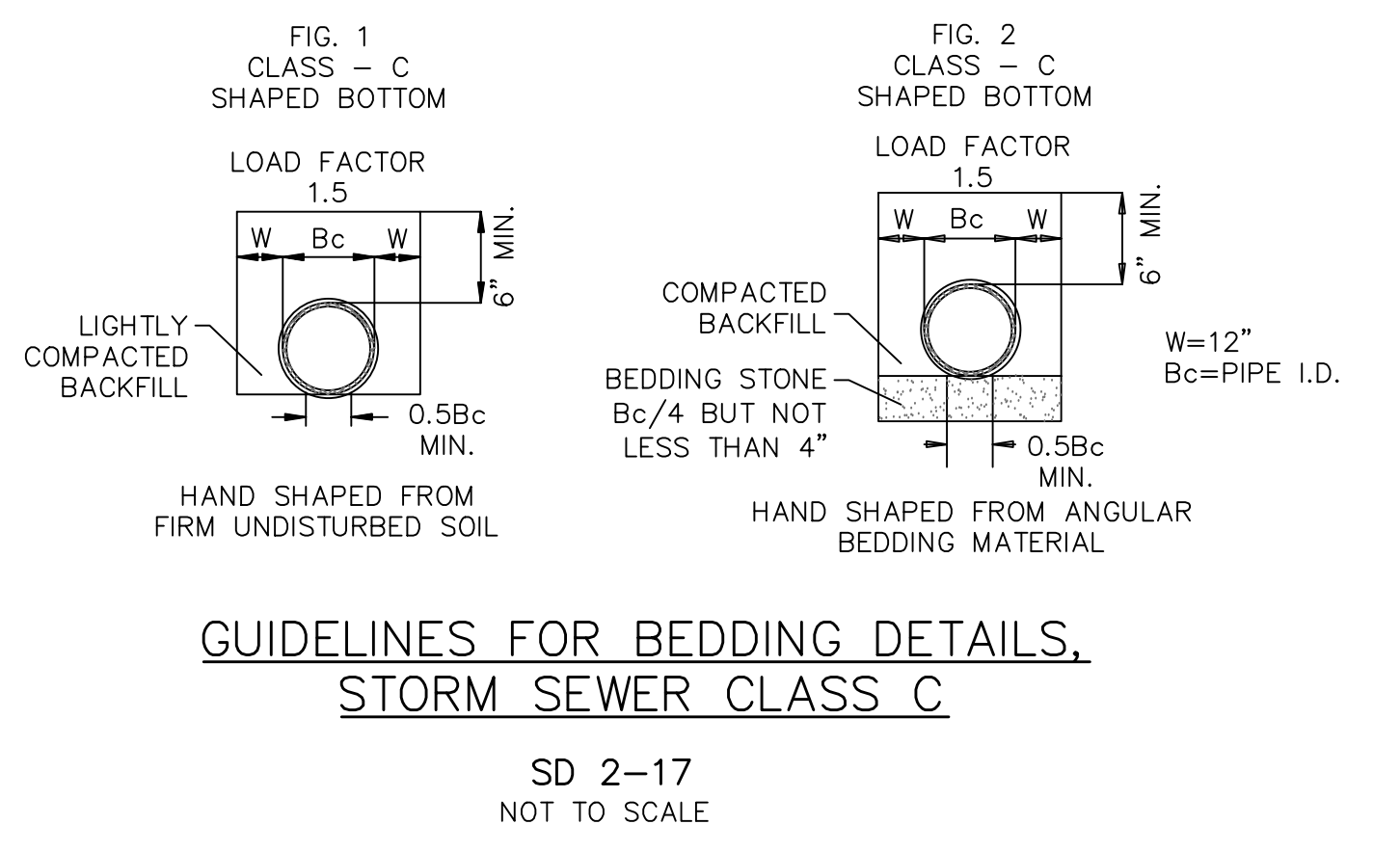
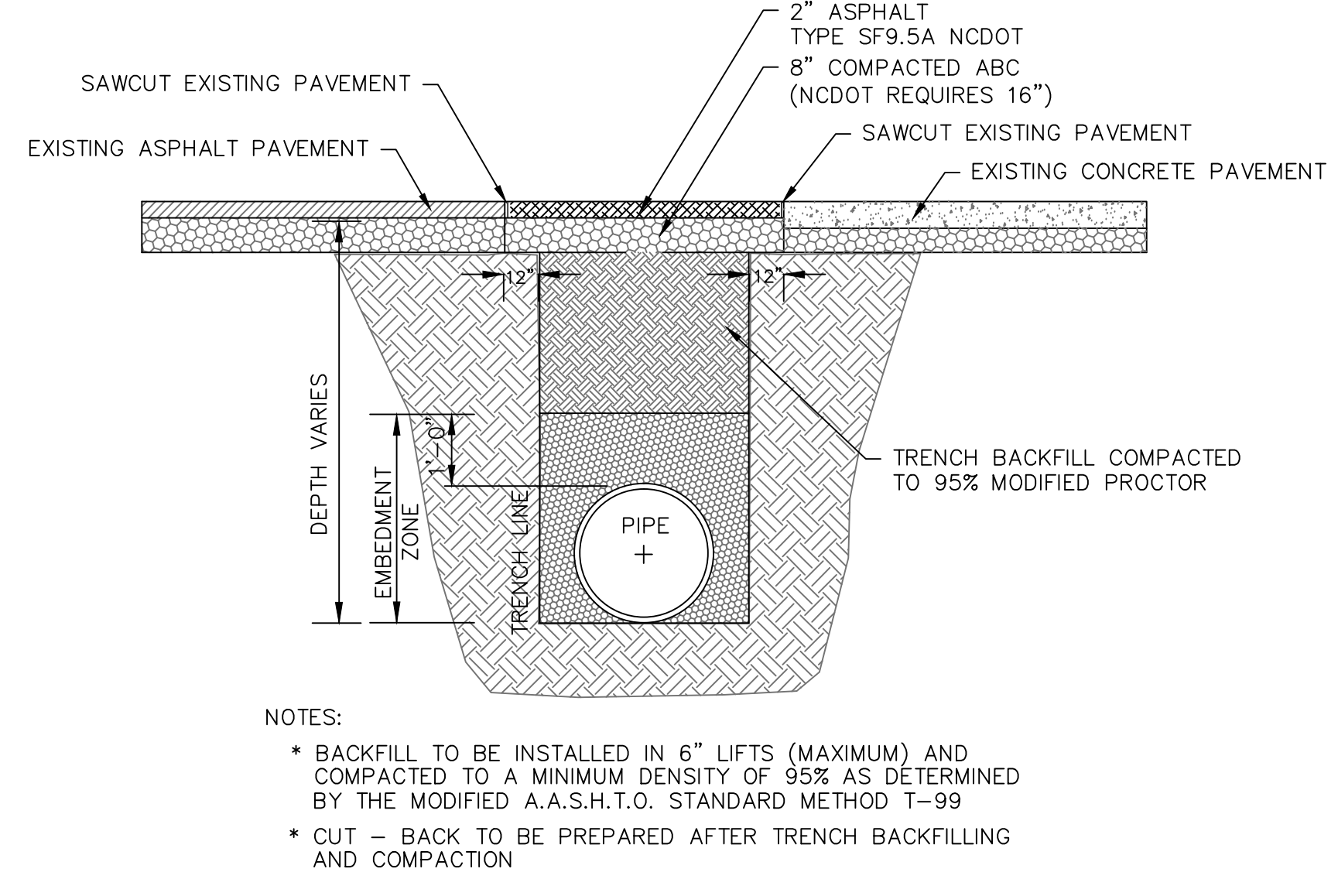
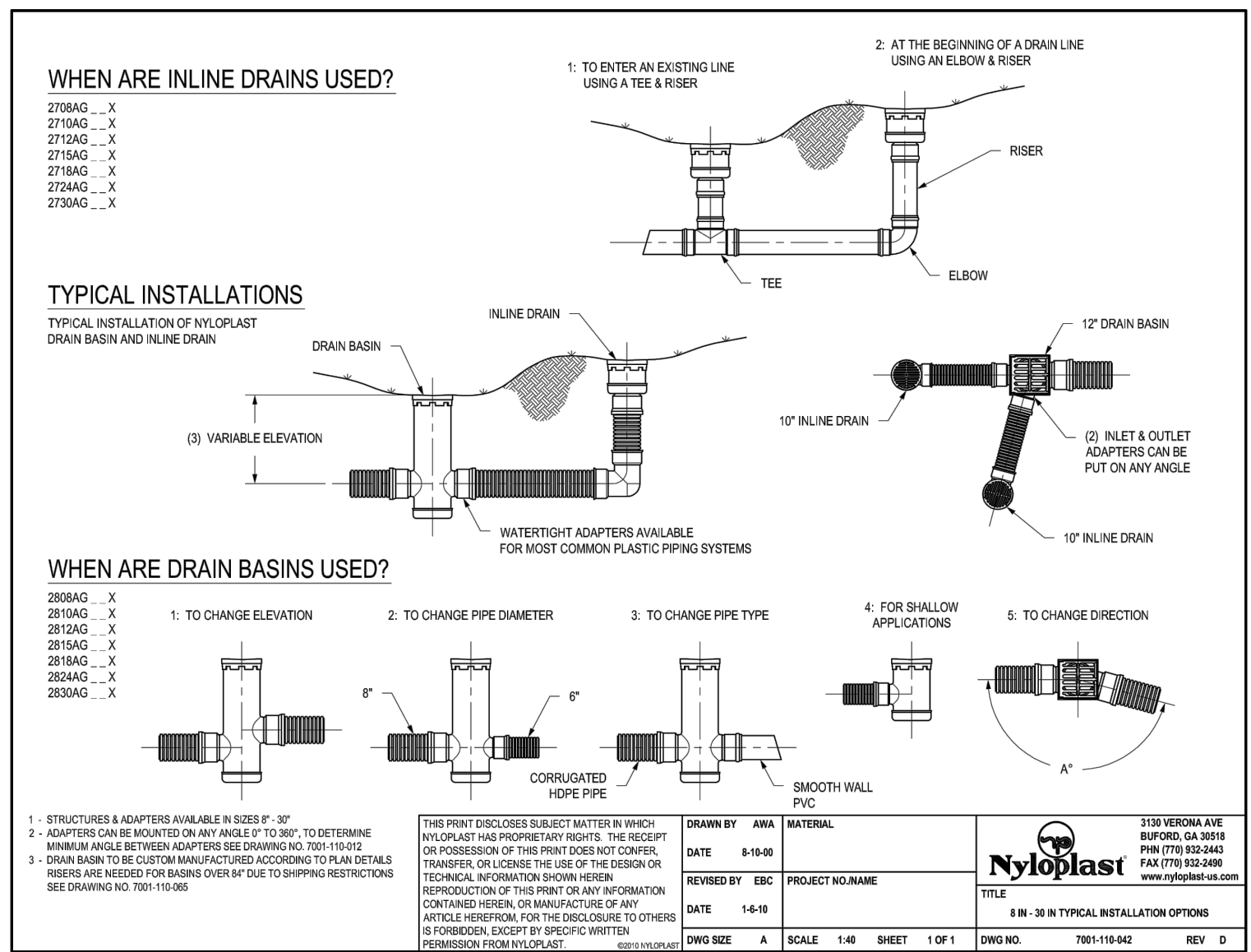
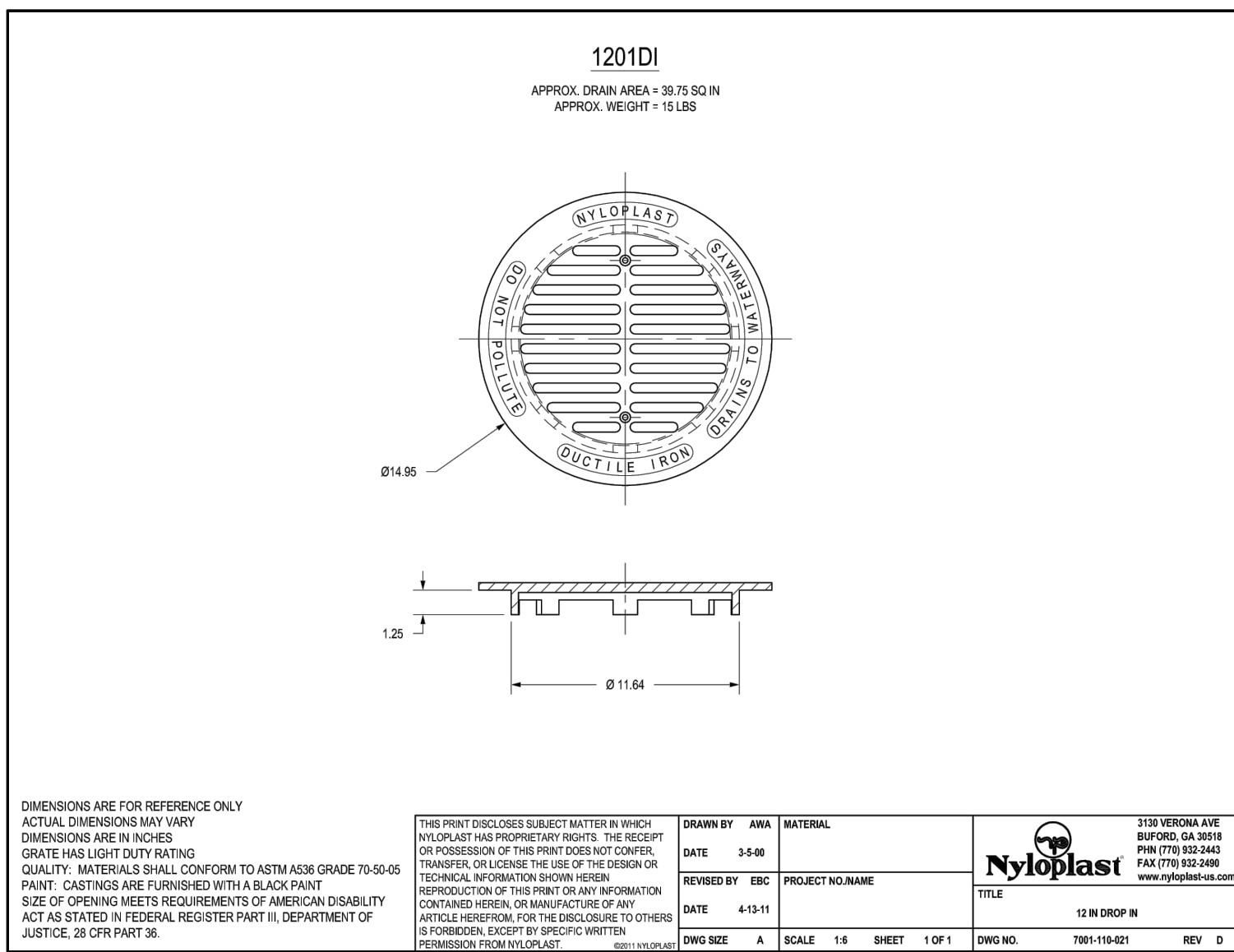
**RIVERLIGHTS**  
by  
Newland COMMUNITIES

**RIVERLIGHTS MARINA VILLAGE  
PHASE 1B  
STORMWATER DRAINAGE DETAILS**

**STATUS: FINAL DESIGN  
NOT FOR CONSTRUCTION**

DATE: 10NOV15	SCALE: CG-502
MCE PROJ. # 2735-0124	HORIZONTAL: N/A
DRAWN: ALM	VERTICAL: N/A
DESIGNED: NUL	
CHECKED: KCBE	
PROJ. MGR: NUL	

DRAWING NUMBER: 29



REV. NO.	DESCRIPTIONS / REVISIONS	DATE

SEAL

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243 North Front Street  
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Phone: (910)343-1048, Fax: (910)251-8282  
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SEAL

**RIVERLIGHTS**  
by Newland COMMUNITIES  
NORTH AMERICA SEKISUI HOUSE, LLC

**RIVERLIGHTS MARINA VILLAGE PHASE 1B**  
STORMWATER DRAINAGE DETAILS

DATE: 10NOV15  
MCE PROJ. # 2735-0124  
DRAWN: ALM  
DESIGNED: NUL  
CHECKED: KCB  
PROJ. MGR.: NUL

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

MAC FILE NUMBER: CG-503  
DRAWING NUMBER: 30  
REVISION: ---

STATUS: FINAL DESIGN  
NOT FOR CONSTRUCTION

**RIVERLIGHTS MARINA VILLAGE PHASE 1B**  
STORMWATER DRAINAGE DETAILS

DATE: 10NOV15  
MCE PROJ. # 2735-0124  
DRAWN: ALM  
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CHECKED: KCB  
PROJ. MGR.: NUL

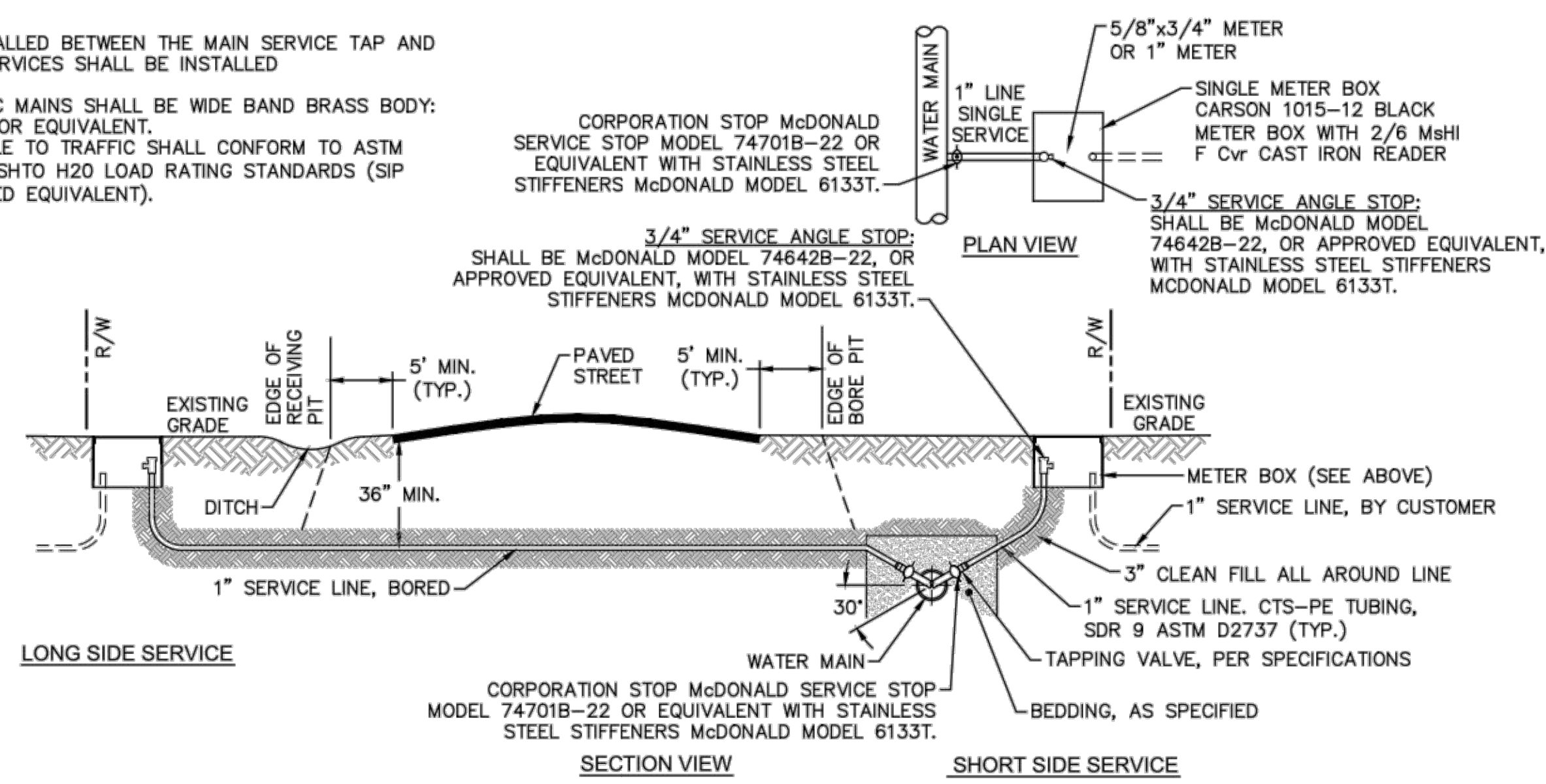
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REVISION: ---

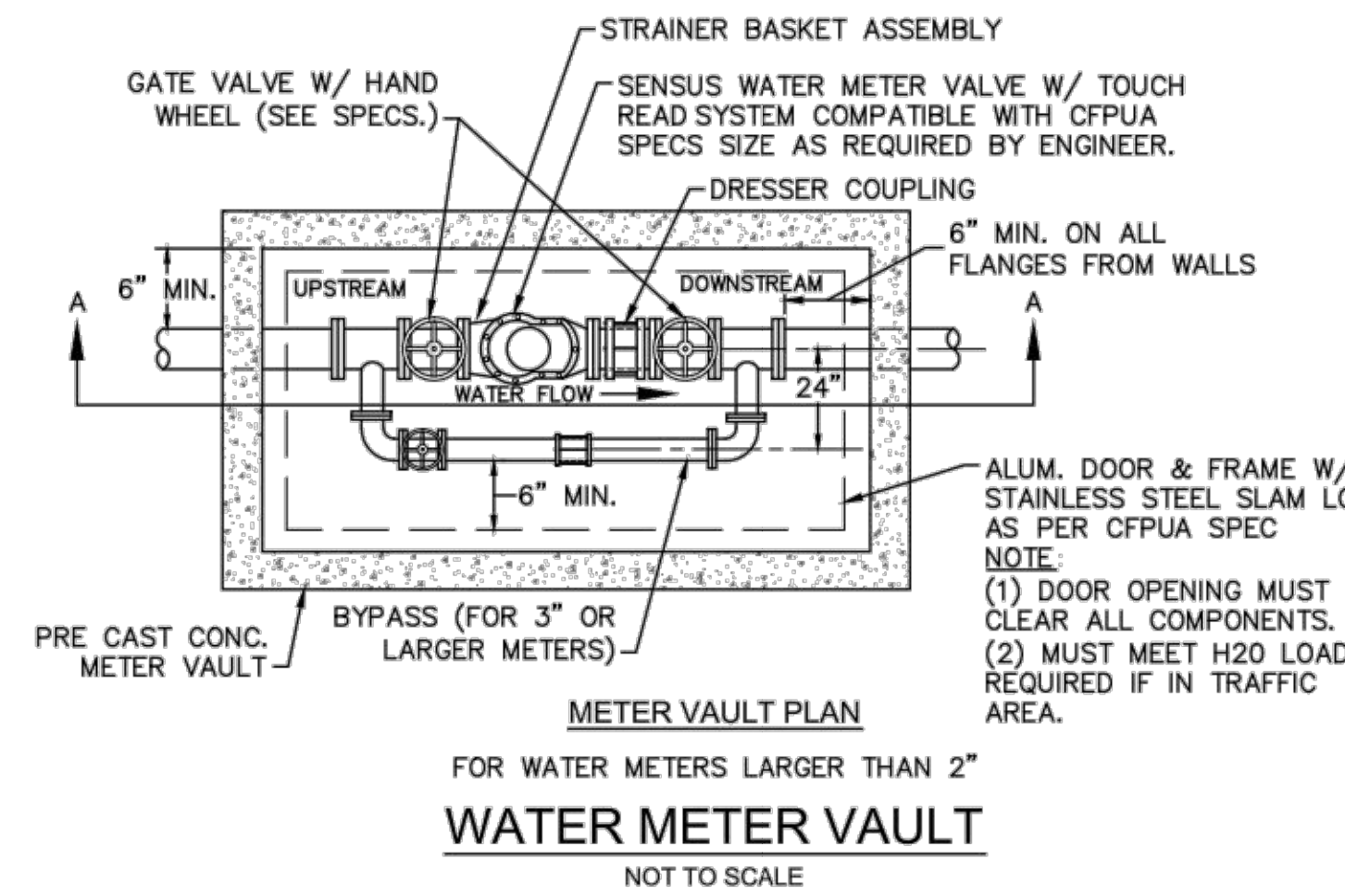
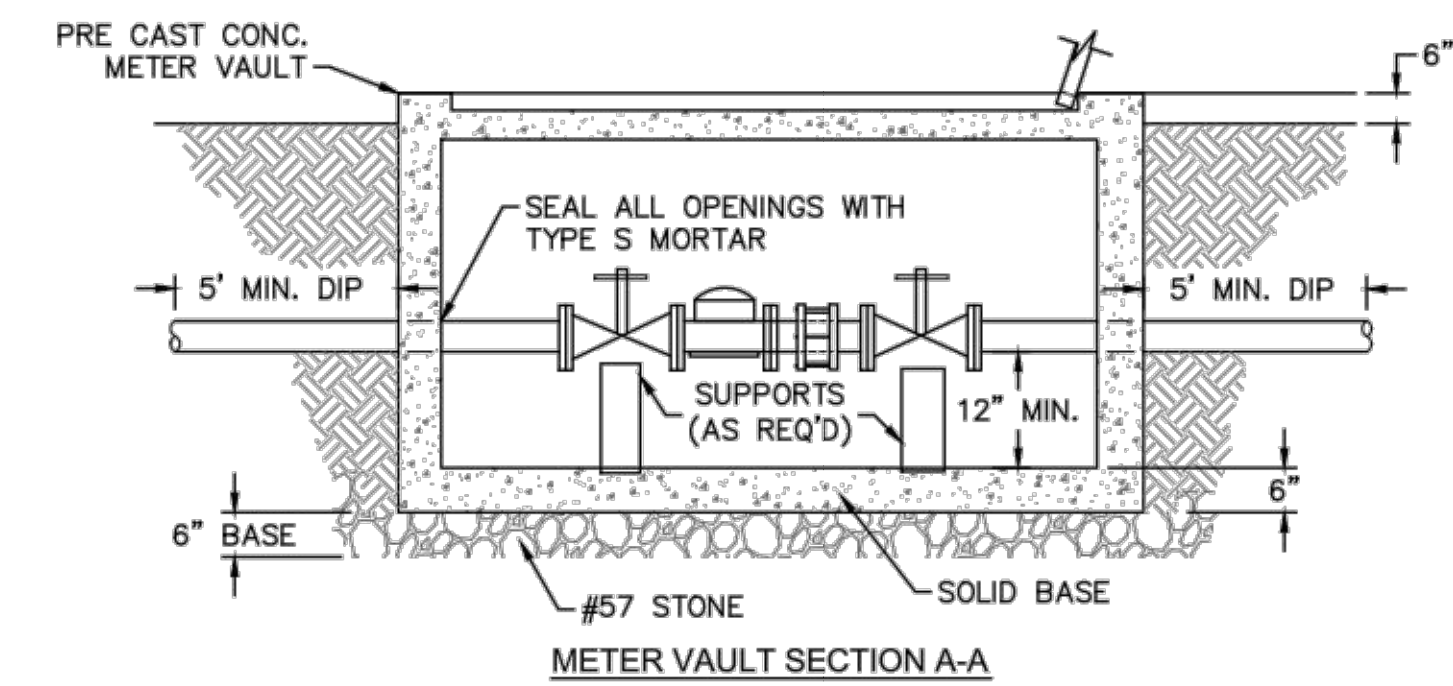
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NOT FOR CONSTRUCTION

