

# CONSTRUCTION DRAWINGS FOR NEEDHAM ANIMAL HOSPITAL EXPANSION

WILMINGTON, NC  
MAY 2018

CONSTRUCTION DRAWINGS  
FOR: NEEDHAM ANIMAL HOSPITAL EXPANSION  
W&R PROJECT NO.: 1705-48

Approved Construction Plan

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

Planning \_\_\_\_\_

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

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**CITY OF WILMINGTON**  
NORTH CAROLINA

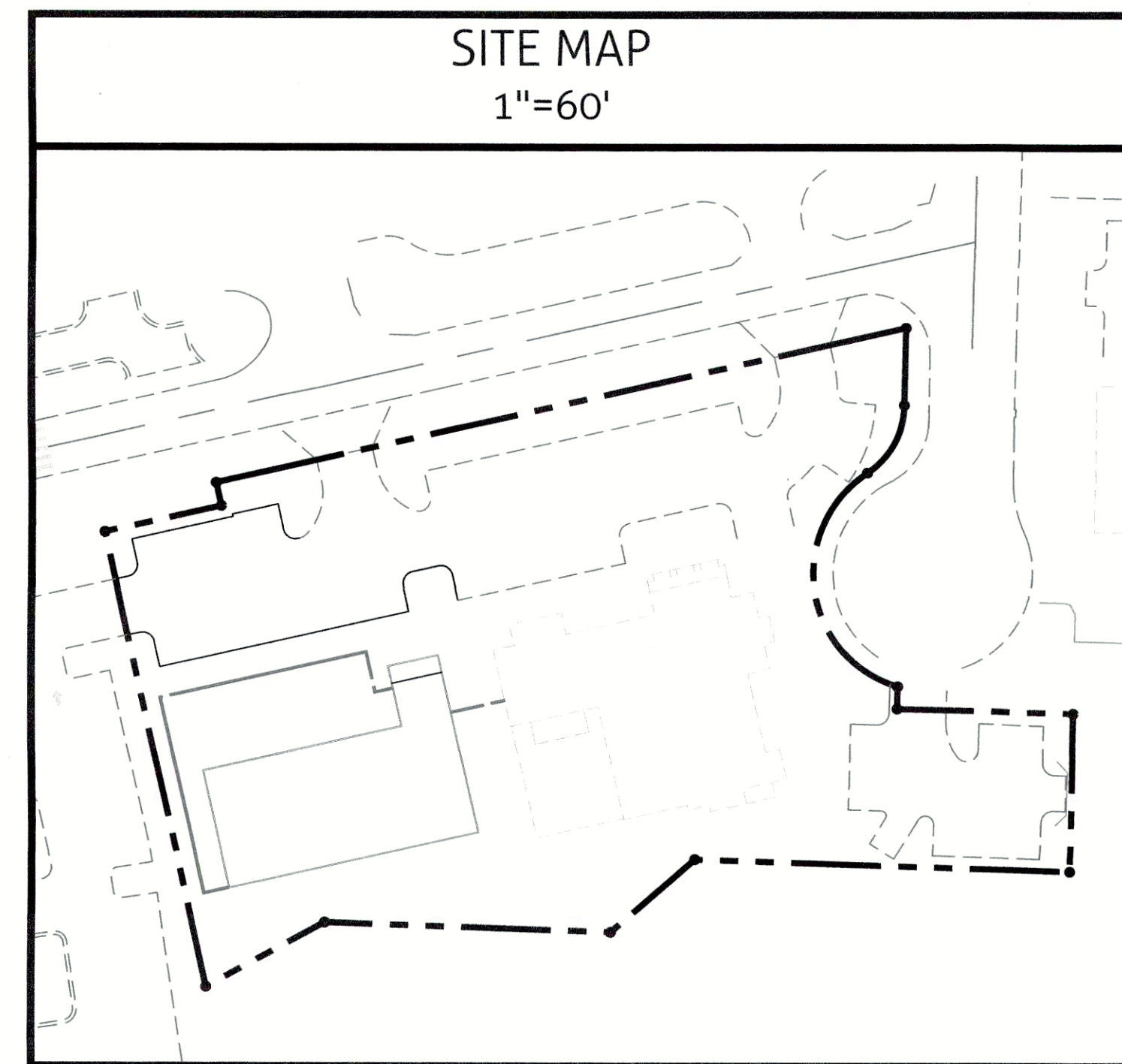
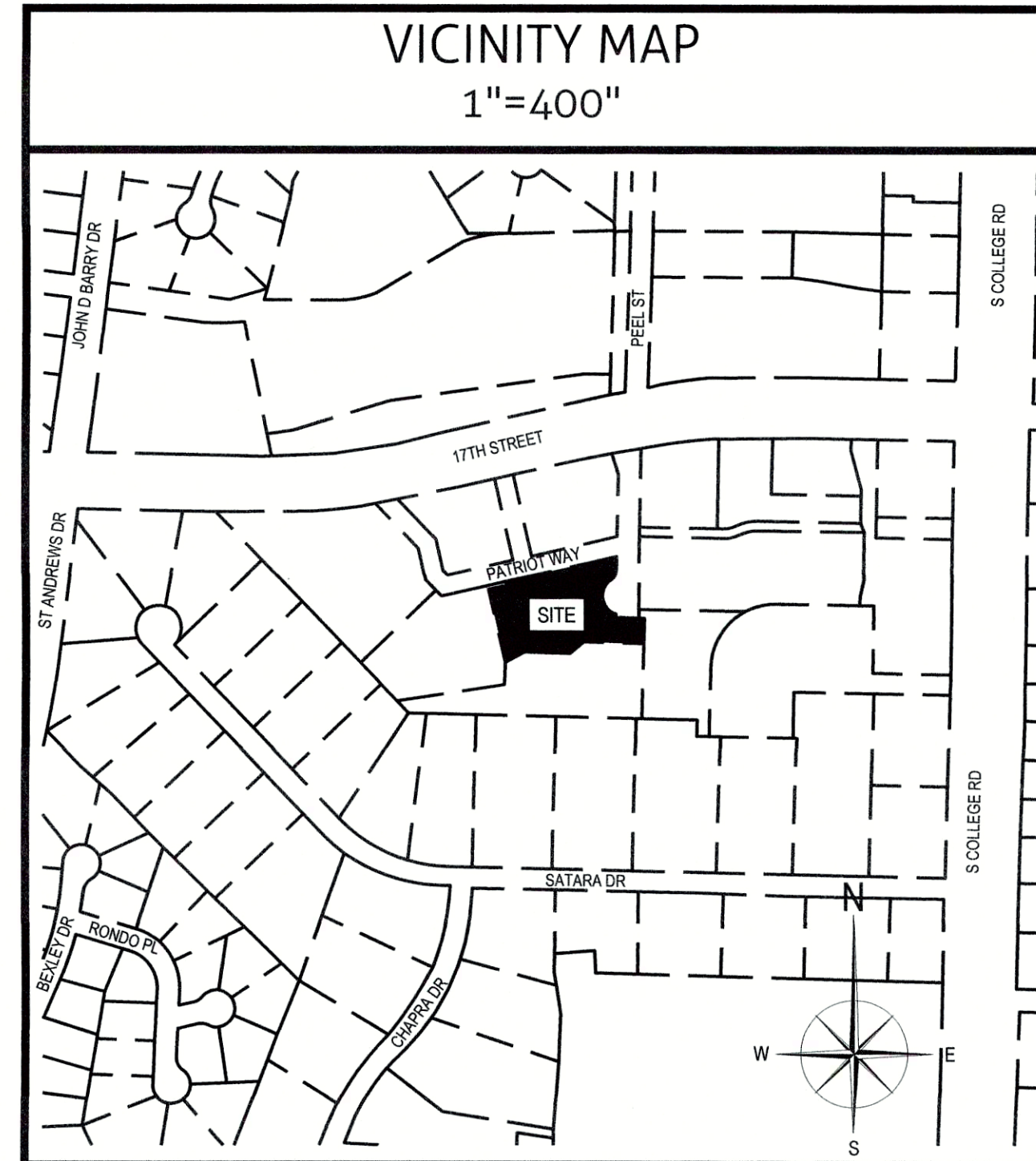
Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

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

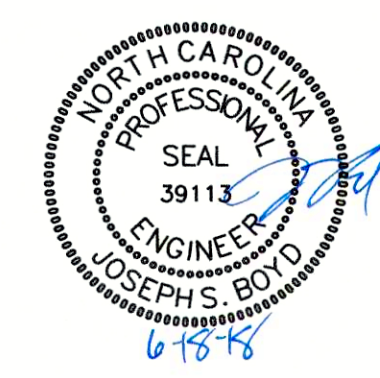
Signed: \_\_\_\_\_

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



SHEET LIST TABLE	
Sheet Number	Sheet Title
C0.0	COVER
C0.1	PROJECT NOTES
C1.0	EXISTING CONDITIONS
C1.1	DEMOLITION PLAN
C2.0	SITE PLAN
C3.0	GRADING PLAN
C3.1	DRAINAGE PLAN
C4.0	UTILITY PLAN
C5.0	EROSION CONTROL PLAN
L1.0	LANDSCAPE DEMOLITION PLAN
L1.1	LANDSCAPE PLAN
C6.0	EROSION CONTROL & STORM DRAIN DETAILS
C6.1	PAVEMENT DETAILS
C6.2	PAVEMENT MARKING DETAILS
C6.3	CFPUA DETAILS
C6.4	CFPUA DETAILS
C6.5	CFPUA DETAILS
C6.6	CFPUA DETAILS

LEGEND			
LINETYPE DESCRIPTION		LINETYPE DESCRIPTION	
EXISTING WATERLINE	---	PROPOSED UNDERGROUND ELECTRIC	UE
PROPOSED WATERLINE	---	EXISTING GASLINE	G
EXISTING STORM DRAINAGE	---	PROPOSED GASLINE	G
PROPOSED STORM DRAINAGE	---	SILT FENCE	SF
EXISTING SANITARY SEWER	SS	TREE PROTECTION & SILT FENCE	SF/TP
PROPOSED SANITARY SEWER	SS	FENCE	XX-XX-XX-XX-XX-XX
EXISTING FORCE MAIN	FM	TREE PROTECTION	TP
PROPOSED FORCE MAIN	FM	TEMP. DIVERSION SWALE	
EXISTING ELECTRIC (OVERHEAD)	E	RIGHT-OF-WAY	
PROPOSED ELECTRIC (OVERHEAD)	E	EXISTING WETLANDS	
EXISTING UNDERGROUND ELECTRIC	UE	1' CONTOUR	1
EXISTING EASEMENT		5' CONTOUR	5
PROJECT BOUNDARY		PROPOSED EASEMENT	



PREPARED BY:

**WithersRavenel**  
Engineers | Planners | Surveyors

219 Station Road | Ste 101 | Wilmington, NC 28405 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

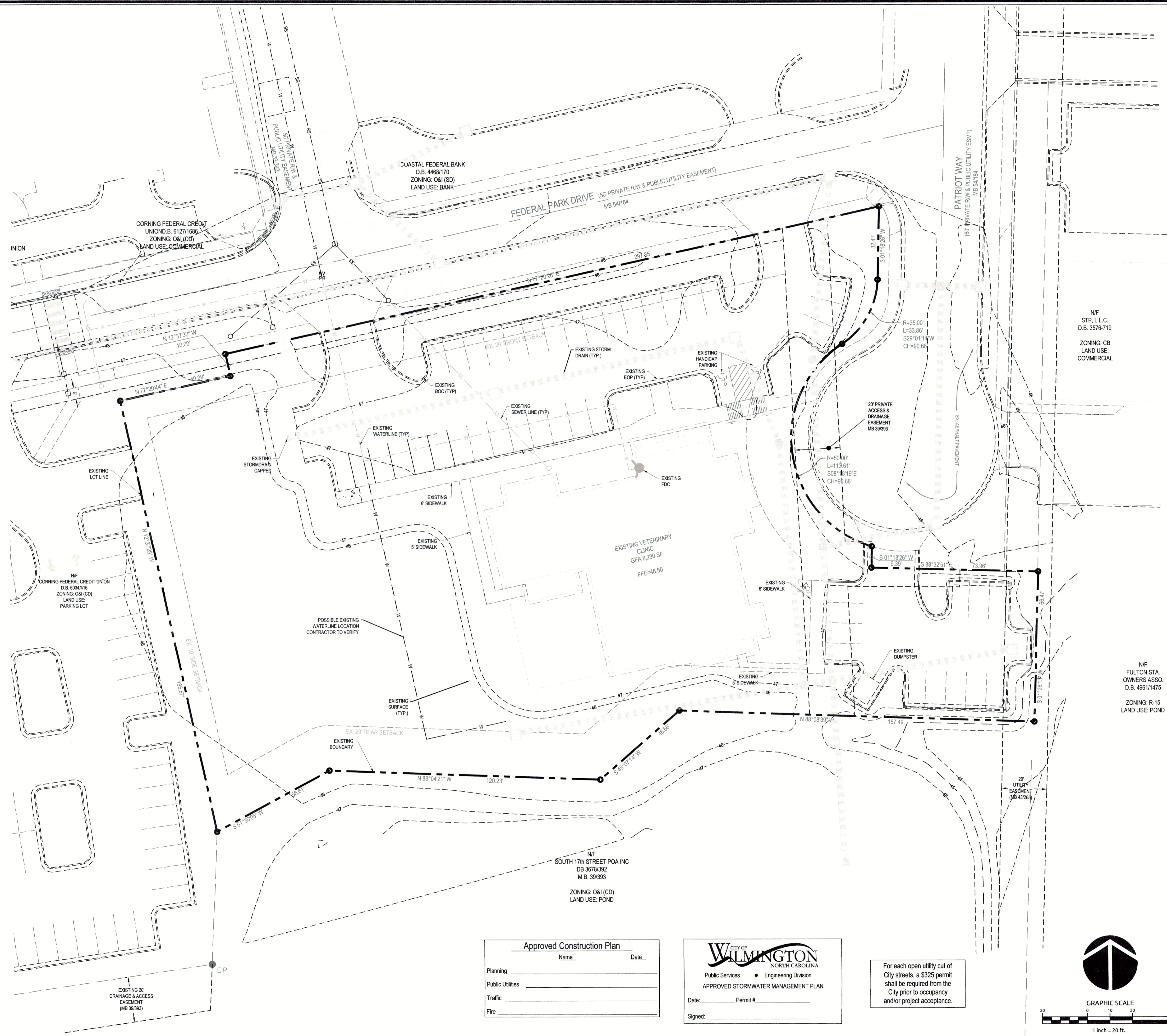
DEVELOPER/OWNER

**SLA PROPERTY, LLC**  
3720 FEDERAL PARK DRIVE  
WILMINGTON, NC 28412  
PHONE: (910) 799-2970

ATTN: DR. CHRISTOPHER BATTS

W:\17-0548\170548-needham\_animal\_hospital\_expansion\CD\01\sheet\_drawing\CO.0 COVER.dwg - Monday, June 18, 2018 12:47:17 PM - GARRICK, TOM






**Approved Construction Plan**

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

Planning \_\_\_\_\_

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

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**CITY OF WILMINGTON**  
 NORTH CAROLINA

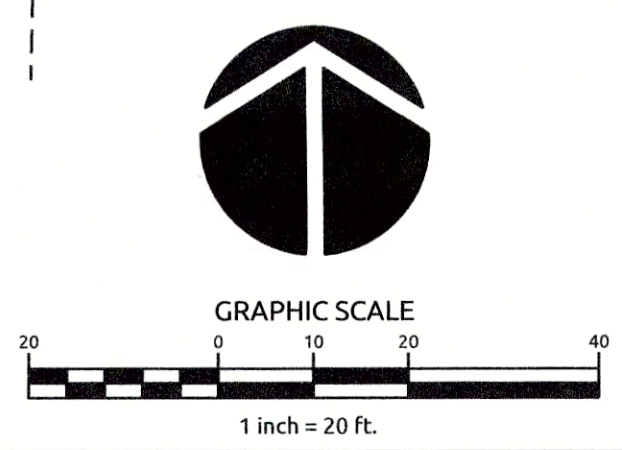
Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

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

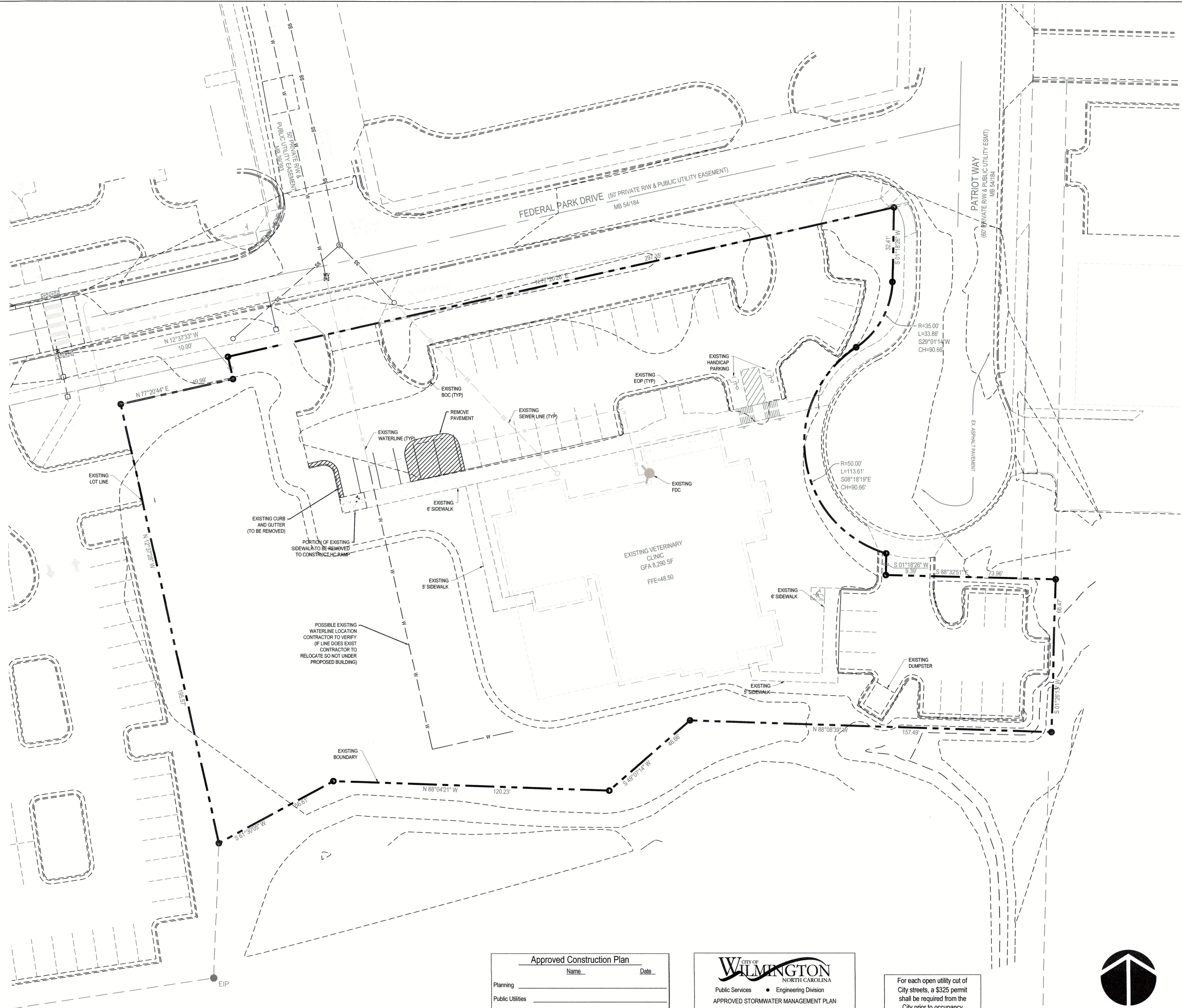
Signed: \_\_\_\_\_

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



W:\1717-0548\170548-needham animal hospital expansion\CD\final drawing\CD\EXISTING CONDITIONS.dwg, Monday, June 18, 2018 12:47:26 PM - GARRETT, TOM

W:\1717-05\05170548-needham animal hospital expansion\CD\needham animal hospital expansion\CD\11 DEMOLITION PLAN.dwg, Monday, June 18, 2018 12:47:20 PM - GABRIEL.TOM



**Approved Construction Plan**

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

Planning \_\_\_\_\_

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

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**CITY OF WILMINGTON**  
NORTH CAROLINA

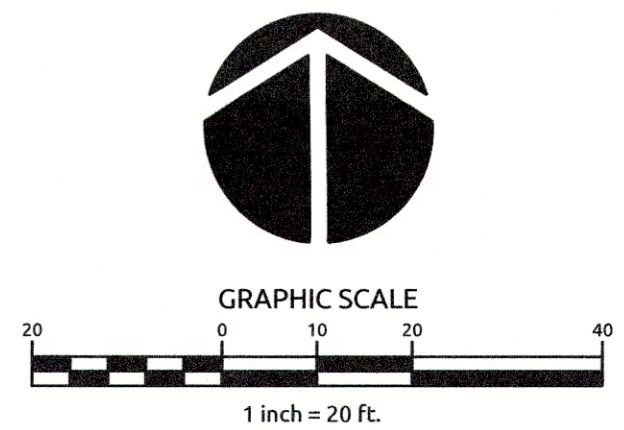
Public Services • Engineering Division

**APPROVED STORMWATER MANAGEMENT PLAN**

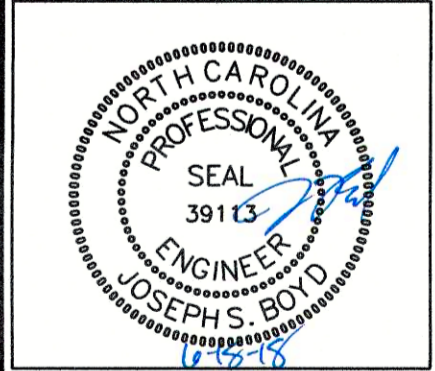
Date: \_\_\_\_\_ Permit # \_\_\_\_\_

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

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



Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



Revisions

1	COW REVIEW COMMENTS	06.18.18

## SITE DEVELOPMENT DATA

### GENERAL NOTES:

OWNER: SLA PROPERTY, LLC  
 ADDRESS: 3720 FEDERAL PARK DRIVE  
 WILMINGTON, NC 28412  
 PHONE: (910) 796-2970  
 ATTN: DR. CHRISTOPHER BATTS

NEW HANOVER COUNTY PARCEL NO.:  
 R006600-001-031-000

ALT ID NO.:  
 313510.46.2257.000

TOTAL TRACT AREA: 1.56 AC ±  
 ZONING DISTRICT: O & I-1 (CD-5-1107-M409-M1217) \*NOT APPROVED UNTIL  
 CONDITIONAL DISTRICT AMENDMENT (PENDING)  
 LAND CLASSIFICATION: 804-OTHER MEDICAL & HEALTH  
 CAMA LAND CLASSIFICATION: URBAN

### DEVELOPMENT DATA:

BUILDINGS: 2  
 BUILDING CONSTRUCTION TYPE: V-B  
**BUILDING AREAS:**  
 EXISTING BUILDING AREA (WITH OVERHANG) = 10,170 SF  
 EXISTING REMAINING IMPERVIOUS PLAY AREA = 500 SF  
 PROPOSED BUILDING AREA (WITH OVERHANG) = 6,786 SF  
 BUILDING LOT COVERAGE = 16,893 SF (24.9%)  
 EXISTING PARKING AREA = 16,455 SF  
 PROPOSED PARKING AREA = 4,130 SF  
 EXISTING SIDEWALK AREA = 2,397 SF  
 PROPOSED SIDEWALK AREA = 1,289 SF  
 PROPOSED WALL AREA = 158 SF  
 TOTAL SITE IMPERVIOUS AREA = 41,885 SF  
 PERMITTED ALLOWABLE IMPERVIOUS AREA = 42,000 SF

### BUILDING HEIGHTS:

EXISTING BUILDING: 2 STORY - 35' HEIGHT  
 PROPOSED BUILDING: 1 STORY - 25' HEIGHT

### BUILDING COVERAGES:

EXISTING BUILDING:  
 1ST FLOOR: 7,413 SF  
 2ND FLOOR: 877 SF  
 TOTAL: 8,290 SF  
 PROPOSED BUILDING:  
 1ST FLOOR: 5,865 SF  
 TOTAL: 5,865 SF

### PARKING:

PROPOSED (KENNEL USE):  
 MAXIMUM SPACES REQUIRED (5,865 SF/250) = 23 SPACES  
 MINIMUM SPACES REQUIRED (5,865 SF/400) = 15 SPACES  
 PARKING SPACES PROVIDED = 18 SPACES (5 COMPACT SPACES)  
 HANDICAP SPACES REQUIRED = 3 (1 VAN ACCESSIBLE)  
 HANDICAP SPACES PROVIDED = 4 (ALL VAN ACCESSIBLE)  
 EXISTING PARKING SPACES = 40 SPACES

### BICYCLE PARKING:

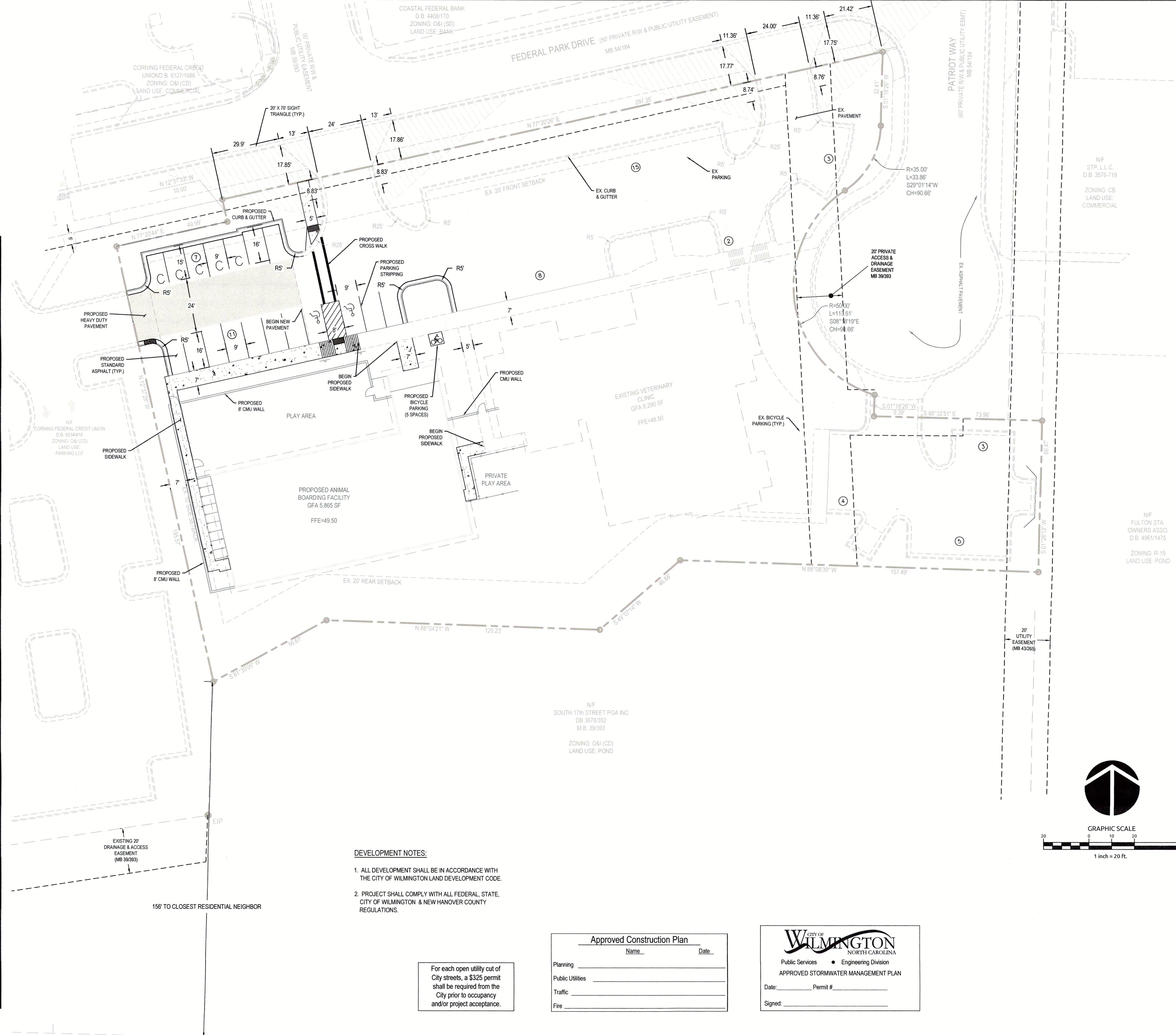
EXISTING: 5 SPACES  
 PROPOSED: 5 SPACES  
 TOTAL: 10 SPACES

### BUILDING SETBACKS:

FRONT - 20 FT  
 SIDES - 10 FT  
 REAR - 20 FT

### PROPOSED BUILDING DISTANCES:

FRONT - 106 FT  
 SIDE - 20 FT  
 REAR - 22 FT



### DEVELOPMENT NOTES:

- ALL DEVELOPMENT SHALL BE IN ACCORDANCE WITH THE CITY OF WILMINGTON LAND DEVELOPMENT CODE.
- PROJECT SHALL COMPLY WITH ALL FEDERAL, STATE, CITY OF WILMINGTON & NEW HANOVER COUNTY REGULATIONS.

