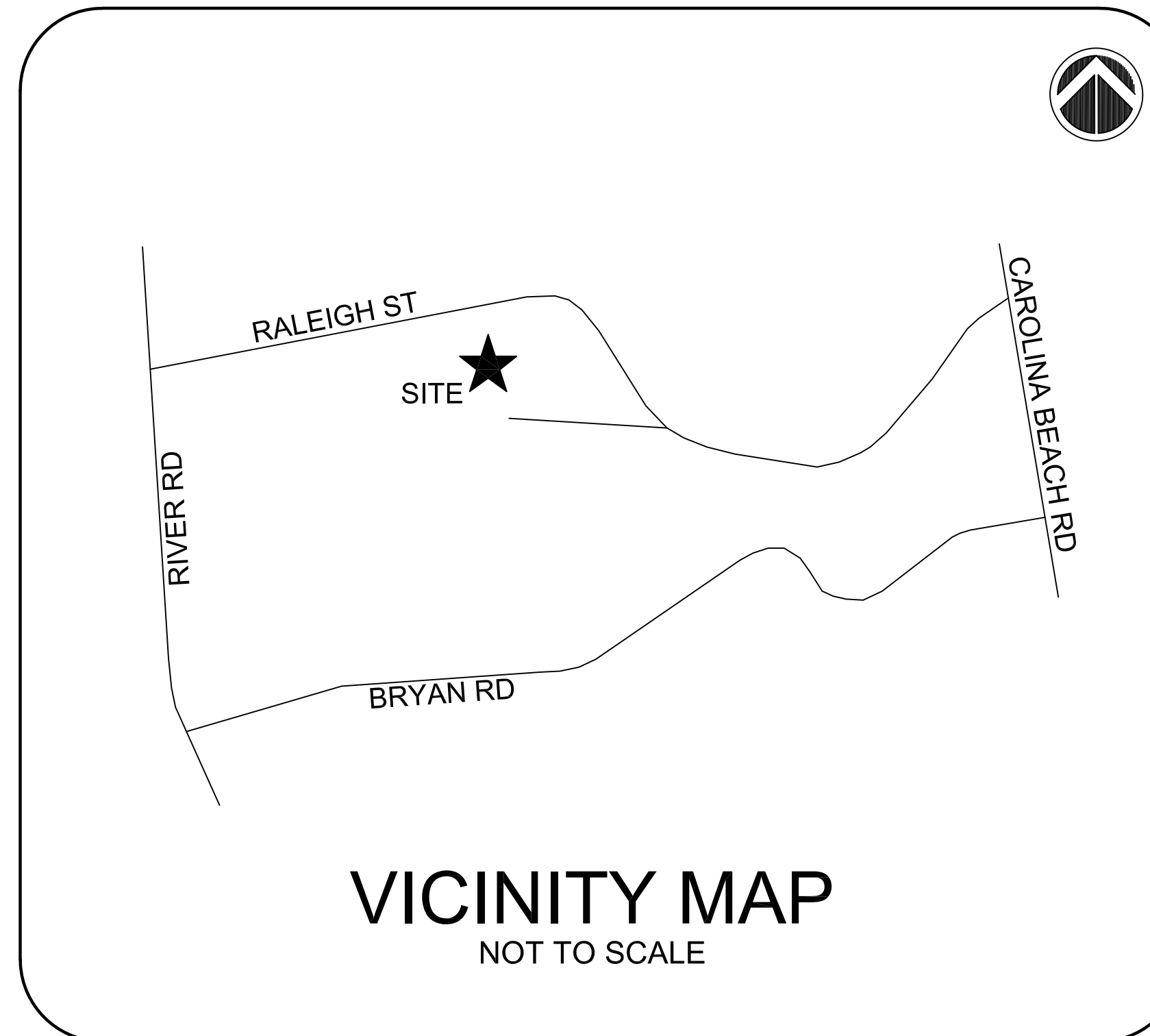


CONSTRUCTION PLANS FOR CIVIL WORKS CONTRACTING

190 Raleigh Street
Wilmington, North Carolina



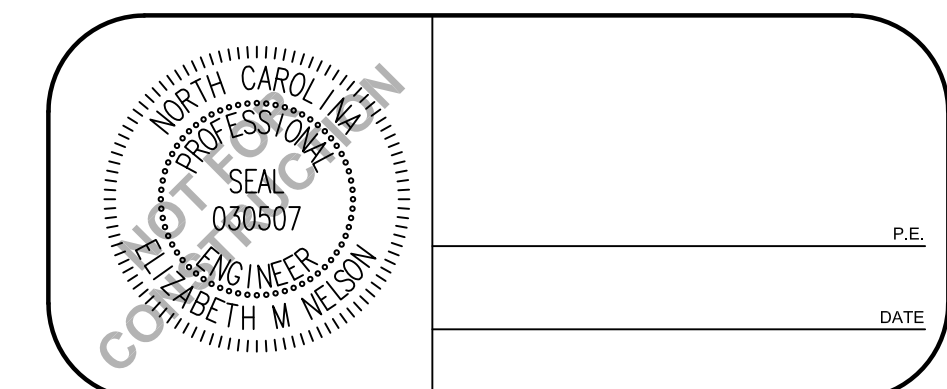
INDEX

COVER	
C-001	GENERAL NOTES & LEGEND
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CS100	SITE & UTILITY PLAN
CU100	OFFSITE UTILITY PLAN AND PROFILE
CU101	OFFSITE UTILITY PLAN AND PROFILE
CG100	STORMWATER & GRADING PLAN
CG120	INITIAL SEDIMENTATION & EROSION CONTROL PLAN
CG121	FINAL SEDIMENTATION & EROSION CONTROL PLAN (INCLUDING OFFSITE)
LS100	LANDSCAPE PLAN
D-500	SITE DETAILS
D-501	SITE DETAILS
D-502	SITE DETAILS
D-503	STORMWATER DETAILS
D-504	STORMWATER DETAILS
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SSD-1	CFPUA SANITARY SEWER STANDARD DETAILS 1
SSD-2	CFPUA SANITARY SEWER STANDARD DETAILS 2
SSD-3	CFPUA SANITARY SEWER STANDARD DETAILS 3
WSD-1	CFPUA WATER STANDARD DETAILS 1
WSD-2	CFPUA WATER STANDARD DETAILS 2

TOTAL WATERLINE MAIN EXTENSION = 1,850 LF
TOTAL GRAVITY SEWER MAIN EXTENSION = 334 LF

**CAPE FEAR
ENGINEERING**

151 Poole Rd., Suite 100; Belville, NC, 28451
TEL (910) 383-1044; FAX (910) 383-1045
www.capefearengineering.com
N.C. LICENSE # C-1621



CITY OF WILMINGTON
NORTH CAROLINA
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____

PARID: R06400-002-005-000
 OWNER: NC STATE PORTS AUTHORITY
 CURRENT ZONING: IND
 LAND USE CODE: 958-UNUSED LAND

PARID: R06400-002-005-000
 OWNER: NC STATE PORTS AUTHORITY
 CURRENT ZONING: IND
 LAND USE CODE: 958-UNUSED LAND

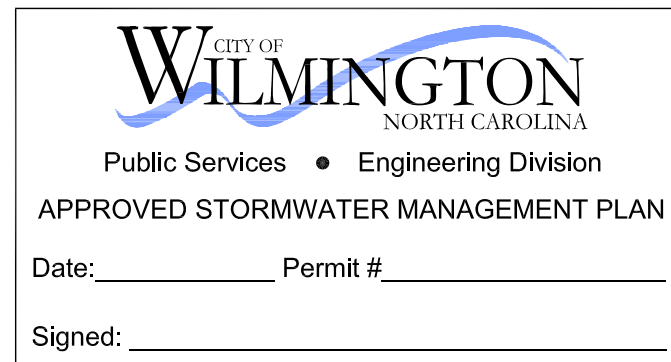
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 CURRENT ZONING: IND
 LAND USE CODE: 958-UNUSED LAND

PARID: R06400-022-005-000
 OWNER: NC STATE PORTS AUTHORITY
 CURRENT ZONING: IND
 LAND USE CODE: 958-UNUSED LAND

PARID: R06500-007-037-000
 OWNER: WILMINGTON RALEIGH LLC
 CURRENT ZONING: IND
 LAND USE CODE: 388-MISC DURABLE MFTG

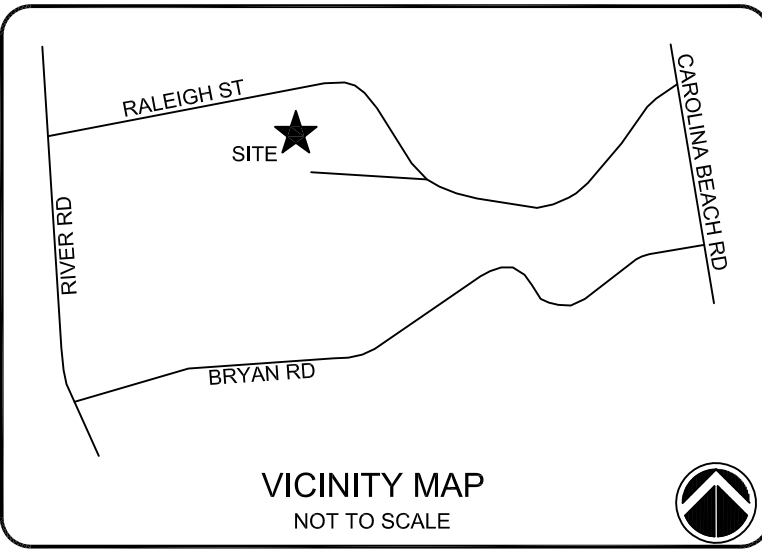
PARID: R06500-007-037-000
 OWNER: WILMINGTON RALEIGH LLC
 CURRENT ZONING: IND
 LAND USE CODE: 388-MISC DURABLE MFTG

SITE NOTES:
 PARID: R06400-002-009-000
 SITE ADDRESS: 190 RALEIGH STREET
 PROPERTY IS ZONED: IND- INDUSTRIAL DISTRICT.
 OWNER: CS PROPERTY DEVELOPMENT, LLC
 3329-C WRIGHTSVILLE AVENUE
 WILMINGTON, NC 28403
 (910) 859-8574
 PROPOSED USE: CIVIL WORKS CONTRACTING
 CONTRACTOR'S OFFICE W/ OUTSIDE STORAGE
 AREA OF SITE IS 10.0 ACRES.



Approved Construction Plan

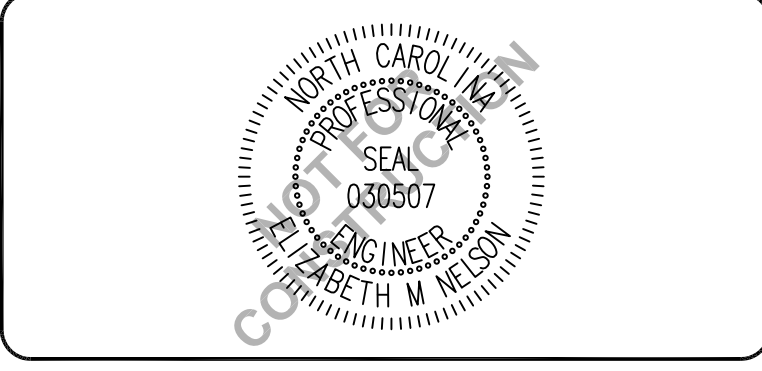
Name	Date
Planning _____	_____
Traffic _____	_____
Fire _____	_____



NOTES:
 1. SEE SHEET C-001 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REV. BY	DATE
D	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
C	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
B	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
A	ISSUED FOR TRC REVIEW	EMN	05/17/17



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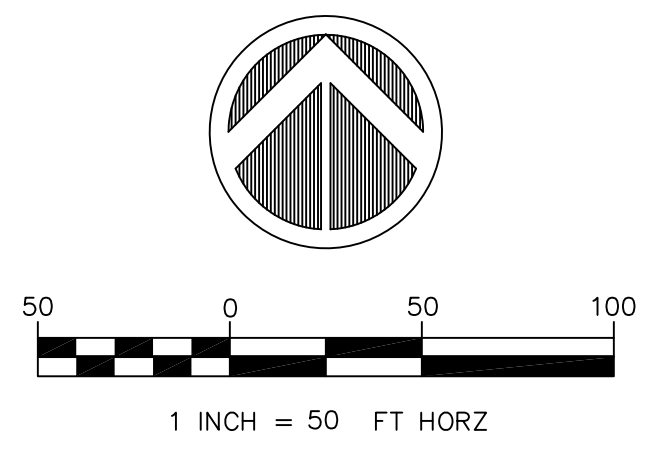
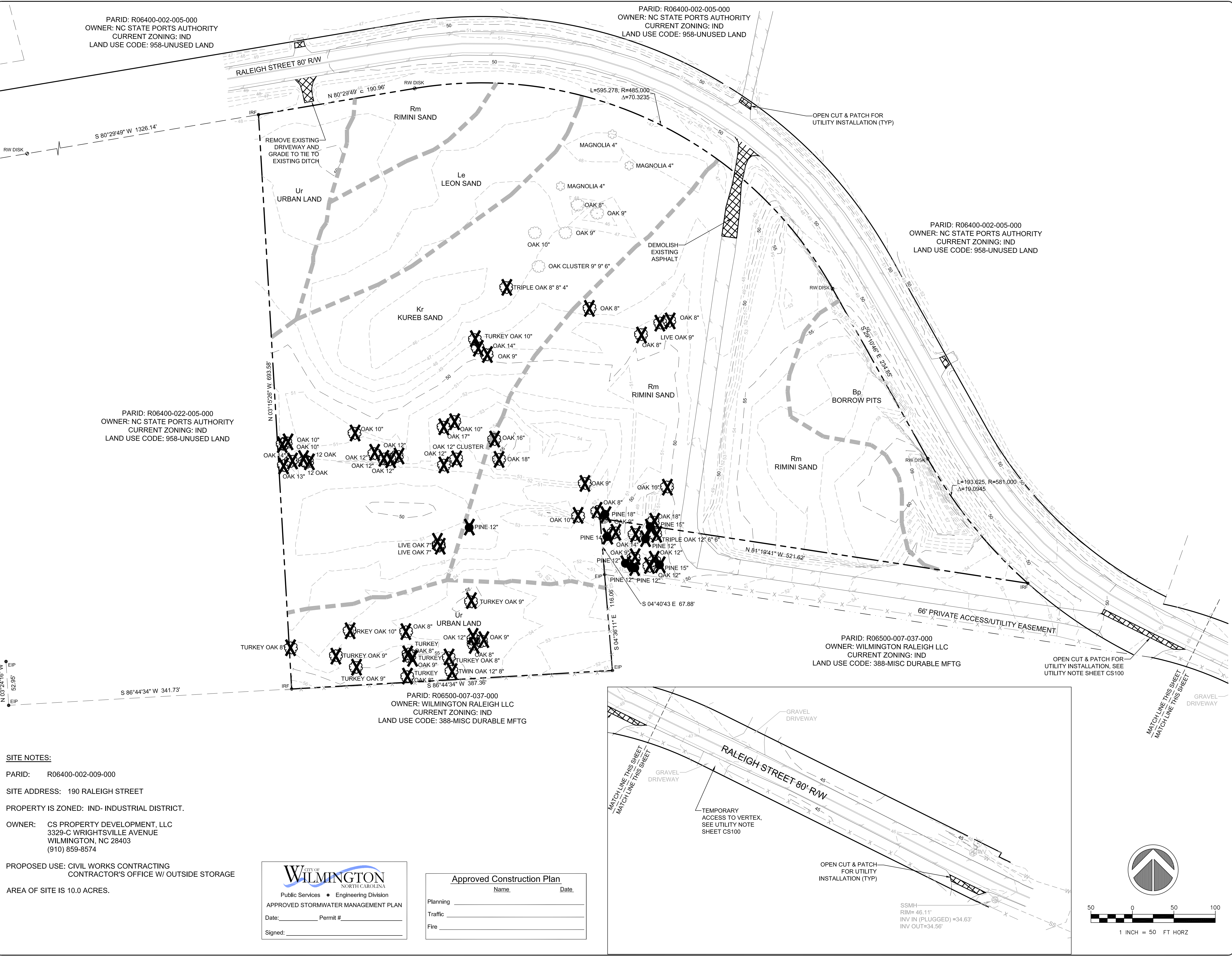
PROJECT NUMBER:	275-77
SCALE:	1" = 50'
DATE:	17 FEB 17

CIVIL WORKS CONTRACTING
 190 RALEIGH STREET
 WILMINGTON, NC

EXISTING CONDITIONS & DEMOLITION PLAN

PROJECT NUMBER	SHEET NUMBER
275-77	VF100

PATH: P:\275\275-77 - ENGINEERING\DWG\CONSTRUCTION\275-77 MASTER.DWG



SSMH
 RIM= 46.11'
 INV IN (PLUGGED)=34.63'
 INV OUT=34.56'

EXISTING CONDITION NOTES:

- THE DRAWING IS BASED ON SURVEY BY CAPE FEAR ENGINEERING, INC. ON OCTOBER 10 THROUGH 14, AND OCTOBER 17, AND NOVEMBER 11, 2016.
- ALL HORIZONTAL DATUM IS BASED ON NAD 83 NORTH CAROLINA STATE PLANE US FOOT. ALL VERTICAL DATUM IS BASED ON NAVD 88.
- ADJOINING PROPERTY OWNERS BASED ON INFORMATION FOUND IN THE NEW HANOVER COUNTY REGISTER OF DEEDS.
- REFERENCE: MAP BOOK 49, PAGE 176, DEED BOOK 5910, PAGE 2592.
- NO BOUNDARY WORK PERFORMED. BOUNDARY BASED ON A MAP BY HANOVER DESIGNS FOR N.C. STATE PORTS AUTHORITY, RALEIGH STREET DIVISION.
- NO WETLANDS ARE PRESENT WITHIN THE PROJECT BOUNDARY, AS DETERMINED BY NEEDHAM ENVIRONMENTAL INC. ON DECEMBER 02, 2016.
- THE PROJECT SITE LIES WITHIN FLOOD ZONE "X" AS DESCRIBED ON THE FLOOD INSURANCE RATE MAP COMMUNITY MAP 372031 PANEL 2500J WITH AN EFFECTIVE DATE OF APRIL 3, 2006.
- THIS PROJECT IS IN THE CAMA LAND USE CLASSIFICATION OF URBAN.
- SOIL DATA DIGITIZED FROM MAP CREATED BY USDA NRCS WEB SOIL SURVEY.
- THERE ARE NO KNOWN CONSERVATION RESOURCES WITHIN THE PROJECT BOUNDARY.
- THERE ARE NO KNOWN LOCAL, STATE, OR FEDERALLY RECOGNIZED HISTORIC STRUCTURE(S) OR ARCHEOLOGICAL RESOURCES WITHIN THE PROJECT BOUNDARY.
- THERE ARE NO EXISTING OR KNOWN PROPOSED THOROUGHFARES, BIKE ROUTES, PEDESTRIAN SIDEWALKS, PEDESTRIAN TRAILS OR TRANSIT FACILITIES WITHIN OR ADJACENT TO THE SUBJECT PROJECT BOUNDARY.
- EXISTING UTILITY INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION, VERIFICATION, SUPPORT AND PROTECTION OF ALL ABOVE GROUND AND UNDERGROUND UTILITIES TO REMAIN IN PLACE, INCLUDING ANY UTILITIES NOT INDICATED ON THESE DRAWINGS. ANY CONFLICTS OR DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
- CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, TREES, PAVEMENT, UTILITIES, AND OTHER PROPERTY UNLESS THEY ARE TO BE DEMOLISHED. ANY PROPERTY NOT AUTHORIZED FOR REMOVAL, BUT DAMAGED BY THE CONTRACTOR SHALL BE RESTORED BY THE CONTRACTOR TO THE ENGINEER'S OR OWNER'S SATISFACTION AT NO ADDITIONAL EXPENSE TO THE OWNER.
- CONTRACTOR SHALL MAKE EVERY EFFORT TO SAVE PROPERTY IRONS, MONUMENTS, OTHER PERMANENT POINTS AND LINES OF REFERENCE AND CONSTRUCTION STAKES. PROPERTY IRONS, MONUMENTS, AND OTHER PERMANENT POINTS OF REFERENCE DESTROYED BY THE CONTRACTOR SHALL BE REPLACED BY A NORTH CAROLINA LICENSED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL MAKE SURE THAT WORK PERFORMED ON THIS PROJECT SHALL NOT IMPACT THE OPERATION OF ANY ADJACENT PROPERTIES.
- THE CONTRACTOR SHALL SEQUENCE WORK AS NECESSARY TO ENSURE THAT ALL UTILITY SERVICES, INCLUDING FIRE HYDRANTS, REMAIN OPERATIONAL DURING CONSTRUCTION.
- THE CONTRACTOR SHALL RESTORE ANY ACCESS ROADS AND STAGING AREAS USED BACK TO THEIR ORIGINAL CONDITION. ALL DISTURBED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE PROJECT PLANS.
- THE CONTRACTOR SHALL TAKE ADEQUATE PROTECTIVE MEASURES TO ENSURE THAT EXISTING PAVEMENT SURFACES ARE NOT DAMAGED FROM TRACKED CONSTRUCTION EQUIPMENT OR ANY OTHER POSSIBLE SOURCE WHEN EQUIPMENT IS BEING MOVED DURING AND AFTER WORK IS BEING CONDUCTED. THE CONTRACTOR SHALL REPAIR ANY PAVED AREAS DAMAGED DURING CONSTRUCTION.
- EXISTING PAVEMENTS AND ALL OTHER AREAS ADJACENT TO THE SITE SHALL BE KEPT CLEAN AT ALL TIMES. DO NOT ALLOW BUILD UP OF SOIL, MUD, DUST OR OTHER DEBRIS.
- ANY AND ALL MATERIAL QUANTITIES INDICATED ON THIS PLAN SET ARE FOR REFERENCE ONLY. THE CONTRACTOR MUST VERIFY ALL MATERIALS QUANTITIES SHOWN.

TREE PROTECTION NOTES:

- TREE PROTECTION FENCING SHALL BE INSTALLED AS REQUIRED PRIOR TO LAND DISTURBING OPERATIONS (INCLUDING TREE REMOVAL) AND IN SUCH A MANNER THAT CLEARLY AND ADEQUATELY SEPARATES ALL TREES TO BE REMOVED FROM TREES TO REMAIN.
- AT THE START OF GRADING INVOLVING THE STRIPPING OF TOPSOIL OR LOWERING OF EXISTING GRADE AROUND A TREE TO REMAIN, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE OF THE TREE SAVE AREA AT THE SAME TIME AS OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FURTHEST AWAY FROM THE TREE TRUNK.
- NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT SHALL BE PERMITTED WITHIN THE PROTECTED AREA(S). NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED AREA(S), AND SHALL BE POSTED ON THE PROTECTION FENCE. A PROTECTION FENCE CONSTRUCTED OF MATERIAL RESISTANT TO DEGRADATION BY SUN, WIND, AND MOISTURE FOR THE DURATION OF CONSTRUCTION SHALL BE INSTALLED AT THE SAME

TIME AS THE EROSION CONTROL MEASURES.

- THE TREE PROTECTION FENCE SHALL BE MAINTAINED ON THE SITE UNTIL ALL SITE WORK IS COMPLETED AND THE FINAL SITE INSPECTION PRIOR TO THE CERTIFICATE OF OCCUPANCY (CO) IS SCHEDULED. FENCING SHALL BE REMOVED PRIOR TO FINAL INSPECTION.

SITE NOTES:

- CONTRACTOR SHALL MAINTAIN AN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION..
- NEW HYDRANTS MUST BE BROUGHT INTO SERVICE PRIOR TO COMBUSTIBLE MATERIALS DELIVERED TO THE JOB SITE AND INSTALLED ACCORDING TO CFPWA STANDARDS.
- LANDSCAPING OR PARKING CANNOT BLOCK OR IMPEDE FIRE HYDRANTS. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANTS.
- ADDITIONAL FIRE PROTECTION AND ACCESSIBILITY REQUIREMENTS MAY BE REQUIRED DUE TO ANY SPECIAL CIRCUMSTANCES CONCERNING THE PROJECT.
- INTERNATIONAL BUILDING CODE TYPE IIB CONSTRUCTION IS PROPOSED.
- WASTE DISPOSAL TO BE PROVIDED BY A ROLL-OUT CONTAINER.
- ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
- 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.
- CONTACT TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT-OF-WAY.

SITE DATA:

PARID: R06400-002-009-000

SITE ADDRESS: 190 RALEIGH STREET

PROPERTY IS ZONED: IND- INDUSTRIAL DISTRICT.

OWNER: CS PROPERTY DEVELOPMENT, LLC
3329-C WRIGHTSVILLE AVENUE
WILMINGTON, NC 28403
(910) 859-8574

PROPOSED USE: CIVIL WORKS CONTRACTING
CONTRACTOR'S OFFICE

AREA OF SITE IS 10.0 ACRES.