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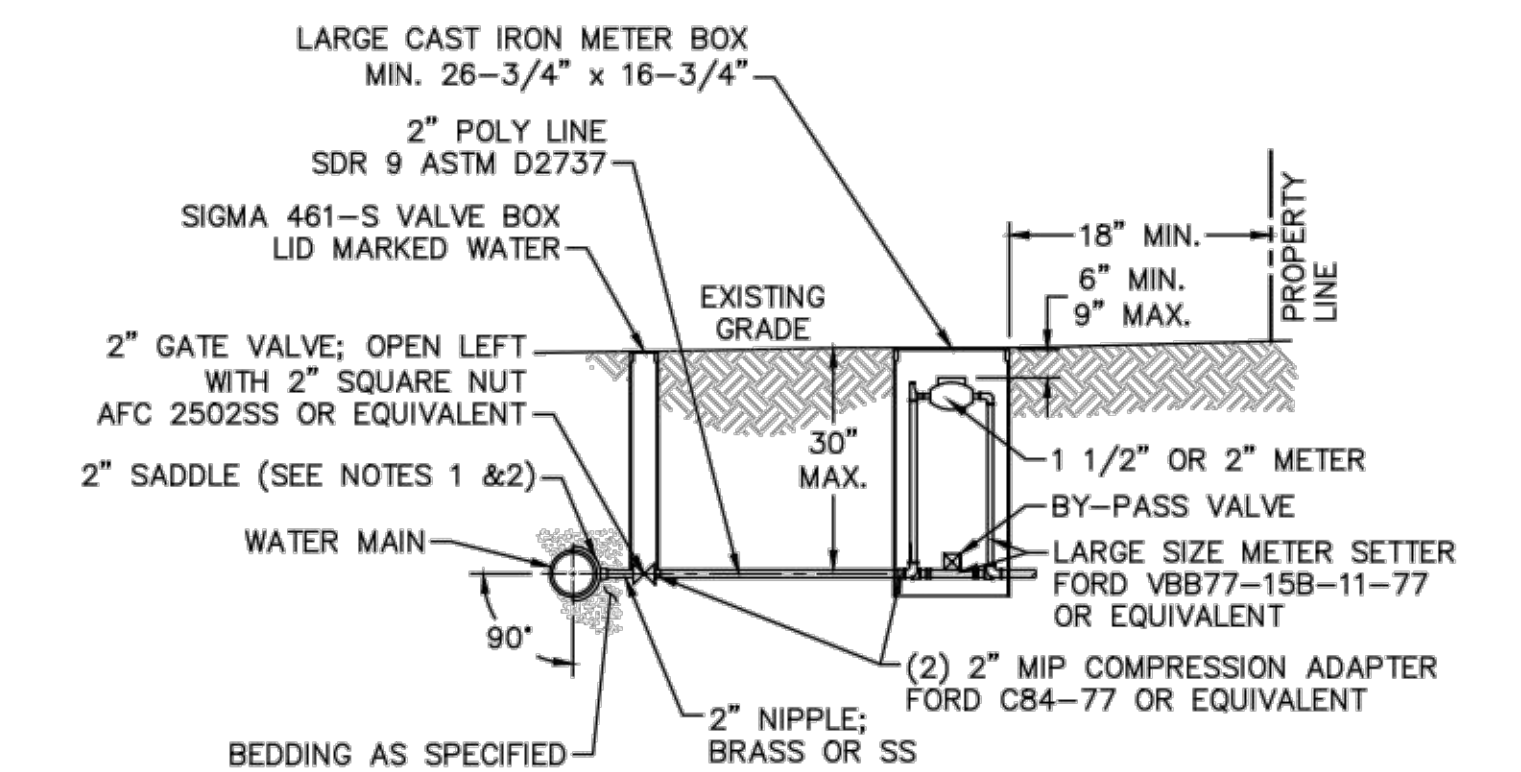
- NOTES:**
- NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
  - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
  - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (SIP MODEL 4240 OR APPROVED EQUIVALENT).



**SINGLE SERVICE CONNECTION**  
NOT TO SCALE

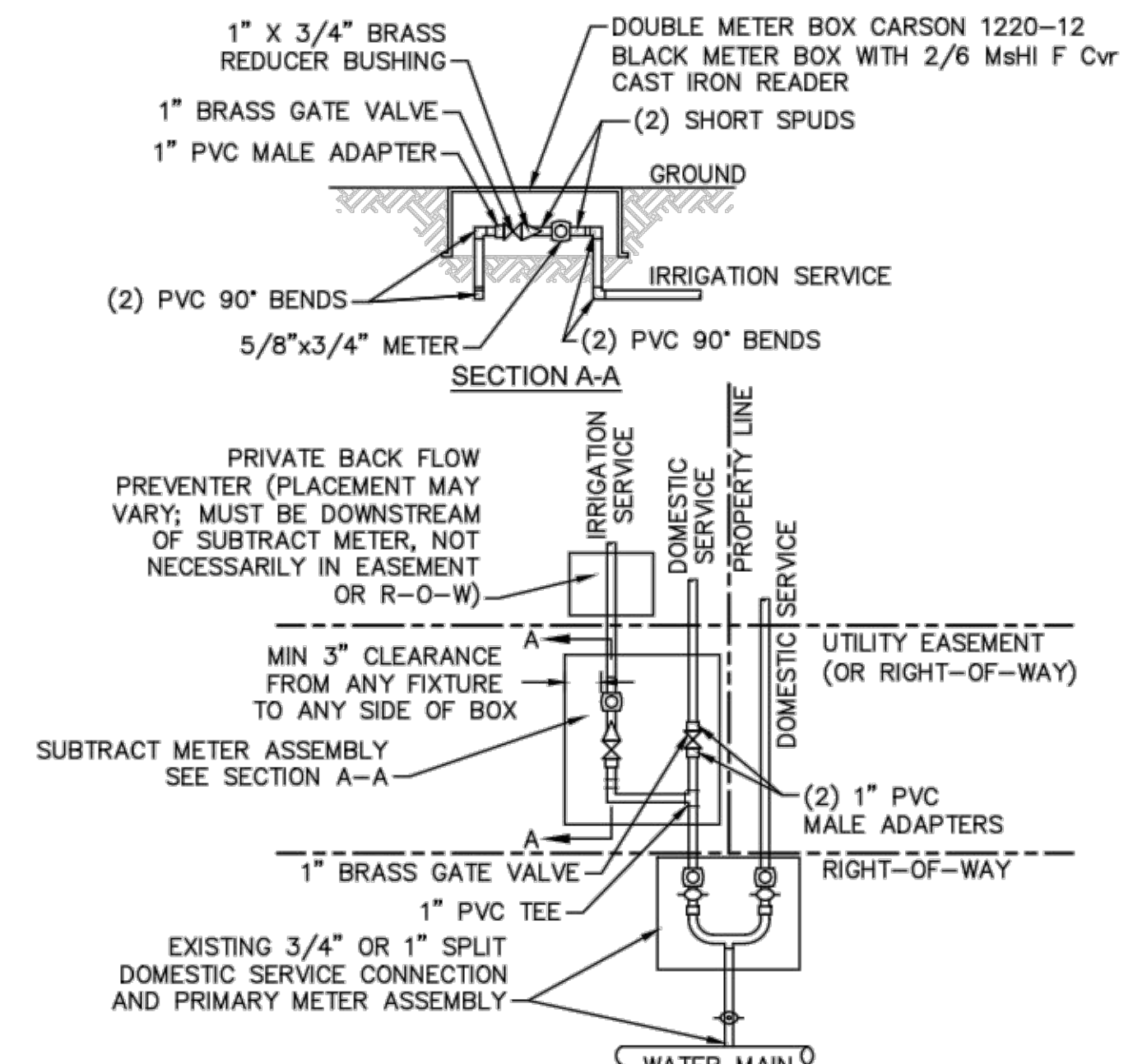


**WATER METER VAULT**  
NOT TO SCALE



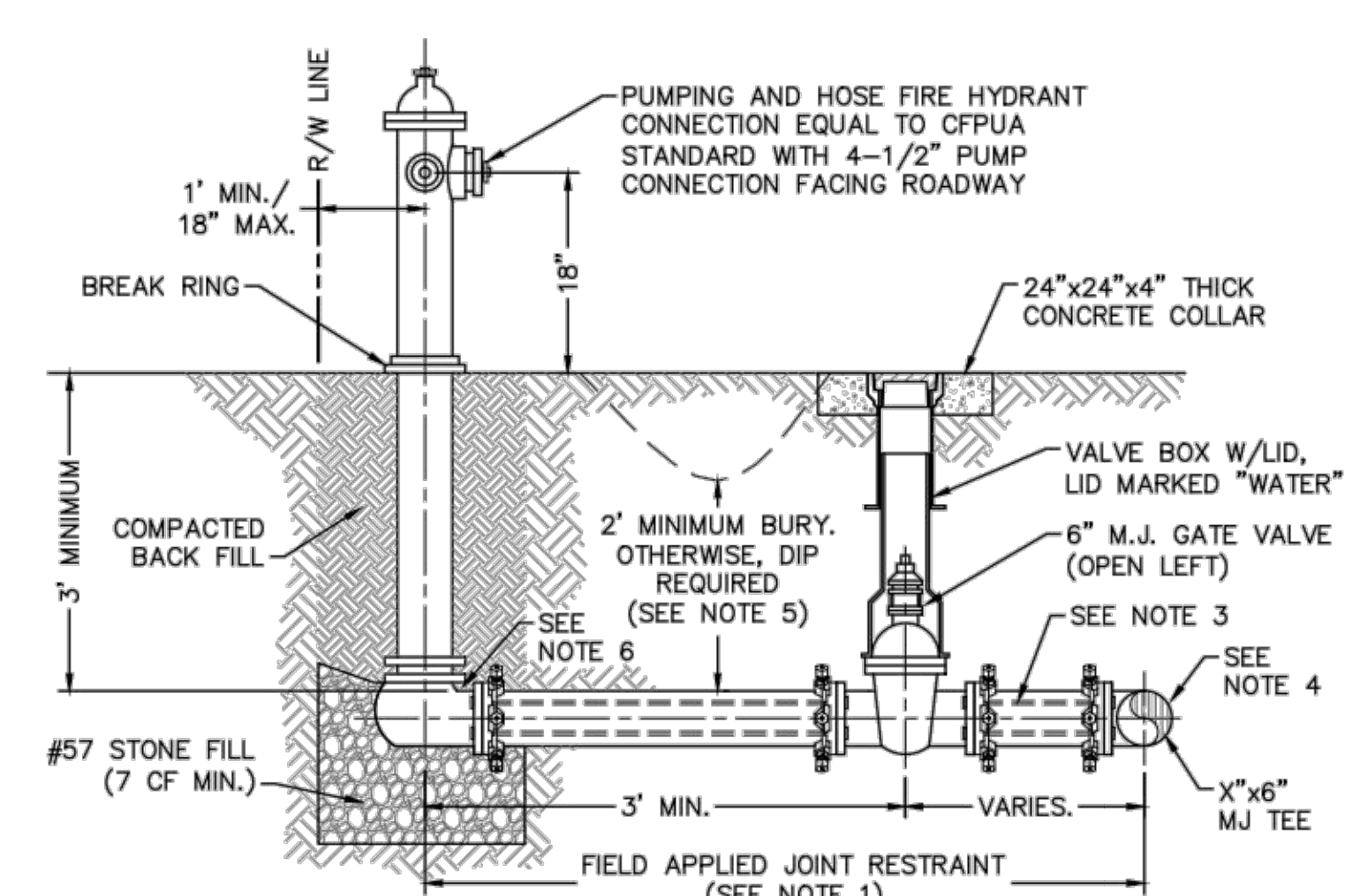
- NOTES:**
- ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
  - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: McDONALD 3800, FORD S90 (DOUBLE STRAP) OR EQUIVALENT.
  - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (OLDCASTLE PRECAST MODEL B1730 OR APPROVED EQUIVALENT).
  - METER BOXES SUSCEPTIBLE TO INCIDENTAL, NON-DELIBERATE TRAFFIC SHALL CONFORM TO ANSI/SCIE 77 TIER 15 LOAD RATING STANDARDS (SYNERTECH MODEL DUO 17x30 OR APPROVED EQUIVALENT).
  - NON-TRAFFIC METER BOXES SHALL BE SIGMA MB2203 OR APPROVED EQUIVALENT.
  - 3" CLEAN FILL REQUIRED ALL AROUND 2" POLY SERVICE LINE.

**LARGE METER**  
NOT TO SCALE



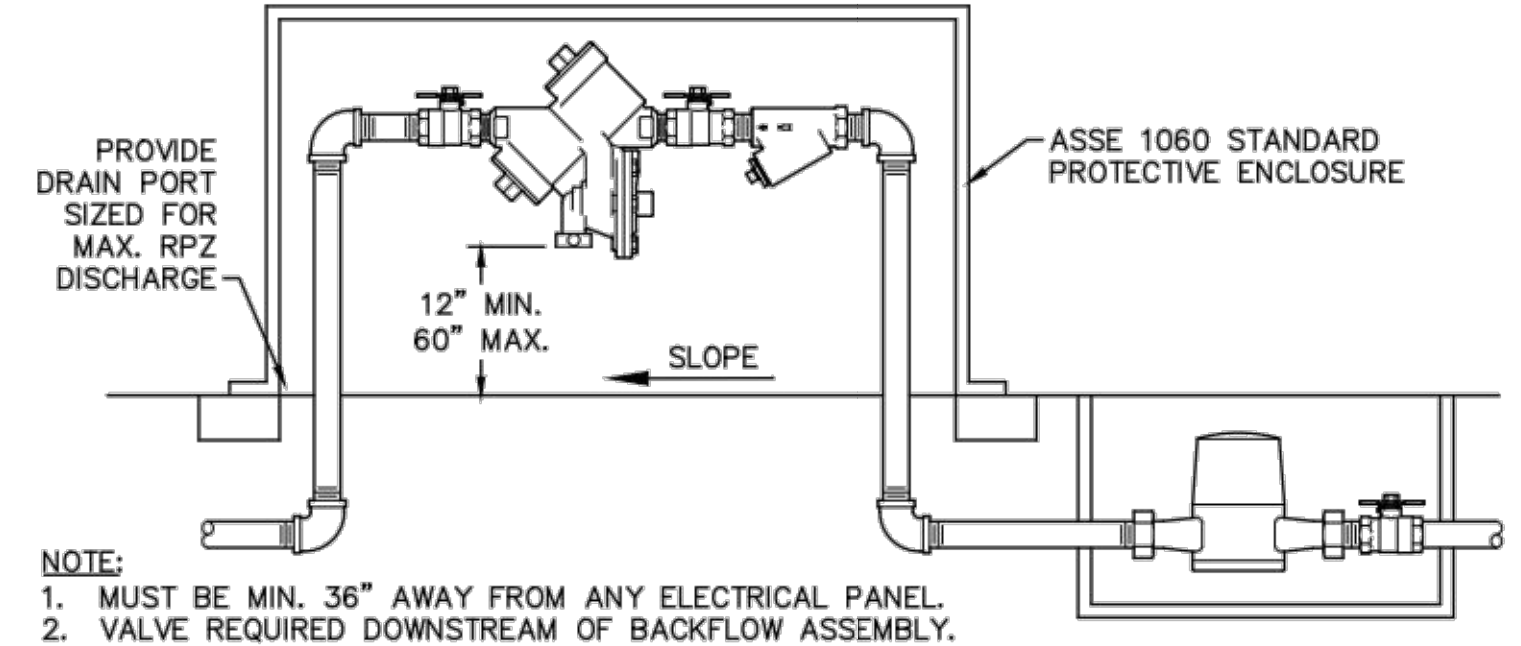
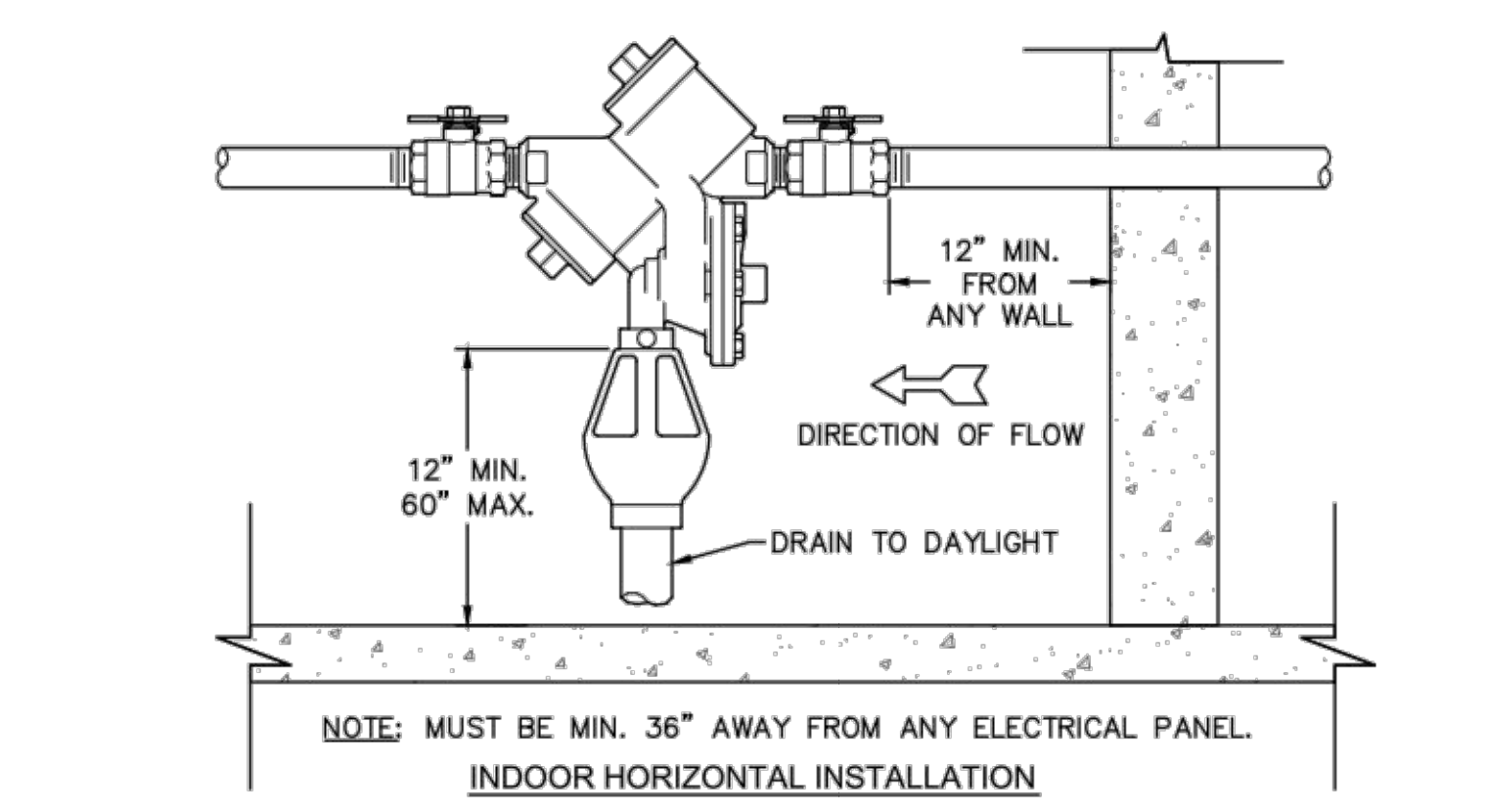
- NOTES:**
- BEYOND THE PRIMARY DOMESTIC METER ASSEMBLY, CFPUA IS ONLY RESPONSIBLE FOR METER AND WASHERS OF SUBTRACT METER ASSEMBLY.
  - ALL PIPE AND FITTINGS UP TO FINAL SERVICE LINE TO BE 1" EXCLUDING METERS.

**DOUBLE SERVICE CONNECTION USING SUBTRACT METER**  
NOT TO SCALE



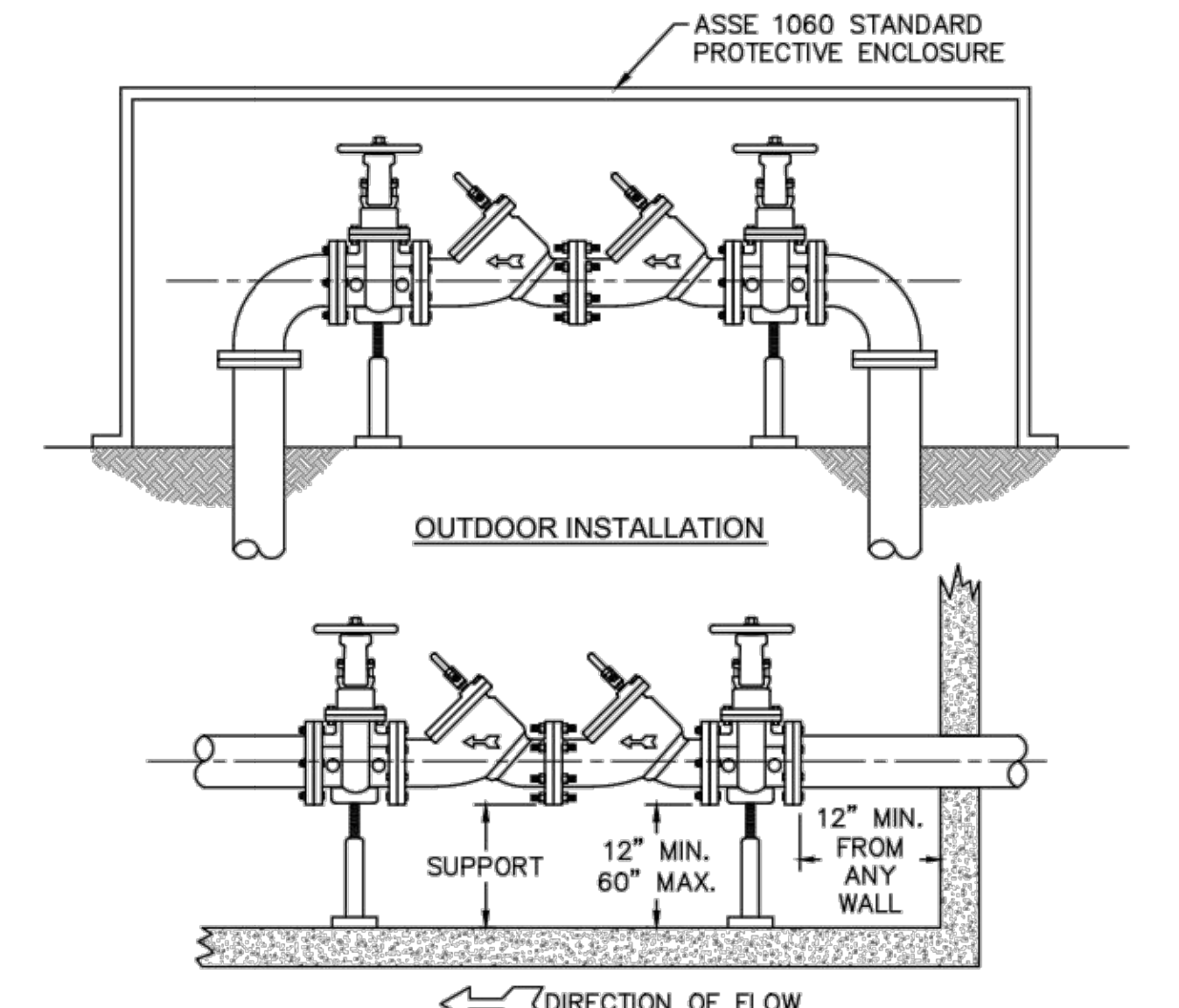
- NOTES:**
- JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI OR C-900 PVC PIPE AS MANUFACTURED BY EBAA IRON, SIGMA STAR PIPE PRODUCTS OR APPROVED EQUAL.
  - WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
  - CONTINUOUS 316 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE MJ T-BOLT AND GASKET KITS, AS AN ALTERNATIVE.
  - HYDRANT TEE SHALL BE RESTRAINED ON EACH SIDE OF MAIN PLUS ANY VALVE, FITTING, OR JOINT IN MAIN WITHIN 10- FEET OF HYDRANT TEE.
  - HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
  - WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.