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 \_\_\_\_\_

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

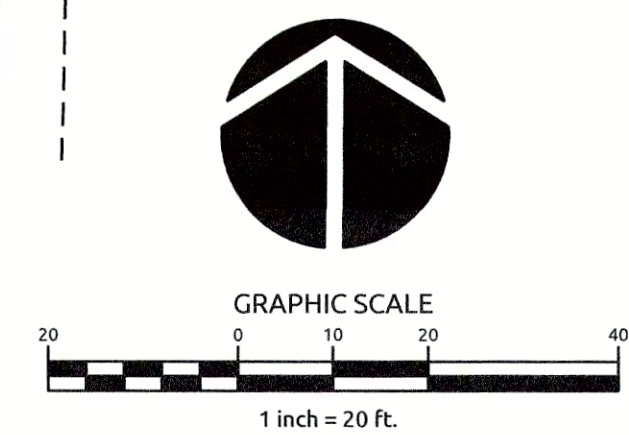
Traffic \_\_\_\_\_

Fire \_\_\_\_\_

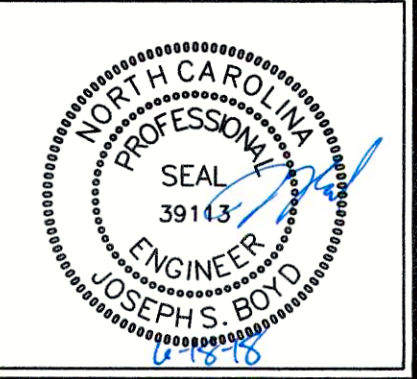
CITY OF WILMINGTON  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN

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

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



Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB

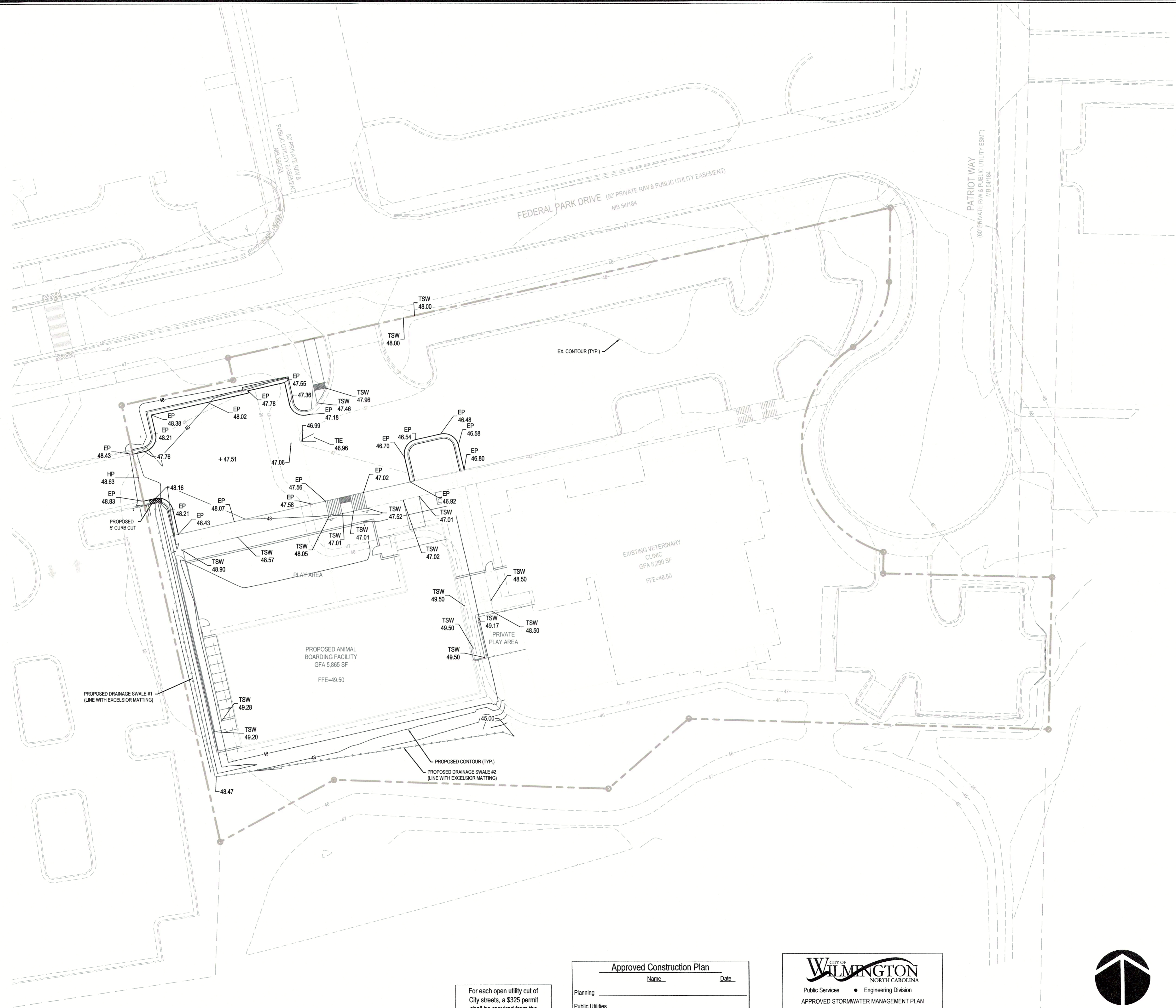


### Revisions

1	COW REVIEW COMMENTS	06.18.18

W:\17-0548\03-170548-needham-animal-hospital-expansion\CD\stormwater\CD-20 SITE PLAN.dwg, Monday, June 18, 2018 11:47:36 AM, GABRIEL.TOM

W:\317-16463170448-revision\municipal\hospital\needham\plan\cadd\grading\CGO\GRADING PLAN.dwg, Revision, June 28, 2018 12:47:43 PM - GABRIEL TOM



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 \_\_\_\_\_

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

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

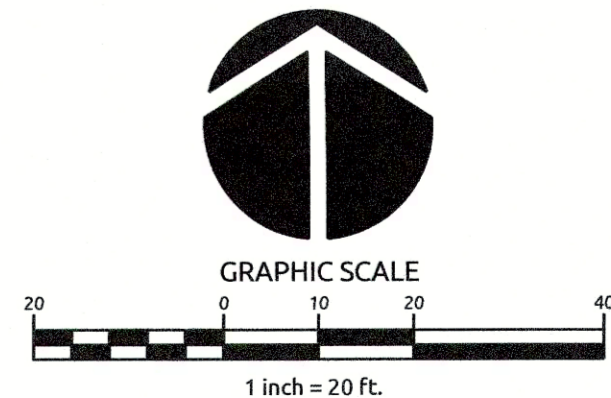
**CITY OF WILMINGTON**  
NORTH CAROLINA

Public Services • Engineering Division

**APPROVED STORMWATER MANAGEMENT PLAN**

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

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

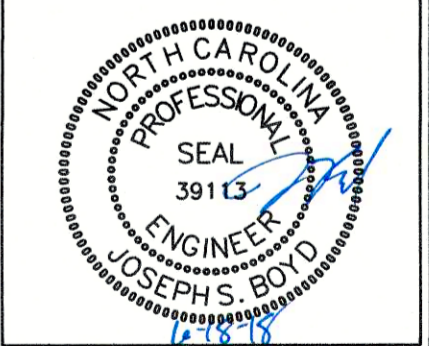


**NEEDHAM ANIMAL HOSPITAL EXPANSION**

WILMINGTON, NC

**GRADING PLAN**

Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



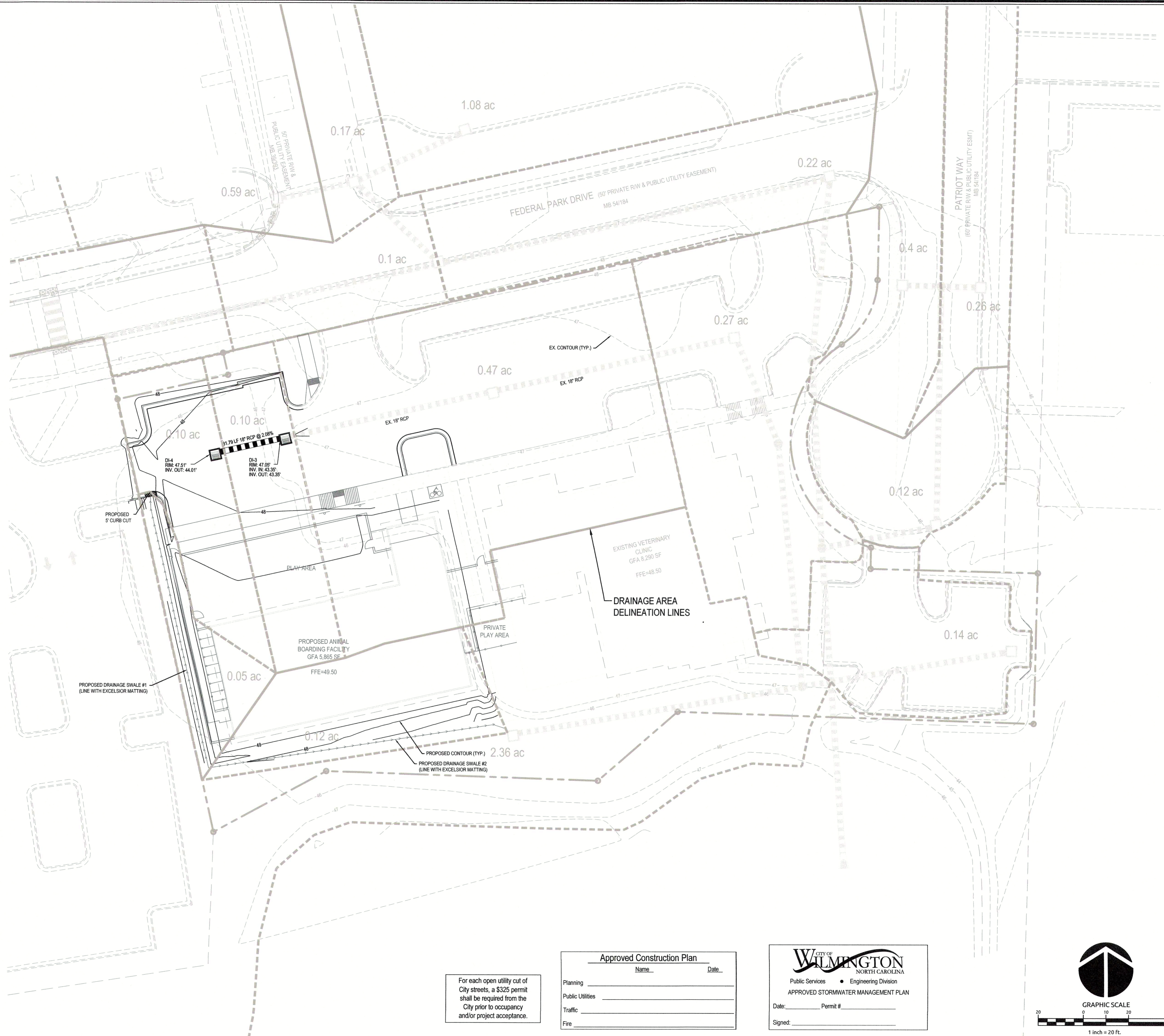
Revisions

1	COW REVIEW COMMENTS	06.18.18

**NEEDHAM ANIMAL  
HOSPITAL EXPANSION**

WILMINGTON, NC

**DRAINAGE PLAN**



IMPERVIOUS SURFACES	
ON-SITE BUILDINGS:	16,956 SF
ON-SITE STREETS:	0 SF
ON-SITE PARKING:	20,585 SF
ON-SITE SIDEWALK:	3,686 SF
OTHER ON-SITE:	658 SF
FUTURE:	115 SF
OFF-SITE:	0 SF
<b>TOTAL:</b>	<b>42,000 SF</b>

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 \_\_\_\_\_

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

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

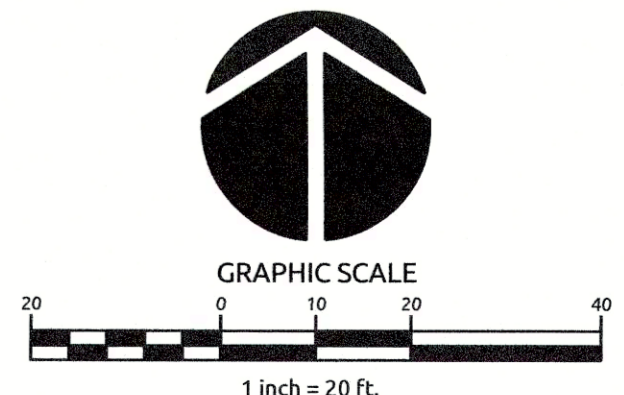
**CITY OF WILMINGTON**  
NORTH CAROLINA

Public Services • Engineering Division

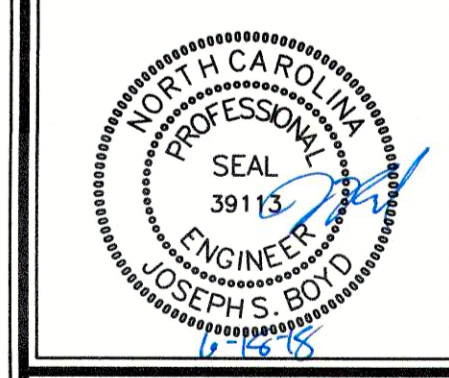
APPROVED STORMWATER MANAGEMENT PLAN

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

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



Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



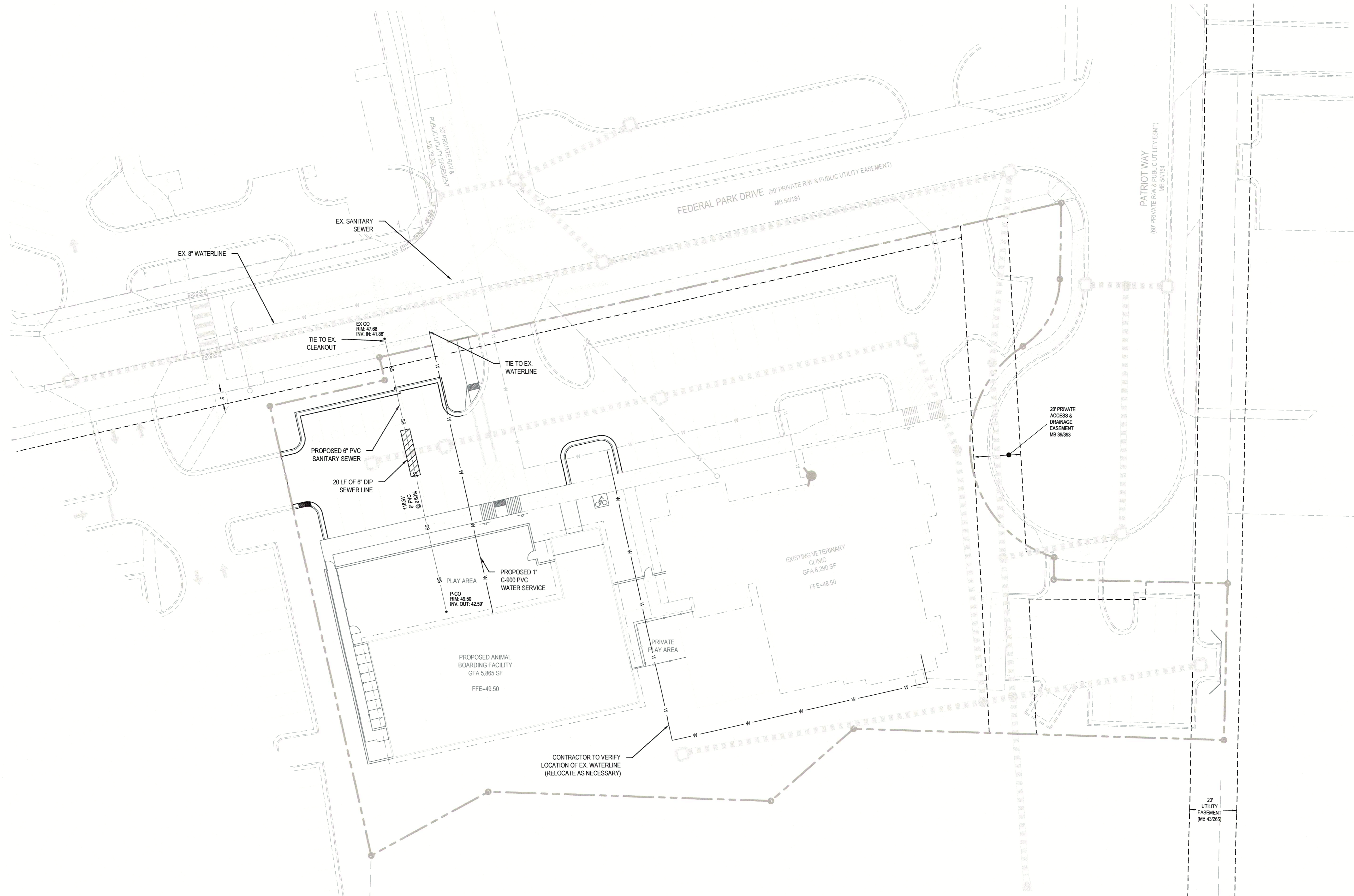
Revisions

1	COW REVIEW COMMENTS	06.18.18

Sheet No.  
**C3.1**

W:\17-0548-01-170548-Needham Animal Hospital Expansion\CAD\work\DWG\31-0318-12-17-18.dwg, Monday, June 18, 2018 12:47:44 PM, GABRIEL, TOM

W:\1710\0501\25646\needham\animal\hospital\expansion\CADD\DWG\DWG\C4.0 UTILITY PLAN.dwg, Monday, June 18, 2018 12:47:50 PM - GARRETT, TOM



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 \_\_\_\_\_

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

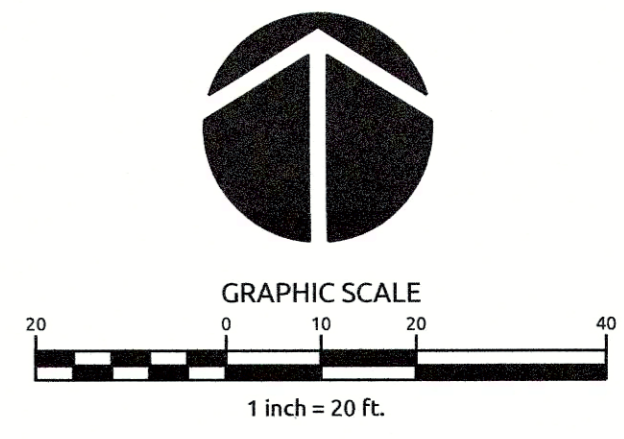
Traffic \_\_\_\_\_

Fire \_\_\_\_\_

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

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

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

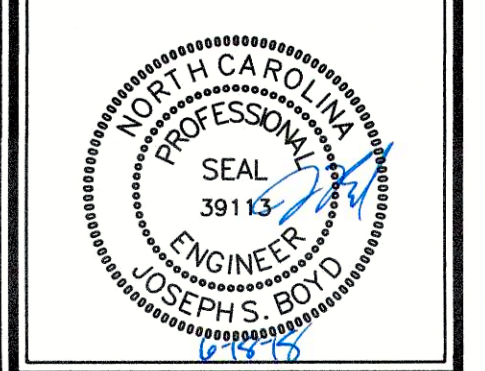


**NEEDHAM ANIMAL HOSPITAL EXPANSION**

WILMINGTON, NC

**UTILITY PLAN**

Job No.	03-1705-48	Drawn By	TMG
Date	03/29/18	Designer	JSB

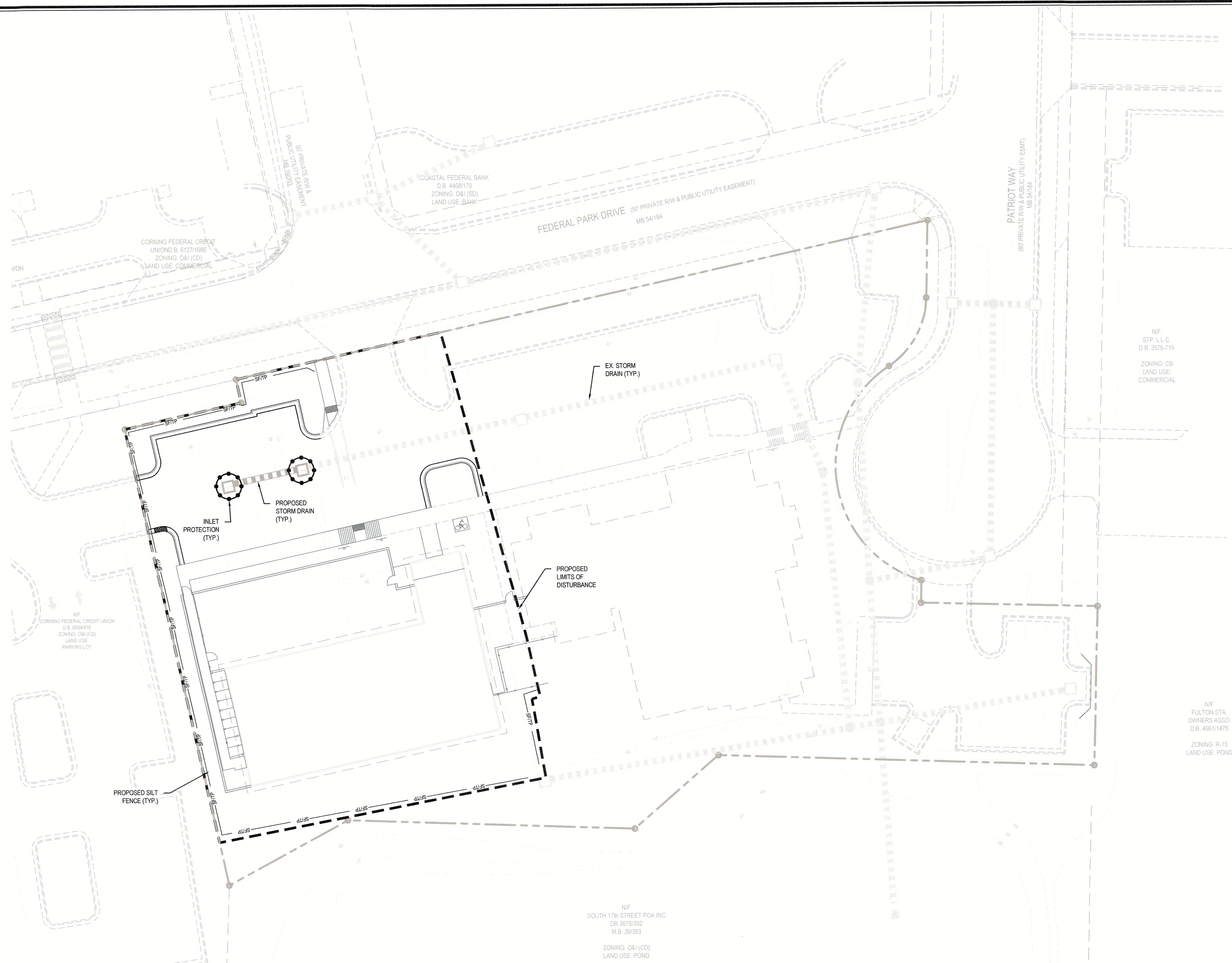


Revisions

1	COW REVIEW COMMENTS	06.18.18



TOTAL AREA DISTURBED = 0.60 AC



**LEGEND**

	TEMPORARY INLET PROTECTION
	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
	CONSTRUCTION DISTURBANCE LIMIT
	TEMPORARY TREE PROTECTION FENCE
	TEMPORARY SILT/TREE PROTECTION FENCE
	TEMPORARY DIVERSION DITCH

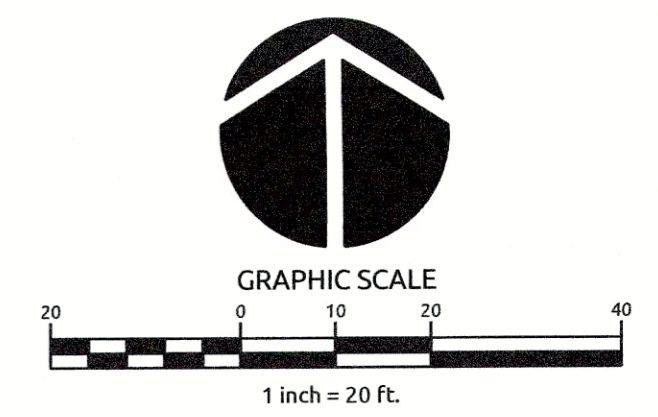
For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

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

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

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

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



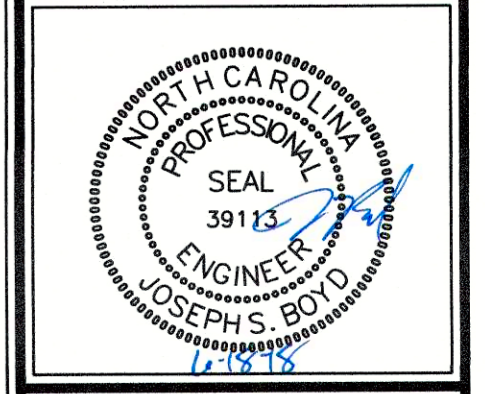
**WithersRavenel**  
 Engineers | Planners | Surveyors

219 Station Road | Ste 101 | Wilmington, NC 28405 | T: 910.254.9277 | License # C-0832 | www.withersravenel.com

**NEEDHAM ANIMAL HOSPITAL EXPANSION**  
 WILMINGTON, NC

**EROSION CONTROL PLAN**

Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



Revisions

1	COW REVIEW COMMENTS	06.18.18

Sheet No.  
**C5.0**

W:\17-0548\170548-needham-animal-hospital-expansion\CAD\erosion-control-plan.dwg - Monday, June 18, 2018 12:42:52 PM - G:\BIBICI\170548

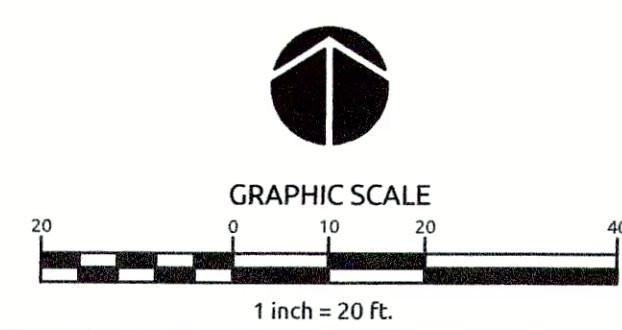


PLANT SCHEDULE - EXISTING PLANTS TO BE RELOCATED				
PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME
CANOPY TREES	1	TAD	Taxodium distichum	Bald Cypress
SHRUBS	9	ILV	Ilex vomitoria	Yaupon Holly
	5	RKO	Rosa Knock Out	Knockout Rose

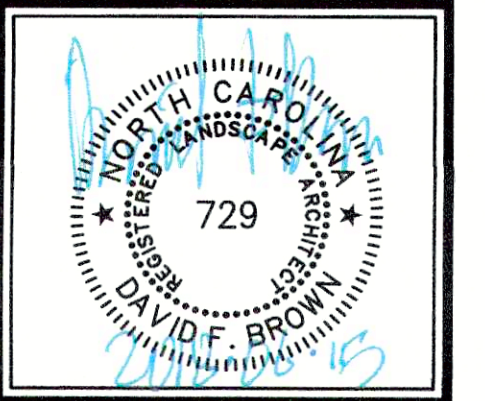
For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

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

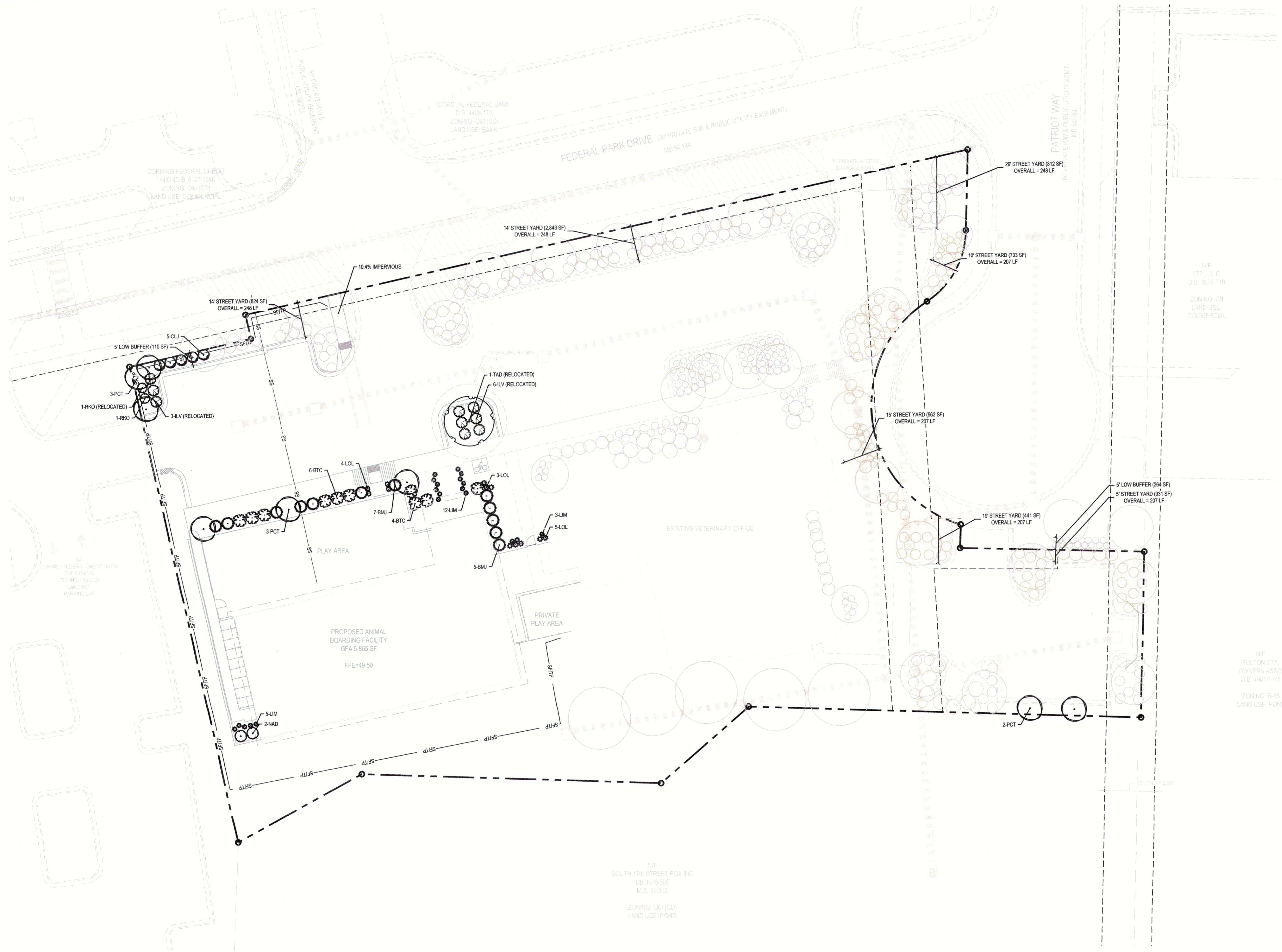
CITY OF WILMINGTON  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_



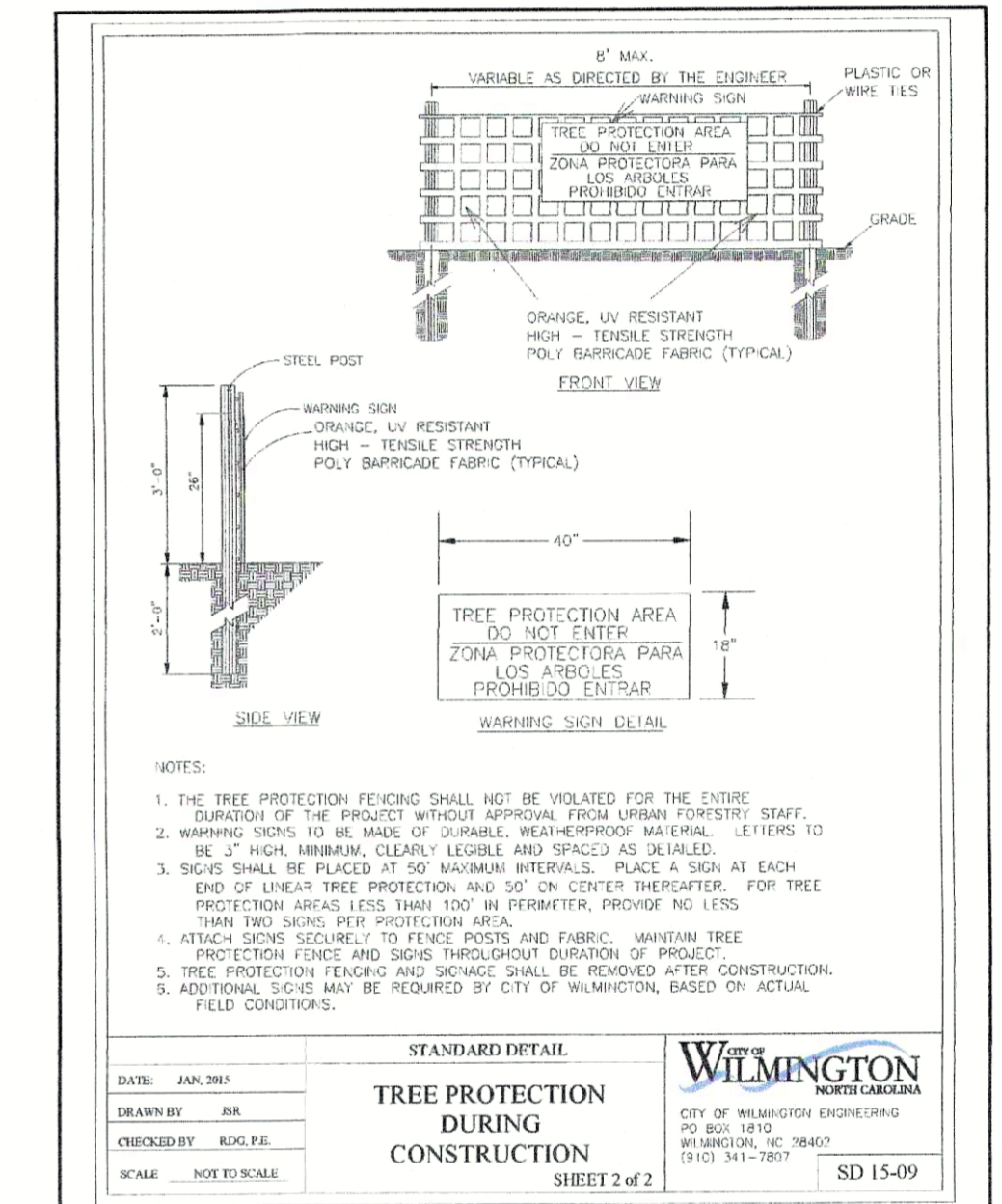
Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



Revisions	
1	COW REVIEW COMMENTS 06.01.18



- LANDSCAPE NOTES:**
1. ALL PLANTS SHALL MEET OR EXCEED THE MINIMUM STANDARDS SET FORTH IN "THE AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
  2. ALL AREAS DISTURBED AND NOT SPECIFIED AS MULCHED PLANTING BEDS WILL BE GRASSED. LAWN AREAS MAY BE ESTABLISHED WITH EITHER SO2 OR SEED AT THE CONTRACTOR'S DISCRETION. HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FULL STAND OF GRASS AT THE TIME OF COMPLETION.
  3. CONTRACTOR SHALL USE WHATEVER METHOD OF TREE STAKING HE DEEMS FIT. HOWEVER, HE WILL BE HELD LIABLE FOR ANY DAMAGES CAUSED TO TREES BY IMPROPER STAKING METHODS (OR ABSENCE OF STAKING) AND IS RESPONSIBLE FOR UPRIGHTING AND REPLANTING TREES WHICH ARE BLOWN OVER.
  4. CONTRACTOR SHALL WARRANT ALL TREES AND SHRUBS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK OF THE LANDSCAPE PLAN.
  5. IF DISCREPANCIES OR AVAILABILITIES ARE FOUND IN THE PLANT SPECIES AND/OR MIN. SIZES REQ'D., CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT. SUBSTITUTIONS MAY BE MADE WITH AUTHORIZATION AS LONG AS THE PLANTS FOLLOW THE INTENDED FORM AND FUNCTION.
  6. THE DEVELOPER SHALL NOTIFY LANDSCAPE DESIGNER PRIOR TO INSTALLATION TO ENSURE PROPER TREE SELECTION & SPACING.
  7. EACH TREE SHALL BE A MINIMUM OF 2" CALIPER AS MEASURED FROM THE DIAMETER AT BREAST HEIGHT (DBH).
  8. TREES WITHIN THE SAME BLOCKS SHALL BE THE SAME SPECIES.
  9. ALL PLANTINGS SHALL BE CURBED OR OTHERWISE PHYSICALLY PROTECTED FROM VEHICULAR TRAFFIC.
  10. THE OWNER IS RESPONSIBLE FOR MAINTAINING ALL REQUIRED PLANT MATERIAL AND PLANTING AREAS IN GOOD HEALTH AND APPEARANCE. ANY DEAD, UNHEALTHY OR MISSING PLANTS MUST BE REPLACED WITHIN 60 DAYS WITH VEGETATION WHICH CONFORMS TO THE INITIAL PLANTING RATES AND STANDARDS.
  11. NO PLANTINGS OVER 30' IN HEIGHT SHALL BE ALLOWED IN VISION CLEARANCE. EXISTING TREES IN THE SIGHT DISTANCE TRIANGLES SHOULD BE LIMBED UP TO ACCOMMODATE THE CODE REGARDING SIGHT DISTANCE TRIANGLES. ALL PROPOSED VEGETATION WITHIN SIGHT TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SIGHT LINES FROM 30' TO 10'.
  12. PRIOR TO ANY CLEARING, GRADING, OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
  13. 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 PLAN. (SD 15-14 CDPW TECH STDS)
  14. THERE IS NO CONSERVATION RESOURCES ASSOCIATED WITH THE PARCELS INCLUDING ANY RARE OR ENDANGERED SPECIES IN ACCORDANCE WITH THE NC WILDLIFE RESOURCES COMMISSION.
  15. THE CRITICAL ROOT ZONE (CRZ) SHALL BE PROTECTED DURING CONSTRUCTION BY APPROVED TREE PROTECTION FENCING AND PRACTICES. TREE PROTECTIVE FENCING SHALL BE SHOWN ON SITE PLANS AND GROUND PLANS AROUND EACH TREE. CLUSTERS OF TREES AT PERIMETER OF TREE-SAVE AREAS, AND AT LIMITS OF DISTURBANCE, NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED. TREE PROTECTIVE FENCING SHALL REMAIN IN PLACE THROUGH COMPLETION OF CONSTRUCTION ACTIVITIES.
  16. IF THE ENTIRE CRZ CANNOT BE PRESERVED, THE DISTURBED AREA SHALL EXTEND NO CLOSER TO THE PROTECTED TREE TRUNK THAN ONE HALF (1/2) THE RADIUS OF THE CRZ. IN NO CASE CAN MORE THAN 40% OF THE CRZ BE DISTURBED.