SETBACKS

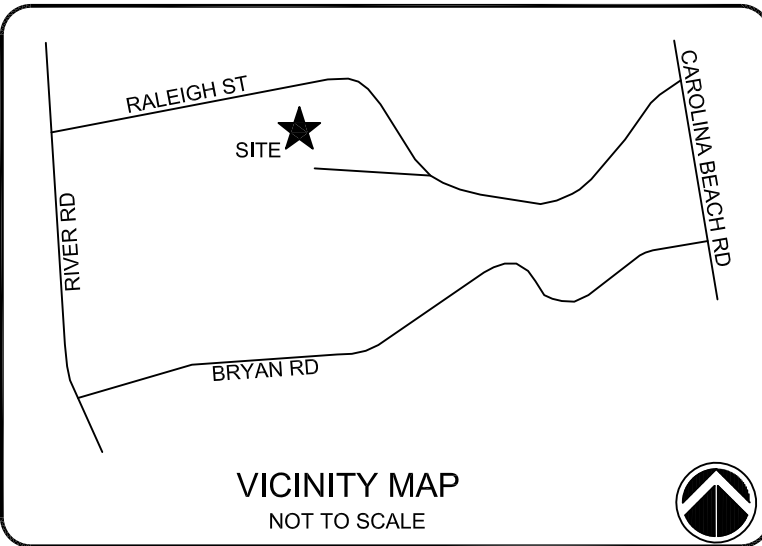
FRONT - 50'
CORNER LOT SIDE - 50'
INTERIOR LOT SIDE - 0'
REAR - 0' (ABUTTING STREET 50')
BUILDING HEIGHT: 35' MAXIMUM

ABBREVIATIONS

EX	EXISTING
GFA	GROSS FLOOR AREA
HP	ADS HP POLYPROPYLENE PIPE
I.E.	INVERT ELEVATION
NRCS	NATURAL RESOURCES CONSERVATION SERVICE
RCP	REINFORCED CONCRETE PIPE
SHWT	SEASONAL HIGH WATER TABLE
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TSW	TOP OF SIDEWALK
USDA	UNITED STATES DEPARTMENT OF AGRICULTURE

LEGEND

	EXISTING	PROPOSED
PROPERTY BOUNDARY	---	---
ADJACENT PROPERTY	---	---
EASEMENT	---	---
GAS LINE	---G---	---
ASPHALT PAVEMENT	---	---
ASPHALT TO BE DEMOLISHED	---	---
ASPHALT ROAD WIDENING	---	---
CHAIN LINK FENCE	- X - X - X - X -	- X - X - X - X -
TELEPHONE PEDESTAL	Ⓣ	---
WOODS LINE	---	---
OAK TREE	⊙	---
PINE TREE	●	---
CEDAR TREE	⊙	---
MAGNOLIA	⊙	---
IRON ROD FOUND	•	---
EXISTING IRON PIPE	• EIP	---
RIGHT-OF-WAY DISK	○ RW DISK	---
CONTOURS	---19--- ---20---	---
LIMITS OF DISTURBANCE	---	---
TEMPORARY CONSTRUCTION ENTRANCE	---	---
INLET PROTECTION	---	---
SILT FENCE	---	---
SILT FENCE OUTLET	---	---
GRASS (SEE VEGETATION SCHEDULE ON SHEET C-506)	---	---
TREE PROTECTION	---	---
WATER LINE	---W---	---
WATERLINE VALVE	⊗	⊗ WW
FIRE HYDRANT	⊙	⊙ FH SSMH RIM XXX IE XXX
SANITARY SEWER MANHOLE	⊙	⊙ SS
SANITARY SEWER LINE	---SS---	---
SOIL SURVEY BOUNDARY	---	---
BUILDING	---	---
CONCRETE PAVEMENT	---	---
ABC	---	---
CONCRETE SIDEWALK	---	---
CURB AND GUTTER	---	---
GATE	---	---
SIGN	---	---
STORMDRAIN PIPE	---	---
STORMDRAIN INLET	---	---
FLARED END SECTION	---	---
STORMWATER CONTROL MEASURE	---	---
SPOT ELEVATION	xx/yy	---
SETBACK LINE	---	---



NOTES:

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REV. BY	DATE
F	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
E	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	08/10/17
D	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	07/21/17
C	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
B	ISSUED FOR TRC REVIEW	EMN	05/17/17
A	ISSUED FOR REGULATORY REVIEW	EMN	02/21/17



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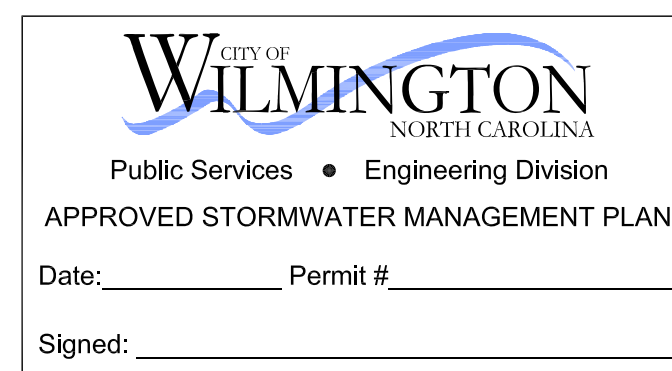
PROJECT NUMBER:	275-77
SCALE:	N/A
DATE:	21 FEB 17

CIVIL WORKS CONTRACTING
190 RALEIGH STREET
WILMINGTON, NC

GENERAL NOTES & LEGEND

PROJECT NUMBER	275-77
SHEET NUMBER	C-001

PATH: P:\275\275-77_CWC OFFICE BLDG RALEIGH ST - ENGINEERING\DWG\CONSTRUCTION\275-77_MASTER.DWG



Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

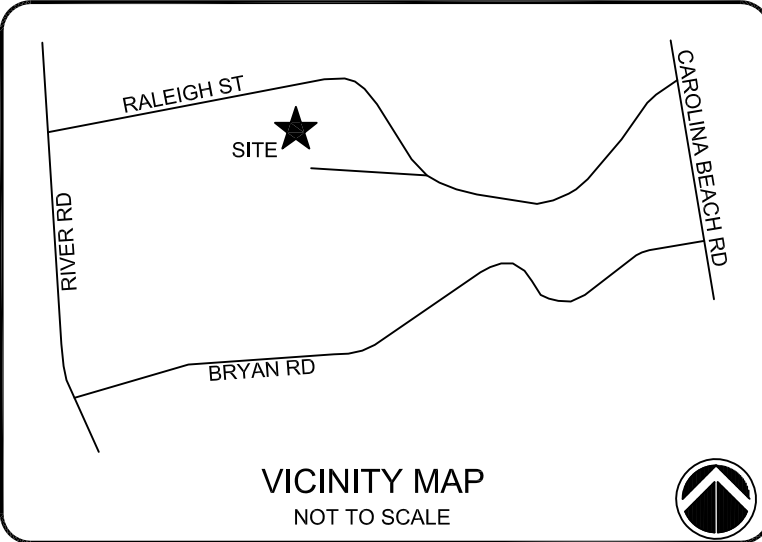
Signed: _____

1 - 10" x 6" TEE
1 - FIRE HYDRANT ASSEMBLY
1 - 10" GATE VALVE

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

Approved Construction Plan

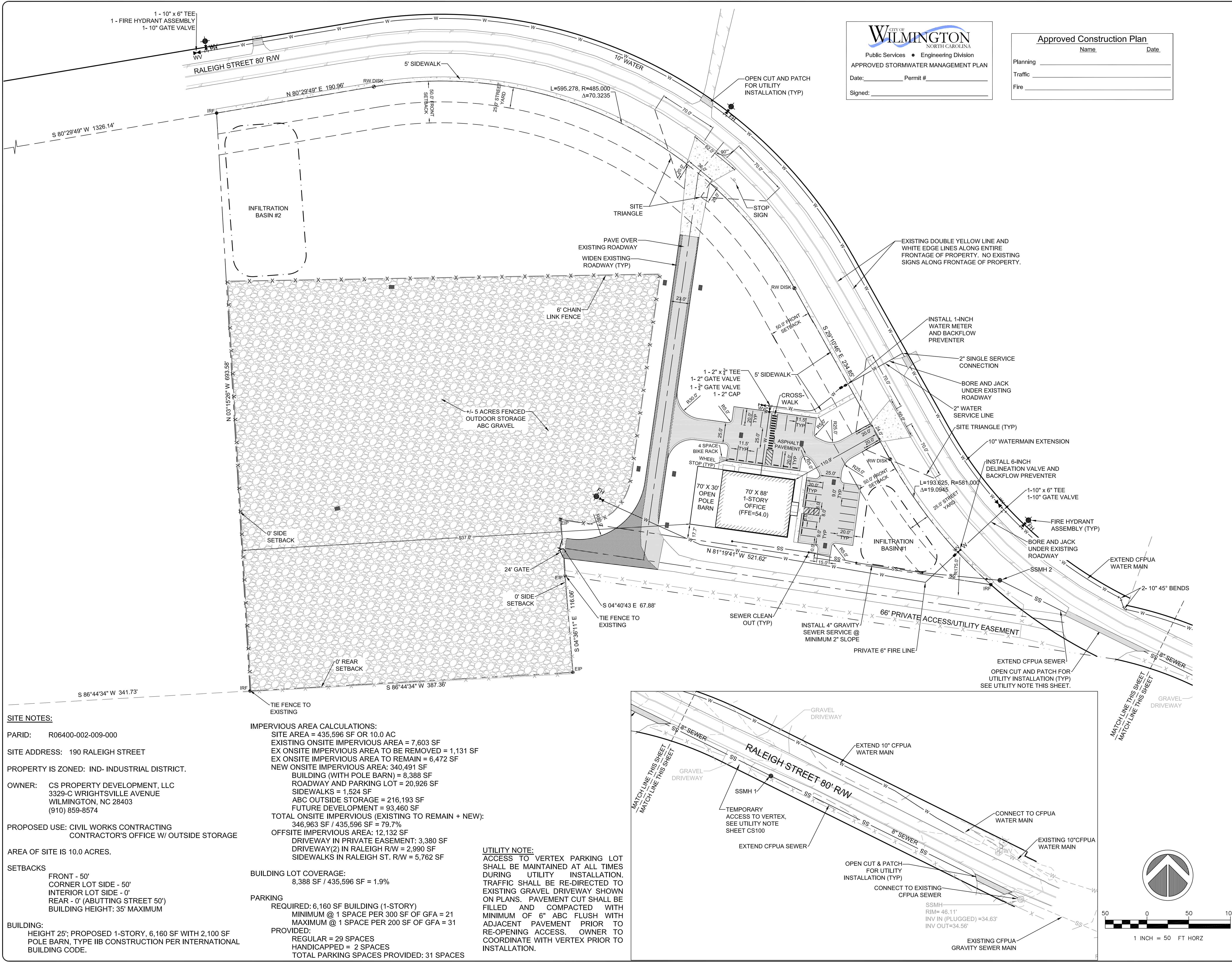
Name	Date
Planning	
Traffic	
Fire	



NOTES:

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REVISIONS	DATE
G	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
F	REVISED PER COMMENTS	EMN	08/10/17
E	REVISED 8" WATERLINE TO 10" PER CFPWA COMMENTS	RAS	07/27/17
D	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	07/21/17
C	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
B	ISSUED TO CITY OF WILMINGTON FOR TRC REVIEW	EMN	05/17/17
A	ISSUED TO CITY OF WILMINGTON FOR CONCEPT PLAN REVIEW	EMN	03/01/17



SITE NOTES:

PARID: R06400-002-009-000

SITE ADDRESS: 190 RALEIGH STREET

PROPERTY IS ZONED: IND- INDUSTRIAL DISTRICT.

OWNER: CS PROPERTY DEVELOPMENT, LLC
3329-C WRIGHTSVILLE AVENUE
WILMINGTON, NC 28403
(910) 859-8574

PROPOSED USE: CIVIL WORKS CONTRACTING
CONTRACTOR'S OFFICE W/ OUTSIDE STORAGE

AREA OF SITE IS 10.0 ACRES.

SETBACKS

FRONT - 50'
CORNER LOT SIDE - 50'
INTERIOR LOT SIDE - 0'
REAR - 0' (ABUTTING STREET 50')
BUILDING HEIGHT: 35' MAXIMUM

BUILDING:
HEIGHT 25'; PROPOSED 1-STORY, 6,160 SF WITH 2,100 SF POLE BARN, TYPE IIB CONSTRUCTION PER INTERNATIONAL BUILDING CODE.

IMPERVIOUS AREA CALCULATIONS:

SITE AREA = 435,596 SF OR 10.0 AC
EXISTING ONSITE IMPERVIOUS AREA = 7,603 SF
EX ONSITE IMPERVIOUS AREA TO BE REMOVED = 1,131 SF
EX ONSITE IMPERVIOUS AREA TO REMAIN = 6,472 SF
NEW ONSITE IMPERVIOUS AREA: 340,491 SF
BUILDING (WITH POLE BARN) = 8,388 SF
ROADWAY AND PARKING LOT = 20,926 SF
SIDEWALKS = 1,524 SF
ABC OUTSIDE STORAGE = 216,193 SF
FUTURE DEVELOPMENT = 93,460 SF
TOTAL ONSITE IMPERVIOUS (EXISTING TO REMAIN + NEW):
346,963 SF / 435,596 SF = 79.7%

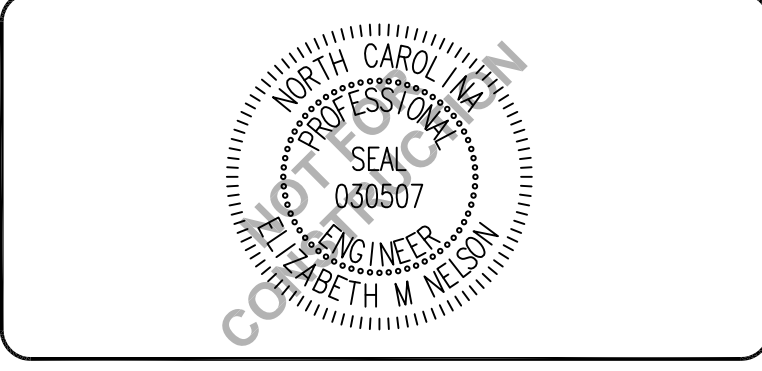
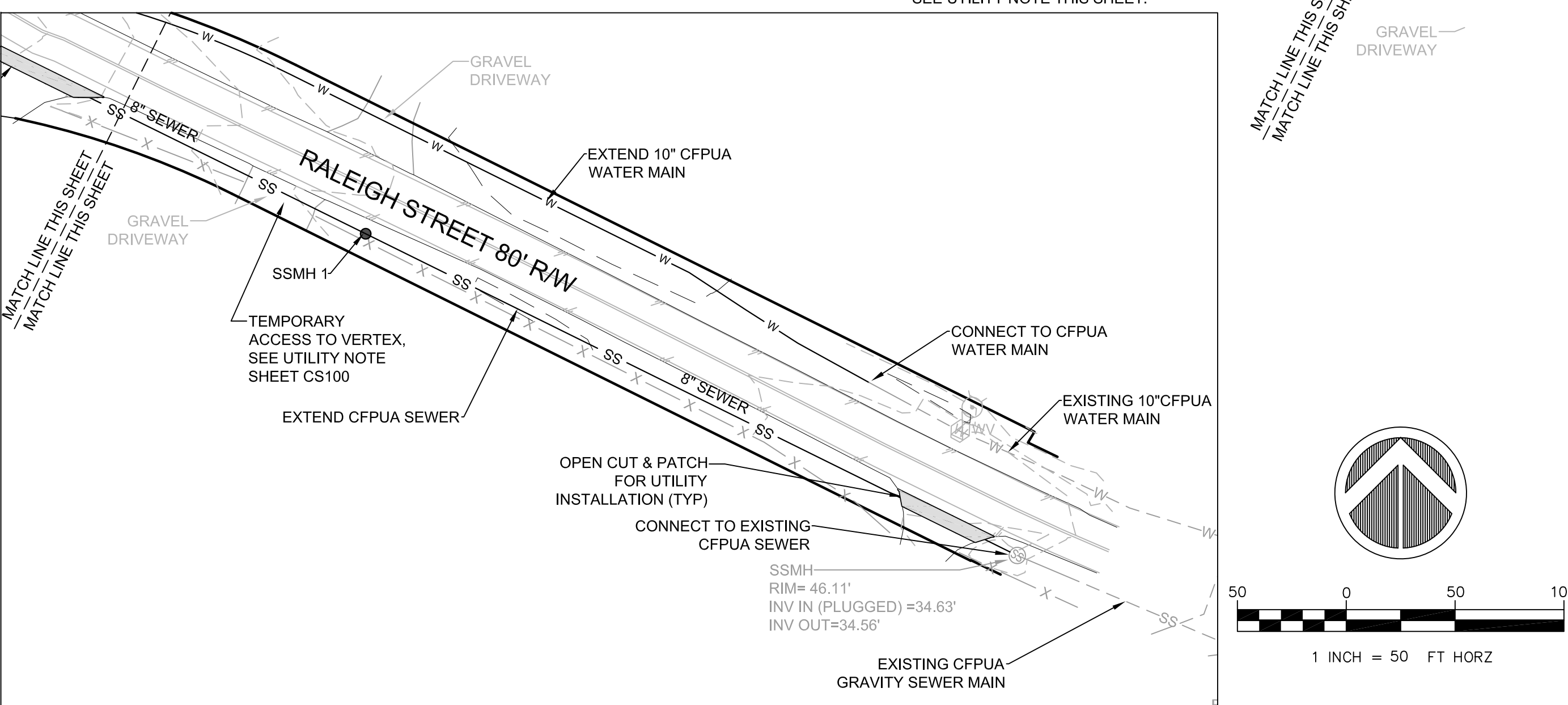
OFFSITE IMPERVIOUS AREA: 12,132 SF
DRIVEWAY IN PRIVATE EASEMENT: 3,380 SF
DRIVEWAY(2) IN RALEIGH R/W = 2,990 SF
SIDEWALKS IN RALEIGH ST. R/W = 5,762 SF

BUILDING LOT COVERAGE:
8,388 SF / 435,596 SF = 1.9%

PARKING

REQUIRED: 6,160 SF BUILDING (1-STORY)
MINIMUM @ 1 SPACE PER 300 SF OF GFA = 21
MAXIMUM @ 1 SPACE PER 200 SF OF GFA = 31
PROVIDED:
REGULAR = 29 SPACES
HANDICAPPED = 2 SPACES
TOTAL PARKING SPACES PROVIDED: 31 SPACES

UTILITY NOTE:
ACCESS TO VERTEX PARKING LOT SHALL BE MAINTAINED AT ALL TIMES DURING UTILITY INSTALLATION. TRAFFIC SHALL BE RE-DIRECTED TO EXISTING GRAVEL DRIVEWAY SHOWN ON PLANS. PAVEMENT CUT SHALL BE FILLED AND COMPACTED WITH MINIMUM OF 6" ABC FLUSH WITH ADJACENT PAVEMENT PRIOR TO RE-OPENING ACCESS. OWNER TO COORDINATE WITH VERTEX PRIOR TO INSTALLATION.



CAPE FEAR ENGINEERING

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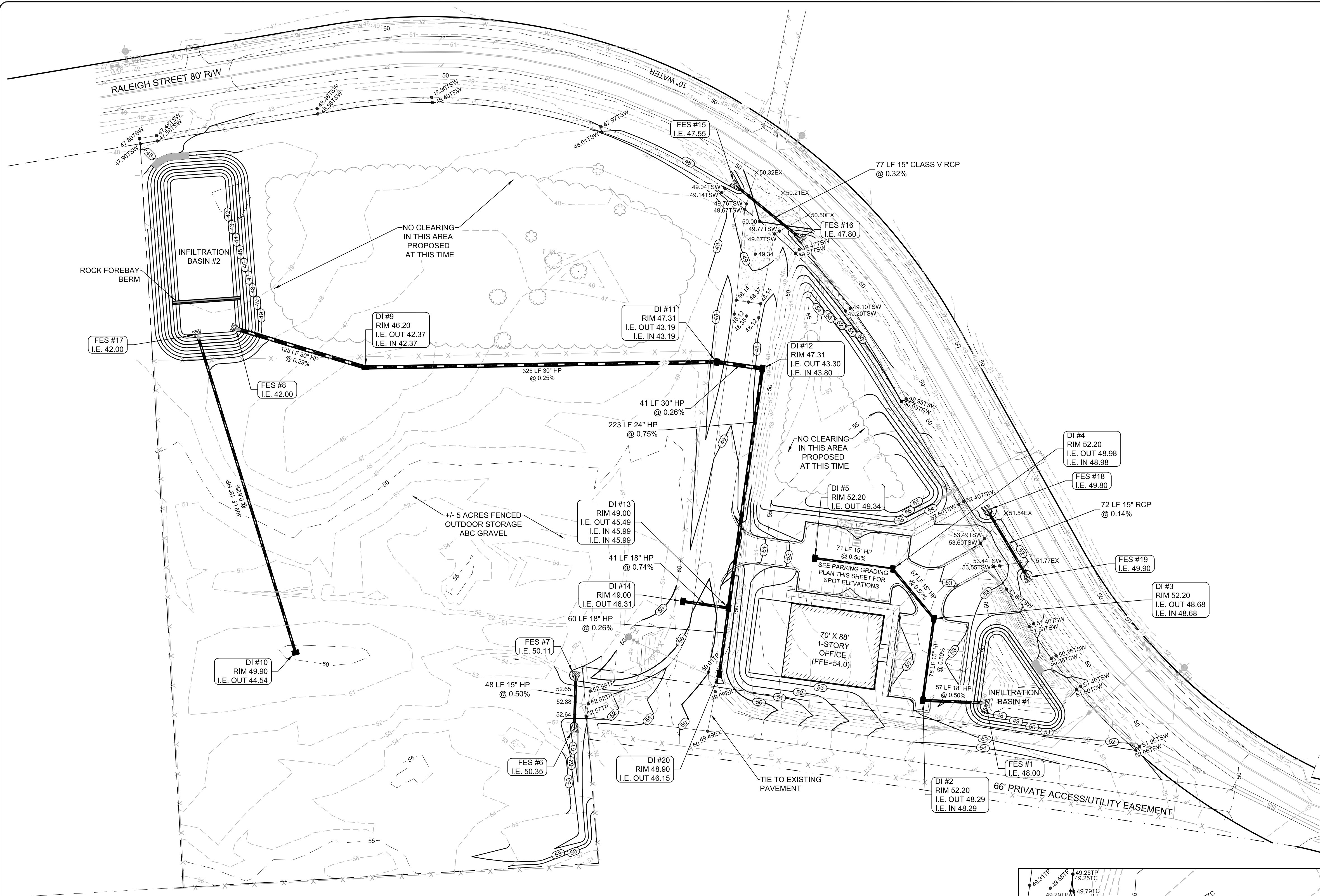
PROJECT NUMBER:	275-77
SCALE:	1" = 50'
DATE:	01 MAR 17

CIVIL WORKS CONTRACTING
190 RALEIGH STREET
WILMINGTON, NC

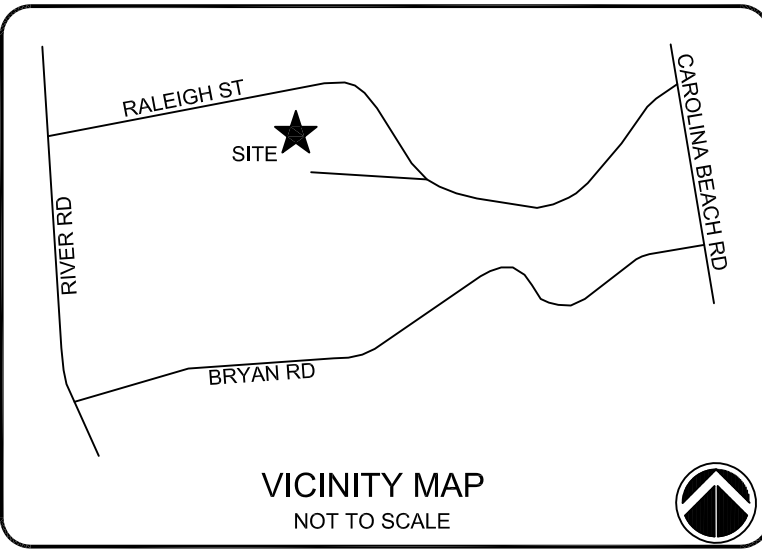
SITE & UTILITY PLAN

PROJECT NUMBER	SHEET NUMBER
275-77	CS100

PATH: P:\275\275-77 CWC OFFICE BLDG RALEIGH ST - ENGINEERING\DWG\CONSTRUCTION\275-77 MASTER.DWG



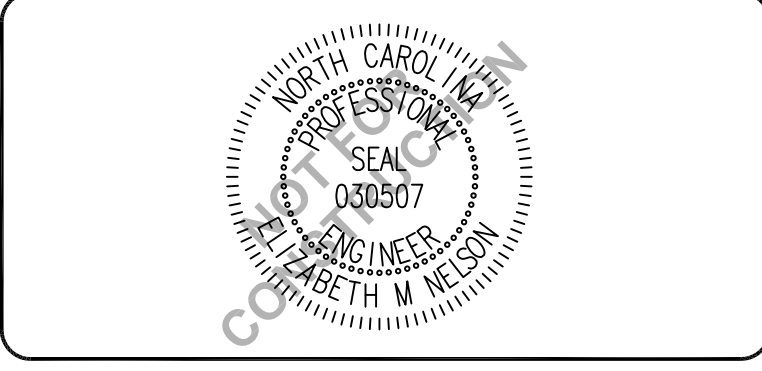
STORMWATER NOTES:
 1. A ONE-FOOT SUMP SHALL BE PROVIDED IN ALL STORM DRAIN STRUCTURES.
 2. ROOF DRAINS FROM BUILDING SHALL TIE TO STORMWATER COLLECTION SYSTEM THAT DRAINS TO INFILTRATION BASIN #1.