**FIRE HYDRANT ASSEMBLY**  
NOT TO SCALE



- NOTE:**
- MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.
  - VALVE REQUIRED DOWNSTREAM OF BACKFLOW ASSEMBLY.
  - VERTICAL INSTALLATION SHALL BE DESIGNED AND SUBMITTED TO CFPUA ESDM FOR APPROVAL.

**REDUCED PRESSURE PRINCIPLE ASSEMBLY**  
NOT TO SCALE



- NOTE:**
- MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.
  - VALVE REQUIRED DOWNSTREAM OF BACKFLOW ASSEMBLY.
  - VERTICAL INSTALLATION SHALL BE DESIGNED AND SUBMITTED TO CFPUA ESDM FOR APPROVAL.

**DOUBLE CHECK VALVE ASSEMBLY**  
NOT TO SCALE

- GENERAL NOTES:**
- NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  - THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
  - THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
  - THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
  - THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

REV.	DESCRIPTION:	DATE:
1	Single Service Connection, Double Service Connection, and Large Meter Revised	10/26/12
2	Single Service Connection and Fire Hydrant Details Revised	7/23/13
3	Fire Hydrant Detail Revised	01/03/14

**CFPUA WATER DISTRIBUTION SYSTEM**

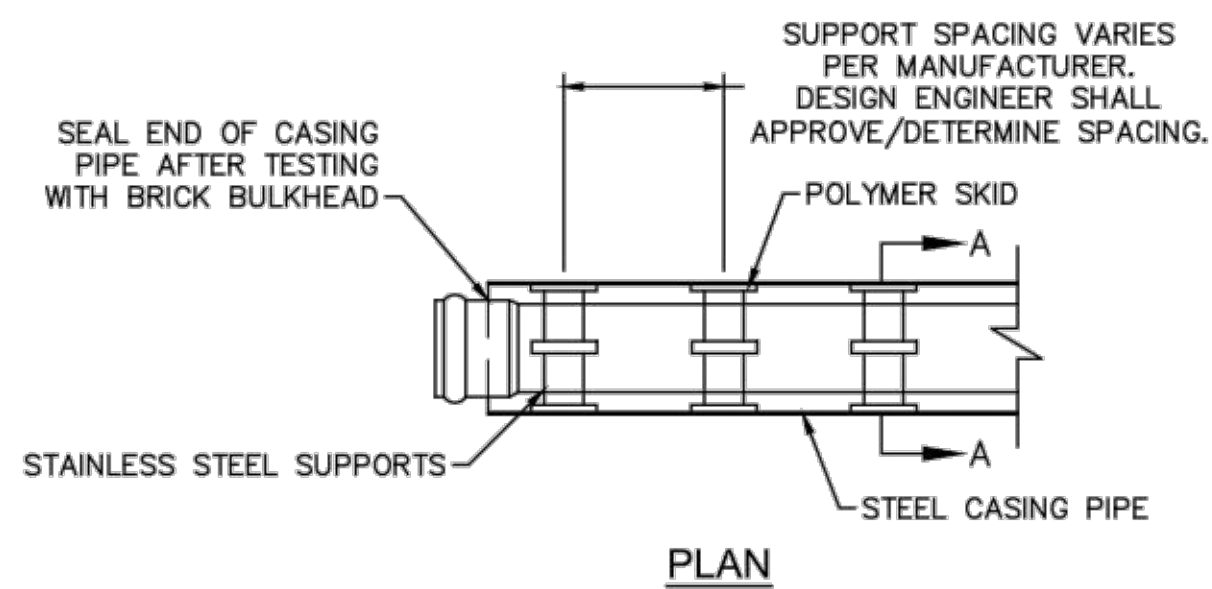
**STANDARD DETAILS**

CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6560

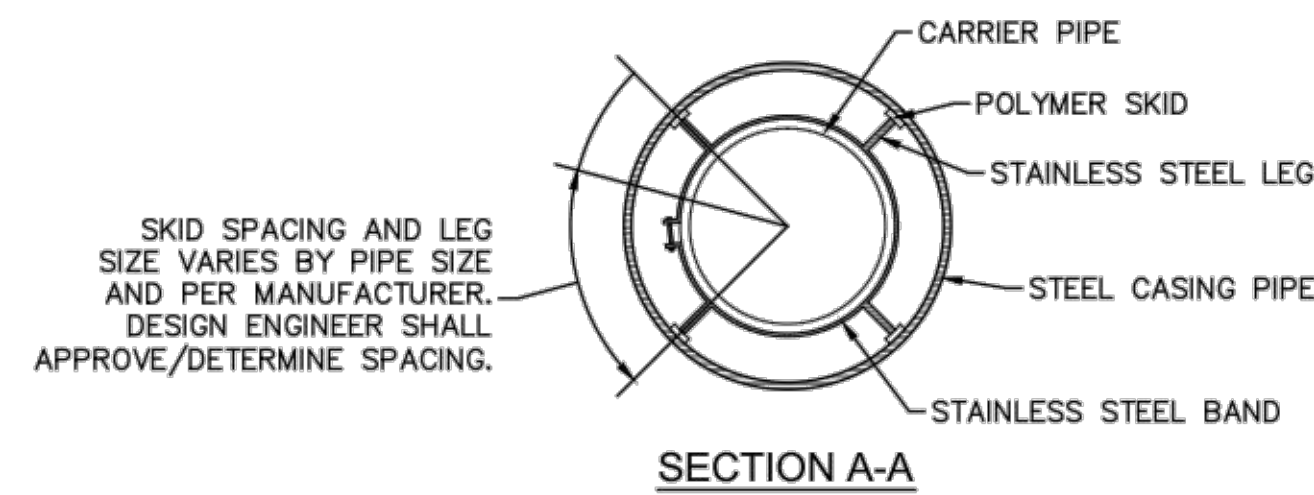
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CHECKED BY: CFPUA  
PROJECT NO.:

**SHEET NO:**  
**WSD-1**

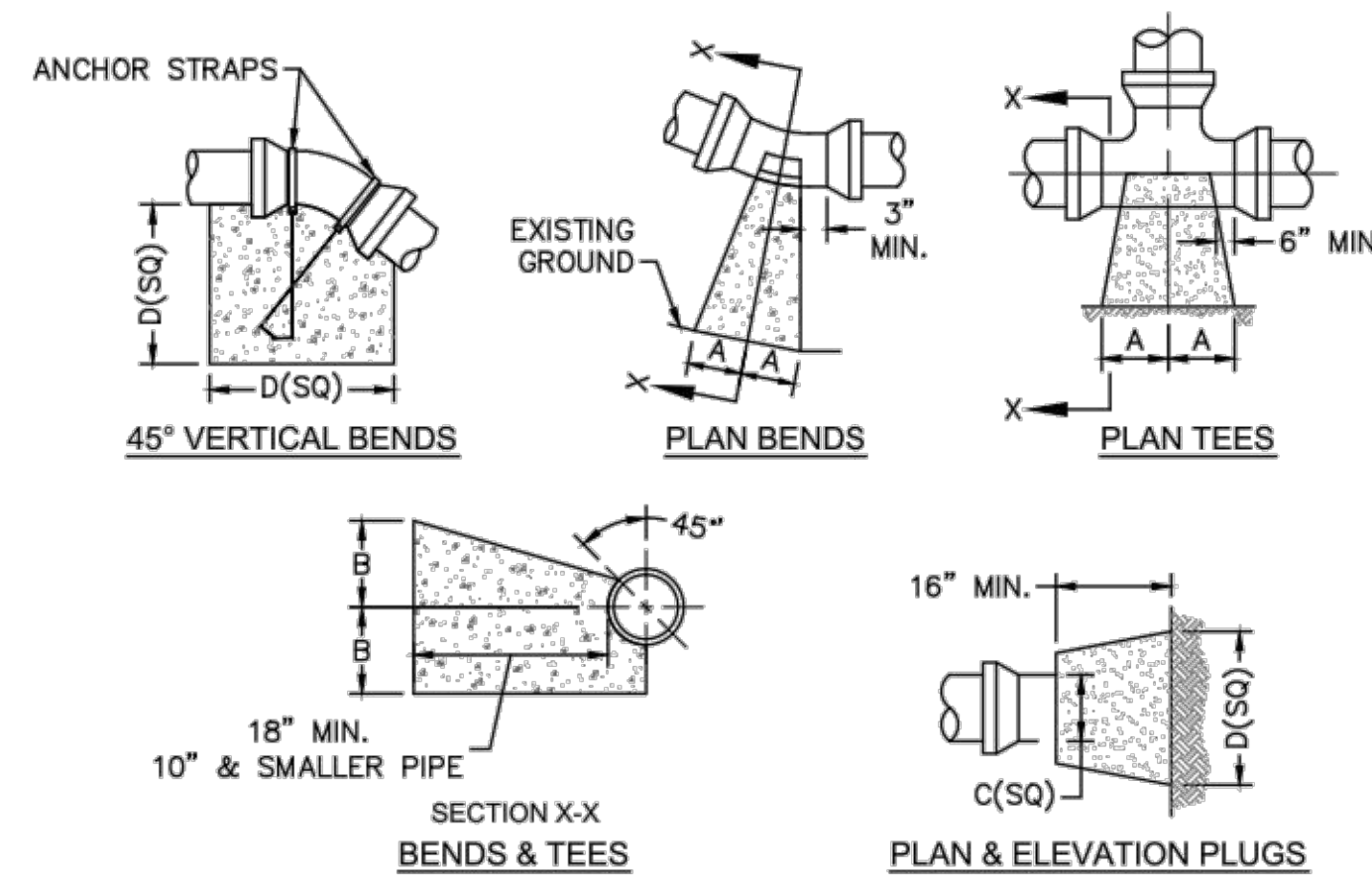
S:\2725\0124\_Marina Village\60-Drawings\Phase1\BSSD-4.dwg, 11/9/2015 11:13:23 AM, AMendenhall



NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.



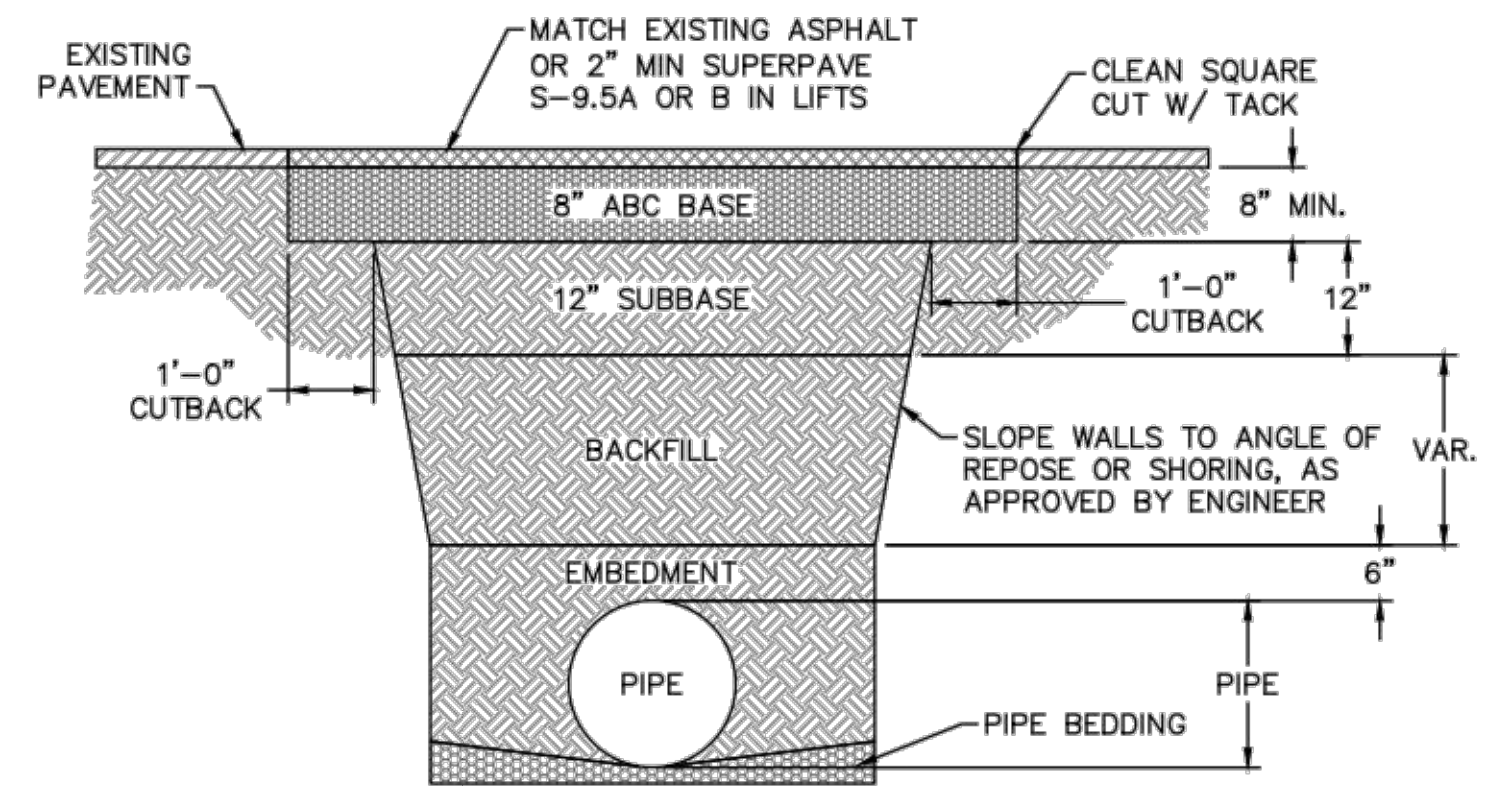
PIPE CASING SUPPORT DETAIL  
NOT TO SCALE



SIZE	90 BENDS		45 BENDS		22 1/2 BENDS		TEES/PLUGS		45 VERT. BENDS
	A	B	A	B	A	B	A	B	
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	22"	18"	62"
14"	26"	29"	21"	19"	18"	18"	26"	20"	72"
16"	33"	29"	25"	21"	20"	21"	32"	21"	83"
18"	40"	30"	28"	24"	22"	23"	36"	24"	88"

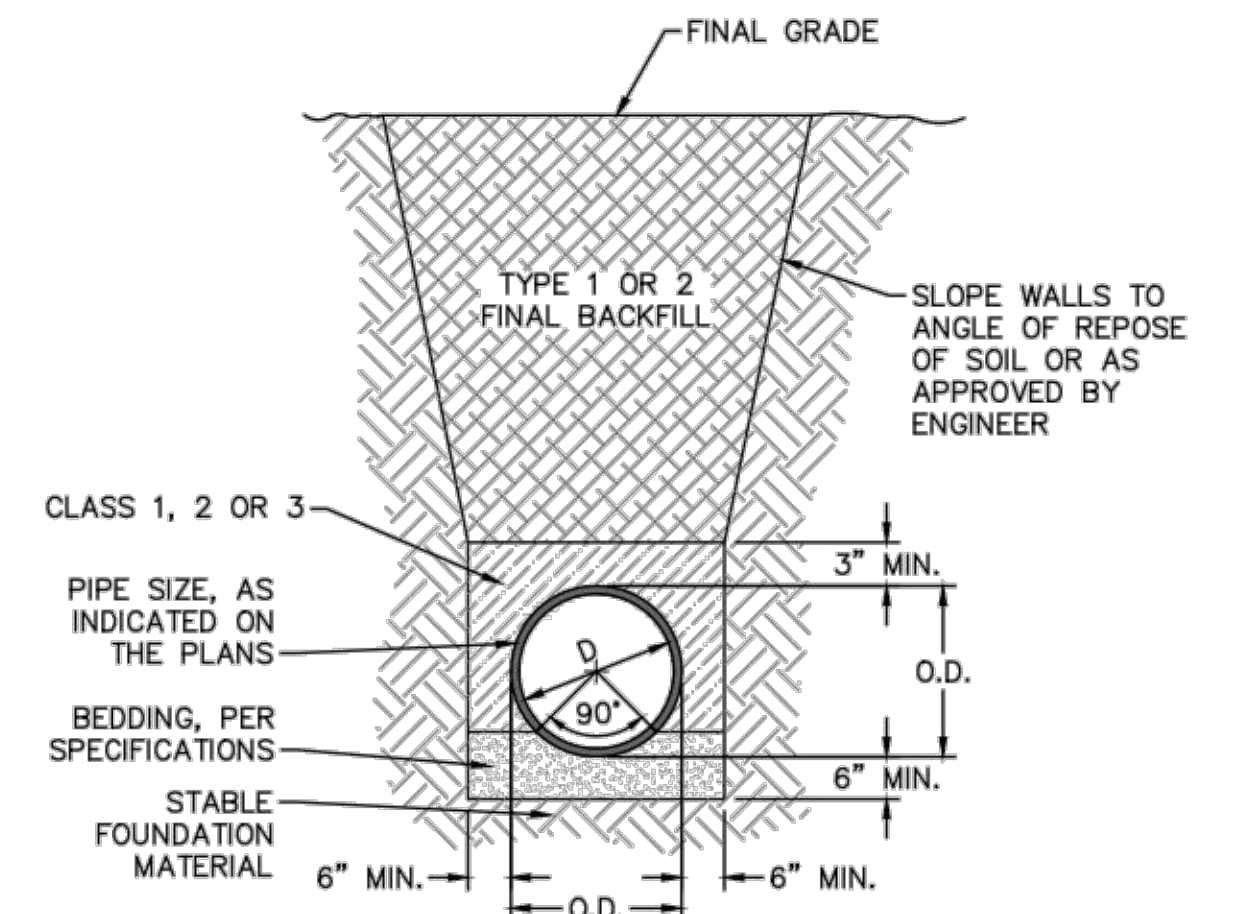
NOTES:  
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.  
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.  
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

THRUST BLOCK DETAIL  
NOT TO SCALE

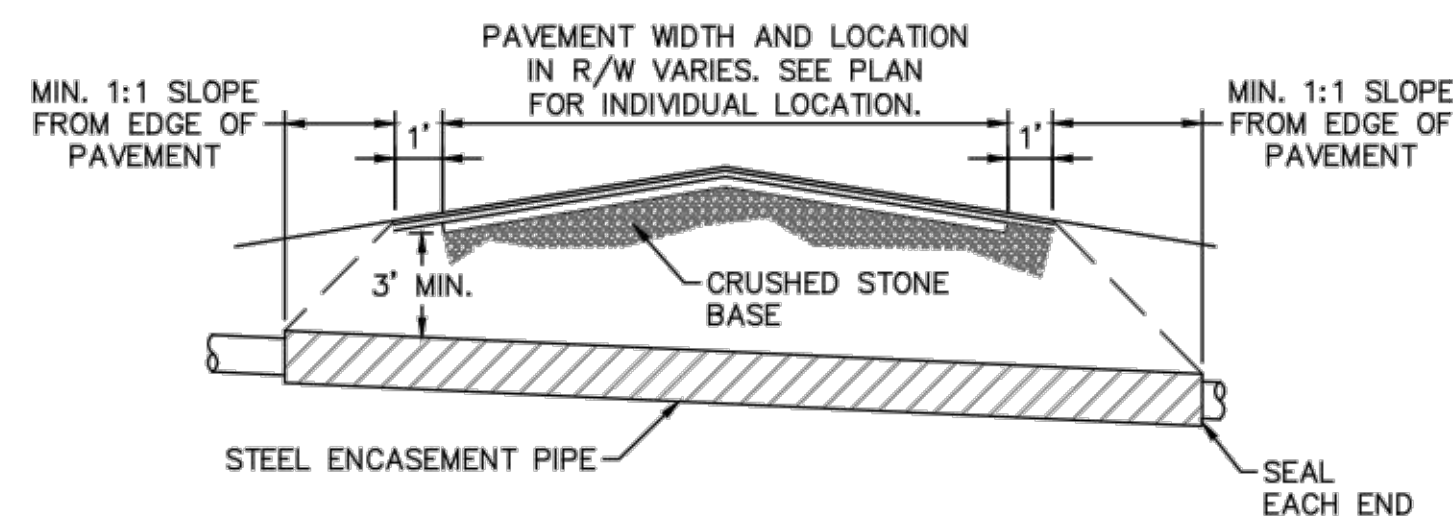


NOTES:  
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.  
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).  
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.  
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS.  
5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.  
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.  
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.  
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