**LANDSCAPE CALCULATIONS:**

<b>FEDERAL PARK STREET YARD:</b> 298 LF - 50' (2 DRIVES) = 248 LF 248' x 18' (O&M DISTRICT) = 4,464 SF REQUIRED 4,479 SF PROVIDED	<b>1 TREE / 600 SF</b> 8 TREES REQUIRED 9 EXISTING TREES PROVIDED 45 SHRUBS REQUIRED 1 SHRUB PROVIDED + 92 EXISTING SHRUBS PROVIDED
<b>PATRIOT WAY STREET YARD:</b> 207 LF - 25' (1 DRIVE) = 182 LF 207' x 18' (O&M DISTRICT) = 3,726 SF REQUIRED 3,615 SF PROVIDED + LOW BUFFER (264 SF) = 3,879 SF PROVIDED	<b>1 TREE / 600 SF</b> 7 TREES REQUIRED 10 EXISTING TREES PROVIDED 39 SHRUBS REQUIRED 132 EXISTING SHRUBS PROVIDED
<b>FRONT VIA (INTERIOR):</b> 16,191 SF 25% SHADING: 4,048 SF REQUIRED 12,664 SF PROVIDED	<b>75% SHADE / CANOPY TREE:</b> 1 (TAD) + 18 EXISTING 6 (PCT)
<b>REAR VIA (INTERIOR):</b> 4,393 SF 25% SHADING: 1,099 SF REQUIRED 4,934 SF PROVIDED	<b>75% SHADE / CANOPY TREE:</b> 6 EXISTING 25% SMALL TREES: 2 (PCT)
<b>FOUNDATION:</b> 181 LF 181 x 12' x 12% = 261 SF REQUIRED 830 SF PROVIDED	

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
CANOPY TREES	1	TAD	Taxodium distichum	Bald Cypress				EX. RELOCATED
UNDERSTORY	8	PCT	Prunus cerasifera 'Thundercloud'	Purple Leaf Plum	B&B	3" CAL.		
	12	BMJ	Buxus microphylla japonica 'Wintergreen'	Wintergreen Japanese Boxwood	CONT.	3 GAL.		
	10	BTC	Berberis thunbergii 'Crimson Pygmy'	Crimson Pygmy Barberry	CONT.	3 GAL.		
	5	CLJ	Cleyera japonica	Japanese Cleyera	CONT.	7 GAL.	3' MIN.	LOW BUFFER
SHRUBS	9	ELV	Ilex vomitoria 'Nana'	Dwarf Yaupon Holly				EX. RELOCATED
	2	NAD	Nandina domestica 'Gulf Stream'	'Gulf Stream' Nandina	CONT.	3 GAL.		
	1	RKO	Rosa 'Knock Out'	Knockout Rose	CONT.	3 GAL.		EX. RELOCATED
	1	RKO	Rosa 'Knock Out'	Knockout Rose	CONT.	3 GAL.		EX. RELOCATED
GRASSES	20	LIM	Liriope muscari	Liriope	CONT.	1 GAL. MIN.		
	12	LOL	Lomandra longifolia 'Breeze'	Breeze Grass	CONT.	1 GAL. MIN.		

**LEGEND:**

- PROPOSED FOUNDATION PLANTING AREA
- STREET YARD AREA (FEDERAL PARK STREET)
- STREET YARD AREA (PATRIOT WAY)

TOTAL DISTURBED AREA: 0.69 AC  
 15 TREES / ACRE = 9 TREES REQUIRED  
 9 TREES PROVIDED + 34 EXISTING TREES

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 \_\_\_\_\_

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

Traffic \_\_\_\_\_

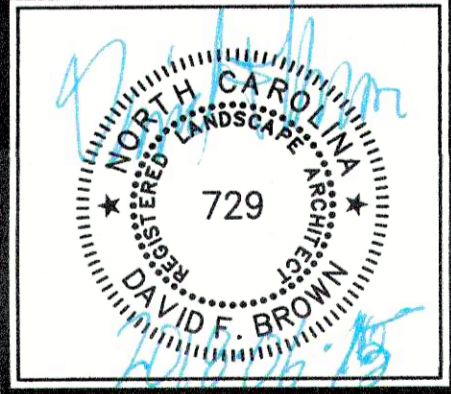
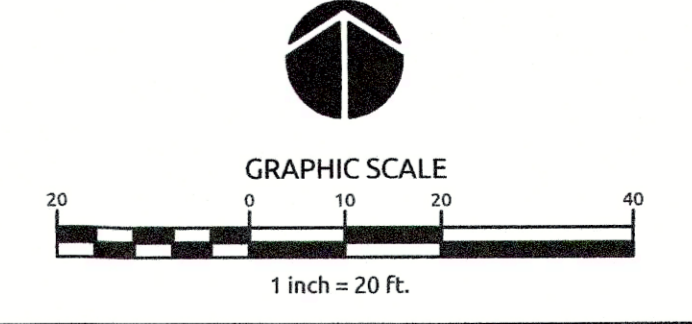
Fire \_\_\_\_\_

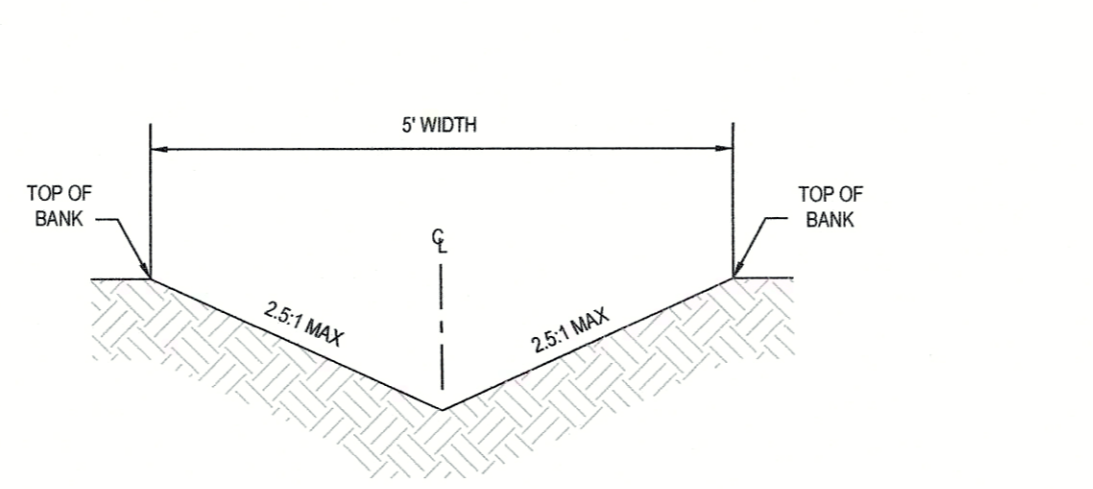
**CITY OF WILMINGTON**  
 NORTH CAROLINA

Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN

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

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





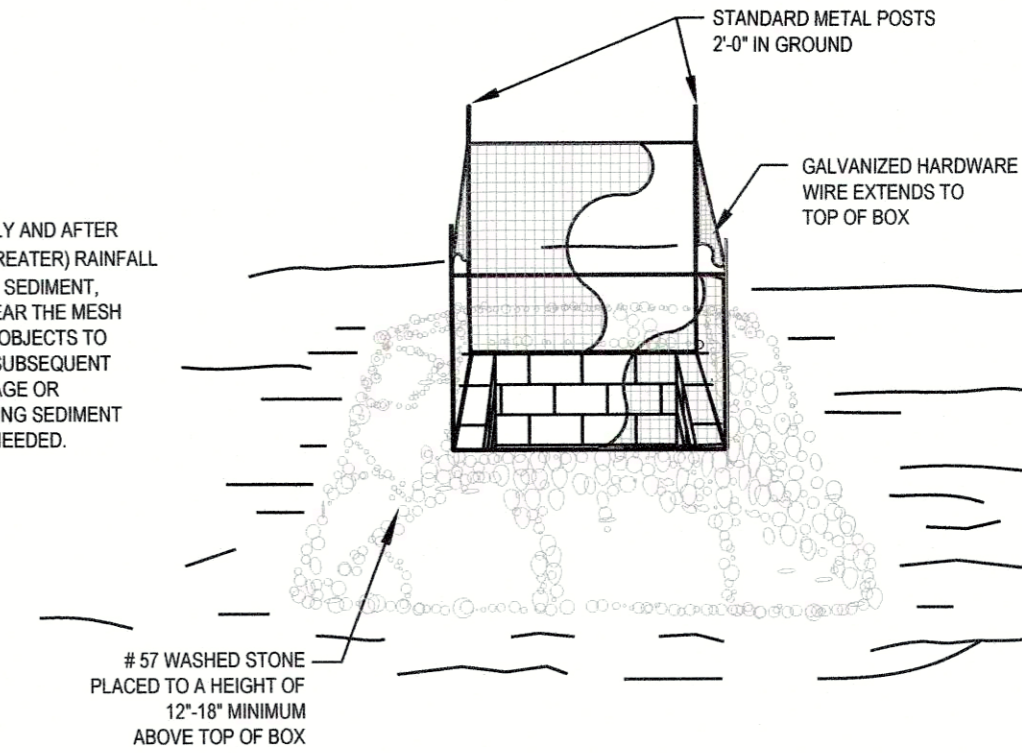
5' TRIANGULAR SWALE CROSS SECTION DETAIL

NOT TO SCALE

SWALE CALCULATIONS

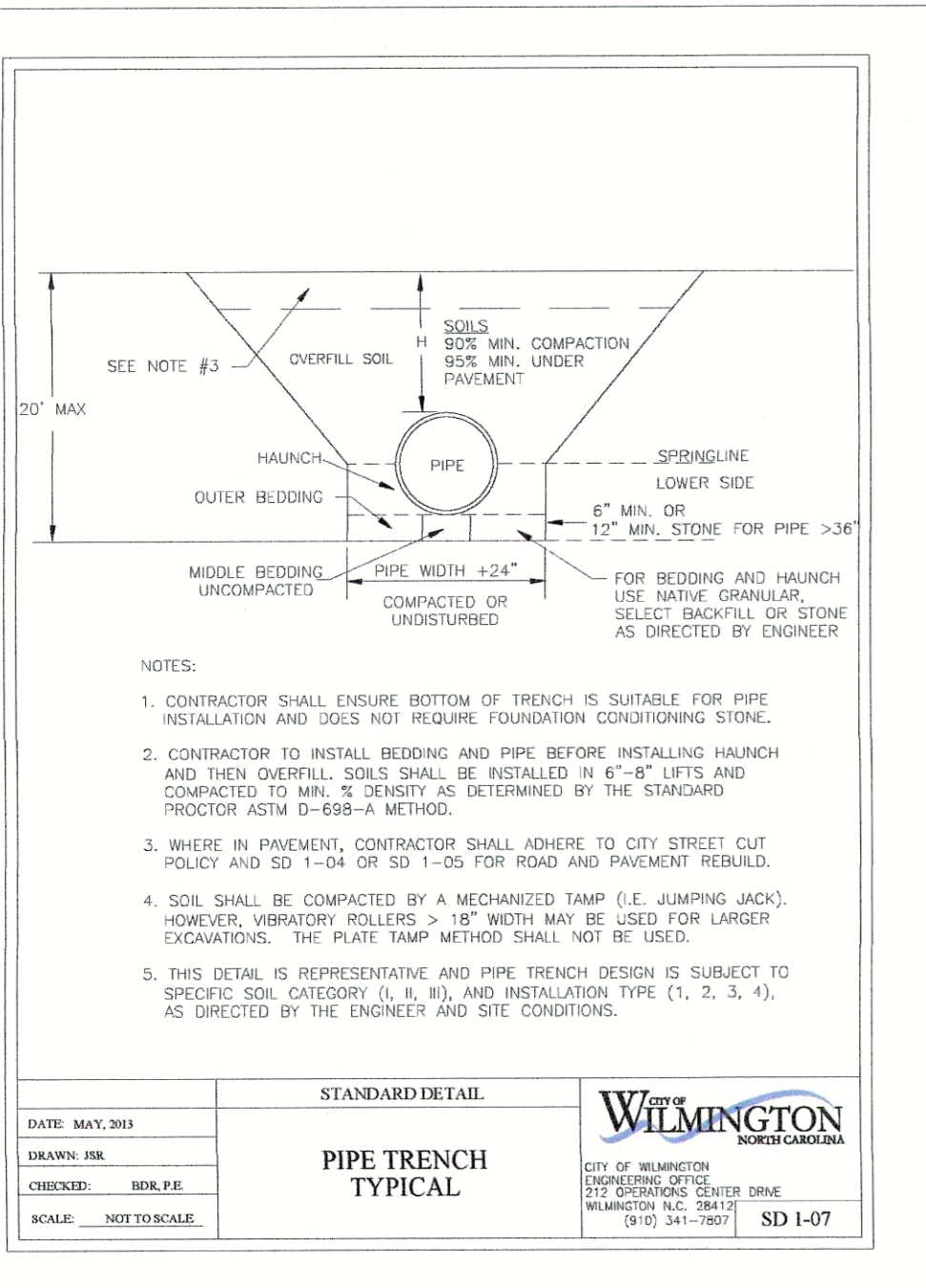
SWALE NO.	DRAINAGE AREA (AC.)	STARTING ELEV.	ENDING ELEV.	LENGTH	AVERAGE SLOPE	CROSS SLOPE	SWALE TYPE	TEMPORARY LINER	SWALE LINER
1	0.05	48.16'	48.47'	125'	0.25%	2.5:1	TRIANGULAR	EXCELSIOR MATTING	GRASS
2	0.12	48.47'	45.00'	133'	2.72%	2.5:1	TRIANGULAR	EXCELSIOR MATTING	GRASS

**MAINTENANCE:**  
 INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT. WHEN MESH IS FULL OF SEDIMENT, MAINTENANCE IS REQUIRED. CLEAR THE MESH WIRE OF ANY DEBRIS OR OTHER OBJECTS TO PROVIDE ADEQUATE FLOW FOR SUBSEQUENT RAINS. TAKE CARE NOT TO DAMAGE OR UNDERCUT THE WIRE MESH DURING SEDIMENT REMOVAL. REPLACE STONE AS NEEDED.

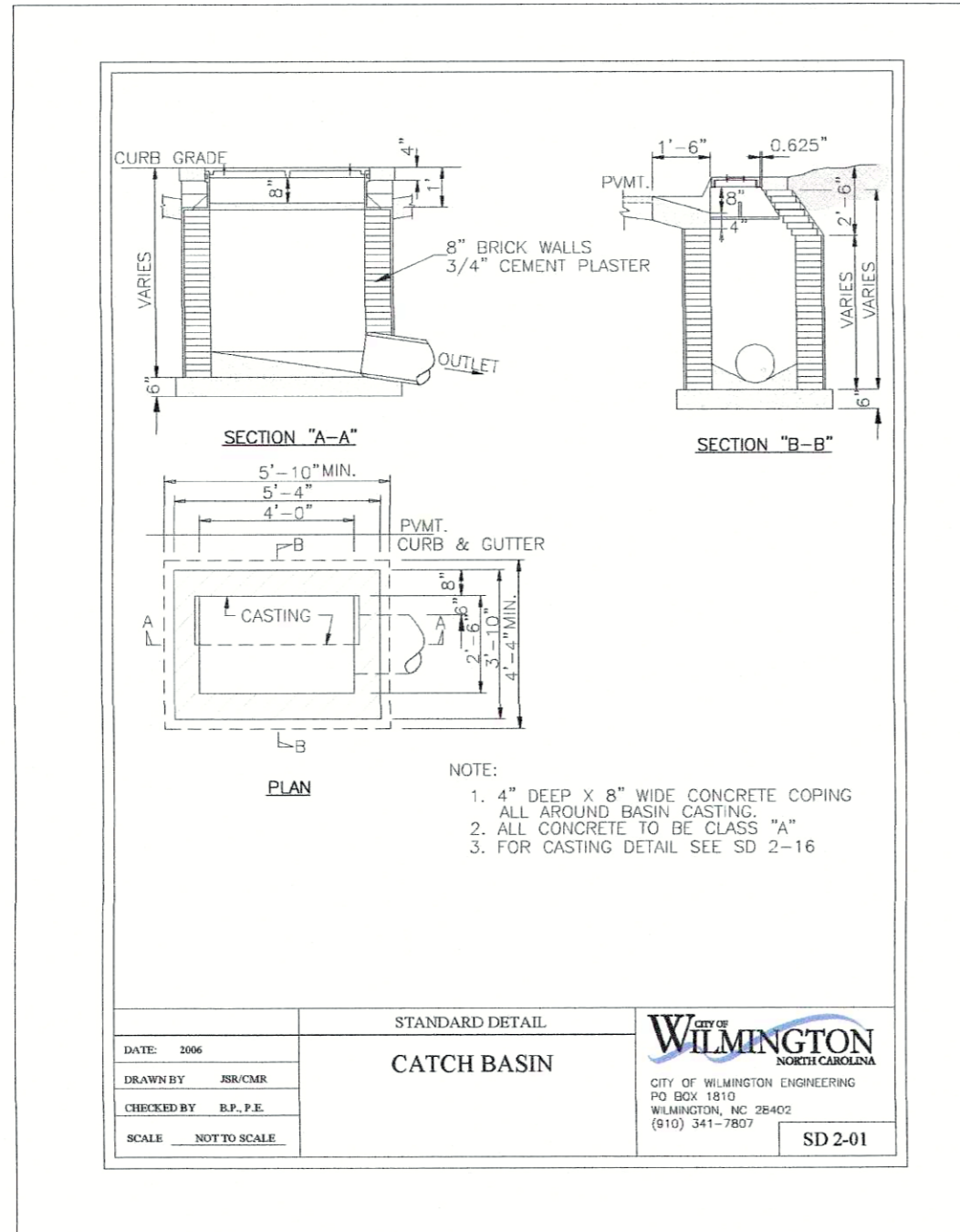
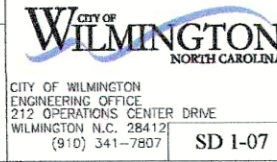


STANDARD CATCH BASIN YARD INLET PROTECTION

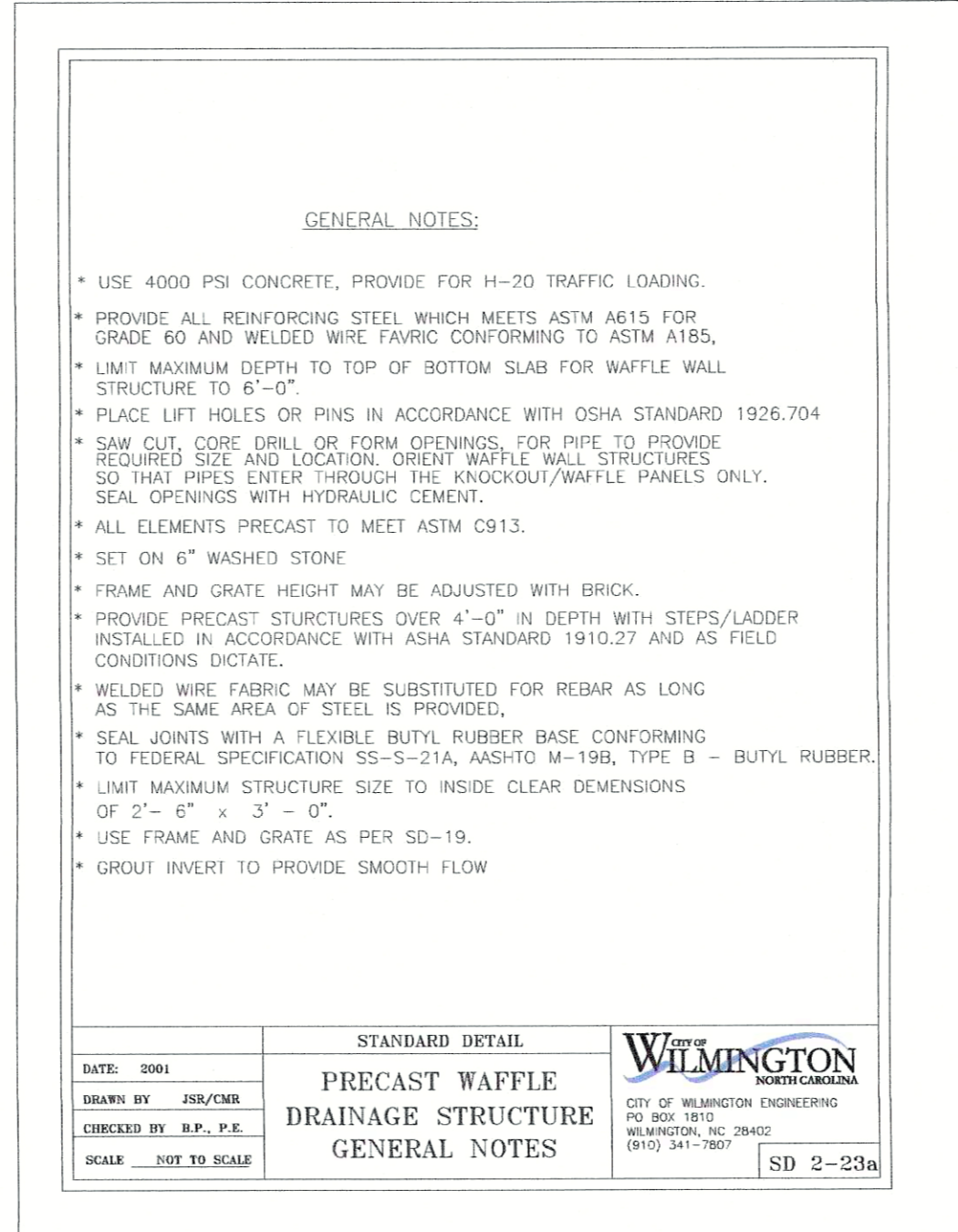
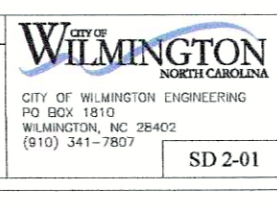
NTS



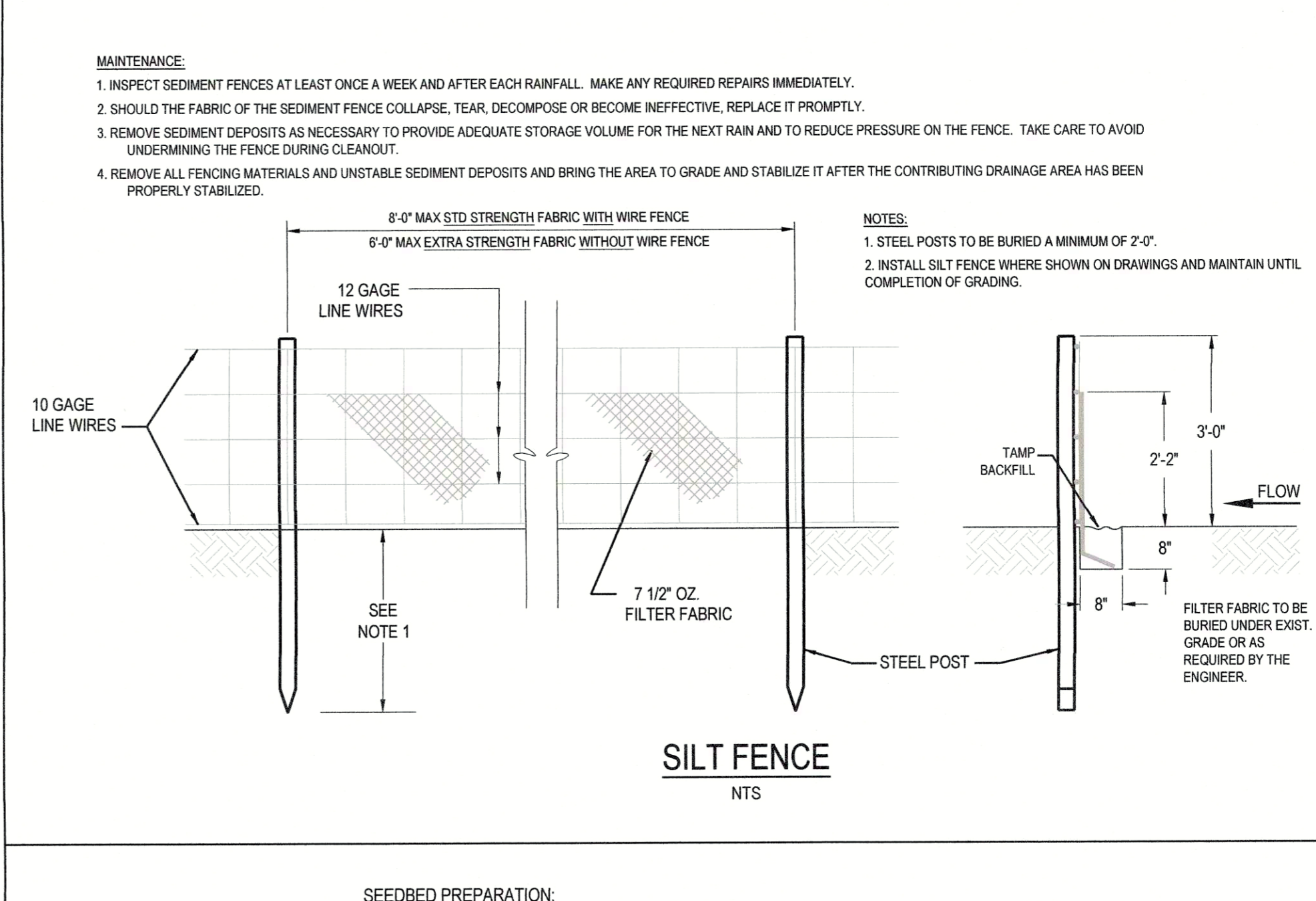
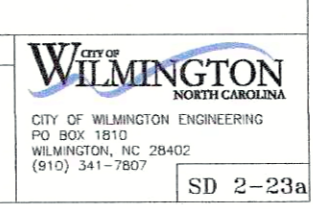
PIPE TRENCH TYPICAL