NOTES:
 SEE SHEET C-001 FOR GENERAL NOTES AND LEGEND

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REV. BY	DATE
E	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
D	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	08/10/17
C	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
B	ISSUED TO CITY OF WILMINGTON FOR TRC REVIEW	EMN	05/17/17
A	ISSUED FOR REGULATORY REVIEW	EMN	02/21/17



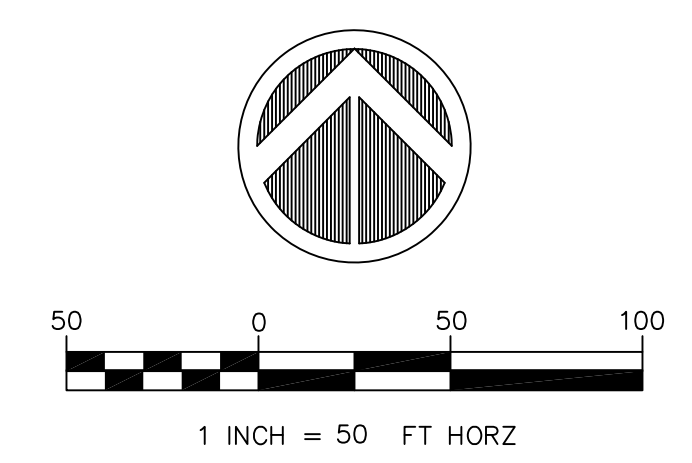
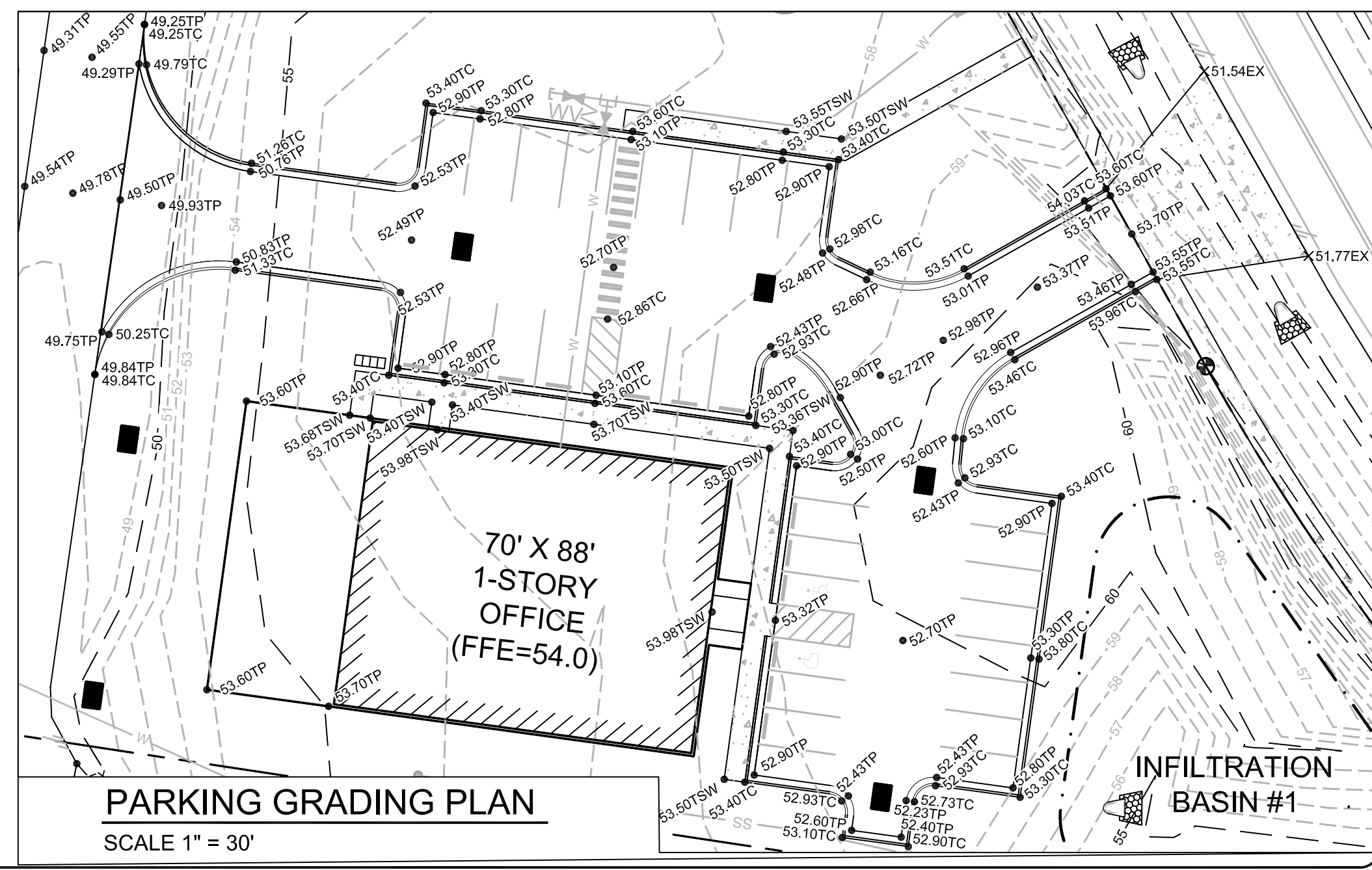
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 N.C. LICENSE # C-1621

PROJECT NUMBER:	275-77
SCALE:	1" = 50'
DATE:	10 JULY 17

CIVIL WORKS CONTRACTING
 190 RALEIGH STREET
 WILMINGTON, NC

STORMWATER & GRADING PLAN

PROJECT NUMBER	275-77	SHEET NUMBER	CG100
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CITY OF WILMINGTON
 NORTH CAROLINA
 Public Services • Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN
 Date: _____ Permit # _____
 Signed: _____

Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

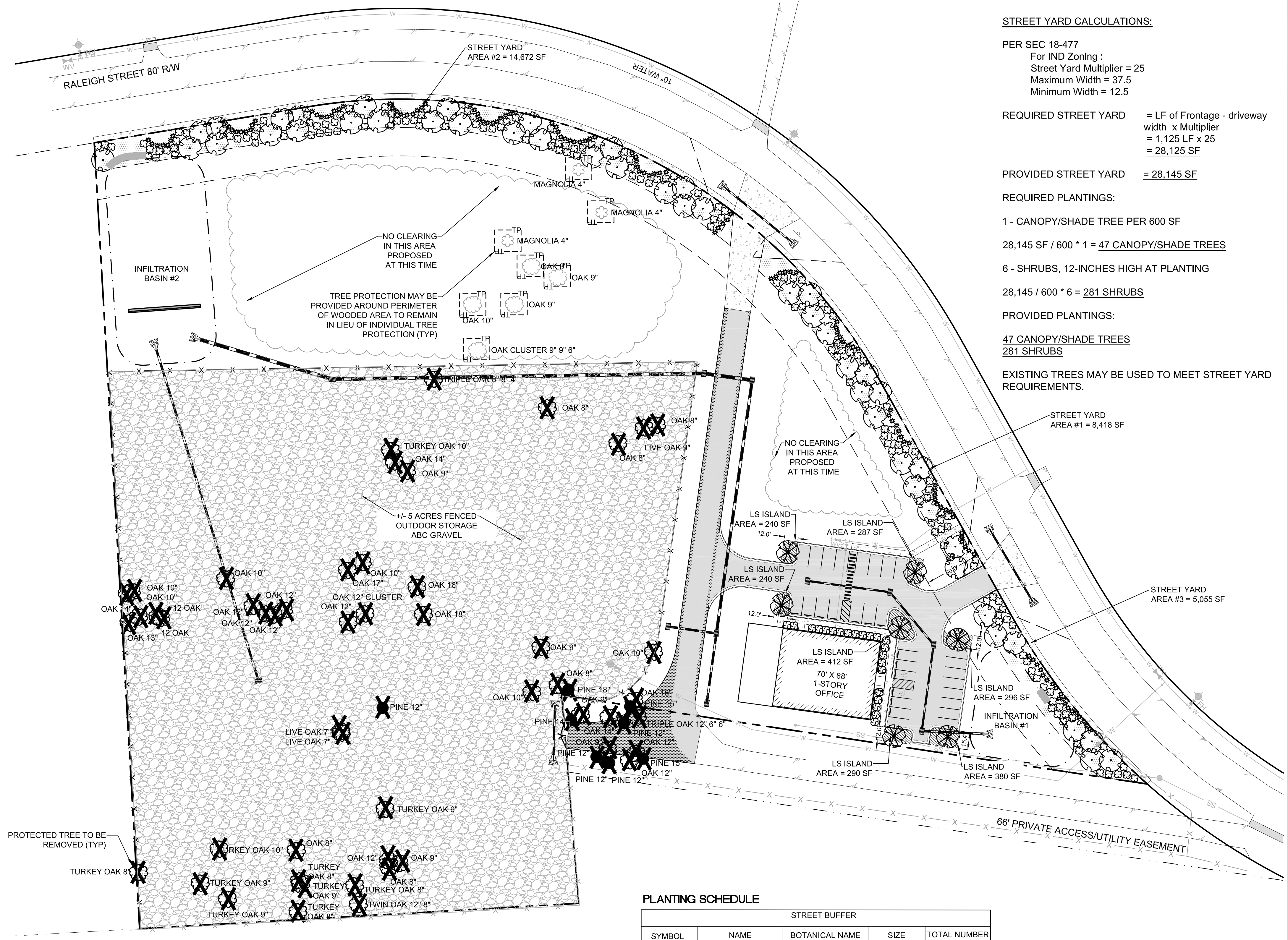
Fire _____

TREE MITIGATION CALCULATIONS:

- PER SEC 18-456:
Regulated Trees
 - Hardwoods > 8" DBH
 - Conifer > 12" DBH
 - Dogwoods, Magnolias, Ornamental Flowering, American Hollies > 4" DBH
- Significant Trees
 - Hardwood, Long Lead Pine, Pocosin (pond) Pine, Black Pine, and non-pine conifer trees > 24" DBH
 - All other pines > 32" DBH
 - Dogwoods, Magnolias, Ornamental Flowering, American Hollies > 8" DBH

Regulated Trees to be Removed and Required Mitigation
 (Per Section 18-460)
 The total number of replacement trees shall be determined for regulated trees removed by multiplying the total DBH of the removed regulated tree(s) by the percentage for the type of tree in Table IV and dividing by three (3)

ALL REGULATED TREES TO BE REMOVED INSIDE OF PROPOSED CONTRACTOR LAY DOWN AREA ARE CONSIDERED EXEMPT FROM MITIGATION PER SECTION 18-461 SINCE LAYDOWN AREA IS AN ESSENTIAL SITE IMPROVEMENT FOR PROPOSED FACILITY. ALL REGULATED TREES OUTSIDE OF LAYDOWN AREA HAVE BEEN PRESERVED.



STREET YARD CALCULATIONS:

PER SEC 18-477
 For IND Zoning :
 Street Yard Multiplier = 25
 Maximum Width = 37.5
 Minimum Width = 12.5

REQUIRED STREET YARD = LF of Frontage - driveway width x Multiplier
 = 1,125 LF x 25
 = 28,125 SF

PROVIDED STREET YARD = 28,145 SF

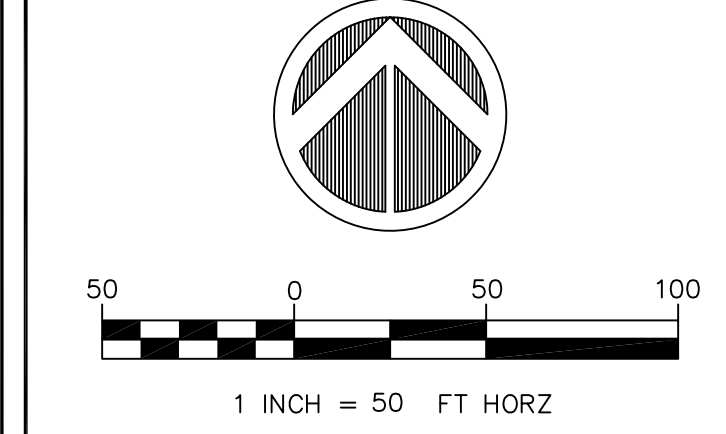
REQUIRED PLANTINGS:
 1 - CANOPY/SHADE TREE PER 600 SF
 28,145 SF / 600 * 1 = 47 CANOPY/SHADE TREES

6 - SHRUBS, 12-INCHES HIGH AT PLANTING
 28,145 / 600 * 6 = 281 SHRUBS

PROVIDED PLANTINGS:
 47 CANOPY/SHADE TREES
 281 SHRUBS

EXISTING TREES MAY BE USED TO MEET STREET YARD REQUIREMENTS.

NOTES:



ISSUED FOR REGULATORY REVIEW

E	REVISED PER COMMENTS BY CITY OF WILMINGTON	EMN	09/27/17
D	REVISED PER COMMENTS BY CITY OF WILMINGTON	EMN	08/10/17
C	REVISED PER COMMENTS BY CITY OF WILMINGTON	EMN	07/21/17
B	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
A	ISSUED FOR TRC REVIEW	EMN	05/17/17
REV. #	DESCRIPTION	REV. BY	DATE
	REVISIONS		

LANDSCAPING CALCULATIONS

PER SEC 18-490
 BUILDING HEIGHT = 25 FT
 BUILDING FACE LENGTH NORTH = 88 FT
 BUILDING FACE LENGTH EAST = 70 FT
 PLANTING FOUNDATIONS REQUIRED:
 12% OF BUILDING FACE AREA
 BUILDING FACE AREA NORTH = 264 SF
 BUILDING FACE AREA EAST = 210 SF
 PLANTING FOUNDATIONS PROVIDED:
 BUILDING FACE NORTH = 664 SF
 BUILDING FACE EAST = 300 SF

LANDSCAPING CALCULATIONS

PER SEC 18-481
 PARKING AREA = 14,427 SF
 SHADING REQUIRED:
 20% OF PARKING AREA = 2,885 SF
 SHADING AREA PROVIDED:
 7 - CANOPY TREES @ 707 SF EACH = 4,949 SF

PLANTING SCHEDULE

STREET BUFFER				
SYMBOL	NAME	BOTANICAL NAME	SIZE	TOTAL NUMBER
TREES				
	SHADE/CANOPY	QUERCUS VIRGINIANA	2" DIA.	47
SHRUBS				
	SHRUB 1	ABELIA GRANDIFLORA	3 Gal.	154
	SHRUB 2	PITOSPORUM TOBIRA	1 Gal.	127
PARKING LOT LANDSCAPE ISLANDS				
SYMBOL	NAME	BOTANICAL NAME	SIZE	TOTAL NUMBER
TREES				
	SHADE/CANOPY	QUERCUS VIRGINIANA	2" DIA.	7
GROUND COVERS				
	GROUND COVER	JUNIPERUS HORIZONTALIS	3 Gal.	N/A
FOUNDATIONS PLANTINGS				
SYMBOL	NAME	BOTANICAL NAME	SIZE	TOTAL NUMBER
SHRUBS				
	SHRUB 1	BURFORDI NANA	1 Gal.	22

CITY OF WILMINGTON
 NORTH CAROLINA
 Public Services • Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN
 Date: _____ Permit # _____
 Signed: _____

Approved Construction Plan
 Name _____ Date _____
 Planning _____
 Traffic _____
 Fire _____

CAPE FEAR ENGINEERING

151 Poole Rd., Suite 100, Belville, NC, 28451
 TEL (910) 383-1044; FAX (910) 383-1045
 www.capefearengineering.com
 N.C. LICENSE # C-1621

PROJECT NUMBER: 275-77
 SCALE: 1" = 50'
 DATE: 24 FEB 17

CWC OFFICE
 190 RALEIGH STREET
 WILMINGTON, NC

LANDSCAPE PLAN

PROJECT NUMBER: 275-77
 SHEET NUMBER: LS100

STANDARD DETAIL
GUIDELINES FOR SEDIMENT CONTROL BMPs
 DATE: SEPTEMBER, 2012
 DRAWN BY: JSR
 CHECKED BY: BDR, P.E.
 SCALE: NOT TO SCALE
 SHEET 1 OF 2
 CITY OF WILMINGTON NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807
 SD 3-104

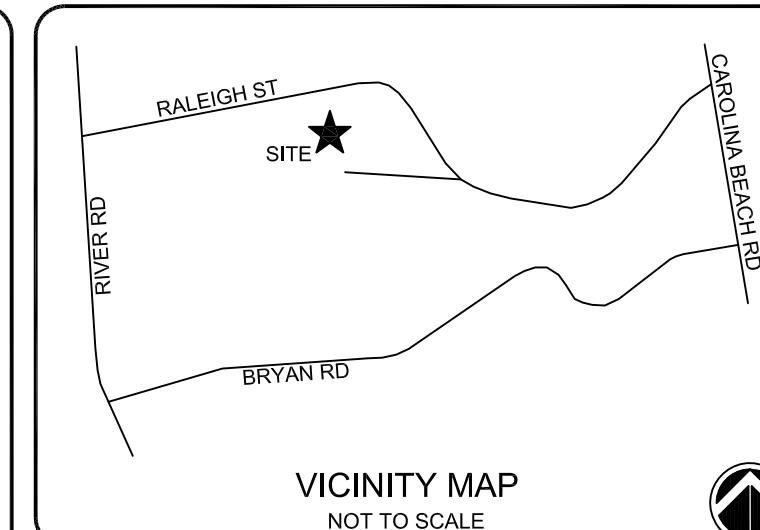
STANDARD DETAIL
GUIDELINES FOR SEDIMENT CONTROL BMPs
 DATE: SEPTEMBER, 2012
 DRAWN BY: JSR
 CHECKED BY: BDR, P.E.
 SCALE: NOT TO SCALE
 SHEET 2 OF 2
 CITY OF WILMINGTON NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807
 SD 3-104

STANDARD DETAIL
TREE PROTECTION DURING CONSTRUCTION
 DATE: JAN, 2015
 DRAWN BY: JSR
 CHECKED BY: RDG, P.E.
 SCALE: NOT TO SCALE
 SHEET 1 OF 2
 CITY OF WILMINGTON NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807
 SD 15-09

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.



NOTES:

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REV. BY	DATE
D	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
C	REVISED PER NHC COMMENTS	EMN	07/31/17
B	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
A	ISSUED FOR REGULATORY REVIEW	EMN	02/21/17

STANDARD DETAIL
TREE PROTECTION DURING CONSTRUCTION
 DATE: JAN, 2015
 DRAWN BY: JSR
 CHECKED BY: RDG, P.E.
 SCALE: NOT TO SCALE
 SHEET 2 OF 2
 CITY OF WILMINGTON NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807
 SD 15-09

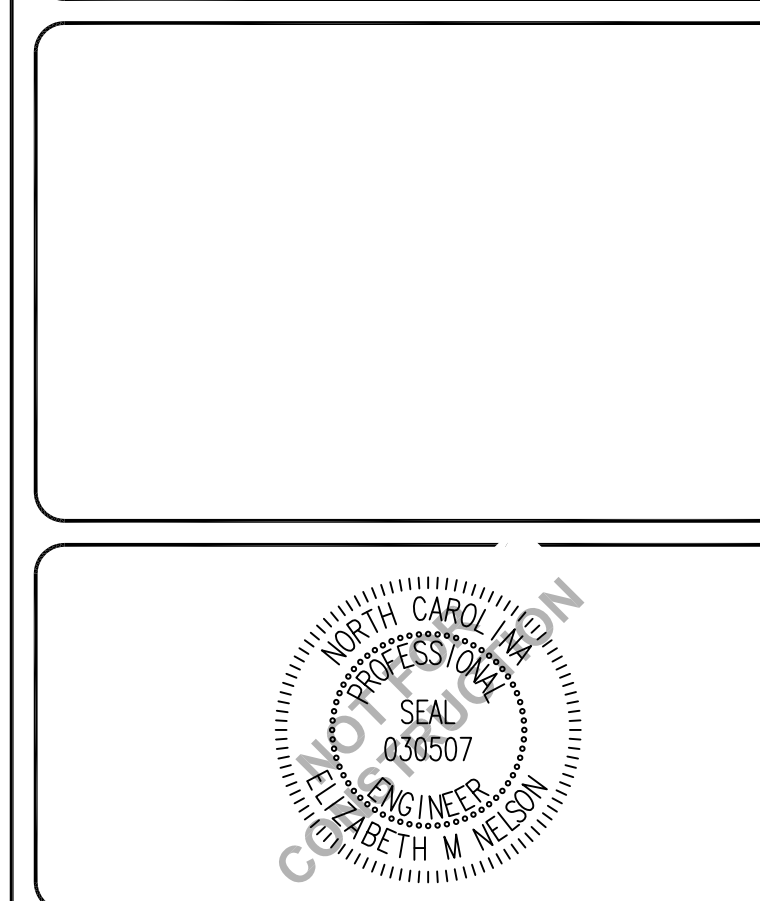
NOTES:
 1. THE TREE PROTECTION FENCING SHALL NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.
 2. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH, MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
 3. SIGNS SHALL BE PLACED 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.