PAVEMENT REPAIR WHERE PIPE INSTALLED  
NOT TO SCALE

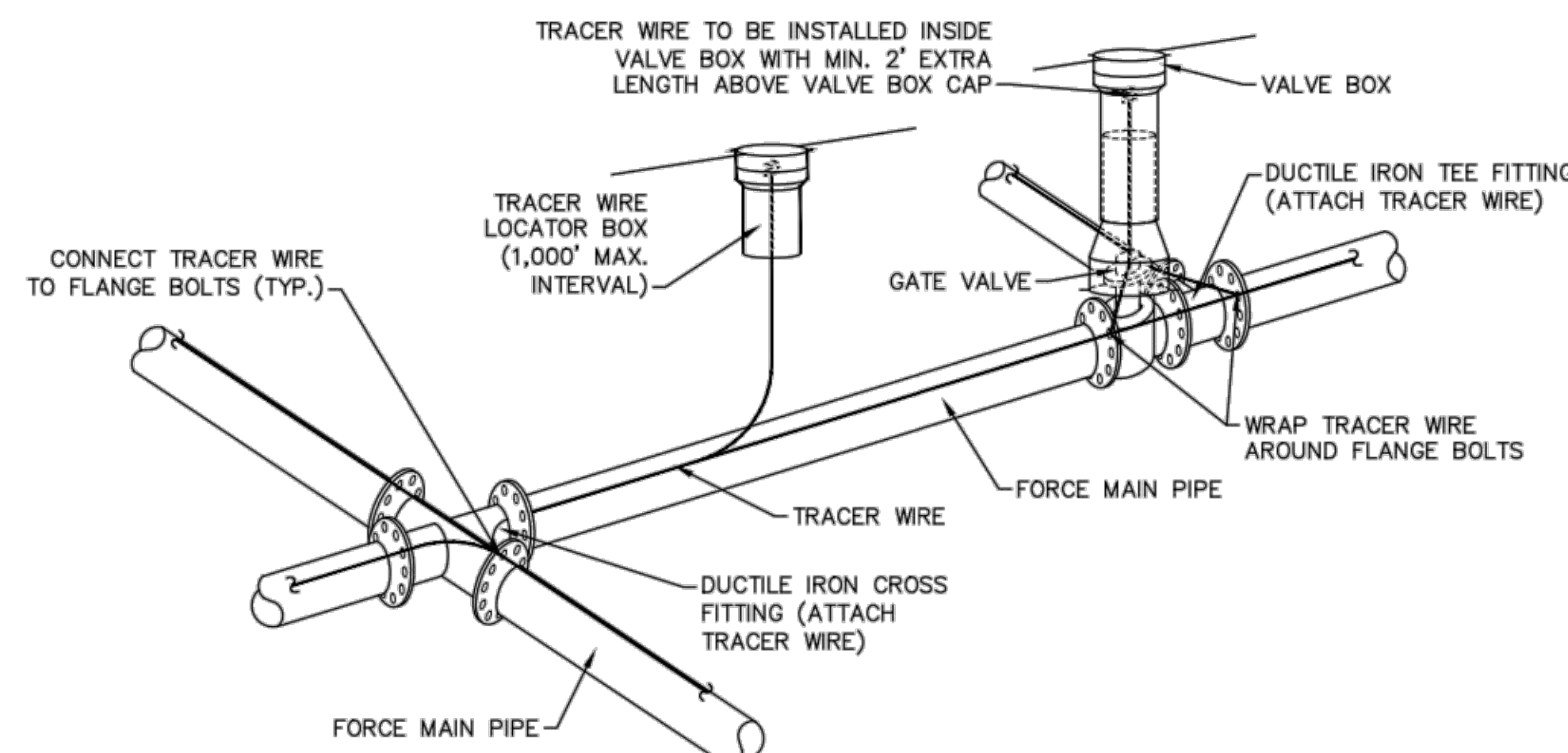


TYPICAL TRENCH DETAIL  
NOT TO SCALE



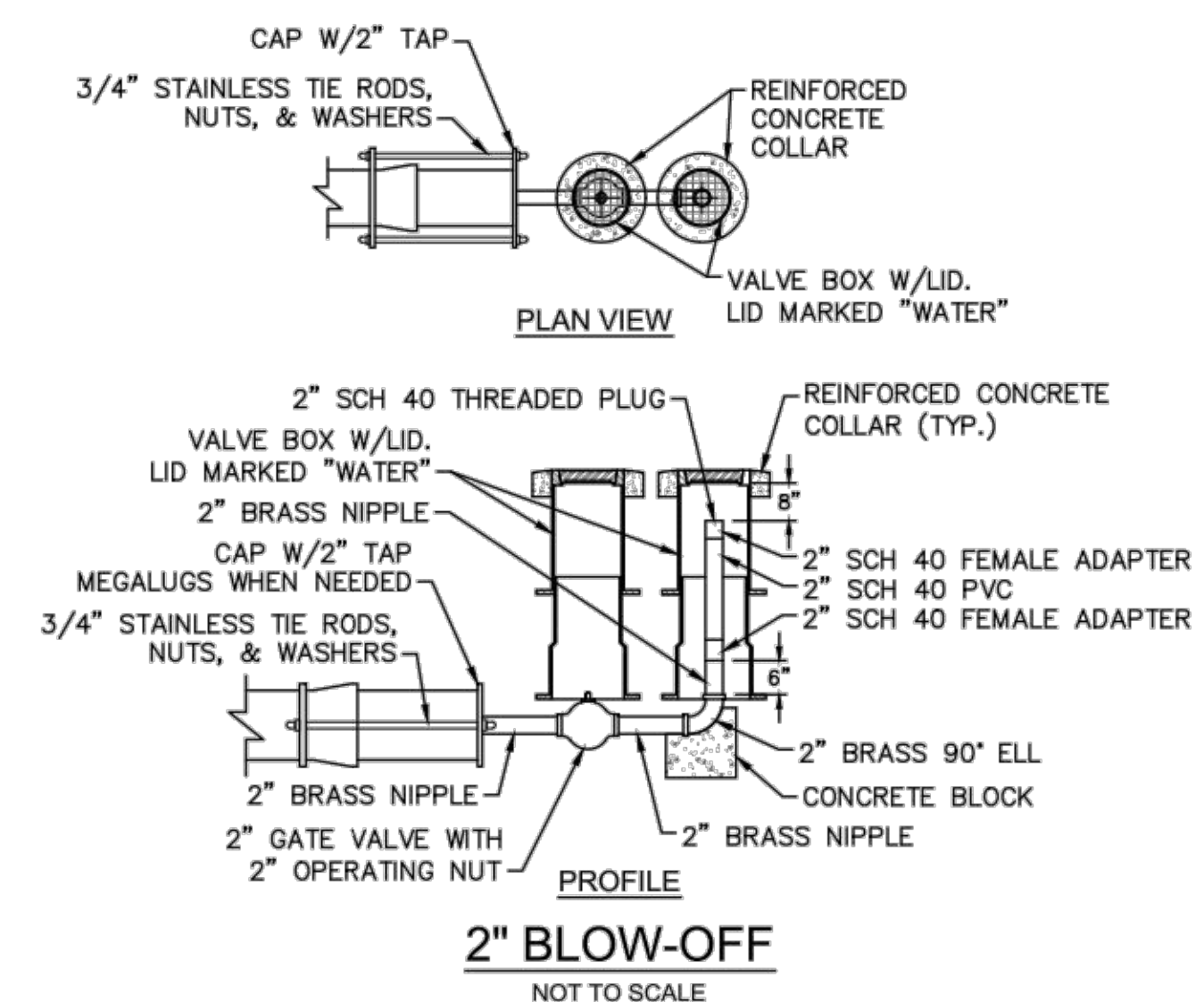
NOTES:  
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.  
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

TYPICAL BORING/JACKING DETAIL  
NOT TO SCALE

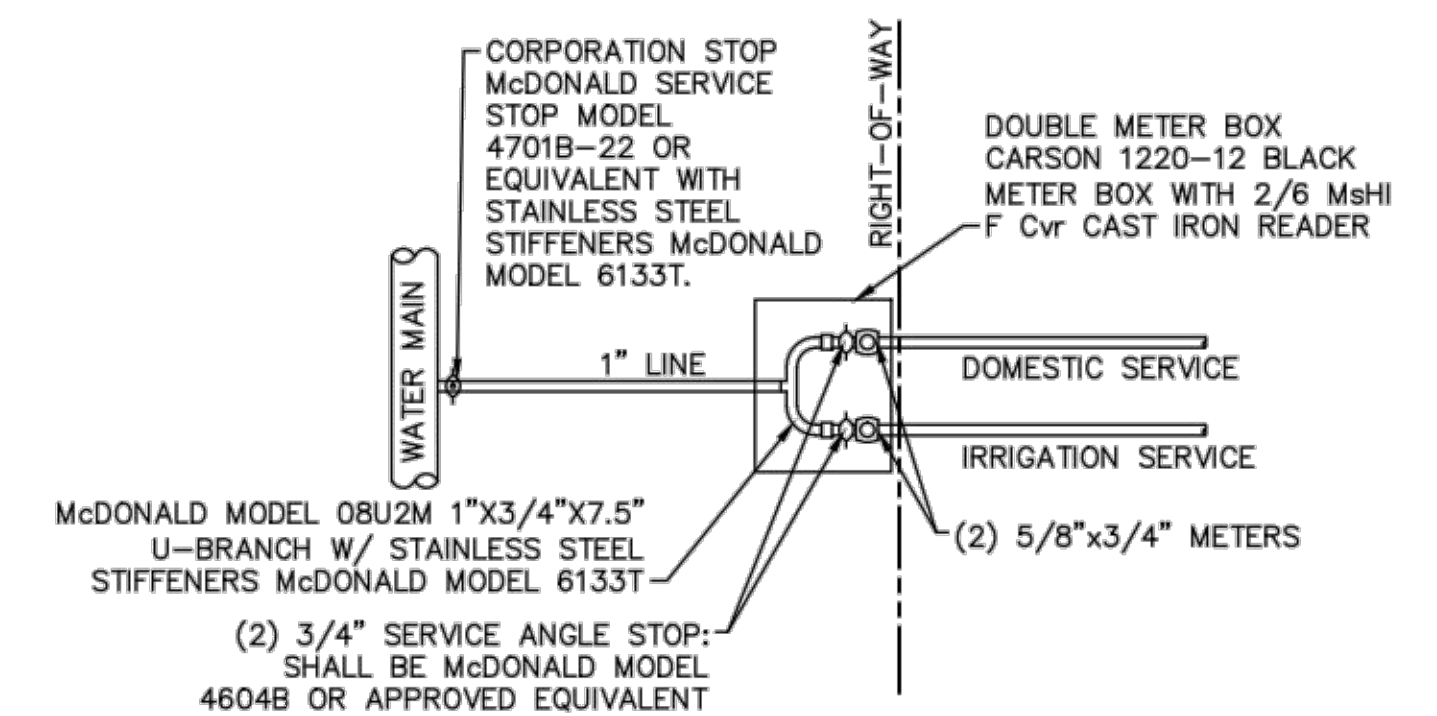


NOTES:  
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION  
2. WIRE SHALL BE STRAPPED TO ALL PVC FORCE MAIN PIPING WITH DUCT TAPE AT 12-FT. INTERVALS.  
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS.  
4. ALL WIRE SPLICES SHALL HAVE WATER PROOF WIRE CONNECTIONS.

TRACER WIRE DETAIL  
NOT TO SCALE



2" BLOW-OFF  
NOT TO SCALE

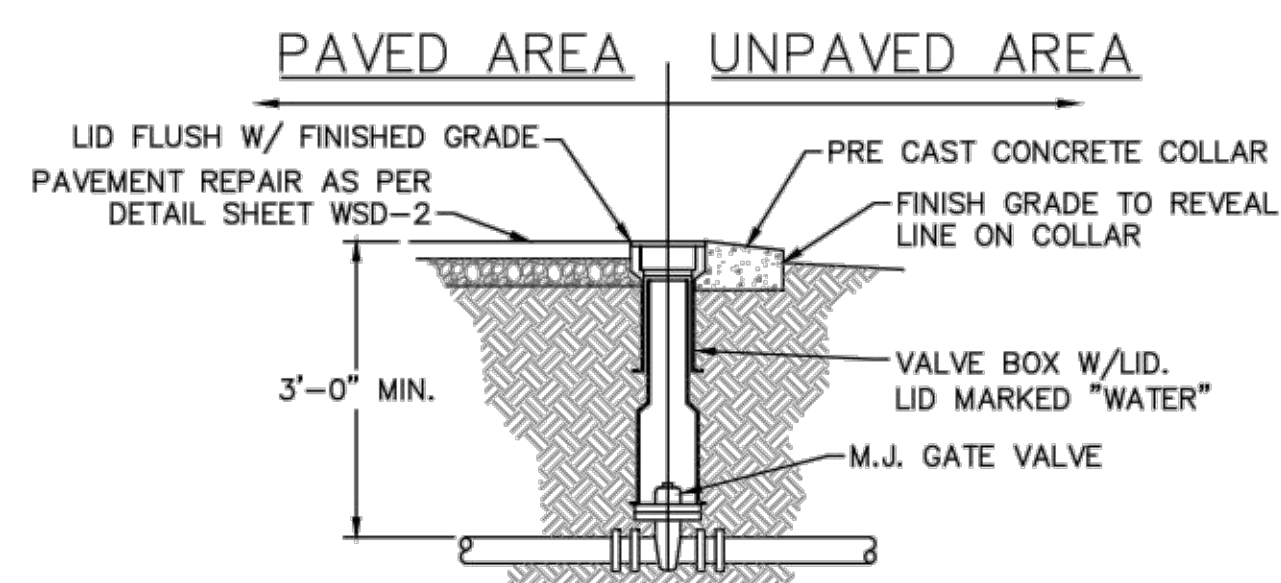


DOUBLE SERVICE CONNECTION  
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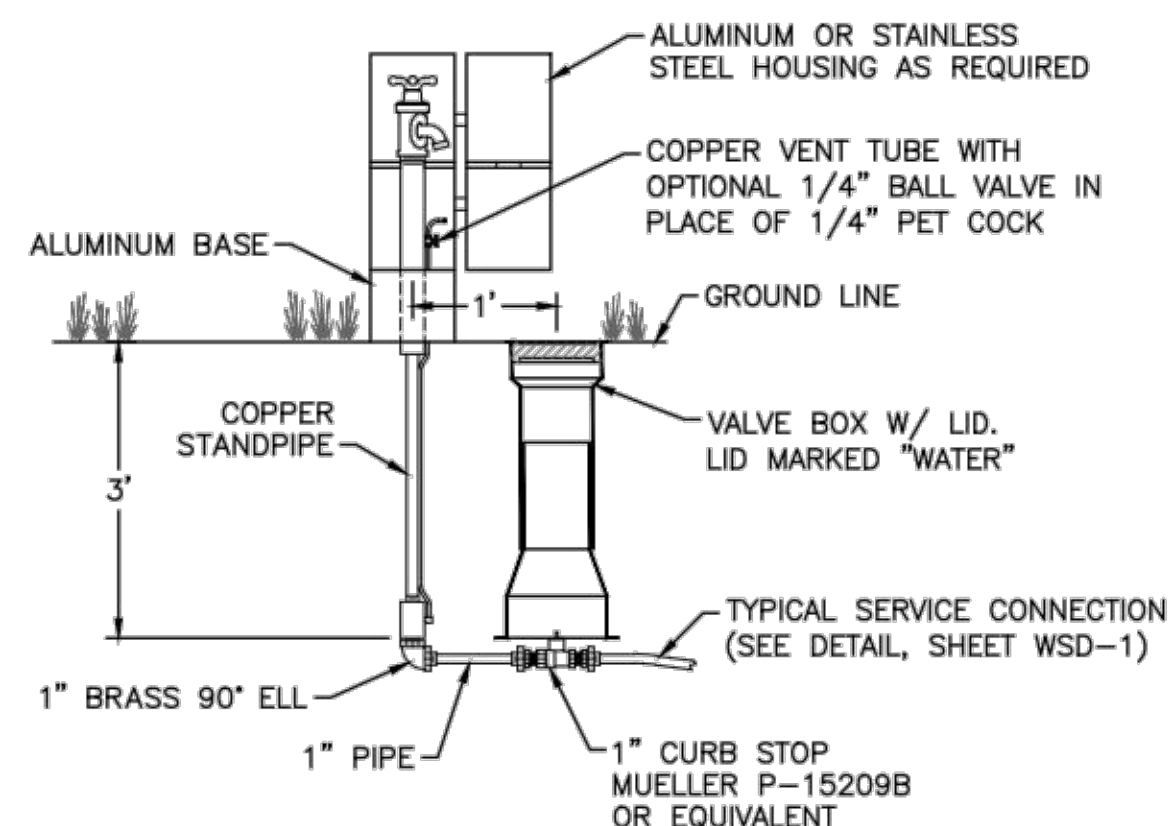
GENERAL NOTES:  
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.  
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.  
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.  
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.  
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPWA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

WATER MAIN DITCH AND STORM DRAIN CROSSING  
NOT TO SCALE



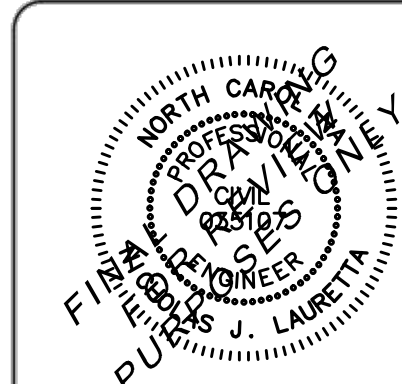
VALVE DETAIL  
NOT TO SCALE



SAMPLING STATION  
NOT TO SCALE

REV:	DESCRIPTION:	DATE:
1	Revised Water Main Ditch and Storm Crossing Detail	11/12/13
2	Revised Water Main Ditch and Storm Crossing Detail	05/05/14

CFPUA WATER DISTRIBUTION SYSTEM



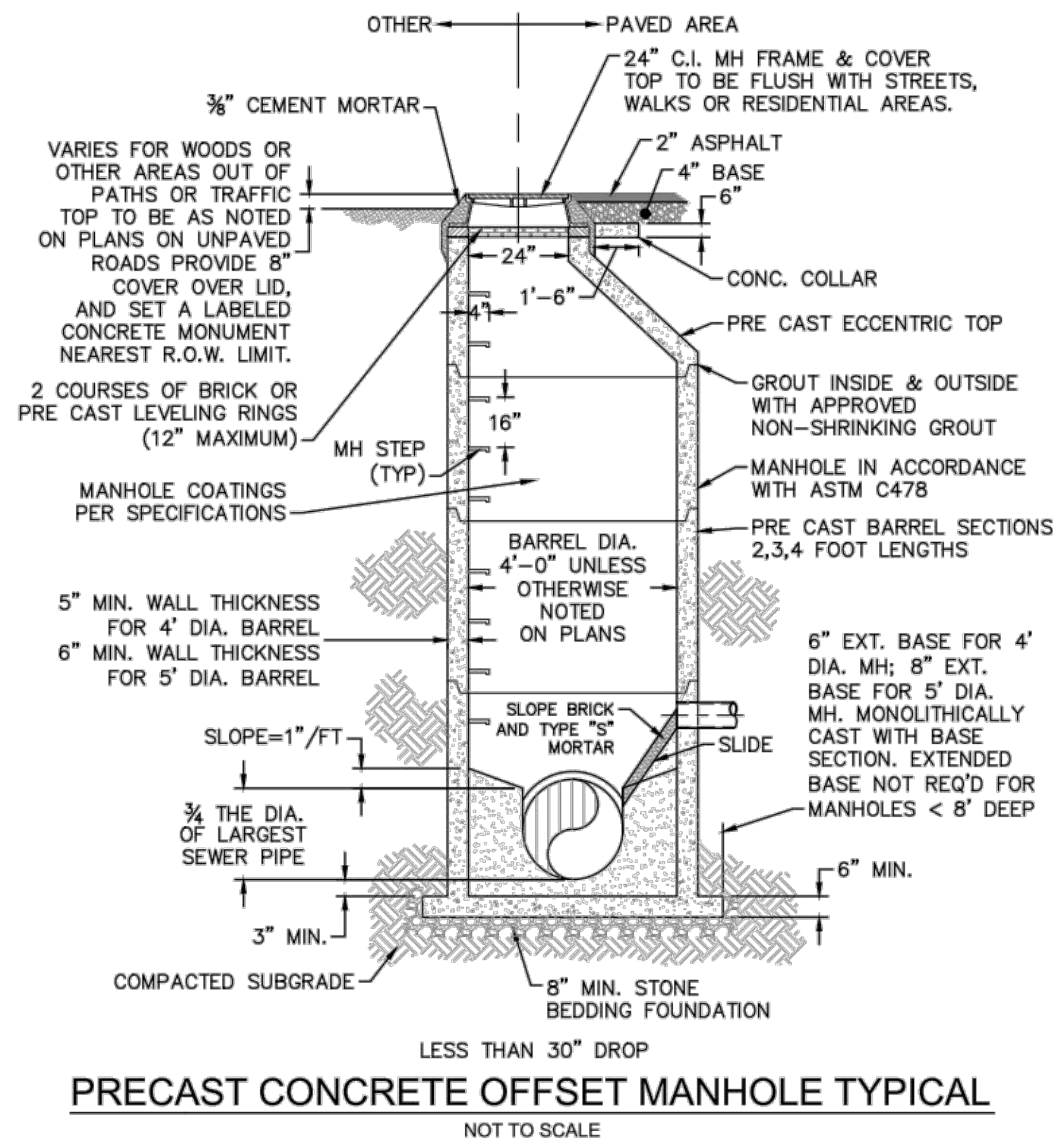
STANDARD DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6560

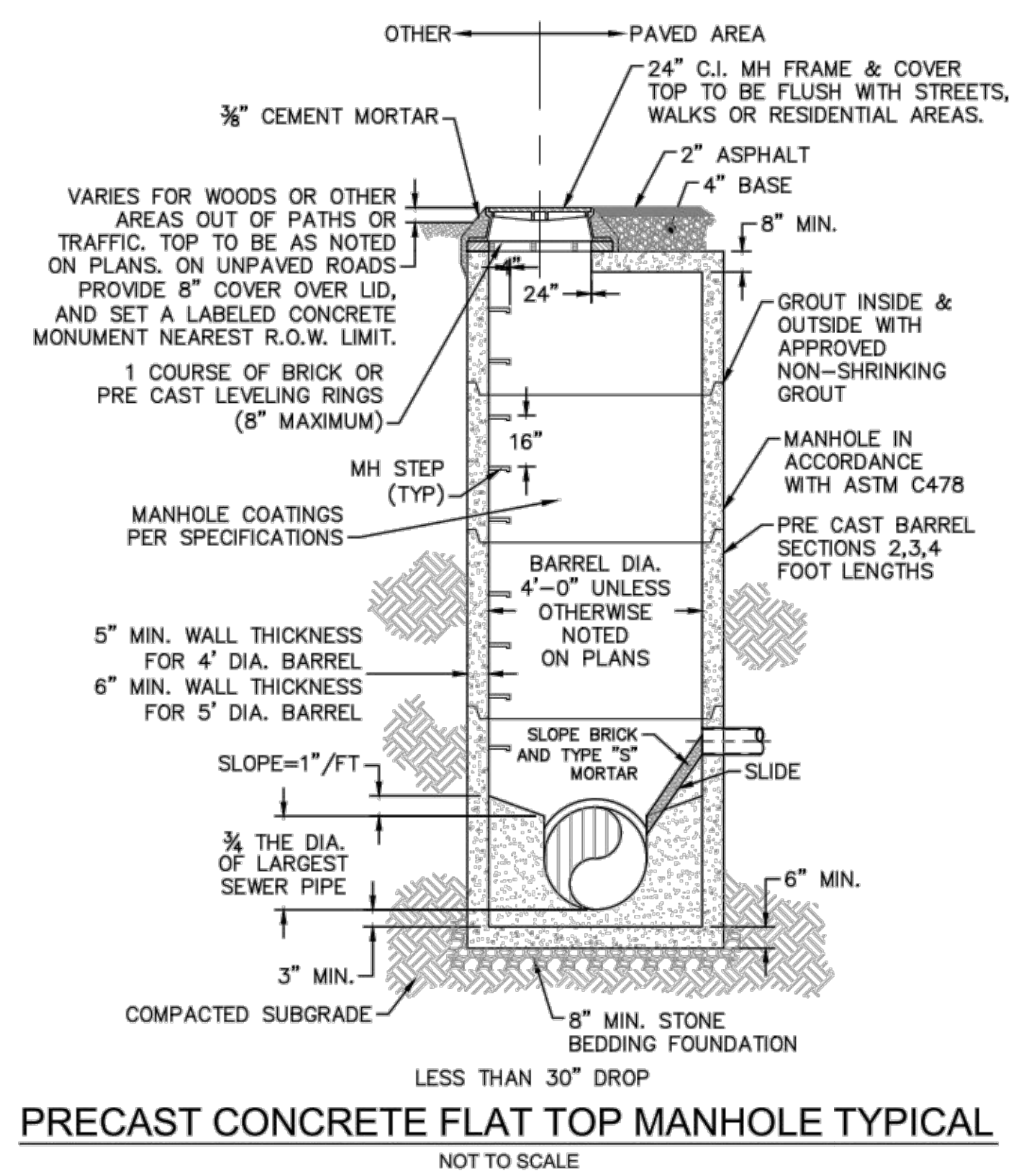
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1/9/12  
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DRAWN BY:  
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PROJECT NO.:

SHEET NO:  
WSD-2

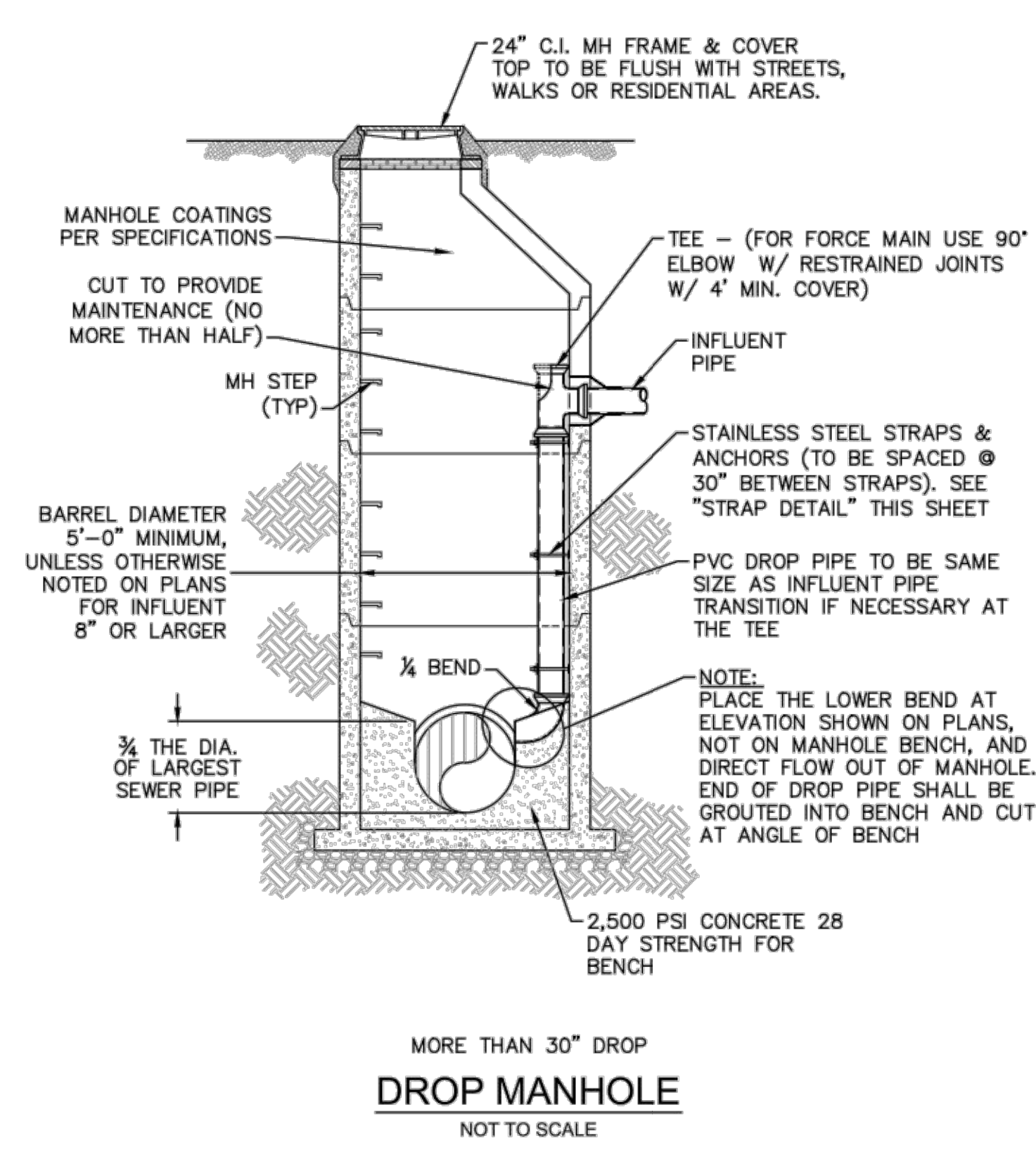




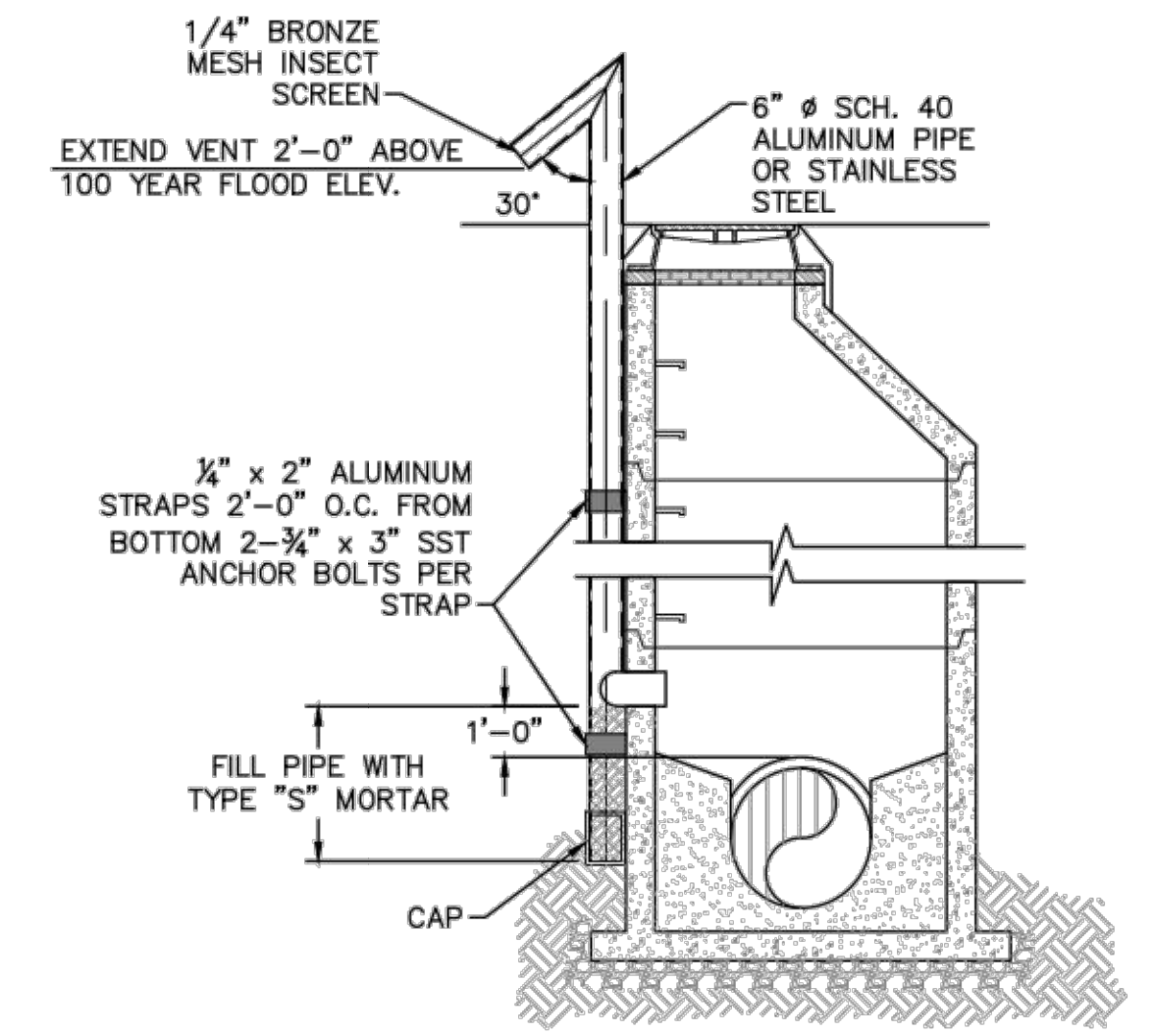
**PRECAST CONCRETE OFFSET MANHOLE TYPICAL**  
NOT TO SCALE



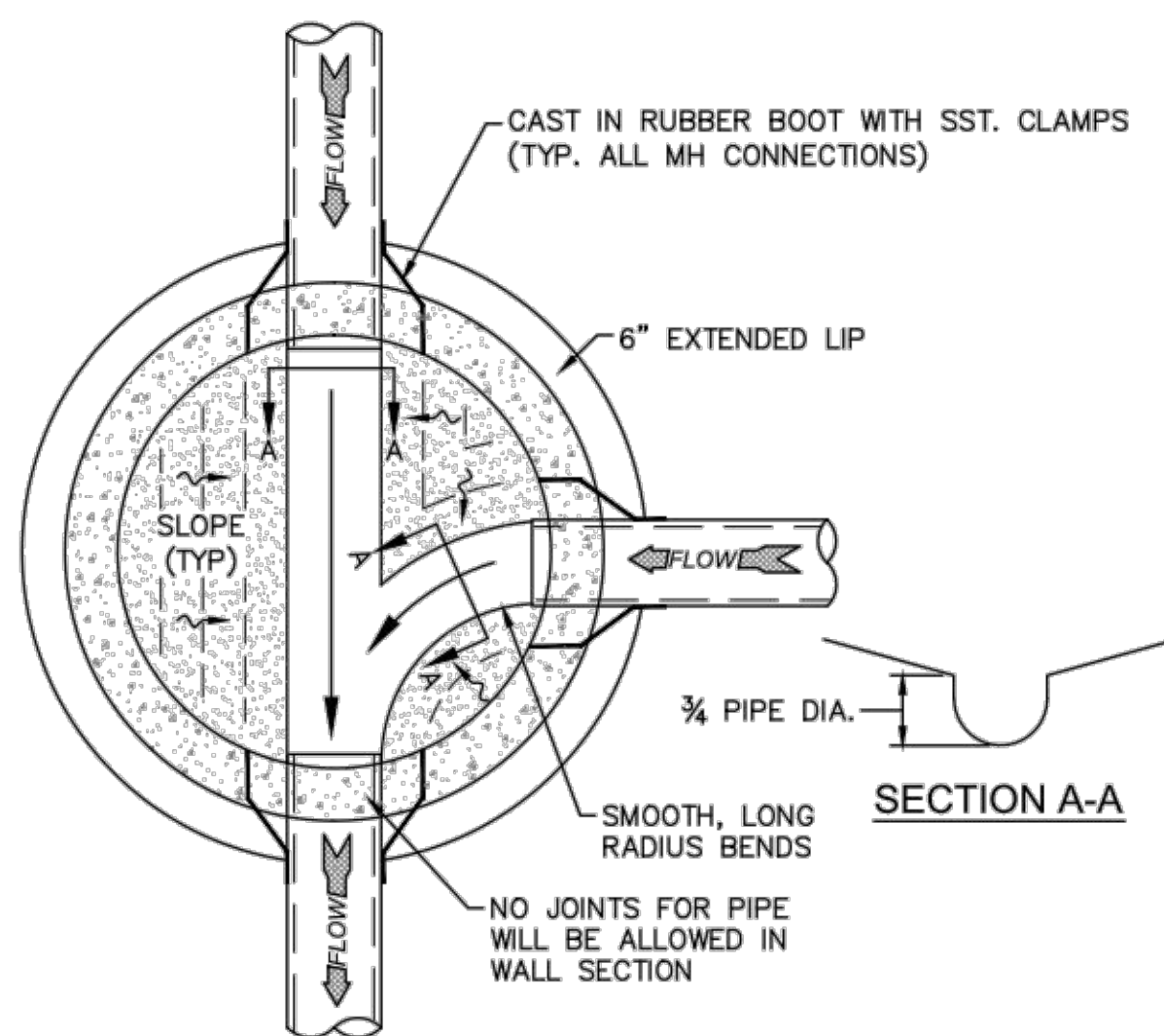
**PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL**  
NOT TO SCALE



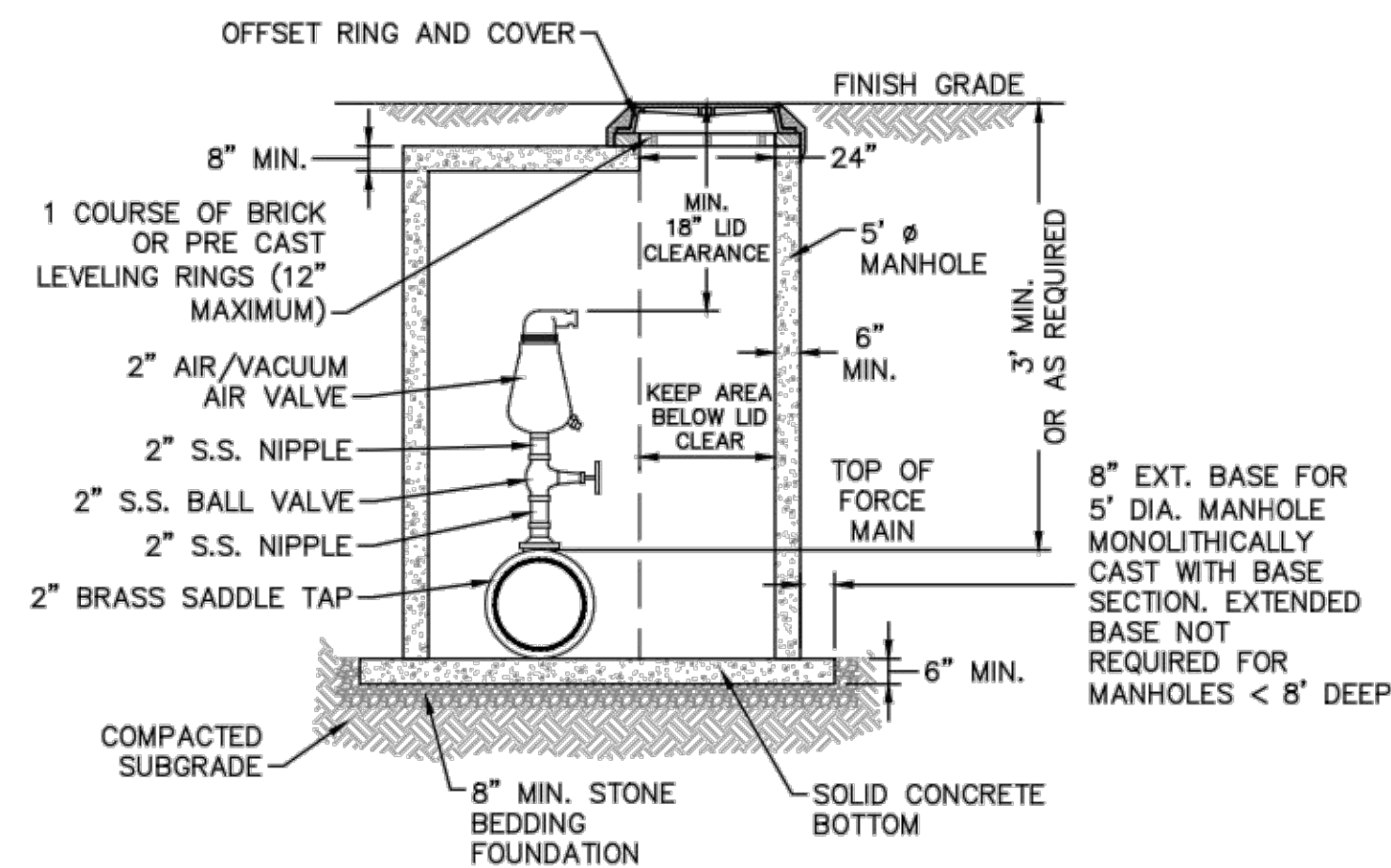
**DROP MANHOLE**  
NOT TO SCALE



**STANDARD VENT MANHOLE**  
NOT TO SCALE

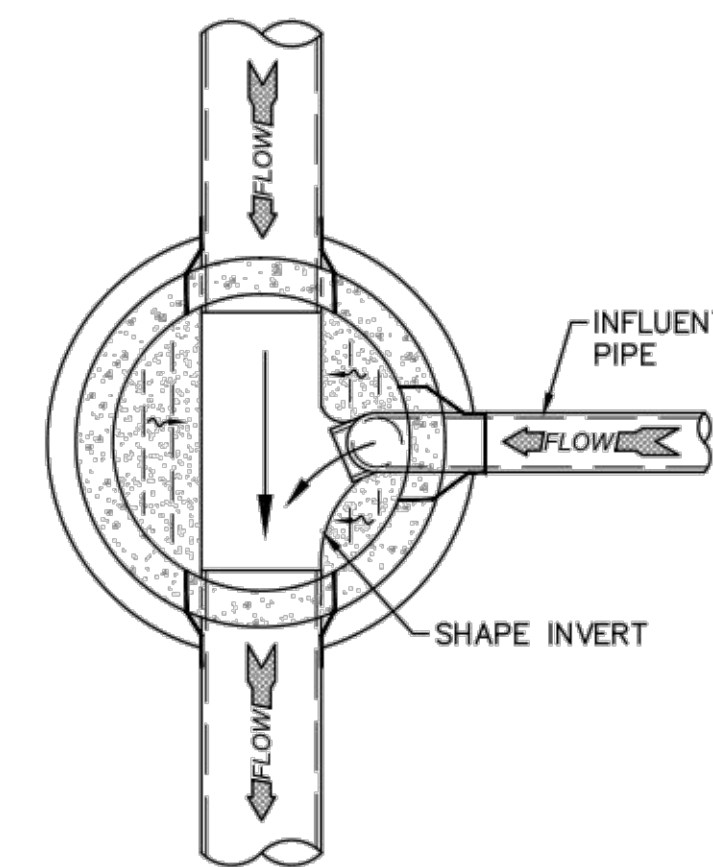


**MANHOLE FLOOR PLAN**  
NOT TO SCALE

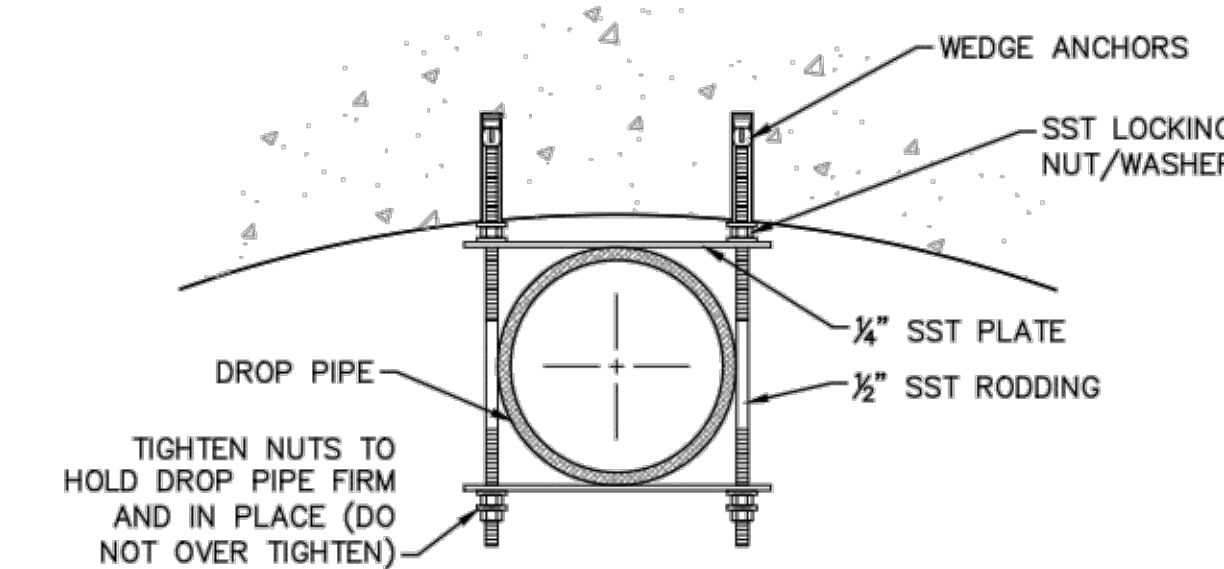


- NOTES:**
1. CONTRACTOR TO INSTALL VALVE AND MANHOLE AT SUFFICIENT DEPTH TO ALLOW FOR ACCESS.
  2. FORCE MAIN TO BE OFFSET IN MANHOLE TO KEEP AREA BELOW LID CLEAR.
  3. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
  4. USE CAST IN RUBBER BOOT WITH SST. CLAMPS FOR ALL MH CONNECTIONS, INCLUDING FORCE MAIN.

**AIR / VACUUM AND AIR RELEASE COMBINATION VALVE**  
NOT TO SCALE



**DROP MANHOLE FLOOR PLAN**  
NOT TO SCALE



NOTE: ALL PARTS TO BE SST.

**STRAP DETAIL**  
NOT TO SCALE

**CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD SEWER NOTES:**

1. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
2. SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
3. ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
4. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
5. NO FLEXIBLE COUPLINGS SHALL BE USED.
6. ALL STAINLESS STEEL FASTENERS SHALL BE 316.

**STANDARD SEWER NOTES**  
(REQUIRED ON ALL SEWER PLAN AND PROFILE SHEETS)

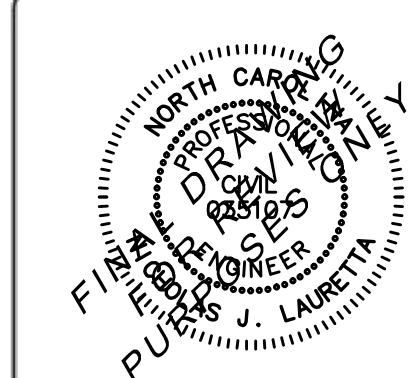
**GENERAL NOTES:**

1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

**CFPUA SANITARY SEWER**

**STANDARD DETAILS**

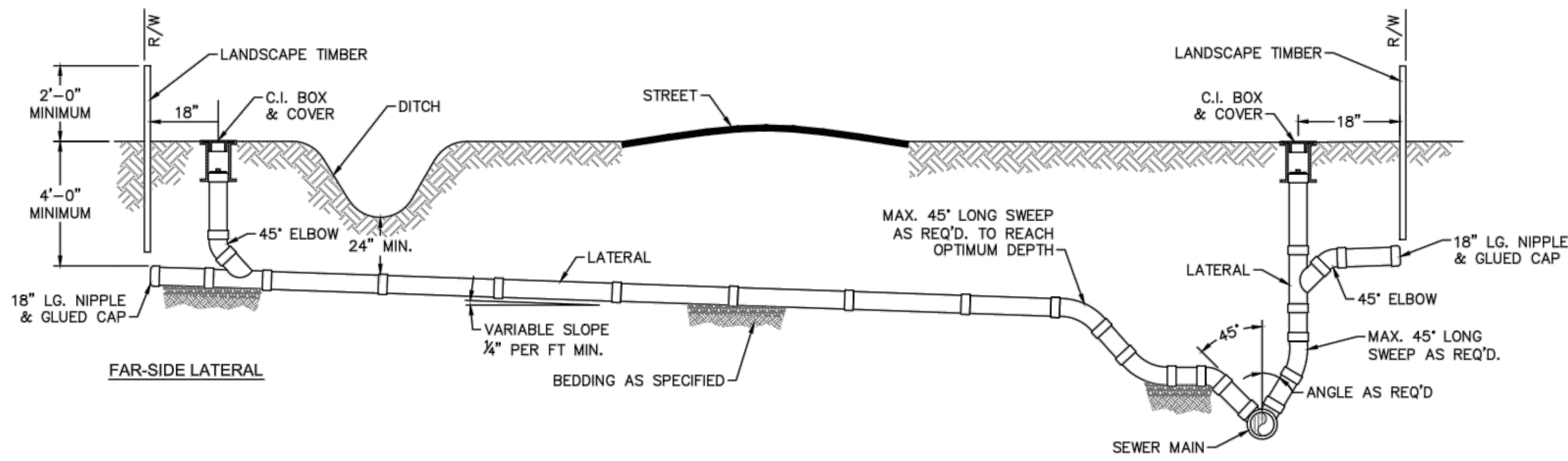


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WILMINGTON, NC 28403  
OFFICE: (910)332-6560

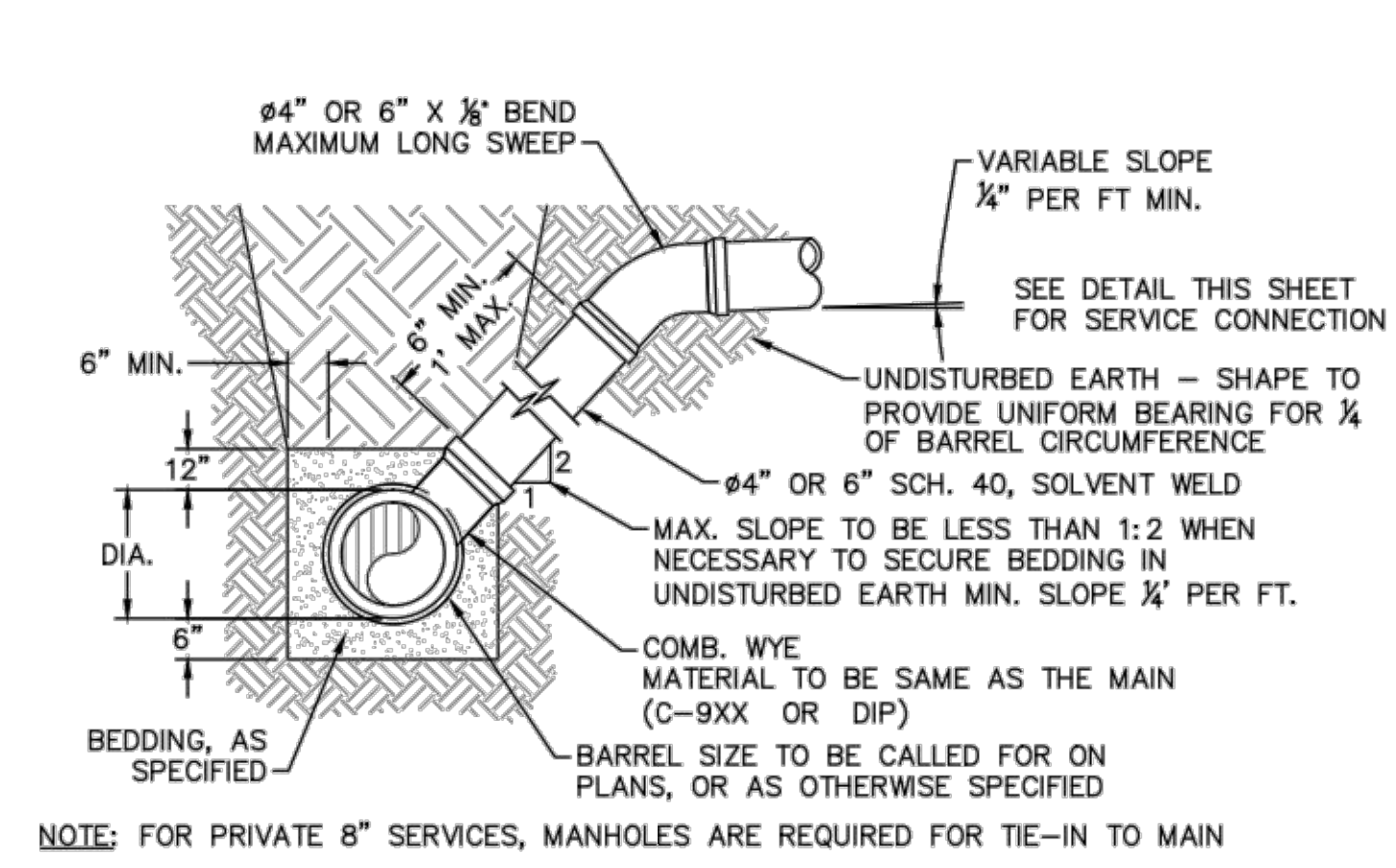
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PROJECT NO.:

**SHEET NO:**  
**SSD-1**

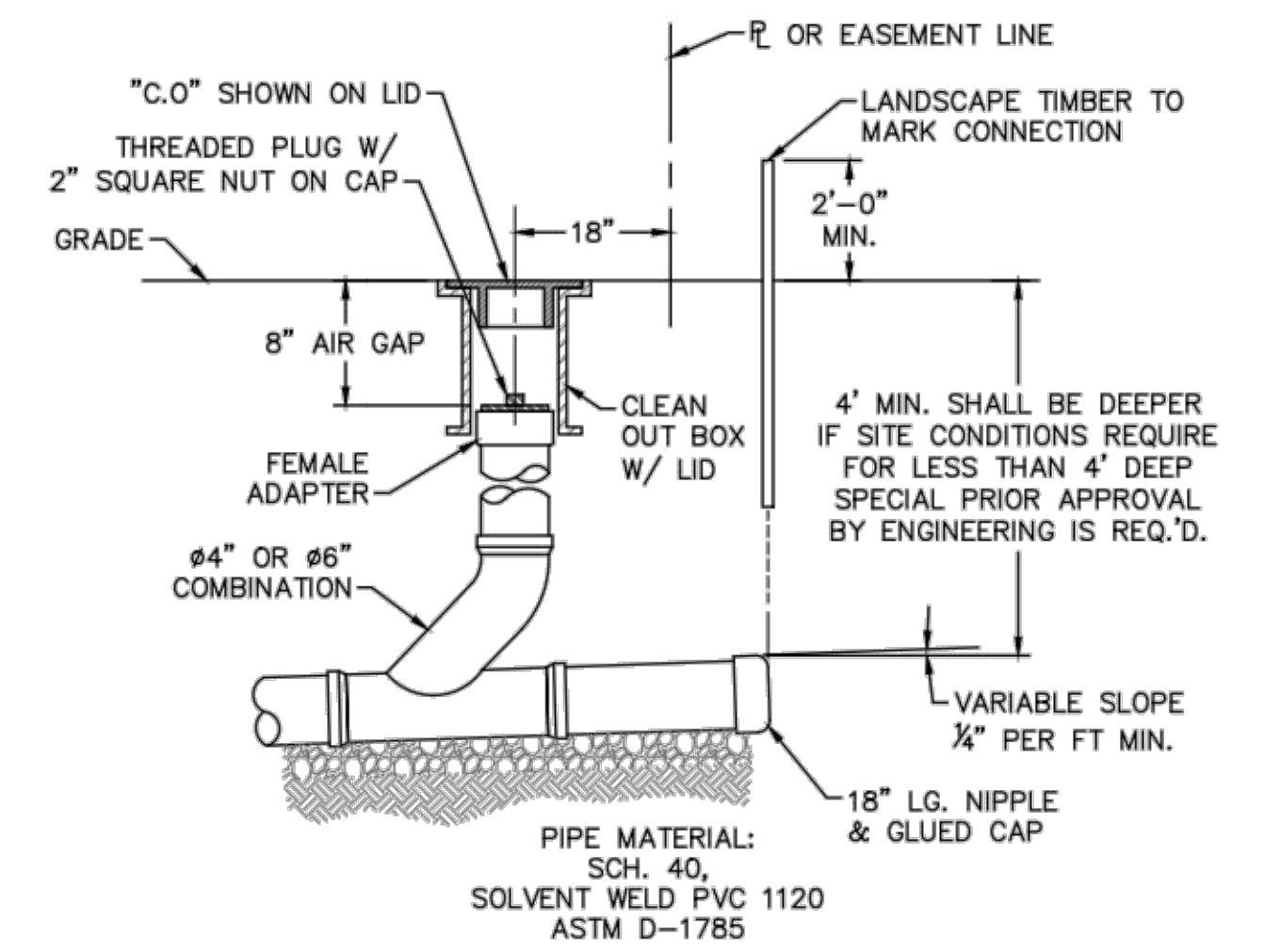
REV:	DESCRIPTION:	DATE:
1	AIR / VACUUM AND AIR RELEASE COMBINATION VALVE REVISED	10/26/12
2	STANDARD SEWER NOTE #6 REVISED	12/10/12
3	REVISED STANDARD VENT MANHOLE TO EXTEND VENT 2'-0" ABOVE 100 YR FLOOD	11/20/14



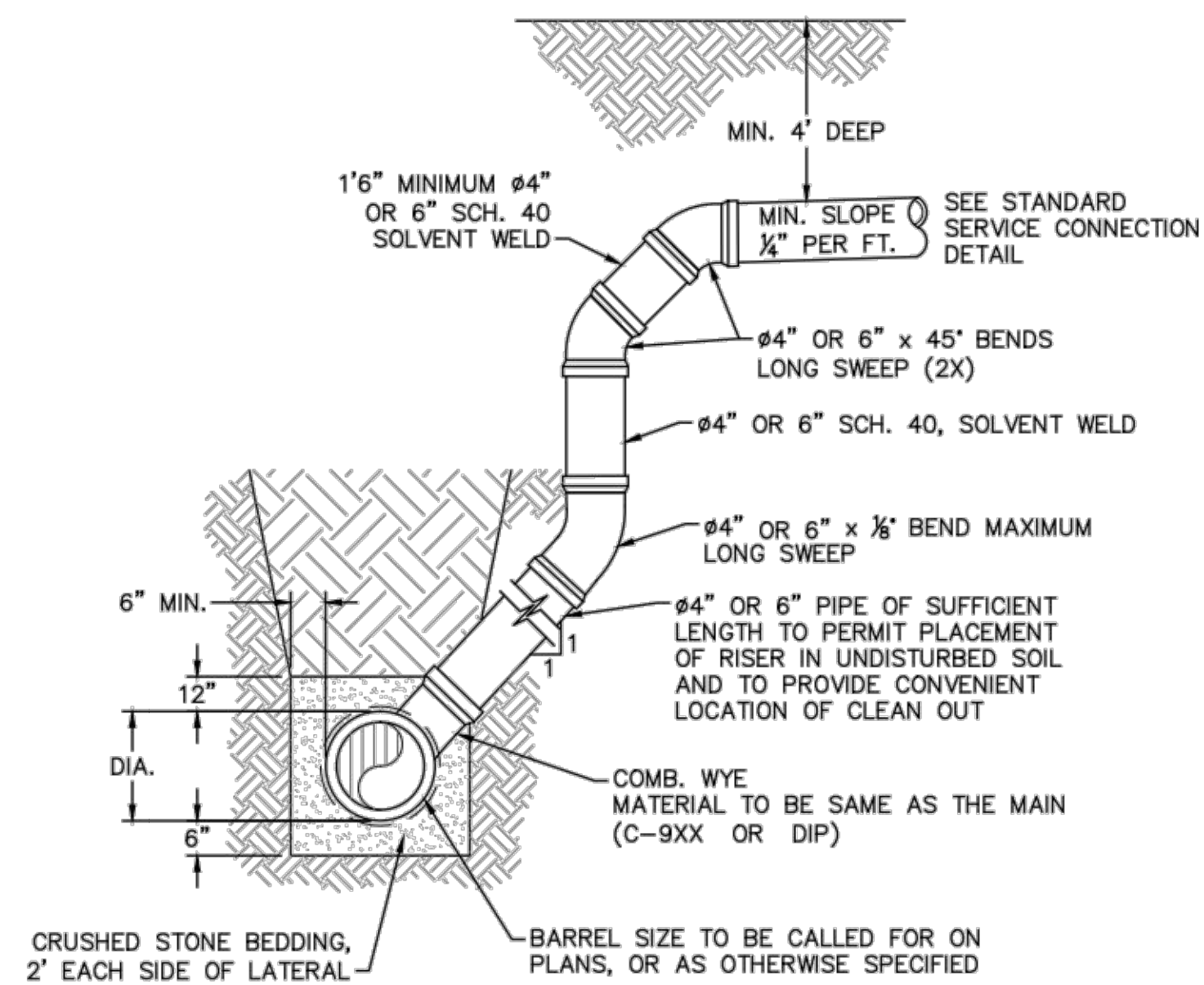
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN  
**STANDARD SERVICE CONNECTION TO SANITARY SEWER**  
 NOT TO SCALE



MAIN DEPTH LESS THAN 8 FT  
**STANDARD SERVICE LATERAL**  
 NOT TO SCALE

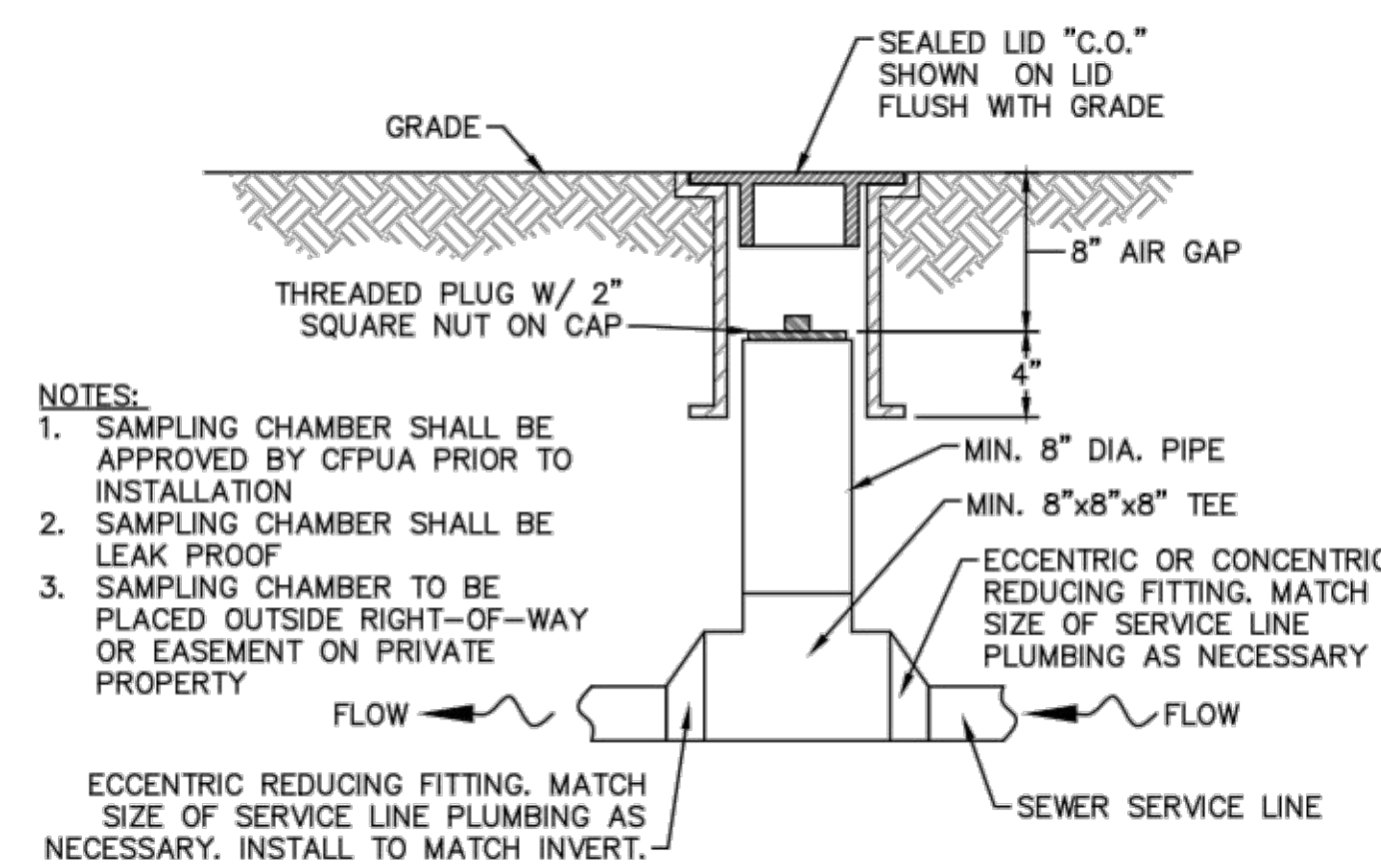


NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN  
**SERVICE CONNECTION & CLEAN-OUT**  
 NOT TO SCALE



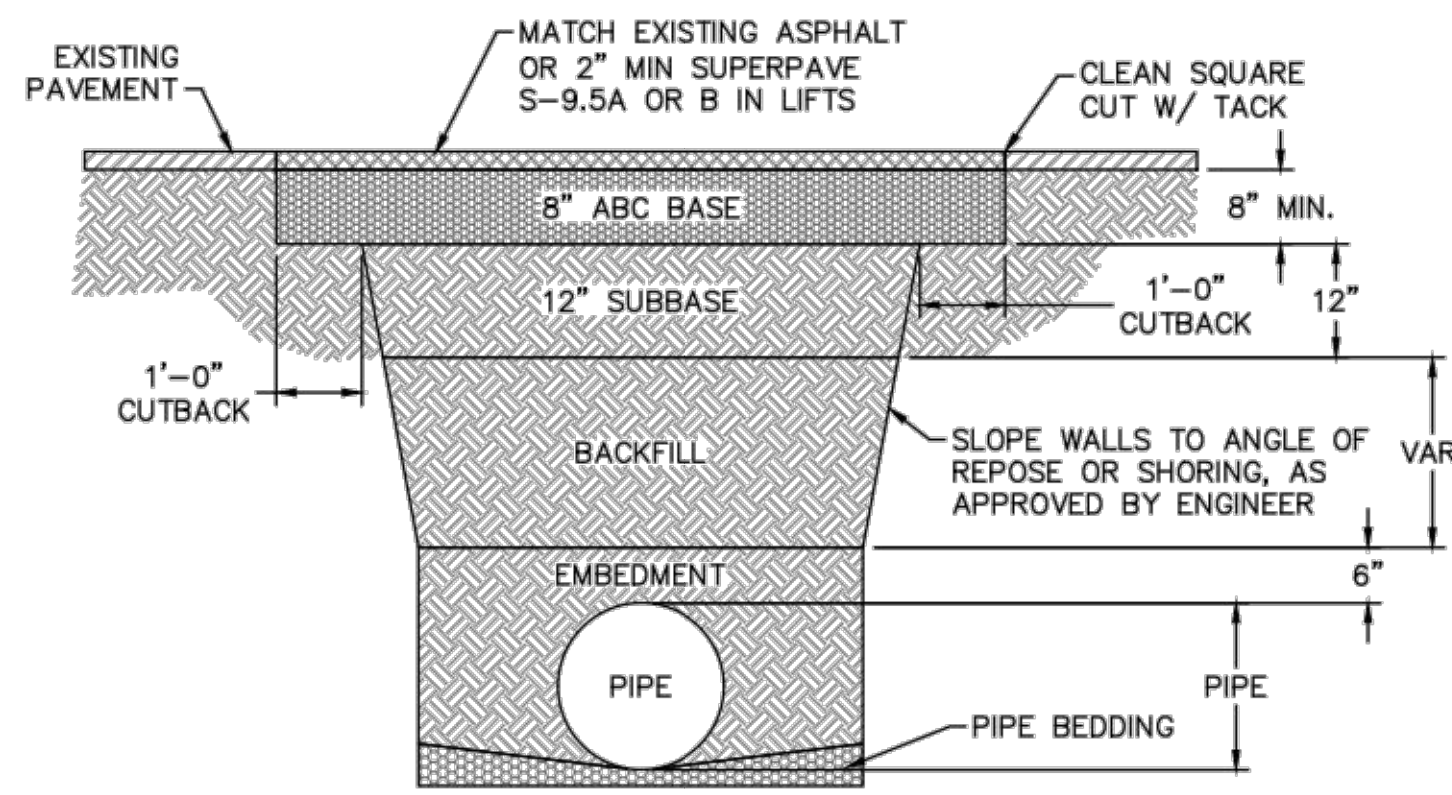
- NOTES:  
 1. SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.  
 2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN.

MAIN DEPTH GREATER THAN 8 FT  
**DEEP SERVICE LATERAL**  
 NOT TO SCALE



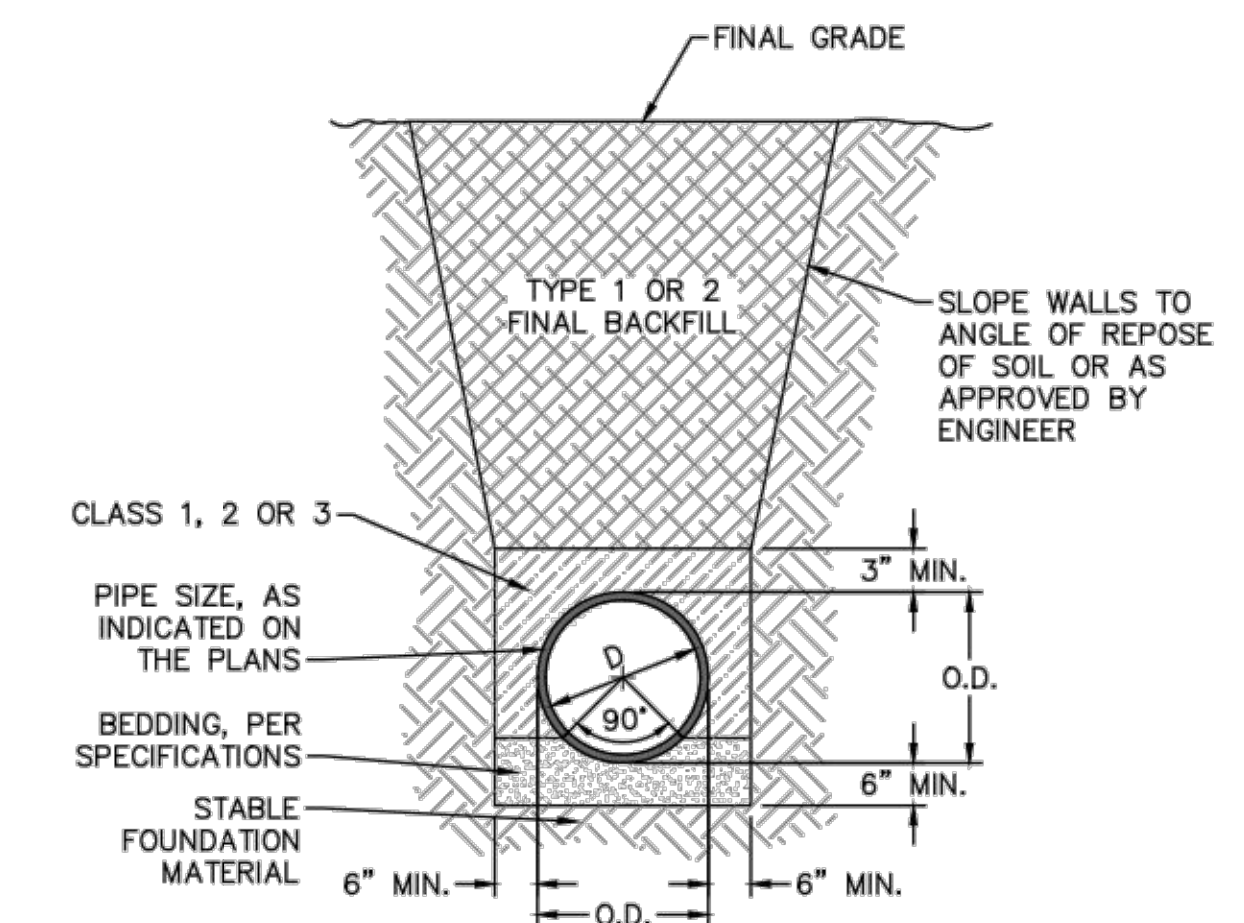
- NOTES:  
 1. SAMPLING CHAMBER SHALL BE APPROVED BY CFPUA PRIOR TO INSTALLATION.  
 2. SAMPLING CHAMBER SHALL BE LEAK PROOF.  
 3. SAMPLING CHAMBER TO BE PLACED OUTSIDE RIGHT-OF-WAY OR EASEMENT ON PRIVATE PROPERTY.

**SAMPLING CHAMBER**  
 NOT TO SCALE



- NOTES:  
 1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.  
 2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).  
 3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.  
 4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS.  
 5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK), HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.  
 6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.  
 7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.  
 8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

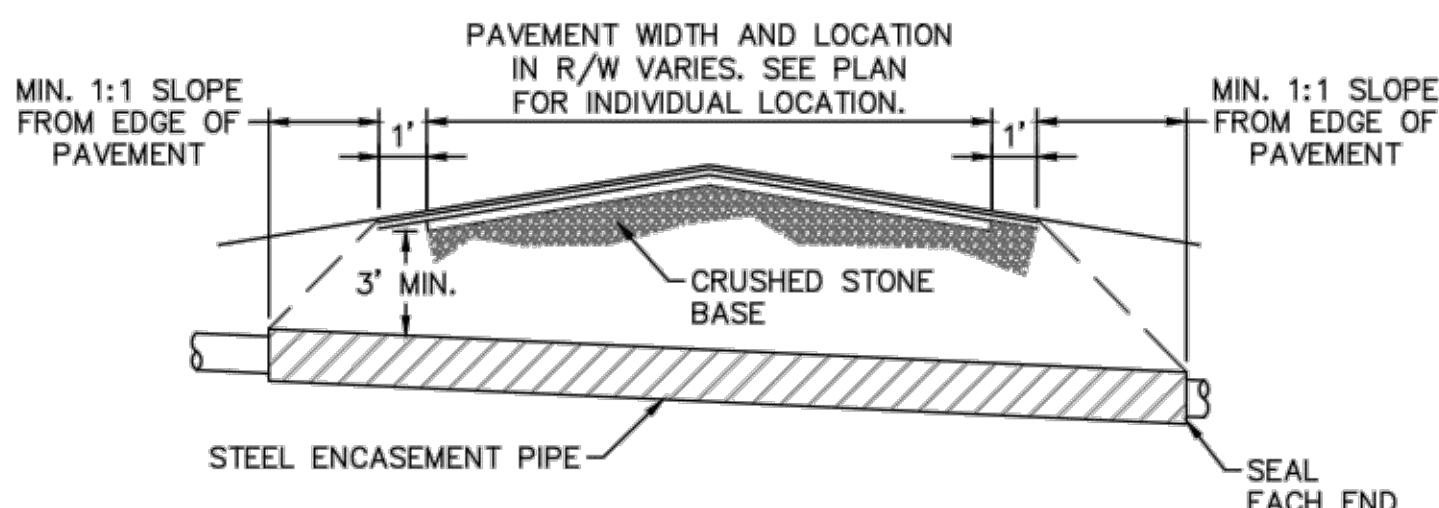
(FOR PRIVATE ROADS AND PAVED AREAS; CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)  
**PAVEMENT REPAIR WHERE PIPE INSTALLED**  
 NOT TO SCALE



**TYPICAL TRENCH DETAIL**  
 NOT TO SCALE

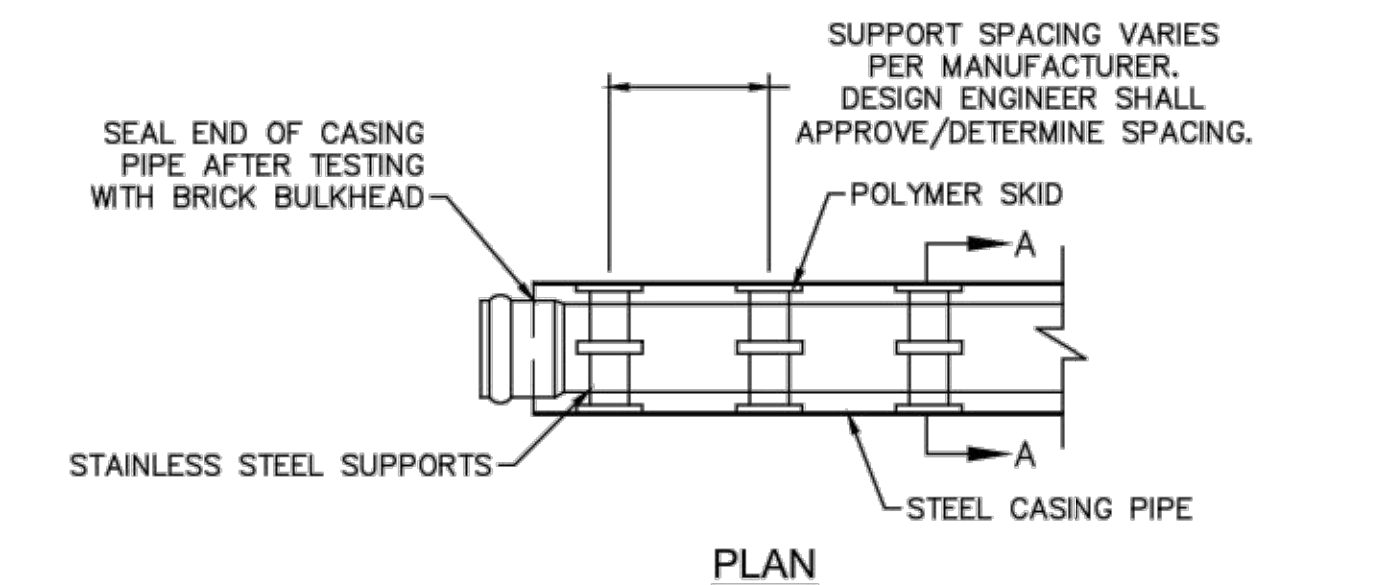
- GENERAL NOTES:  
 1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.  
 2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.  
 3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.  
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**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

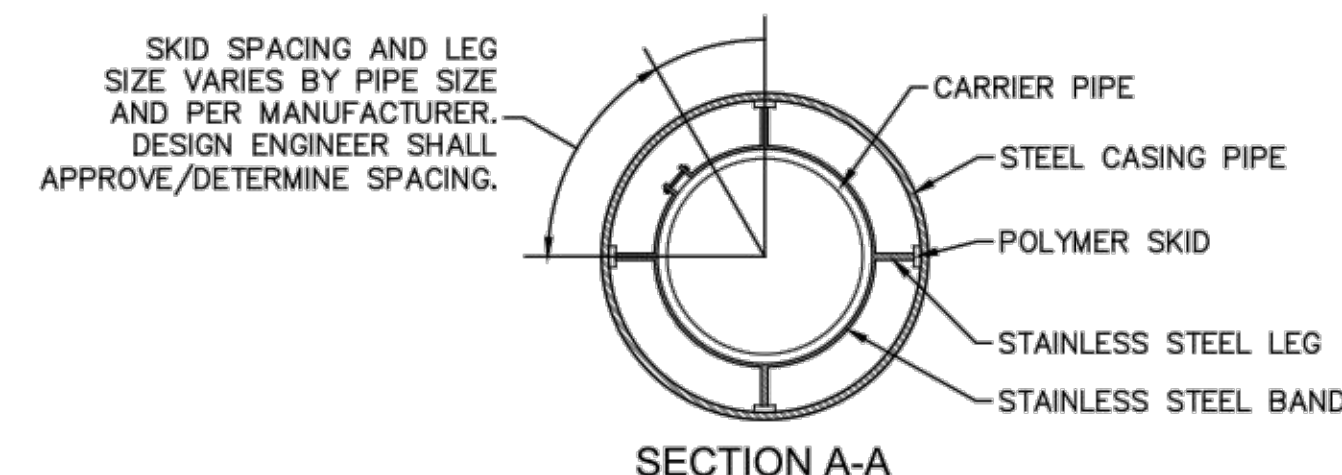


- NOTES:  
 1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.  
 2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

**TYPICAL BORING/ JACKING DETAIL**  
 NOT TO SCALE



- NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.