CATCH BASIN



PRECAST WAFFLE DRAINAGE STRUCTURE GENERAL NOTES



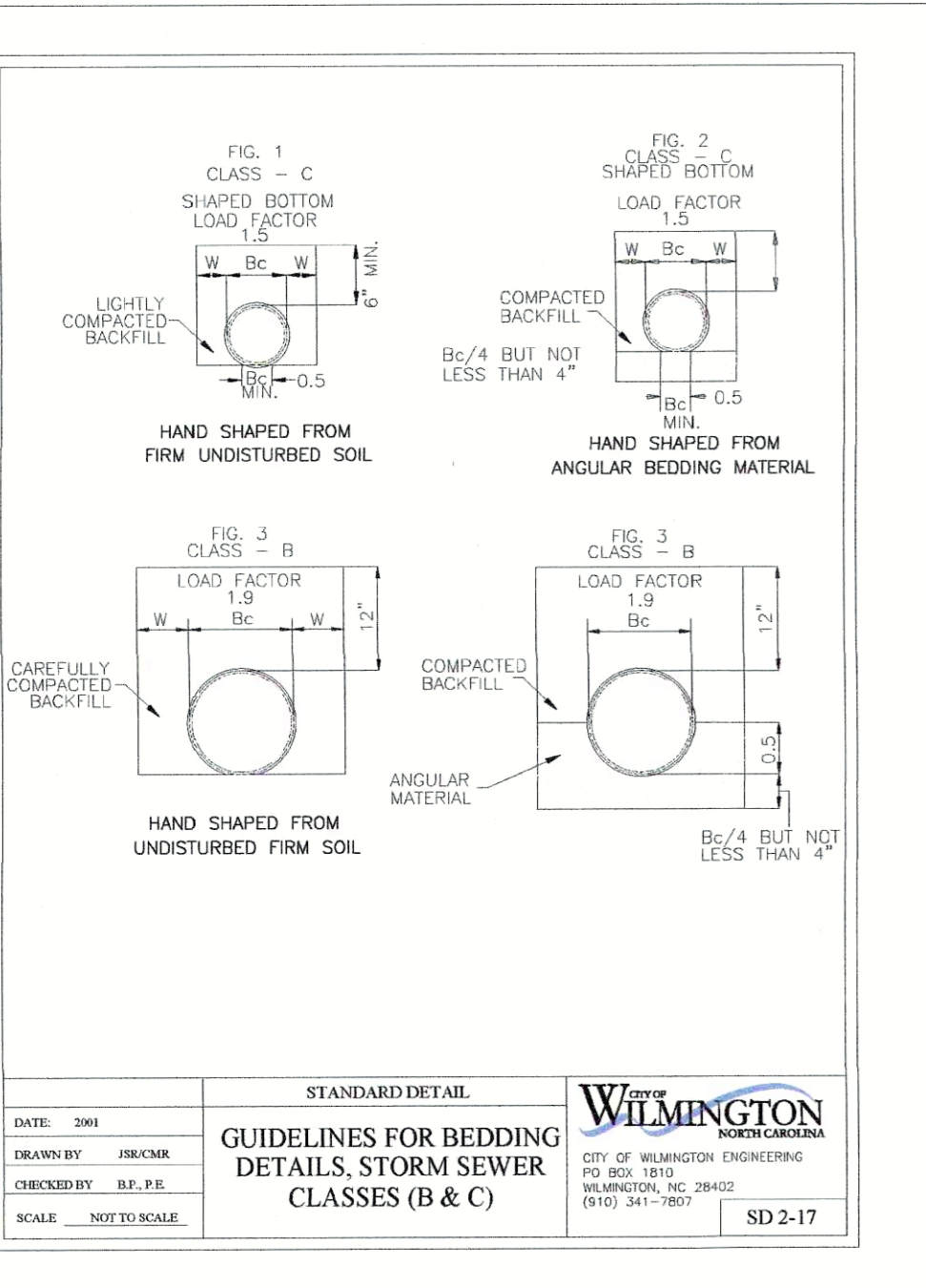
SILT FENCE

NTS

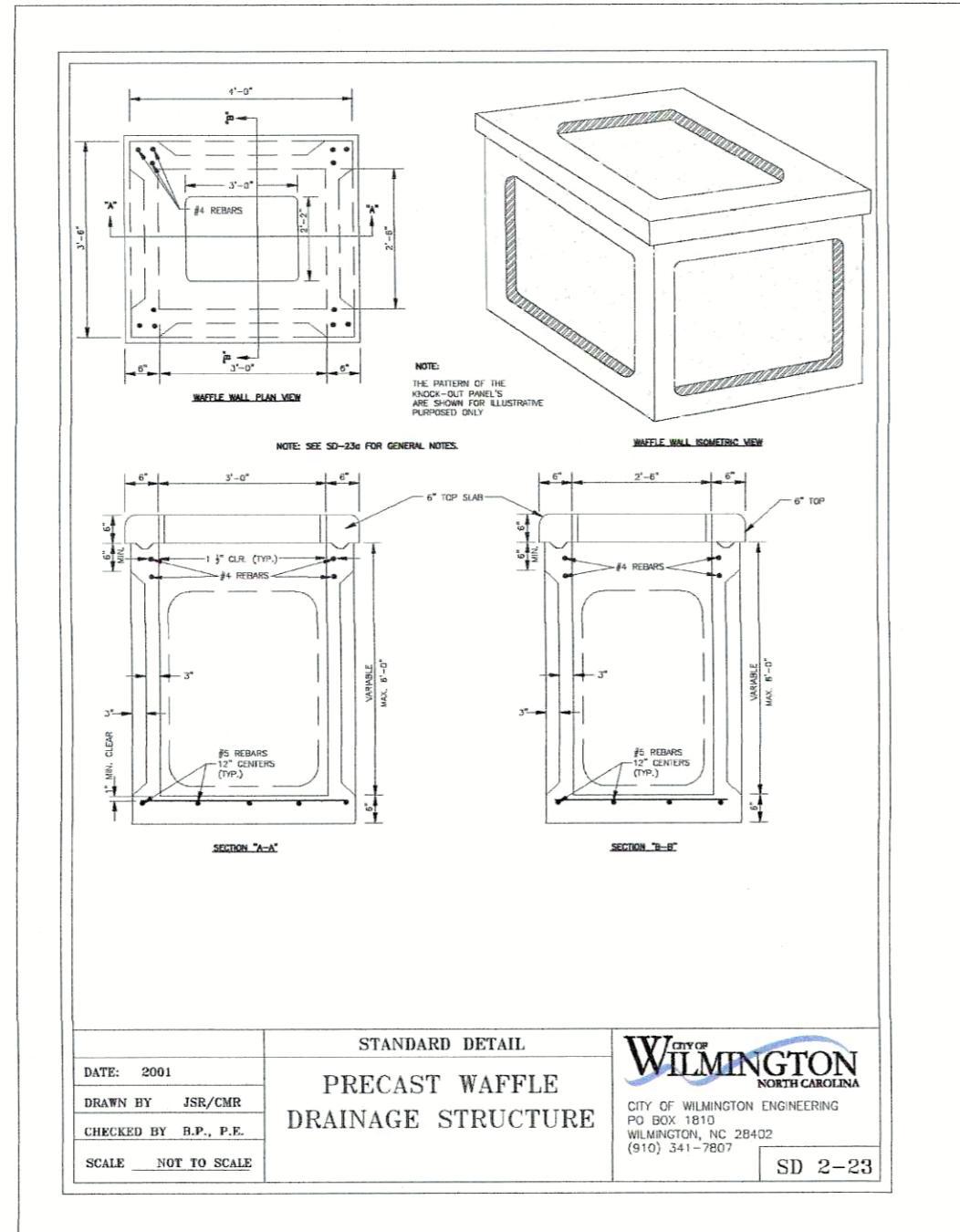
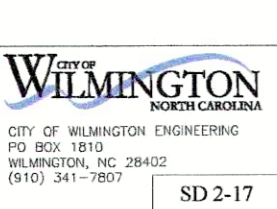
- SEEDBED PREPARATION:**
1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
  2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
  3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
  4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL.
  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 SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RE-SEEDINGS WITHIN THE PLANTING SEASON. IF POSSIBLE, IF STAND SHOULD BE OVER 60% DAMAGED, RE-ESTABLISH FOLLOWING ORIGINAL LIME FERTILIZER AND SEEDING RATES.
  9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS. OTHER SEEDING RATES COMBINATIONS ARE POSSIBLE.

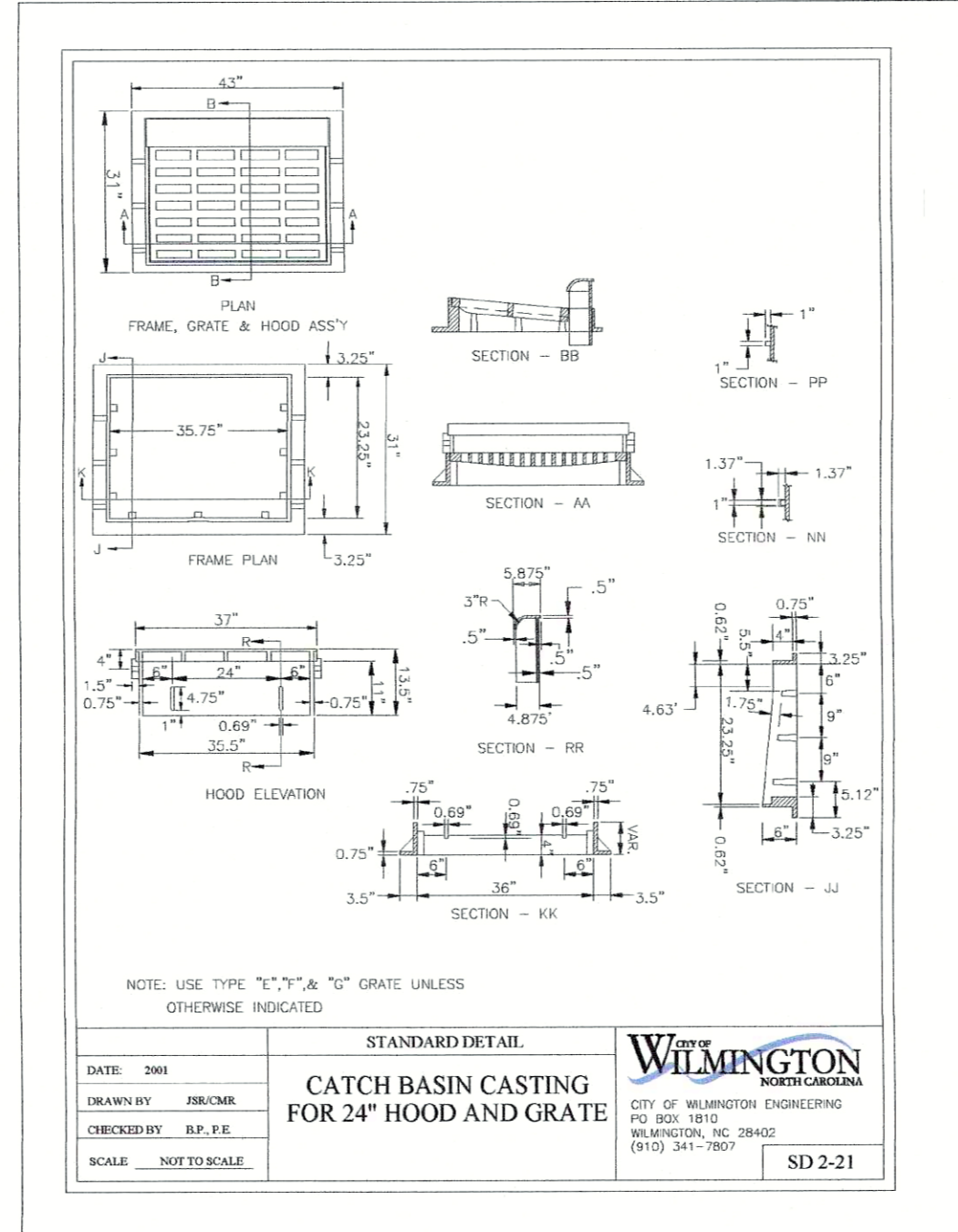
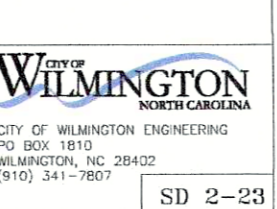
\* TEMPORARY- RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING.



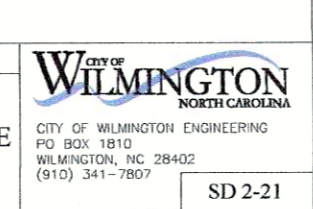
GUIDELINES FOR BEDDING DETAILS, STORM SEWER CLASSES (B & C)



PRECAST WAFFLE DRAINAGE STRUCTURE



CATCH BASIN CASTING FOR 24\"/>



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 \_\_\_\_\_

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

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

City of Wilmington, North Carolina

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

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

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

**WithersRavenel**  
 Engineers | Planners | Surveyors

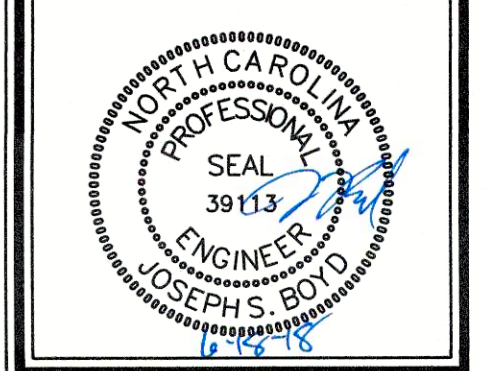
219 Station Road | Ste 101 | Wilmington, NC 28405 | Tel: 910.256.9277 | License #: C-9882 | www.withersravenel.com

**NEEDHAM ANIMAL HOSPITAL EXPANSION**

WILMINGTON, NC

**EROSION CONTROL & STORM DRAIN DETAILS**

Job No. 03-170548 Drawn By TMG  
 Date 03/29/18 Designer JSB

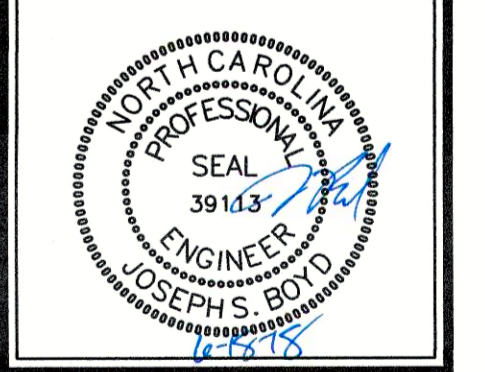


Revisions  
 1 COW REVIEW COMMENTS 06.18.18

Sheet No. **C6.0**

W:\1717-10560\17170548 Needham Animal Hospital Expansion\CD\Drawings\CD\DETAILS\Erosion Control\CD\DETAILS\Erosion Control\03-170548-CD-001.dwg, Monday, June 18, 2018 12:45:00 PM, GARDNER, TOM

Job No. 03-1705-48 Drawn By TMC  
Date 03/29/18 Designer JSB



Revisions  
1 COW REVIEW COMMENTS 06.18.18

Sheet No.  
**C6.1**

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

ENGLISH STANDARD DRAWING FOR  
TYPE 'D', 'E', AND 'F' SIGNS  
ON 'U' CHANNEL POSTS

DATE: OCTOBER, 2003  
DRAWN: PRINKE  
CHECKED: EBC  
SCALE: NOT TO SCALE

STANDARD DETAIL  
**SIDEWALK**

CITY OF WILMINGTON  
NORTH CAROLINA  
100 N. COLLETT STREET  
WILMINGTON, NC 28402  
(910) 341-7807

SD 3-10

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

ENGLISH STANDARD DRAWING FOR  
MOUNTING OF 'D', 'E', AND 'F' SIGNS  
ON 'U' CHANNEL POSTS

DATE: OCTOBER, 2003  
DRAWN: PRINKE  
CHECKED: EBC  
SCALE: NOT TO SCALE

STANDARD DETAIL  
**MOUNTING OF SIGNS**

CITY OF WILMINGTON  
NORTH CAROLINA  
100 N. COLLETT STREET  
WILMINGTON, NC 28402  
(910) 341-7807

SD 3-11

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

ENGLISH STANDARD DRAWING FOR  
PAVEMENT REPAIRS  
FOR SUPERPAVE MIX TYPES

DATE: AUGUST, 2011  
DRAWN: PRINKE  
CHECKED: EBC  
SCALE: NOT TO SCALE

STANDARD DETAIL  
**CURBING**

CITY OF WILMINGTON  
NORTH CAROLINA  
100 N. COLLETT STREET  
WILMINGTON, NC 28402  
(910) 341-7807

SD 3-11

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

ENGLISH STANDARD DRAWING FOR  
PAVEMENT REPAIRS  
FOR SUPERPAVE MIX TYPES

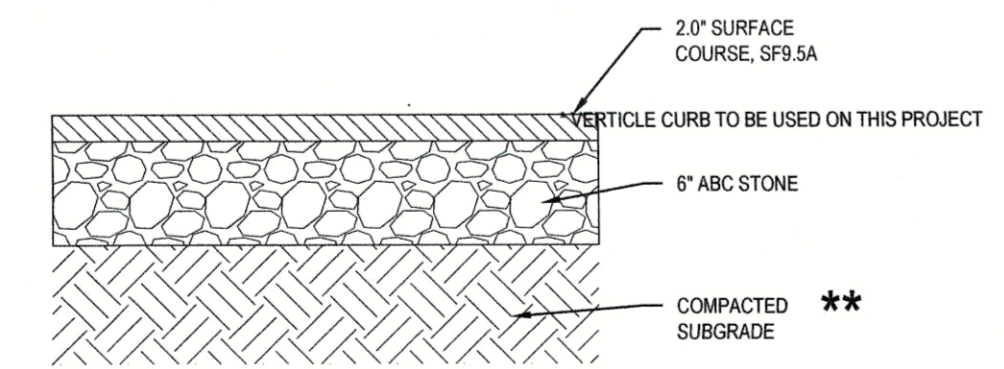
D	X	W
12"	1'-4"	7'-4"
15"	1'-7"	7'-7"
18"	1'-10"	7'-10"
24"	2'-6"	8'-6"
30"	3'-1"	9'-1"
36"	3'-8"	9'-8"
42"	4'-5"	10'-5"
48"	5'-0"	11'-0"

DATE: AUGUST, 2011  
DRAWN: PRINKE  
CHECKED: EBC  
SCALE: NOT TO SCALE

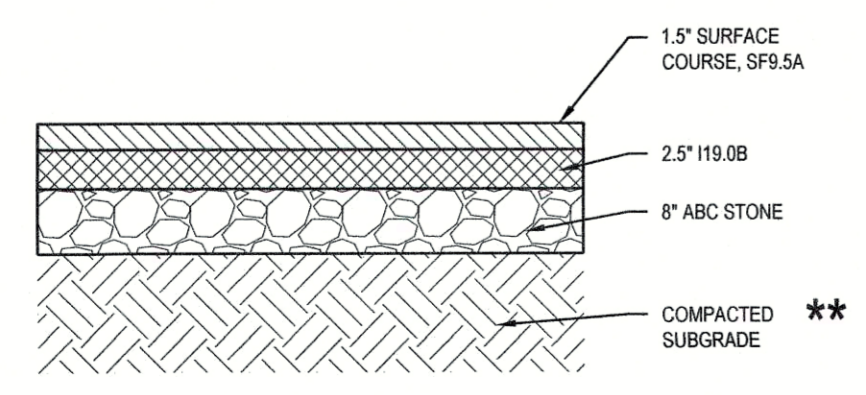
STANDARD DETAIL  
**PAVEMENT REPAIRS**

CITY OF WILMINGTON  
NORTH CAROLINA  
100 N. COLLETT STREET  
WILMINGTON, NC 28402  
(910) 341-7807

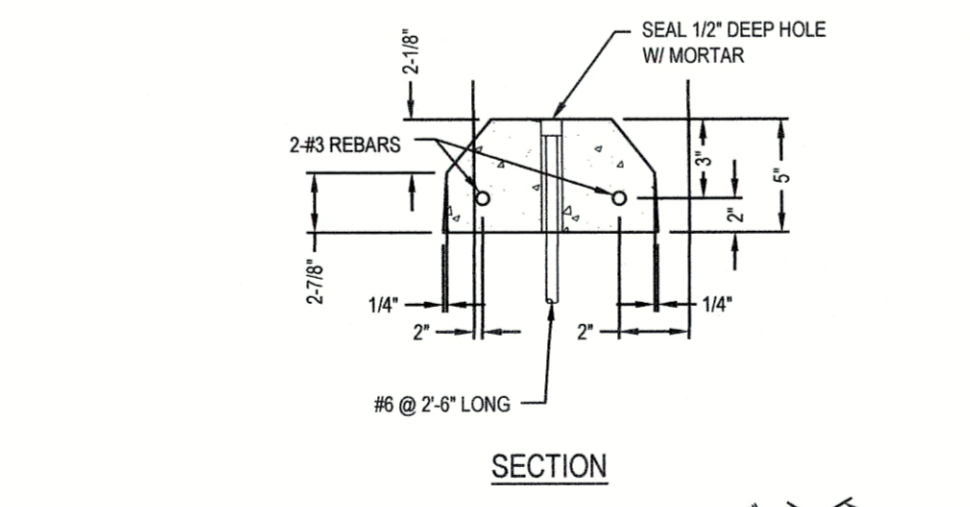
SD 3-11



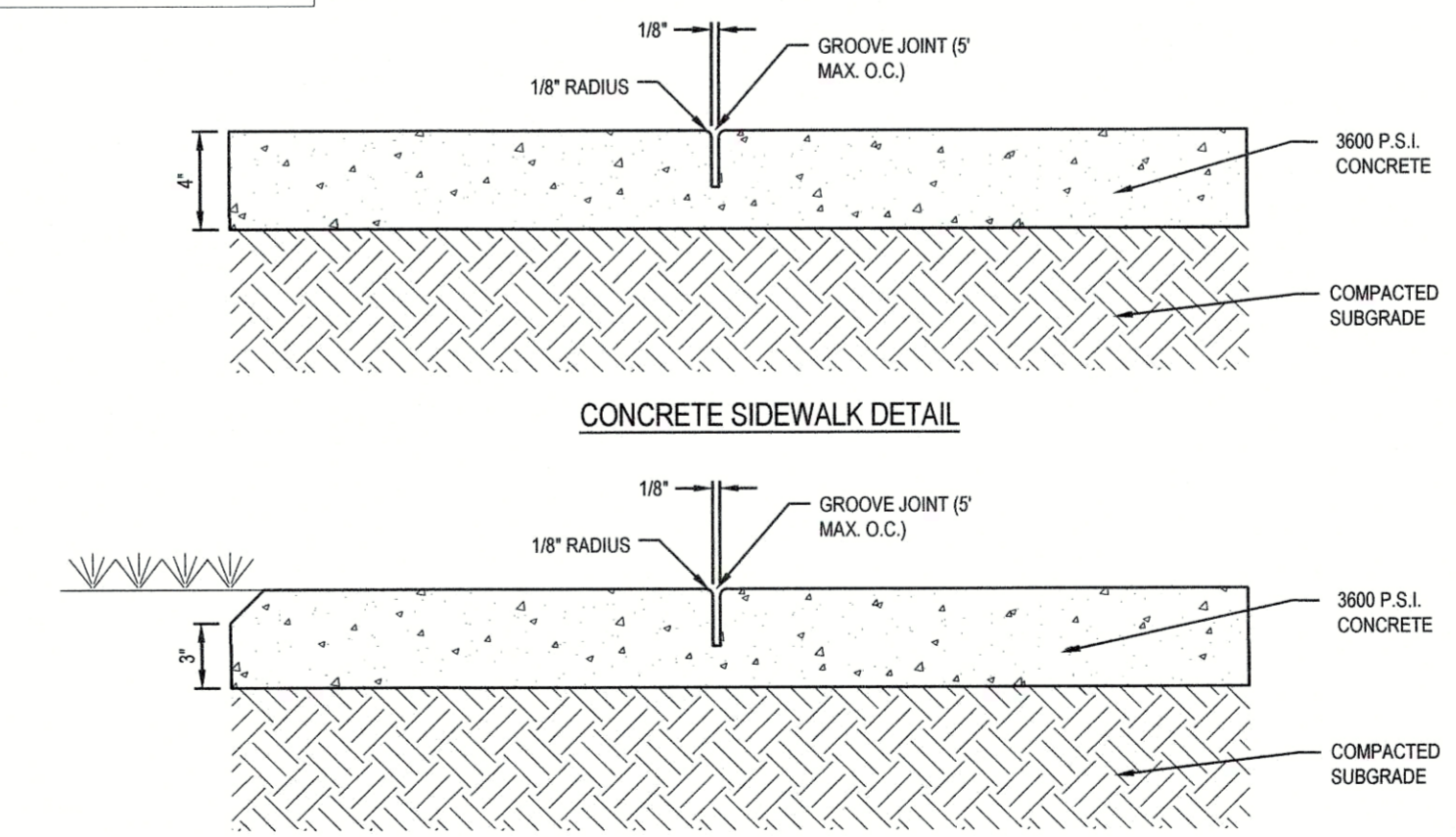
**ASPHALT PAVEMENT DETAIL**  
NOT TO SCALE



**HEAVY DUTY PAVEMENT DETAIL**  
NOT TO SCALE



**PRECAST CONCRETE WHEEL STOP DETAIL**  
NOT TO SCALE



**CONCRETE SIDEWALK DETAIL**  
NOT TO SCALE

- GENERAL NOTES:**
- A GROOVE JOINT 1" DEEP WITH 18" RADIUS SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS.
  - ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS.
  - A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK ABUTS ANY CURB AND GUTTER AND ANY RIGID STRUCTURES.
  - IN SIDEWALKS AND PLAZA AREAS EXPANSION JOINTS ARE REQUIRED AT NO GREATER THAN 30' INTERVALS.
  - CONCRETE SHALL BE 3600 PSI IN 28 DAYS.

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

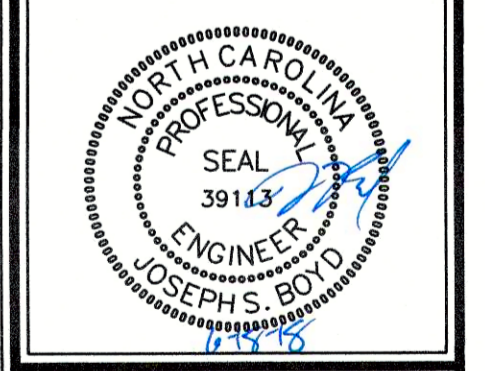
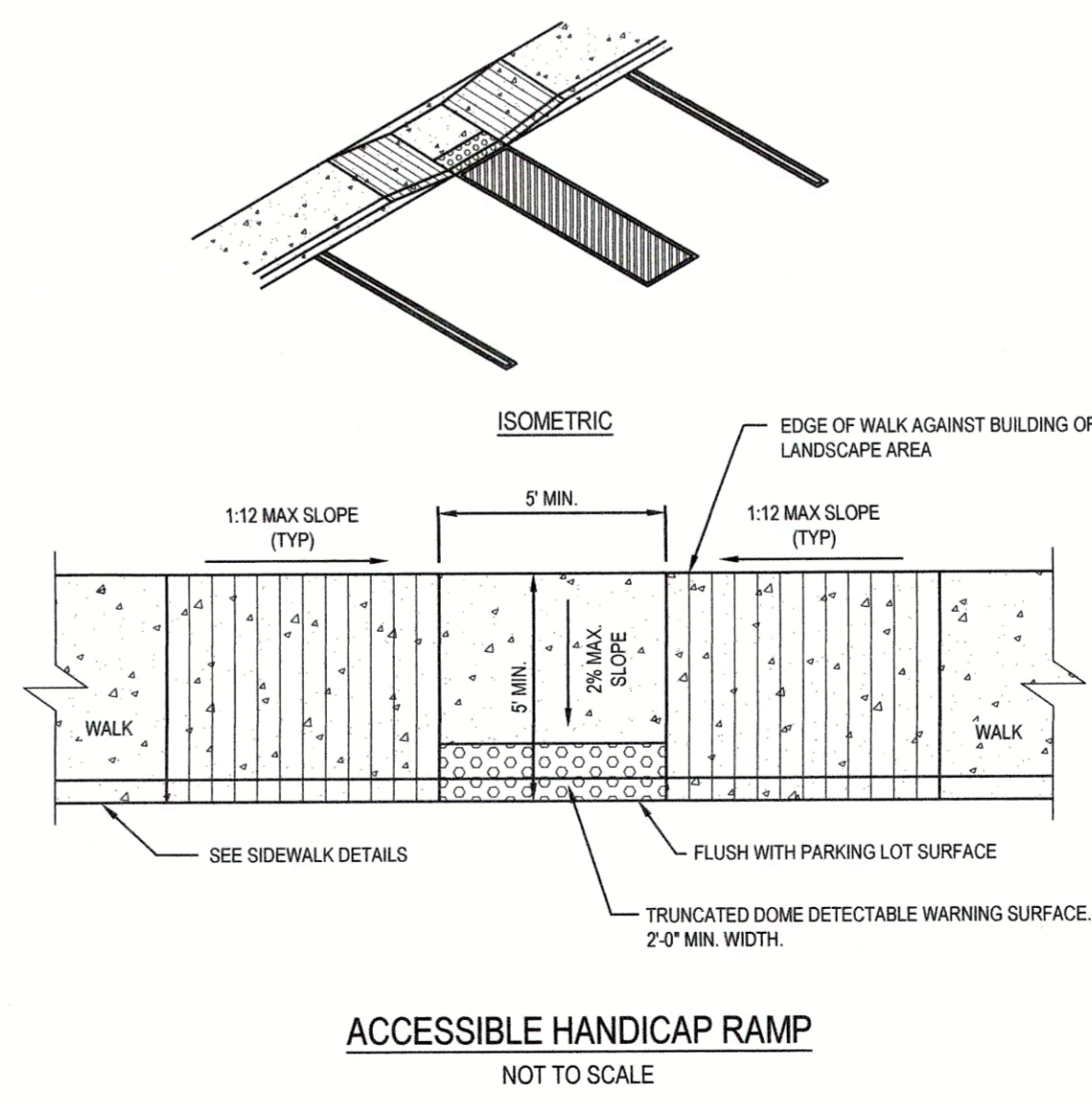
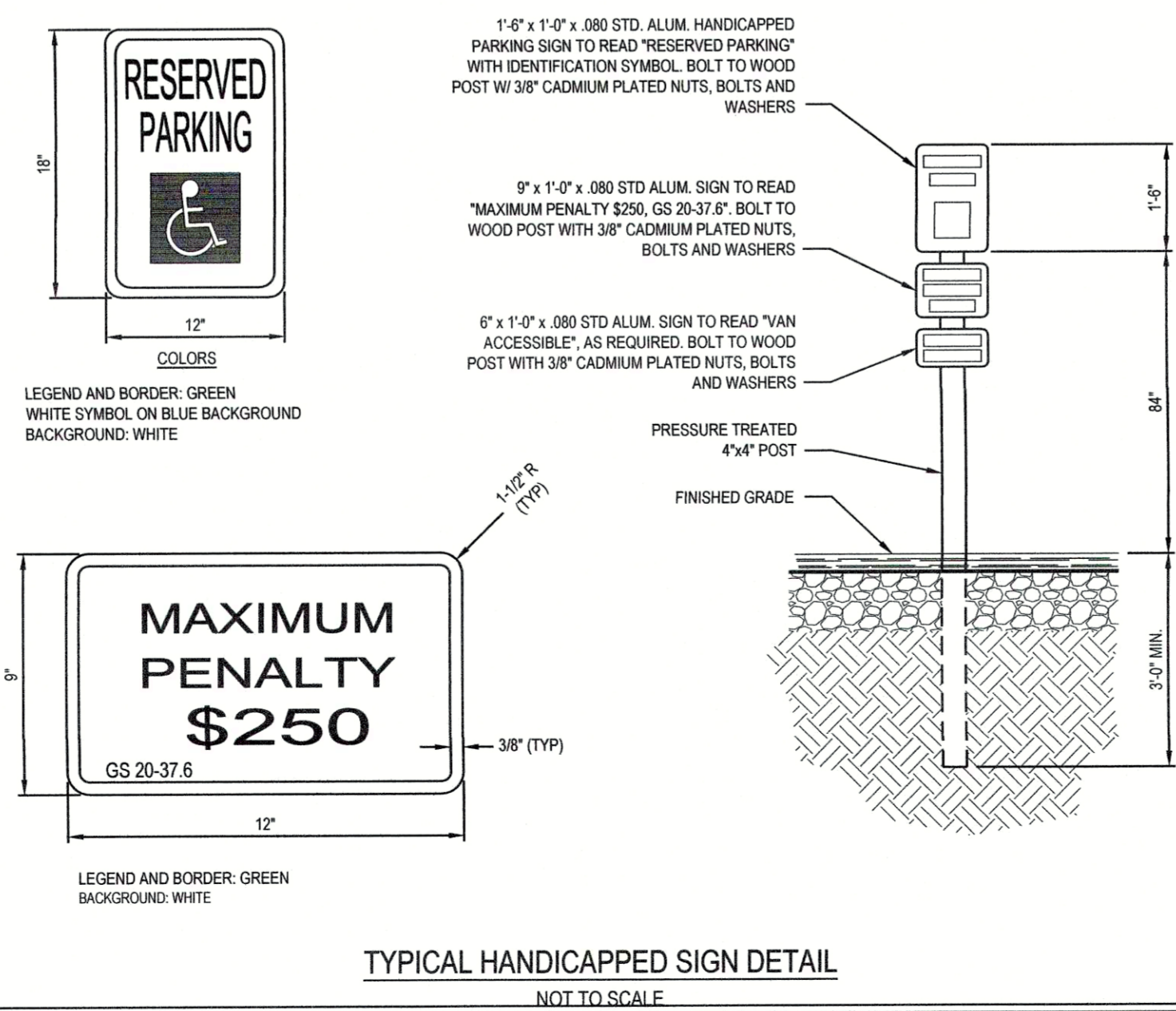
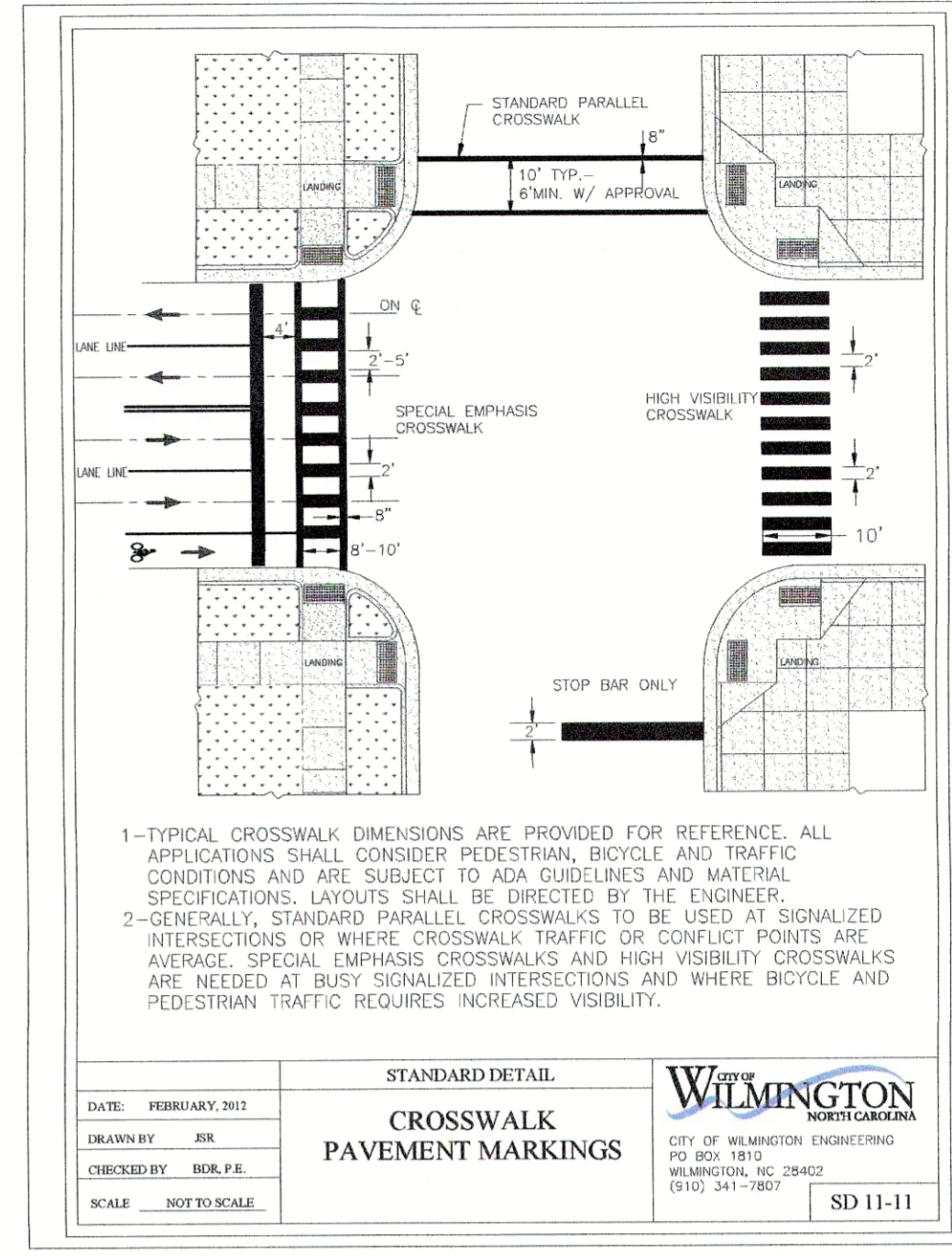
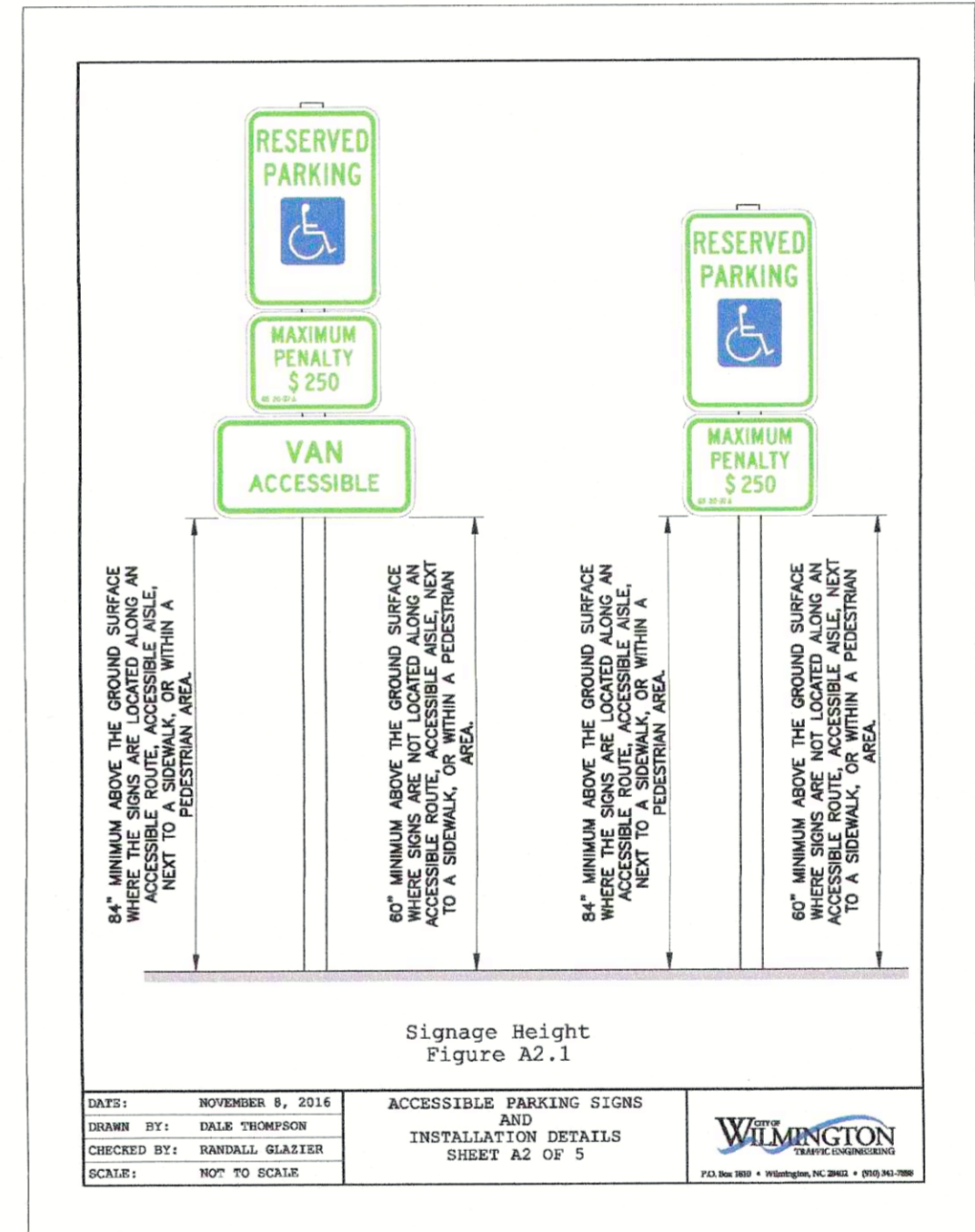
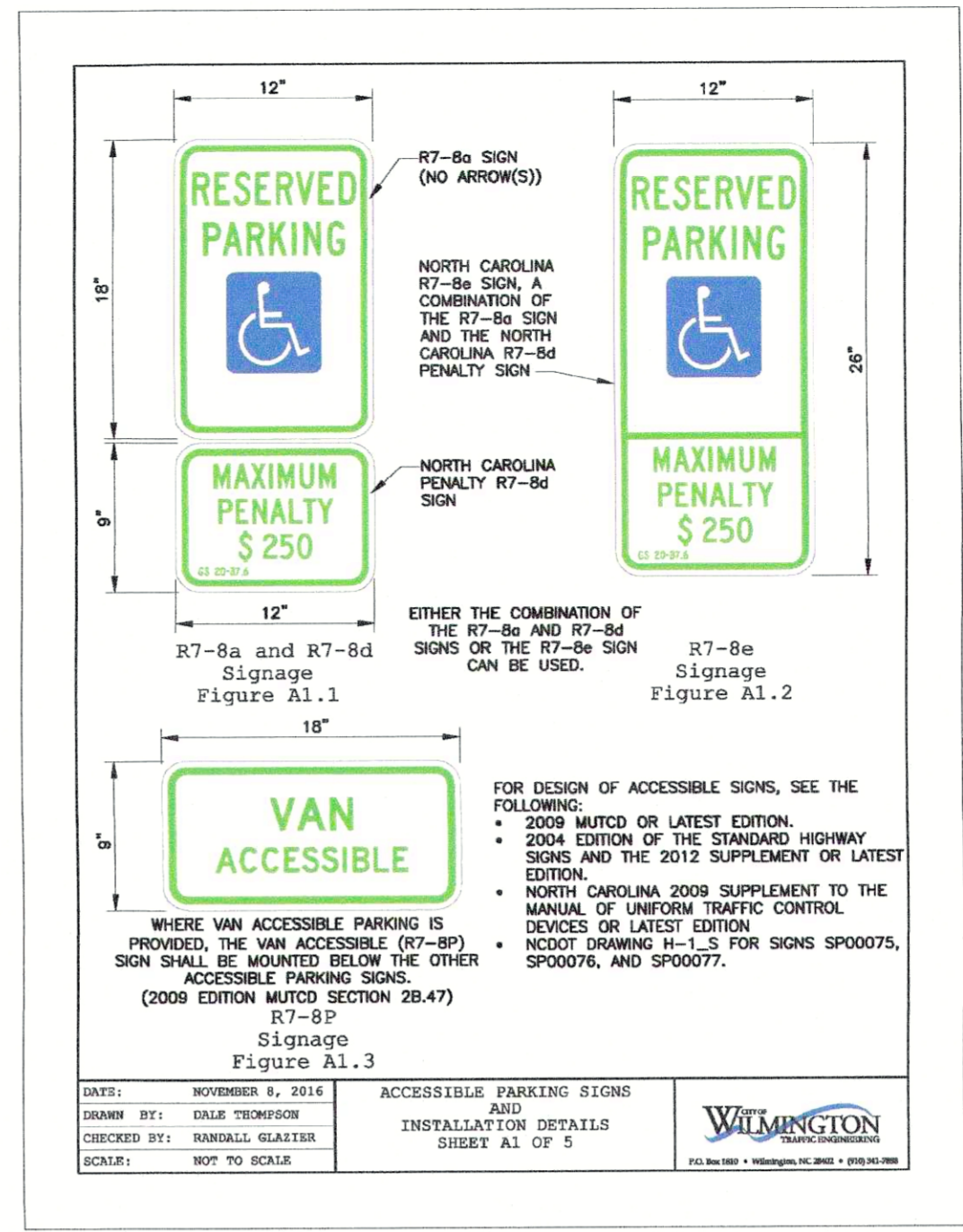
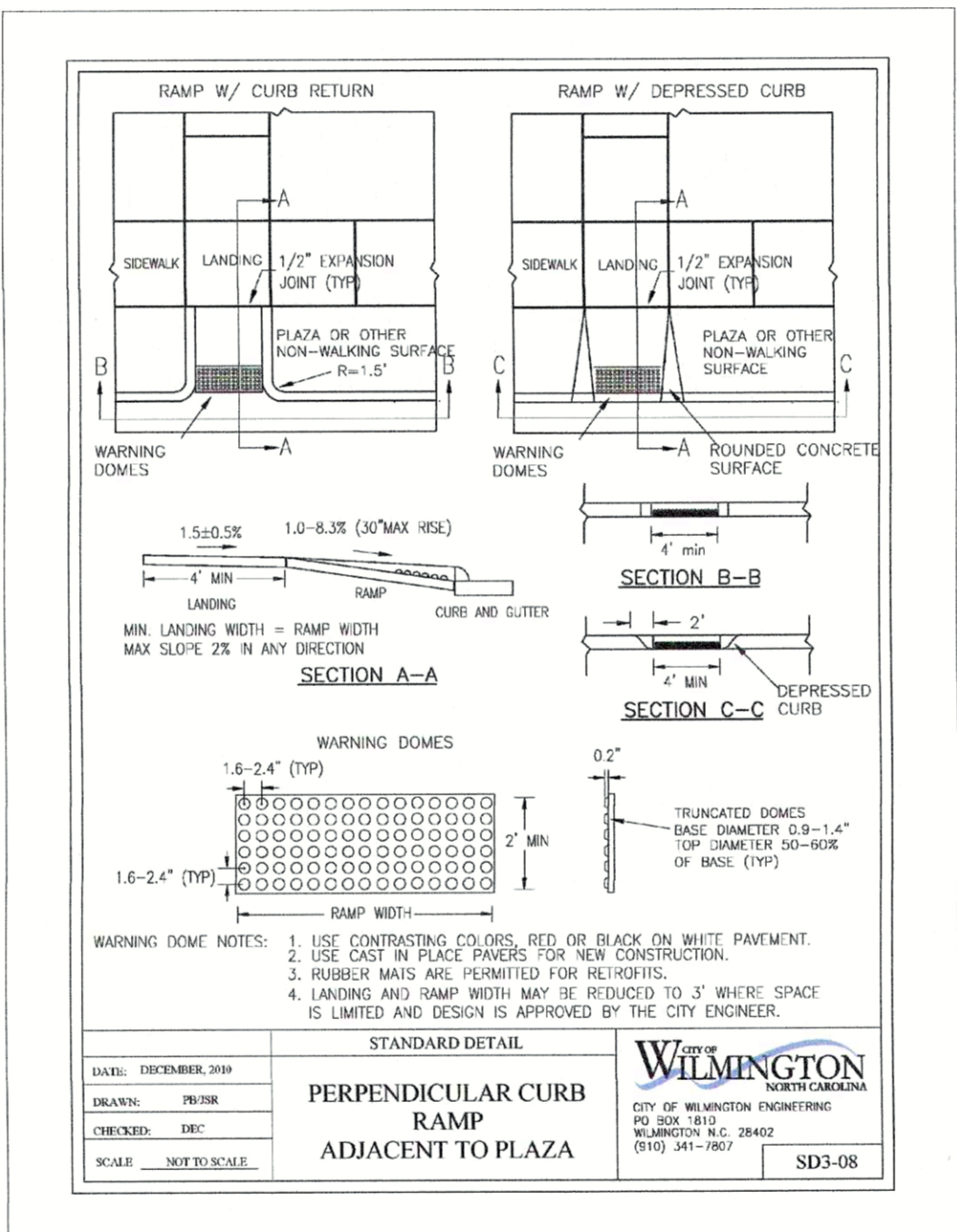
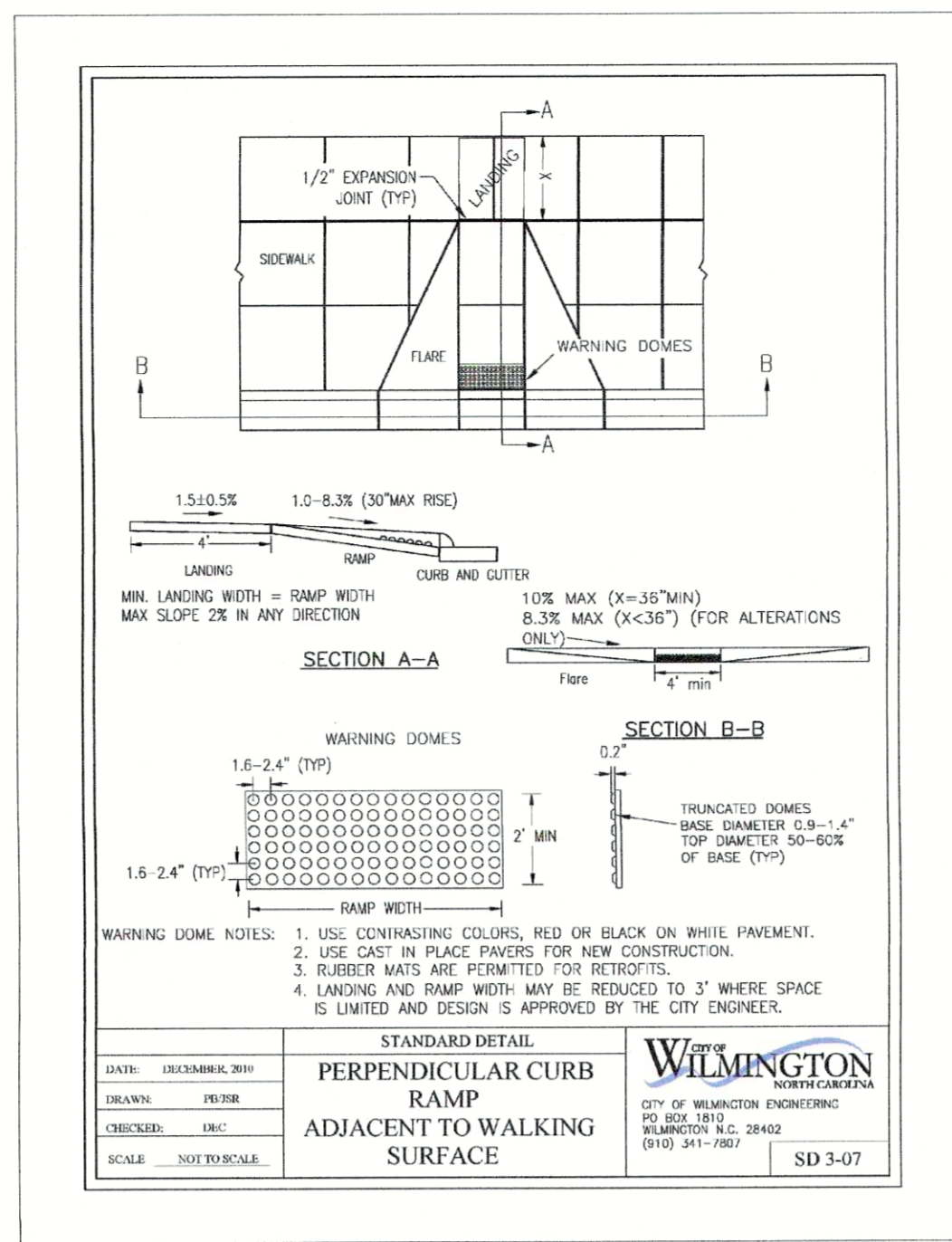
**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN

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

**Approved Construction Plan**

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Planning: \_\_\_\_\_  
Public Utilities: \_\_\_\_\_  
Traffic: \_\_\_\_\_  
Fire: \_\_\_\_\_

W:\Projects\2018\03-170548\Needham Animal Hospital Expansion\DWG\DWG\SD3-07.dwg, Monday, June 18, 2018 12:48:02 PM, C:\Users\jgarrett\Documents\2018\03-170548\Needham Animal Hospital Expansion\DWG\DWG\SD3-07.dwg, Monday, June 18, 2018 12:48:02 PM, C:\Users\jgarrett\Documents\2018\03-170548\Needham Animal Hospital Expansion\DWG\DWG\SD3-07.dwg



Revisions  
1 COW REVIEW COMMENTS 06.18.18

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

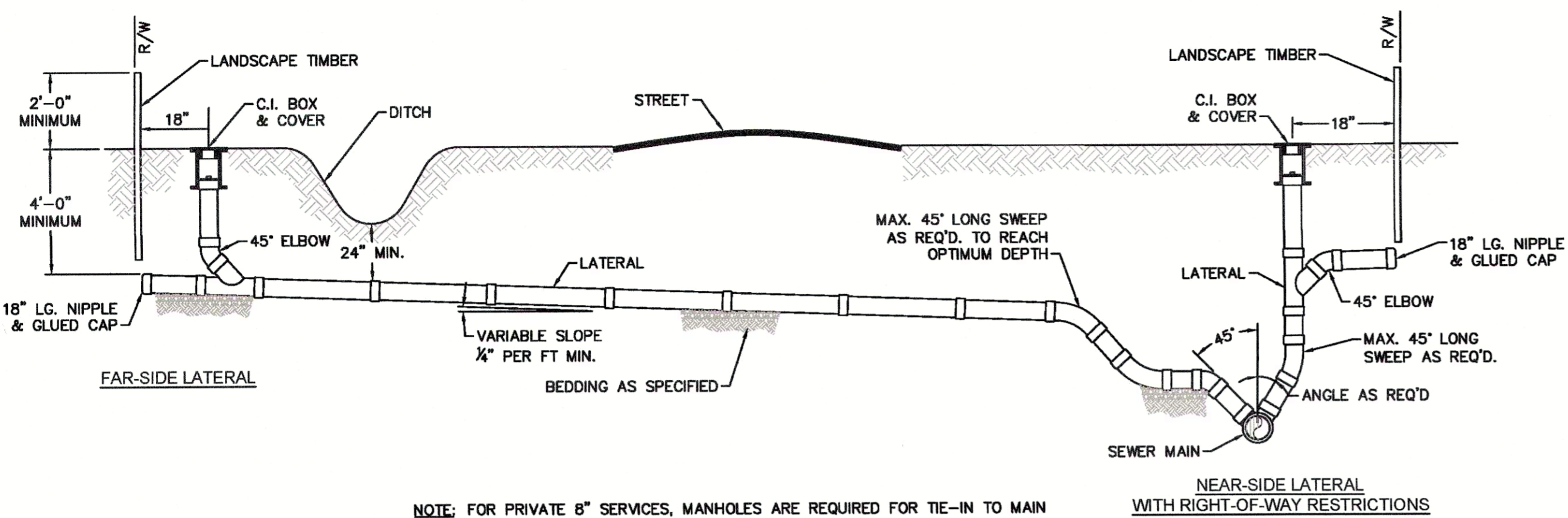
CITY OF WILMINGTON  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN

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

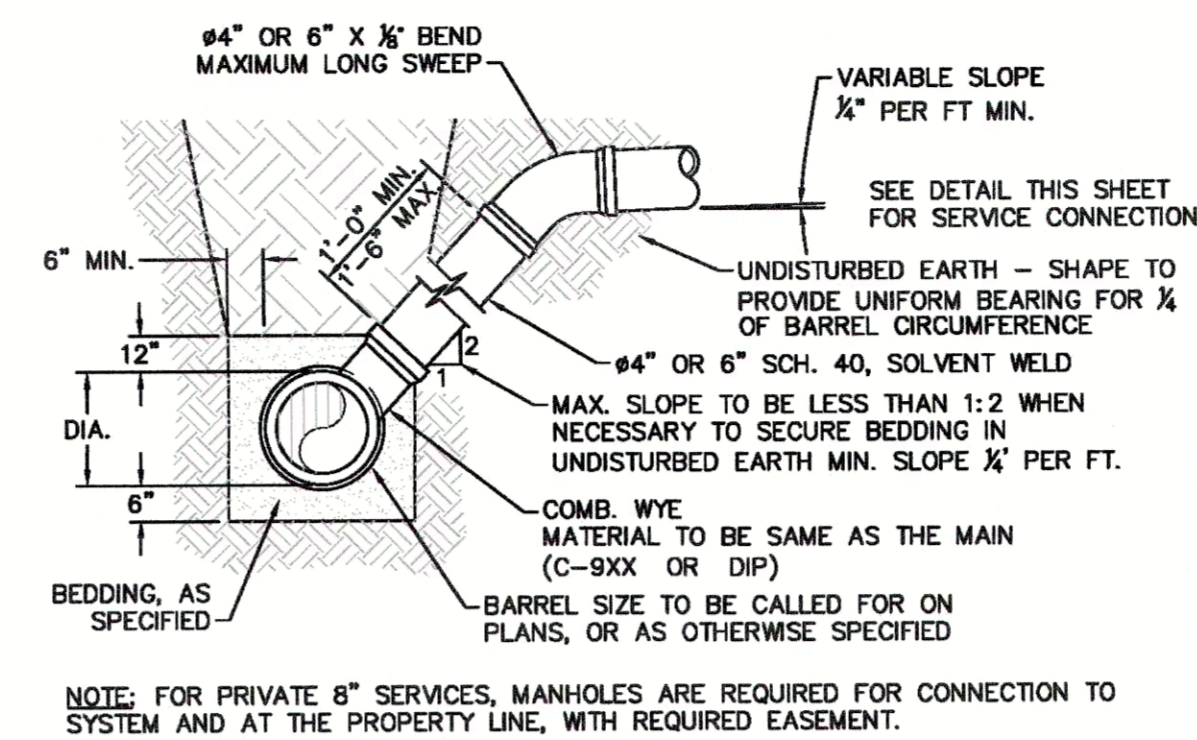
Signed: \_\_\_\_\_

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

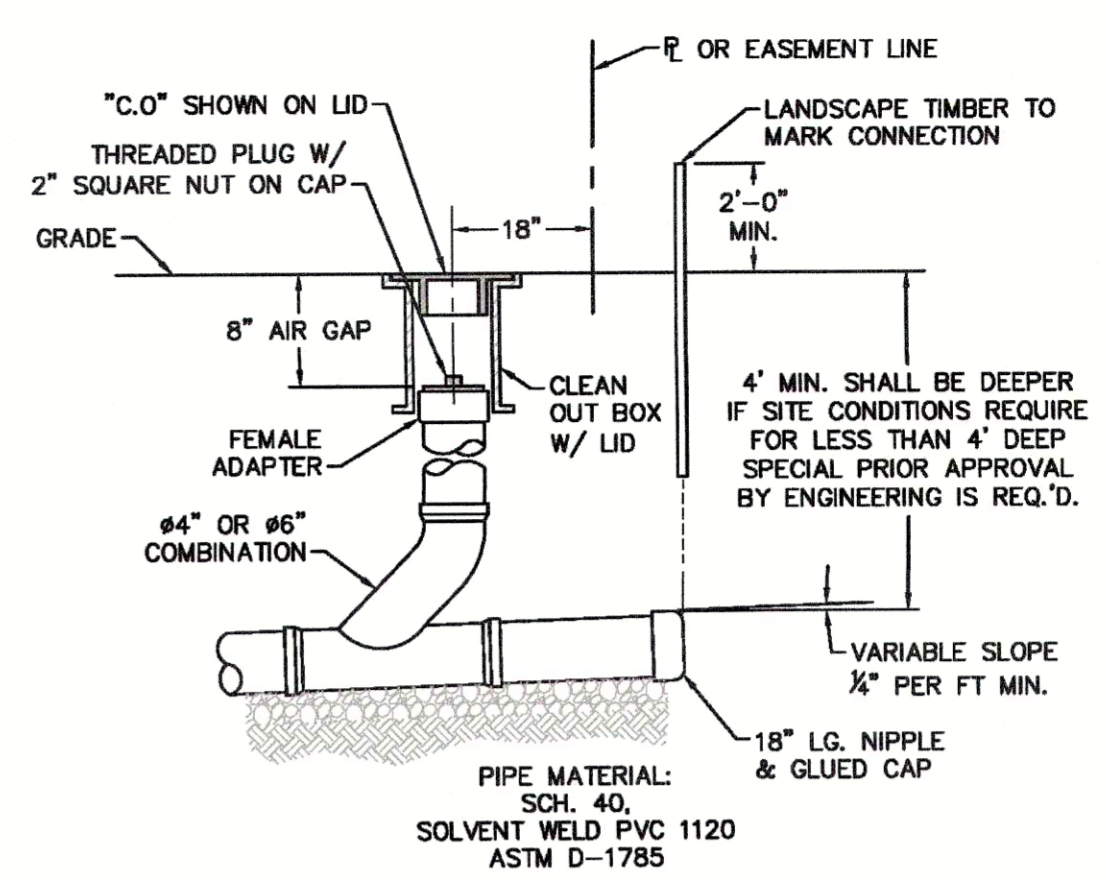
Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_



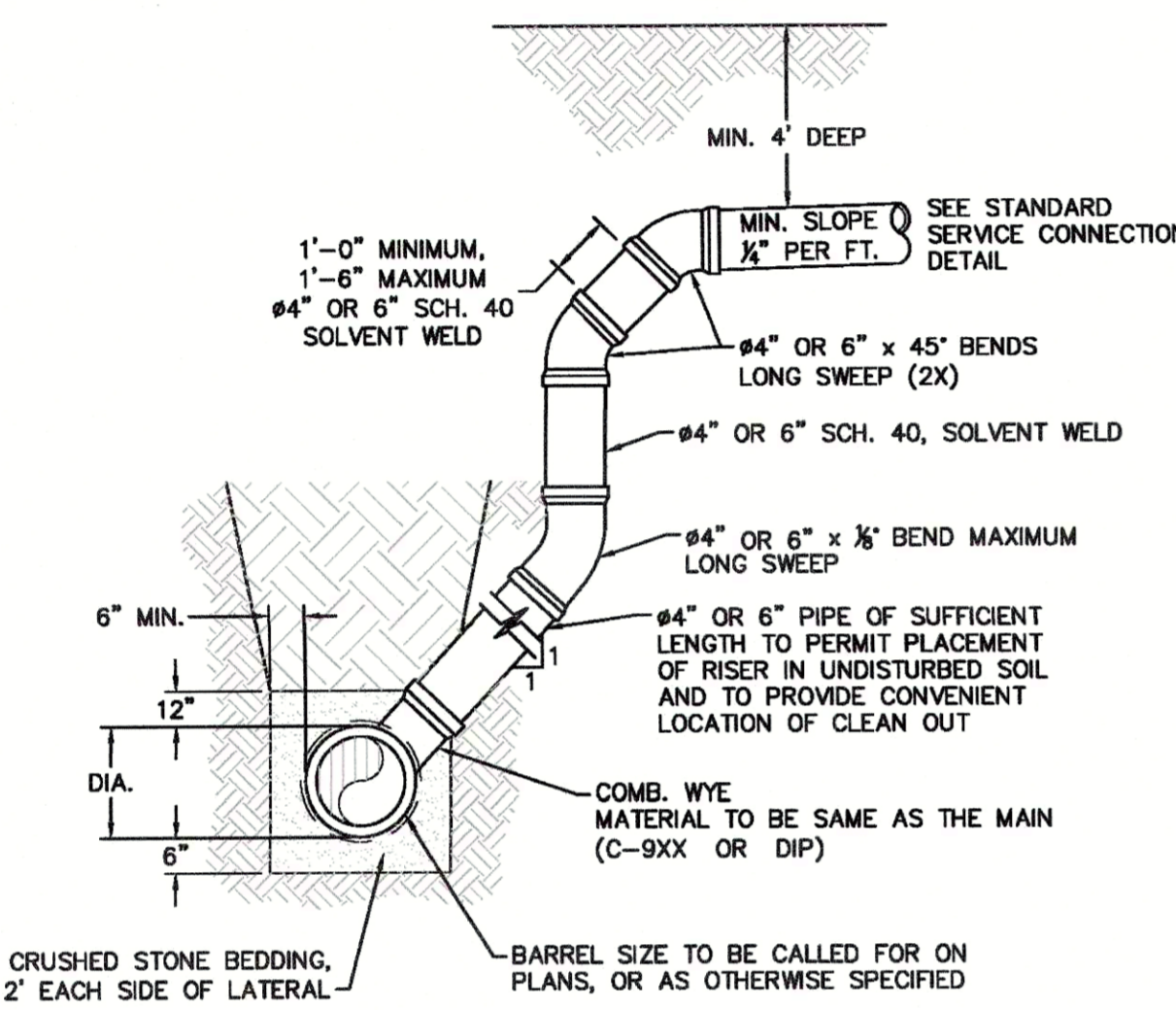
**SD-19**  
STANDARD SERVICE CONNECTION  
TO SANITARY SEWER  
NOT TO SCALE



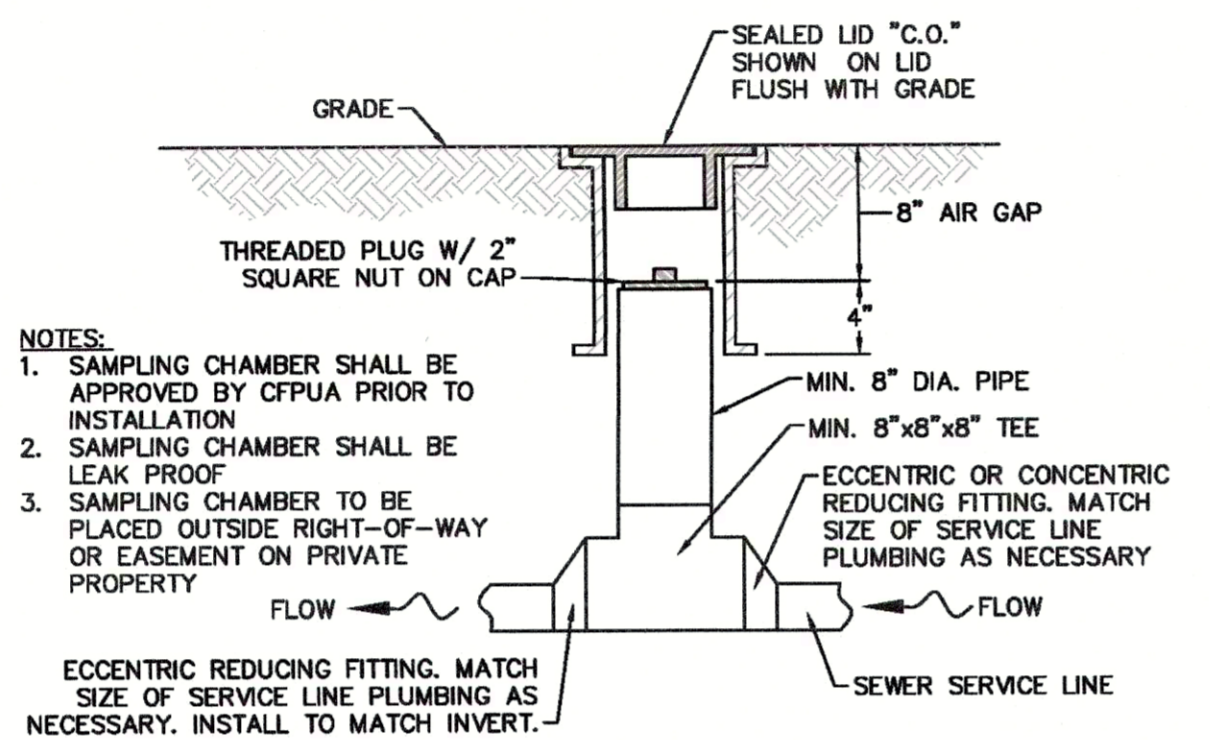
**SD-10**  
STANDARD SERVICE LATERAL  
NOT TO SCALE



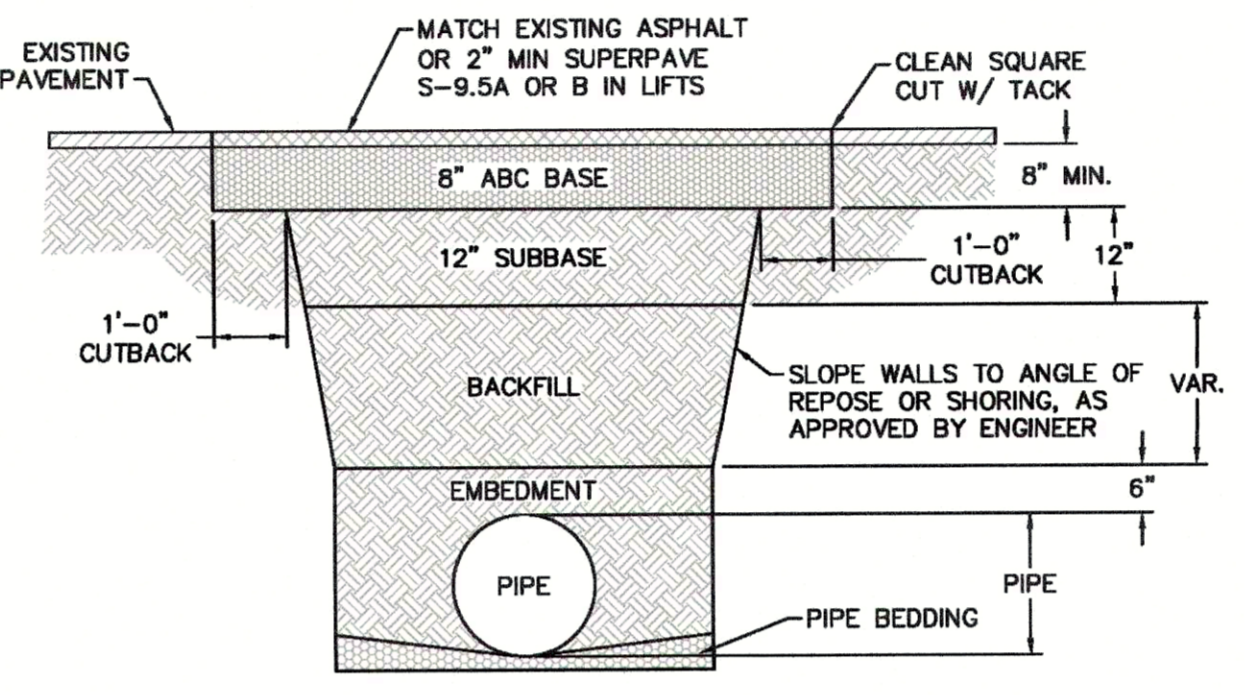
**SD-11**  
SERVICE CONNECTION AND CLEAN-OUT  
NOT TO SCALE



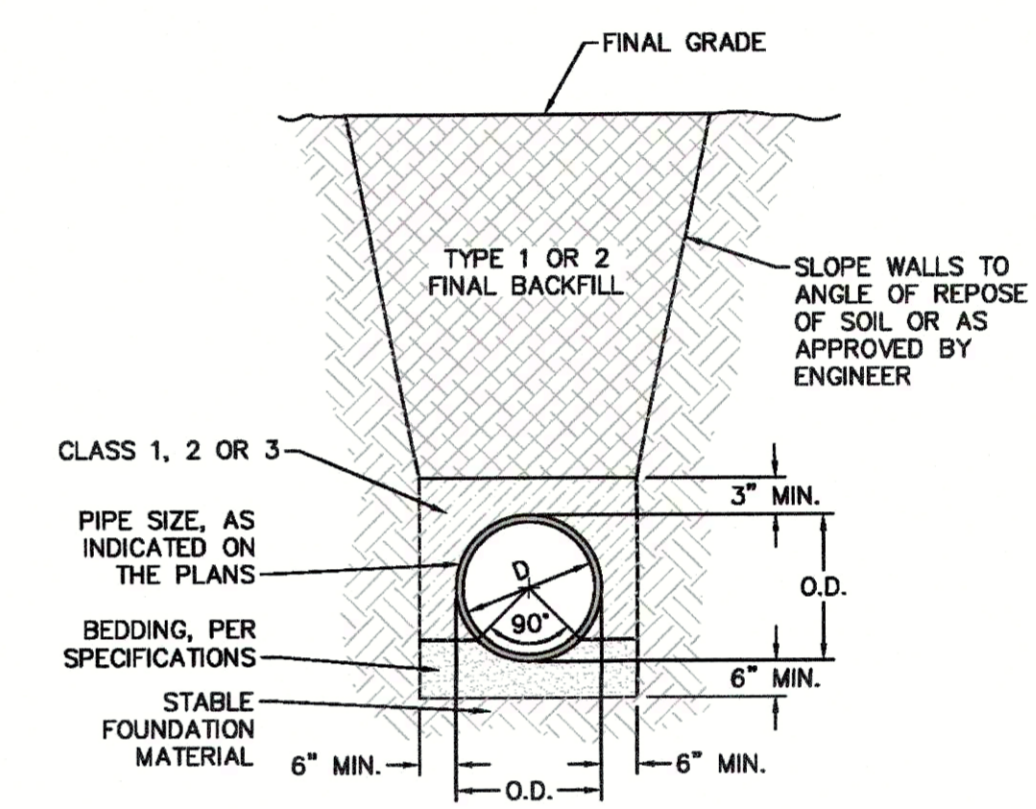
**SD-12**  
DEEP SERVICE LATERAL  
NOT TO SCALE



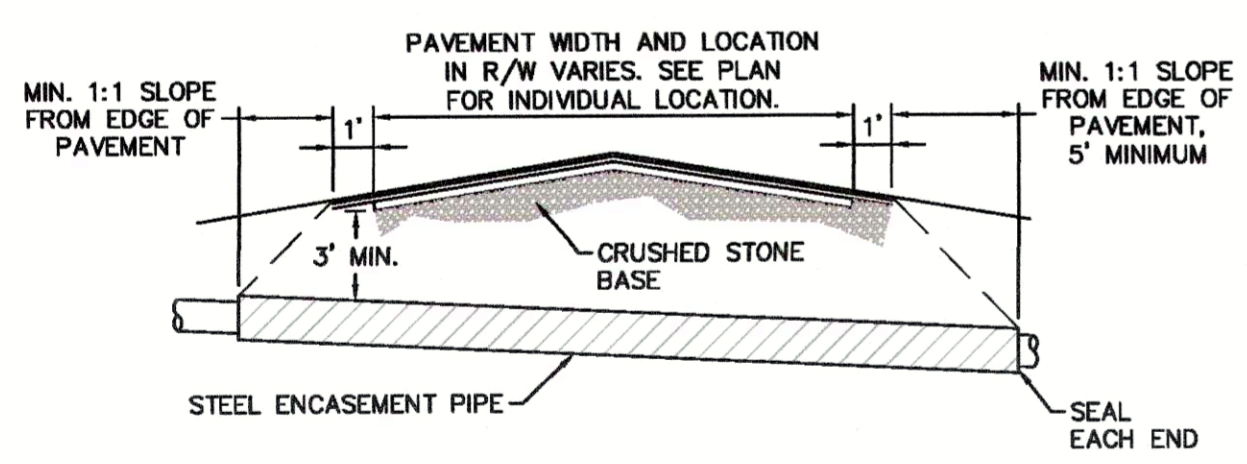
**SD-13**  
SAMPLING CHAMBER  
NOT TO SCALE



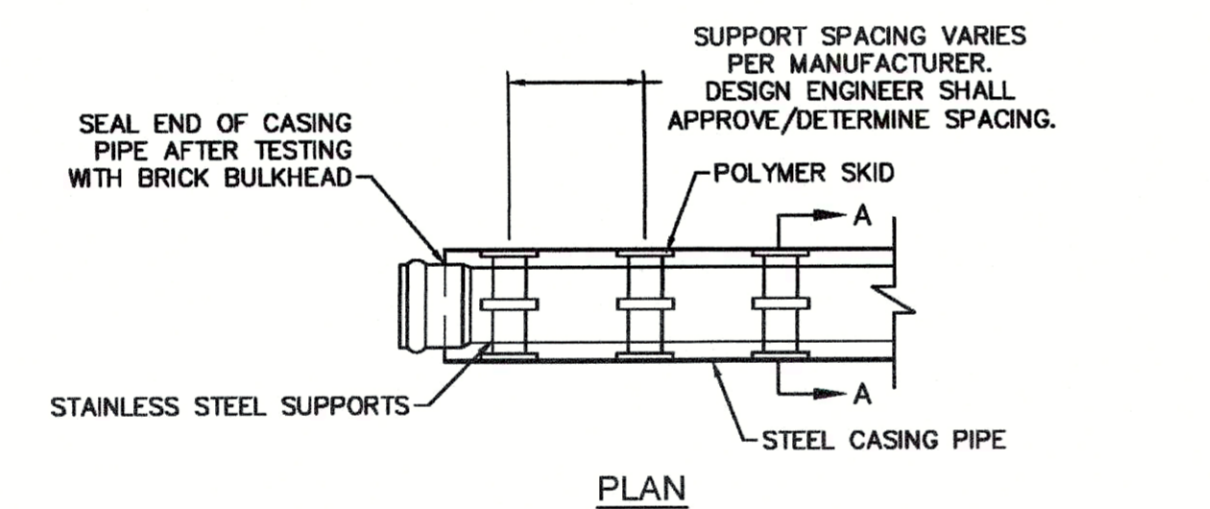
**SD-14**  
PAVEMENT REPAIR WHERE PIPE INSTALLED  
NOT TO SCALE



**SD-15**  
TYPICAL TRENCH DETAIL  
NOT TO SCALE



**SD-16**  
TYPICAL BORING/JACKING DETAIL  
NOT TO SCALE



**SD-17**  
PIPE CASING SUPPORT DETAIL  
NOT TO SCALE

- NOTES:**
- BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
  - SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION. (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC.)
  - 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
  - BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS.
  - 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.
  - ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
  - ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
  - 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

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

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

**Approved Construction Plan**

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

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

REV:	DESCRIPTION:	DATE:
1	SAMPLING CHAMBER REVISED	10/28/12
2	Revised Multiple Details	02/15/16

- 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**

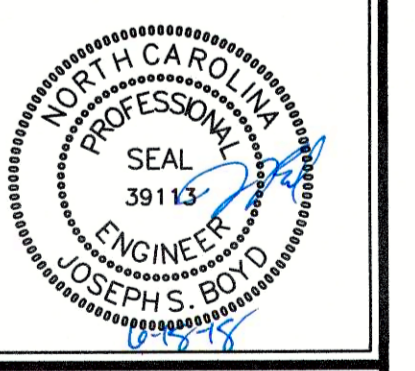
**CFPUA SANITARY SEWER**

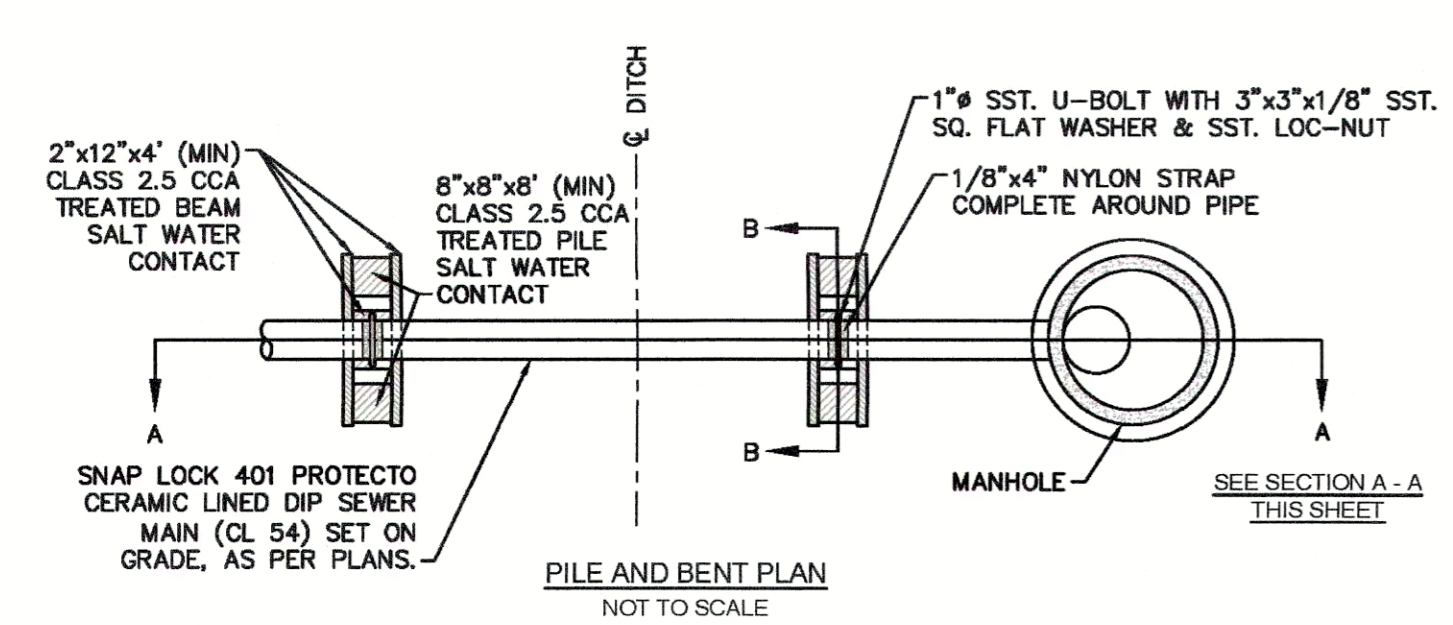
**STANDARD DETAILS**

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

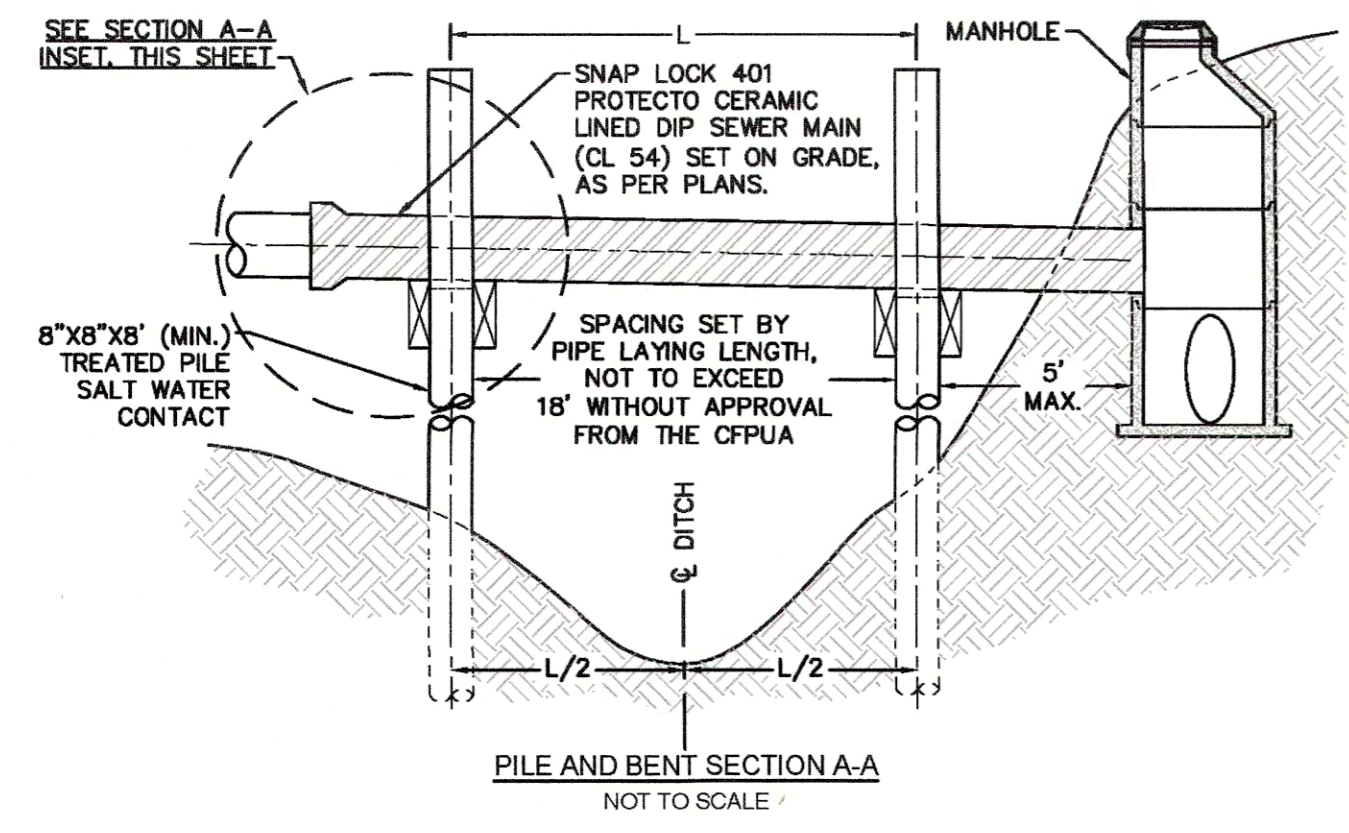
DATE: 1/8/12  
SCALE: N/A  
DRAWN BY: CFPUA  
CHECKED BY: CFPUA  
PROJECT NO.:  
SHEET NO: **SSD-2**

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE  
DESIGNED AND PREPARED BY OTHERS.

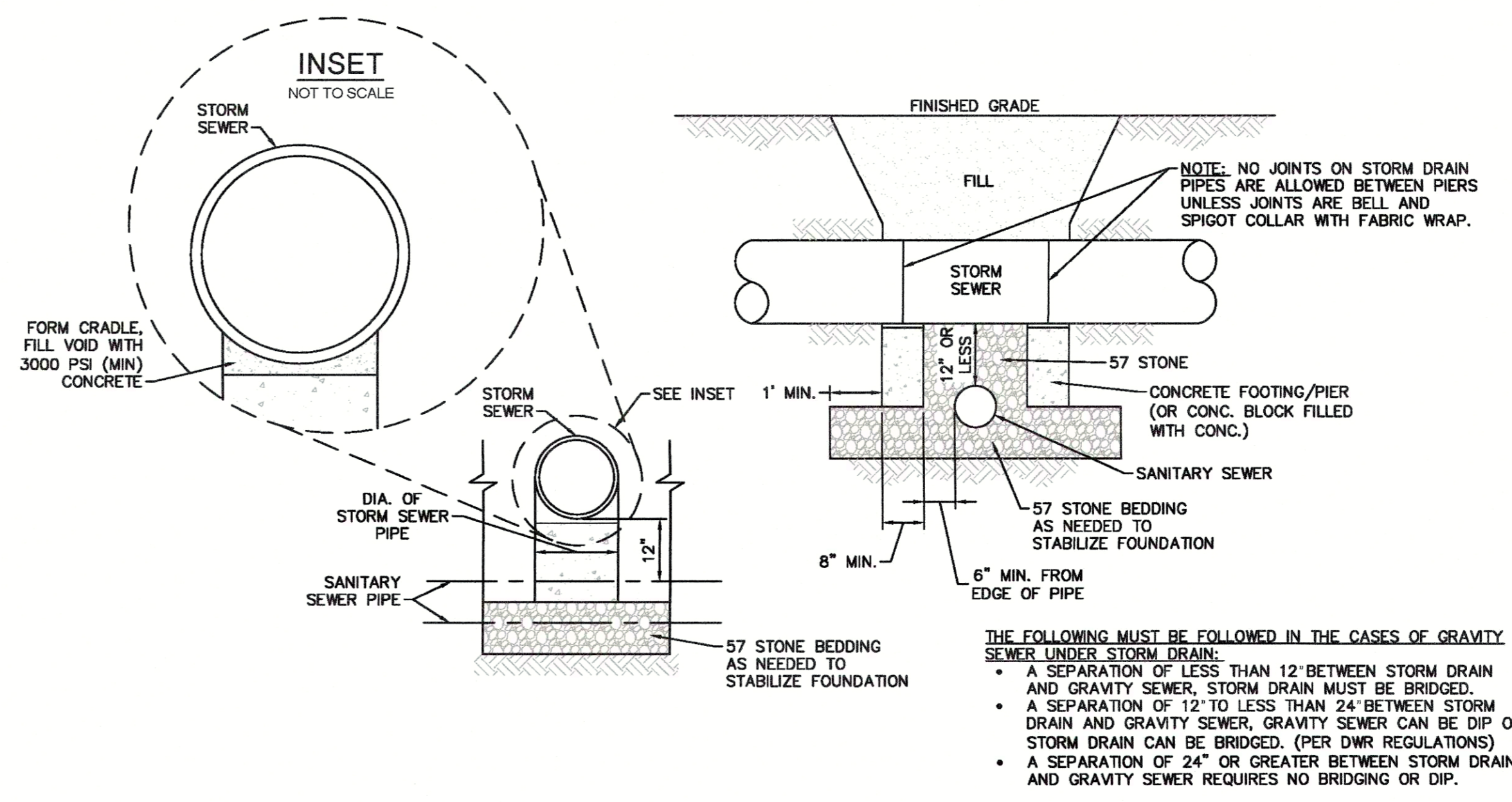
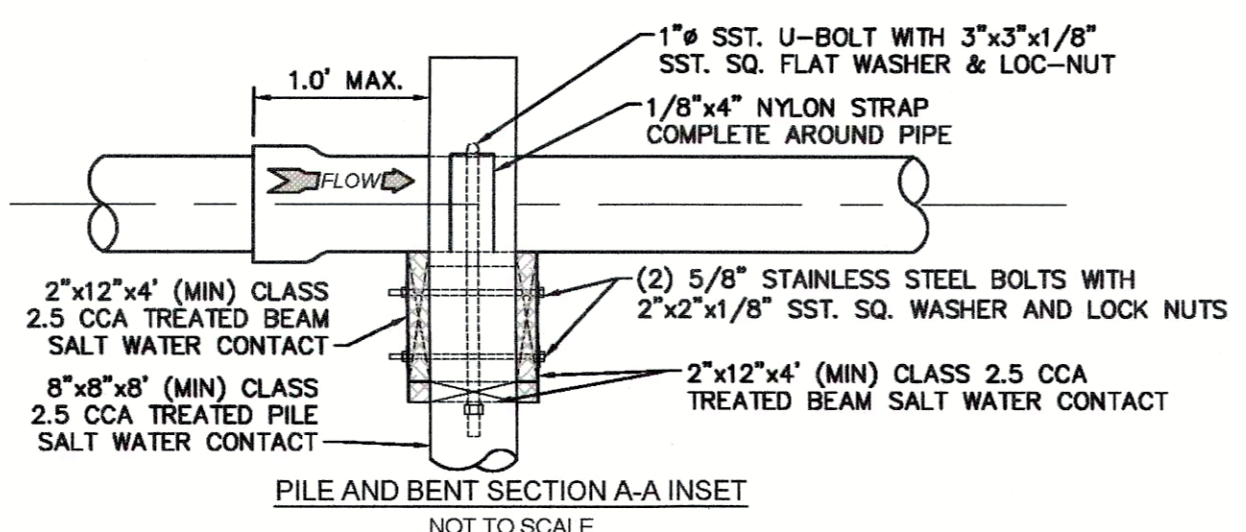
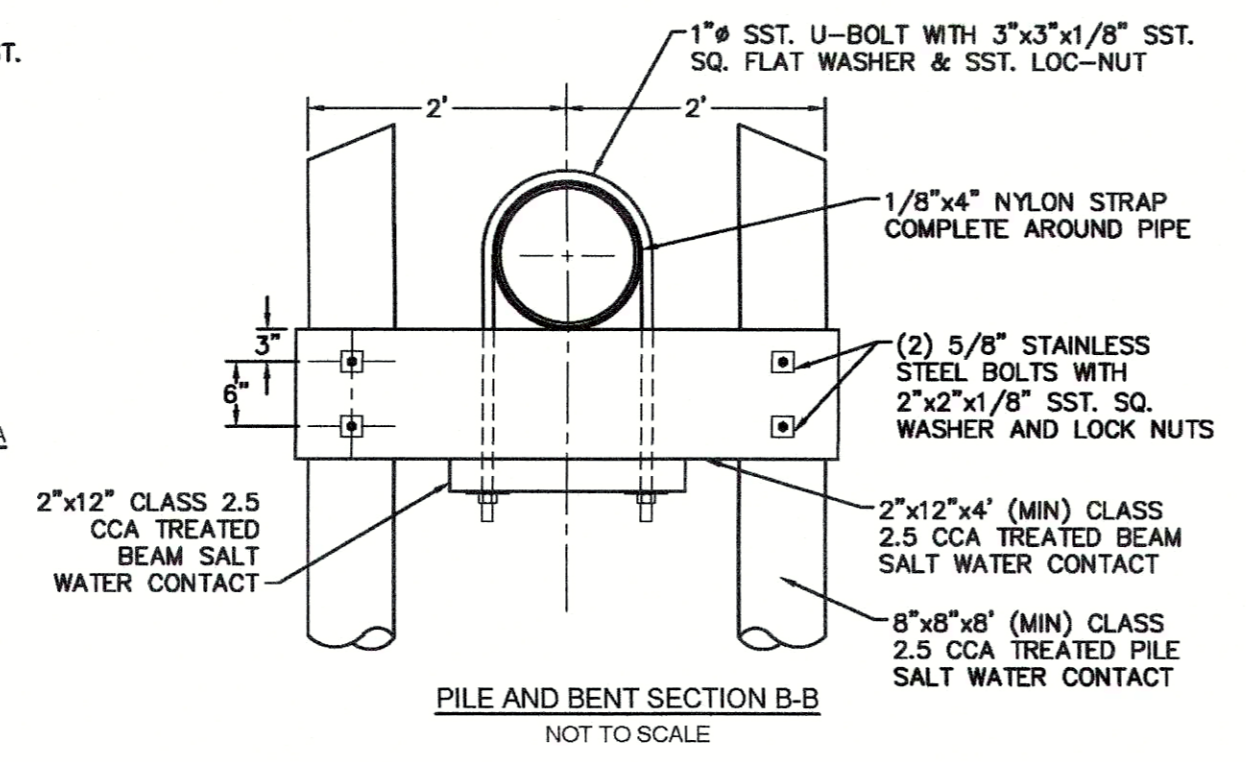




- NOTES:**
1. PILES AND PILE DRIVING SHALL CONFORM TO NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2002, SECTIONS 445, 450, 1082-2 & 1084-2.
  2. CENTERLINE OF BOLTS TO BE A MINIMUM OF 3" FROM OUTSIDE EDGE OF TIMBER. BOLTS TO BE A MINIMUM OF 3" CENTERLINE TO CENTERLINE.
  3. ALL STAINLESS 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.

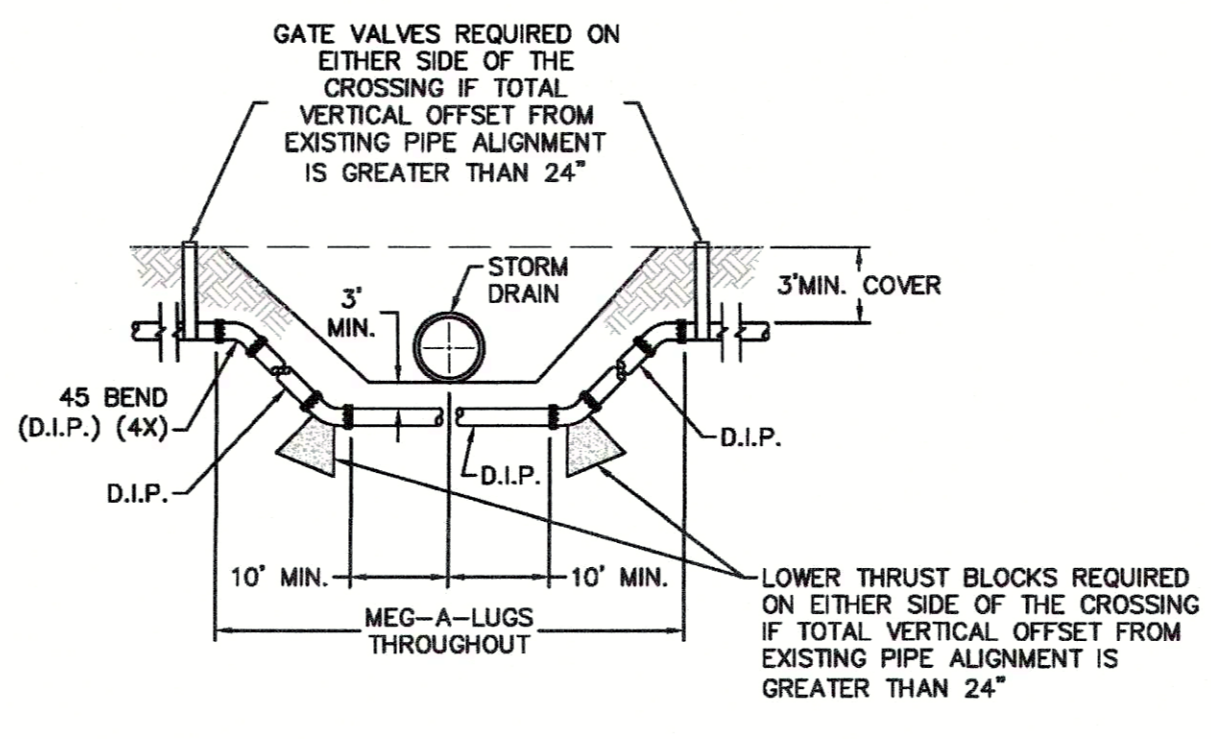


**SD-20 PILE AND BENT DETAIL**  
NOT TO SCALE



**SD-24 STRUCTURAL BRIDGING DETAIL FOR STORMWATER OVER GRAVITY SEWER INSTALLATIONS WITH LESS THAN 12" SEPARATION**  
NOT TO SCALE

- THE FOLLOWING MUST BE FOLLOWED IN THE CASES OF GRAVITY SEWER UNDER STORM DRAIN:
- A SEPARATION OF LESS THAN 12" BETWEEN STORM DRAIN AND GRAVITY SEWER, STORM DRAIN MUST BE BRIDGED.
  - A SEPARATION OF 12" TO LESS THAN 24" BETWEEN STORM DRAIN AND GRAVITY SEWER, GRAVITY SEWER CAN BE DIP OR STORM DRAIN CAN BE BRIDGED. (PER DWR REGULATIONS)
  - A SEPARATION OF 24" OR GREATER BETWEEN STORM DRAIN AND GRAVITY SEWER REQUIRES NO BRIDGING OR DIP.



**SD-18 FORCE MAIN DITCH AND STORM DRAIN CROSSING**  
NOT TO SCALE

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

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

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

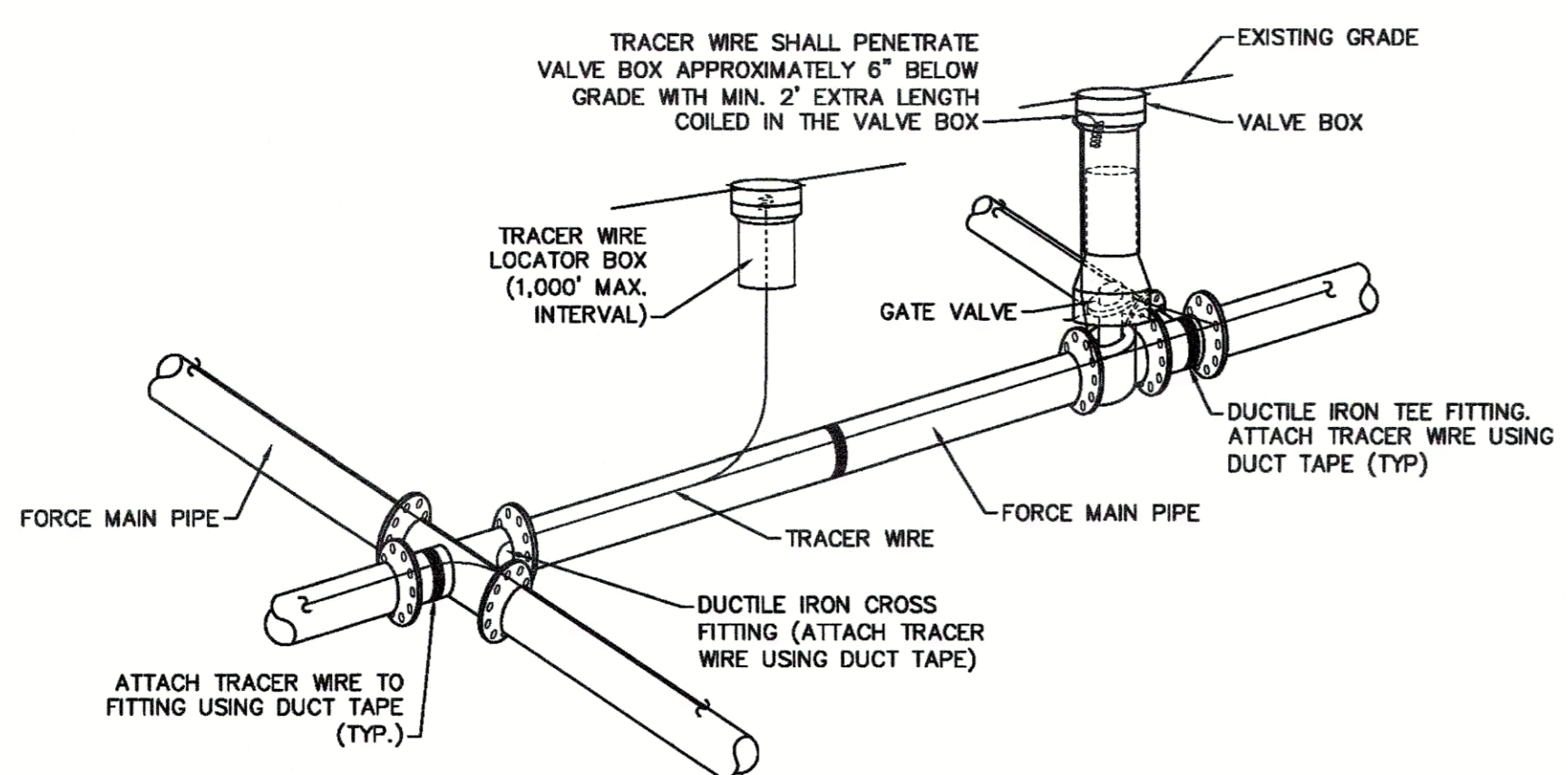
**Approved Construction Plan**

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

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

- 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**



- 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 FOOT INTERVALS ALONG THE PIPE.
  3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
  4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

**SD-21 TRACER WIRE DETAIL**  
NOT TO SCALE

REV.	DESCRIPTION:	DATE:
1	ADDED NOTES TO THE STRUCTURAL BRIDGING DETAIL	03/11/15
2	Revised Tracer Wire Detail	10/20/15
3	Revised Force Main Ditch and Storm Drain Crossing Detail	02/15/16

**CFPUA SANITARY SEWER**

**STANDARD DETAILS**

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

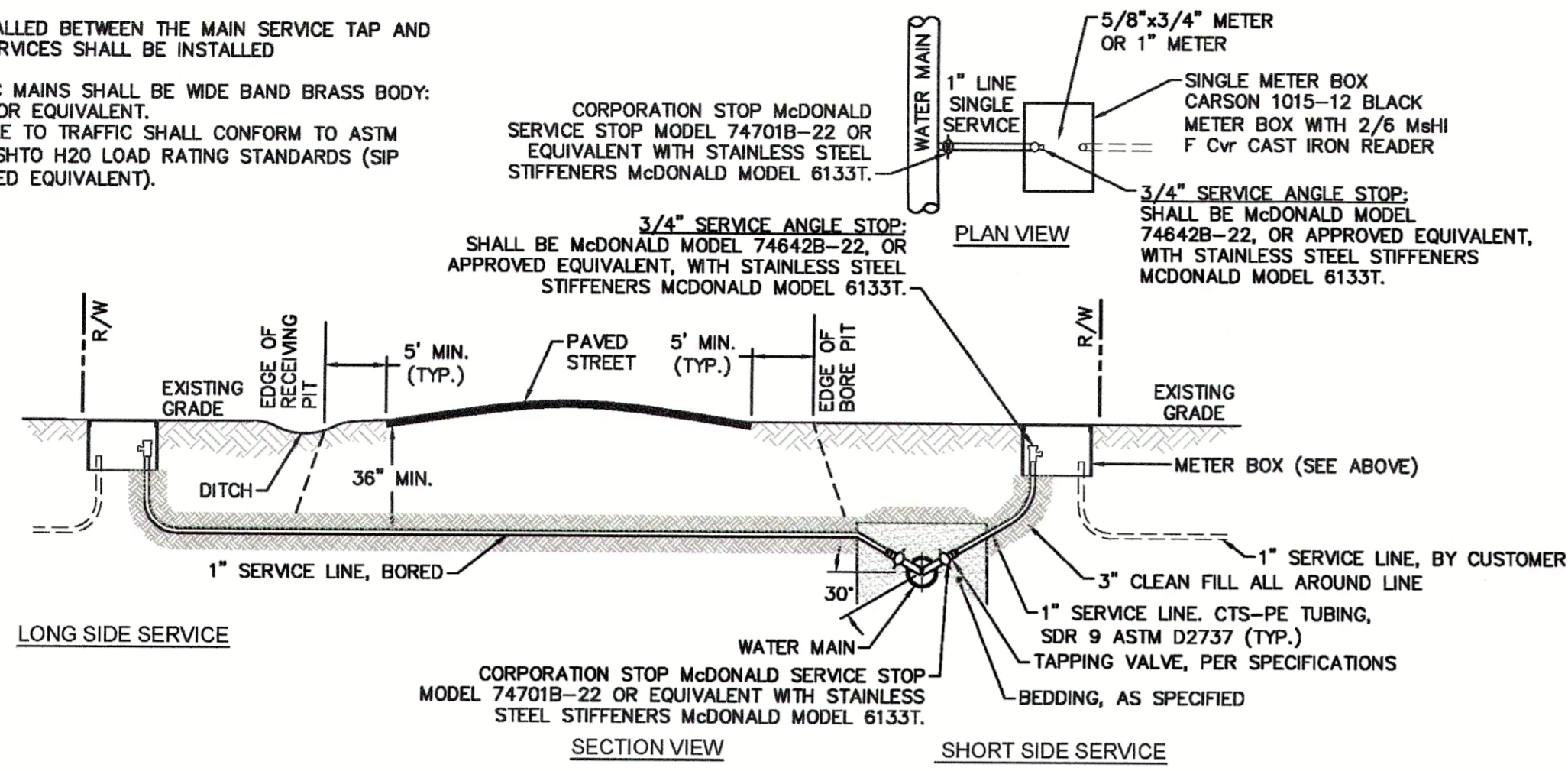
DATE: 1/9/12  
SCALE: N/A  
DRAWN BY: CFPUA  
CHECKED BY: CFPUA  
PROJECT NO.:  
SHEET NO.: **SSD-3**

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE  
DESIGNED AND PREPARED BY OTHERS.

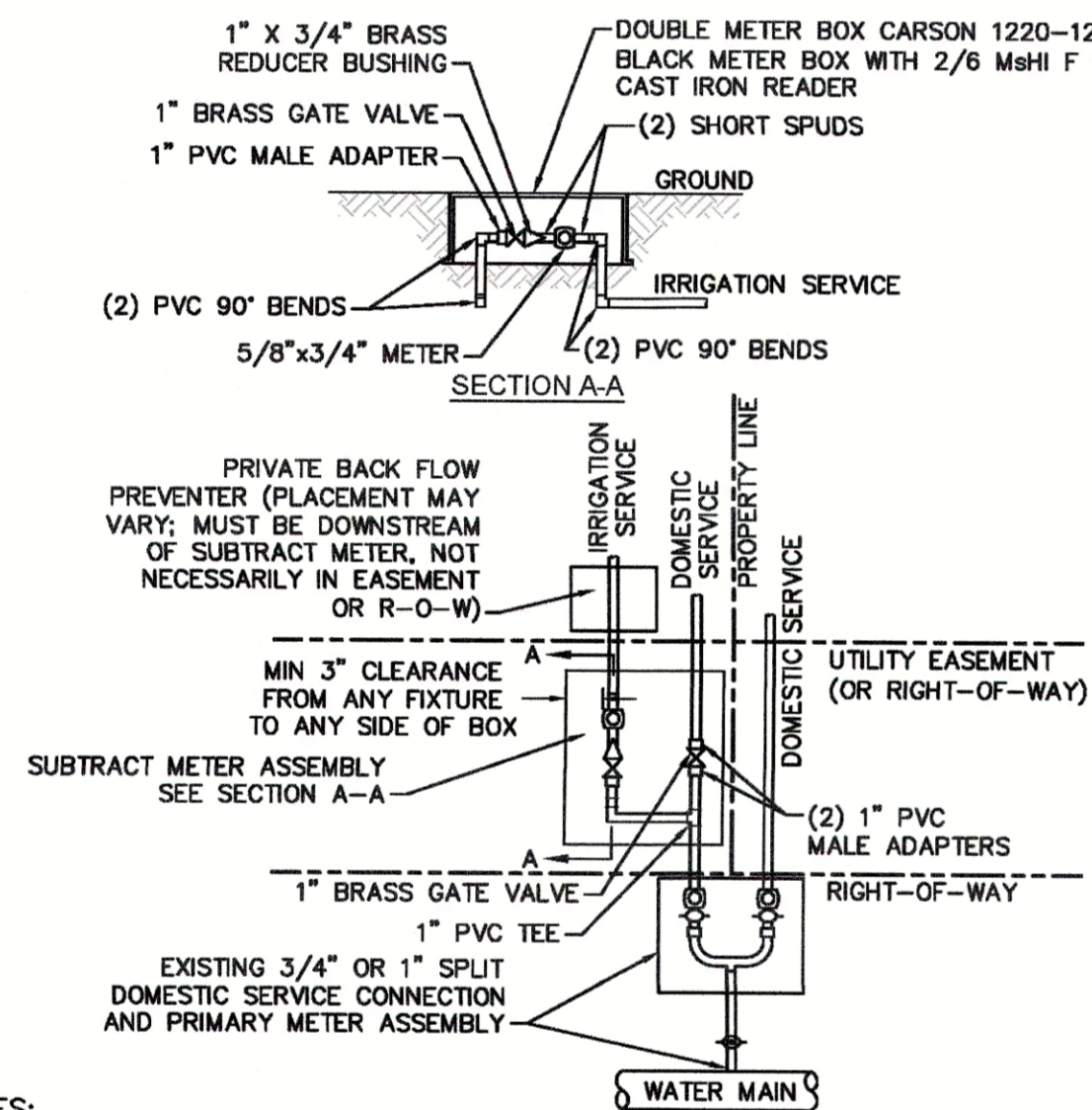


**NOTES:**

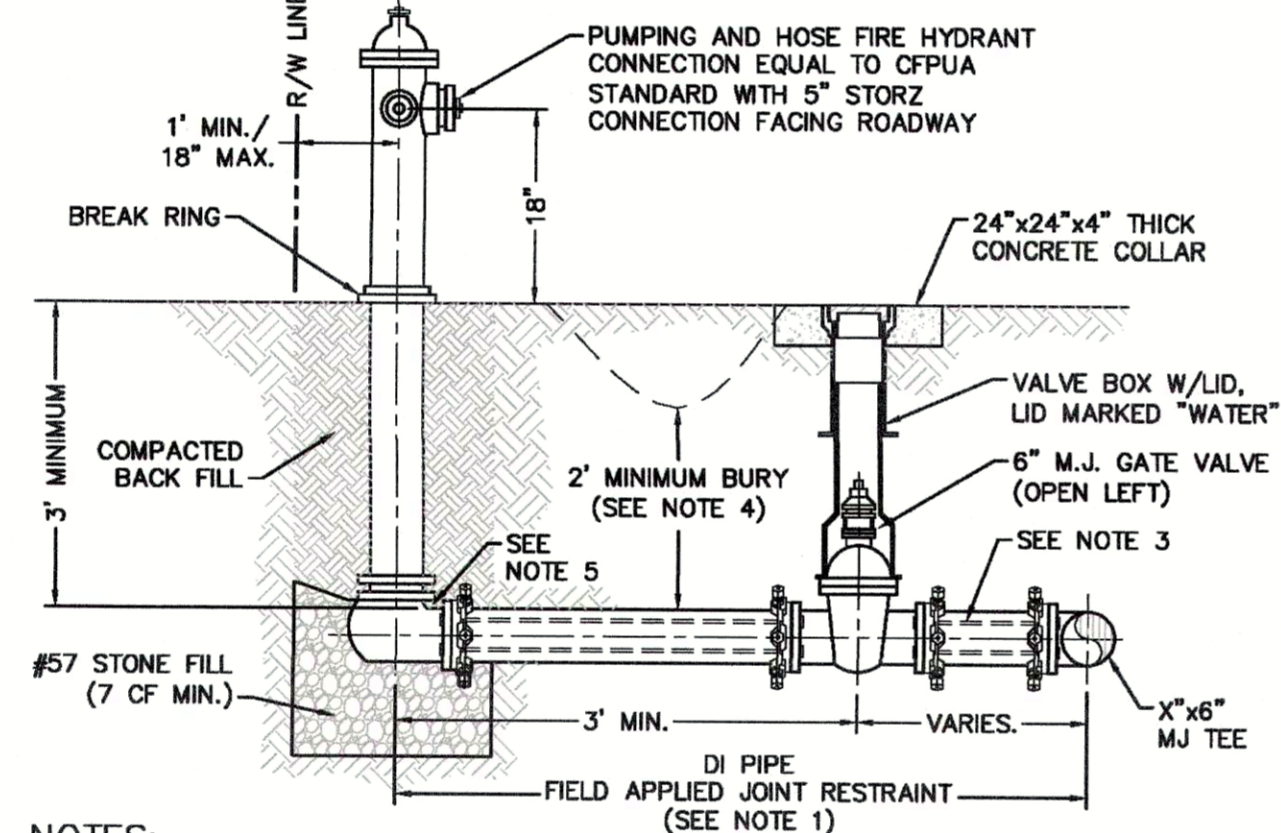
1. NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
2. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
3. METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND ASHTO H20 LOAD RATING STANDARDS (SIP MODEL 4242, OR APPROVED EQUIVALENT).



**WD-18 SINGLE SERVICE CONNECTION**  
NOT TO SCALE



**WD-8 DOUBLE SERVICE CONNECTION USING SUBTRACT METER**  
NOT TO SCALE



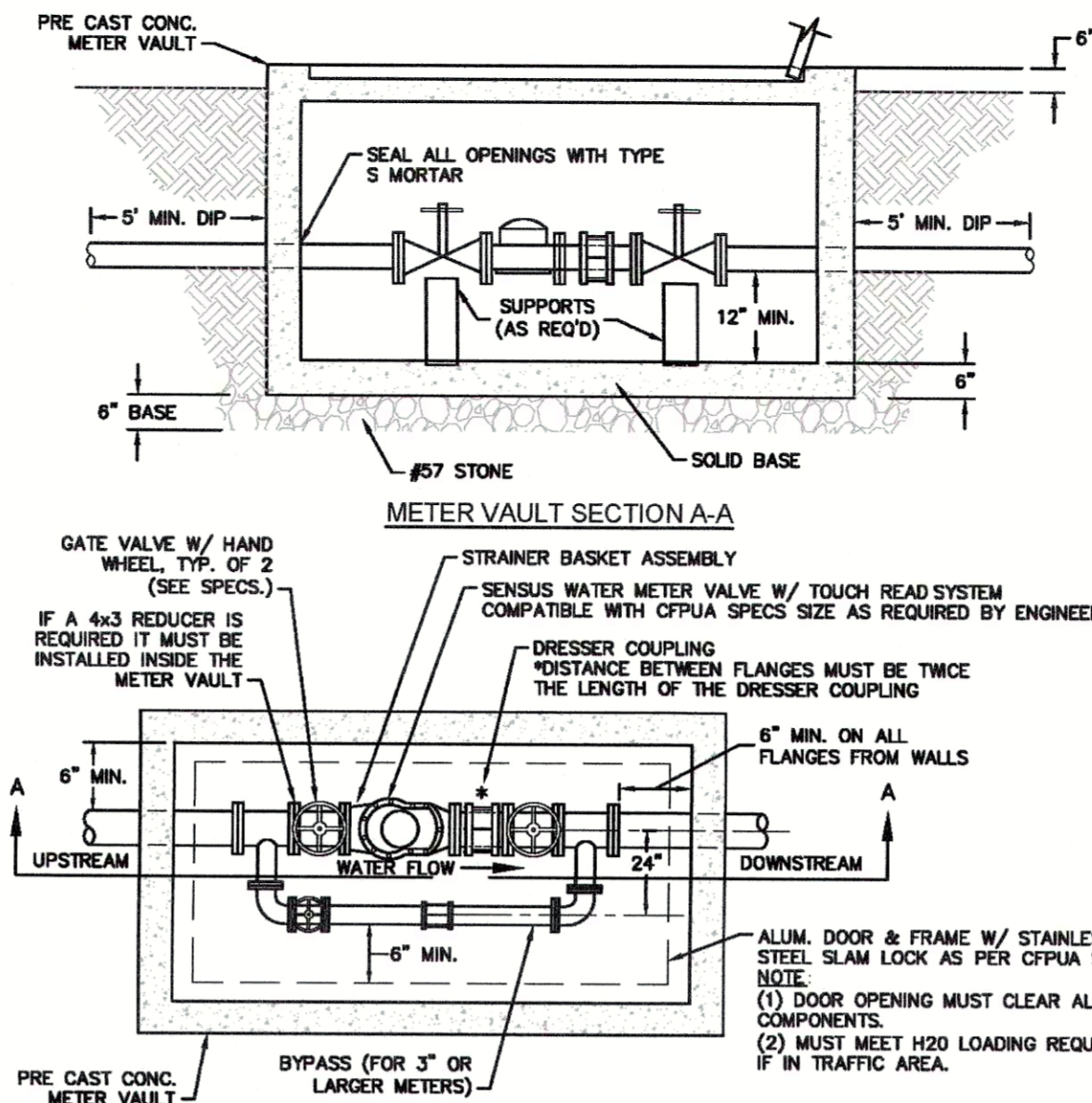
- NOTES:**
1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
  2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
  3. CONTINUOUS 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.
  4. HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
  5. WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.

**WD-10 FIRE HYDRANT ASSEMBLY**  
NOT TO SCALE

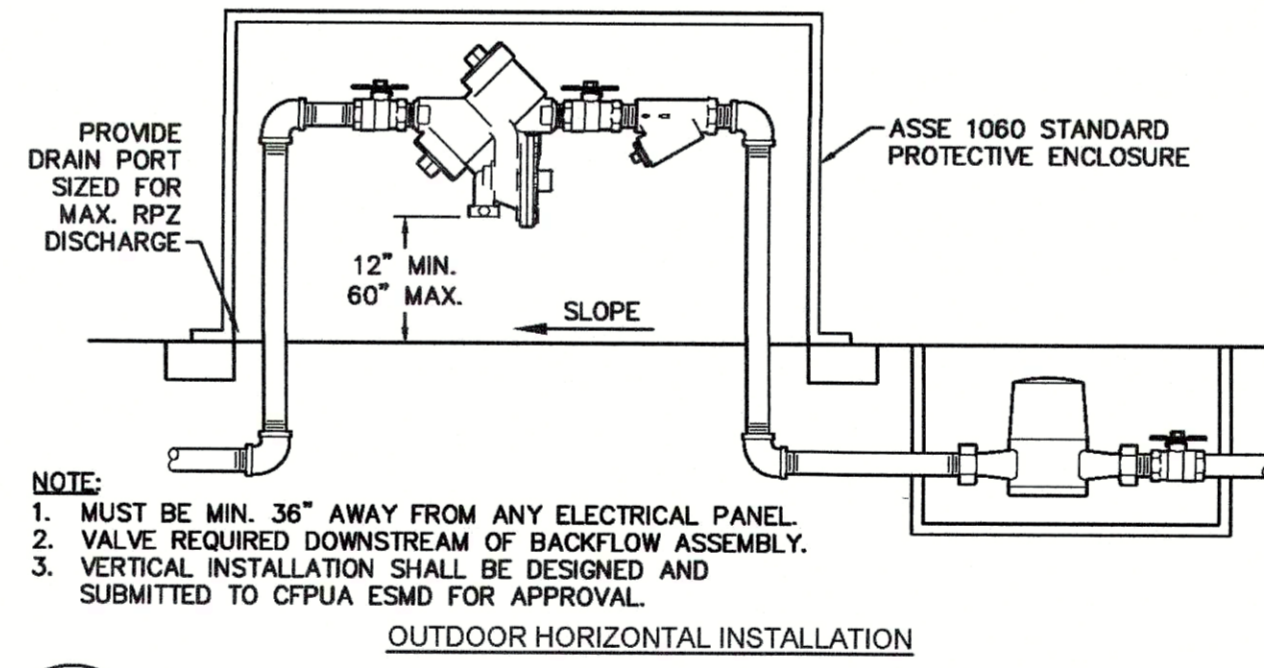
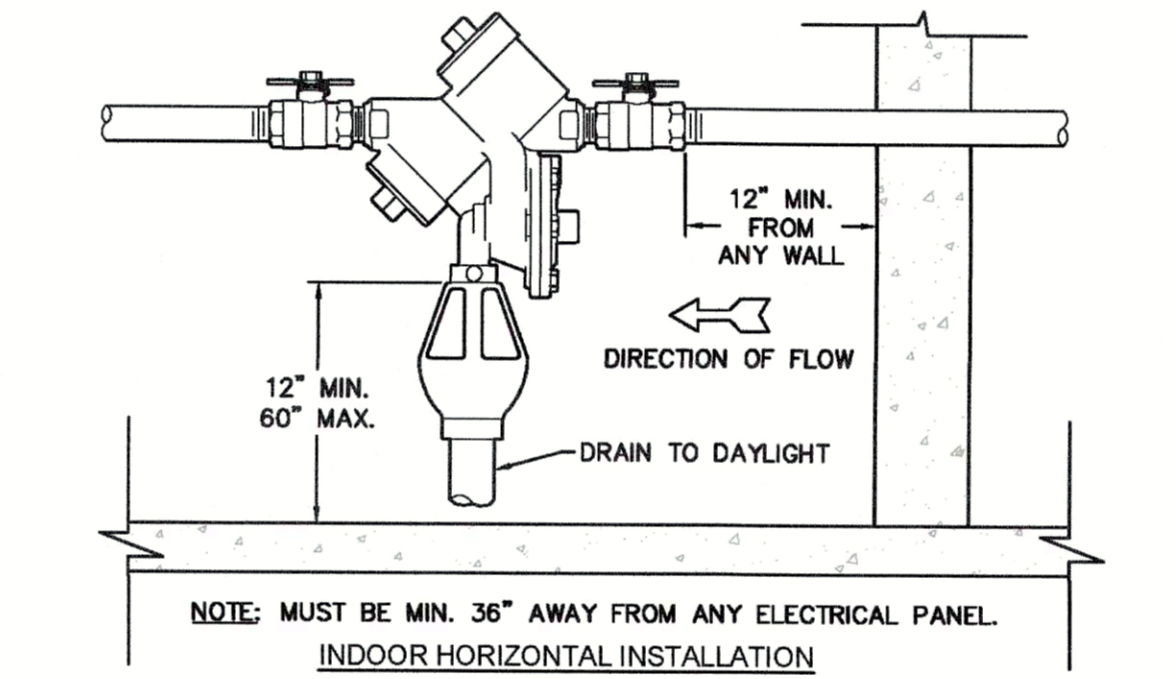
**CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:**

1. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
2. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE 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.
7. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.

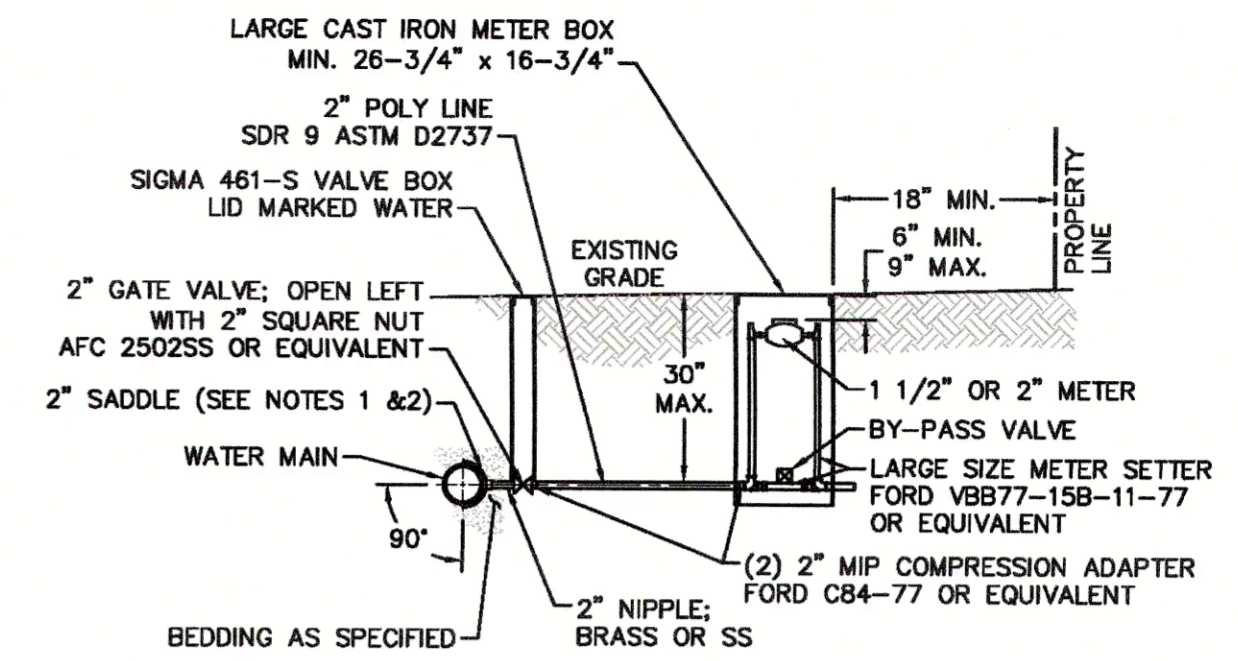
**WD-19 STANDARD NOTES**  
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)



**WD-1 WATER METER VAULT**  
NOT TO SCALE

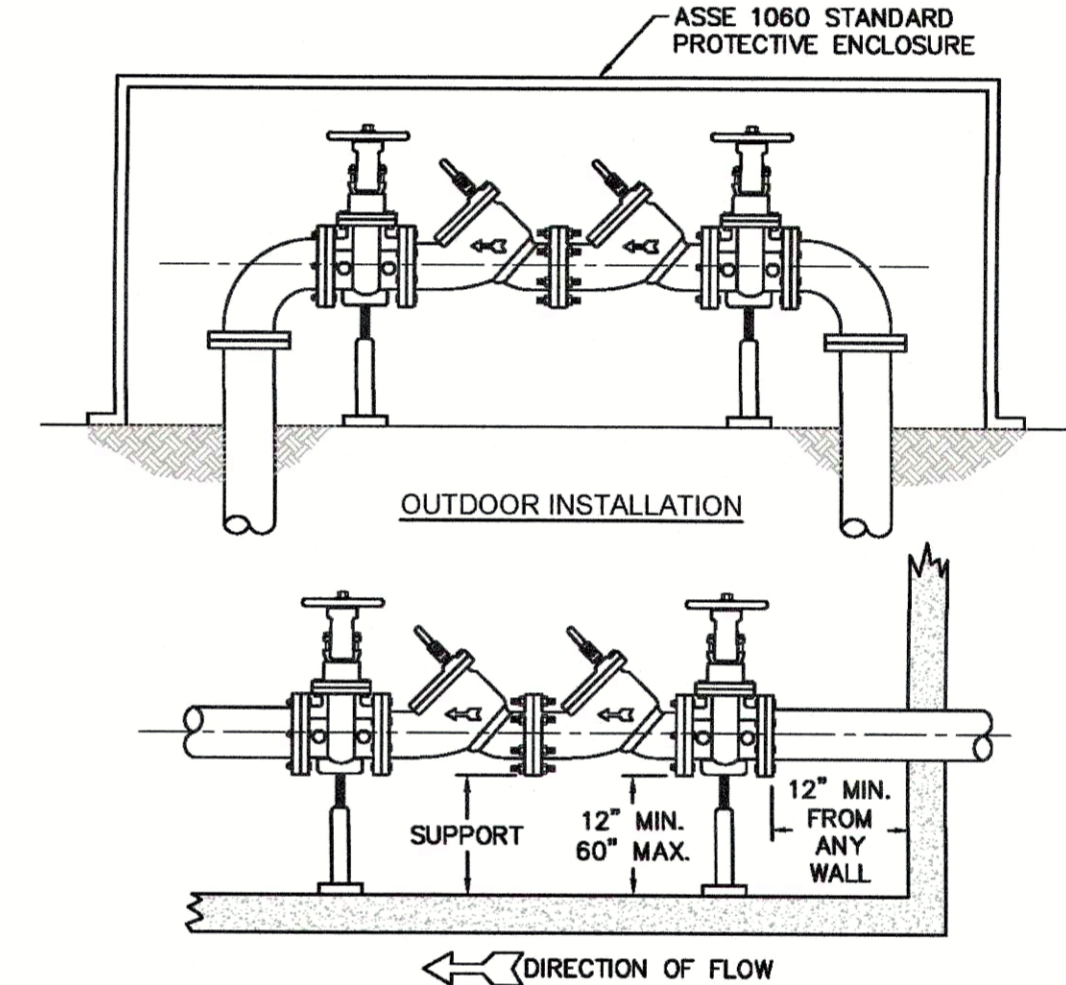


**WD-12 REDUCED PRESSURE PRINCIPLE ASSEMBLY**  
NOT TO SCALE



- NOTES:**
1. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
  2. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: McDONALD 3800, FORD S90 (DOUBLE STRAP) OR EQUIVALENT.
  3. METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND ASHTO H20 LOAD RATING STANDARDS (OLDCASTLE PRECAST MODEL B1730 OR APPROVED EQUIVALENT).
  4. METER BOXES SUSCEPTIBLE TO INCIDENTAL, NON-DELIBERATE TRAFFIC SHALL CONFORM TO ANSI/SCTE 77 TIER 15 LOAD RATING STANDARDS (SYNERTECH MODEL DUO 17x30 OR APPROVED EQUIVALENT).
  5. NON-TRAFFIC METER BOXES SHALL BE SIGMA MB2203 OR APPROVED EQUIVALENT.
  6. 3" CLEAN FILL REQUIRED ALL AROUND 2" POLY SERVICE LINE.

**WD-11 LARGE METER**  
NOT TO SCALE



**WD-7 DOUBLE CHECK VALVE ASSEMBLY**  
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.
  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**

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
4	Revised Fire Hydrant Assembly To Show 5" STORZ Connection	04/10/15
5	Revised Fire Hydrant Assembly To Show Full Dip Hydrant Leg	01/19/16
6	Revised Water Meter Vault and Large Meter Details, Added Standard Notes	02/15/16

**CFPUA WATER DISTRIBUTION SYSTEM**

**STANDARD DETAILS**

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

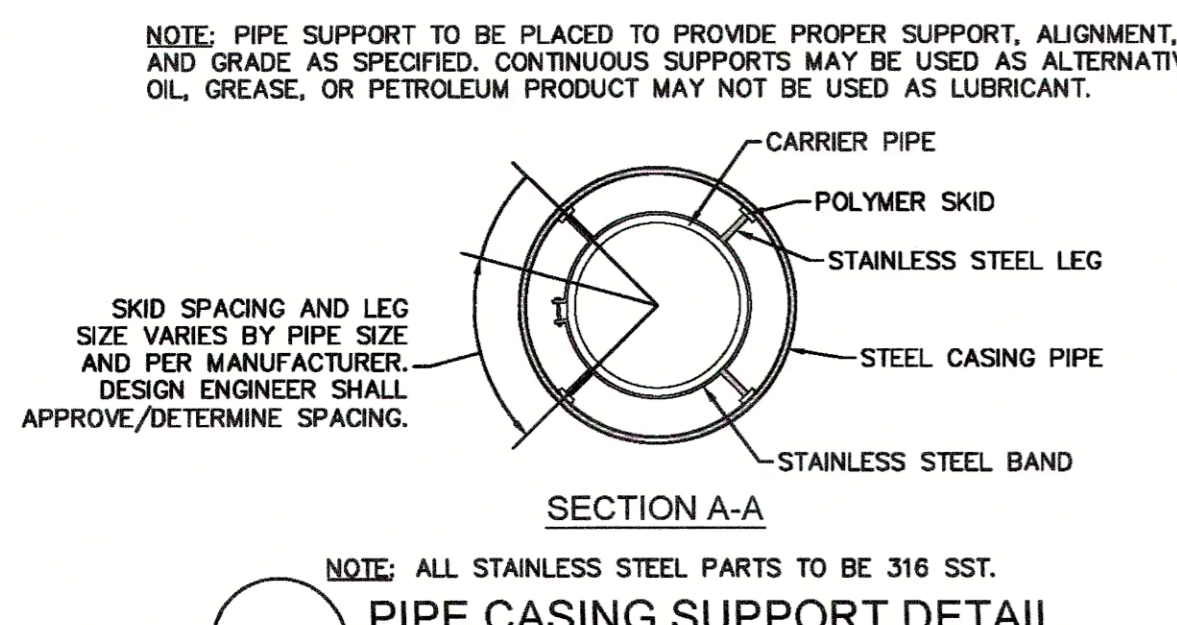
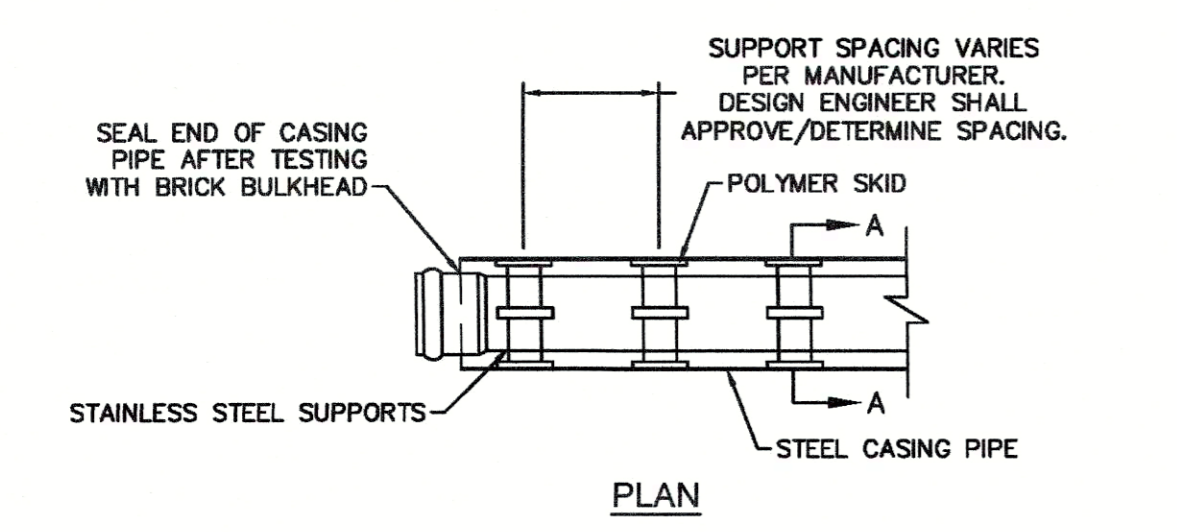
DATE: 1/9/12  
SCALE: N/A  
DRAWN BY: CFPUA  
CHECKED BY: CFPUA  
PROJECT NO.:

SHEET NO.: WSD-1

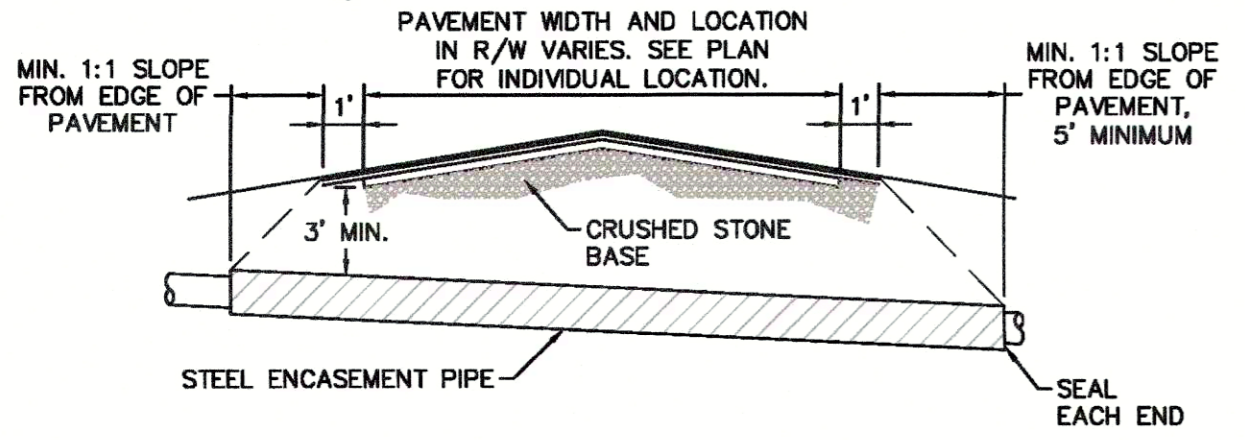
TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.



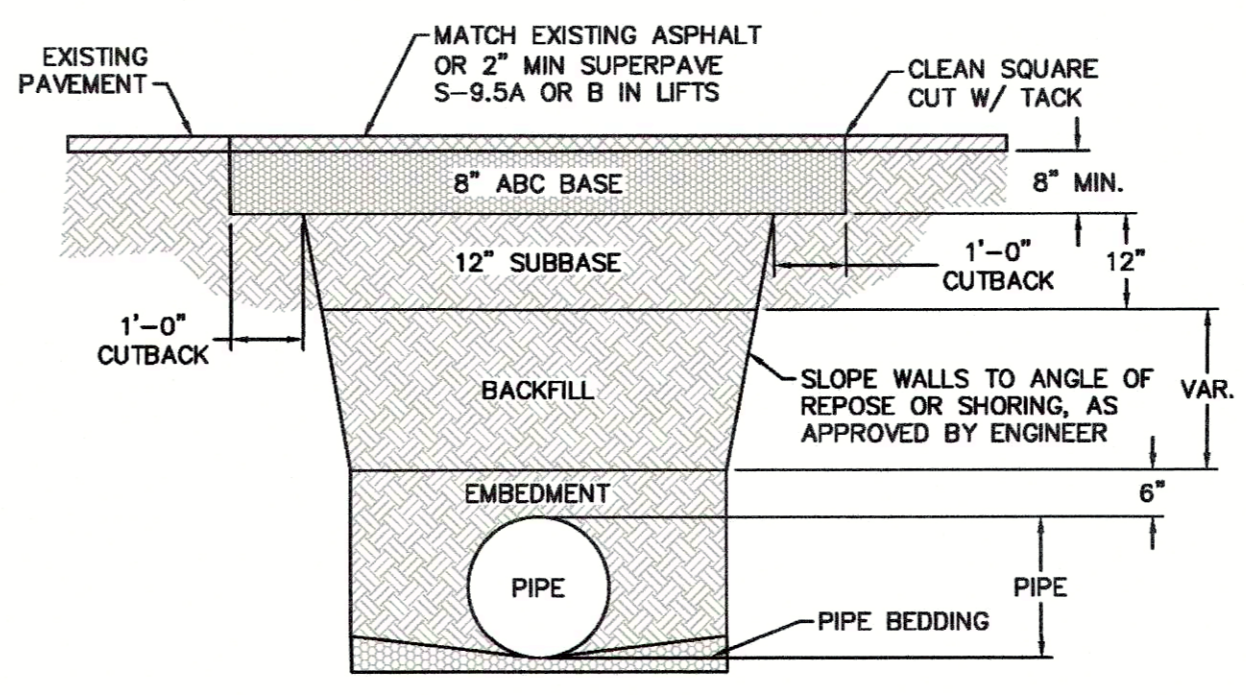
Revisions  
1 COW REVIEW COMMENTS 06.18.18



WD-15 PIPE CASING SUPPORT DETAIL  
NOT TO SCALE

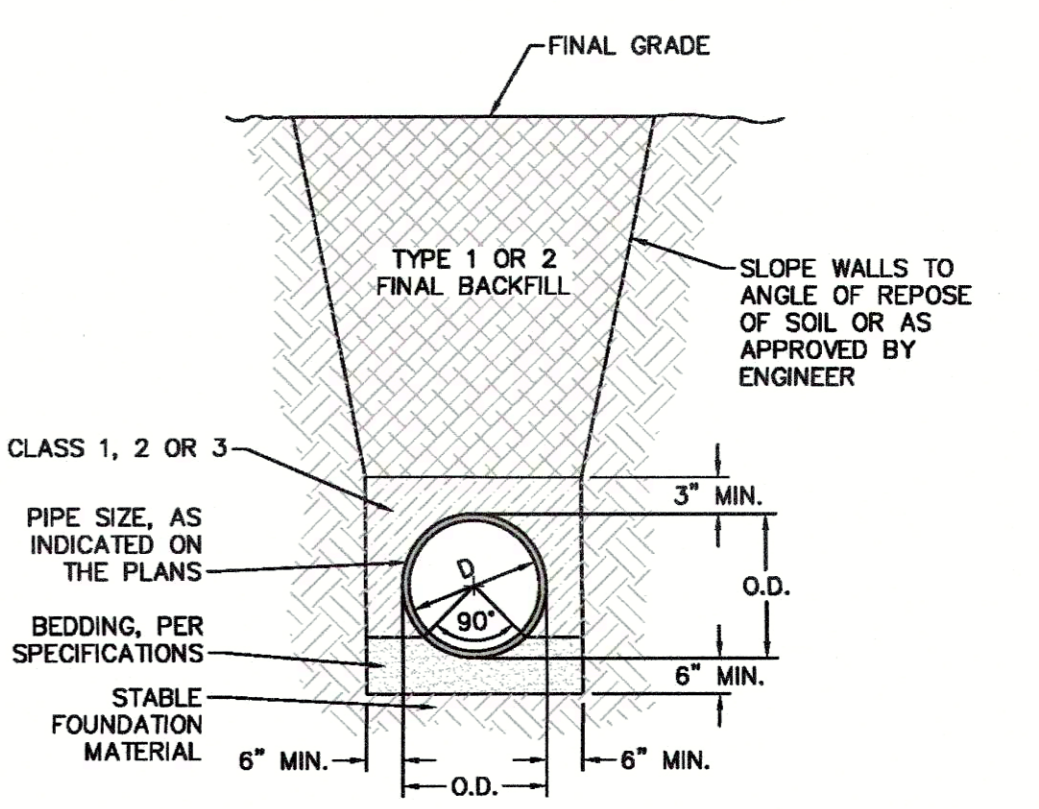


WD-4 THRUST BLOCK DETAIL  
NOT TO SCALE

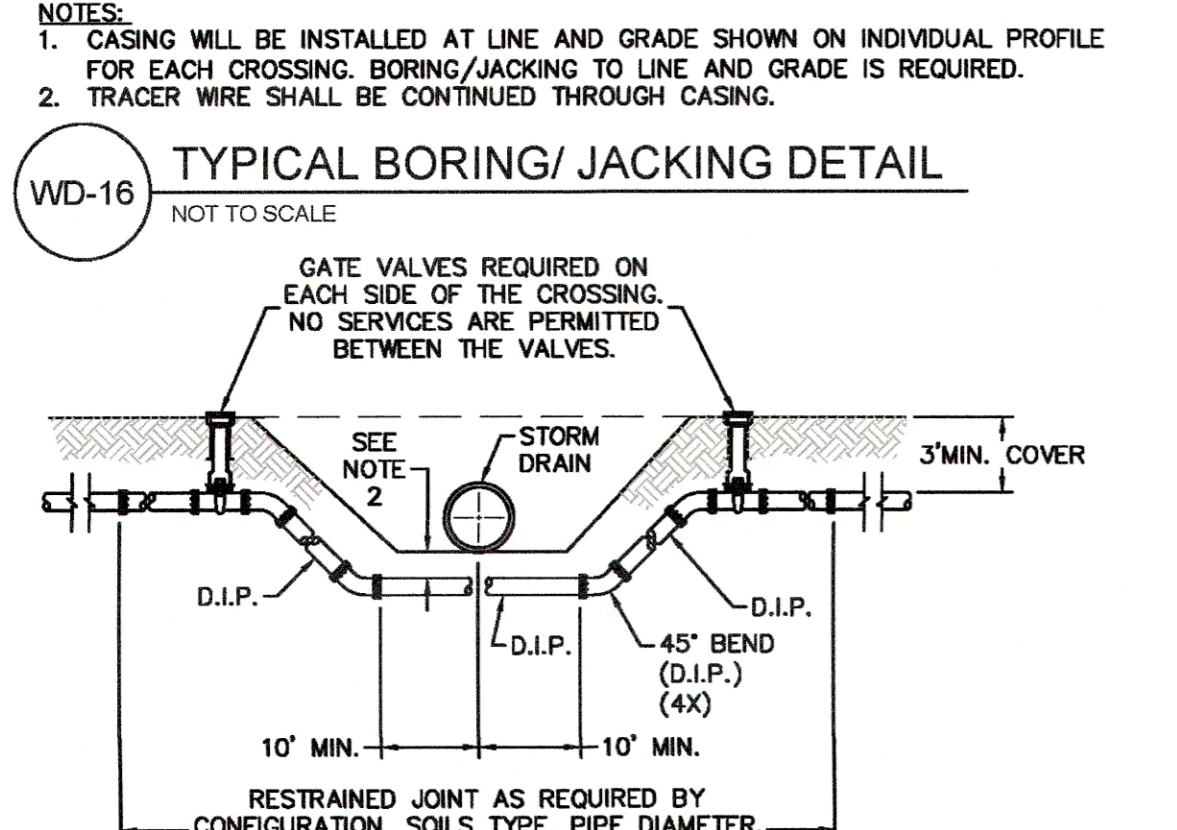


WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED  
NOT TO SCALE

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\"/>

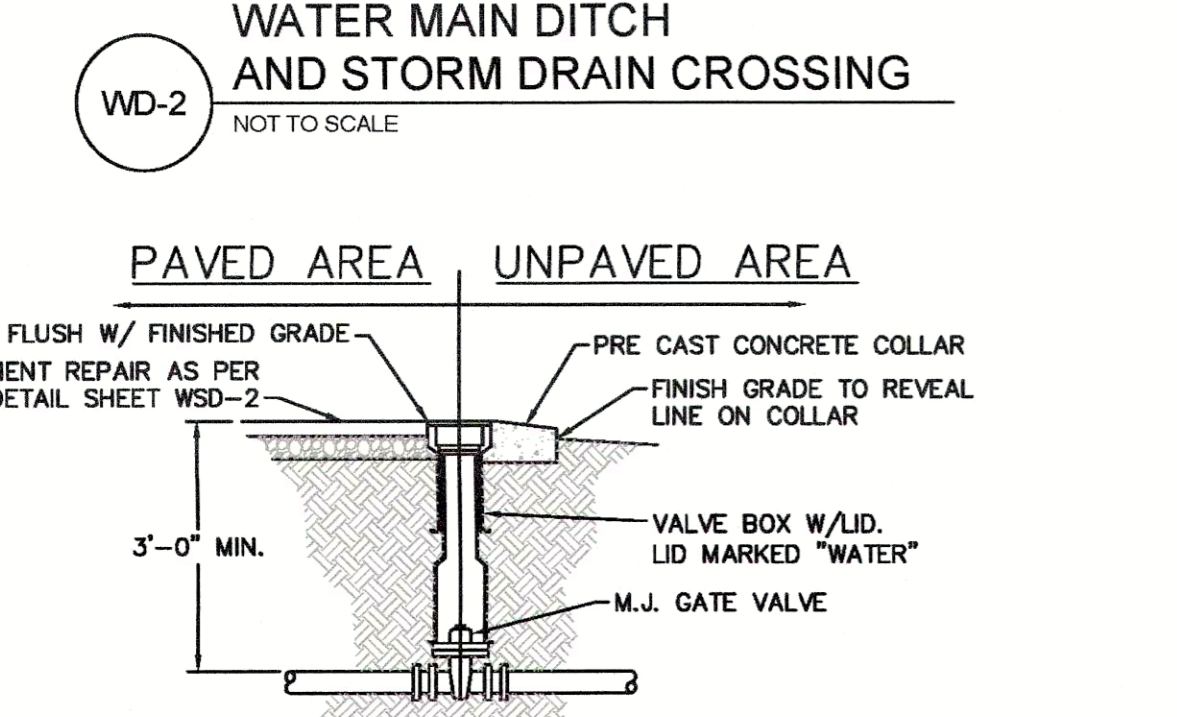


WD-13 TYPICAL TRENCH DETAIL  
NOT TO SCALE

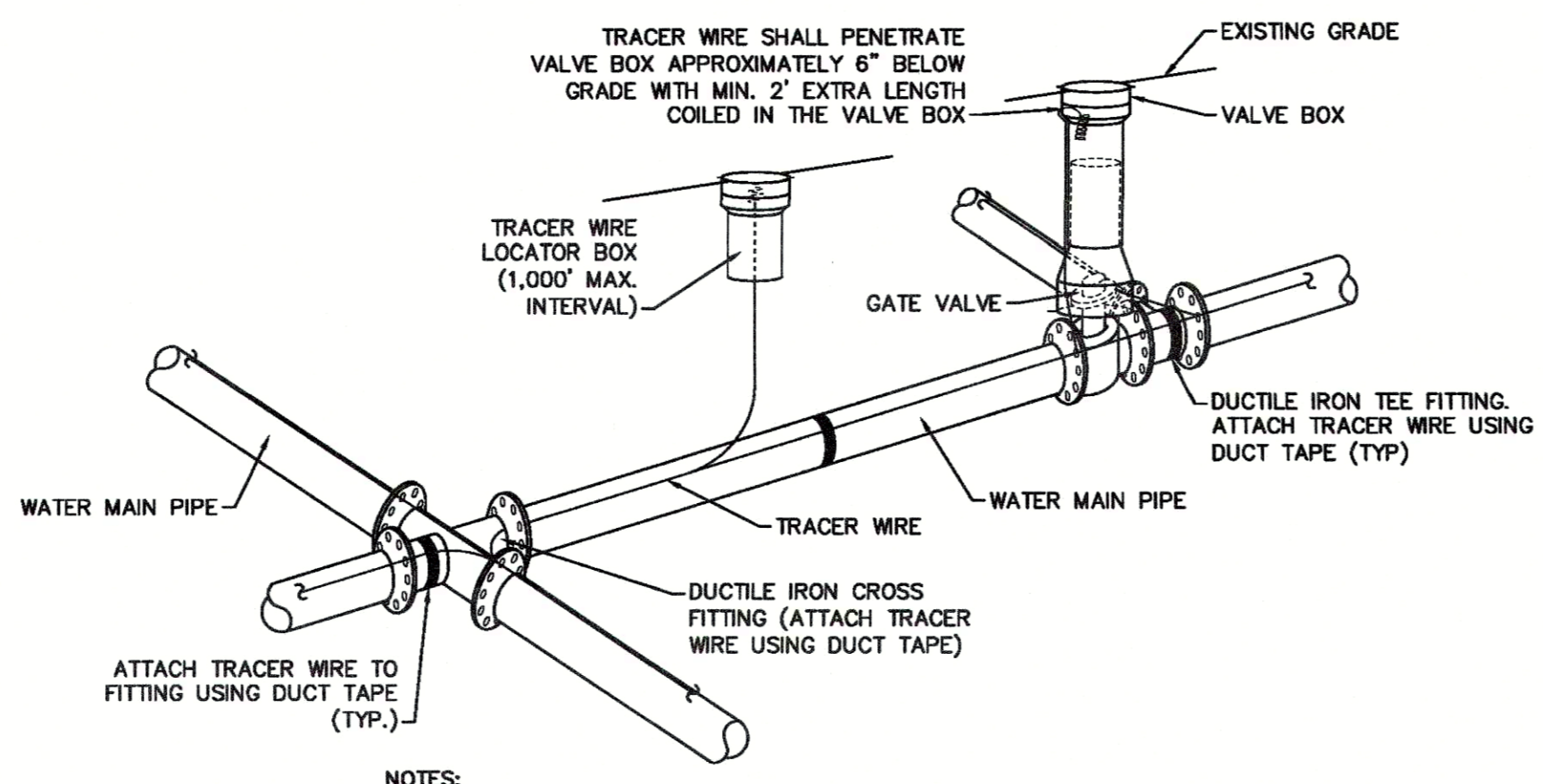


WD-16 TYPICAL BORING/ JACKING DETAIL  
NOT TO SCALE

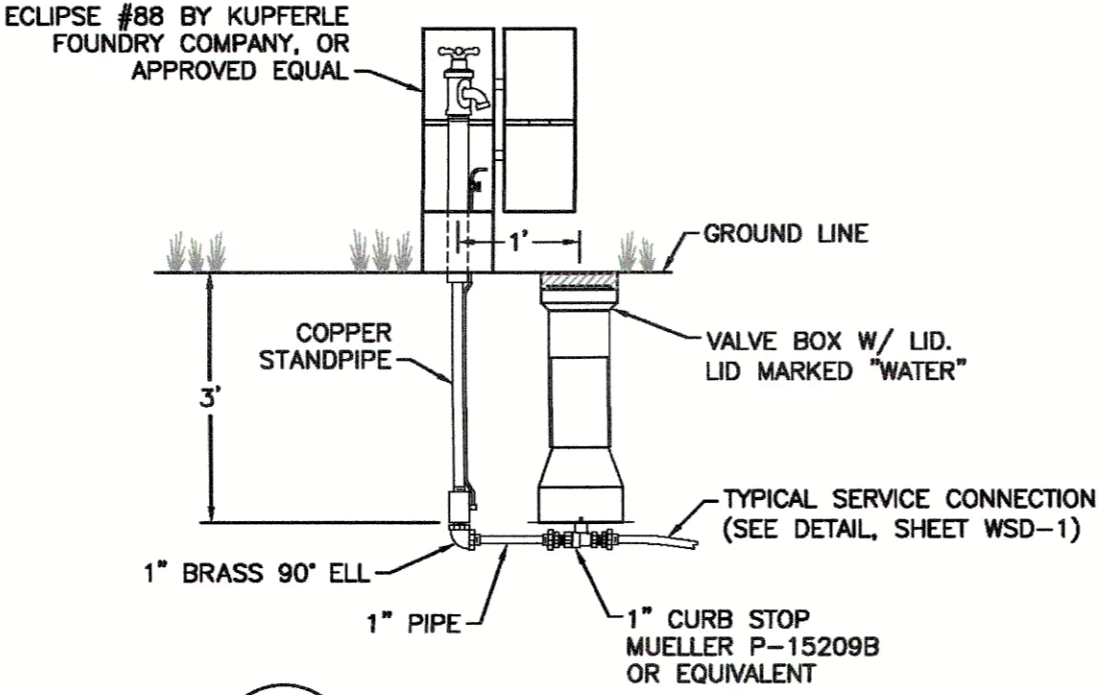
NOTES:  
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.  
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:  
a. IN DOT R/W, 36\"/>



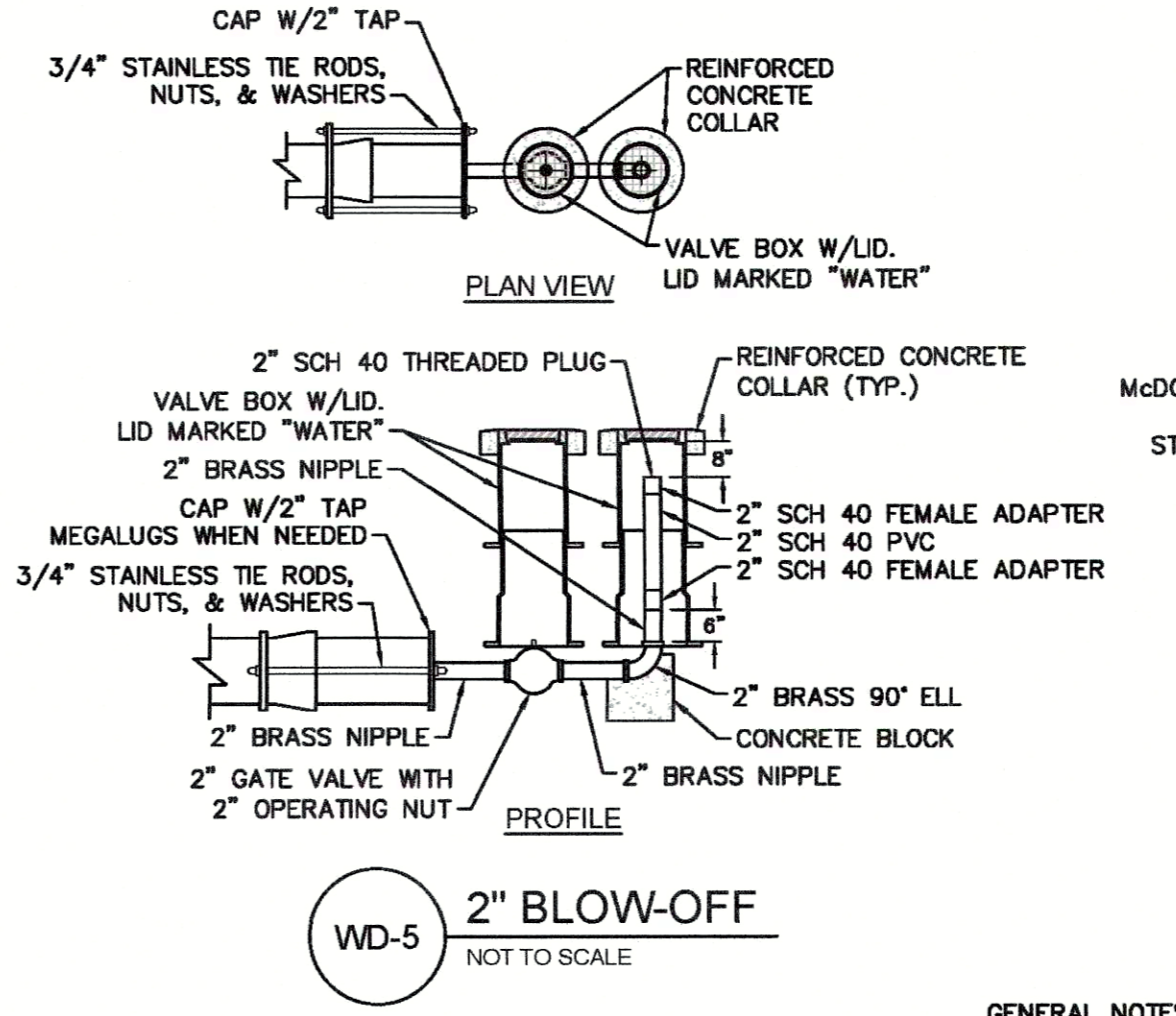
WD-2 WATER MAIN DITCH AND STORM DRAIN CROSSING  
NOT TO SCALE



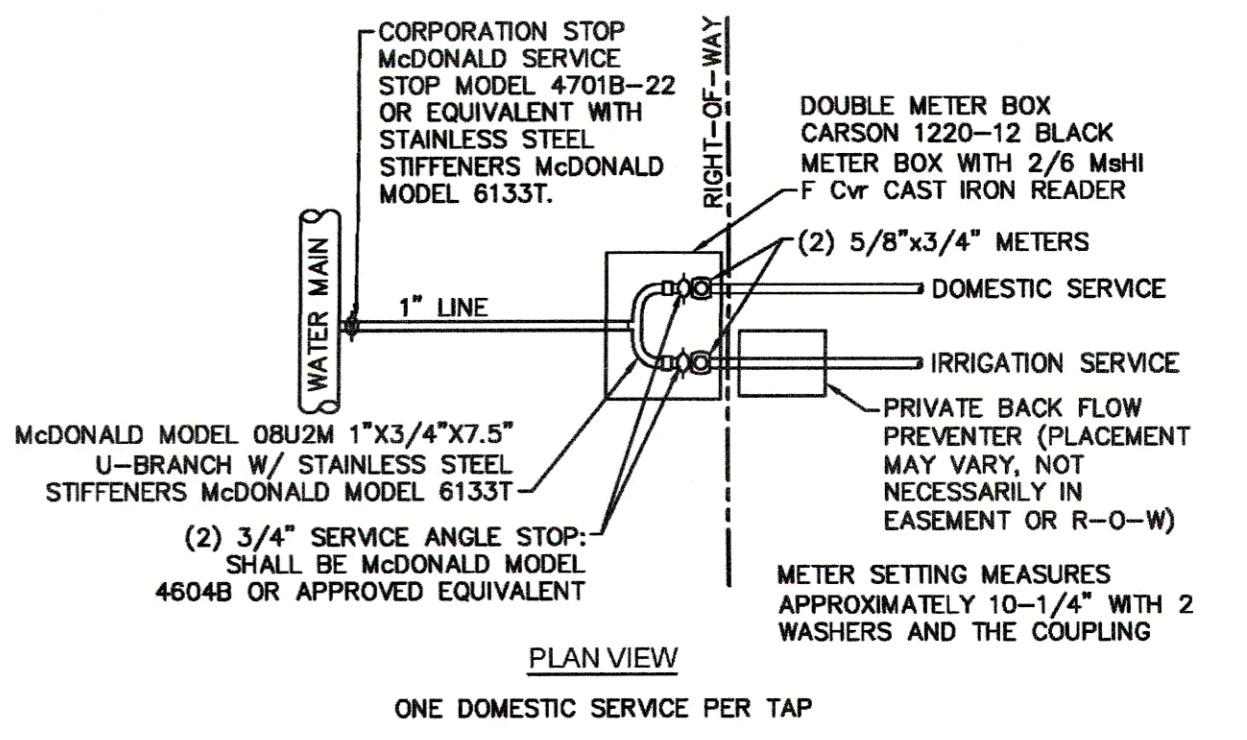
WD-17 TRACER WIRE DETAIL  
NOT TO SCALE



WD-6 SAMPLING STATION  
NOT TO SCALE



WD-5 2\"/>



WD-9 DOUBLE SERVICE CONNECTION  
NOT TO SCALE

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

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

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
3	Revised Tracer Wire Detail	10/20/15
4	Added Backflow Preventer to Double Service Connection Detail	02/01/16
5	Revised Sampling Station Detail	02/15/16

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 WATER DISTRIBUTION SYSTEM**

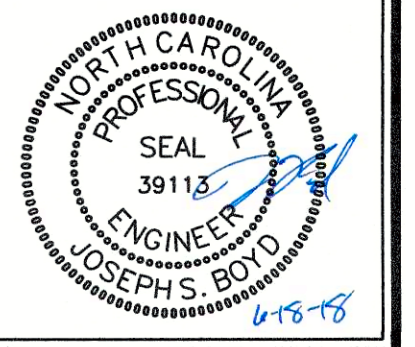
STANDARD DETAILS

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

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

SHEET NO: WSD-2

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.



Revisions  
1 COW REVIEW COMMENTS 06.18.18