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

Approved Construction Plan

Name _____ Date _____

Planning _____
 Traffic _____
 Fire _____



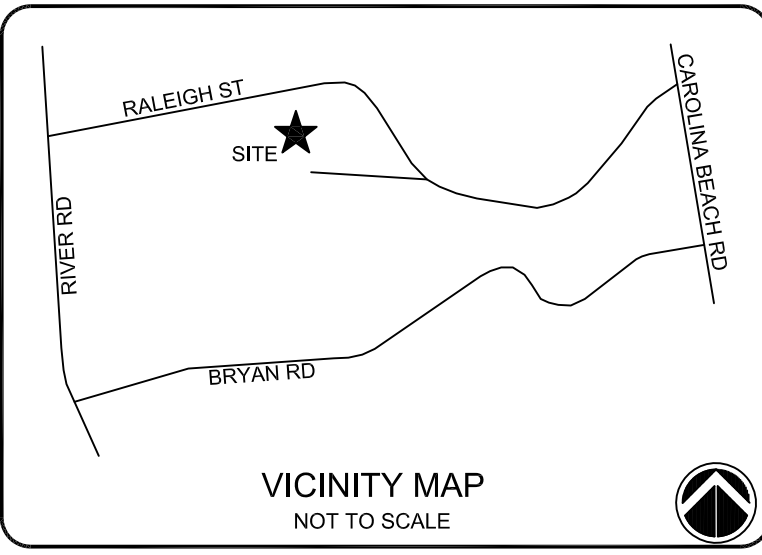
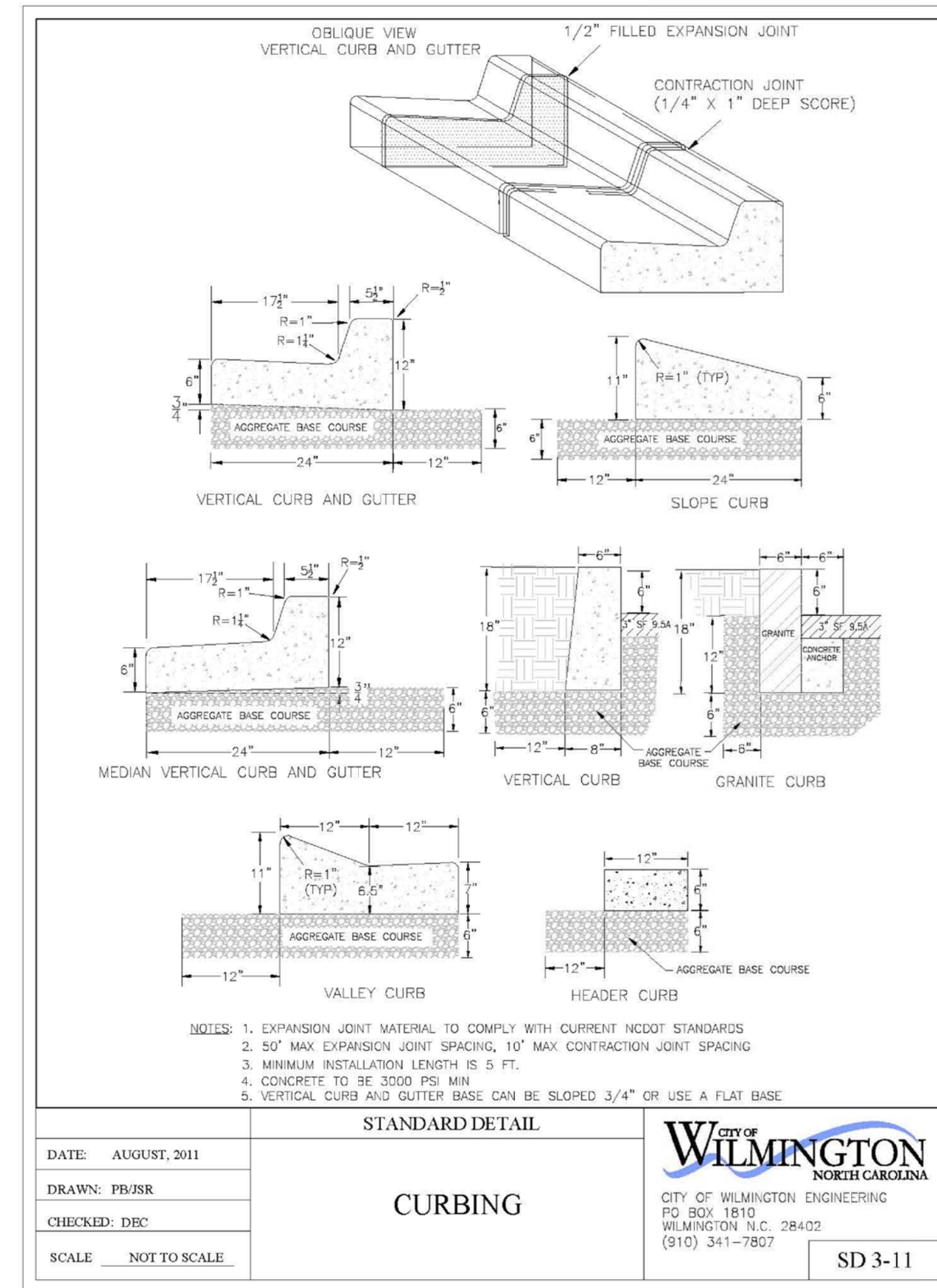
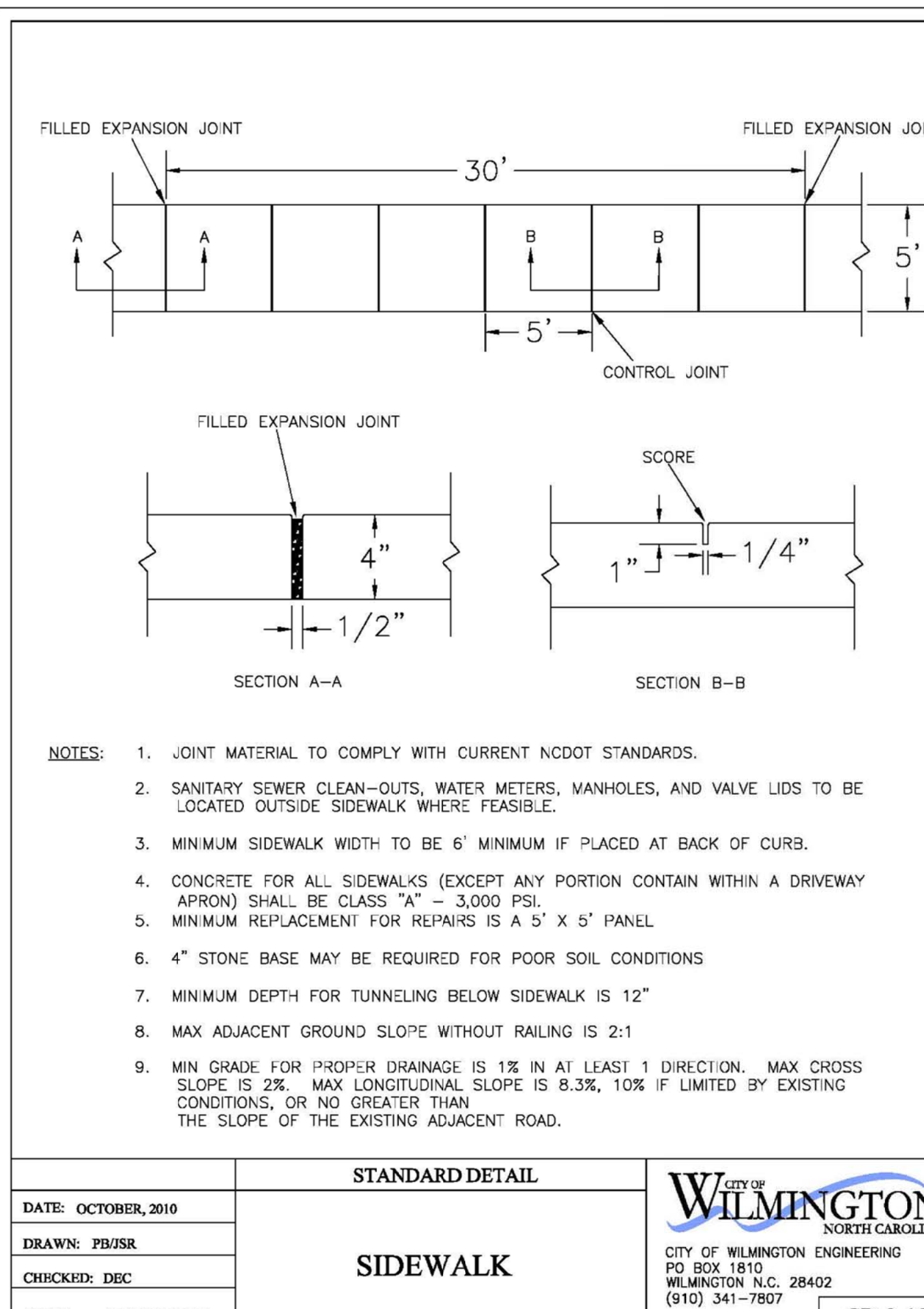
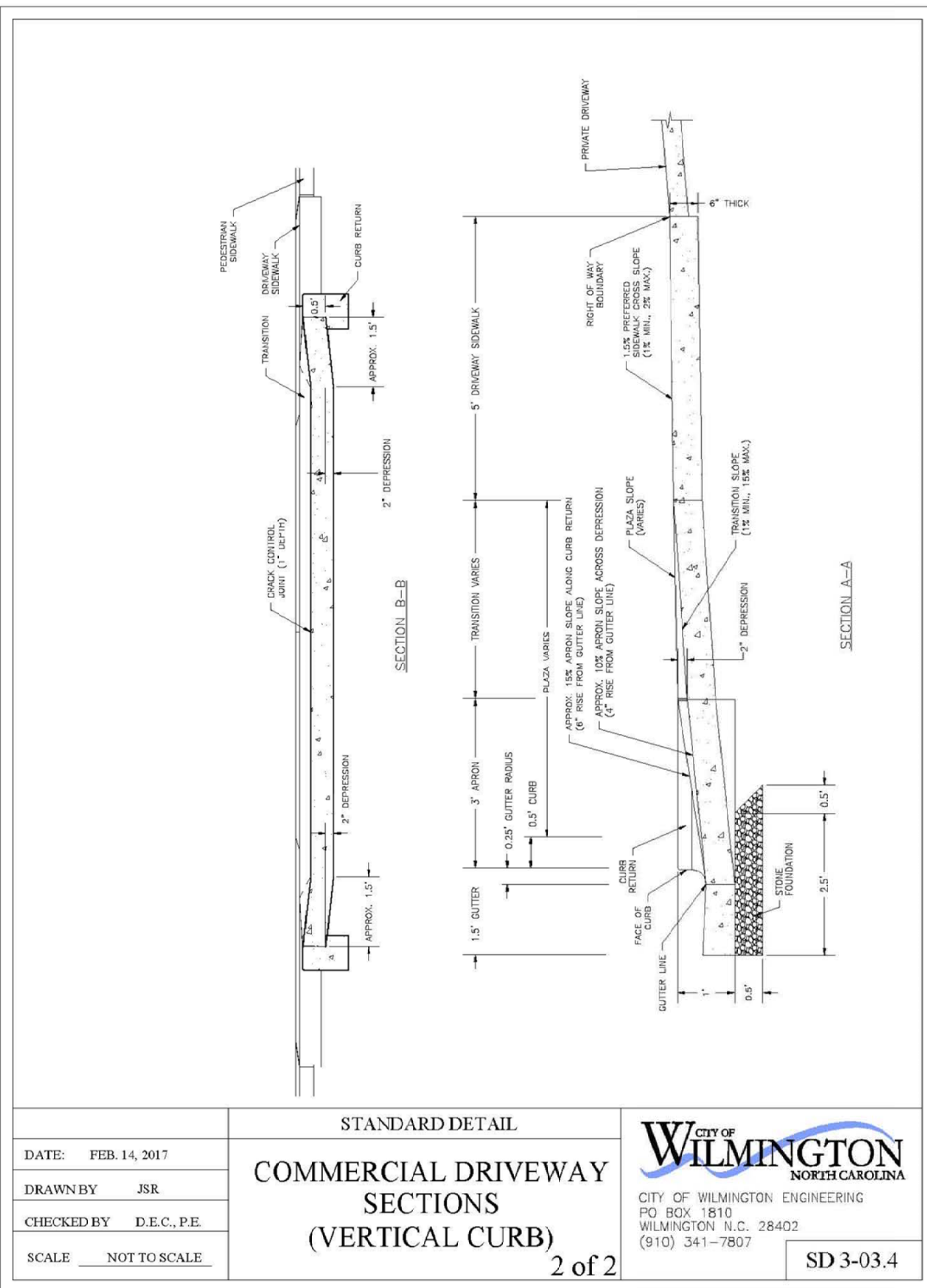
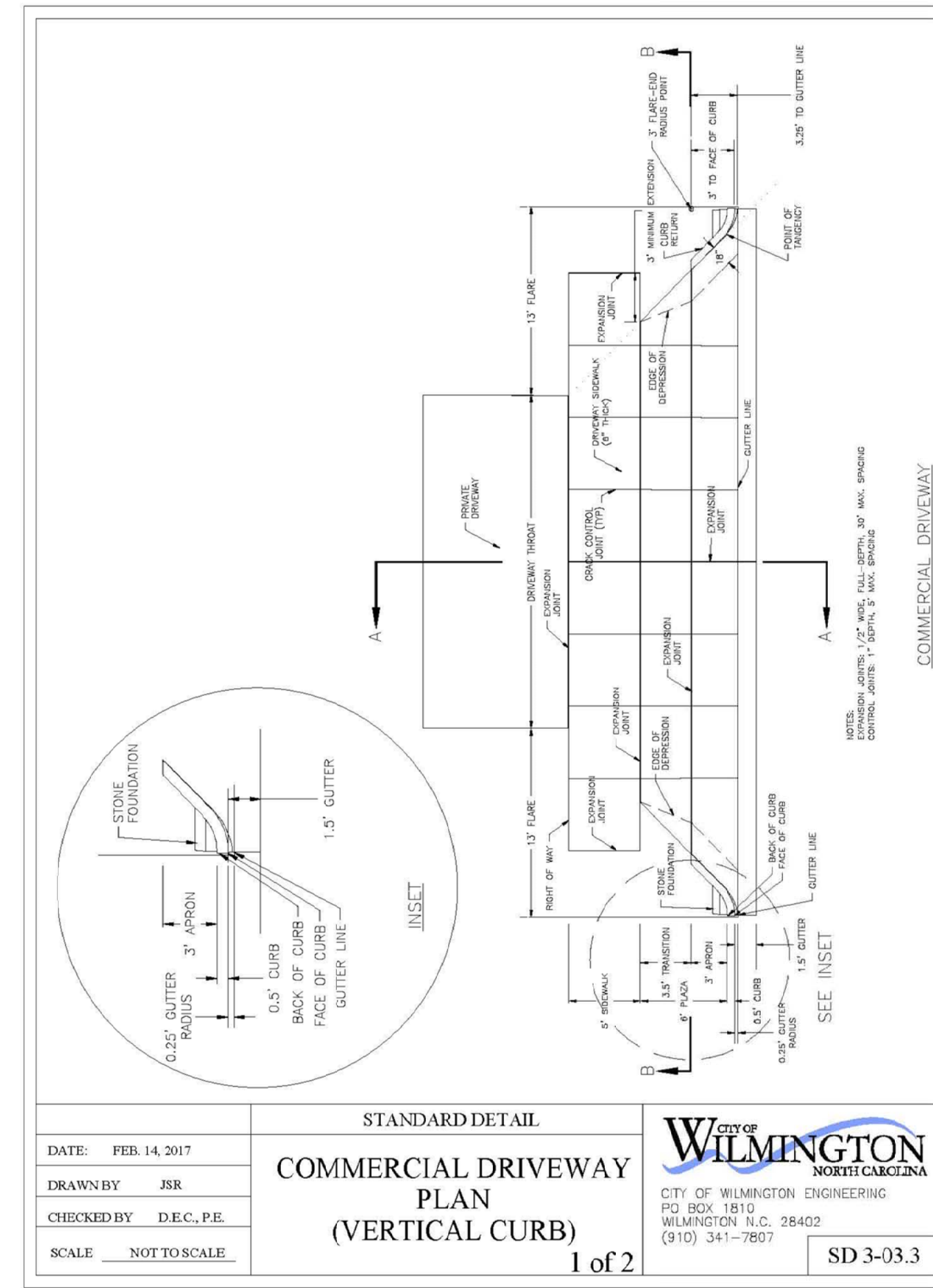
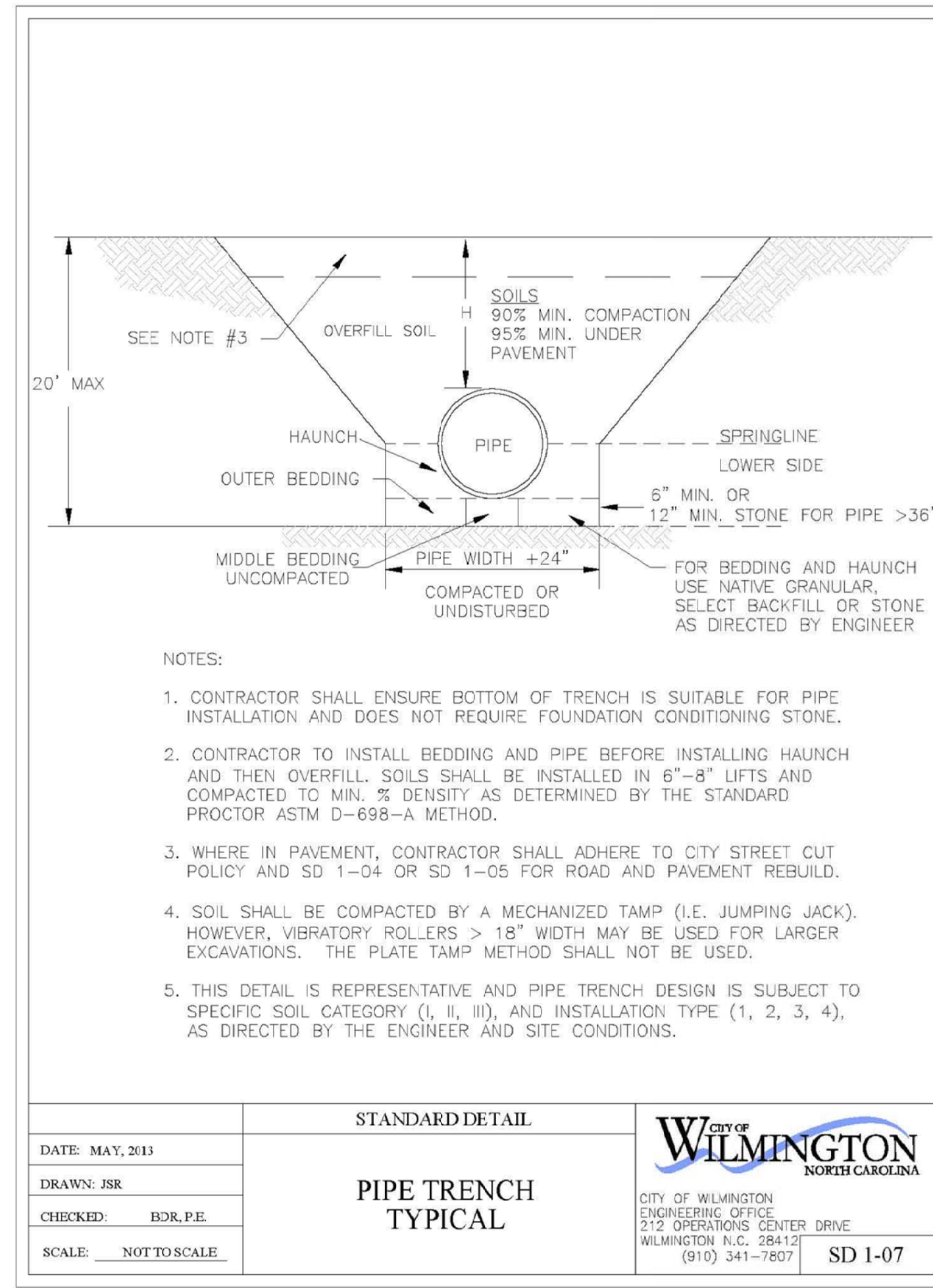
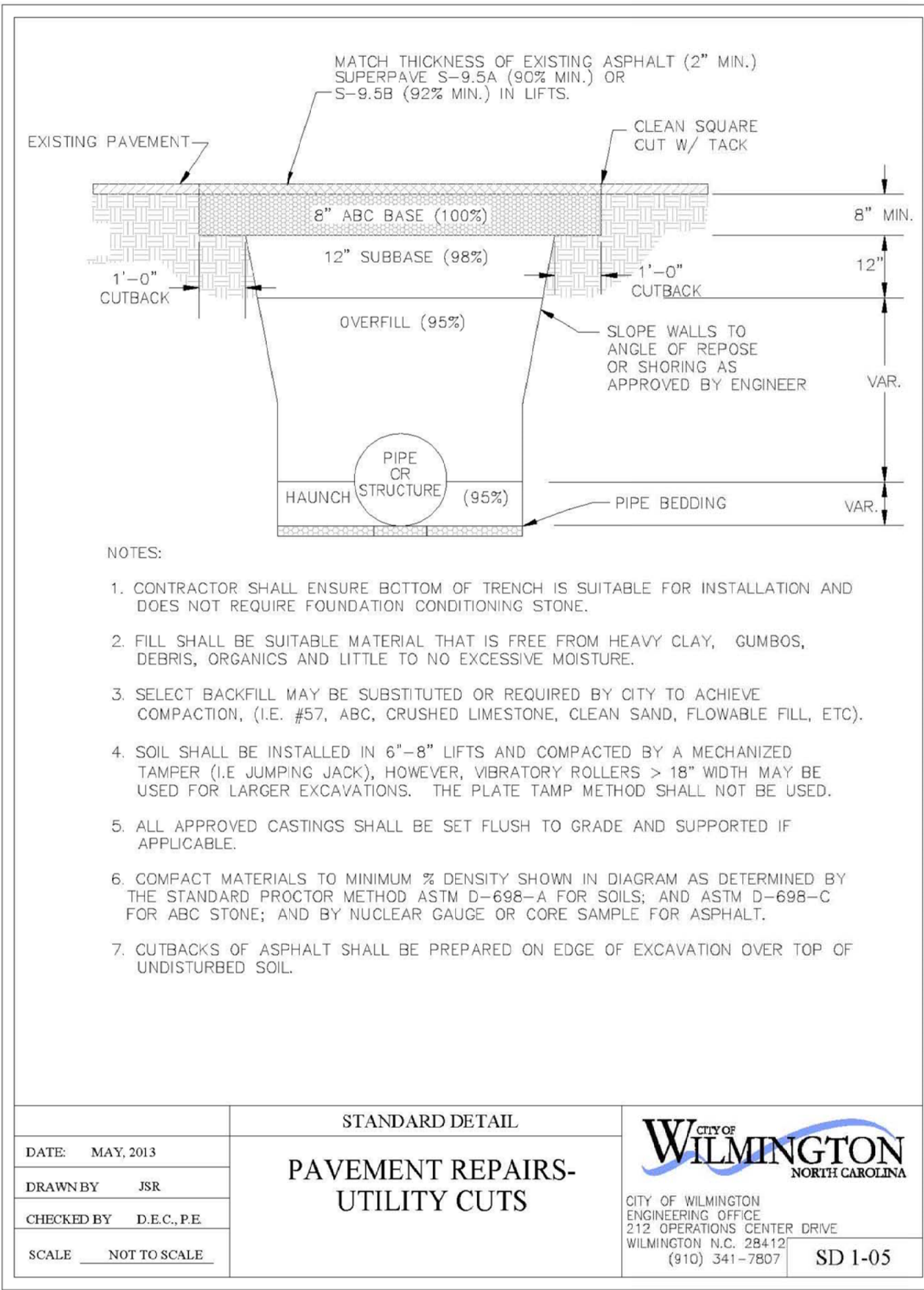
CAPE FEAR ENGINEERING
 151 Poole Rd., Suite 100, Belville, NC, 28451
 TEL (910) 383-1044; FAX (910) 383-1045
 www.capefearengineering.com
 N.C. LICENSE # C-1621

PROJECT NUMBER:	275-77
SCALE:	As Shown
DATE:	21 FEB 17

CIVIL WORKS CONTRACTING
 190 RALEIGH STREET
 WILMINGTON, NC

SITE DETAILS

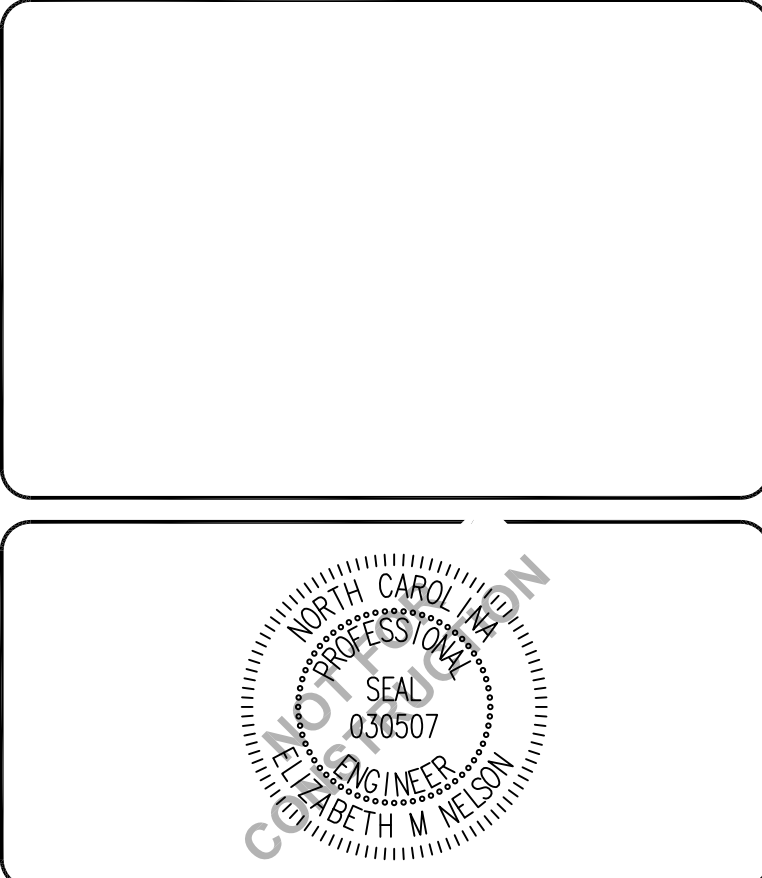
PROJECT NUMBER	SHEET NUMBER
275-77	D-500



NOTES:

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REVISIONS	DATE
C	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
B	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
A	ISSUED FOR REGULATORY REVIEW	EMN	02/21/17



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

Date: _____ Permit # _____
 Signed: _____

Approved Construction Plan
 Name: _____ Date: _____

Planning _____
 Traffic _____
 Fire _____

PROJECT NUMBER:	275-77
SCALE:	As Shown
DATE:	21 FEB 17

CIVIL WORKS CONTRACTING
 190 RALEIGH STREET
 WILMINGTON, NC

SITE DETAILS

PROJECT NUMBER	275-77
SHEET NUMBER	D-501

STANDARD DETAIL
PAVEMENT MARKINGS LINE TYPES

DATE: DECEMBER, 2011
 DRAWN BY: JSR
 CHECKED BY: BDR, P.E.
 SCALE: NOT TO SCALE

CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807

SD 11-01

STANDARD DETAIL
STREET SIGNS AND LOCATION

DATE: NOVEMBER, 2011
 DRAWN BY: JSR
 CHECKED BY: BDR, P.E.
 SCALE: NOT TO SCALE

CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807

SHEET 1 of 2 SD 15-03

SIGNS

- All signs shall meet the requirements of MUTCD and City Traffic Engineering in effect at the time of construction.
- All Traffic Control Signs including multi-use paths shall be fabricated with 0.080 inch aluminum blanks using high intensity prismatic reflective sheeting Type IV or better. STOP signs shall be a minimum of 30"x30".
- SPECIAL DESIGNATION signs by location and type shall adhere to City of Wilmington signage plan (ie. downtown, historic, cross-city trail, parks, riverfront, scenic by-way, parking, etc.) and all associated policies.
- POST MOUNTED STREET NAME SIGNS shall be fabricated with 9" extruded aluminum street name sign blanks using a standard cut-out. Minimum sign length is 18" long and increasing in 6" increments to 54" maximum as dictated by the number of letters in the name. The color scheme shall be white letters on a green background without a border. Generally, in the downtown and historic areas or as designated in the City of Wilmington signage plan the background shall be blue and contain a topper.
- Decorative sign posts shall consist of the NEX sign support system, 2" octagonal tube, 14 gauge, powder coated glossy black and include cap, post, base and wedge.
- All other sign posts shall be u-channel posts made of galvanized steel with 8" posts 2lbs/ft or 12" posts 3lbs/ft. Galvanized NEX post may be substituted with approval from the City Signs and Markings Engineer.
- OVERHEAD STREET NAME SIGNS shall be fabricated with 0.080 inch aluminum flat sign blanks 18" in height using a standard cut-out. Sign length will be dictated by the number of letters in the name. For mast-arm type traffic signal supports and other overhead support systems refer to the design plans for maximum sign length.
- All sign lettering, colors and fonts shall adhere to the MUTCD in effect at the time of construction. Florescent Yellow-Green shall be used on signs, in place of Yellow, when listed as an optional color in the MUTCD. Generally, the font will be FHWA series fonts (Highway Gothic.) Other font types require prior City Signs and Markings Engineer approval.

LOCATION

- Sign locations depend on the edge of road condition. Generally, signs shall be a minimum 2' from face of a vertical curb, 4' from front of slope face curb, and 6' from edge of pavement without curb. Signs shall not be located more than 12' from any of these locations.
- Sign posts installed in dirt shall be buried a minimum of 36". Octagonal posts shall utilize an anti-spin device, 6" in length minimum. Sign posts installed in concrete or brick shall utilize a base cast in concrete 24" x 12" diameter.
- Street name signs shall be installed 8'-6" from the ground to the bottom of the sign. Street name signs co-located with STOP signs shall be installed above the STOP sign. A 5" space shall be maintained between the STOP sign and a Street name sign that is parallel to the STOP sign face. All other signs should be mounted per MUTCD guidelines for Urban Areas.

STANDARD DETAIL
STREET SIGNS AND LOCATION

DATE: NOVEMBER, 2011
 DRAWN BY: JSR
 CHECKED BY: BDR, P.E.
 SCALE: NOT TO SCALE

CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807

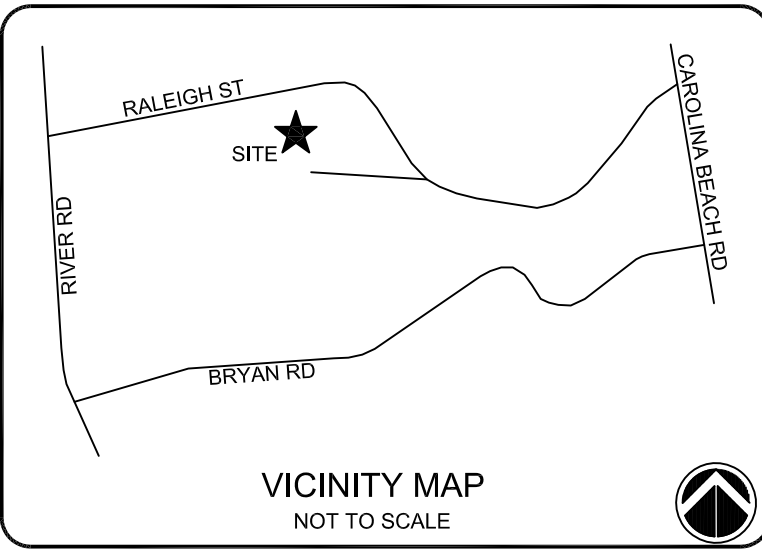
SHEET 2 of 2 SD 15-03

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

Date: _____ Permit # _____
 Signed: _____

Approved Construction Plan
 Name: _____ Date: _____

Planning _____
 Traffic _____
 Fire _____



NOTES:

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REVISIONS
C	REVISED PER CITY OF WILMINGTON COMMENTS	EMN 09/27/17
B	ISSUED FOR REGULATORY REVIEW	EMN 08/30/17
A	ISSUED FOR REGULATORY REVIEW	EMN 02/21/17
REV. #	DESCRIPTION	REV. BY DATE

STANDARD DETAIL
PARKING FACILITY EQUAL TO OR GREATER THAN 25 STALLS

DATE: 2001
 DRAWN BY: JSR/CMR
 CHECKED BY: B.P., P.E.
 SCALE: NOT TO SCALE

CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807

SHEET 1 OF 2 SD 15-12

- Variations on stall widths, angle and other dimensions will be allowed only upon approval of the Traffic Engineer.
- Wheel stops shall be required three (3) feet from the end of parking stall when using eighteen (18) feet deep stalls.
- Curbing, crossties, utility poles, etc., can be used as wheel stops. (Must be anchored down)
- All medians shall be a minimum of six (6) feet wide.
- Parking bays which terminate at a circulation way shall provide for a minimum turning radius of twenty-five (25) feet, as measured from the edge of the travel portion.
- All parking stall markings and lane arrows shall be white.
- All other pavement markings, signs or other traffic control devices shall conform to the latest edition and/or interpretation of the Manual on Uniform Traffic Control Devices (MUTCD).
- No obstructions will be allowed adjacent to a parking stall which would prevent safe ingress and egress from a parked vehicle.
- Parking in fire lanes and in non-residential driveways shall be prevented by standard signs and as needed by portable barricades.

STANDARD DETAIL
PARKING FACILITY DESIGN NOTES

DATE: 2001
 DRAWN BY: JSR/CMR
 CHECKED BY: B.P., P.E.
 SCALE: NOT TO SCALE

CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, NC 28402
 (910) 341-7807

SD 15-13

TOTAL PARKING SPACES PROVIDED	MINIMUM NUMBER OF ACCESSIBLE SPACES REQUIRED	MINIMUM NUMBER OF ACCESSIBLE SPACES REQUIRED TO BE VAN ACCESSIBLE
1 TO 25	1	1
26 TO 50	2	1
51 TO 75	3	1
76 TO 100	4	1
101 TO 150	5	1
151 TO 200	6	1
201 TO 300	7	1
301 TO 400	8	1
401 TO 500	9	2
501 TO 1000	2% OF TOTAL	1 IN EVERY 8 ACCESSIBLE SPACES
1001 AND OVER	20 PLUS 1 FOR EACH 100 OVER 1000	1 IN EVERY 8 ACCESSIBLE SPACES

SECTION 4.1.2 (5) OF THE AMERICANS WITH DISABILITIES ACT (ADA). SEE 4.1.2 (5) (d) FOR MEDICAL CARE FACILITIES

NOTES:

- ALL 12"x18" ACCESSIBLE SIGNS (R7-8 & R7-1) SHALL BE MOUNTED AT 7 FEET FROM GRADE TO BOTTOM EDGE OF SIGN FACE (MUTCD). MOUNTING HEIGHT CAN BE REDUCED TO 5 FEET IF PLACED IN AN AREA BETWEEN SIDEWALK AND BUILDING FACE IN WHICH PEDESTRIANS ARE NOT EXPECTED TO USE.
- REFER TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) U.S. DEPARTMENT OF TRANSPORTATION AND NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUPPLEMENT.
- IF ACCESSIBLE ROUTE IS A RAISED SIDEWALK AREA, THEN RAMPS ARE REQUIRED AT LOADING ZONE AREA.

ACCESSIBLE PARKING/ SIGNING REQUIREMENTS
 NOT TO SCALE

TYPE	DESCRIPTION	MINIMUM DIMENSIONS
A	RESERVED PARKING	MUTCD R7-8 12"x18"
B	DISABLED PARKING	MUTCD R7-1 12"x18"
C	RESERVED PARKING	MUTCD R7-8 12"x18"
D	VAN ACCESSIBLE	R7-8a 12"x6"
E	REQUIRED ACCESSIBLE RESERVED PARKING SIGN	R7-8b 12"x6"
F	MAXIMUM PENALTY \$ 250	R7-8d 12"x9"
G	MAXIMUM PENALTY \$ 250	R7-8d 12"x9"

SEE STANDARD NO. 50.108 & 50.10C FOR SUPPLEMENTAL SIGN DETAIL

ASPHALT PAVEMENT DETAIL
 NOT TO SCALE

1" SF 9.5A
 2.5" TYPE I-19.0B ASPHALT
 6" ABC STONE
 TOP 12" OF SUBGRADE TO BE COMPACTED TO 95% DRY DENSITY, STANDARD PROCTOR

CONCRETE WHEEL STOP
 NOT TO SCALE

TWO 24" LG. #4 REBARS DRIVEN INTO PAVEMENT TO ANCHOR WHEELSTOPS
 3,000 PSI CONCRETE
 NOTE: WHEELSTOPS MAY VARY IN NON-ESSENTIAL DIMENSIONS OR DETAILS

CITY OF WILMINGTON
 NORTH CAROLINA
 PROFESSIONAL SEAL
 030507
 ENGINEER
 GABRIEL M. NELSON

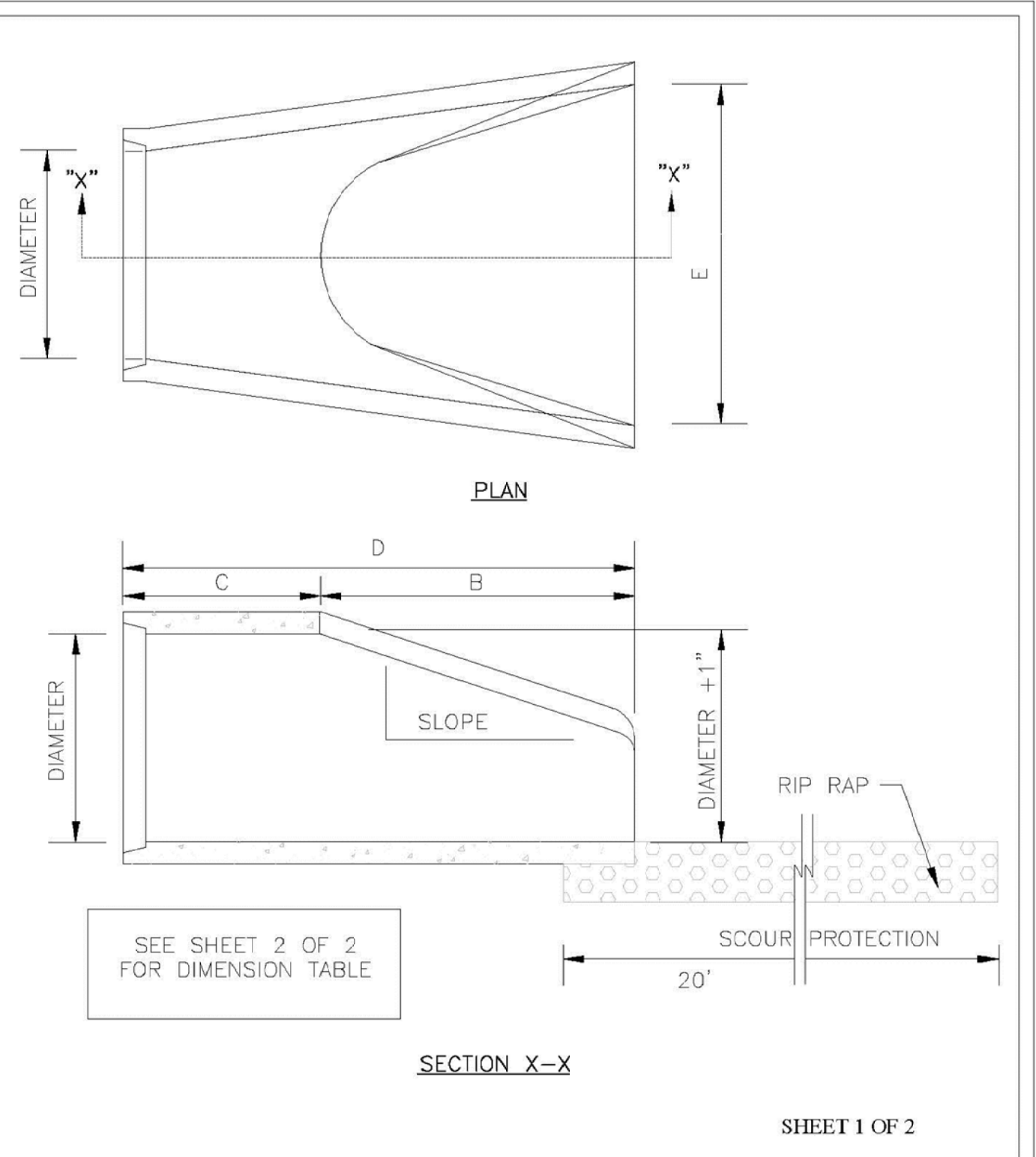
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 N.C. LICENSE # C-1621

PROJECT NUMBER:	275-77
SCALE:	As Shown
DATE:	21 FEB 17

CIVIL WORKS CONTRACTING
 190 RALEIGH STREET
 WILMINGTON, NC

SITE DETAILS

PROJECT NUMBER	275-77
SHEET NUMBER	D-502



SHEET 1 OF 2

DATE: 2001	STANDARD DETAIL	CITY OF WILMINGTON ENGINEERING OFFICE 305 CHESTNUT STREET PO. BOX 1810 WILMINGTON, N.C. 28402 (910) 341-7807	
DRAWN BY: JSR/CMR	FLARED END SECTION OUTLET		
CHECKED BY: B.P., P.E.			
SCALE: NOT TO SCALE			SD 1-17

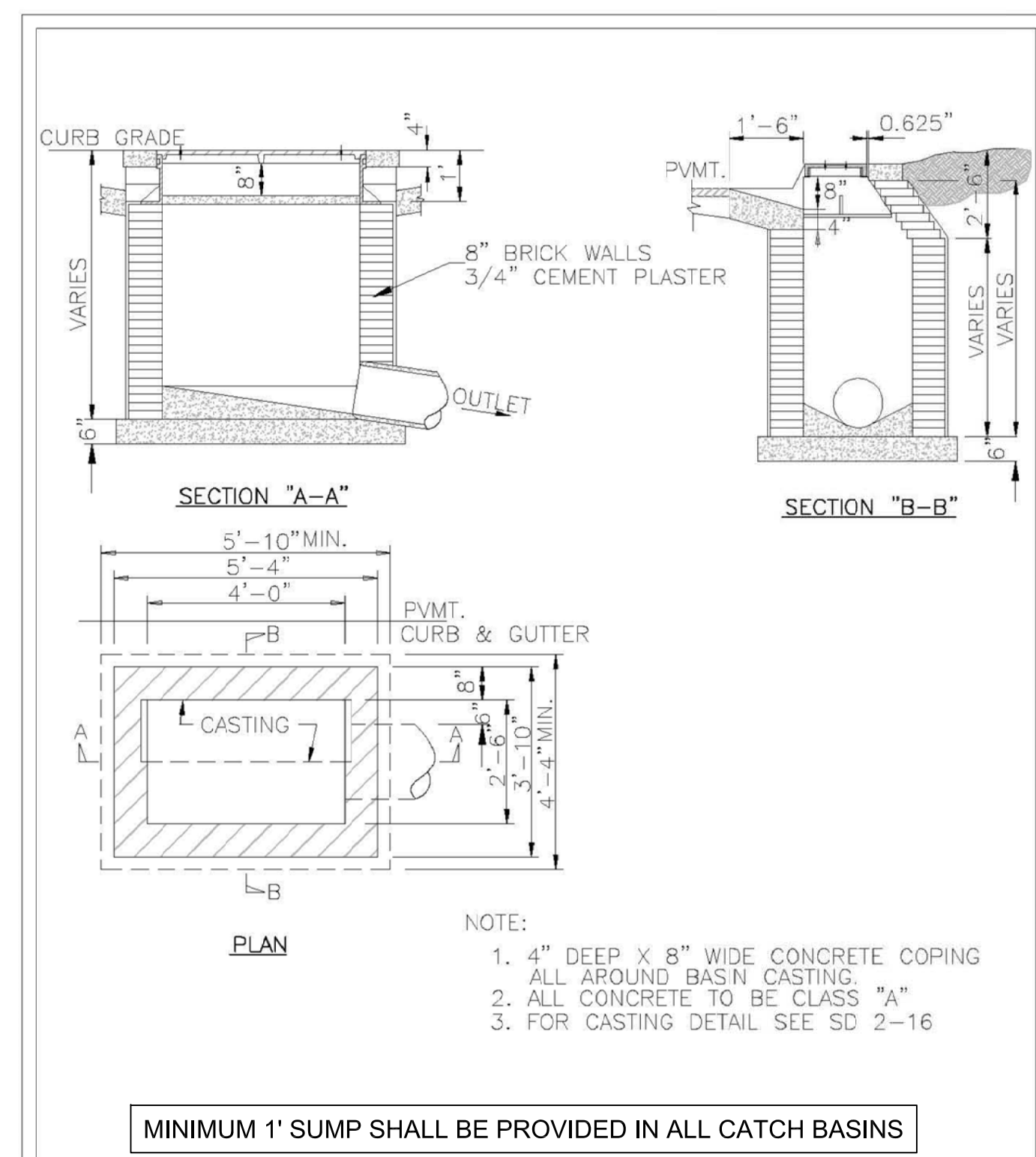
NOTE:
1. STRUCTURAL DESIGN OF END SECTION SHALL CONFORM WITH THAT OF STANDARD REINFORCED CONCRETE.

PIPE DIAMETER	WALL THICKNESS	SLOPE	B	C	D	E	UNIT WEIGHT
12	2 1/4	3:1	24	49	73	24	730
15	2 1/4	3:1	27	46	73	30	910
18	2 1/2	3:1	27	46	73	36	1190
21	2 3/4	3:1	36	37	73	42	1370
24	3	3:1	42	31 1/2	73 1/2	48	1770
27	3 1/4	3:1	48	25 1/2	73 1/2	54	2130
30	3 1/2	3:1	54	19 3/4	73 3/4	60	2380
33	3 3/4	3:1	60	36	96	66	3870
36	4	3:1	63	34 3/4	97 3/4	72	5320
42	4 1/2	3:1	63	35	98	78	5920
48	5	3:1	72	26	98	84	7470
54	5 1/2	2.4:1	66	34	100	90	8810
60	6	2:1	60	39	99	96	11180
72	7	2:1	78	21	99	108	13980

DIMENSIONS IN INCHES WEIGHTS IN POUNDS

SHEET 2 OF 2

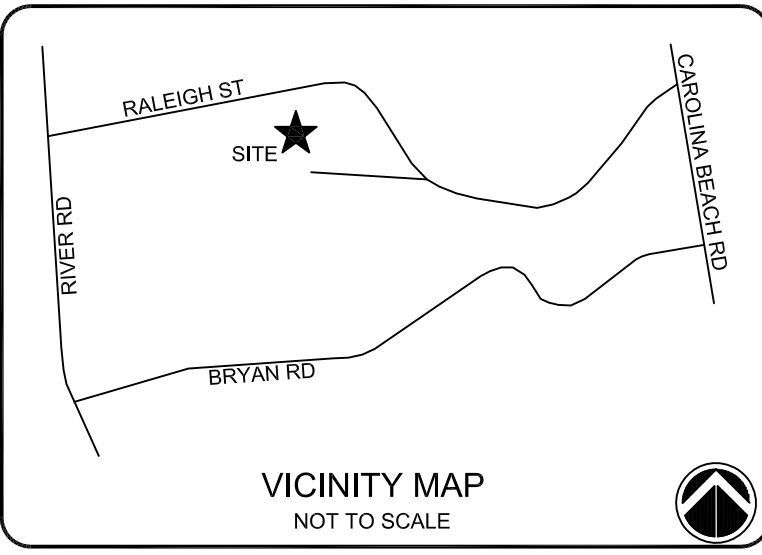
DATE: 2001	STANDARD DETAIL	CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807	
DRAWN BY: JSR/CMR	FLARED END SECTION OUTLET DIMENSION TABLE		
CHECKED BY: B.P., P.E.			
SCALE: NOT TO SCALE			SD 1-17



NOTE:
1. 4" DEEP X 8" WIDE CONCRETE COPING ALL AROUND BASIN CASTING.
2. ALL CONCRETE TO BE CLASS "A"
3. FOR CASTING DETAIL SEE SD 2-16

MINIMUM 1' SUMP SHALL BE PROVIDED IN ALL CATCH BASINS

DATE: 2006	STANDARD DETAIL	CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807	
DRAWN BY: JSR/CMR	CATCH BASIN		
CHECKED BY: B.P., P.E.			
SCALE: NOT TO SCALE			SD 2-01

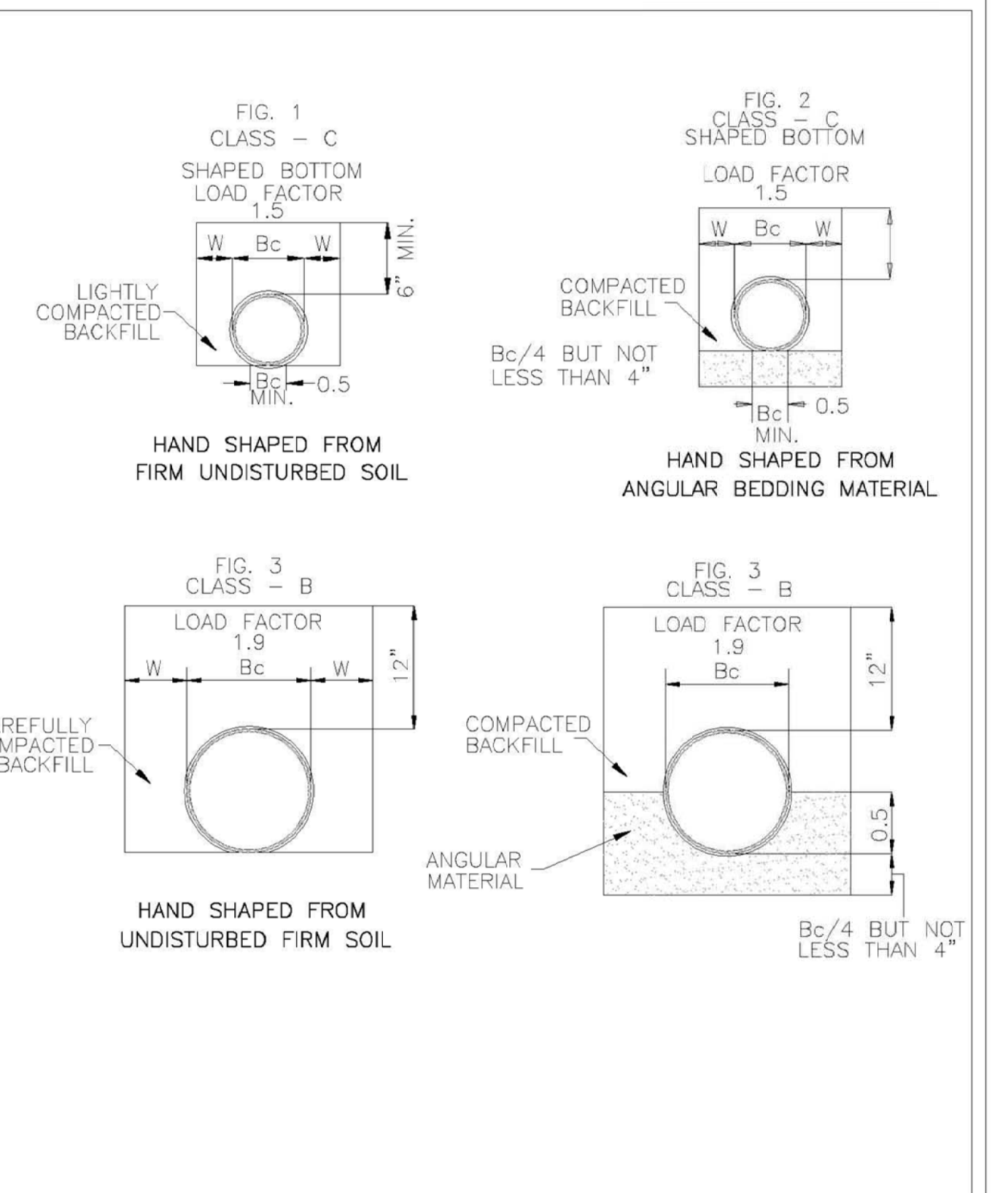


VICINITY MAP
NOT TO SCALE

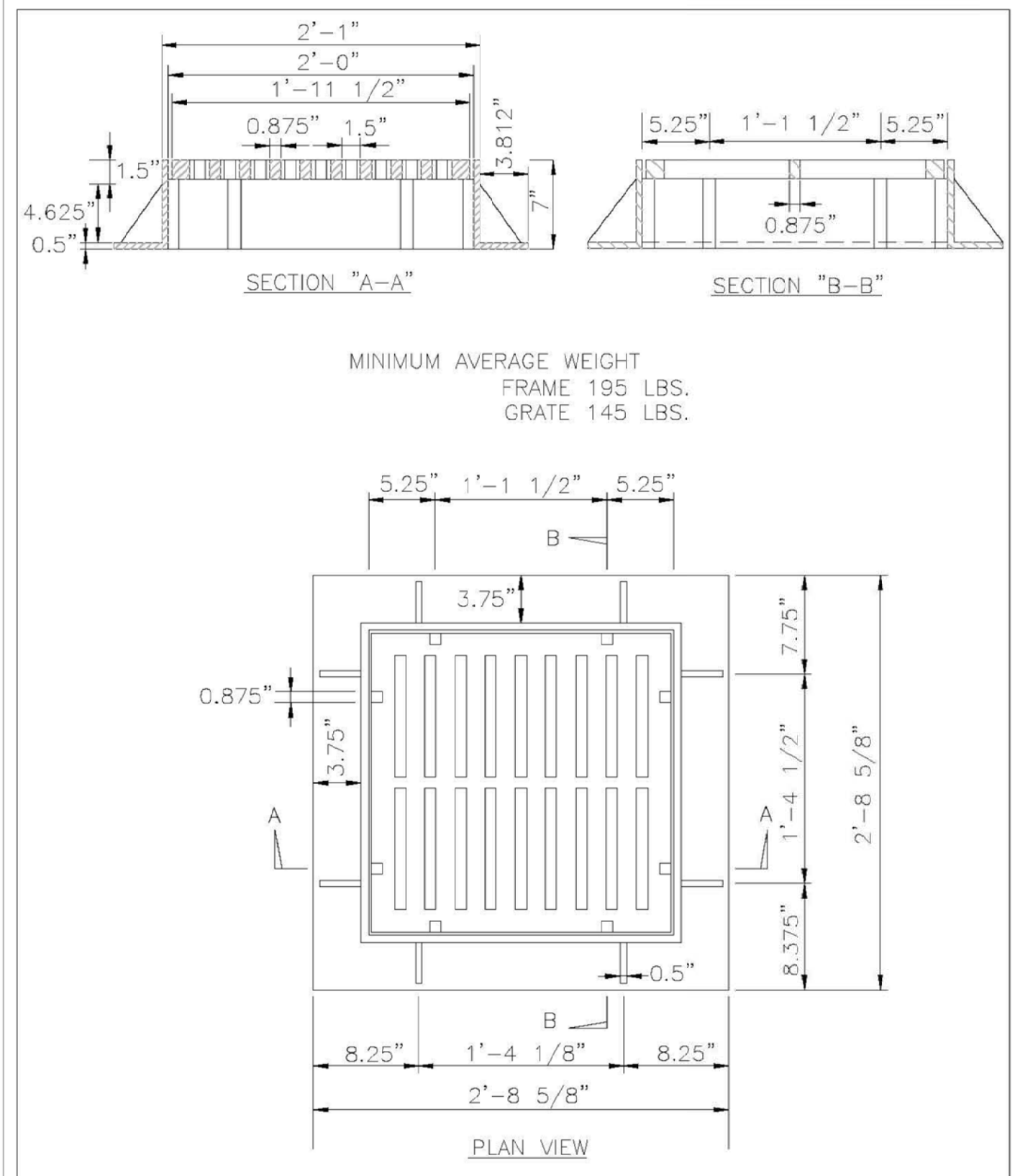
NOTES:

ISSUED FOR REGULATORY REVIEW

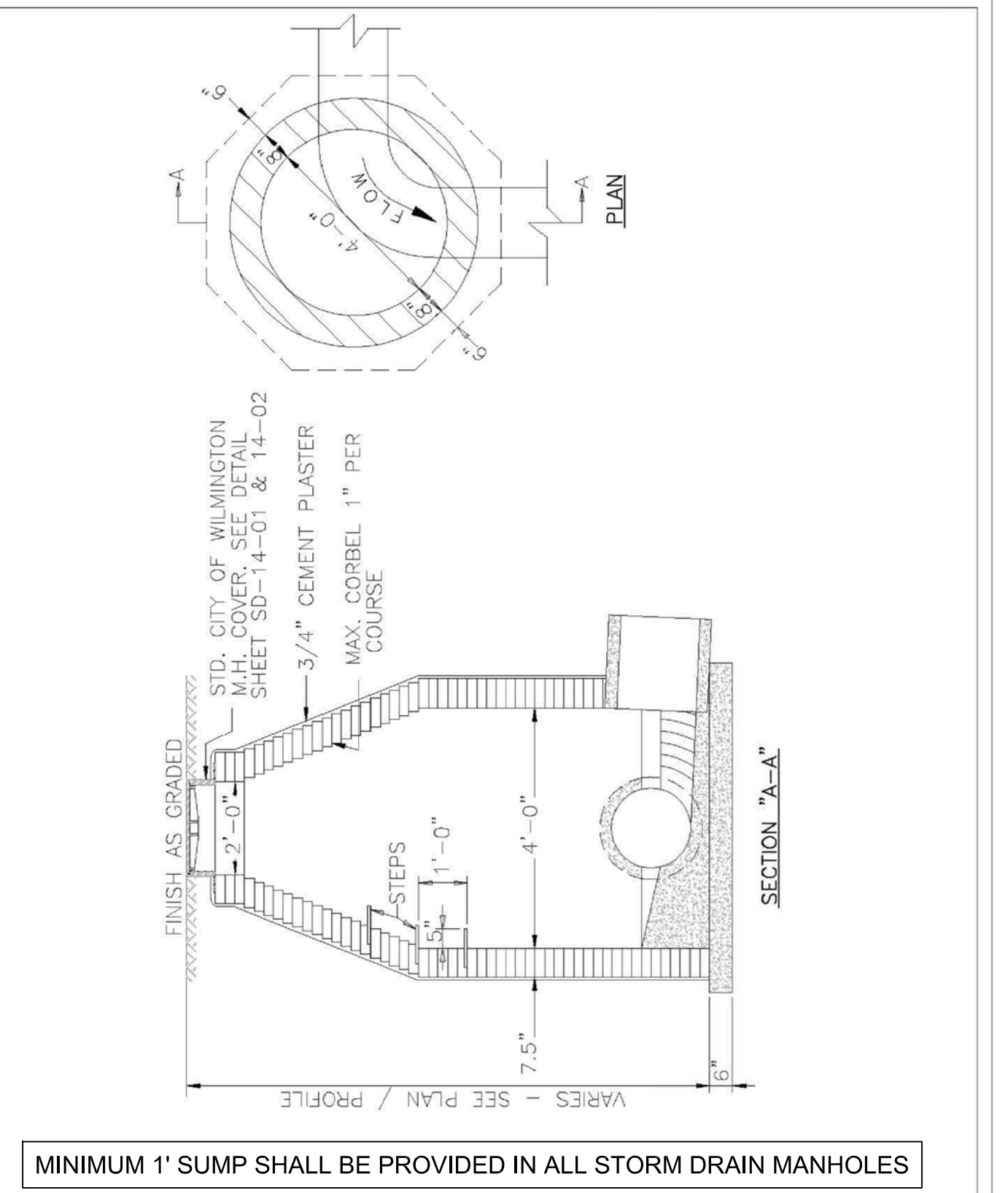
REV. #	DESCRIPTION	REVISIONS	DATE
C	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
B	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
A	ISSUED FOR REGULATORY REVIEW	EMN	02/21/17



DATE: 2001	STANDARD DETAIL	CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807	
DRAWN BY: JSR/CMR	GUIDELINES FOR BEDDING DETAILS, STORM SEWER CLASSES (B & C)		
CHECKED BY: B.P., P.E.			
SCALE: NOT TO SCALE			SD 2-17



DATE: 2001	STANDARD DETAIL	CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807	
DRAWN BY: JSR/CMR	GRILL BASIN CASTINGS		
CHECKED BY: B.P., P.E.			
SCALE: NOT TO SCALE			SD 14-04



DATE: 2001	STANDARD DETAIL	CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807	
DRAWN BY: JSR/CMR	GUIDELINES FOR STORM DRAIN MANHOLE		
CHECKED BY: B.P., P.E.			
SCALE: NOT TO SCALE			SD 2-03

PATH: P:\275-77\CWC OFFICE BLDG RALEIGH ST - ENGINEERING\DWG\CONSTRUCTION\275-77 DETAILS.DWG



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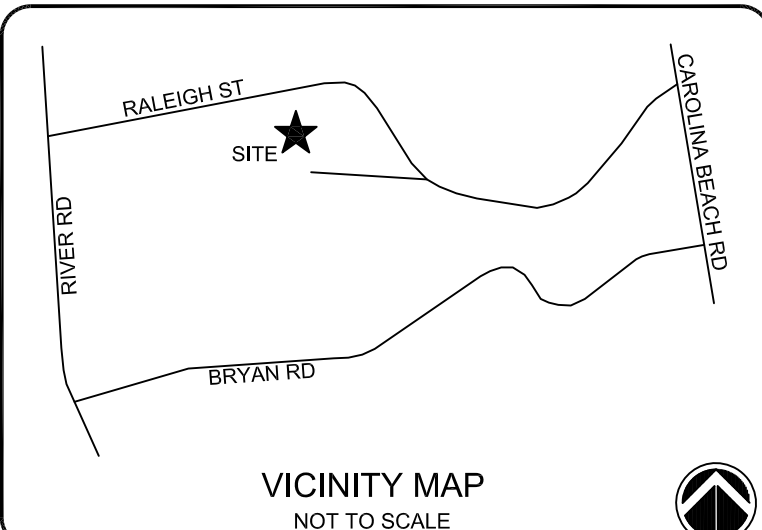
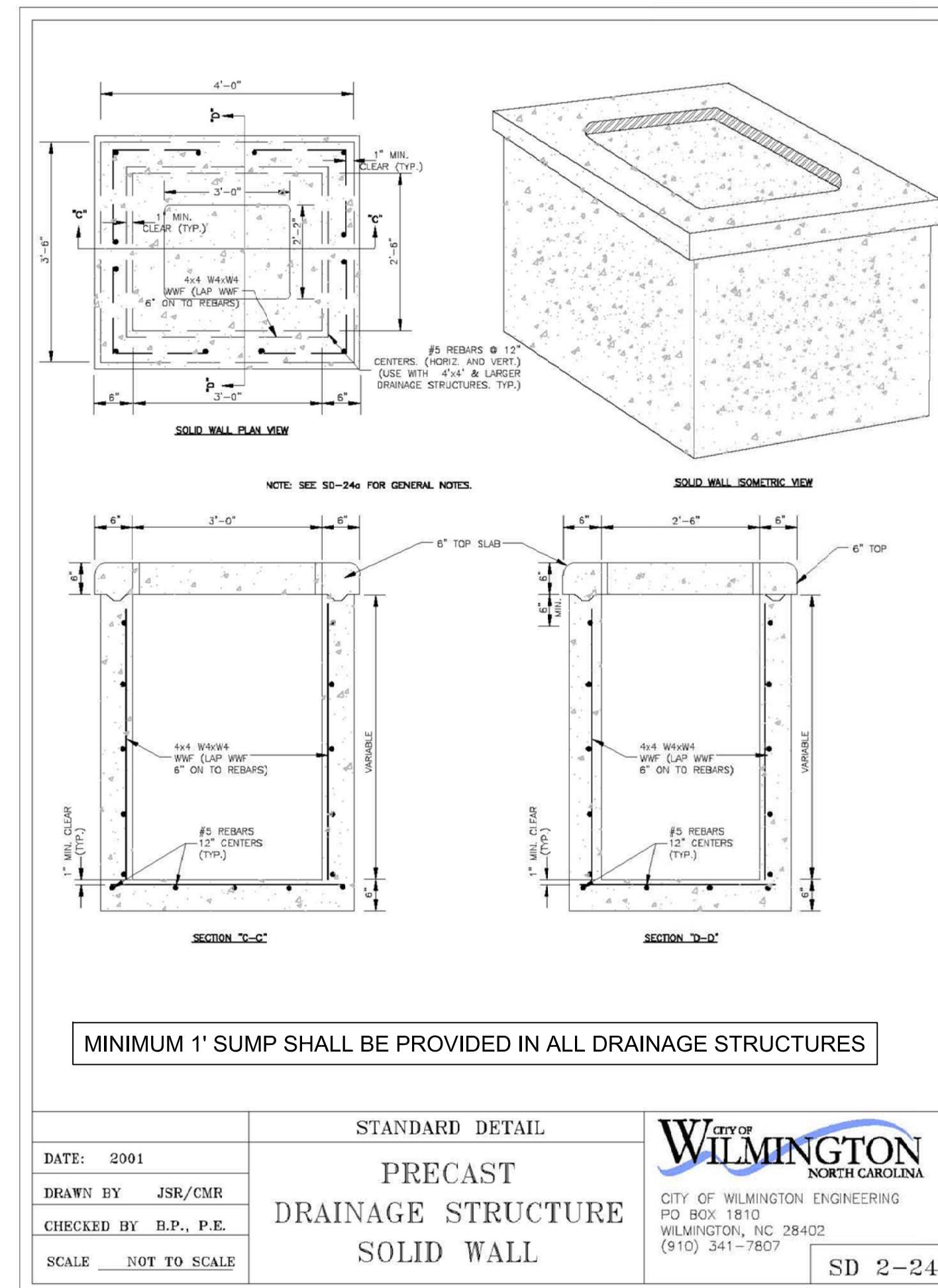
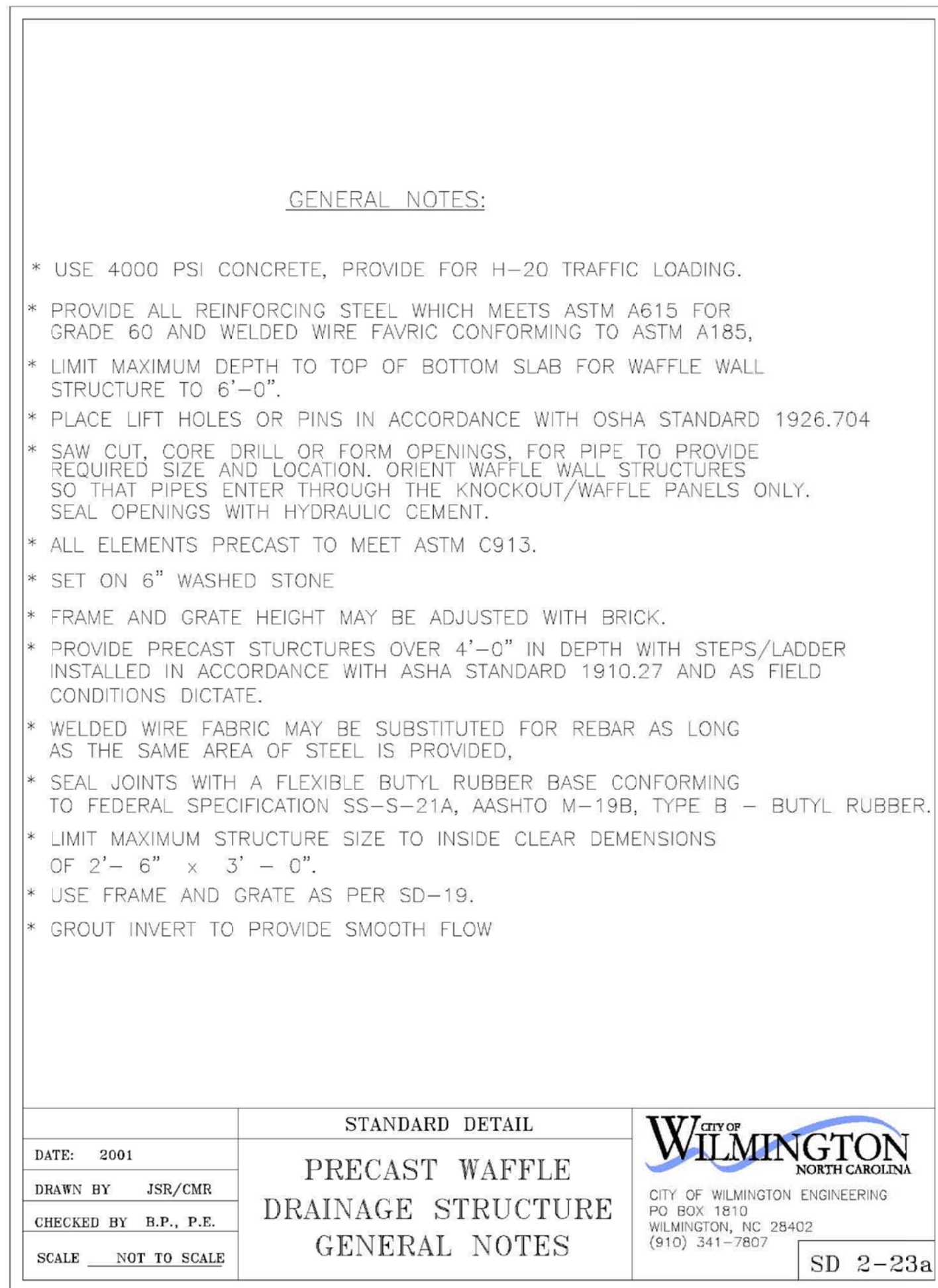
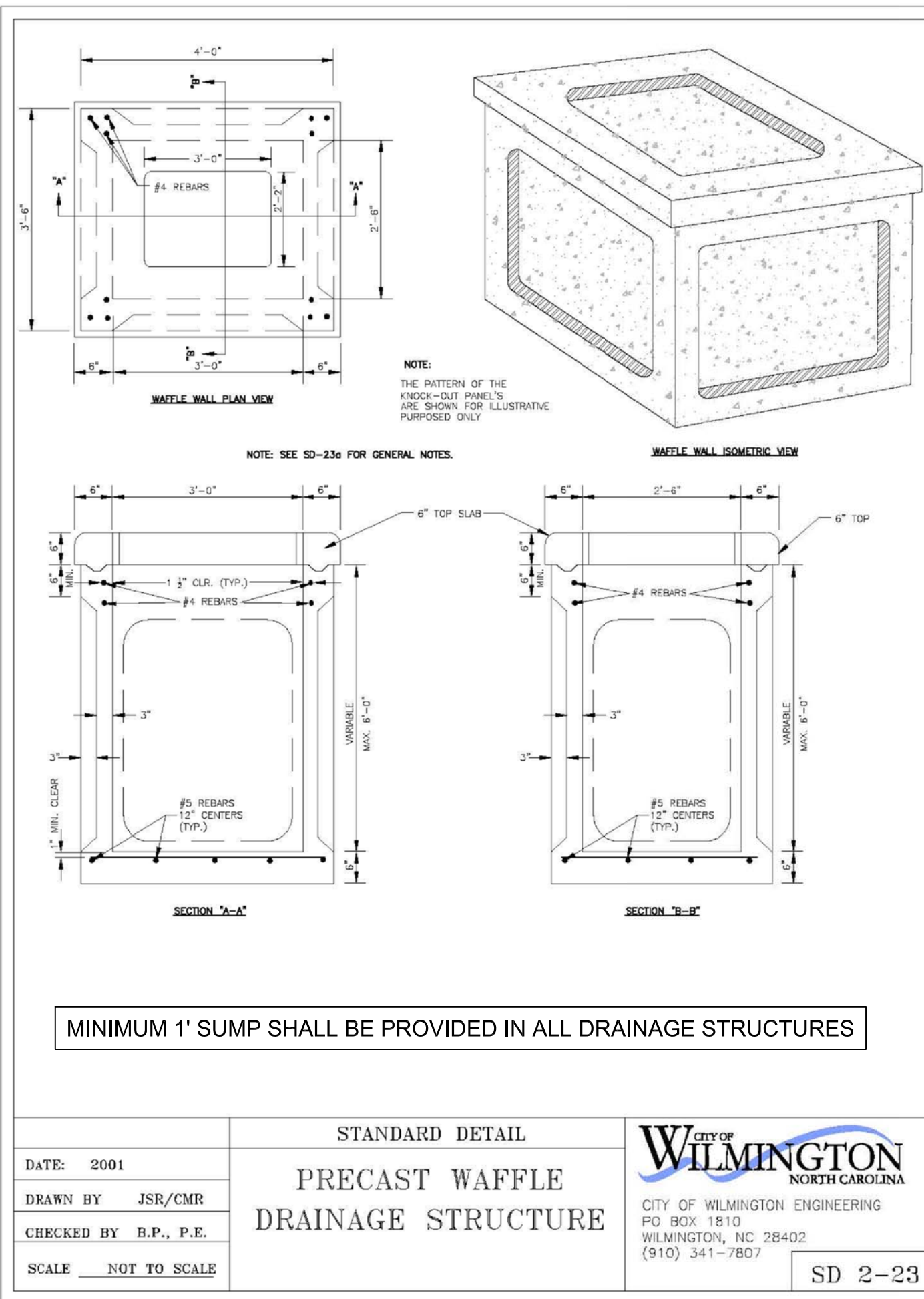
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____

CIVIL WORKS CONTRACTING
190 RALEIGH STREET
WILMINGTON, NC

STORMWATER DETAILS

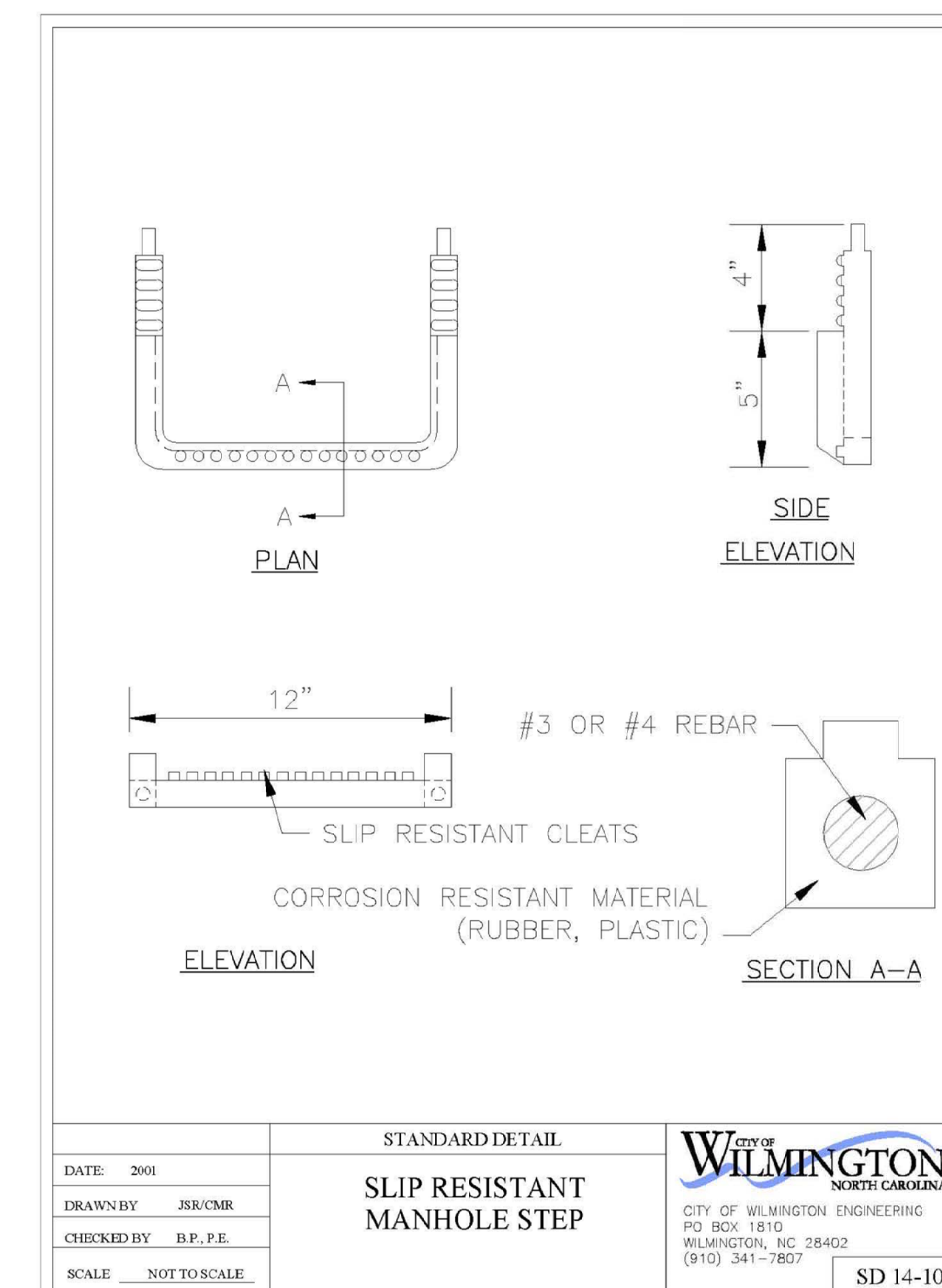
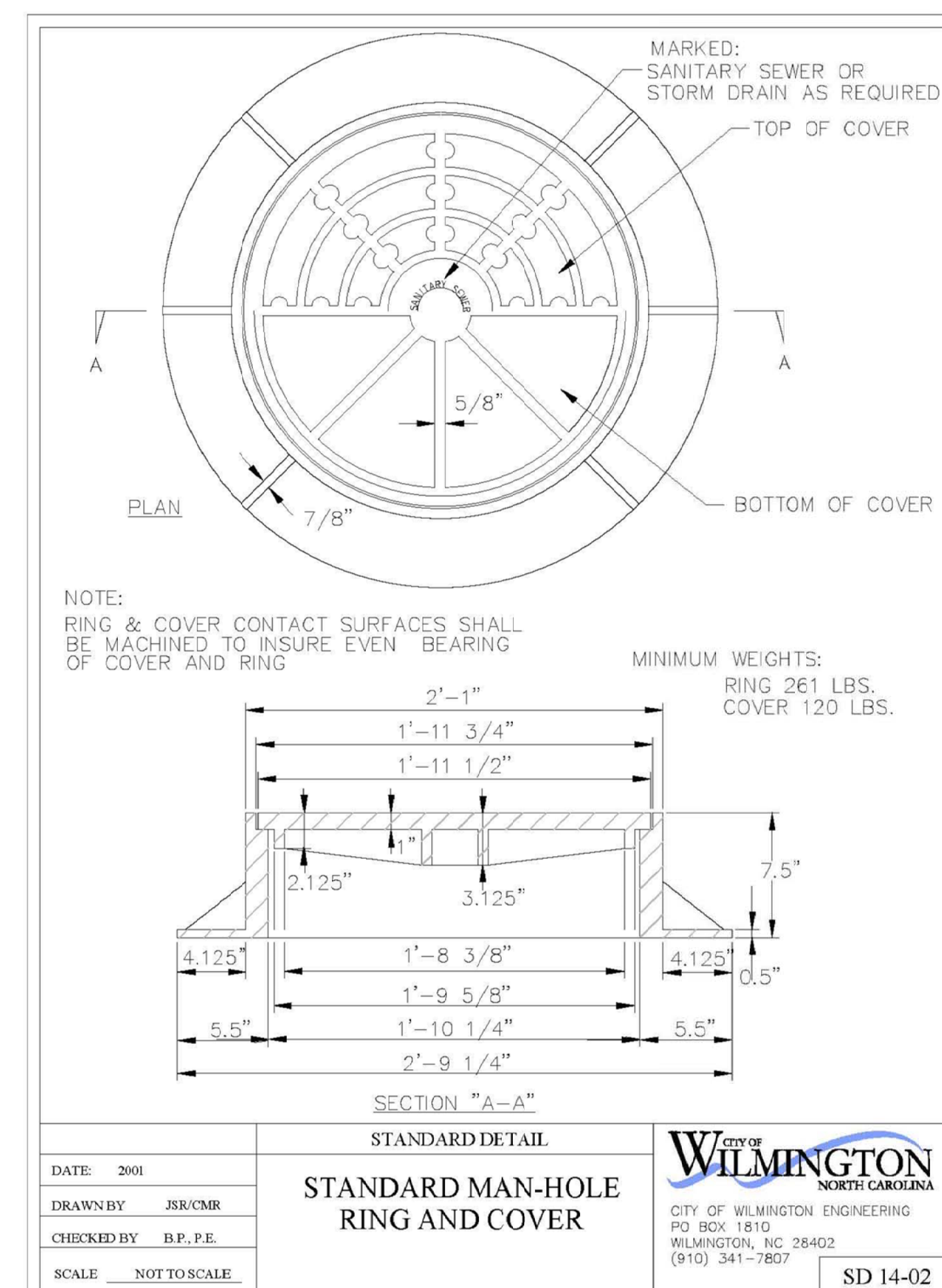
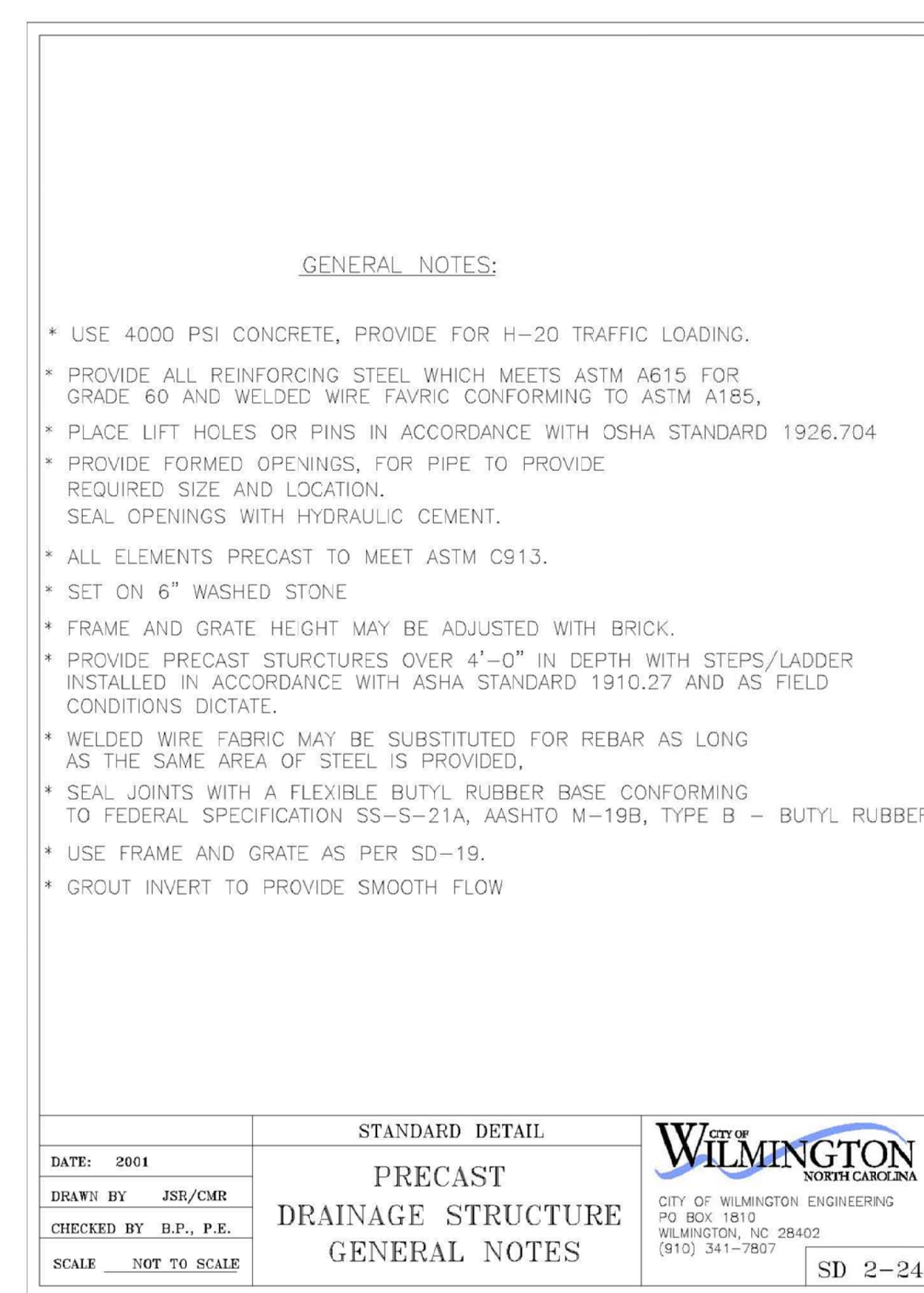
PROJECT NUMBER: 275-77
SHEET NUMBER: D-503



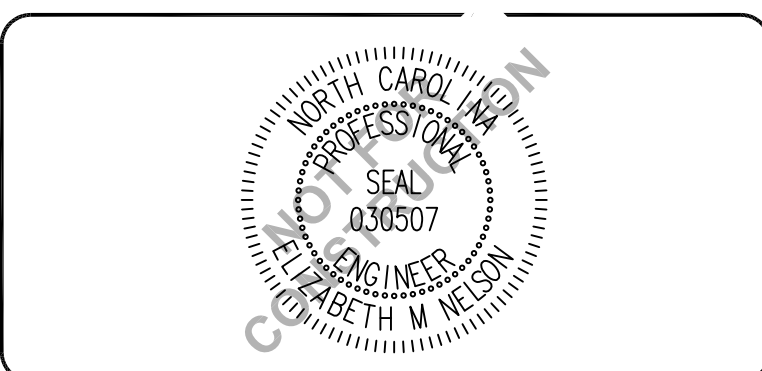
NOTES:

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REV. #	DESCRIPTION	REV. BY	DATE
C	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/27/17
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REVISIONS



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PROJECT NUMBER:	275-77
SCALE:	As Shown
DATE:	21 FEB 17

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190 RALEIGH STREET
WILMINGTON, NC

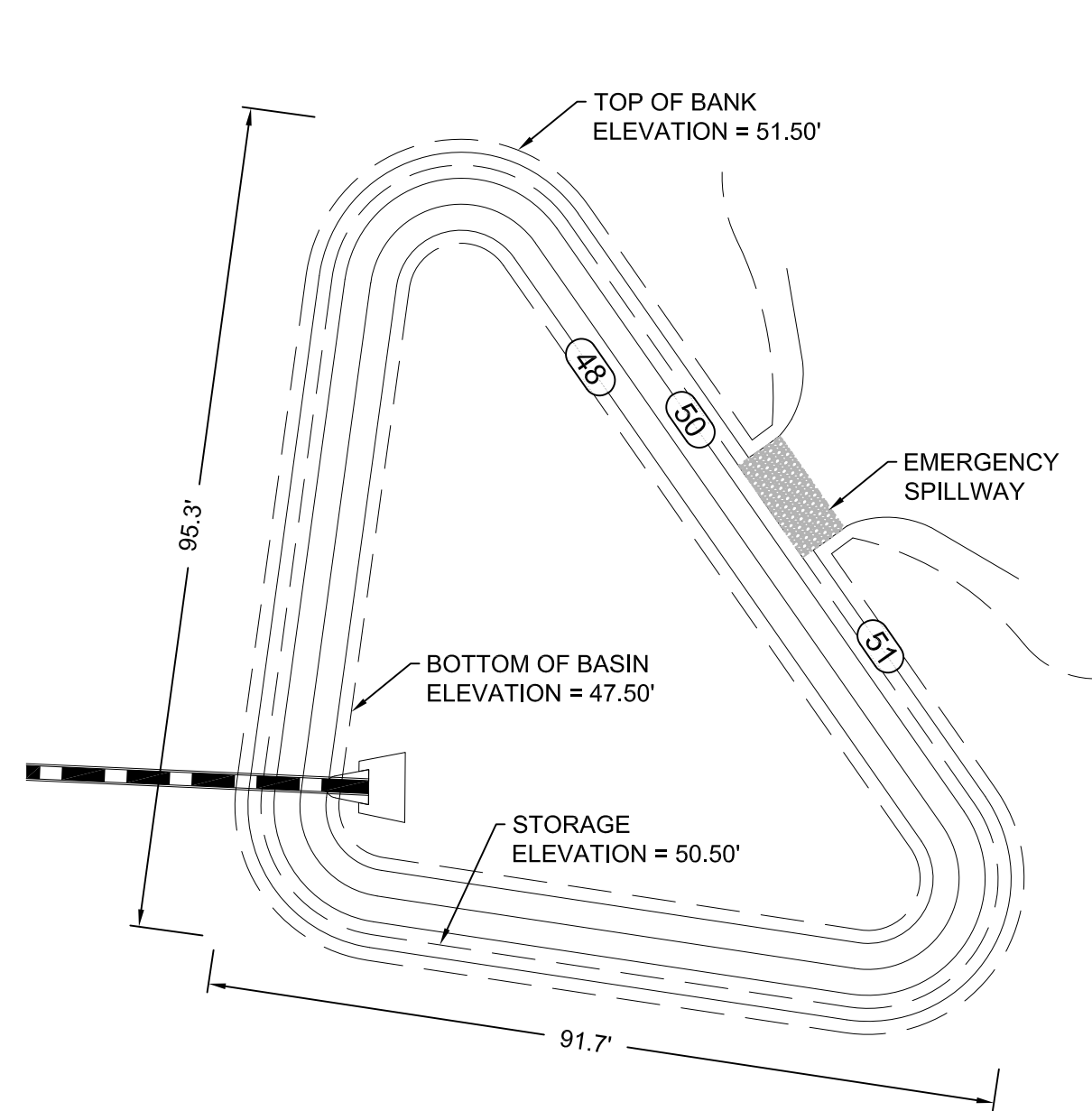
WILMINGTON NORTH CAROLINA
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

Approved Construction Plan
Name: _____ Date: _____
Planning _____
Traffic _____
Fire _____

STORMWATER DETAILS

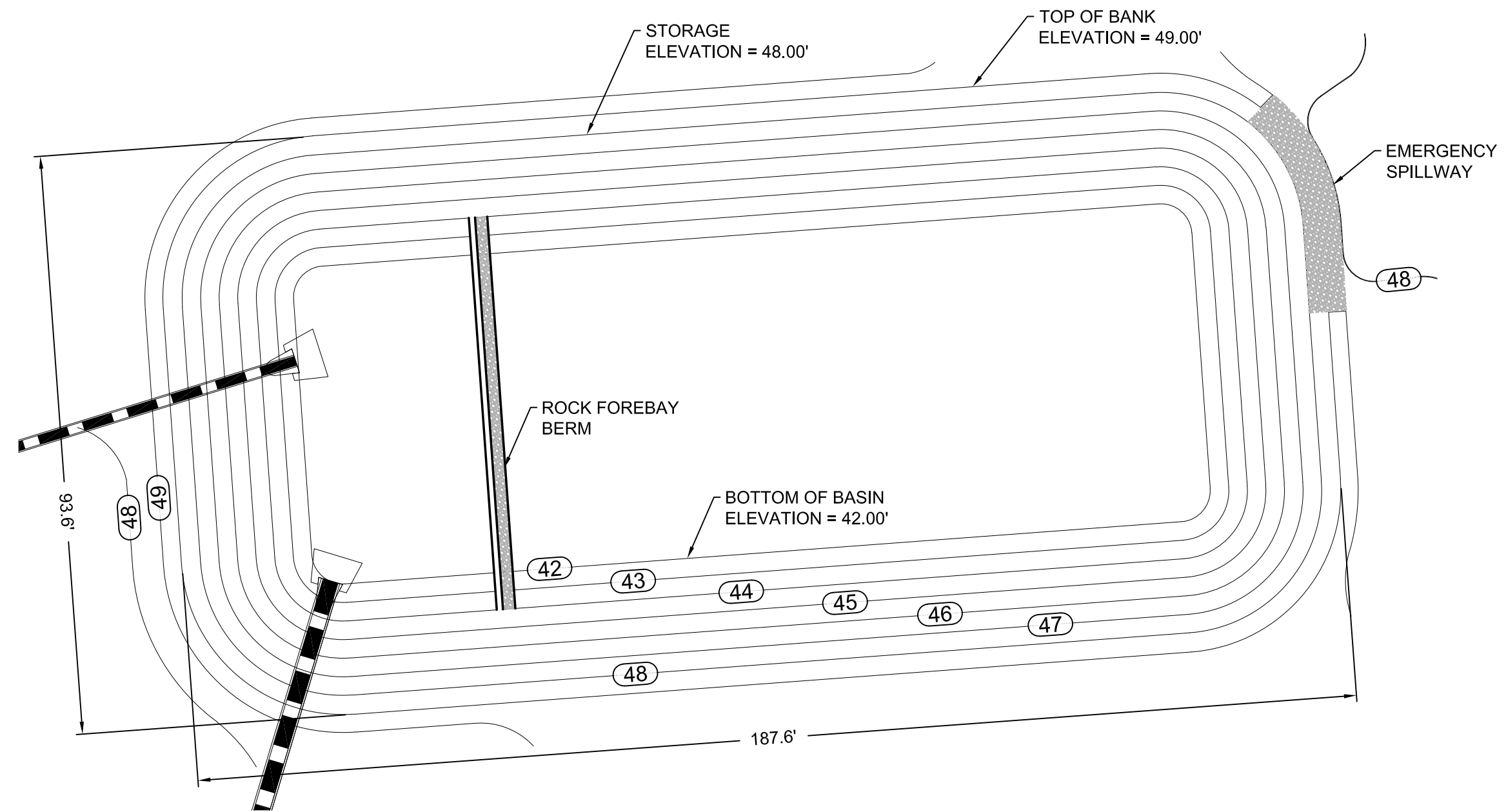
PROJECT NUMBER	275-77
SHEET NUMBER	D-504

PATH: P:\275\275-77 CWC OFFICE BLDG RALEIGH ST - ENGINEERING\DWG\CONSTRUCTION\275-77 DETAILS.DWG



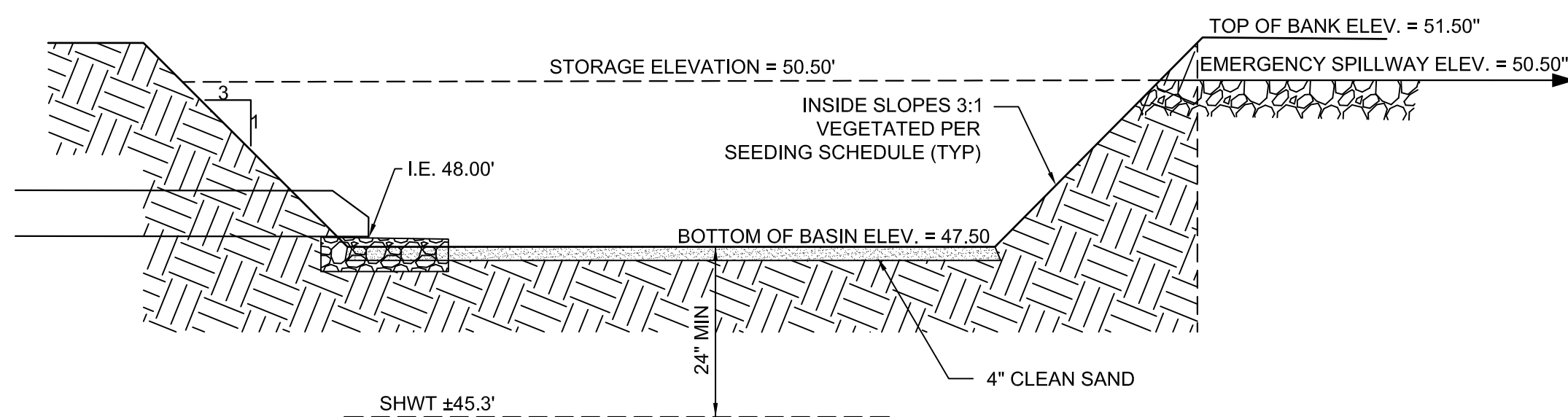
INFILTRATION BASIN #1 PLAN VIEW

SCALE 1" = 20'



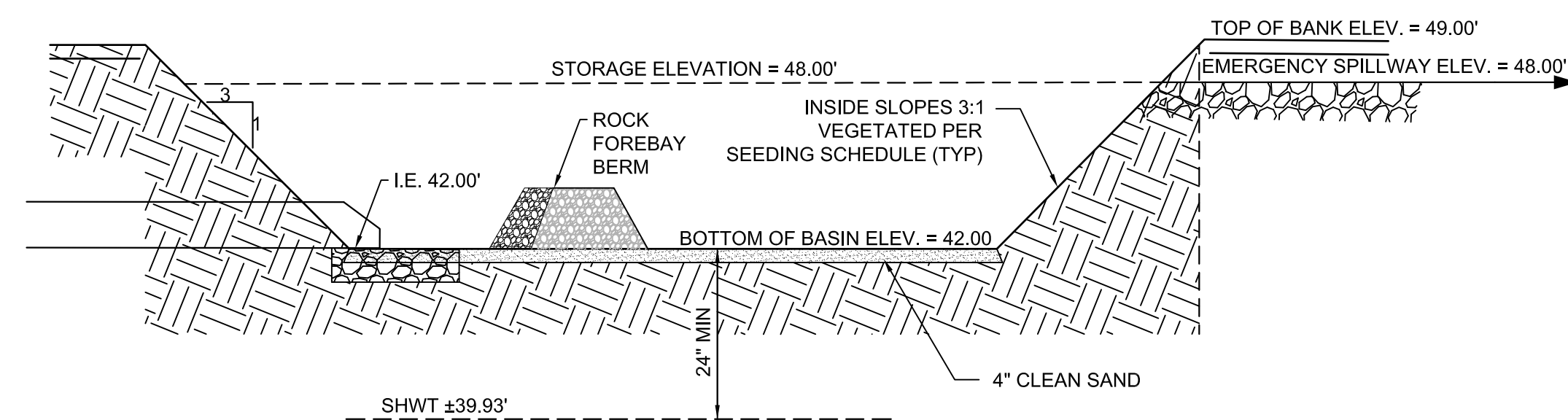
INFILTRATION BASIN #2 PLAN VIEW

SCALE 1" = 20'



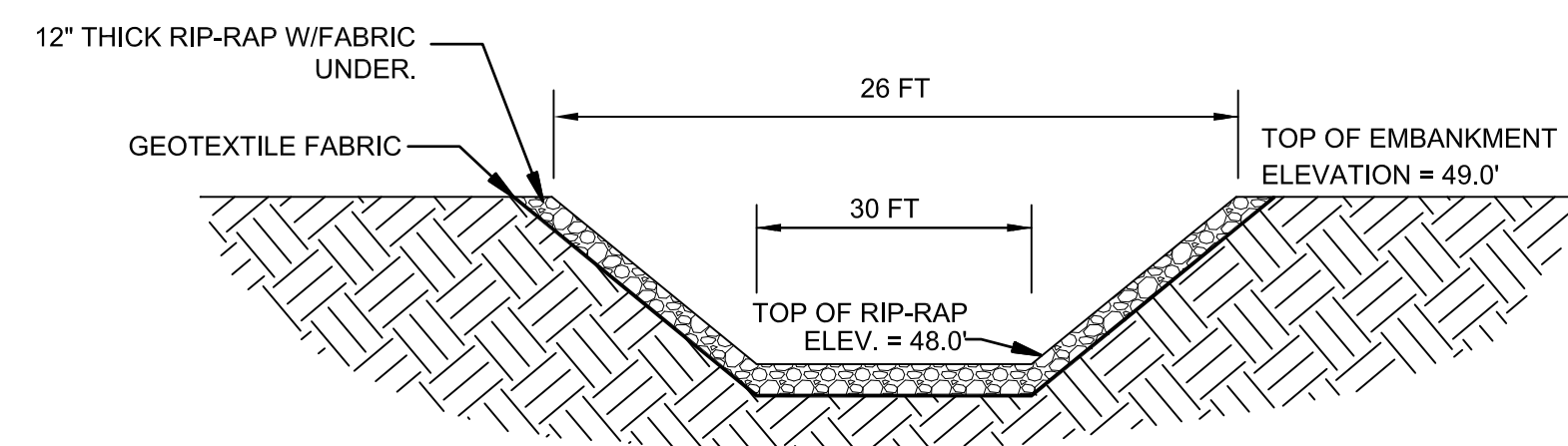
INFILTRATION BASIN #1 PROFILE VIEW

NOT TO SCALE



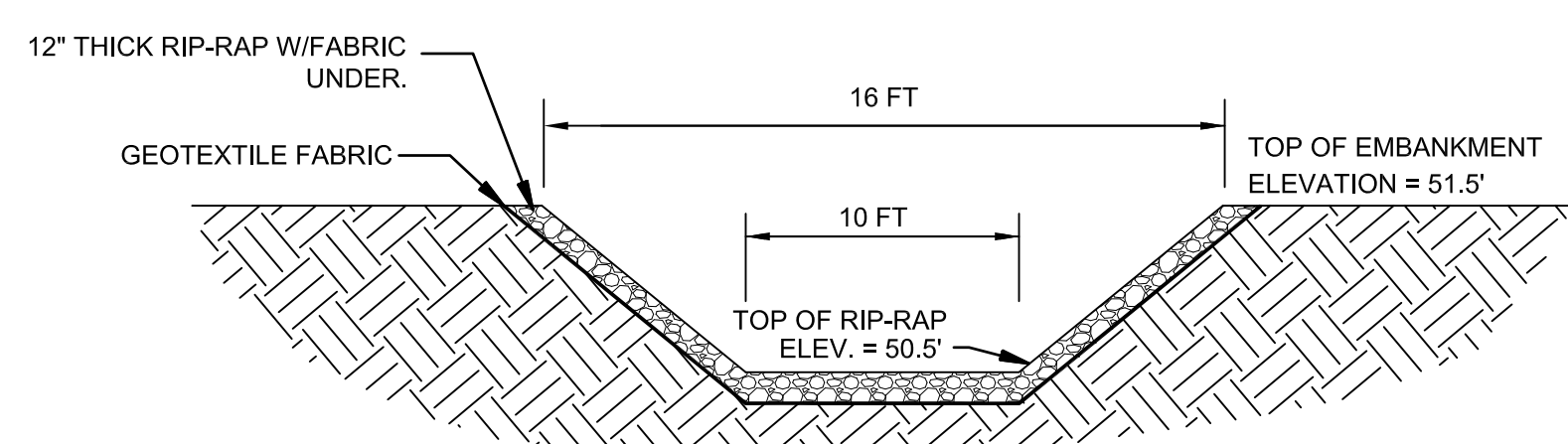
INFILTRATION BASIN #2 PROFILE VIEW

NOT TO SCALE



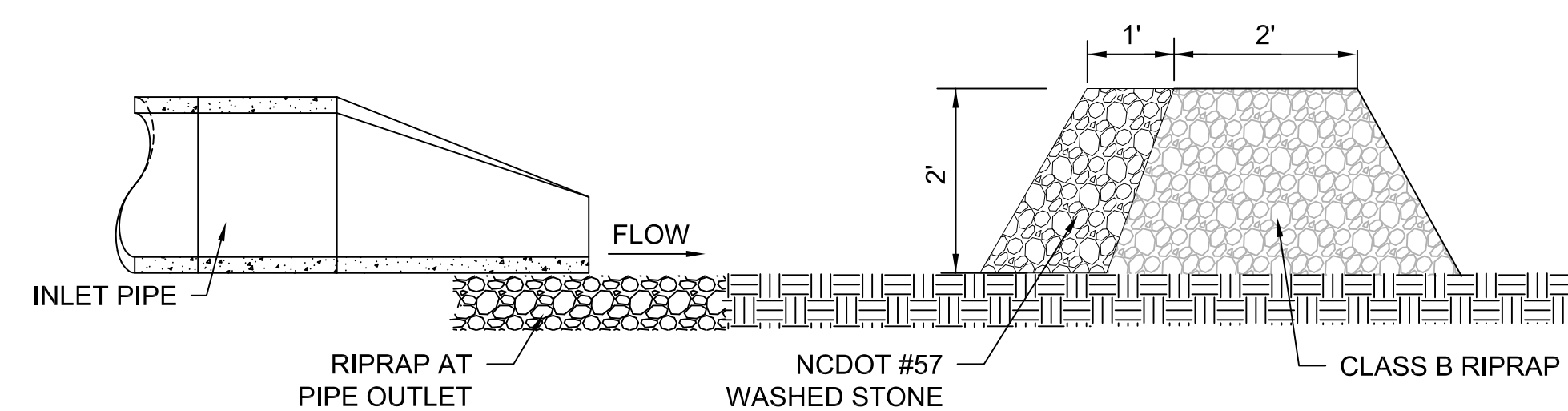
EMERGENCY SPILLWAY FOR INFILTRATION BASIN #2

NOT TO SCALE




EMERGENCY SPILLWAY FOR INFILTRATION BASIN #1

NOT TO SCALE

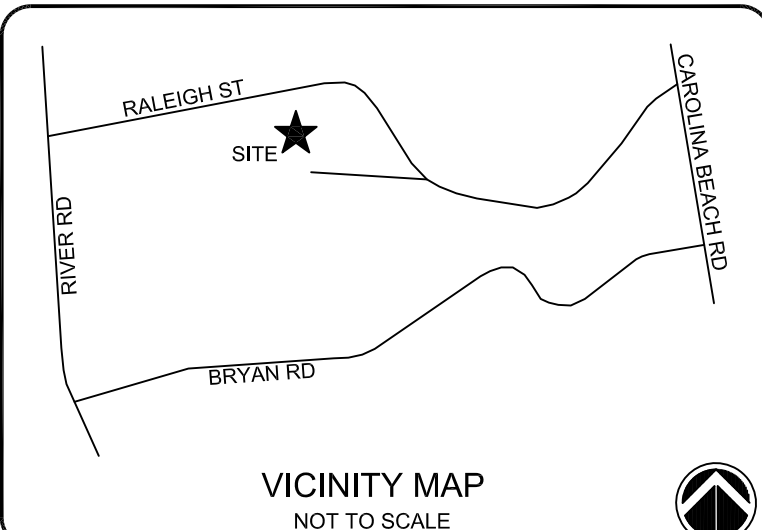


ROCK FOREBAY BERM

NOT TO SCALE


 Public Services • Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN
 Date: _____ Permit # _____
 Signed: _____

Approved Construction Plan
 Name _____ Date _____
 Planning _____
 Traffic _____
 Fire _____



NOTES:

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 WILMINGTON, NC

STORMWATER DETAILS

PROJECT NUMBER: 275-77
 SHEET NUMBER: D-505

PATH: P:\275\275-77 CWC OFFICE BLDG RALEIGH ST - ENGINEERING\DWG\CONSTRUCTION\275-77 DETAILS.DWG

SEQUENCE OF FINAL LAND DISTURBANCE:

1. PRECONSTRUCTION CONFERENCE TO BE HELD PRIOR TO BEGINNING.
2. DETERMINE AND MARK LIMITS OF DISTURBANCE. LIMITS OF DISTURBANCE ARE 11.6 ACRES.
3. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE, SILT FENCE AND SILT FENCE OUTLETS.
4. INSTALL INFILTRATION BASINS AND OUTLET WEIRS. INSTALL STORMWATER COLLECTION SYSTEM AND INLET PROTECTION. INSTALL RIP RAP ENERGY DISSIPATION WITH ALL FLARED END SECTIONS.
5. TOPSOIL REMOVAL AND/OR STORAGE.
6. INSPECT AND MAINTAIN ALL EROSION CONTROL DEVICES EVERY 7 DAYS AND AFTER EACH SIGNIFICANT RAINFALL EVENT (0.5" OR GREATER).
7. PLACE TEMPORARY SEEDING ON ALL PERIMETER SWALES AND ALL AREAS WITH SLOPES GREATER THAN 3:1 THAT ARE TO BE LEFT IDLE FOR MORE THAN 7 DAYS. PLACE TEMPORARY SEEDING ON ALL OTHER DISTURBED AREAS THAT ARE TO BE LEFT IDLE FOR MORE THAN 14 DAYS.
8. PERMANENT GRASS SHALL BE INSTALLED FOR ALL AREAS AT FINAL GRADE AND IN SEASON. FERTILIZE, WATER AND RESEED AS REQUIRED TO ESTABLISH A VIGOROUS STAND OF COVER.
9. UPON STABILIZATION OF SITE, CLEAN OUT ALL SEDIMENT FROM INFILTRATION BASINS AND RESTORE TO DESIGN GRADES.

PROTECTION, BLOCK AND GRAVEL INLET PROTECTION, ROCK DOUGHNUT INLET PROTECTION AND ROCK PIPE INLET PROTECTION WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS AS DESIGNED. DEBRIS WILL BE REMOVED FROM THE ROCK AND HARDWARE CLOTH TO ALLOW PROPER DRAINAGE. SILT SACKS WILL BE EMPTIED ONCE A WEEK AND AFTER EVERY RAIN EVENT. SEDIMENT WILL BE REMOVED FROM AROUND BEAVER DAMS, DANDY SACKS AND SOCKS ONCE A WEEK AND AFTER EVERY RAIN EVENT.

4. DIVERSION DITCHES WILL BE CLEANED OUT IMMEDIATELY TO REMOVE SEDIMENT OR OBSTRUCTIONS FROM THE FLOW AREA. THE DIVERSION RIDGES WILL ALSO BE REPAIRED. SWALES MUST BE TEMPORARILY STABILIZED WITHIN 21 CALENDAR DAYS OF CEASE OF ANY PHASE OF ACTIVITY ASSOCIATED WITH A SWALE.
5. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES HALF FILLED. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER. STAKES MUST BE STEEL. STAKE SPACING WILL BE 6 FEET MAX. WITH THE USE OF EXTRA STRENGTH FABRIC, WITHOUT WIRE BACKING. STAKE SPACING WILL BE 8 FEET MAX. WHEN STANDARD STRENGTH FABRIC AND WIRE BACKING ARE USED. IF ROCK FILTERS ARE DESIGNED AT LOW POINTS IN THE SEDIMENT FENCE THE ROCK WILL BE REPAIRED OR REPLACED IF IT BECOMES HALF FULL OF SEDIMENT, NO LONGER DRAINS AS DESIGNED OR IS DAMAGED.
6. SEDIMENT WILL BE REMOVED FROM SEDIMENT TRAPS WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT.
7. THE ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR WHEN THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1st BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED AND KEPT CLEAN WEEKLY.
8. SEDIMENT WILL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE DESIGN STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR IF THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED FROM BAFFLES WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1st BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED WEEKLY AND WILL BE KEPT CLEAN.
9. ALL SEEDER AREAS WILL BE FERTILIZED, RESEED AS NECESSARY AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER. ALL SLOPES WILL BE STABILIZED WITHIN 21 CALENDAR DAYS. ALL OTHER AREAS WILL BE STABILIZED WITHIN 15 WORKING DAYS.
10. FLOCCULANTS WILL BE USED TO ADDRESS TURBIDITY ISSUES. THE PUMPS, TANKS, HOSES AND INJECTION SYSTEMS WILL BE CHECKED FOR PROBLEMS OR TURBID DISCHARGES DAILY.

MAINTENANCE PLAN FOR EROSION CONTROL MEASURES (NEW HANOVER COUNTY)

1. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL, BUT IN NO CASE, LESS THAN ONCE EVERY WEEK AND WITHIN 24 HOURS OF EVERY HALF INCH RAINFALL.
2. ALL POINTS OF EGRESS WILL HAVE CONSTRUCTION ENTRANCES THAT WILL BE PERIODICALLY TOP-DRESSED WITH AN ADDITIONAL 2 INCHES OF #4 STONE TO MAINTAIN PROPER DEPTH. THEY WILL BE MAINTAINED IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. IMMEDIATELY REMOVE OBJECTIONABLE MATERIAL SPILLED WASHED OR TRACKED ONTO THE CONSTRUCTION ENTRANCE OR ROADWAYS.
3. SEDIMENT WILL BE REMOVED FROM HARDWARE CLOTH AND GRAVEL INLET

MULCHING MATERIALS AND APPLICATION RATES

MATERIAL	RATE PER ACRE	QUALITY	NOTES
STRAW	2 TONS	DRY, UNCHOPPED, UNWEATHERED; AVOID WEEDS	SHOULD COME FROM WHEAT OR OATS SPREAD BY HAND OR MACHINE, MUST BE TACKED DOWN.

TEMPORARY SEEDING

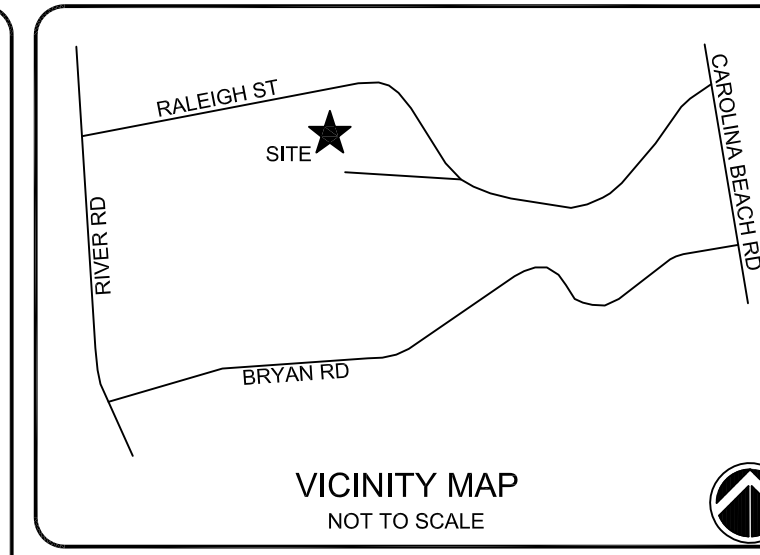
TIME OF SEEDING	GRASS TYPE	AMOUNT/ ACRE	FERTILIZATION/ ACRE	FERTILIZATION/ACRE MAINTENANCE	
DEC 1-APR 15	RYE (GRAIN) & LESPEDEZA, KOBE	120 LBS. & 50 LBS.	750 LBS. 10-10-10	NA	NA
APR 15-AUG 15	GERMAN MILLET	40 LBS.	750 LBS. 10-10-10	NA	NA
AUG 15-DEC 30	RYE (GRAIN)	120 LBS.	1,000 LBS. 10-10-10	NA	NA

PERMANENT VEGETATION

PERMANENT SODDING MAY BE USED IS LIEU OF PERMANENT SEEDING SHOWN BELOW.

PERMANENT SEEDING

GRASS TYPE	AMOUNT/ 1000 SF.	TIME OF SEEDING	FERTILIZATION/1000 SF.			
			INITIAL	MAINTENANCE		
BERMUDA, COMMON	1-2 LBS.	APR. THRU JUNE	25 LBS. 10-10-10	MARCH - APRIL 12 LBS. 10-10-10	EACH 4-8 WEEKS 1-2 LBS. N.	AUG. - SEPT. 12 LBS. 10-10-10
FESCUE, TALL (KENTUCKY 31)	5-7 LBS.	SEPT. THRU OCT. FEB. THRU OCT.	25 LBS. 10-10-10	FEB. - MARCH 12 LBS. 10-10-10	MAY & DEC. 12 TO 1 LB. N.	SEPT. - OCT. 12 LBS. 10-10-10
SERICEA LESPEDEZA (SLOPES)	1-2 LBS.	MARCH THRU APR.	25 LBS. 10-10-10	FEB. - MARCH	12 TO 1 LB. N.	NA



NOTES:

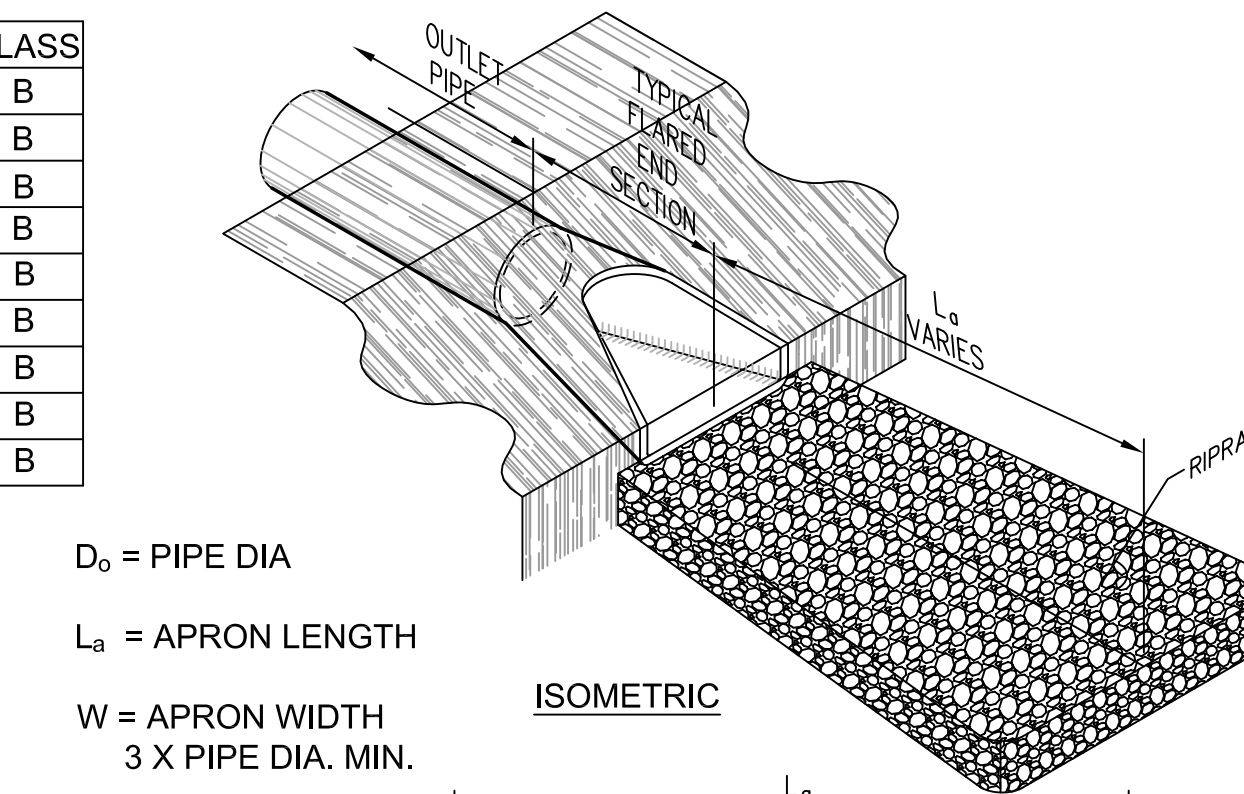
ISSUED FOR REGULATORY REVIEW

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

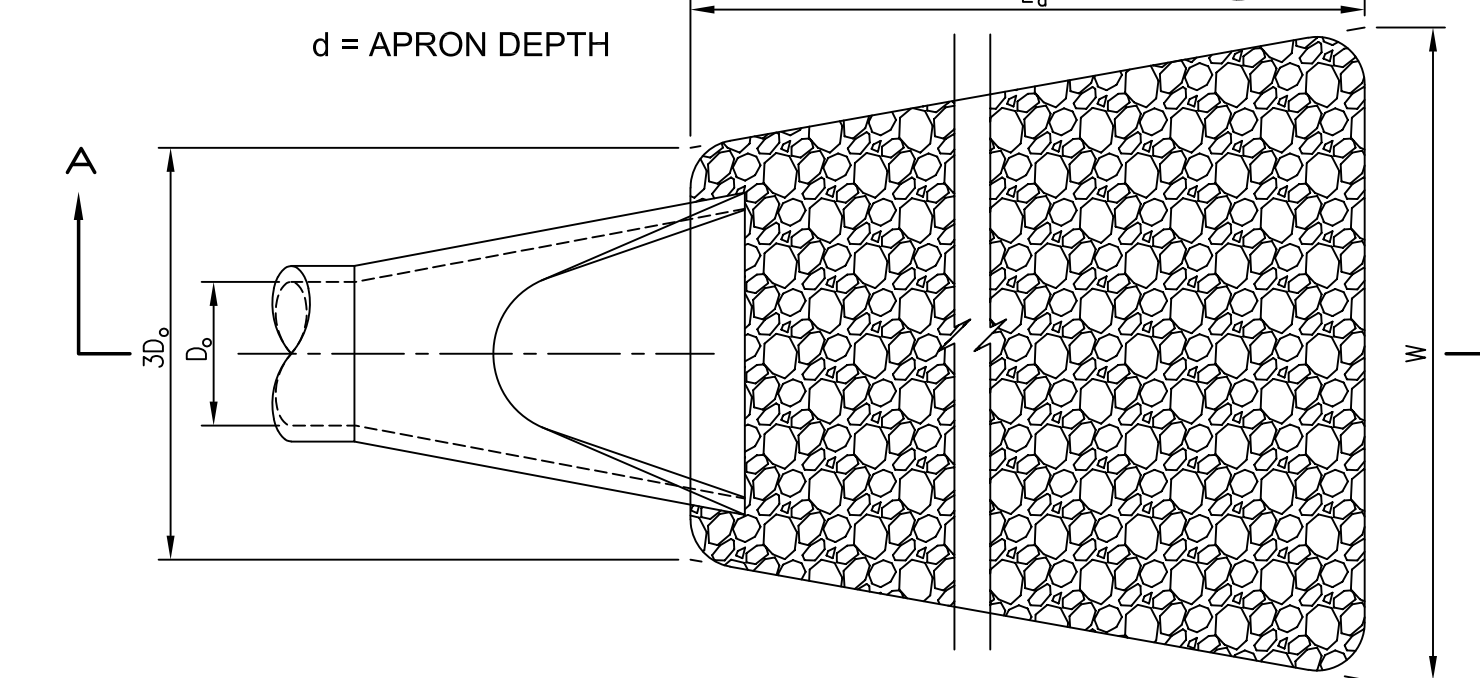
NOTE: TEMPORARY SEEDING SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH SECTION 6.10 OF THE NCDEQ EROSION CONTROL PLANNING AND DESIGN MANUAL. SODDING SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH SECTION 6.12 OF THE NCDEQ EROSION CONTROL PLANNING AND DESIGN MANUAL AND PROJECT SPECIFICATIONS.

STR ID	Do (IN.)	La (FT.)	W1(FT.)	d (IN.)	CLASS
FES #1	18"	9	4.5	12	B
FES #6	15"	7.5	3.75	12	B
FES #7	15"	7.5	3.75	12	B
FES #8	30"	15	7.5	12	B
FES #15	18"	9	4.5	12	B
FES #16	18"	9	4.5	12	B
FES #17	18"	9	4.5	12	B
FES #18	18"	9	4.5	12	B
FES #19	18"	9	4.5	12	B

RIPRAP SCHEDULE



Do = PIPE DIA
 La = APRON LENGTH
 W = APRON WIDTH 3 X PIPE DIA. MIN.
 d = APRON DEPTH



NOTES:

SEE APPROPRIATE SCHEDULE FOR DIMENSIONS

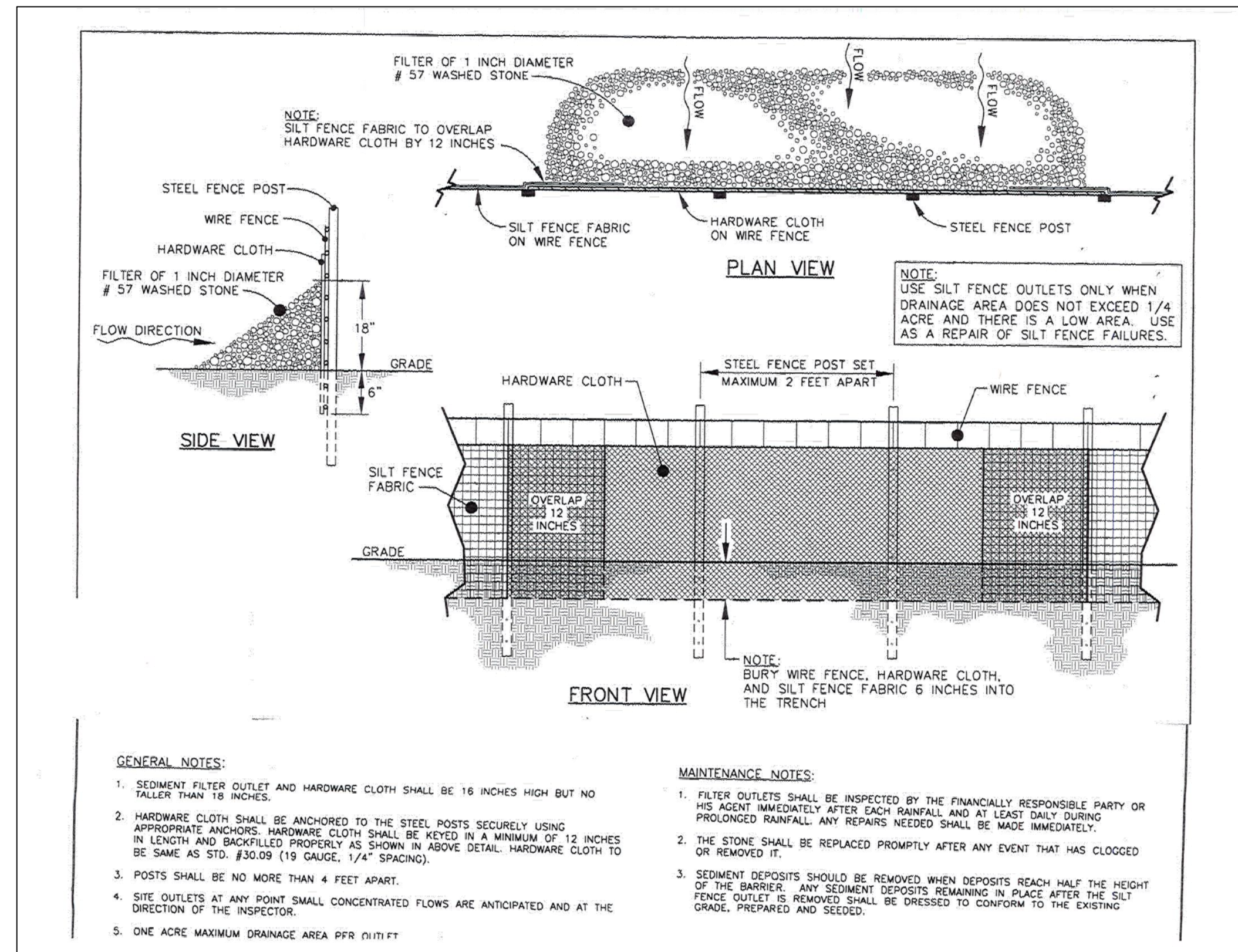
1. La IS THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".

3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

SCALE 1/4" = 1'-0"

SECTION A-A

RIPRAP AT PIPE OUTLET
NOT TO SCALE

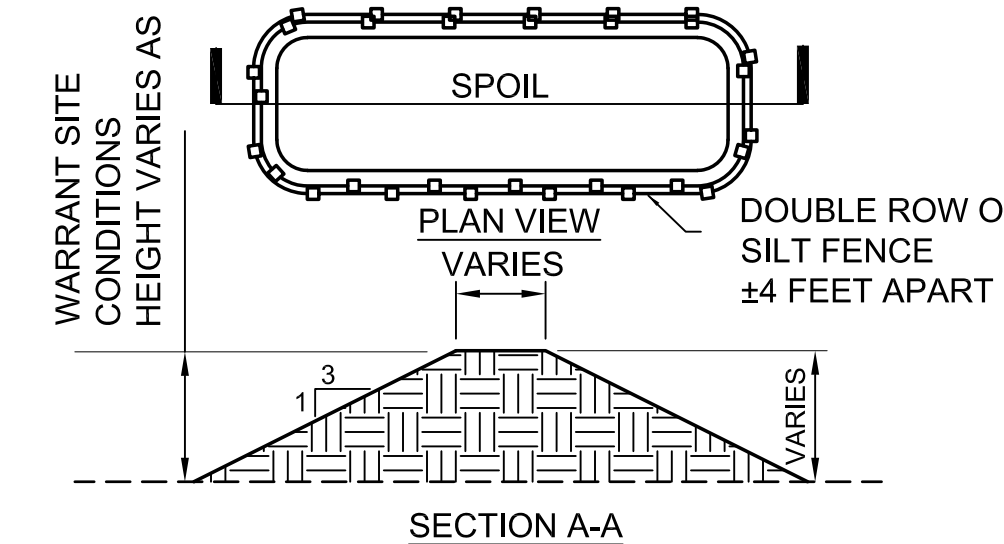


GENERAL NOTES:

1. SEDIMENT FILTER OUTLET AND HARDWARE CLOTH SHALL BE 16 INCHES HIGH BUT NO TALLER THAN 18 INCHES.
2. HARDWARE CLOTH SHALL BE ANCHORED TO THE STEEL POSTS SECURELY USING APPROPRIATE ANCHORS. HARDWARE CLOTH SHALL BE KEPT IN A MINIMUM OF 12 INCHES IN LENGTH AND BACKFILLED PROPERLY AS SHOWN IN ABOVE DETAIL. HARDWARE CLOTH TO BE SAME AS STD. #30.09 (19 GAUGE, 1/4" SPACING).
3. POSTS SHALL BE NO MORE THAN 4 FEET APART.
4. SITE OUTLETS AT ANY POINT SMALL CONCENTRATED FLOWS ARE ANTICIPATED AND AT THE DIRECTION OF THE INSPECTOR.
5. ONE ACRE MAXIMUM DRAINAGE AREA PER OUTLET

MAINTENANCE NOTES:

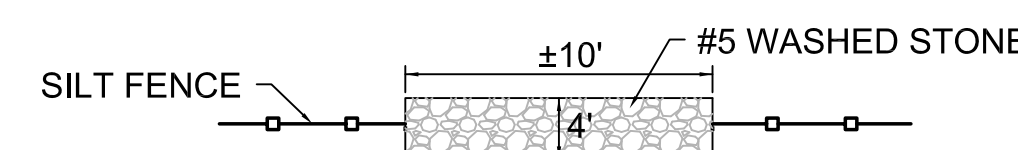
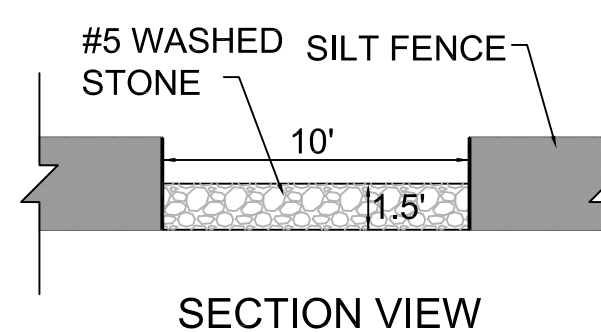
1. FILTER OUTLETS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY.
2. THE STONE SHALL BE REPLACED PROMPTLY AFTER ANY EVENT THAT HAS CLOGGED OR REMOVED IT.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OUTLET IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEED.



NOTE:

1. CONTRACTOR SHALL LOCATE STOCKPILES AS NEEDED FOR CONSTRUCTION SEQUENCE/PHASING. STOCKPILES SHALL NOT BE LOCATED NEAR PLANNED CUT/FILL LINES, IMMEDIATELY ADJACENT TO PROJECT LIMIT LINE OR IN ANY OTHER AREA THAT MAY INCREASE POTENTIAL FOR EROSION OR NEGATIVELY IMPACT THE SITE

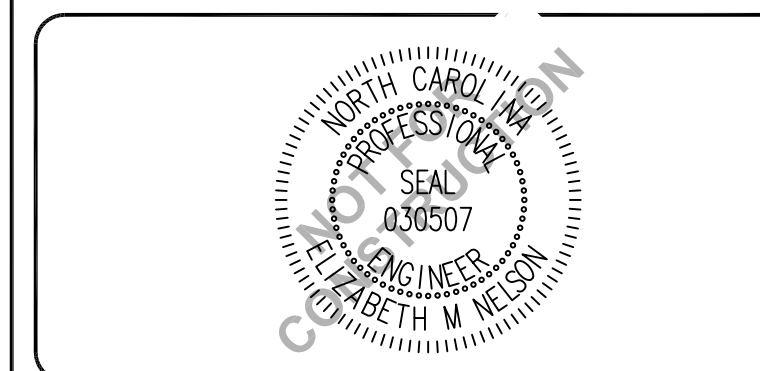
MATERIAL STORAGE BERM
NOT TO SCALE



PLAN VIEW

SILT FENCE OUTLET

NOT TO SCALE



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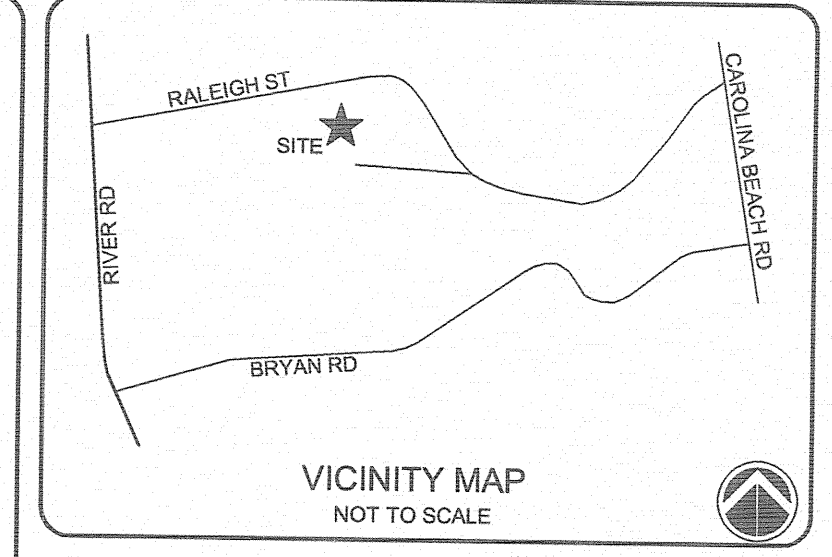
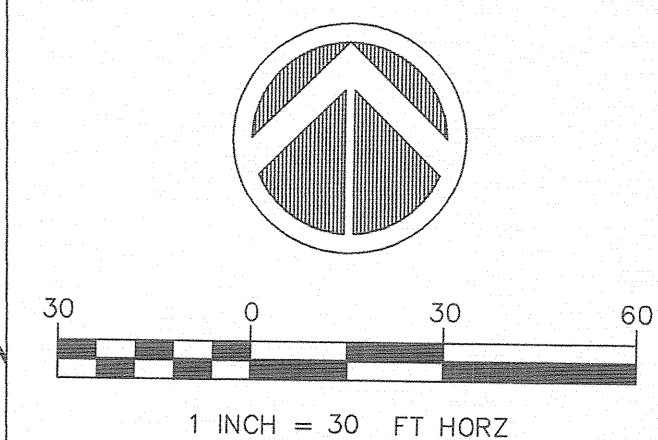
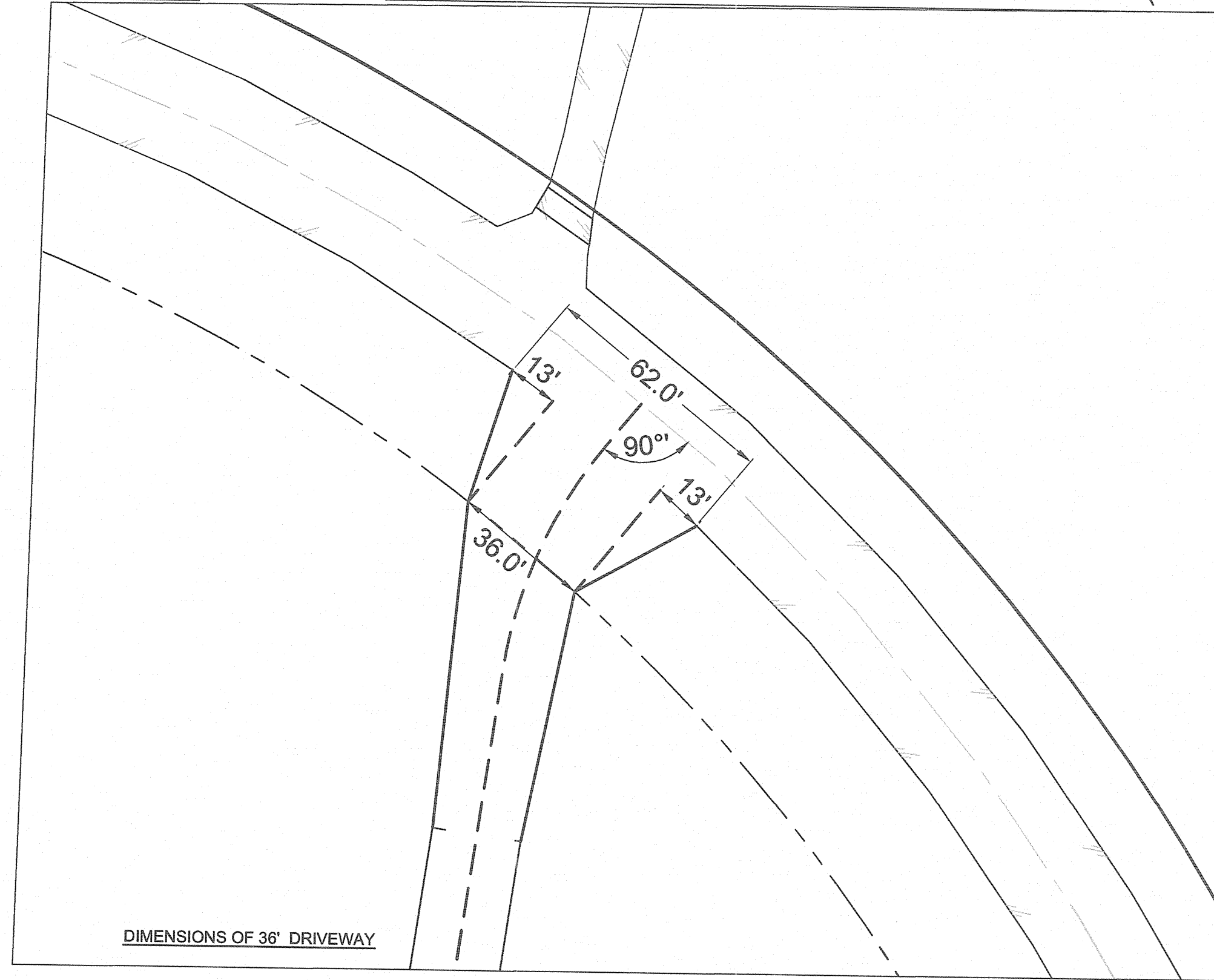
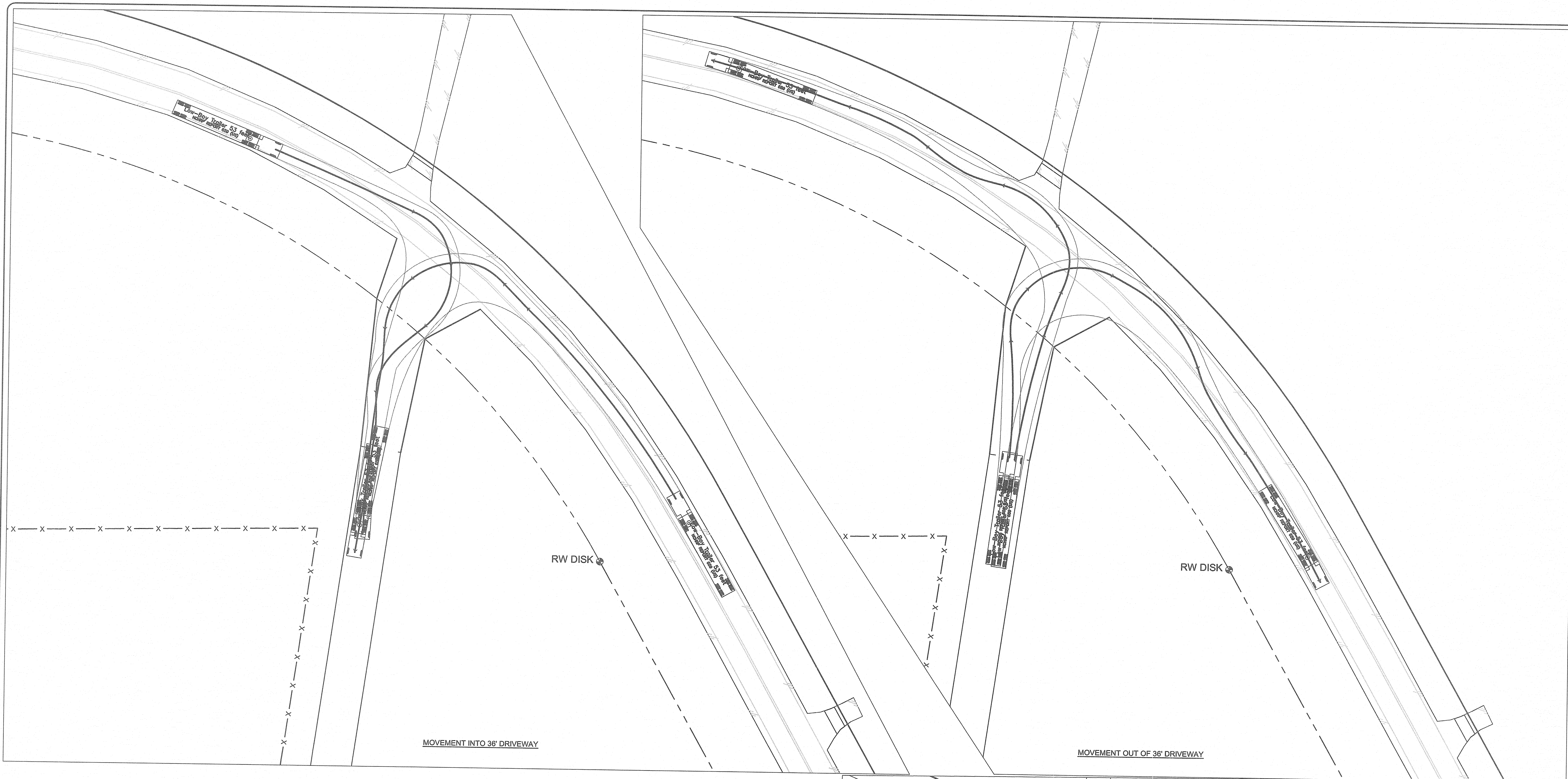
PROJECT NUMBER:	275-77
SCALE:	As Shown
DATE:	21 FEB 17

CIVIL WORKS CONTRACTING
 190 RALEIGH STREET
 WILMINGTON, NC

EROSION CONTROL DETAILS

PROJECT NUMBER	SHEET NUMBER
275-77	D-506

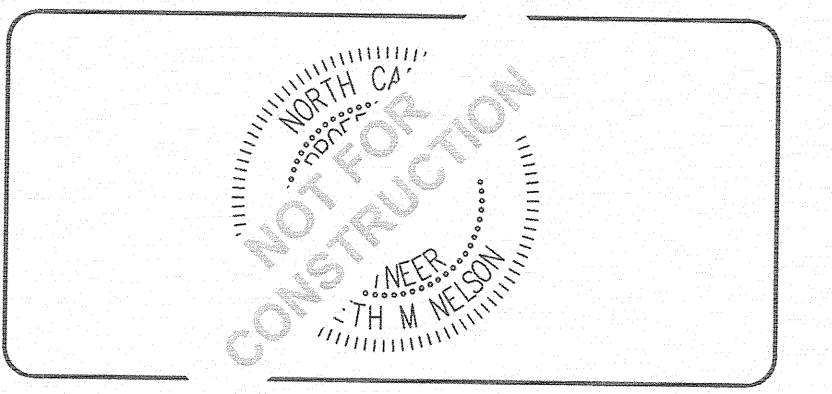
PATH: P:\275\275-77 CMC OFFICE BLDG RALEIGH ST - ENGINEERING\DWG\CONSTRUCTION\WORKING\AUTOTURN MOD.DWG



NOTES:

ISSUED FOR REGULATORY REVIEW

REV. #	DESCRIPTION	REV. BY	DATE
C	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	09/01/17
B	REVISED PER CITY OF WILMINGTON COMMENTS	EMN	08/10/17
A	ISSUED FOR REGULATORY REVIEW	EMN	06/30/17
REVISIONS			



CAPE FEAR ENGINEERING
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 TEL (910) 383-1044; FAX (910) 383-1045
 www.capefearengineering.com
 N.C. LICENSE # C-1621

PROJECT NUMBER: 275-77
 SCALE: 1" = 50'
 DATE: 01 MAR 17

CIVIL WORKS CONTRACTING
 RALEIGH STREET
 WILMINGTON, NC

AUTOTURN EXHIBIT
 36' DRIVEWAY @ RW

PROJECT NUMBER: 275-77
 SHEET NUMBER: EX-1