**PIPE CASING SUPPORT DETAIL**  
 NOT TO SCALE

REV:	DESCRIPTION:	DATE:
1	SAMPLING CHAMBER REVISED	10/26/12

**CFPUA SANITARY SEWER**

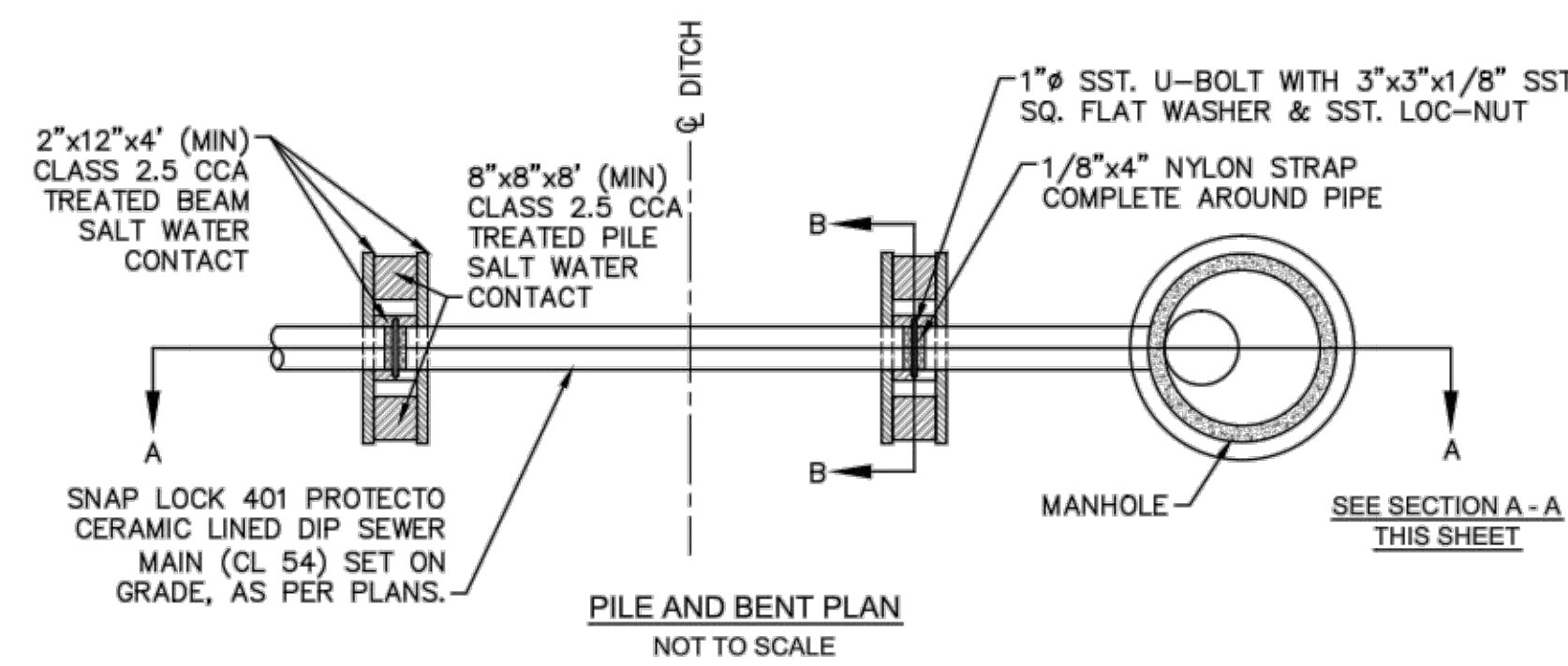
**STANDARD DETAILS**

CAPE FEAR PUBLIC UTILITY AUTHORITY  
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 WILMINGTON, NC 28403  
 OFFICE: (910)332-6560

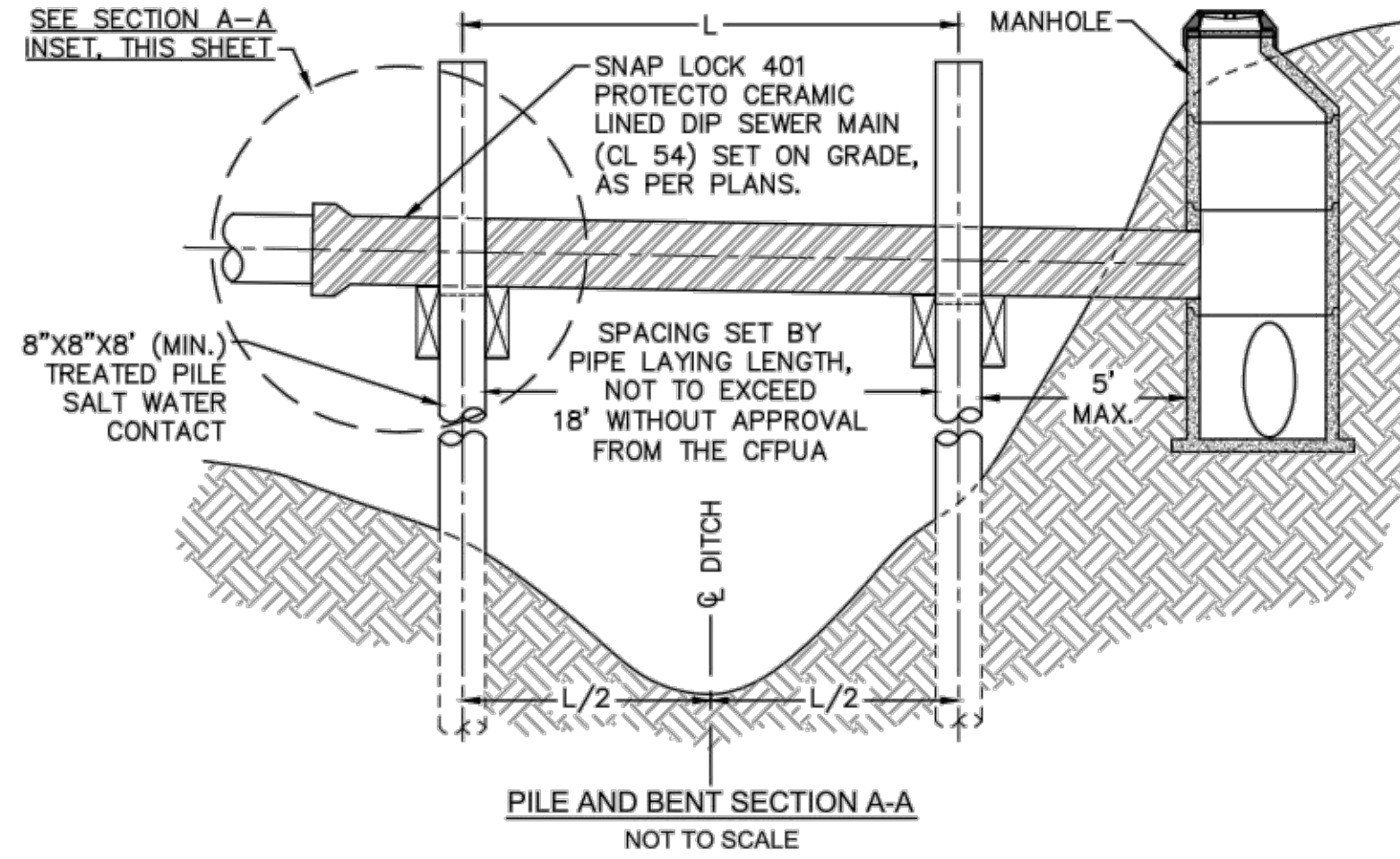
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 CHECKED BY: CFPUA  
 PROJECT NO.:

**SHEET NO:**  
**SSD-2**

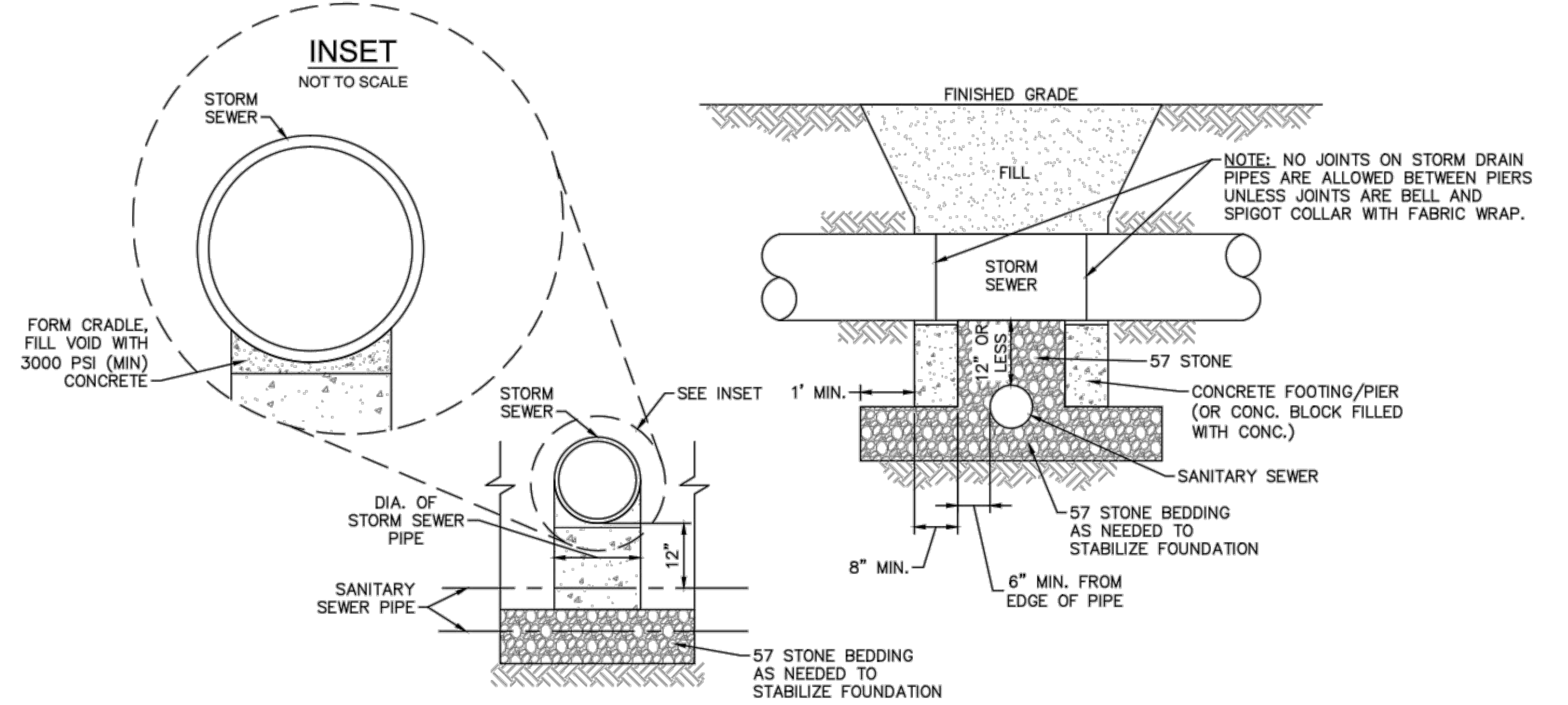
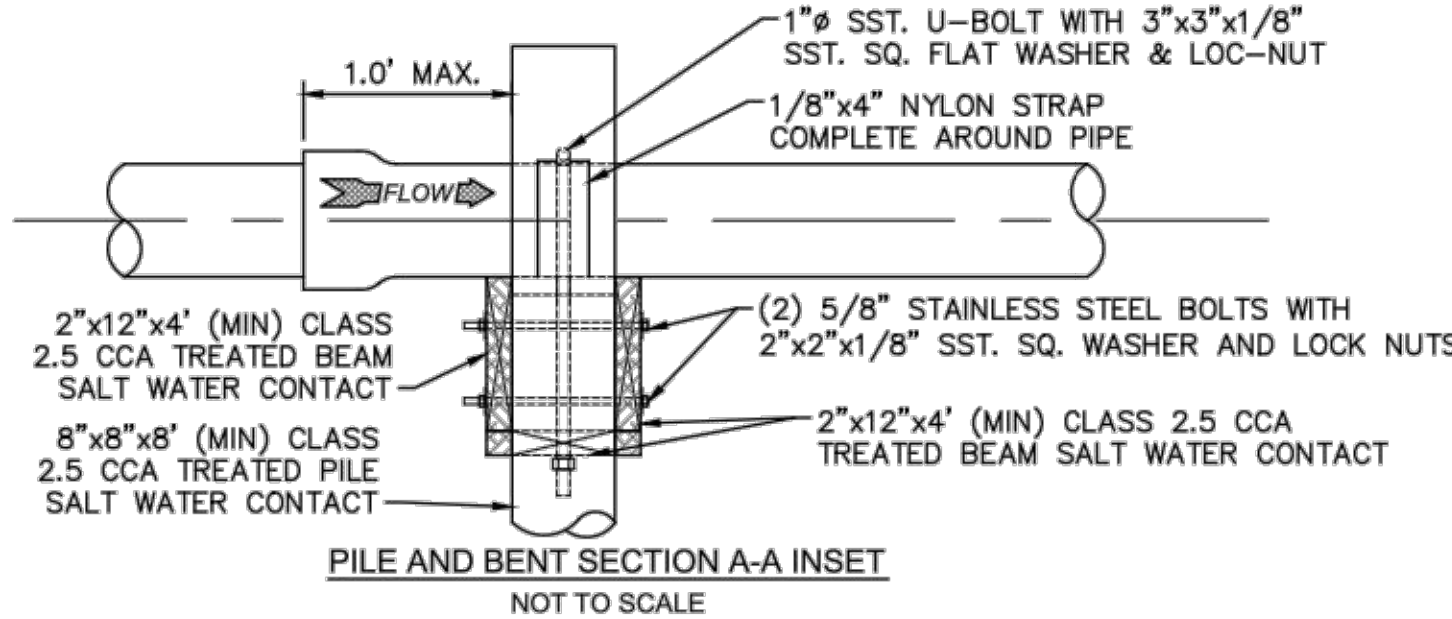
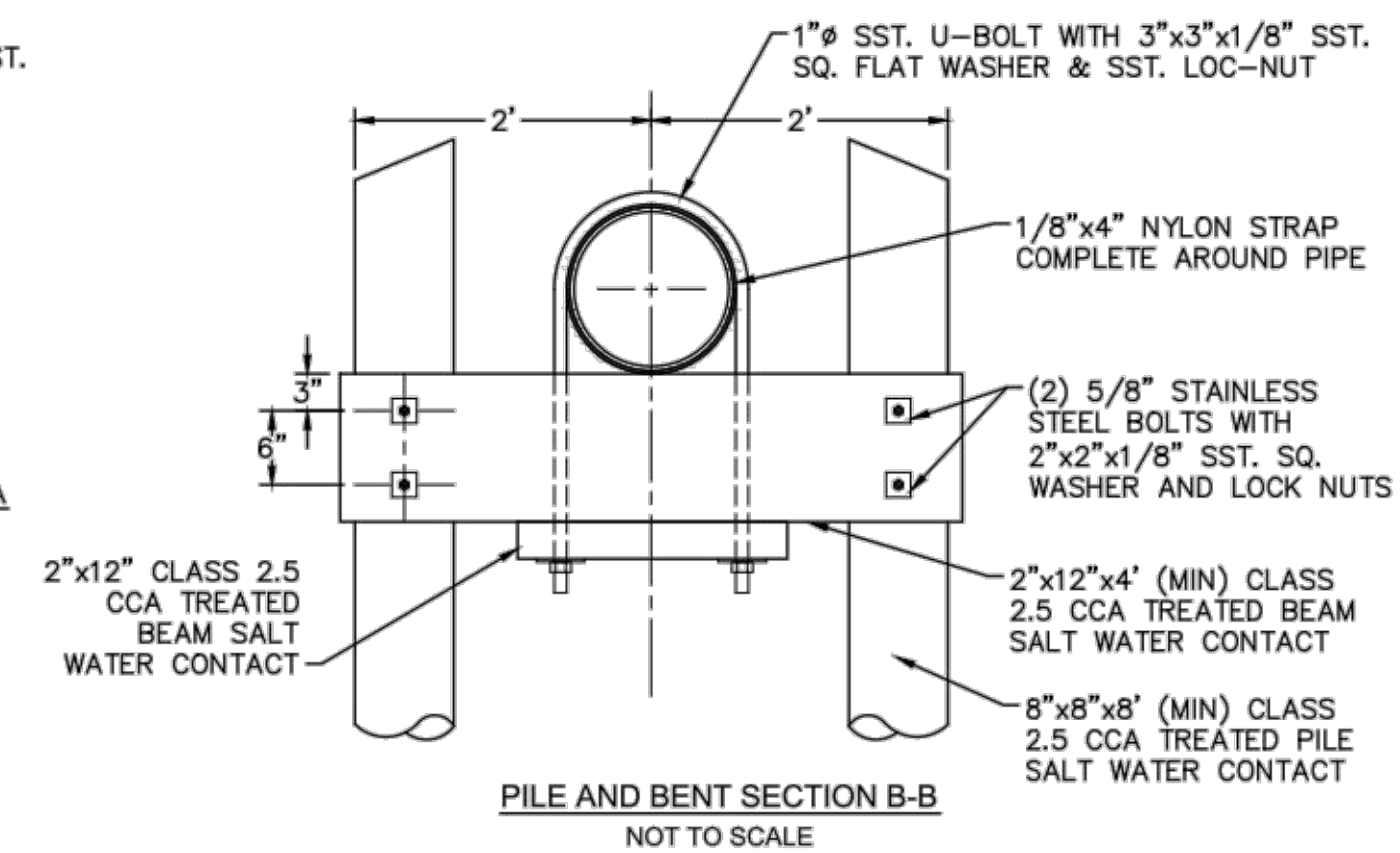
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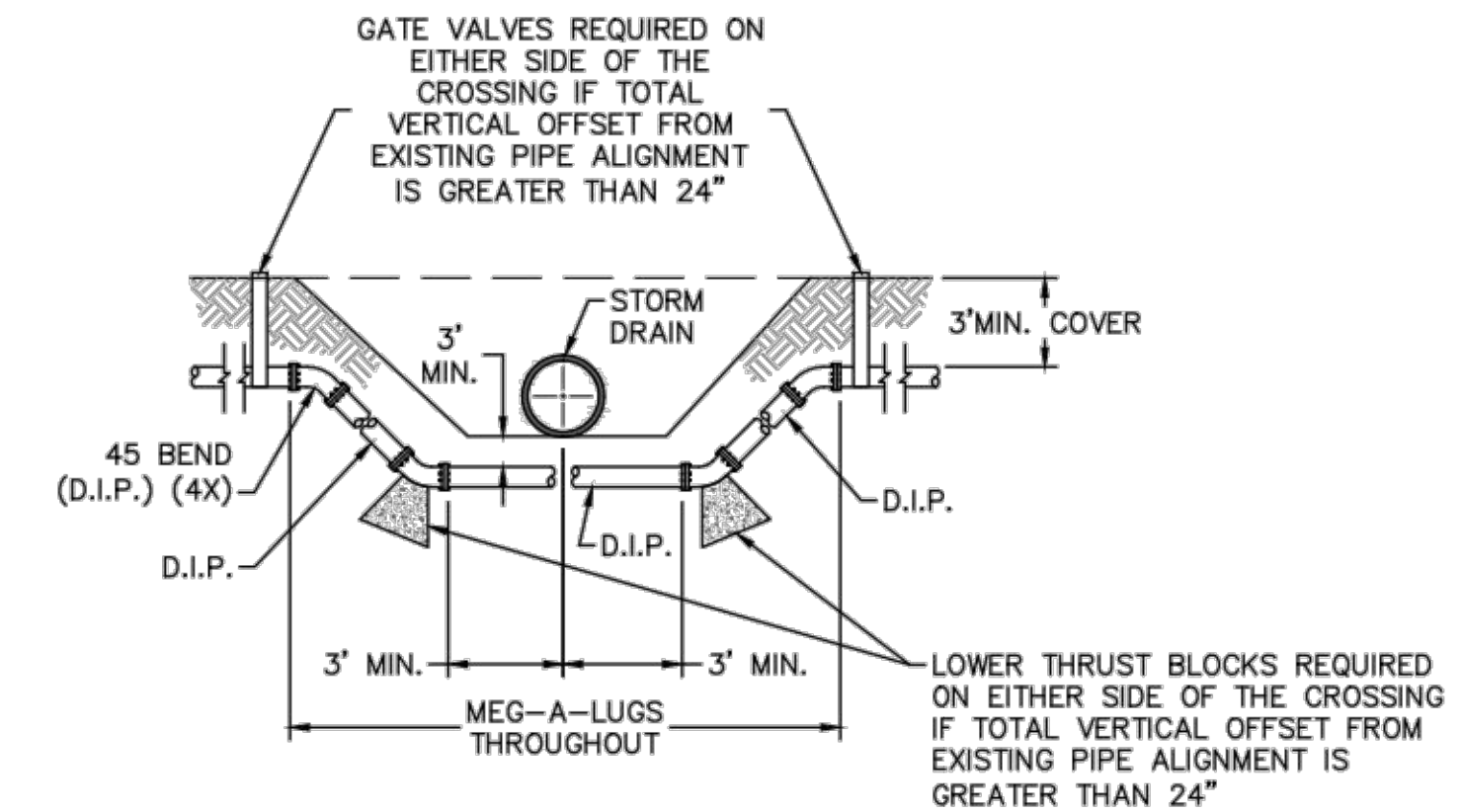
- NOTES:**
1. PILES AND PILE DRIVING SHALL CONFORM TO NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2002, SECTIONS 445, 450, 1082-2 & 1084-2.
  2. CENTERLINE OF BOLTS TO BE A MINIMUM OF 3" FROM OUTSIDE EDGE OF TIMBER. BOLTS TO BE A MINIMUM OF 3" CENTERLINE TO CENTERLINE.
  3. ALL STAINLESS STEEL SHALL BE 316. STAINLESS STRAP TO BE COLD FORMED.
  4. PILE SHALL NOT OBSTRUCT FLOW OR CAUSE EROSION OF DITCH/STREAM BANK.
  5. MIN. CLASS 54 DIP-ENGINEER MUST DESIGN LOADING.
  6. DESIGN SHALL BE APPROVED BY CFPUA.



**PILE AND BENT DETAIL**  
NOT TO SCALE

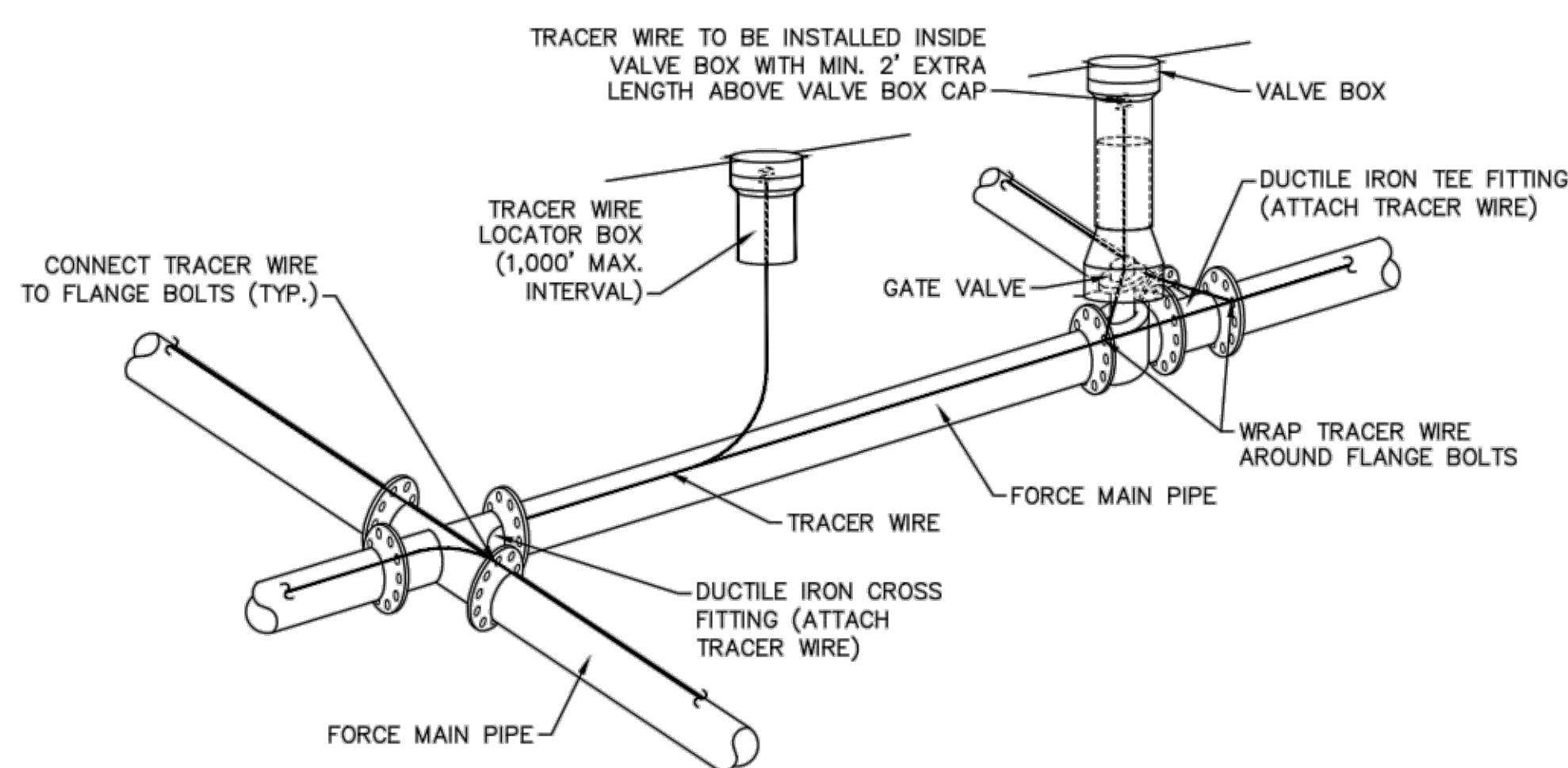


**STRUCTURAL BRIDGING DETAIL FOR STORMWATER OVER GRAVITY SEWER INSTALLATIONS WITH LESS THAN 12" SEPARATION**  
NOT TO SCALE



NOTE: USE D.I.P. (CL50 OR BETTER)

**FORCE MAIN DITCH AND STORM DRAIN CROSSING**  
NOT TO SCALE



- NOTES:**
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION
  2. WIRE SHALL BE STRAPPED TO ALL PVC FORCE MAIN PIPING WITH DUCT TAPE AT 12'-FT. INTERVALS.
  3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS.
  4. ALL WIRE SPLICES SHALL HAVE WATER PROOF WIRE CONNECTIONS.

**TRACER WIRE DETAIL**  
NOT TO SCALE

- GENERAL NOTES:**
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
  3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
  4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
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**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

REV:	DESCRIPTION:	DATE:

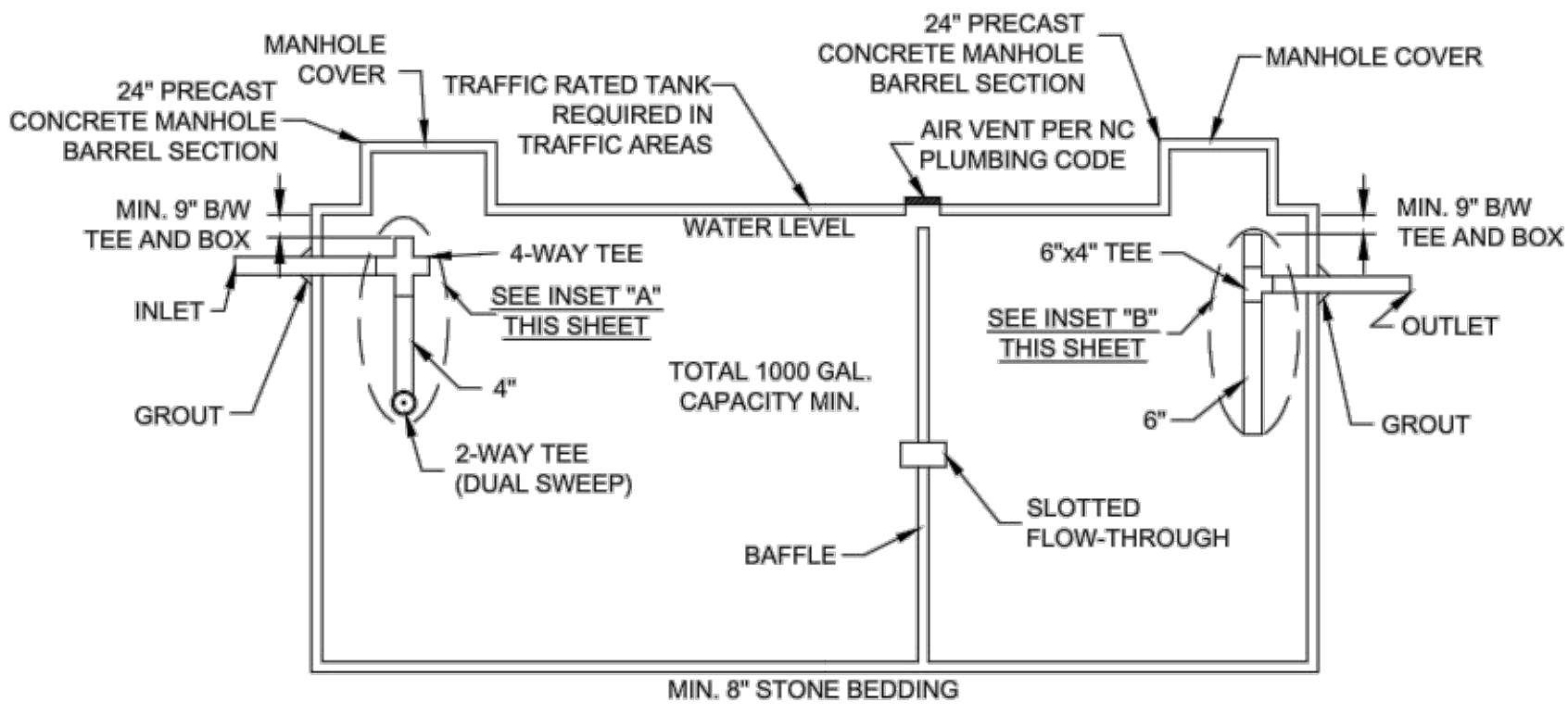
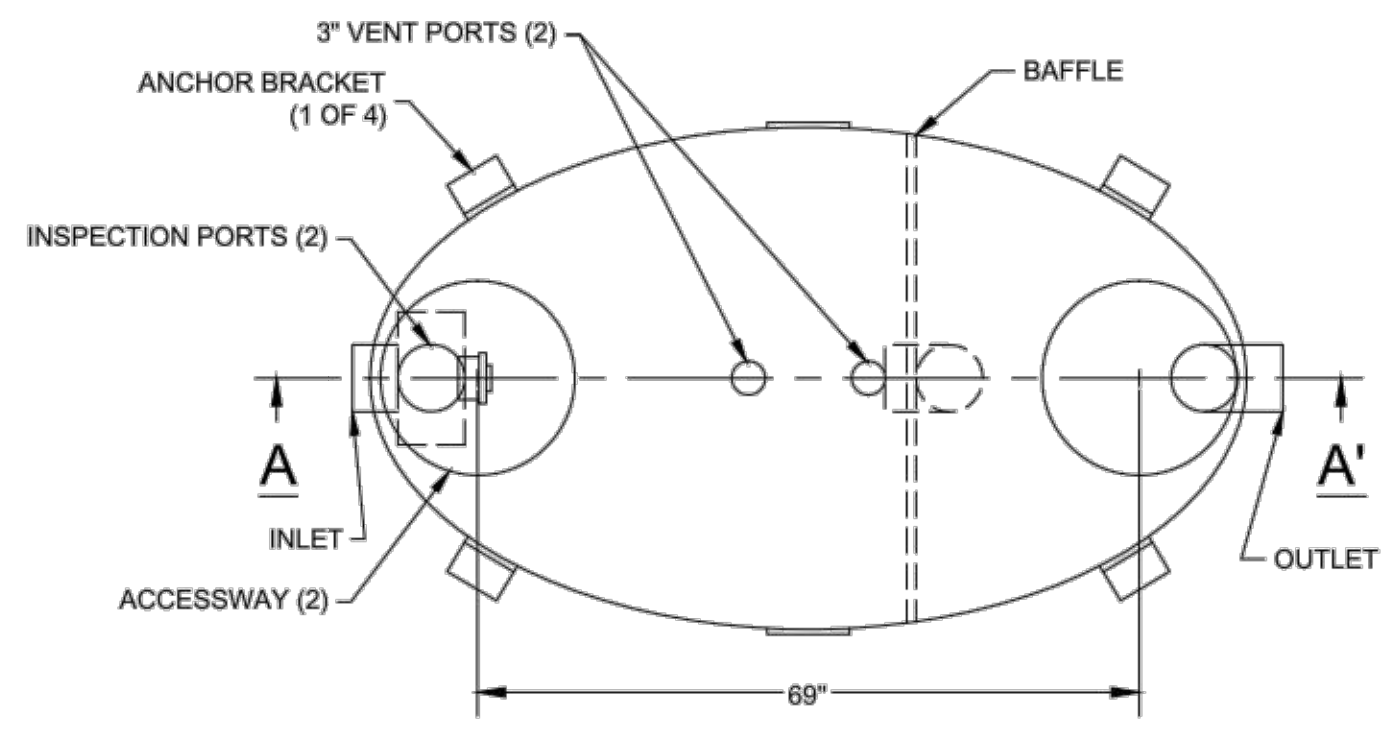
**CFPUA SANITARY SEWER**

**STANDARD DETAILS**

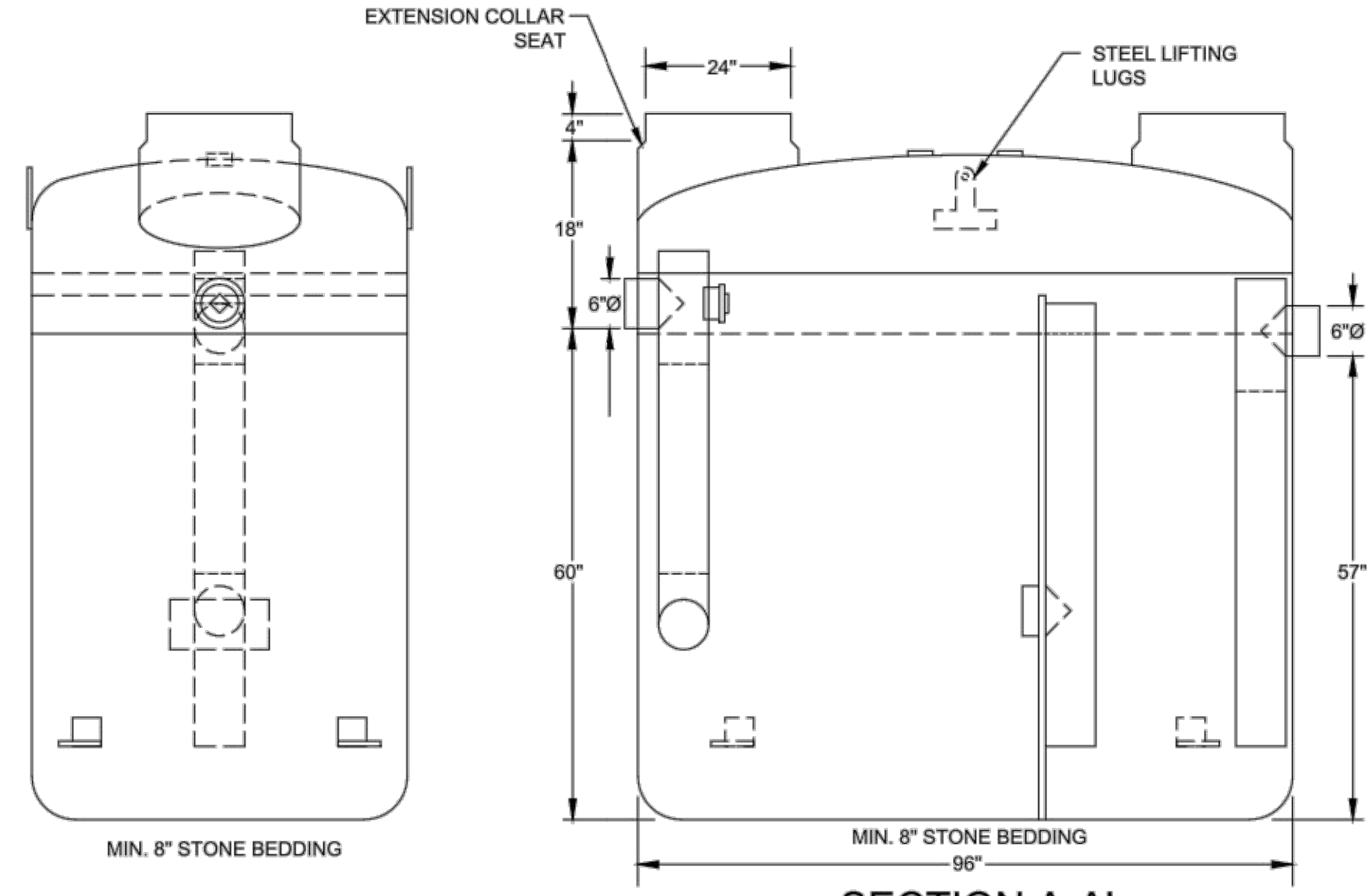
CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6560

DATE:  
1/9/12  
SCALE:  
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DRAWN BY:  
CFPUA  
CHECKED BY:  
CFPUA  
PROJECT NO.:

SHEET NO:  
**SSD-3**



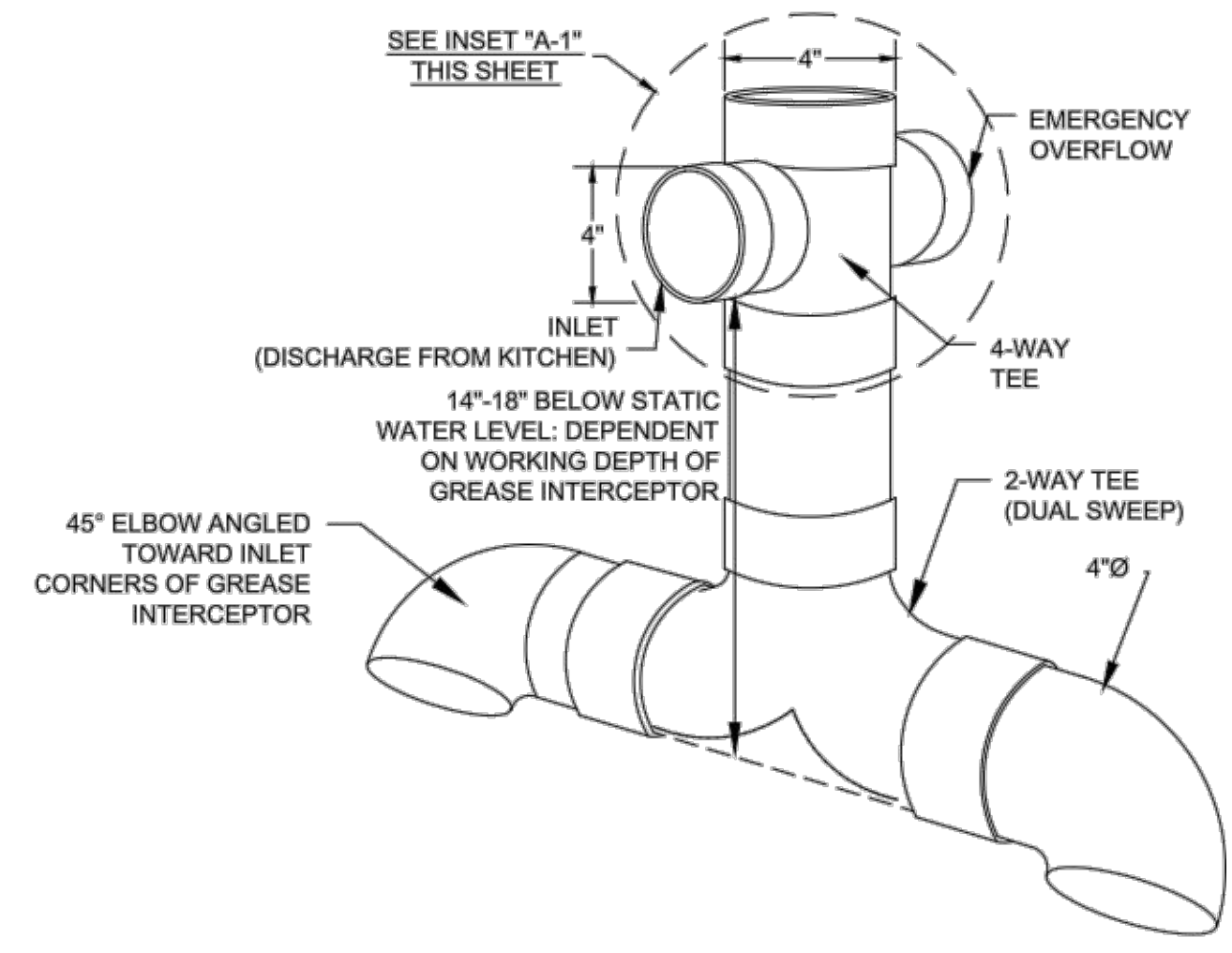
**CONCRETE GREASE INTERCEPTOR**  
NOT TO SCALE



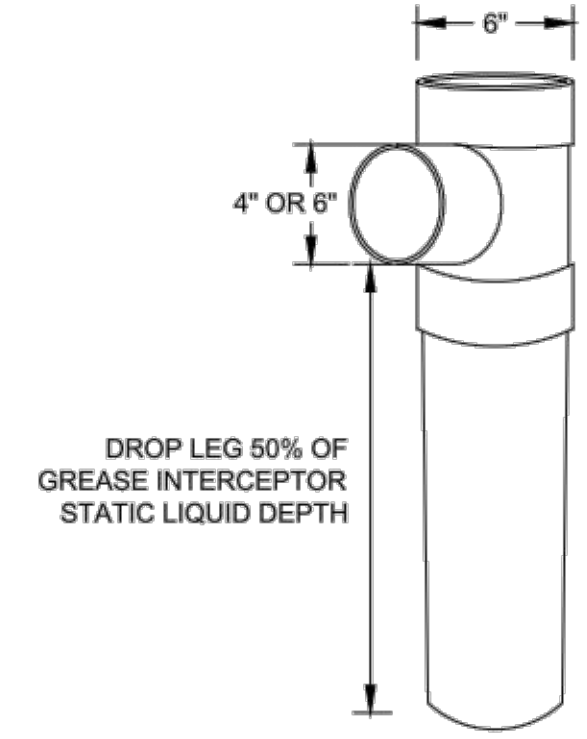
**SECTION A-A'**

- NOTES:
1. FOR GRAVITY APPLICATIONS ONLY
  2. MIN. THICKNESS: 1/4" WALL AND 3/8" TOP AND BOTTOM BOWLS
  3. STANDARD PIPE STUBS ARE SOCKET SDR 35 PVC
  4. EXTENSION COLLARS SHALL BE CAULKED WITH SIKAFLEX OR EQUIVALENT FOR WATERTIGHT SEAL
  5. FOLLOW MANUFACTURE'S SPECS FOR TRAFFIC OR PEDESTRIAN LOADING

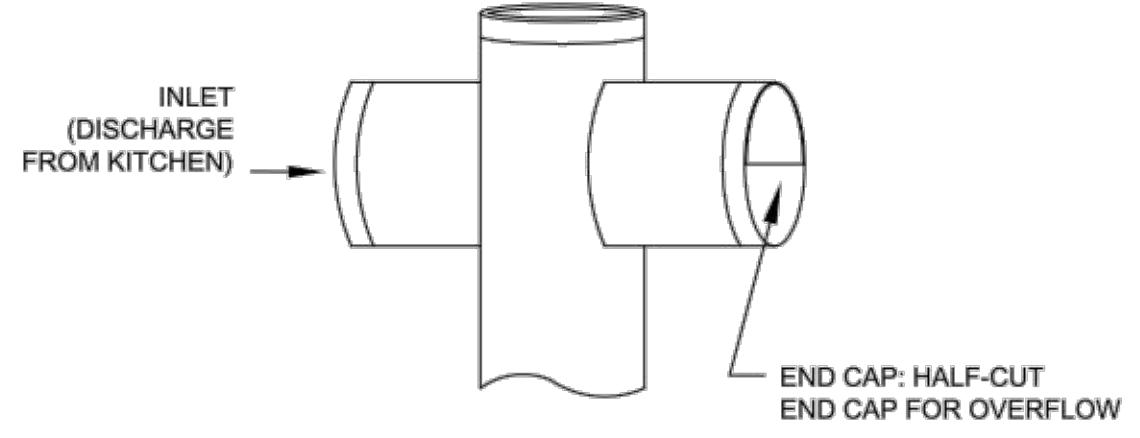
**FIBERGLASS GREASE INTERCEPTOR**  
NOT TO SCALE



**GREASE INTERCEPTOR INSET "A" 4" SANITARY TEE**  
NOT TO SCALE



**GREASE INTERCEPTOR INSET "B" 6" X 6" X 4" OUTLET SANITARY TEE**  
NOT TO SCALE



**GREASE INTERCEPTOR INSET "A-1" EMERGENCY OVERFLOW CLOSE-UP**  
NOT TO SCALE

**GENERAL NOTES:**

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**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

**CFPUA SANITARY SEWER**

DATE:	1/9/12
SCALE:	N/A
DRAWN BY:	CFPUA
CHECKED BY:	CFPUA
PROJECT NO.:	

**STANDARD DETAILS**

**CAPE FEAR PUBLIC UTILITY AUTHORITY**  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
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**SHEET NO:**  
SSD-4

REV:	DESCRIPTION:	DATE:

