

CONSTRUCTION DRAWINGS FOR NEEDHAM ANIMAL HOSPITAL EXPANSION

WILMINGTON, NC
SEPTEMBER 2018

CONSTRUCTION DRAWINGS
FOR: NEEDHAM ANIMAL HOSPITAL EXPANSION
W&R PROJECT NO.: 170548

Approved Construction Plan

Name _____ Date _____

Planning _____

Public Utilities _____

Traffic _____

Fire _____

CITY OF WILMINGTON
NORTH CAROLINA

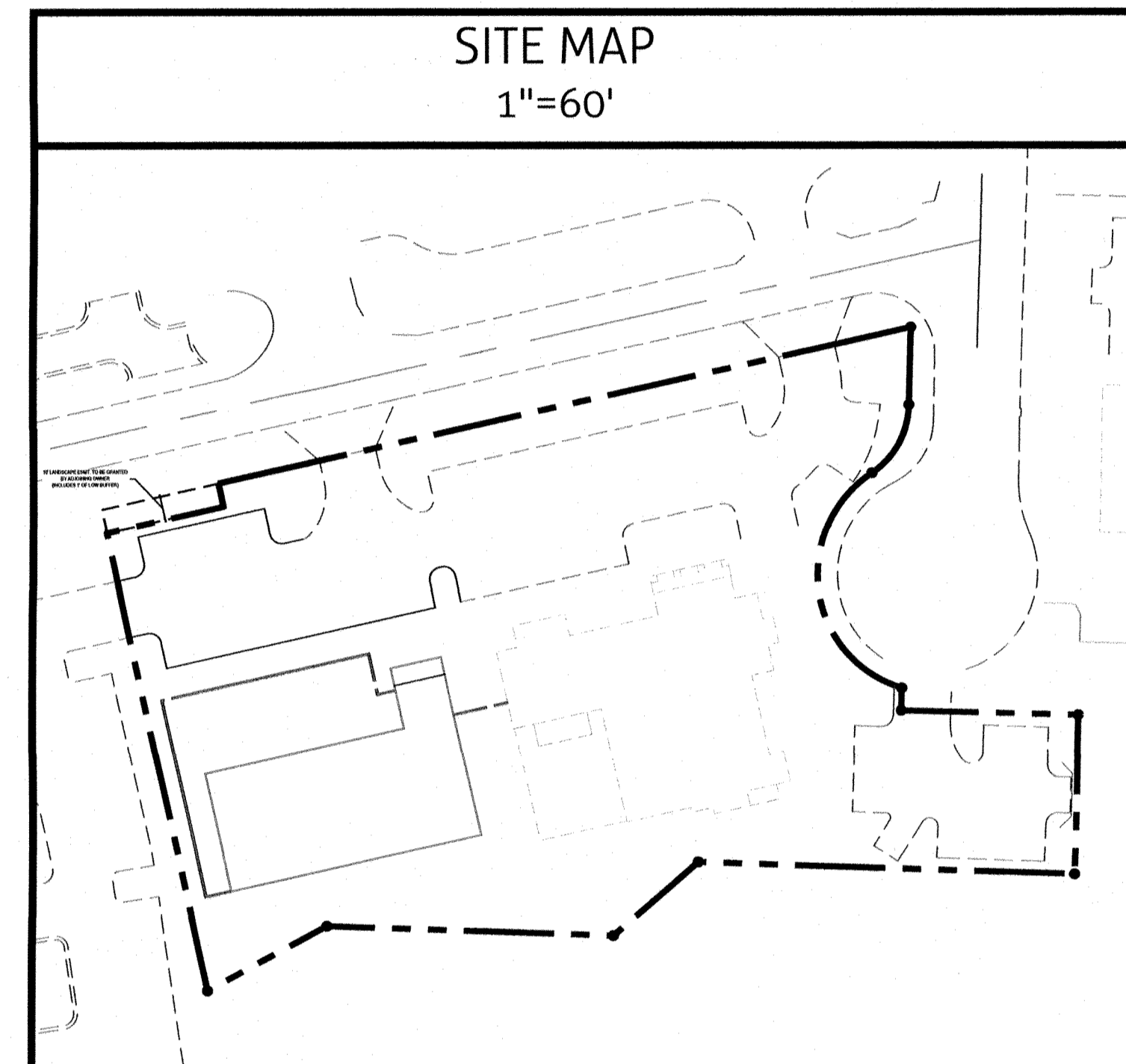
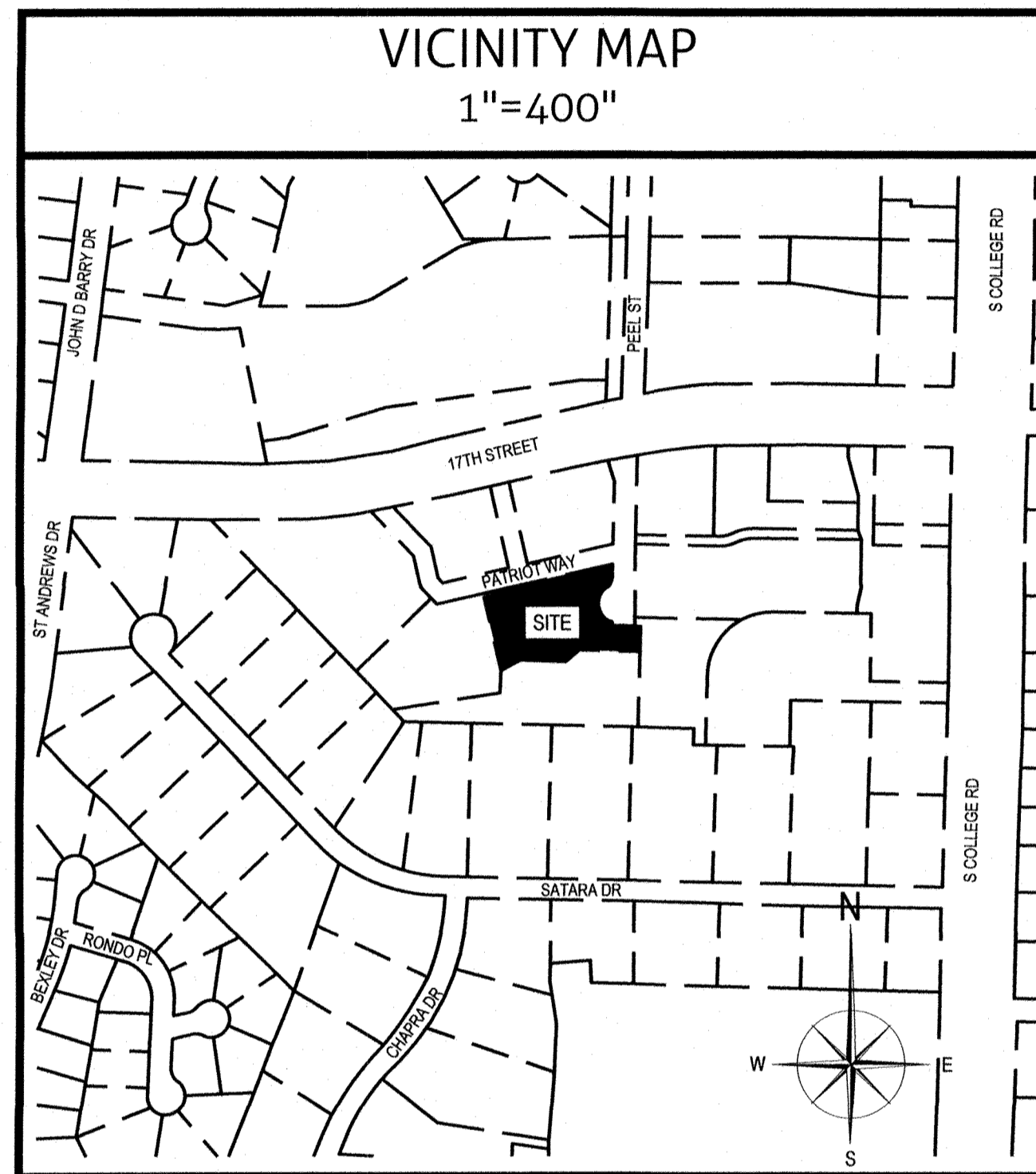
Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit #: _____

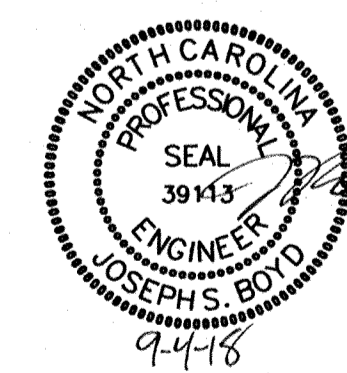
Signed: _____

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	
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C0.0	COVER
C0.1	PROJECT NOTES
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C3.1	DRAINAGE PLAN
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LEGEND	
LINETYPE DESCRIPTION	LINETYPE DESCRIPTION
EXISTING WATERLINE	PROPOSED UNDERGROUND ELECTRIC
PROPOSED WATERLINE	EXISTING GASLINE
EXISTING STORM DRAINAGE	PROPOSED GASLINE
PROPOSED STORM DRAINAGE	SILT FENCE
EXISTING SANITARY SEWER	TREE PROTECTION & SILT FENCE
PROPOSED SANITARY SEWER	FENCE
EXISTING FORCE MAIN	TREE PROTECTION
PROPOSED FORCE MAIN	TEMP. DIVERSION SWALE
EXISTING ELECTRIC (OVERHEAD)	RIGHT-OF-WAY
PROPOSED ELECTRIC (OVERHEAD)	EXISTING WETLANDS
EXISTING UNDERGROUND ELECTRIC	1' CONTOUR
EXISTING EASEMENT	5' CONTOUR
PROJECT BOUNDARY	PROPOSED EASEMENT



PREPARED BY:

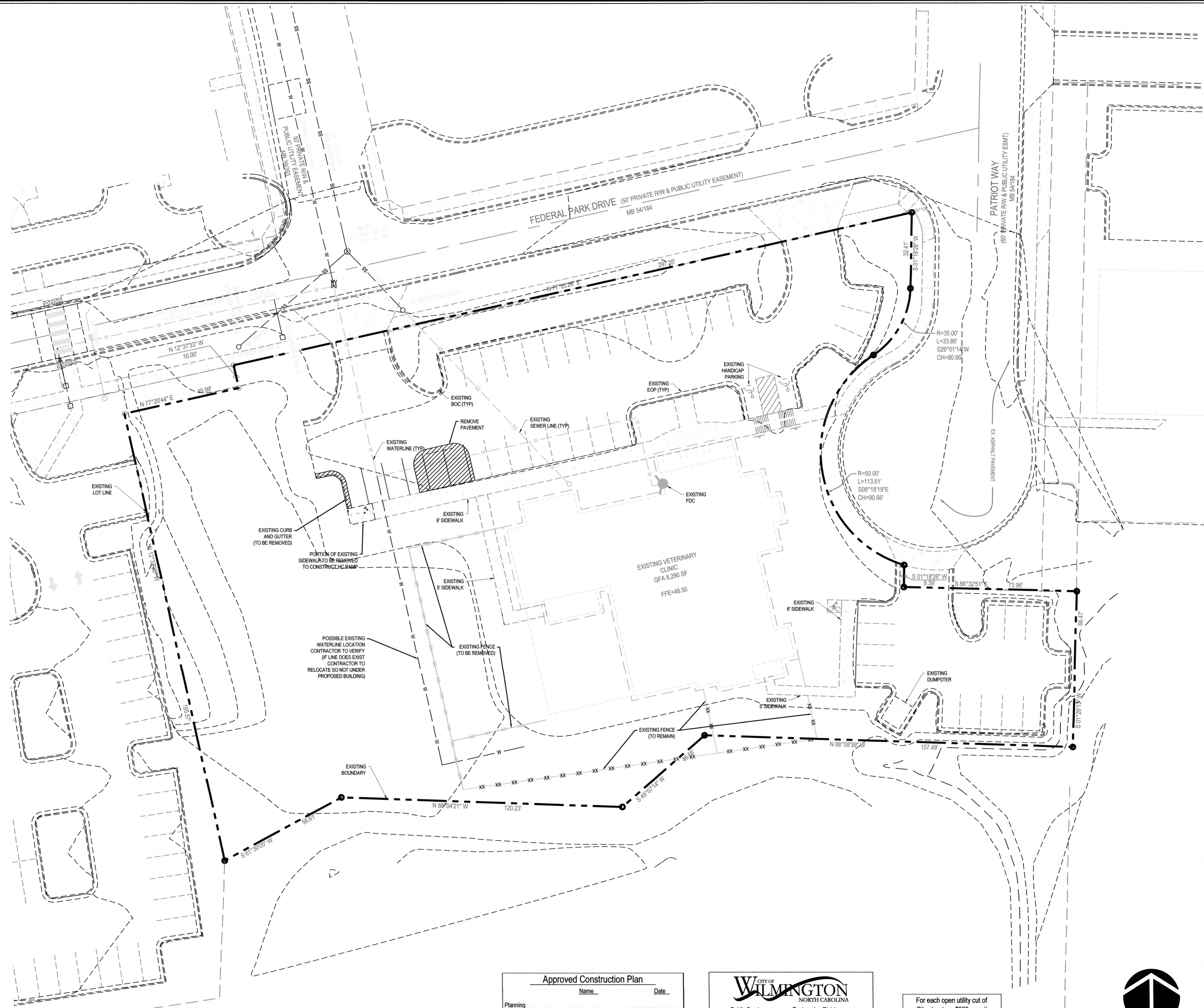
WithersRavenel
Engineers | Planners | Surveyors
219 Station Road | Ste 101 | Wilmington, NC 28405 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

DEVELOPER/OWNER

SLA PROPERTY, LLC
3720 FEDERAL PARK DRIVE
WILMINGTON, NC 28412
PHONE: (910) 799-2970
ATTN: DR. CHRISTOPHER BATTS

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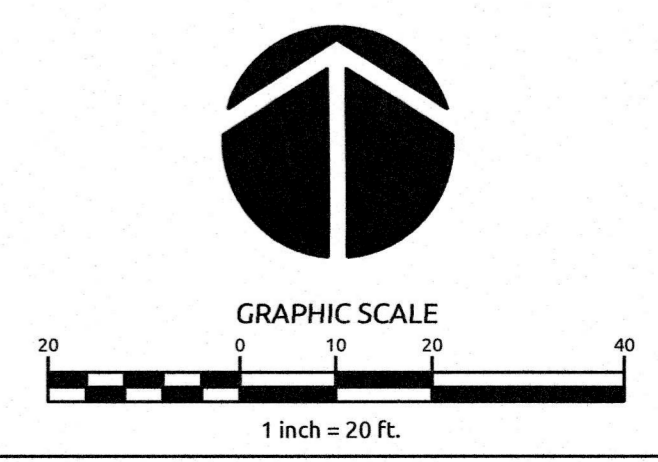
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CITY OF WILMINGTON
 NORTH CAROLINA
 Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

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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) 799-2970
 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)
 PROPOSED ZONING DISTRICT: CB (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
 HANDICAP SPACES REQUIRED = 3 (1 VAN ACCESSIBLE)
 HANDICAP SPACES PROVIDED = 3 (ALL VAN ACCESSIBLE)
 EXISTING PARKING SPACES = 46 SPACES

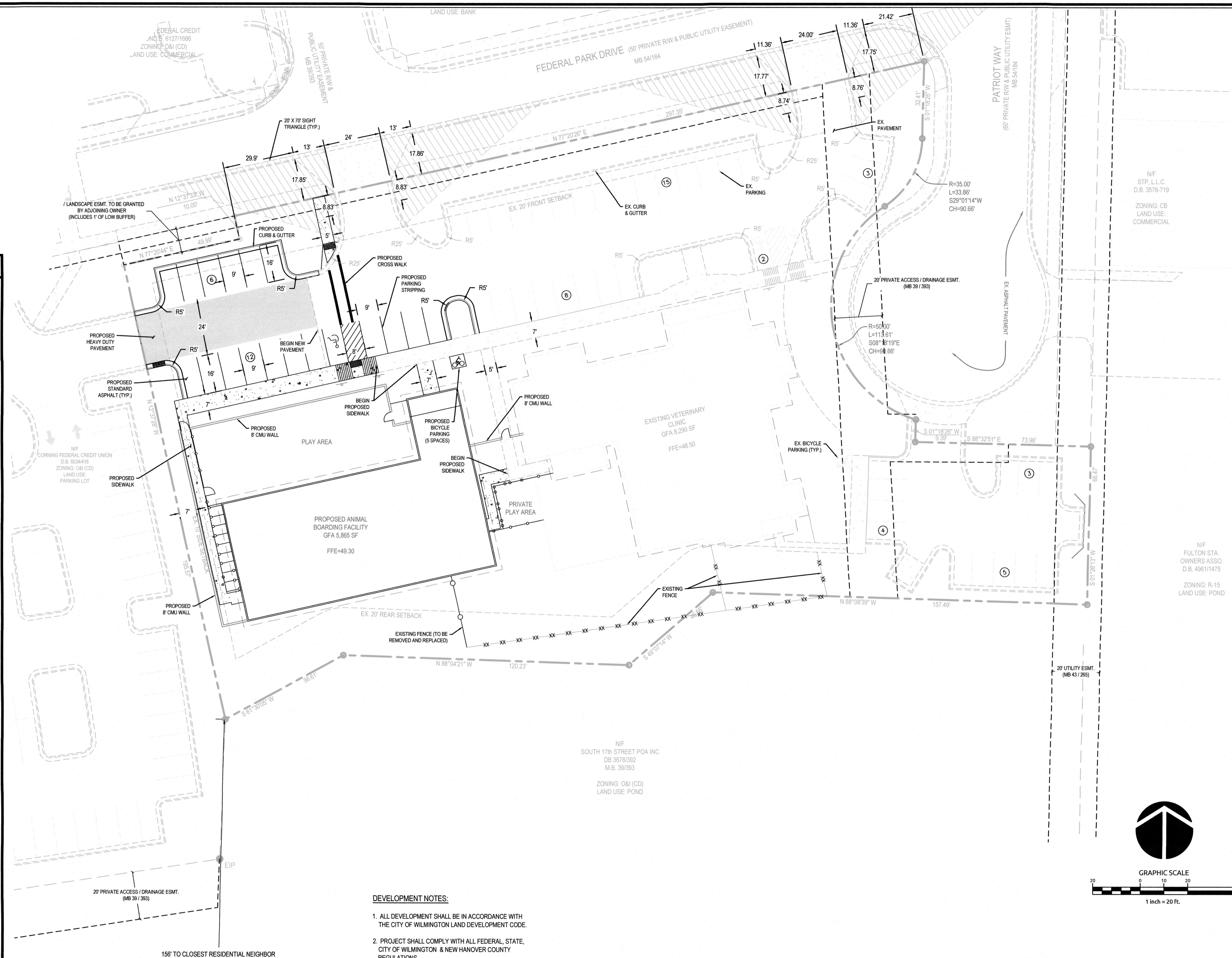
BICYCLE PARKING:
 EXISTING: 5 SPACES
 PROPOSED: 5 SPACES
 TOTAL: 10 SPACES

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:

1. ALL DEVELOPMENT SHALL BE IN ACCORDANCE WITH THE CITY OF WILMINGTON LAND DEVELOPMENT CODE.
2. 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 _____

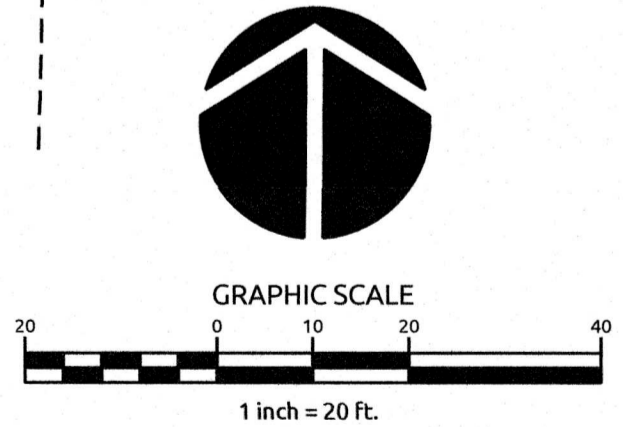
CITY OF WILMINGTON
 NORTH CAROLINA

Public Services • Engineering Division

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WithersRavenel
 Engineers | Planners | Surveyors

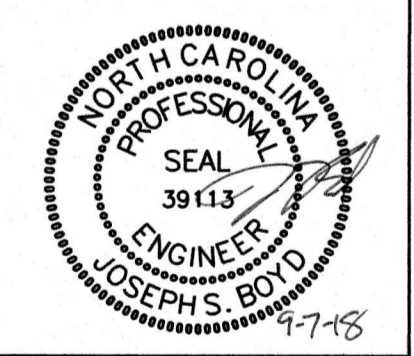
215 Station Road | Ste 101 | Wilmington, NC 28405 | E: 910.256.9277 | License #: C-6852 | www.withersravenel.com

NEEDHAM ANIMAL HOSPITAL EXPANSION

WILMINGTON, NC

SITE PLAN

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

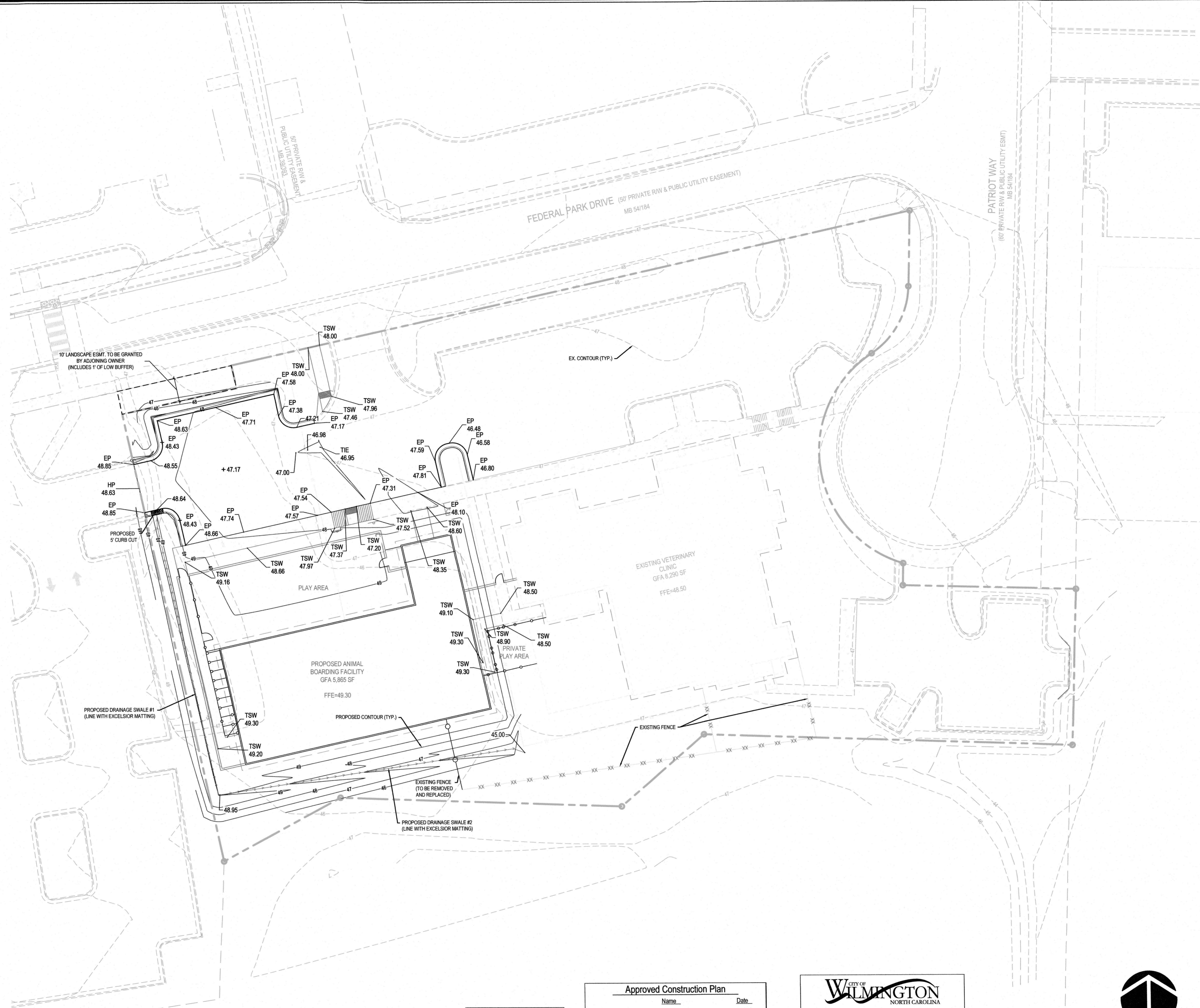


Revisions	Comments	Date
1	COW REVIEW COMMENTS	06-18-18

Sheet No.
C2.0

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17' LANDSCAPE ESMT. TO BE GRANTED BY ADJOINING OWNER (INCLUDES 1' OF LOW BUFFER)

PROPOSED 5' CURB CUT

PROPOSED DRAINAGE SWALE #1 (LINE WITH EXCELSIOR MATTING)

PROPOSED ANIMAL BOARDING FACILITY GFA 5,865 SF FFE=49.30

PROPOSED CONTOUR (TYP.)

PROPOSED DRAINAGE SWALE #2 (LINE WITH EXCELSIOR MATTING)

EXISTING VETERINARY CLINIC GFA 8,290 SF FFE=48.50

FEDERAL PARK DRIVE (50' PRIVATE RW & PUBLIC UTILITY EASEMENT) MB 541184

PATRIOT WAY (60' PRIVATE RW & PUBLIC UTILITY ESMIT) MB 541184

EX. CONTOUR (TYP.)

50' PRIVATE RW & PUBLIC UTILITY EASEMENT

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

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

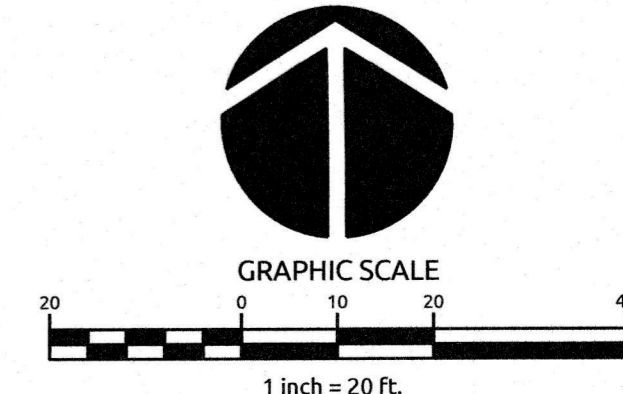
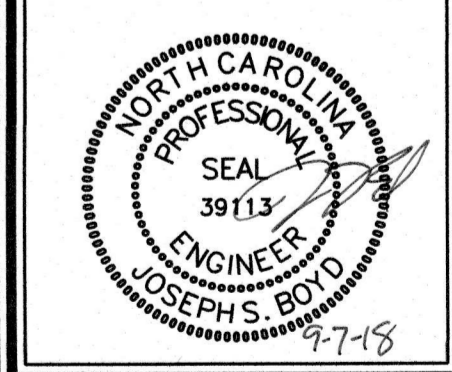
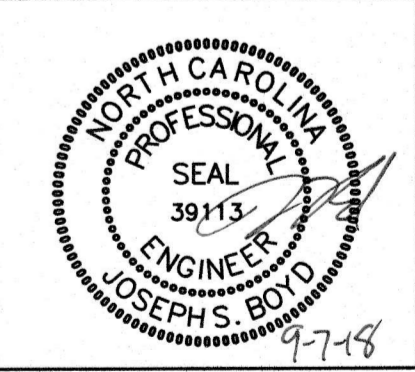


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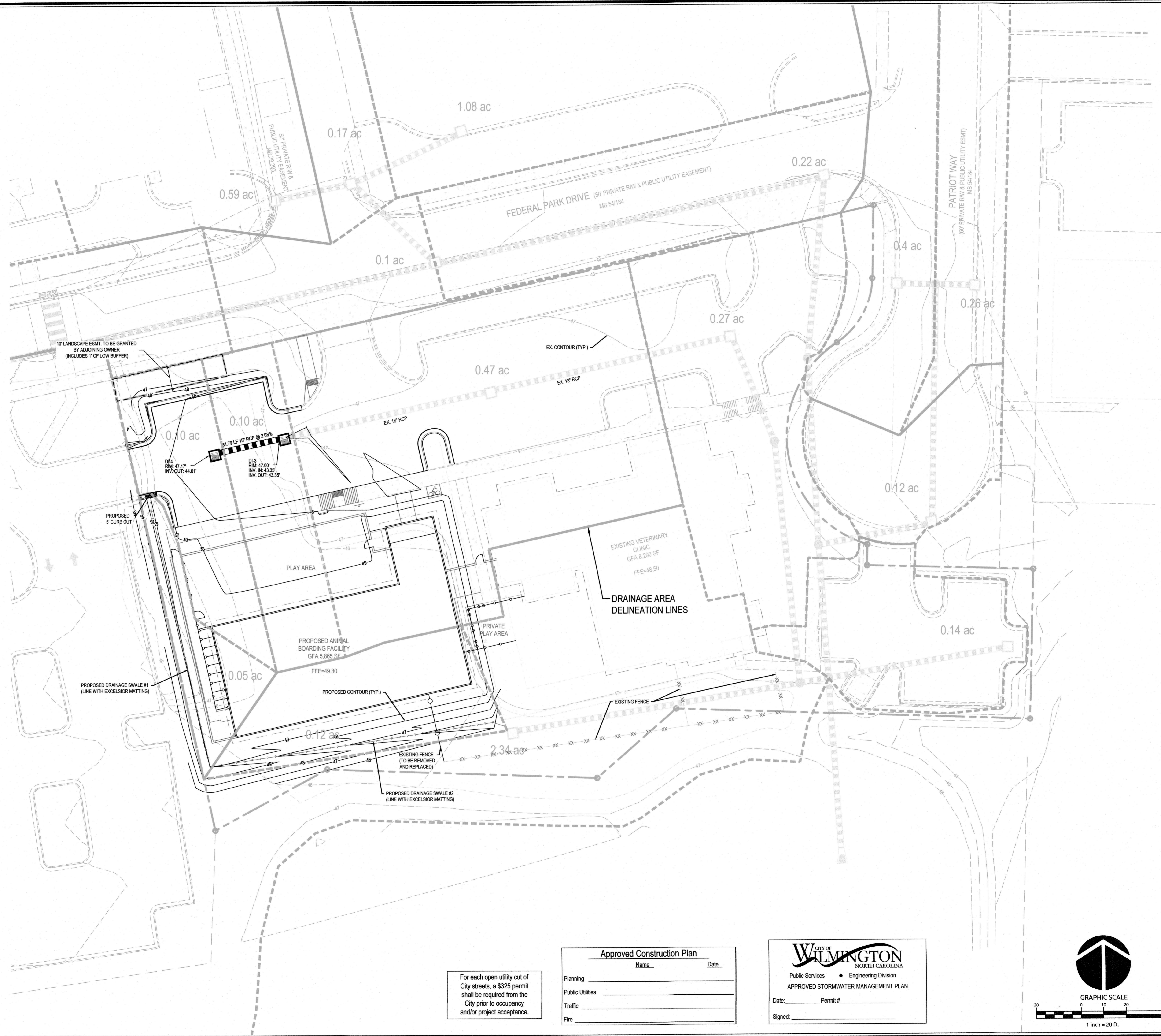


Revisions table with 1 row: 1 COW REVIEW COMMENTS 06.18.18

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



Revisions
1 COW REVIEW COMMENTS 06.18.18



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
TOTAL:	42,000 SF

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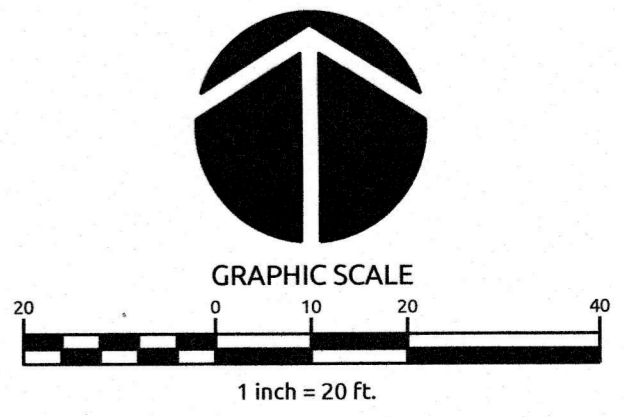
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NORTH CAROLINA

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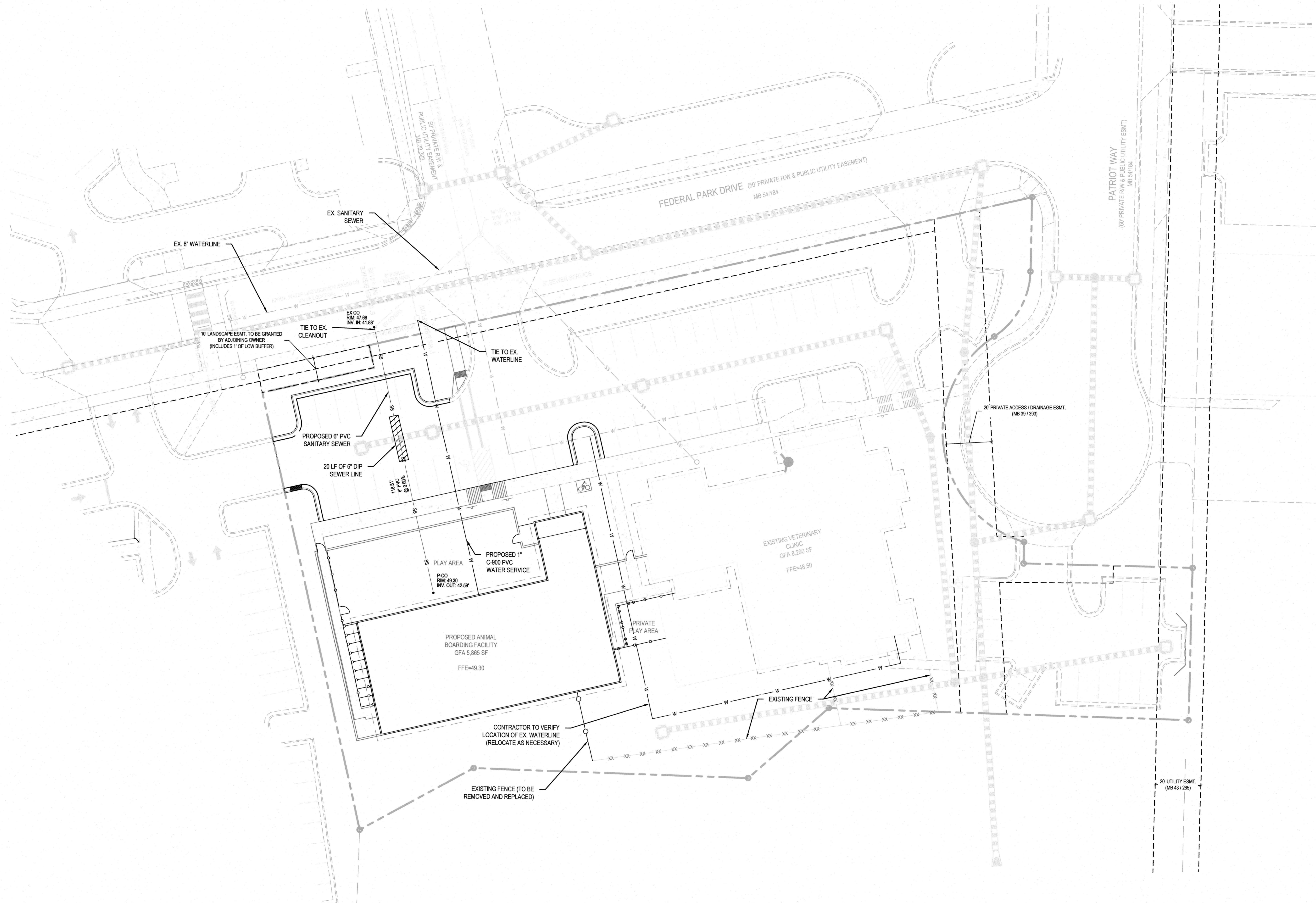
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Signed: _____



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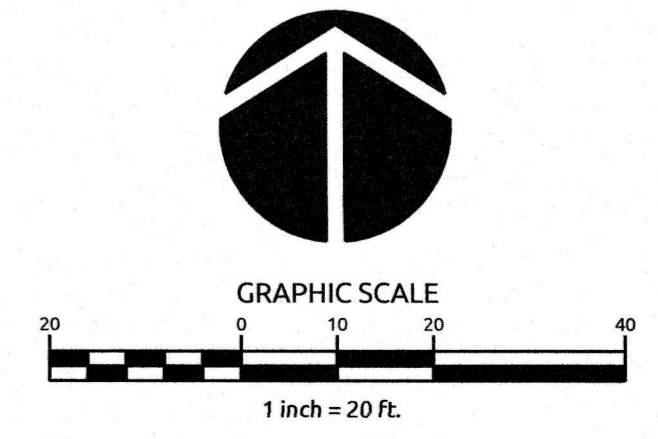
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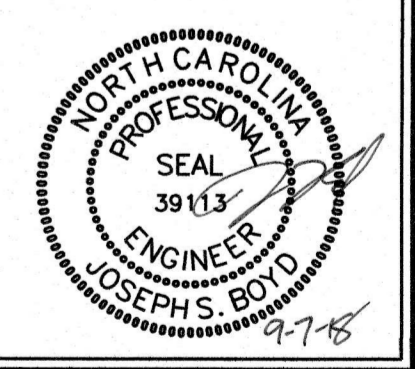
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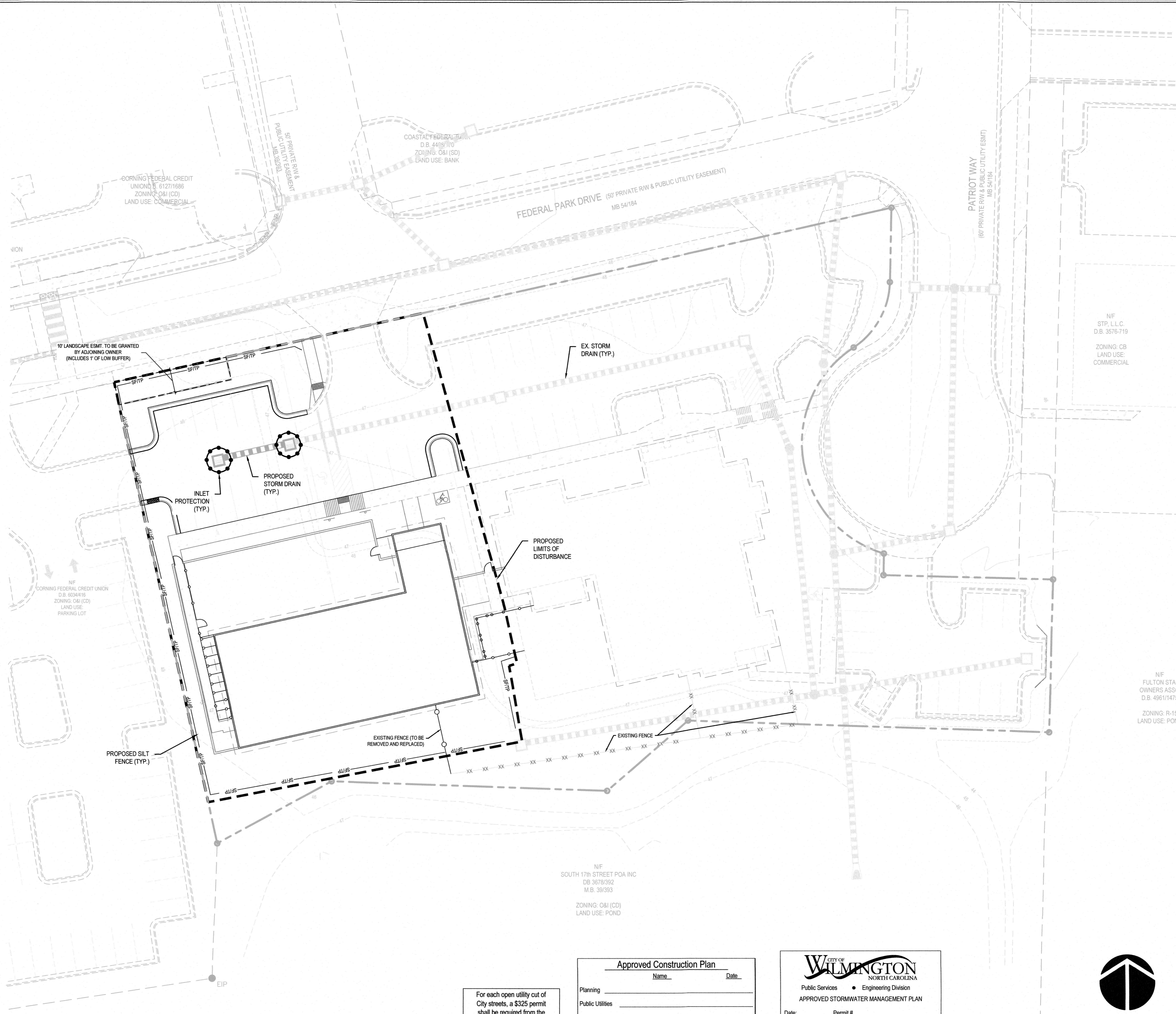


Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



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

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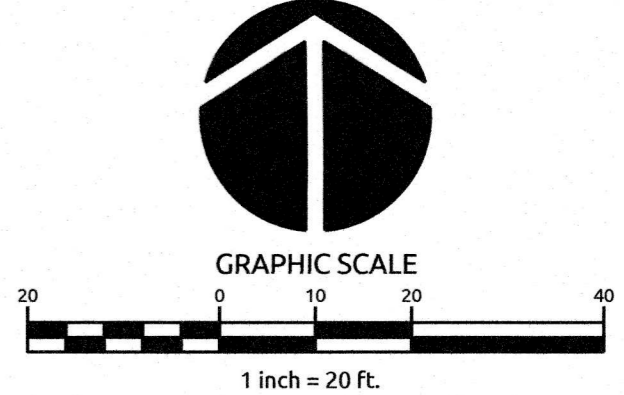
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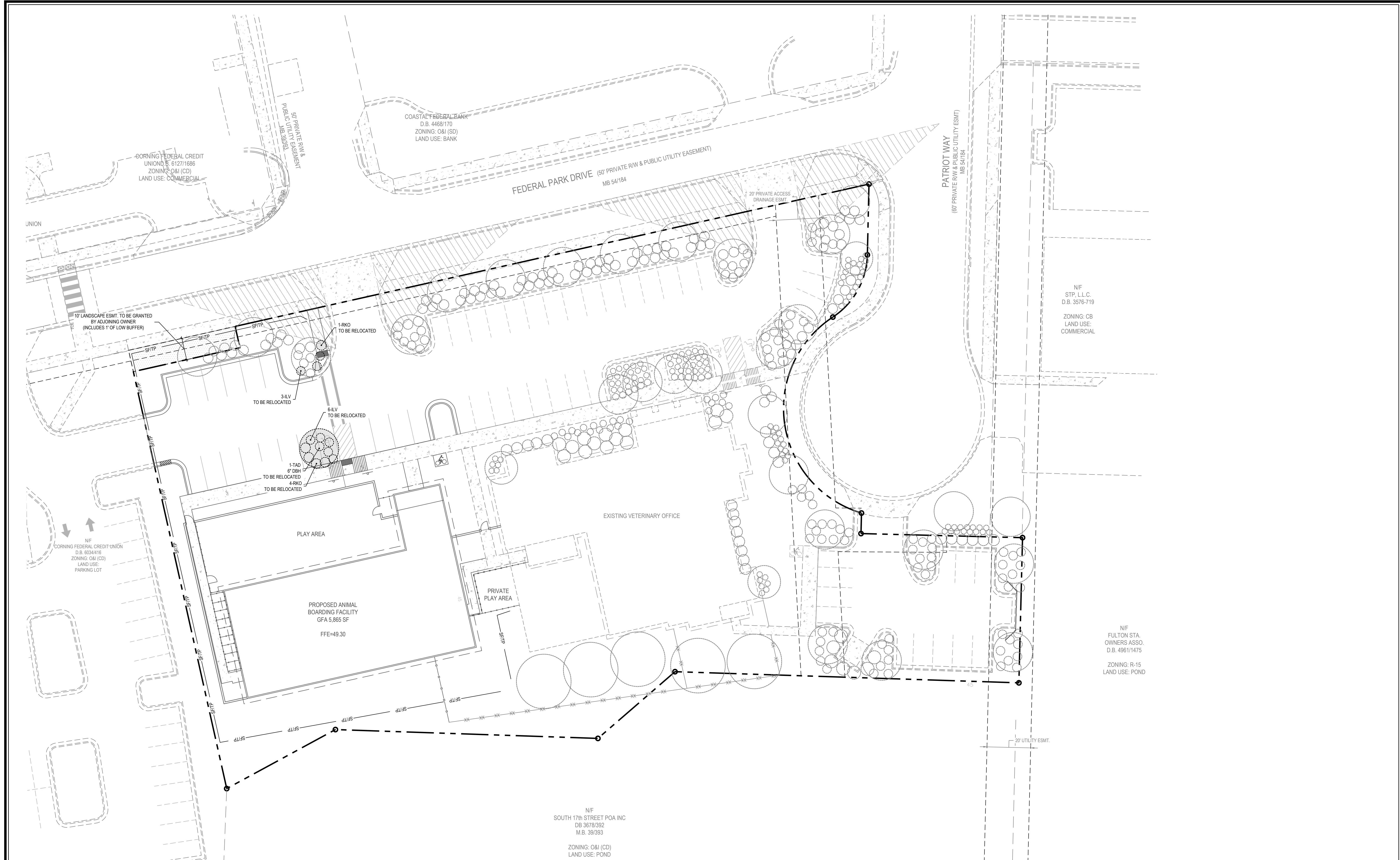


Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



Revisions	
1	COW REVIEW COMMENTS 06.18.18

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PLANT SCHEDULE - EXISTING PLANTS TO BE RELOCATED

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE
CANOPY TREES	1	TAD	Taxodium distichum	Bald Cypress	6" DBH
SHRUBS	9	ILV	Ilex vomitoria	Yaupon Holly	
	5	RKO	Rosa 'Knock Out'	Knockout Rose	

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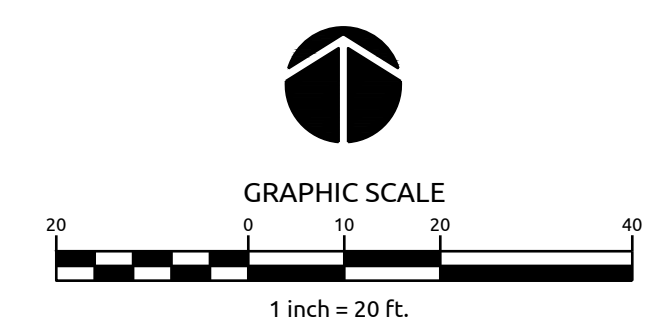
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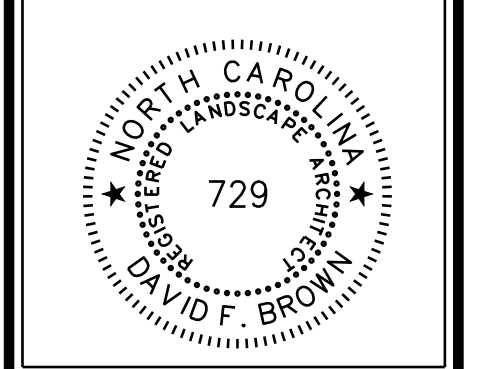
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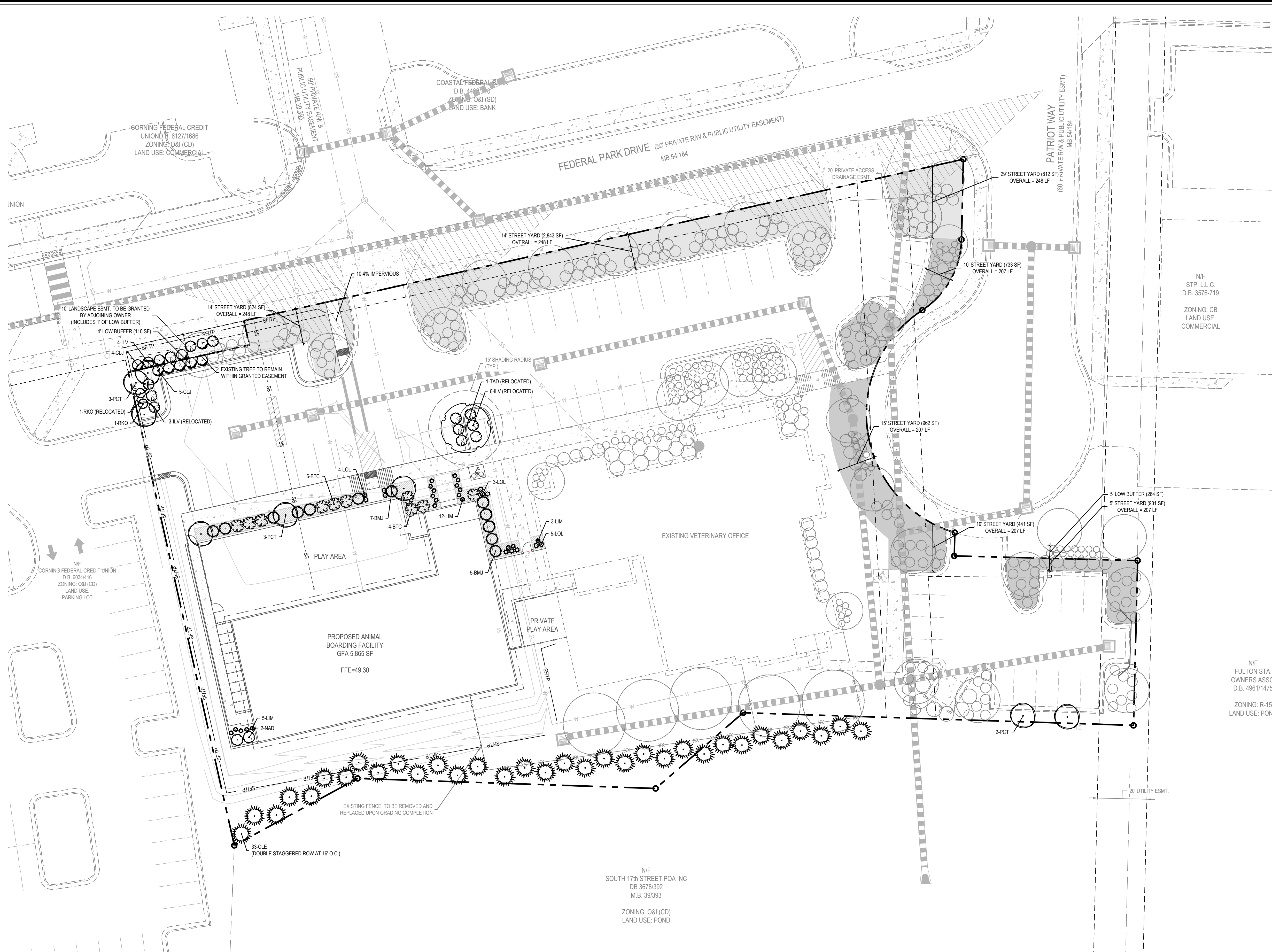
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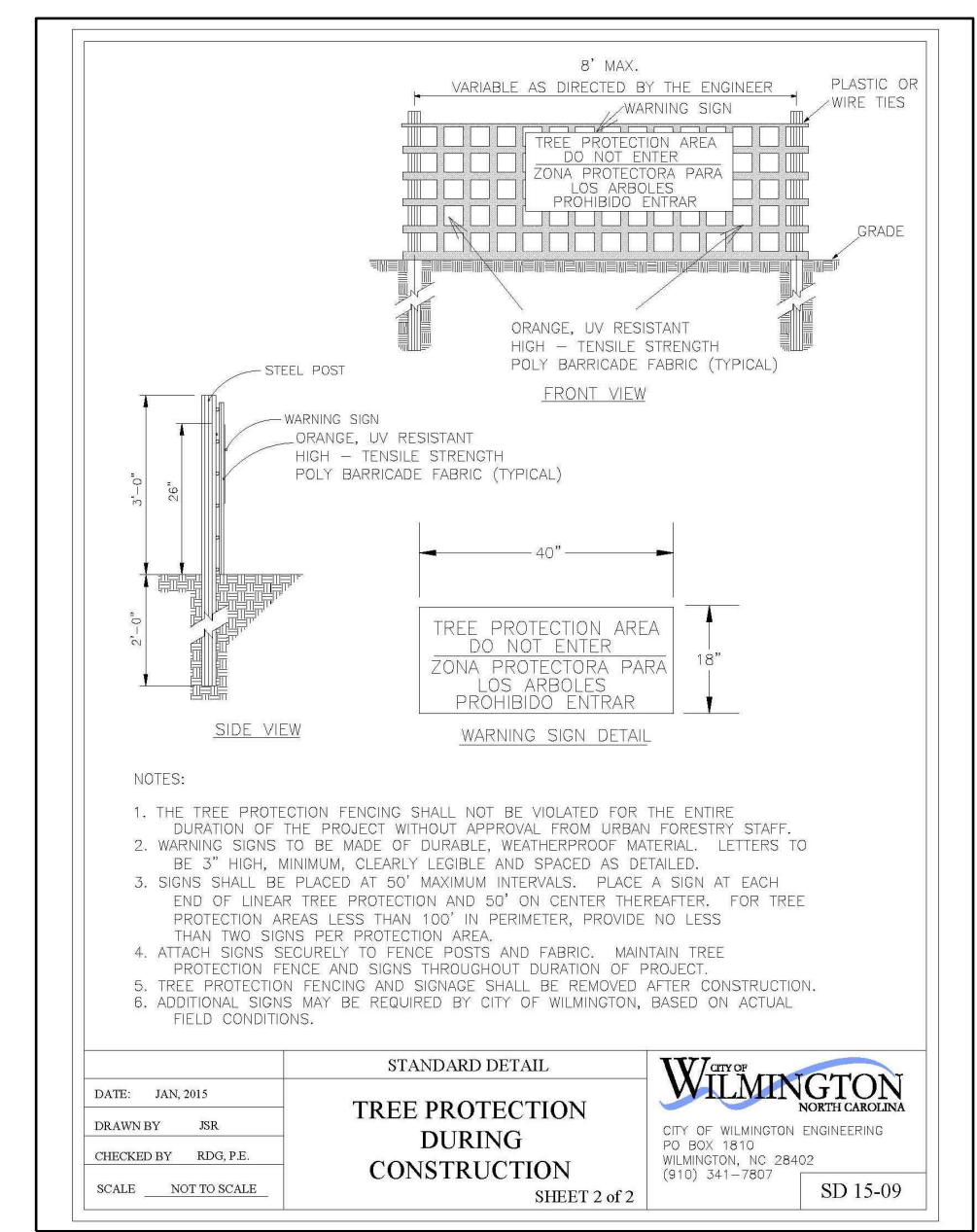
Job No.	03-170548	Drawn By	TMG
Date	03/29/18	Designer	JSB



Revisions	Comments	Date
1	COW REVIEW COMMENTS	06.18.18



- 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 GRASSSED. LAWN AREAS MAY BE ESTABLISHED WITH EITHER SOO 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 WARRANTY 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 TRIANGLE 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 COW TECH STDS)
 14. THERE IS NO CONSERVATION RESOURCES ASSOCIATED WITH THE PARCELS INCLUDING ANY RARE OR ENDANGERED SPECIES IN ACCORDANCE WITH THE NC WILDLIFE RESTORATION 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 GRADING PLANS AROUND EACH TREE CLUSTER 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:

FEDERAL PARK STREET YARD: 248' x 18' (O&I DISTRICT) = 4,464 SF REQUIRED 4,479 SF PROVIDED	298 LF - 50' (2 DRIVES) = 248 LF 4,464 SF REQUIRED 4,479 SF PROVIDED
1 TREE / 600 SF 8 TREES REQUIRED 9 EXISTING TREES PROVIDED	8 TREES REQUIRED 9 EXISTING TREES PROVIDED
6 SHRUBS / 600 SF 45 SHRUBS REQUIRED 1 SHRUB PROVIDED + 92 EXISTING SHRUBS PROVIDED	45 SHRUBS REQUIRED 1 SHRUB PROVIDED + 92 EXISTING SHRUBS PROVIDED
PATRIOT WAY STREET YARD: 207' x 9' (O&I DISTRICT) = 3,615 SF PROVIDED + LOW BUFFER (264 SF) = 3,879 SF PROVIDED	232 LF - 25' (1 DRIVE) = 207 LF 1,863 SF REQUIRED (SECONDARY STREET - 18' 50%) 3,615 SF PROVIDED + LOW BUFFER (264 SF) = 3,879 SF PROVIDED
1 TREE / 600 SF 7 TREES REQUIRED 10 EXISTING TREES PROVIDED	7 TREES REQUIRED 10 EXISTING TREES PROVIDED
6 SHRUBS / 600 SF 39 SHRUBS REQUIRED 132 EXISTING SHRUBS PROVIDED	39 SHRUBS REQUIRED 132 EXISTING SHRUBS PROVIDED
FRONT VIA (INTERIOR): 25% SHADING: 16,191 SF 4,048 SF REQUIRED 12,664 SF PROVIDED	16,191 SF 4,048 SF REQUIRED 12,664 SF PROVIDED
75% SHADE / CANOPY TREE: 25% SMALL TREES: 4,393 SF 1,099 SF REQUIRED 4,934 SF PROVIDED	1 (TAD) + 18 EXISTING 6 (PCT)
75% SHADE / CANOPY TREE: 25% SMALL TREES: 6 EXISTING 2 (PCT)	6 EXISTING 2 (PCT)
FOUNDATION: 181 x 12 x 12 = 261 SF REQUIRED 830 SF PROVIDED	181 LF 261 SF REQUIRED 830 SF PROVIDED

PLANT SCHEDULE

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
CANOPY TREES	1	TAD	<i>Taxodium distichum</i>	Bald Cypress	CONT.	6" DBH		EX. RELOCATED
UNDERSTORY	33	CLE	<i>Cygnoscypris leylandii</i>	Leyland Cypress	B&B	3" CAL.		
	8	PCT	<i>Prunus cerasifera</i> 'Thundercloud'	Purple Leaf Plum	B&B	3" CAL.		
	12	BMJ	<i>Buxus microphylla japonica</i> 'Wintergreen'	Wintergreen Japanese Boxwood	CONT.	3 GAL.		
	10	BTC	<i>Berberis thunbergii</i> 'Crimson Pygmy'	Crimson Pygmy Barberry	CONT.	3 GAL.		
SHRUBS	9	CLJ	<i>Cleyera japonica</i>	Japanese Cleyera	CONT.	7 GAL.	3' MIN.	LOW BUFFER
	13	ILV	<i>Ilex vomitoria</i> 'Nana'	Dwarf Yaupon Holly	CONT.	3 GAL.		EX. RELOCATED
	2	NAD	<i>Nandina domestica</i> 'Gulf Stream'	'Gulf Stream' Nandina	CONT.	3 GAL.		
	1	RKO	<i>Rosa 'Knock Out'</i>	Knockout Rose	CONT.	3 GAL.		
	1	RKO	<i>Rosa 'Knock Out'</i>	Knockout Rose	CONT.	3 GAL.		EX. RELOCATED
GRASSES	20	LIM	<i>Liriope muscari</i>	Liriope	CONT.	1 GAL. MIN.		
	12	LOL	<i>Lomandra longifolia</i> '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: 0.60 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 _____

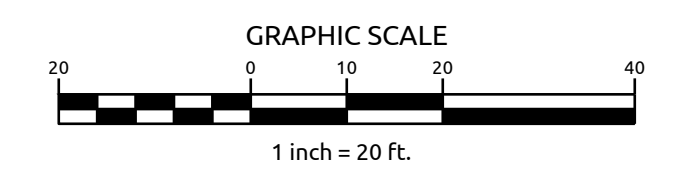
CITY OF WILMINGTON
NORTH CAROLINA

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____



WithersRavenel
Engineers | Planners | Surveyors

NEEDHAM ANIMAL HOSPITAL EXPANSION

LANDSCAPE PLAN

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

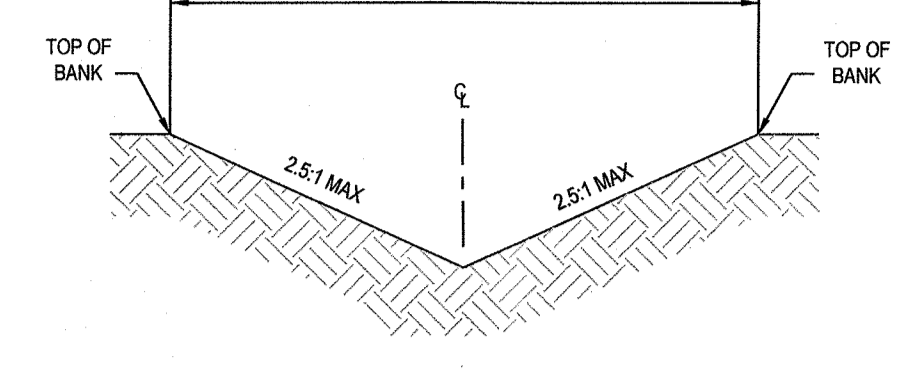
729

Revisions:
1 COW REVIEW COMMENTS 06.18.18

Sheet No. **L1.1**

219 Station Road | Ste 101 | Wilmington, NC 28405 | Tel: 910.256.9277 | License #: C-6852 | www.withersravenel.com

5' TRIANGULAR SWALE CROSS SECTION DETAIL



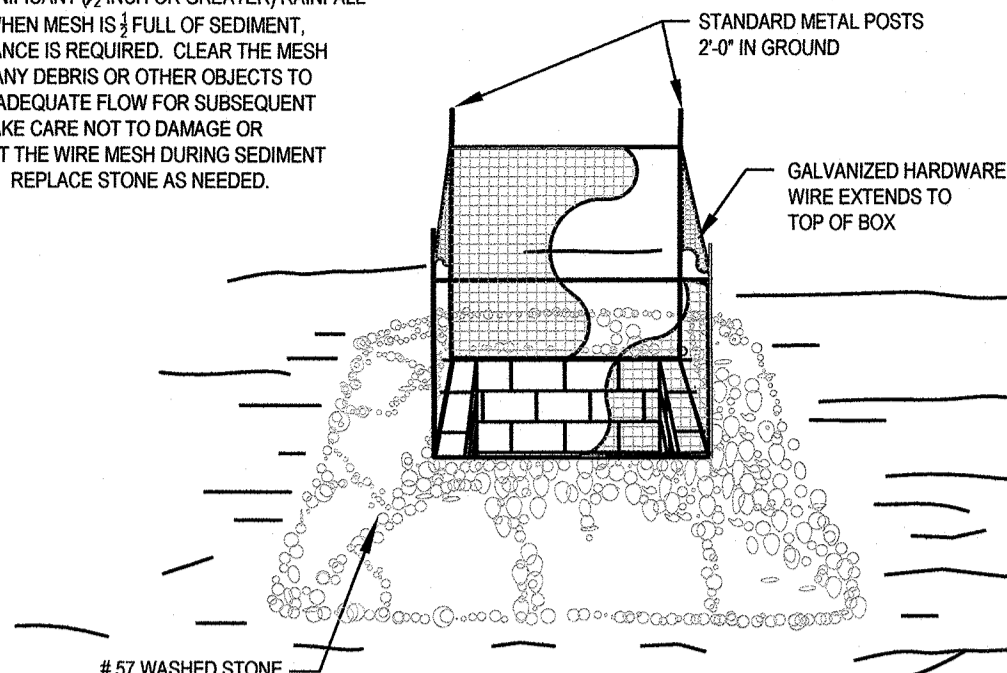
NOT TO SCALE

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	48.64'	48.95'	125'	0.25%	2.5:1	TRIANGULAR	EXCELSIOR MATTING	GRASS
2	0.12	48.95'	45.00'	133'	3.10%	2.5:1	TRIANGULAR	EXCELSIOR MATTING	GRASS

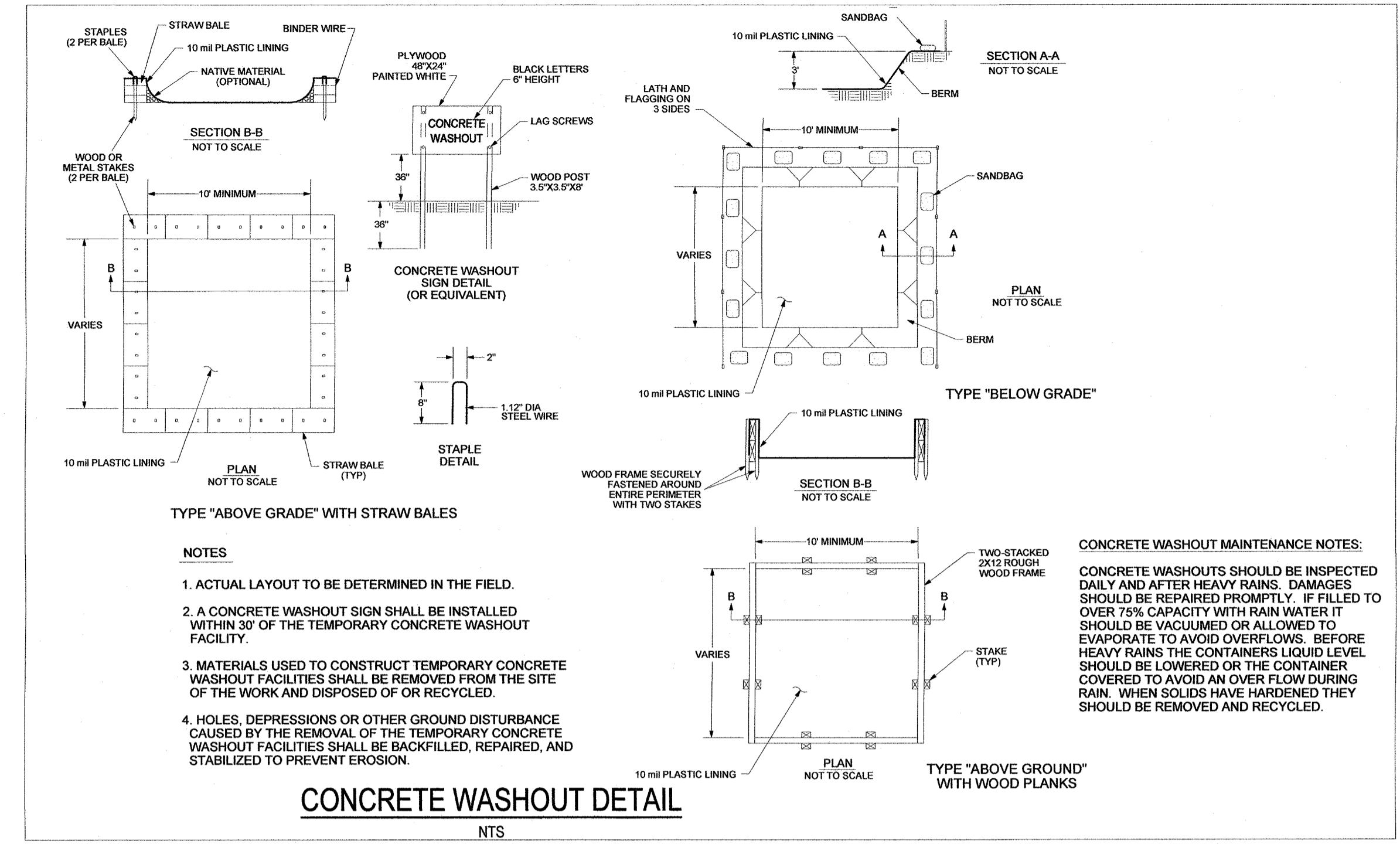
MAINTENANCE:

INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT 1/8" 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



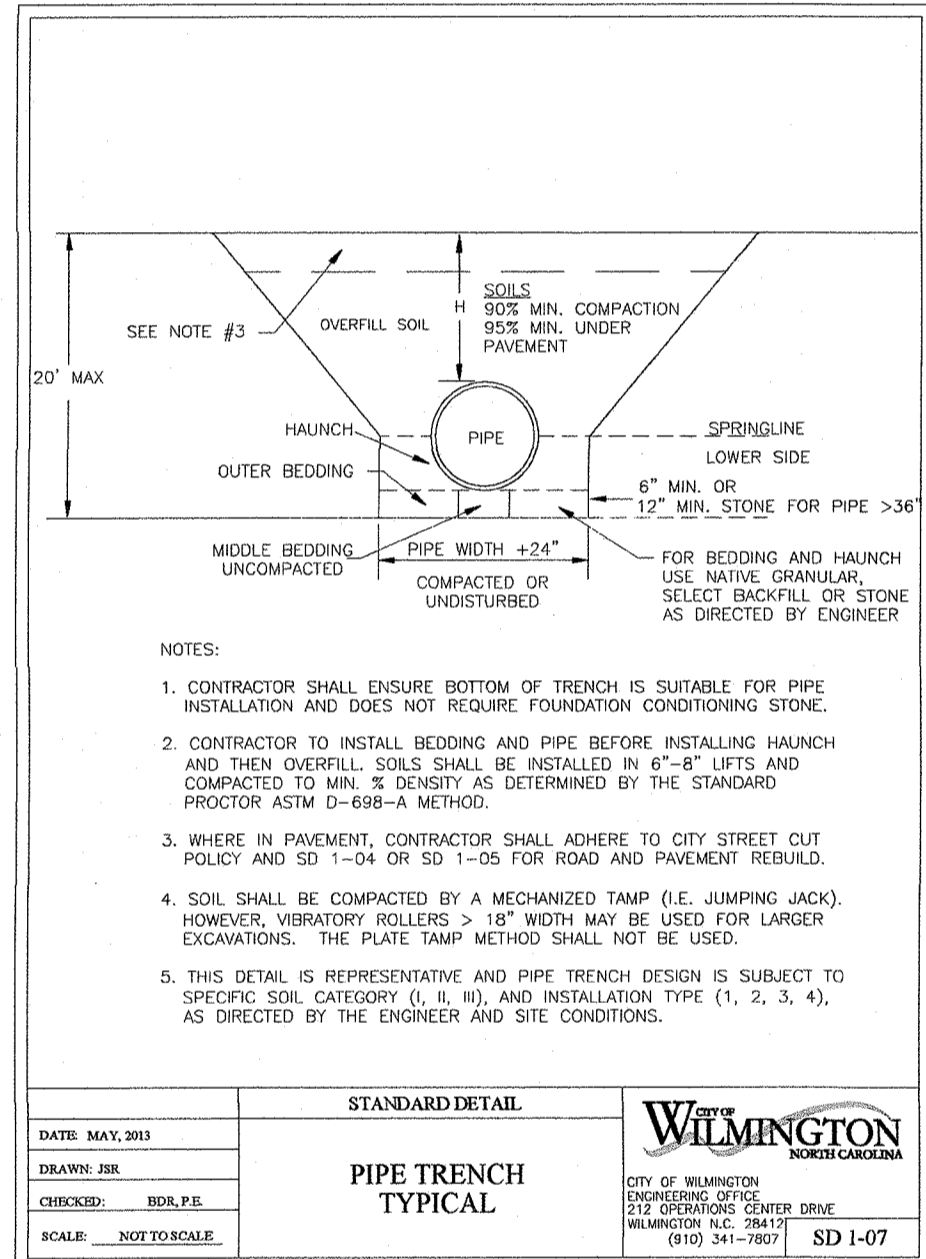
NOTES:

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL

NTS

CONCRETE WASHOUT MAINTENANCE NOTES:
CONCRETE WASHOUTS SHOULD BE INSPECTED DAILY AND AFTER HEAVY RAINS. DAMAGES SHOULD BE REPAIRED PROMPTLY. IF FILLED TO OVER 75% CAPACITY WITH RAIN WATER IT SHOULD BE VACUUMED OR ALLOWED TO EVAPORATE TO AVOID OVERFLOWS. BEFORE HEAVY RAINS THE CONTAINERS LIQUID LEVEL SHOULD BE LOWERED OR THE CONTAINER COVERED TO AVOID AN OVER FLOW DURING RAIN. WHEN SOLIDS HAVE HARDENED THEY SHOULD BE REMOVED AND RECYCLED.

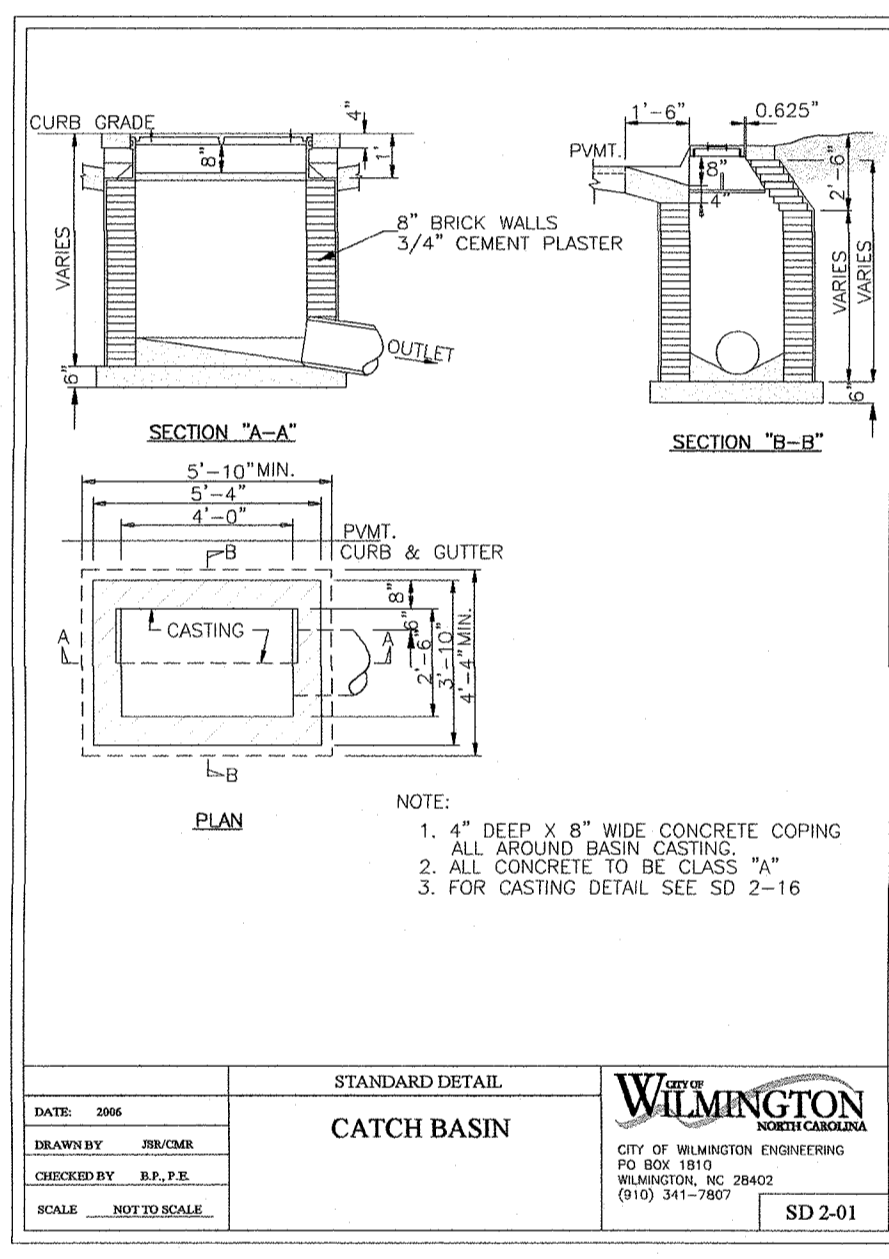
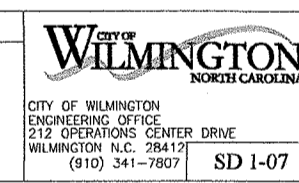


NOTES:

1. CONTRACTOR SHALL ENSURE BOTTOM OF TRENCH IS SUITABLE FOR PIPE INSTALLATION AND DOES NOT REQUIRE FOUNDATION CONDITIONING STONE.
2. CONTRACTOR TO INSTALL BEDDING AND PIPE BEFORE INSTALLING HAUNCH AND THEN OVERFILL. SOILS SHALL BE INSTALLED IN 6"-8" LIFTS AND COMPACTED TO MIN. DENSITY AS DETERMINED BY THE STANDARD PROCTOR ASTM D-698-A METHOD.
3. WHERE IN PAYMENT CONTRACTOR SHALL ADHERE TO CITY STREET CUT POLICY AND SD 1-04 OR SD 1-05 FOR ROAD AND PAVEMENT REBUILD.
4. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMP (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EDUCATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
5. THIS DETAIL IS REPRESENTATIVE AND PIPE TRENCH DESIGN IS SUBJECT TO SPECIFIC SOIL CATEGORY (L, B, H), AND INSTALLATION TYPE (1, 2, 3, 4), AS DIRECTED BY THE ENGINEER AND SITE CONDITIONS.

STANDARD DETAIL

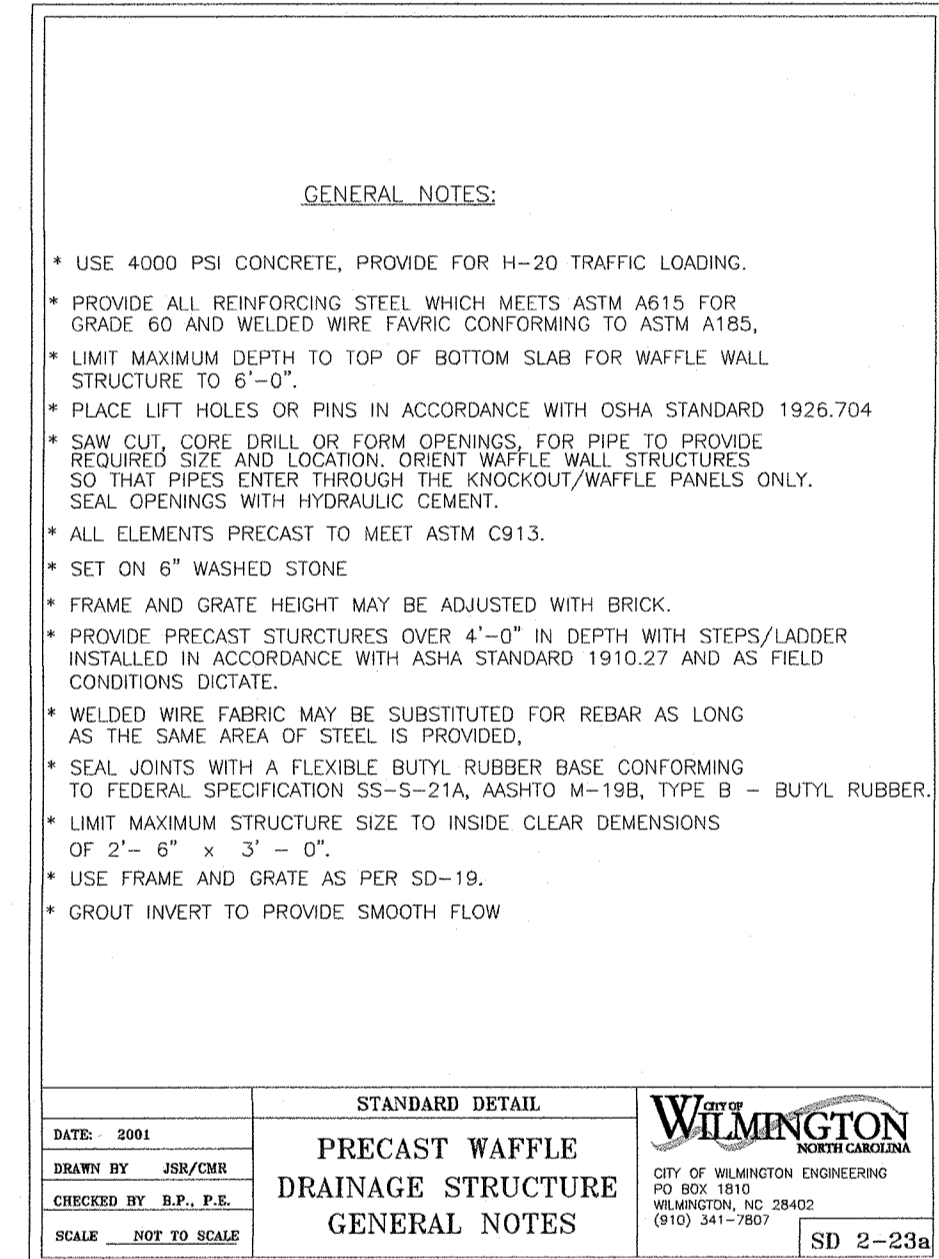
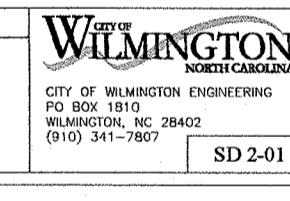
PIPE TRENCH TYPICAL



- 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

STANDARD DETAIL

CATCH BASIN

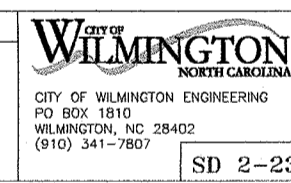


GENERAL NOTES:

- USE 4000 PSI CONCRETE, PROVIDE FOR H-20 TRAFFIC LOADING.
- PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185.
- LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB FOR WAFFLE WALL STRUCTURE TO 6'-0".
- PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704
- SAW CUT, CORE DRILL OR FORM OPENINGS FOR PIPE TO PROVIDE REQUIRED SIZE AND LOCATION. ORIENT WAFFLE WALL STRUCTURES SO THAT PIPES ENTER THROUGH THE KNOCKOUT/WAFFLE PANELS ONLY. SEAL OPENINGS WITH HYDRAULIC CEMENT.
- ALL ELEMENTS PRECAST TO MEET ASTM C913.
- SET ON 6" WASHED STONE
- FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH BRICK.
- PROVIDE PRECAST STRUCTURES OVER 4'-0" IN DEPTH WITH STEPS/LADDER INSTALLED IN ACCORDANCE WITH ASHA STANDARD 1910.27 AND AS FIELD CONDITIONS DICTATE.
- WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
- SEAL JOINTS WITH A FLEXIBLE BUTYL RUBBER BASE CONFORMING TO FEDERAL SPECIFICATION SS-5-21A, AKSHO M-198, TYPE B - BUTYL RUBBER.
- LIMIT MAXIMUM STRUCTURE SIZE TO INSIDE CLEAR DIMENSIONS OF 2'-6" X 3'-0".
- USE FRAME AND GRATE AS PER SD-18.
- GROUT INVERT TO PROVIDE SMOOTH FLOW

STANDARD DETAIL

PRECAST WAFFLE DRAINAGE STRUCTURE GENERAL NOTES

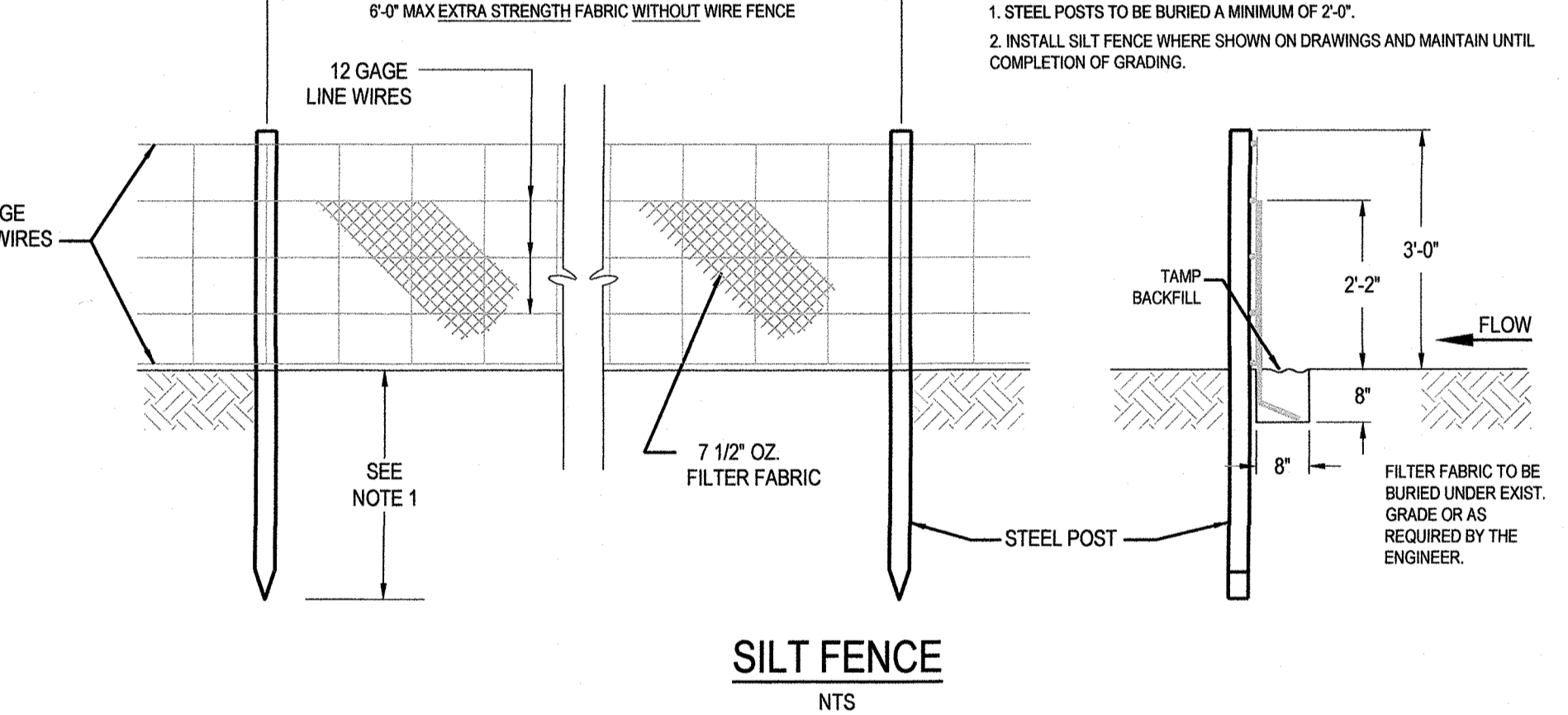


MAINTENANCE:

1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. SHOULD THE FABRIC OF THE SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
3. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
4. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

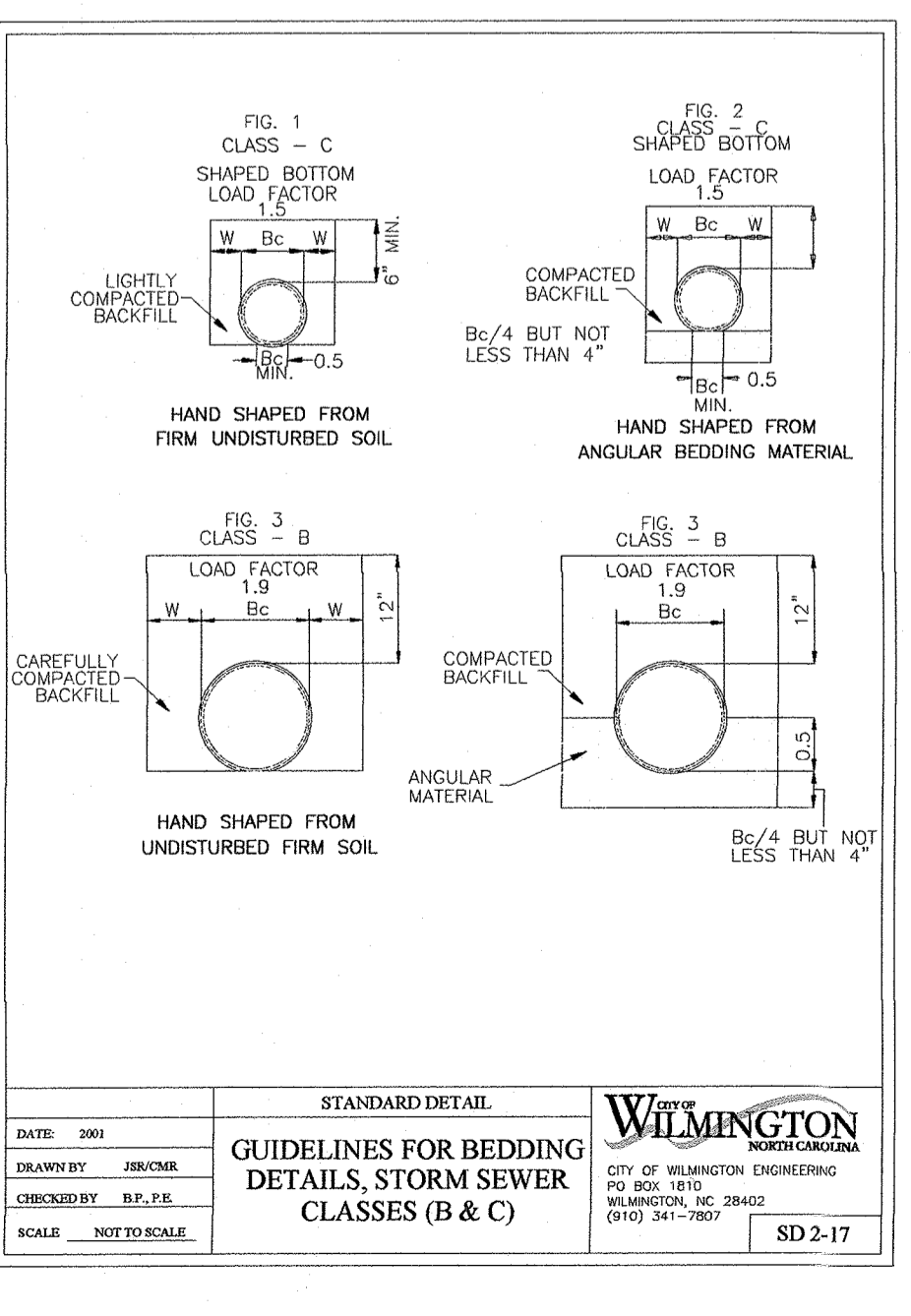
NOTES:

1. STEEL POSTS TO BE BURIED A MINIMUM OF 2'-0".
2. INSTALL SET FENCE WHERE SHOWN ON DRAWINGS AND MAINTAIN UNTIL COMPLETION OF GRADING.



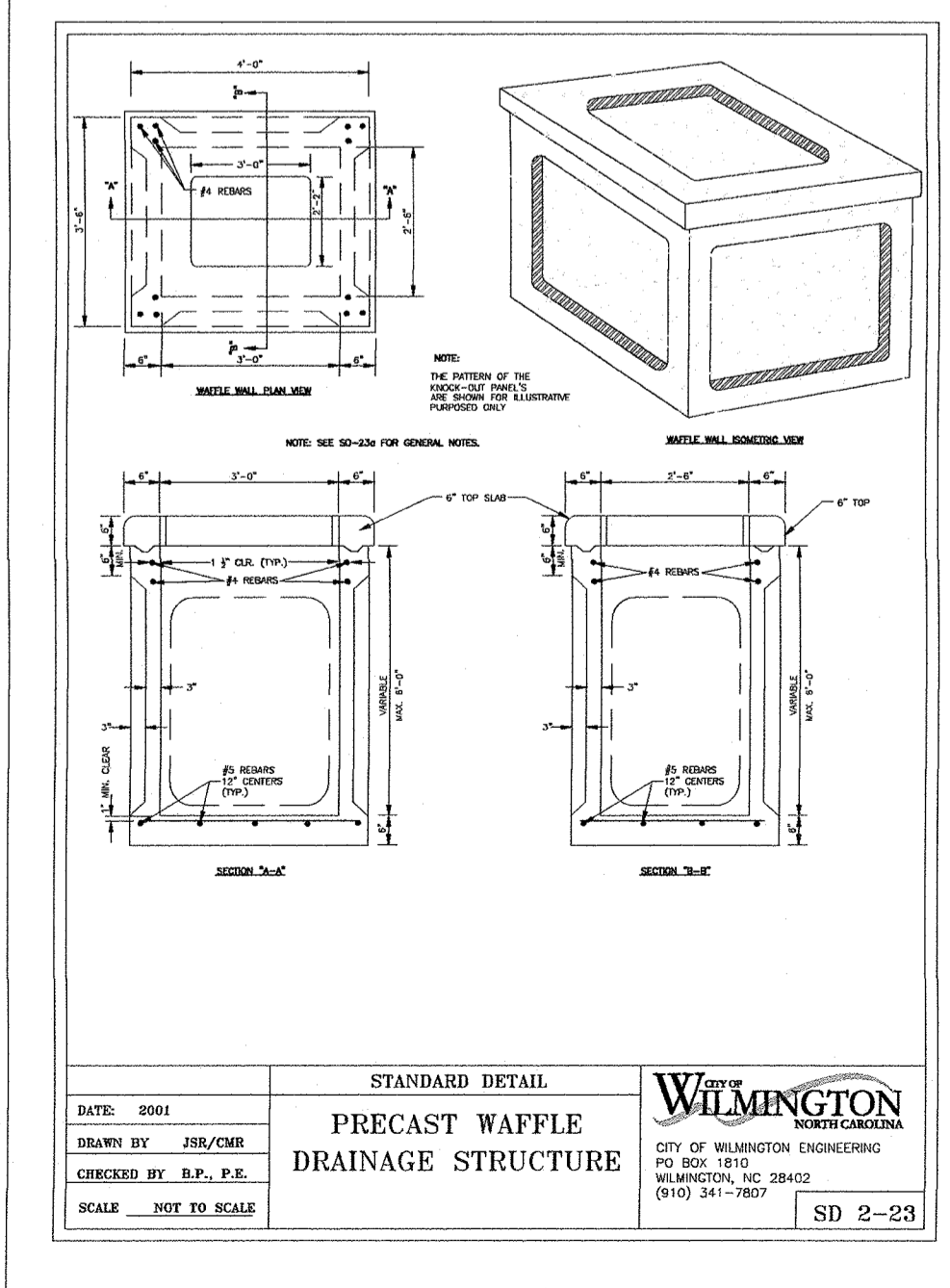
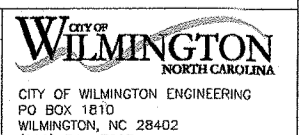
SILT FENCE

NTS



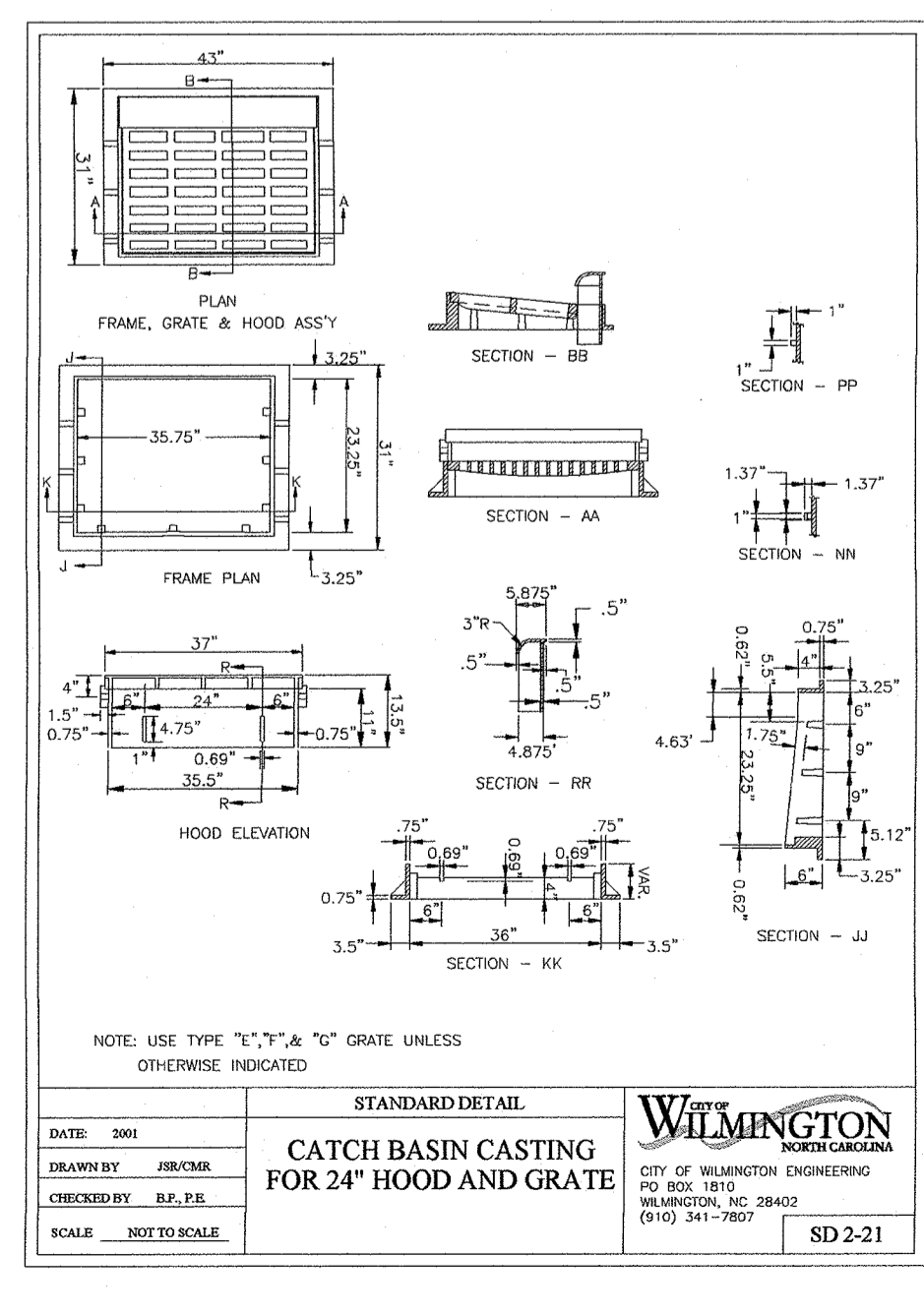
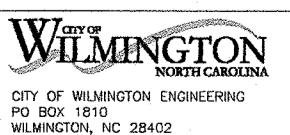
STANDARD DETAIL

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



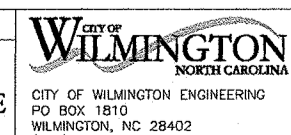
STANDARD DETAIL

PRECAST WAFFLE DRAINAGE STRUCTURE



STANDARD DETAIL

CATCH BASIN CASTING FOR 24" HOOD AND GRATE



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 _____

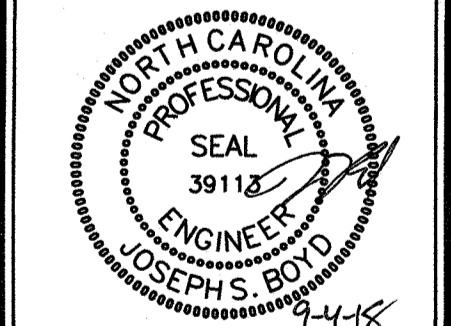
CITY OF WILMINGTON NORTH CAROLINA
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____



NEEDHAM ANIMAL HOSPITAL EXPANSION
WILMINGTON, NC

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

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STANDARD DETAIL
SIDEWALK

DATE: OCTOBER, 2010
DRAWN: PFRON
CHECKED: DEC
SCALE: NOT TO SCALE

WILMINGTON
CITY OF WILMINGTON ENGINEERING
PO BOX 1810
WILMINGTON, N.C. 28402
(910) 341-1907 SD 3-10

NOTES:
1. JOINT MATERIAL TO COMPLY WITH CURRENT AASHTO STANDARDS.
2. SANITARY SEWER CLEAN-OUTS, WATER METERS, MANHOLES, AND VALVE LIDS TO BE LOCATED OUTSIDE SIDEWALK WHERE FEASIBLE.
3. MINIMUM SIDEWALK WIDTH TO BE 6' MINIMUM IF PLACED AT BACK OF CURB.
4. CONCRETE FOR ALL SIDEWALKS (EXCEPT ANY PORTION CONTAIN WITHIN A DRIVEWAY APPROX) SHALL BE CLASS "M" - 3000 PSI.
5. MINIMUM REPLACEMENT FOR REPAIRS IS A 5' X 5' PANEL.
6. 4" STONE BASE MAY BE REQUIRED FOR POOR SOIL CONDITIONS.
7. MINIMUM DEPTH FOR TUNNELING BELOW SIDEWALK IS 12".
8. MAX ADJACENT GROUND SLOPE WITHOUT RAILING IS 2:1
9. MIN GRADE FOR PROPER DRAINAGE IS 1% IN AT LEAST 1 DIRECTION. MAX CROSS SLOPE IS 2%. MAX LONGITUDINAL SLOPE IS 8.3%, 10% IF LIMITED BY EXISTING CONDITIONS, OR NO GREATER THAN THE SLOPE OF THE EXISTING ADJACENT ROAD.

ENGLISH STANDARD DRAWING FOR MOUNTING OF SIGNS ON U CHANNEL POSTS

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

DATE: 1-1-12

NOTES:
1. SIGN TYPE "D", "E", "F", AND "G" SIGNS ON FREESTANDING U CHANNEL POSTS SHALL BE MOUNTED TO THE SIGN POST WITH THE SIGN POST TO THE SIDE OF THE SIGN. THE SIGN SHALL BE MOUNTED TO THE SIGN POST WITH THE SIGN POST TO THE SIDE OF THE SIGN. THE SIGN SHALL BE MOUNTED TO THE SIGN POST WITH THE SIGN POST TO THE SIDE OF THE SIGN.
2. THE VERTICAL CLEARANCE BETWEEN MOUNTING HOLES CENTER ON ALL TYPES "D", "E", "F", AND "G" SIGNS IS 20" MINIMUM. THE VERTICAL AND HORIZONTAL CLEARANCE BETWEEN MOUNTING HOLES IS TO THE SIGN POST. THE SIGN SHALL BE MOUNTED TO THE SIGN POST WITH THE SIGN POST TO THE SIDE OF THE SIGN.
3. ATTACH SIGN BY "W" WIRE HOOKS, WIRE HOOKS, BRASS, FLAT WIRE, LOCK WIRE, OR ANY OTHER MEANS THAT WILL BE PERMITTED. SEE APPROVED DETAIL SHEET # 2 OF 50-100.
4. FINISH AND INSTALL CROSS BRACING AS SHOWN IN DETAIL. PAINT ENDS OF CROSS BRACES BY APPROVED ZINC PAINT.
5. INSTALL SIGN AND CROSS BRACING WITH THE SIGN SIDE OF THE FLANGE TOWARD THE BACK OF SIGN. THE SIGN SHALL BE MOUNTED TO THE SIGN POST WITH THE SIGN POST TO THE SIDE OF THE SIGN.
6. THE SIGN SHALL BE MOUNTED TO THE SIGN POST WITH THE SIGN POST TO THE SIDE OF THE SIGN.

STANDARD DETAIL
CURBING

DATE: AUGUST, 2011
DRAWN: PFRON
CHECKED: DEC
SCALE: NOT TO SCALE

WILMINGTON
CITY OF WILMINGTON ENGINEERING
PO BOX 1810
WILMINGTON, N.C. 28402
(910) 341-1907 SD 3-11

NOTES:
1. EXPANSION JOINT MATERIAL TO COMPLY WITH CURRENT AASHTO STANDARDS.
2. 6" MAX EXPANSION JOINT SPACING, 10" MAX CONTRACTION JOINT SPACING.
3. MINIMUM INSTALLATION LENGTH IS 5 FT.
4. CONCRETE TO BE 3000 PSI MIN.
5. VERTICAL CURB AND GUTTER BASE CAN BE SLOPED 3/4" OR USE A FLAT BASE.

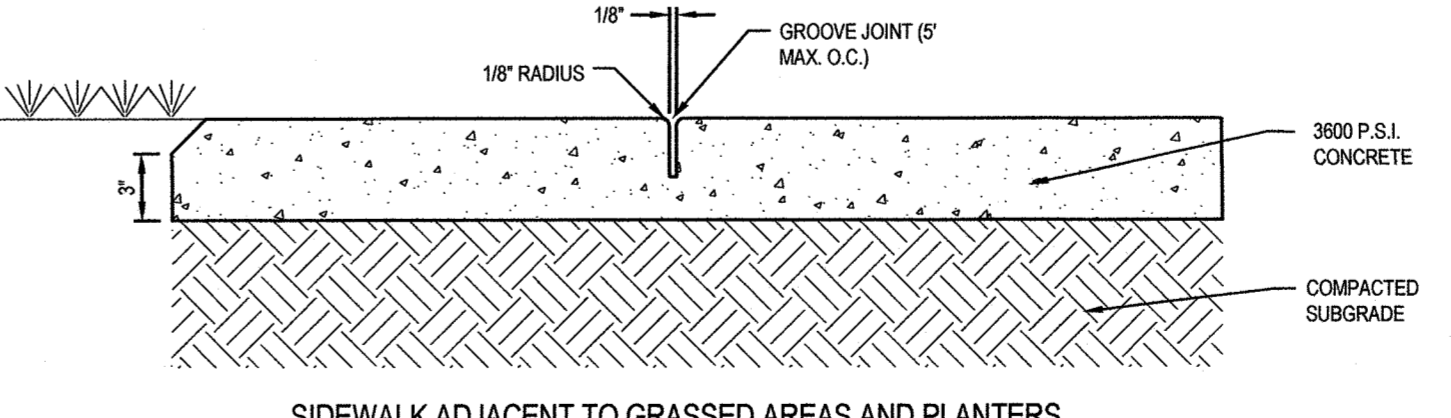
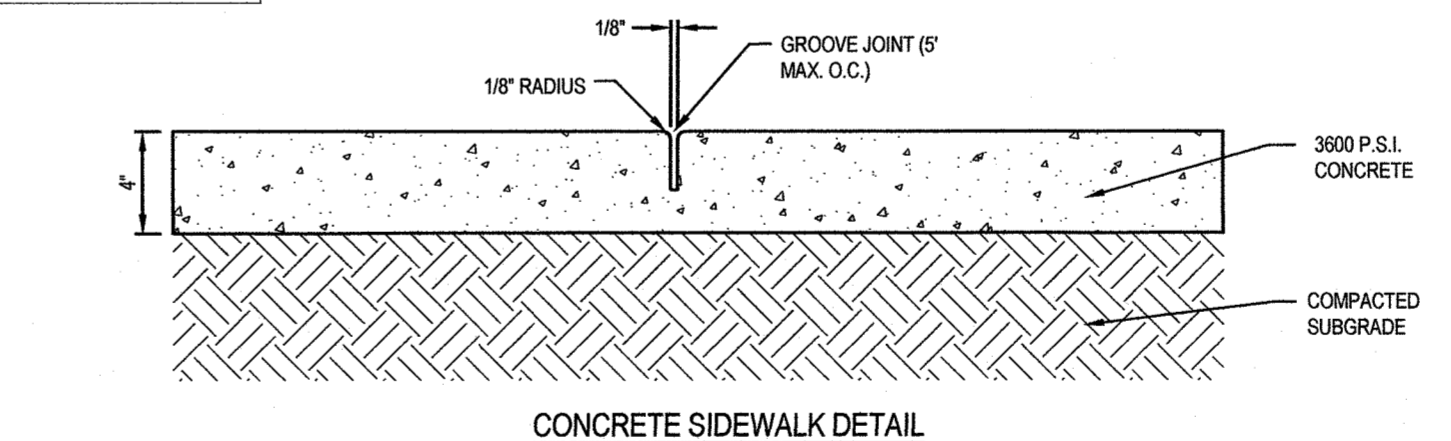
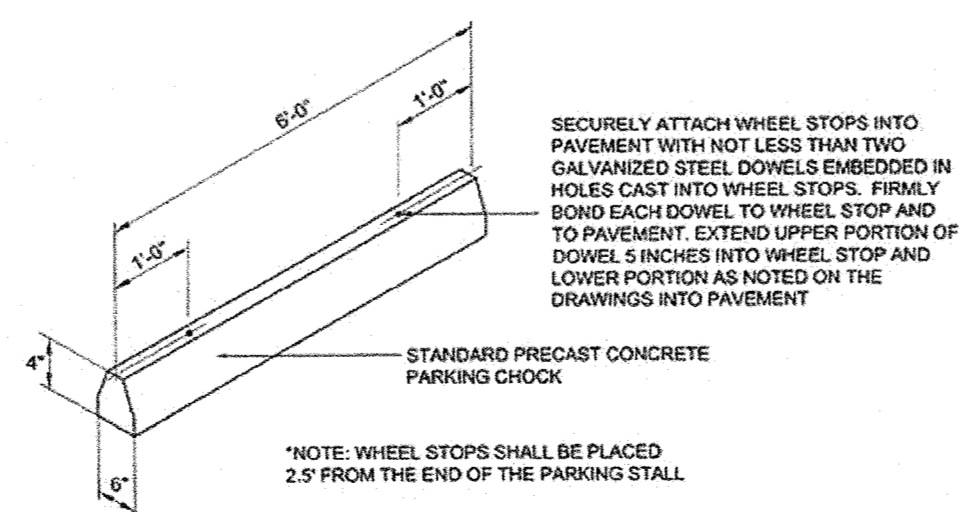
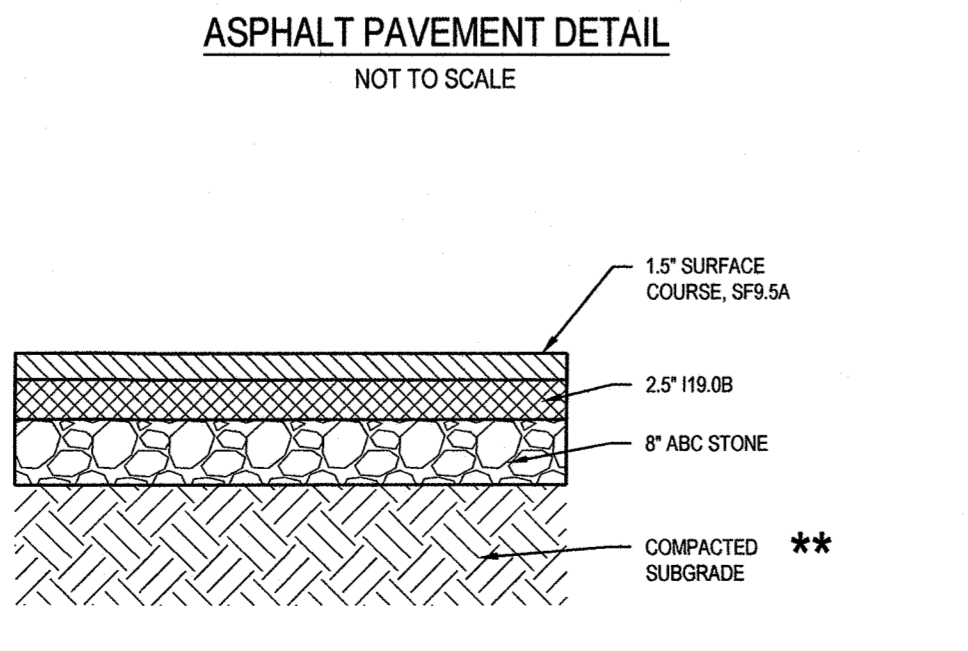
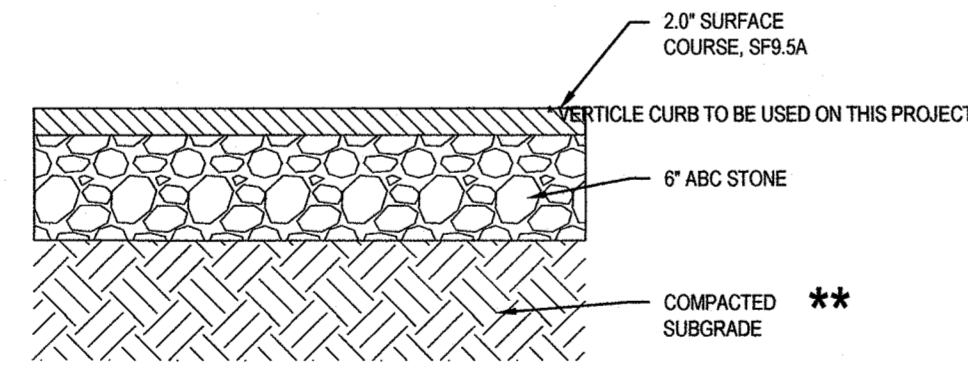
ENGLISH STANDARD DRAWING FOR PAVEMENT REPAIRS FOR SUPERPAVE MIX TYPES

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

DATE: 1-1-12

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"

NOTES:
1. EXPANSION JOINT MATERIAL TO COMPLY WITH CURRENT AASHTO STANDARDS.
2. 6" MAX EXPANSION JOINT SPACING, 10" MAX CONTRACTION JOINT SPACING.
3. MINIMUM INSTALLATION LENGTH IS 5 FT.
4. CONCRETE TO BE 3000 PSI MIN.
5. VERTICAL CURB AND GUTTER BASE CAN BE SLOPED 3/4" OR USE A FLAT BASE.



CONCRETE SIDEWALK DETAIL
NOT TO SCALE

GENERAL NOTES:
1. A GROOVE JOINT 1" DEEP WITH 1/8" RADIUS SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 9' INTERVALS.
2. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS.
3. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK ABUTS ANY CURB AND GUTTER AND ANY RIGID STRUCTURES.
4. IN SIDEWALKS AND PLAZA AREAS EXPANSION JOINTS ARE REQUIRED AT NO GREATER THAN 30' INTERVALS.
5. CONCRETE SHALL BE 3600 PSI. IN 28 DAYS.

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

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

Date: _____ Permit # _____
Signed: _____

Approved Construction Plan

Name _____ Date _____

Planning _____
Public Utilities _____
Traffic _____
Fire _____

WithersRavenel
Engineers | Planners | Surveyors

219 Station Road | Ste. 101 | Wilmington, NC 28403 | Tel: 910.256.9777 | License #: C-0892 | www.withersravenel.com

NEEDHAM ANIMAL HOSPITAL EXPANSION

WILMINGTON, NC

PAVEMENT DETAILS

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

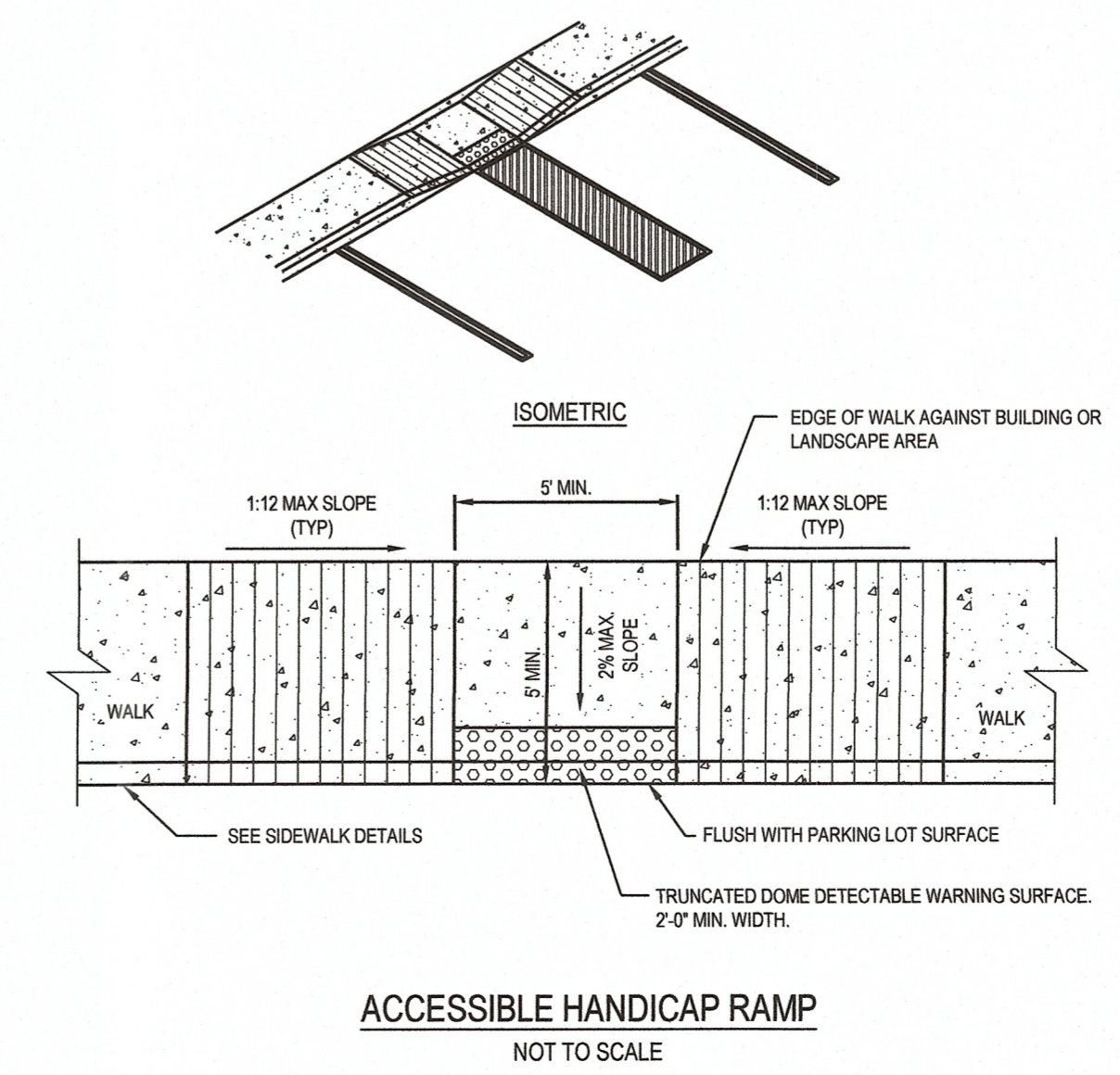
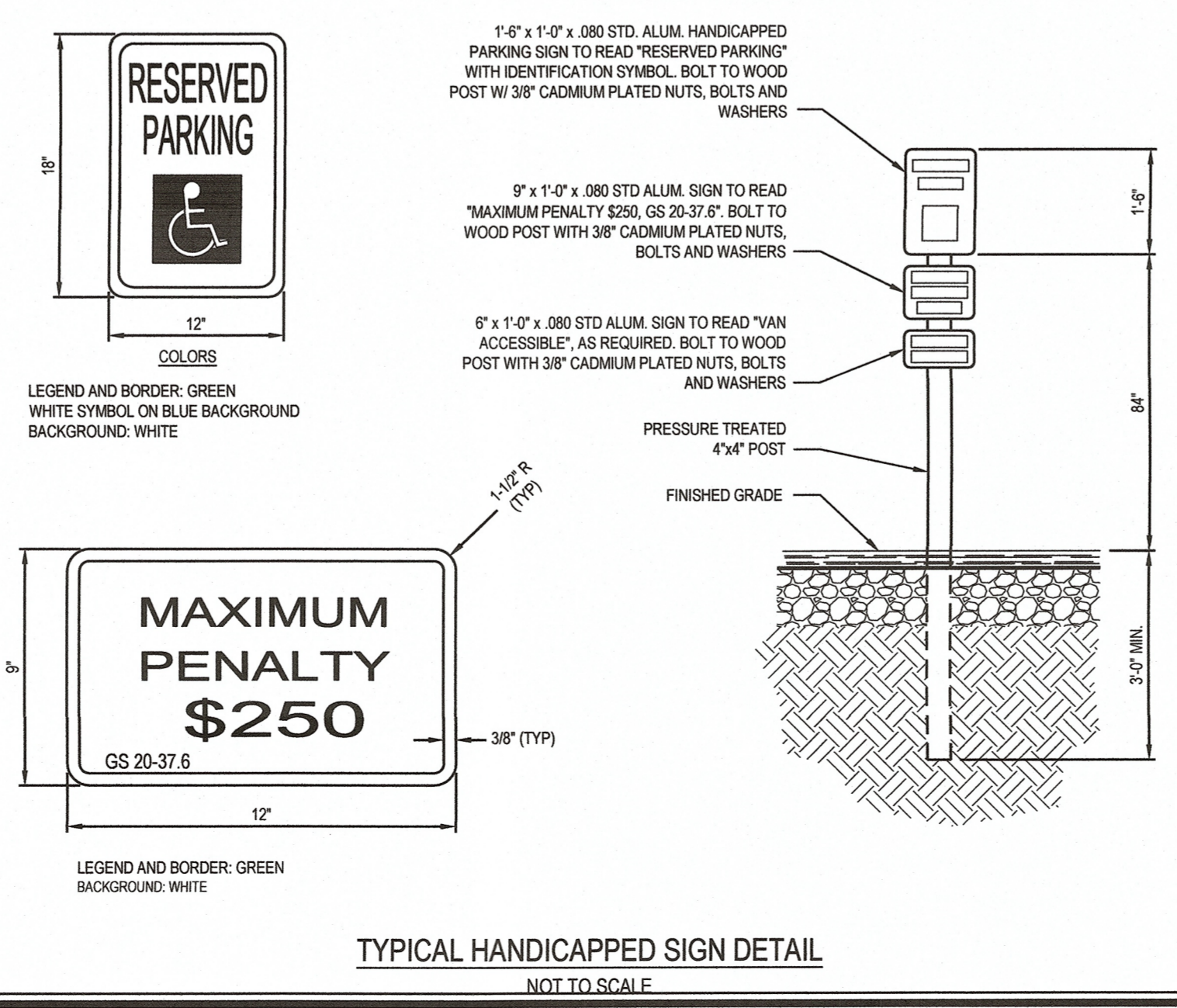
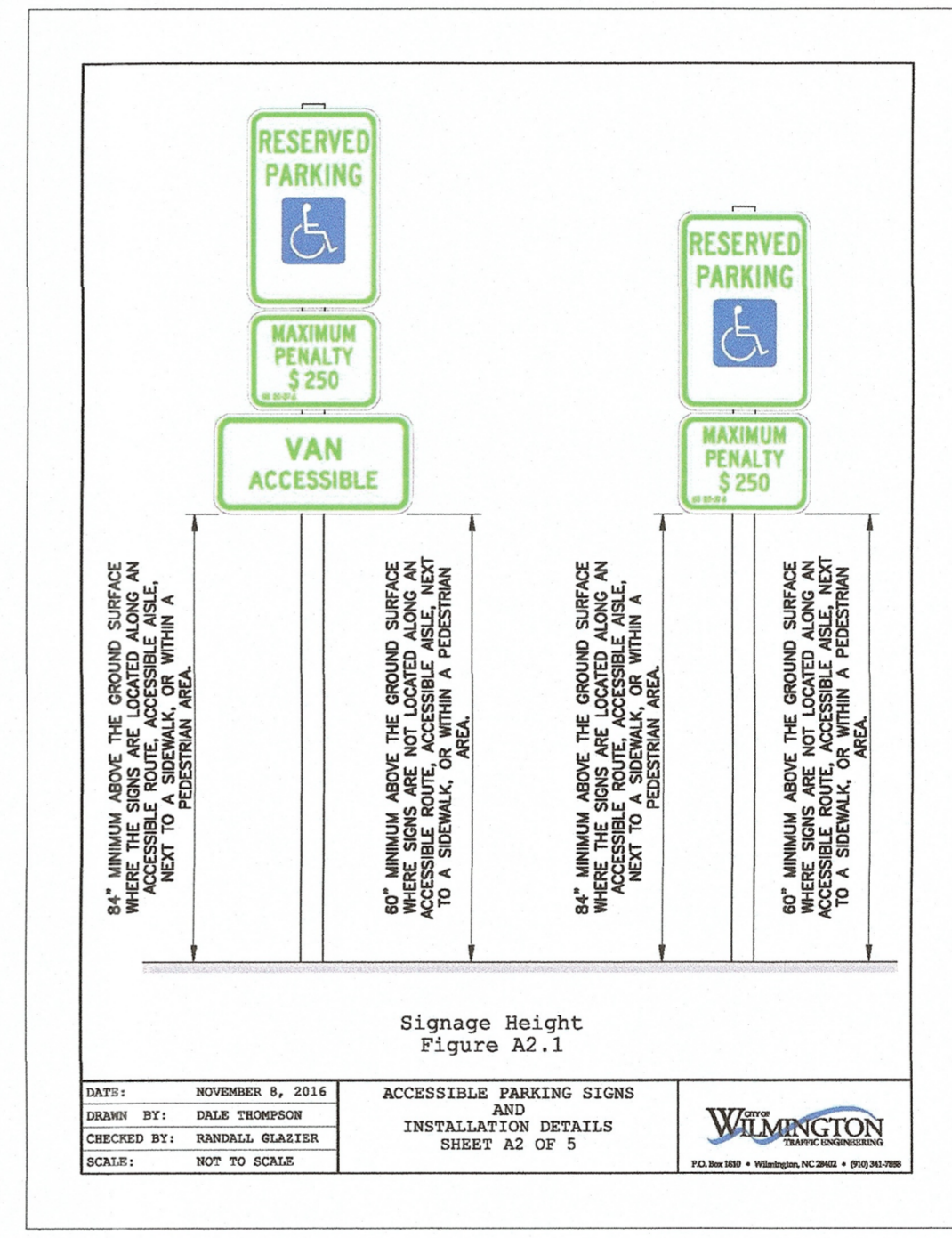
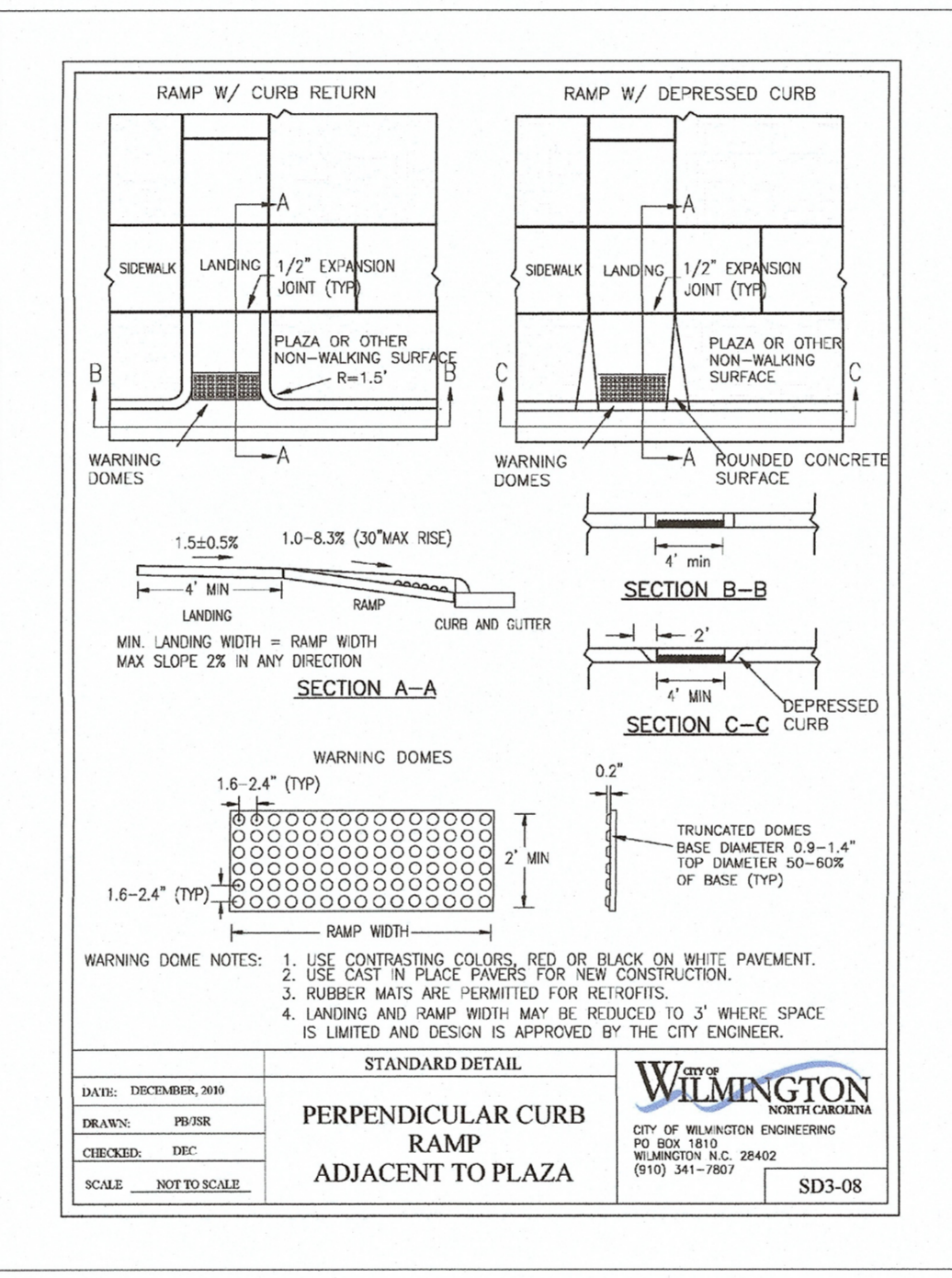
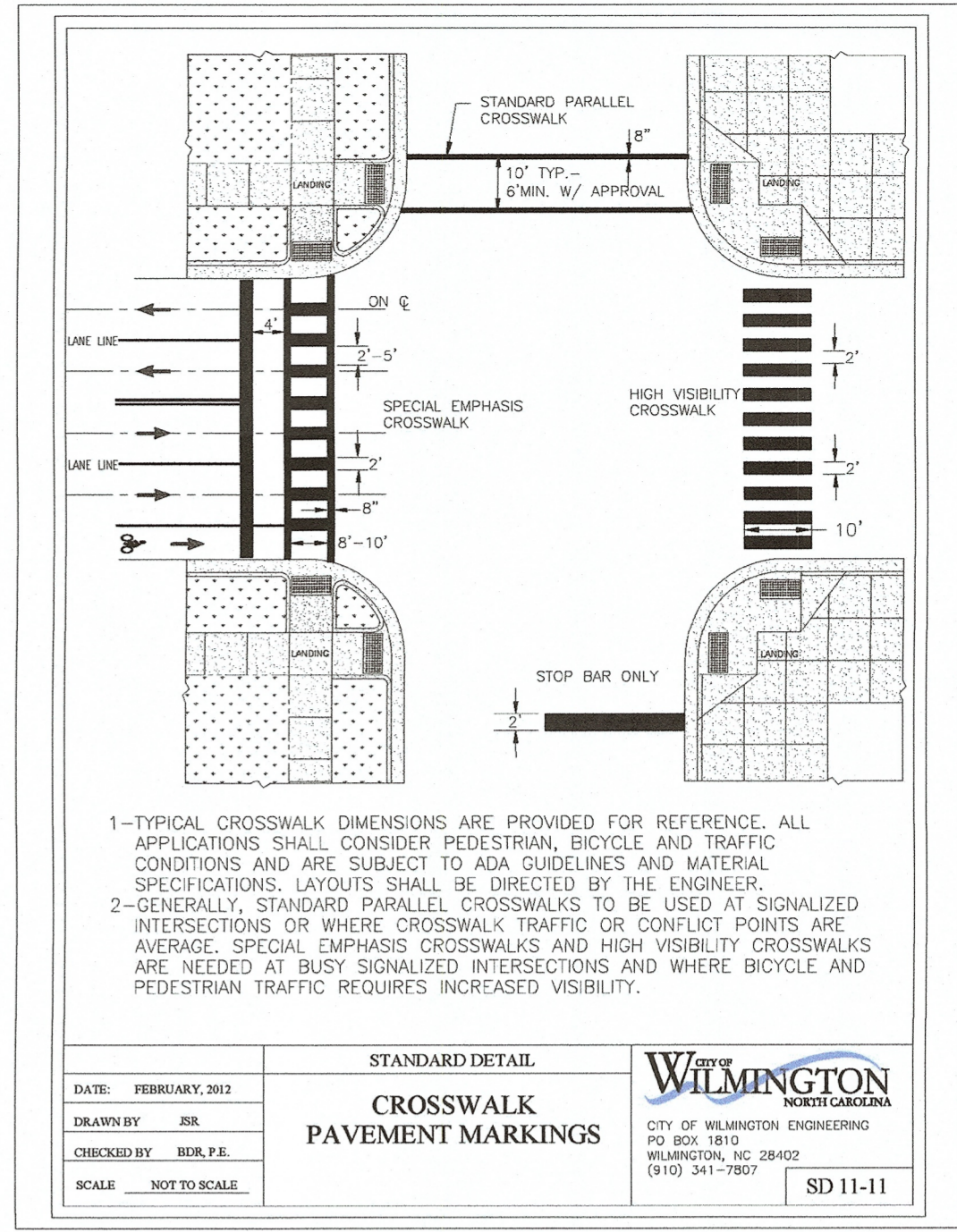
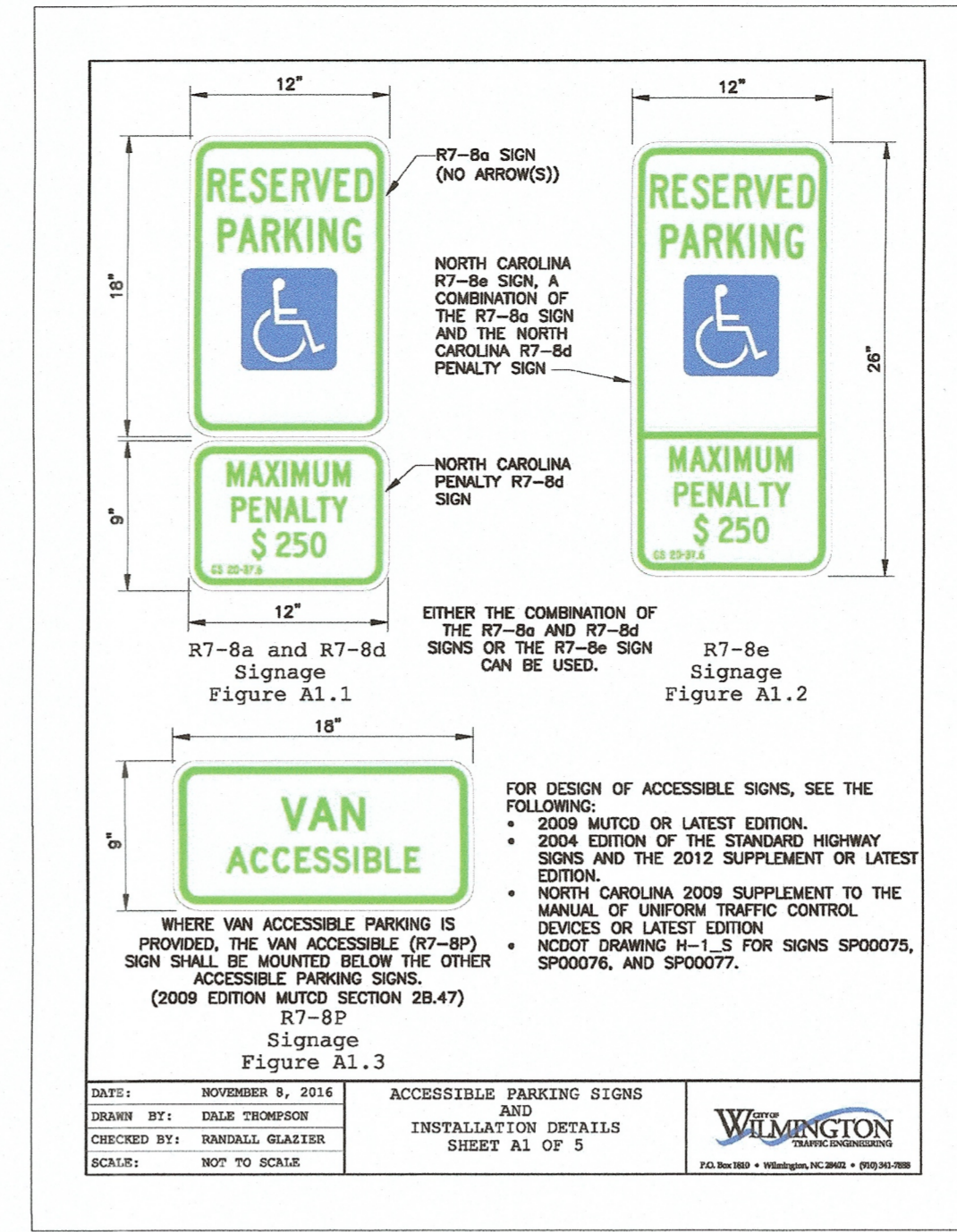
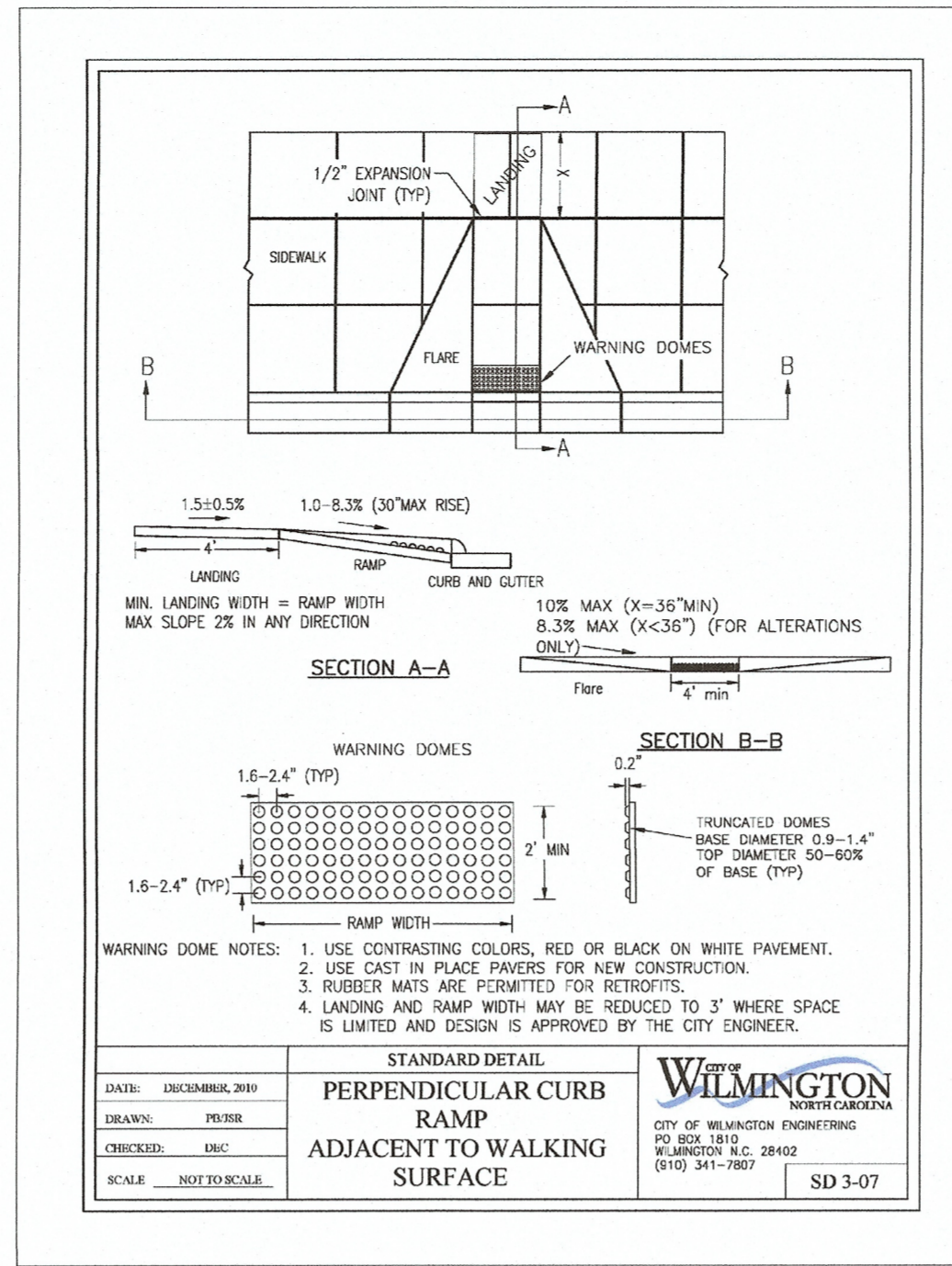
CITY OF WILMINGTON
NORTH CAROLINA
Professional Seal
39143
ENGINEER
JOSEPH S. BOYD

Revisions

1	COW REVIEW COMMENTS	06.18.18
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Sheet No.
C6.1

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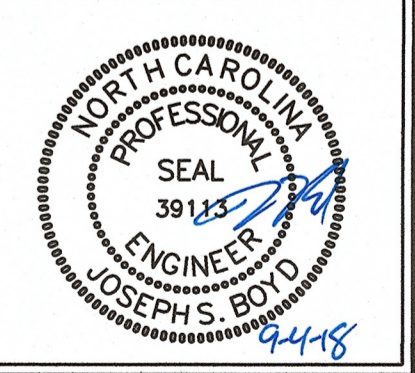


For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

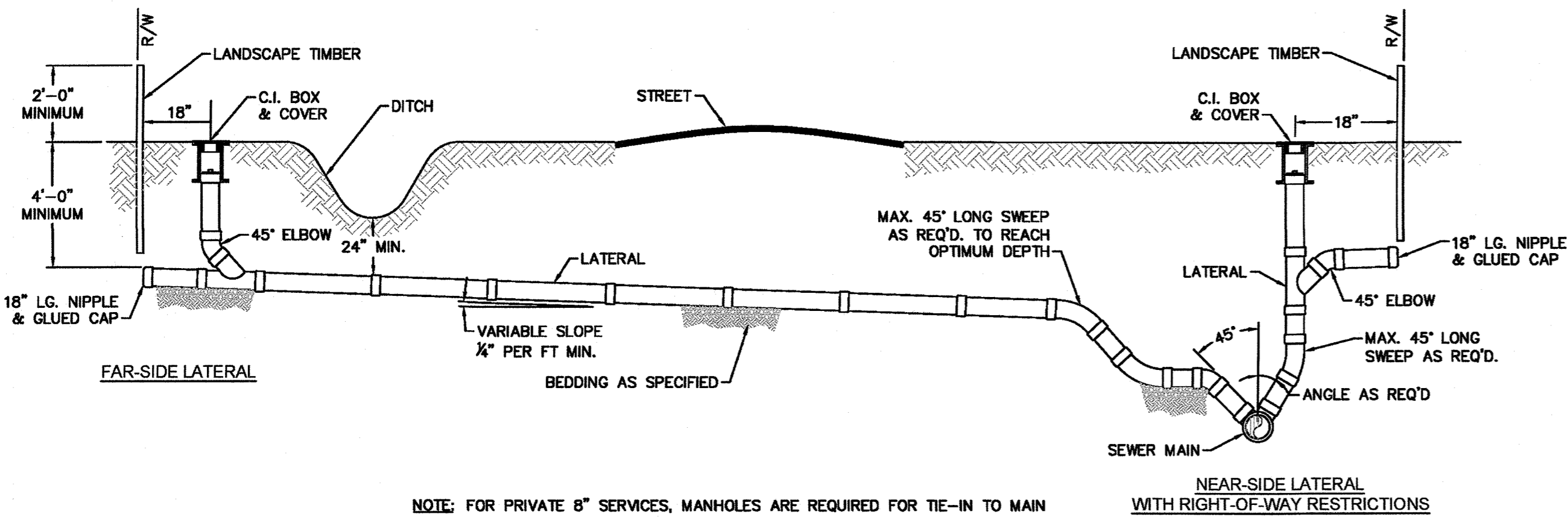
CITY OF WILMINGTON
 NORTH CAROLINA
 Public Services • Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN
 Date: _____ Permit # _____
 Signed: _____

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

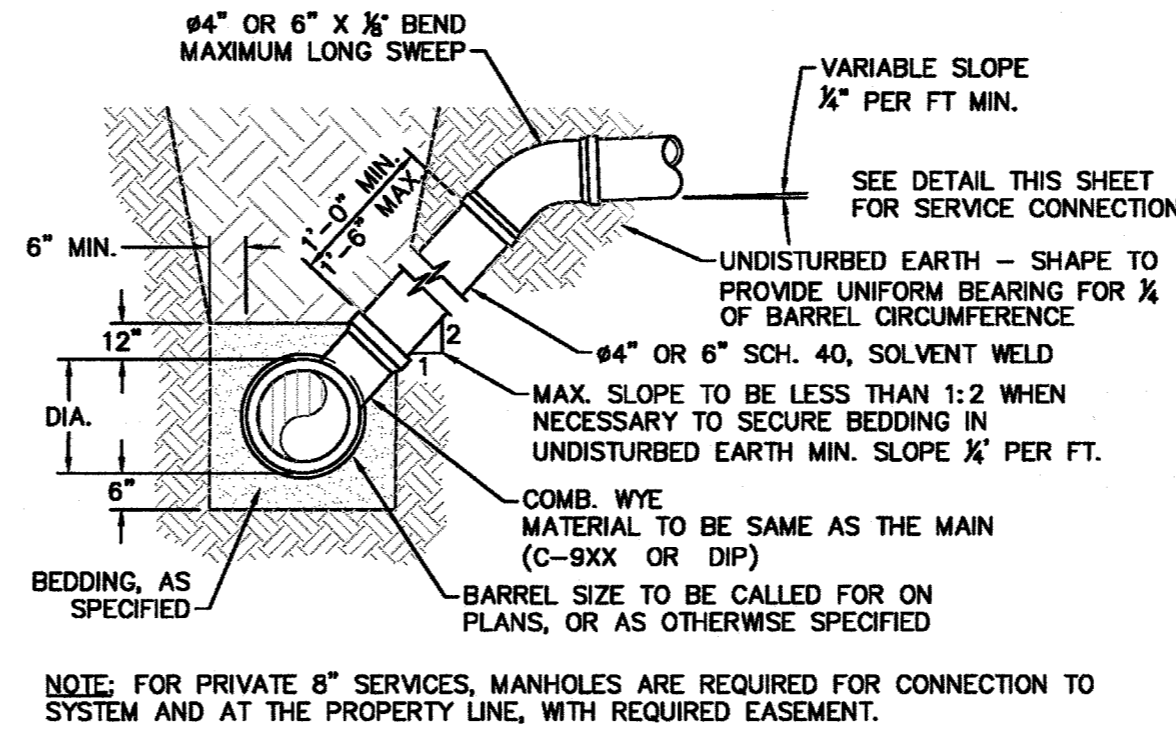
Job No. 03-170548 Drawn By TMC
 Date 03/29/18 Designer JSB



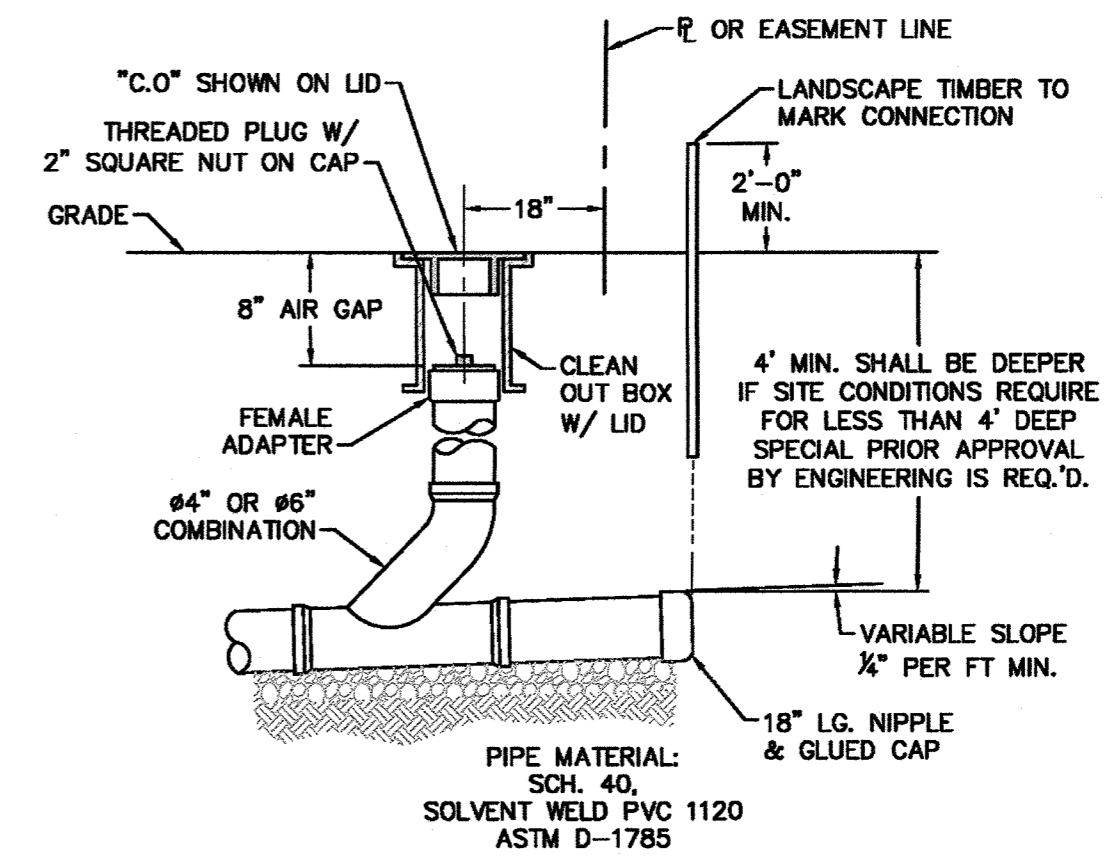
Revisions		
1	COW REVIEW COMMENTS	06.18.18



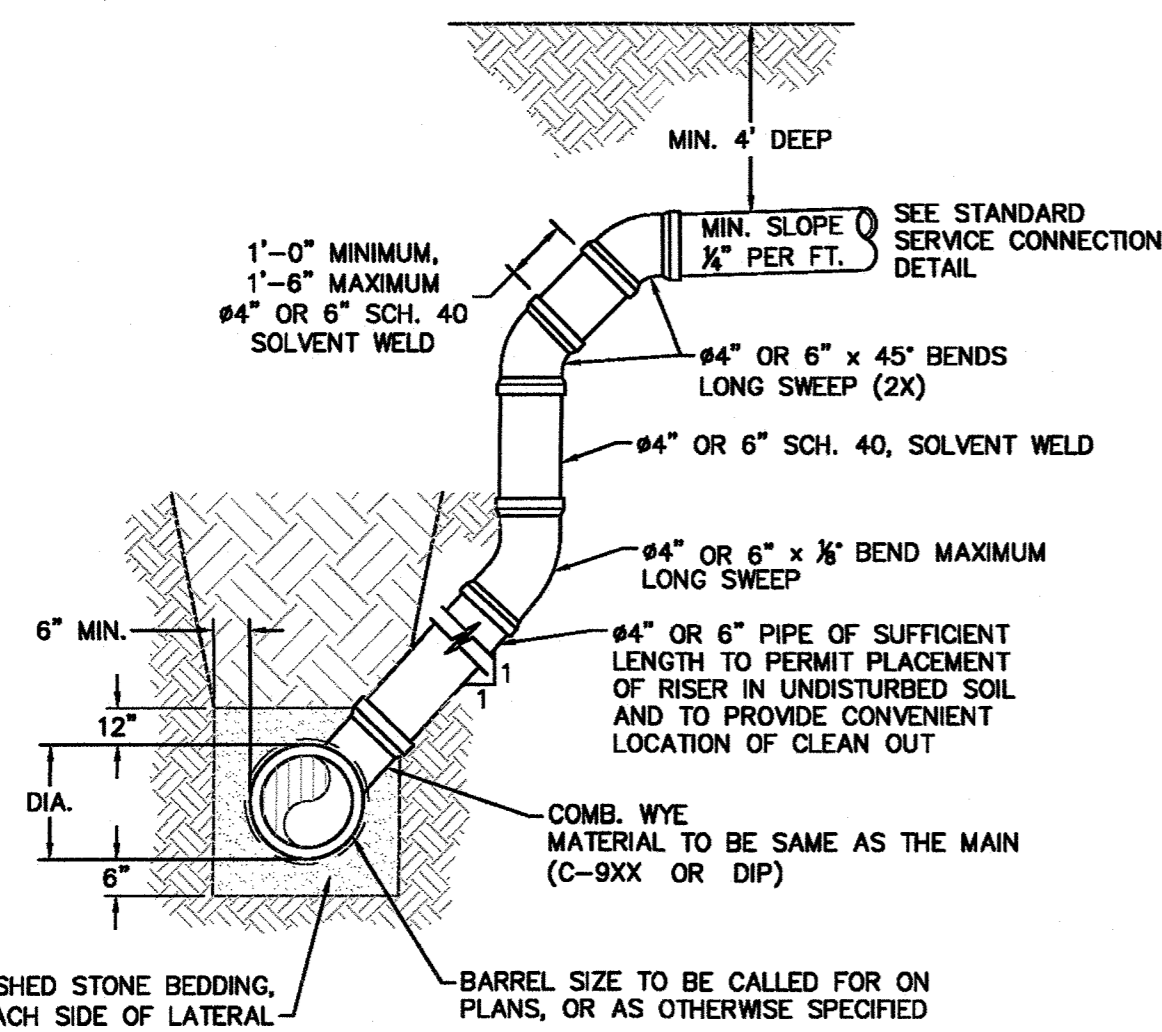
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN
SD-19 STANDARD SERVICE CONNECTION TO SANITARY SEWER
 NOT TO SCALE



NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
SD-10 STANDARD SERVICE LATERAL
 NOT TO SCALE

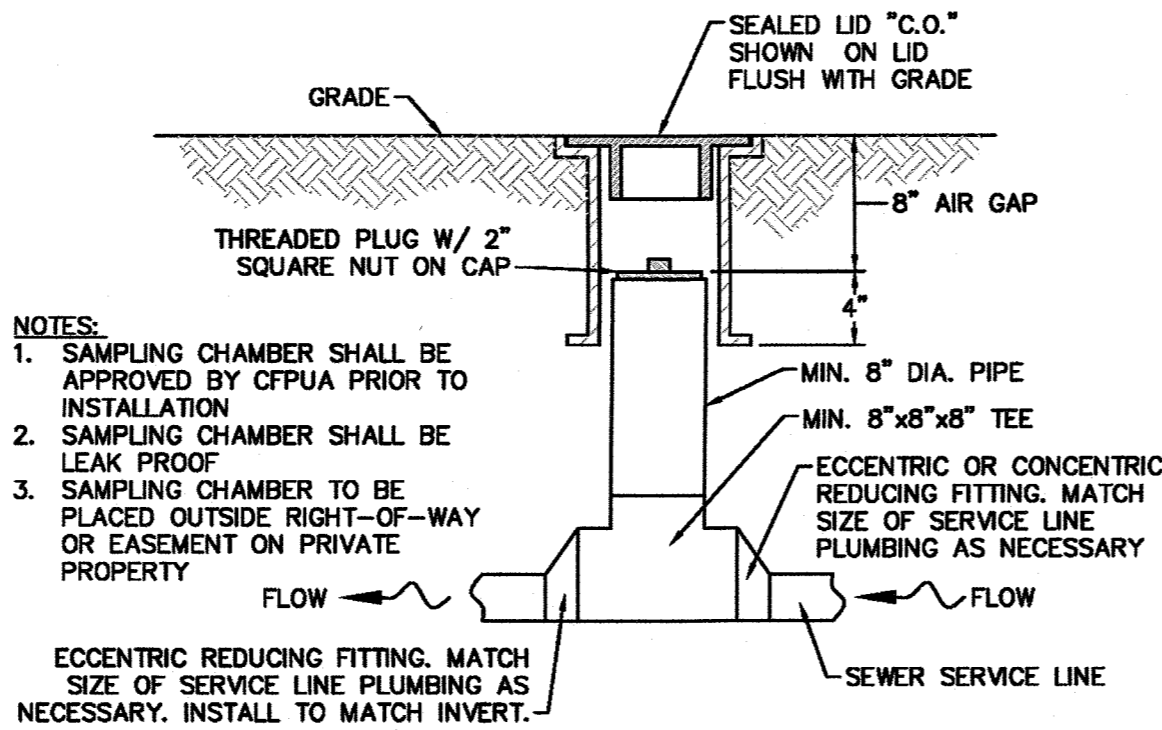


NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
SD-11 SERVICE CONNECTION AND CLEAN-OUT
 NOT TO SCALE



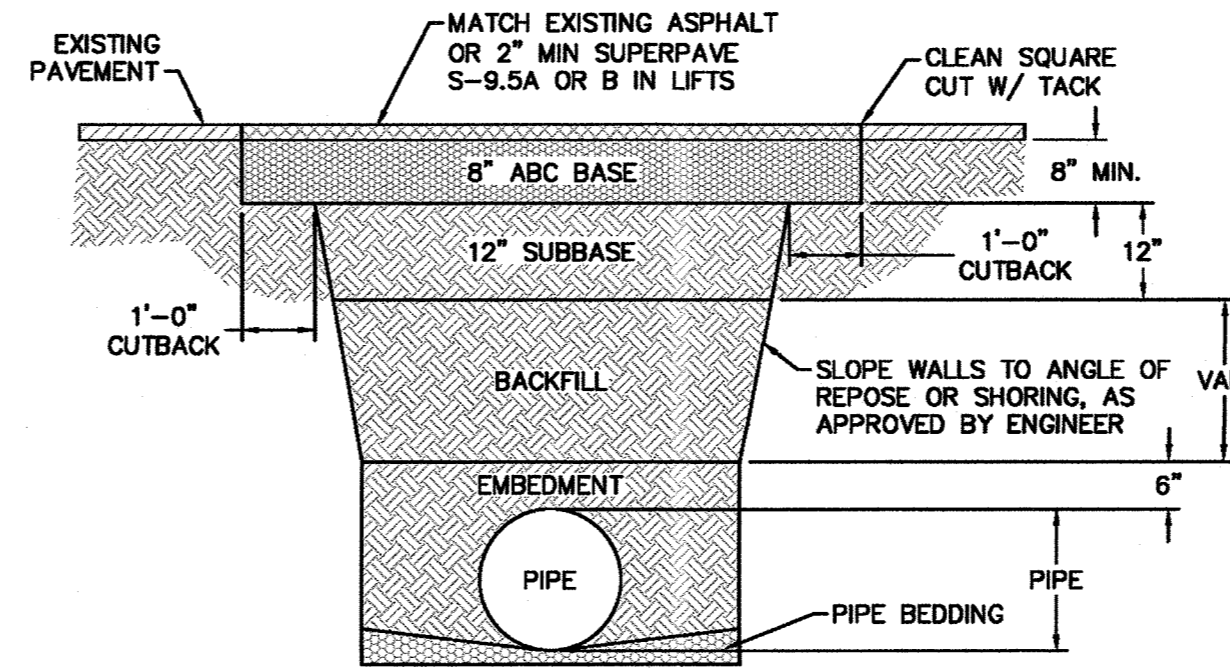
- NOTES:
- SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.
 - FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

MAIN DEPTH GREATER THAN 8 FT
SD-12 DEEP SERVICE LATERAL
 NOT TO SCALE



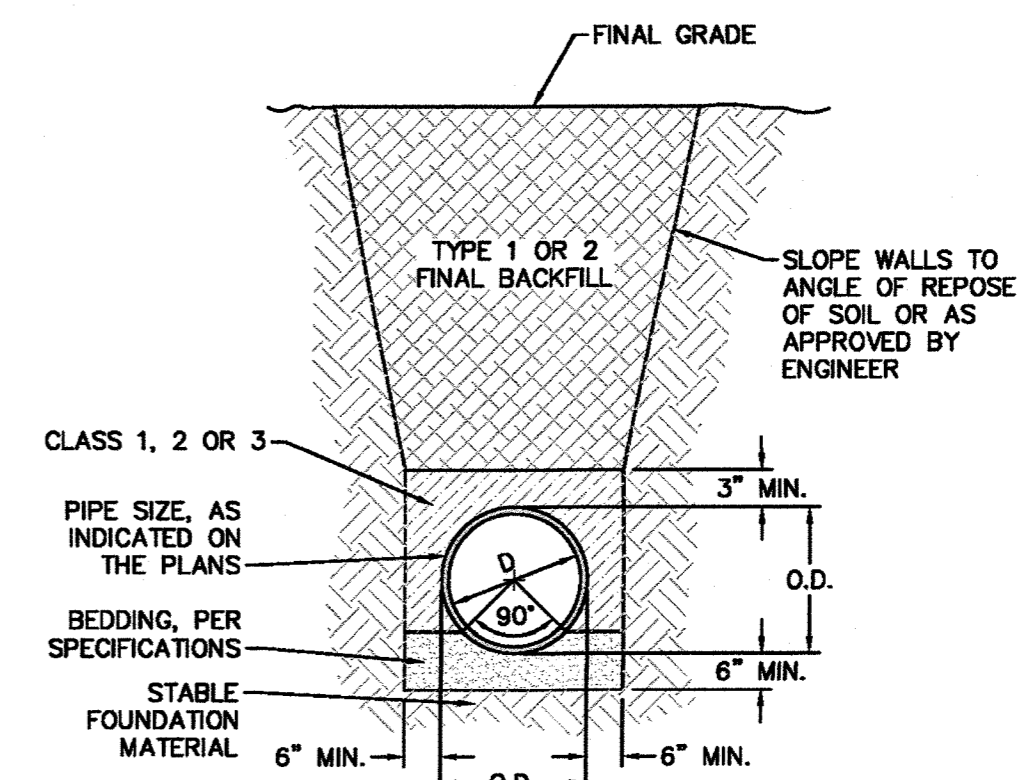
- NOTES:
- SAMPLING CHAMBER SHALL BE APPROVED BY CFPUA PRIOR TO INSTALLATION.
 - SAMPLING CHAMBER SHALL BE LEAK PROOF.
 - SAMPLING CHAMBER TO BE PLACED OUTSIDE RIGHT-OF-WAY OR EASEMENT ON PRIVATE PROPERTY.

SD-13 SAMPLING CHAMBER
 NOT TO SCALE

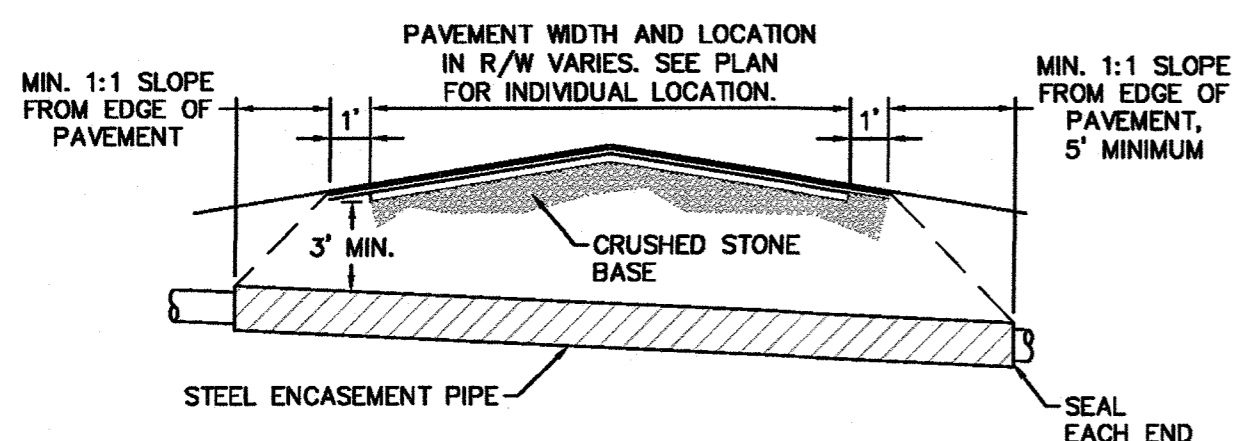


- NOTES:
- BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
 - SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
 - 3-INCH OF 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. JACKING 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 OUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.
- (FOR PRIVATE ROADS AND PAVED AREAS, CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)

SD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
 NOT TO SCALE

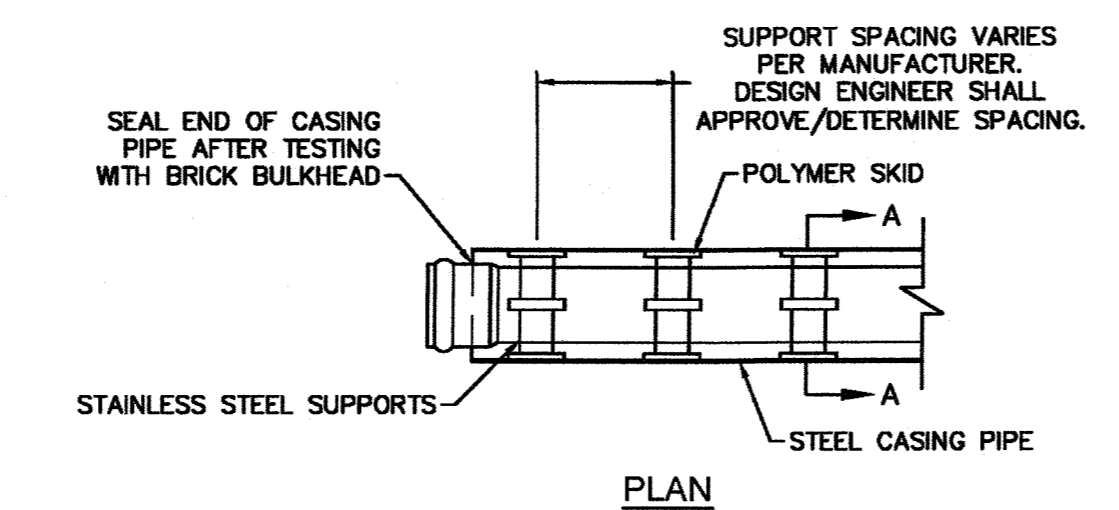


SD-15 TYPICAL TRENCH DETAIL
 NOT TO SCALE

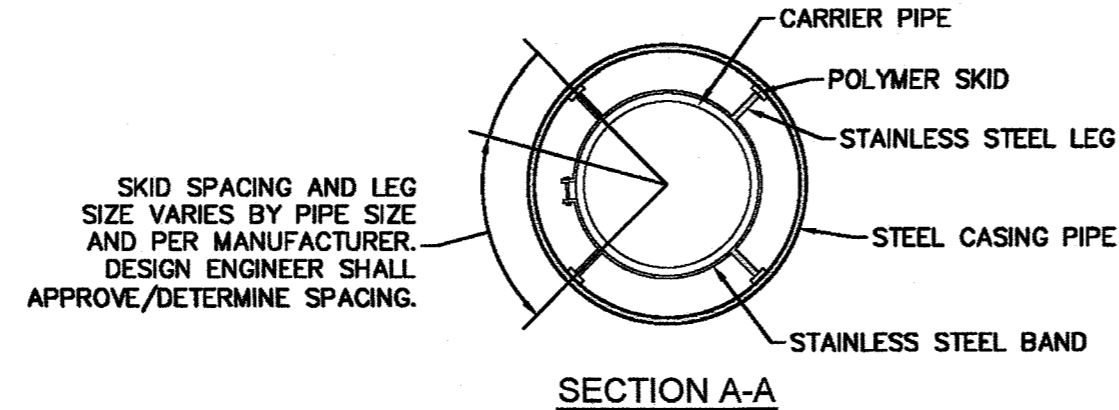


- NOTES:
- CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
 - TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

SD-16 TYPICAL BORING/JACKING DETAIL
 NOT TO SCALE



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



NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.
SD-17 PIPE CASING SUPPORT DETAIL
 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 _____

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

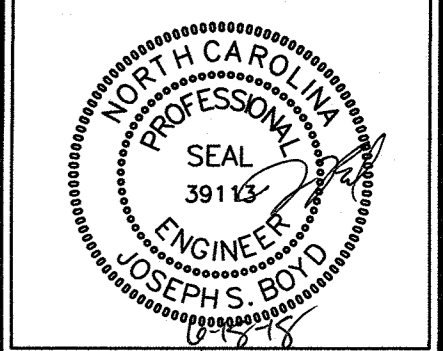
CFPUA SANITARY SEWER

STANDARD DETAILS

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

DATE: 1/9/12
 SCALE: N/A
 DRAWN BY: CFPJA
 CHECKED BY: CFPJA
 PROJECT NO.:
 SHEET NO.: **SSD-2**

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

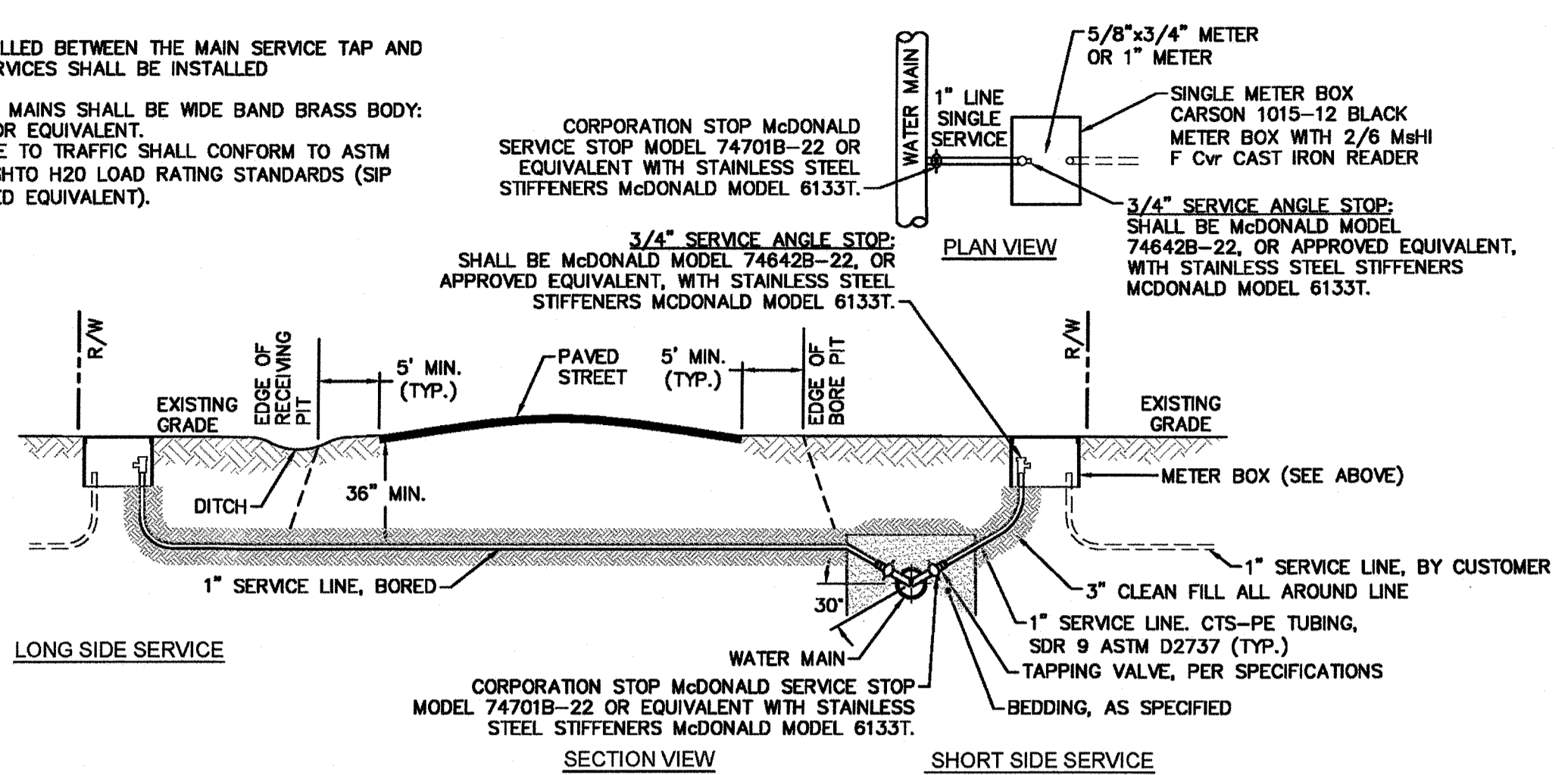


Revisions
 1 COW REVIEW COMMENTS 06.18.18

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

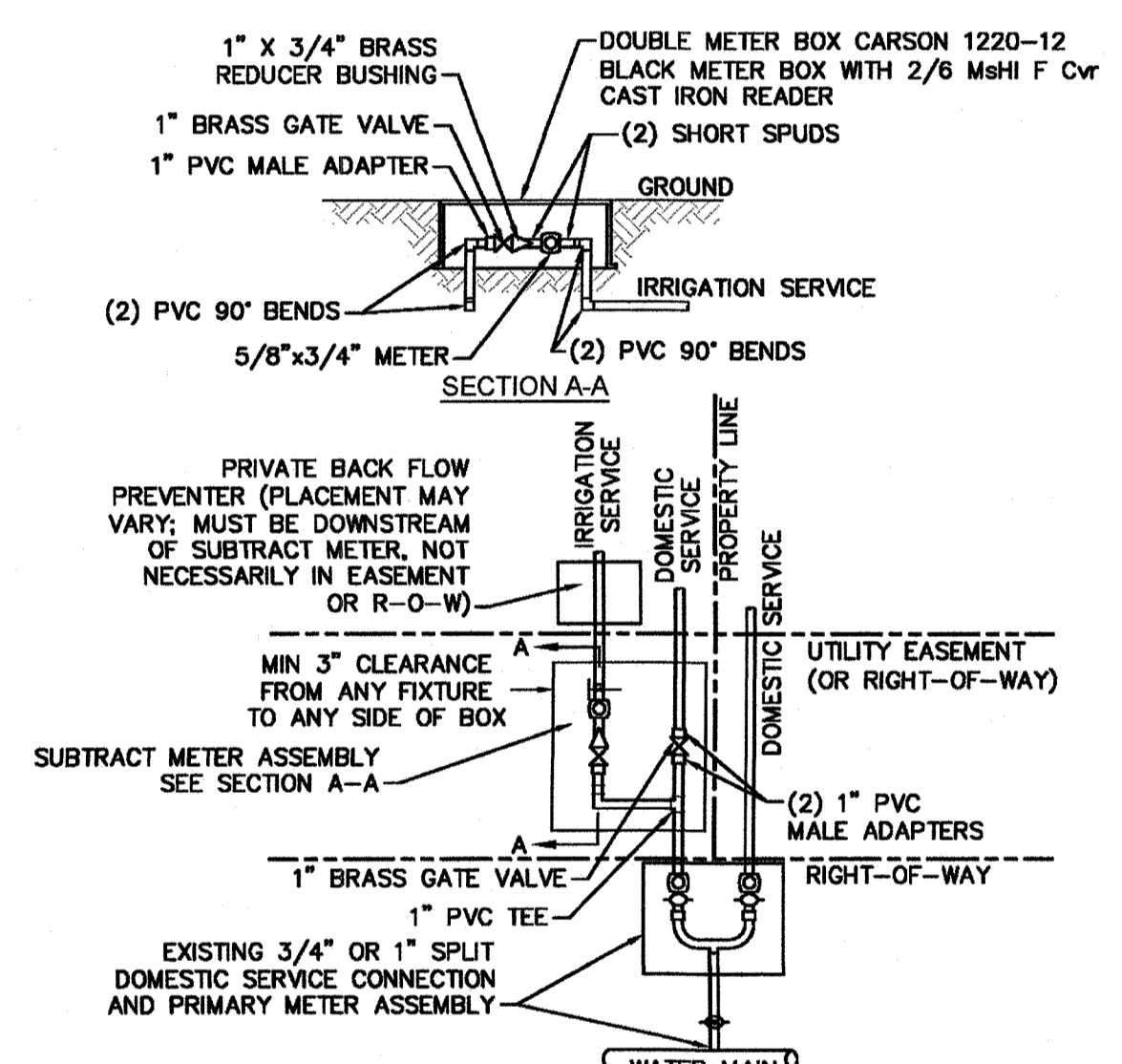
NOTES:

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 AASHTO H20 LOAD RATING STANDARDS (SIP MODEL 4242, OR APPROVED EQUIVALENT).



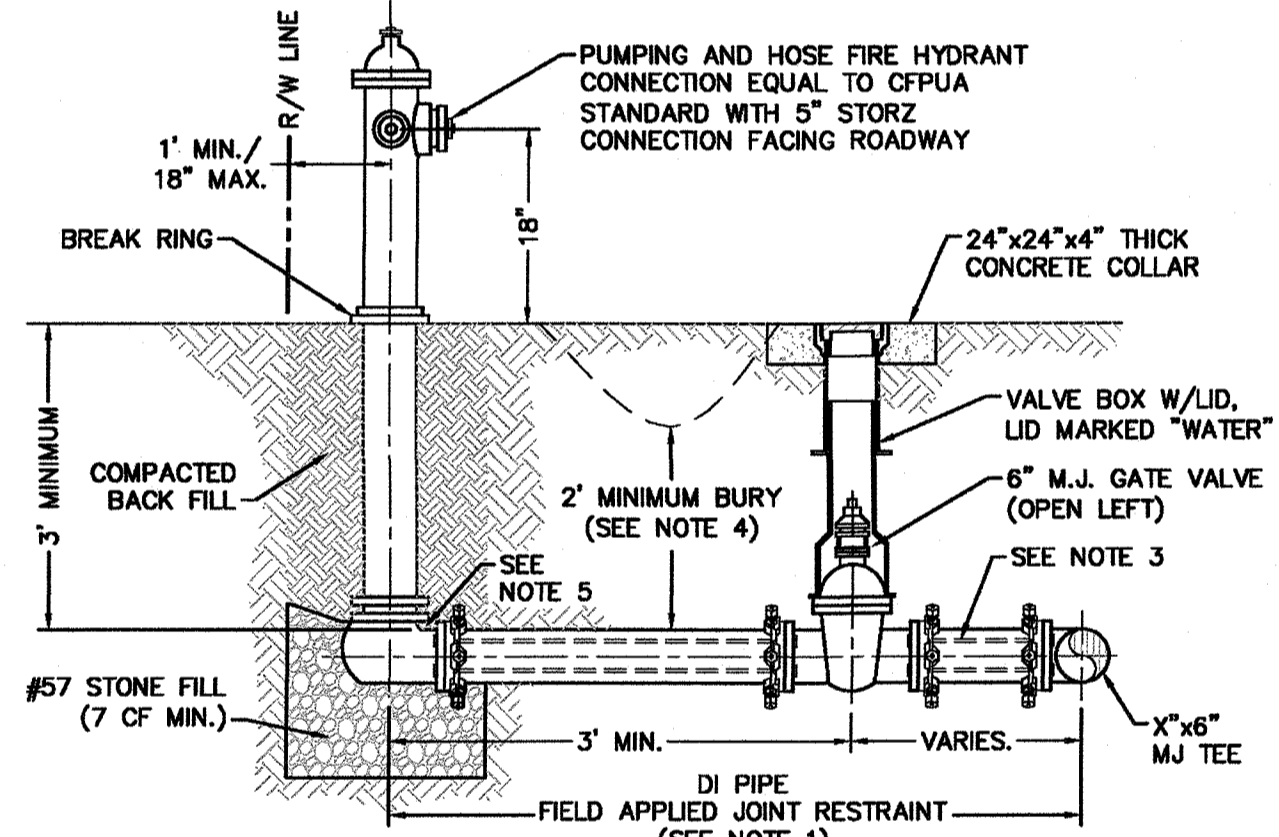
NOTE:
TYPICAL WATER SERVICE CONNECTION FOR RESIDENTIAL SINGLE FAMILY HOME ON CFPUA WATER SYSTEM

WD-18 SINGLE SERVICE CONNECTION
NOT TO SCALE



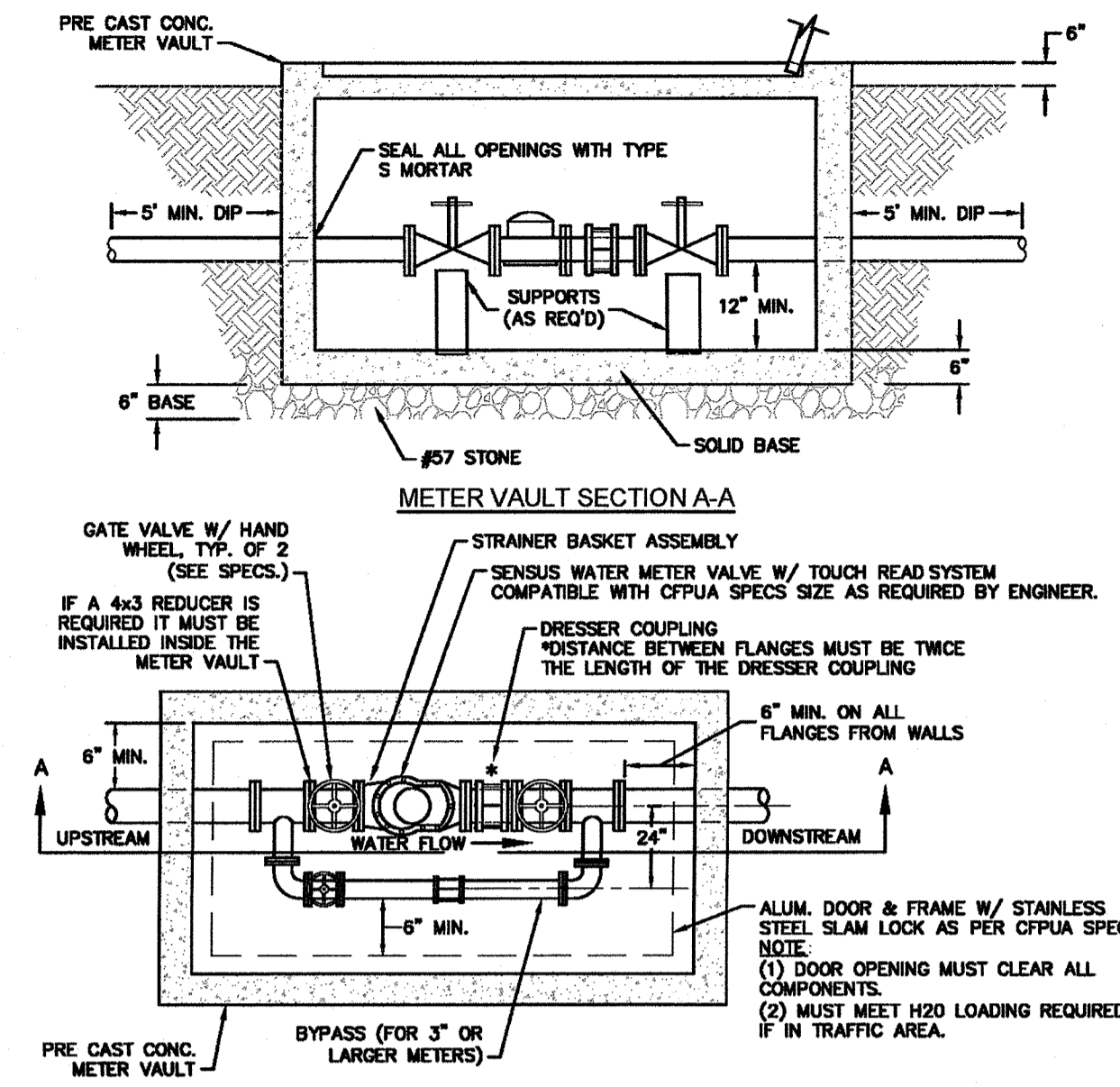
- NOTES:**
1. BEYOND THE PRIMARY DOMESTIC METER ASSEMBLY, CFPUA IS ONLY RESPONSIBLE FOR METER AND WASHERS OF SUBTRACT METER ASSEMBLY.
 2. ALL PIPE AND FITTINGS UP TO FINAL SERVICE LINE TO BE 1" EXCLUDING METERS.

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

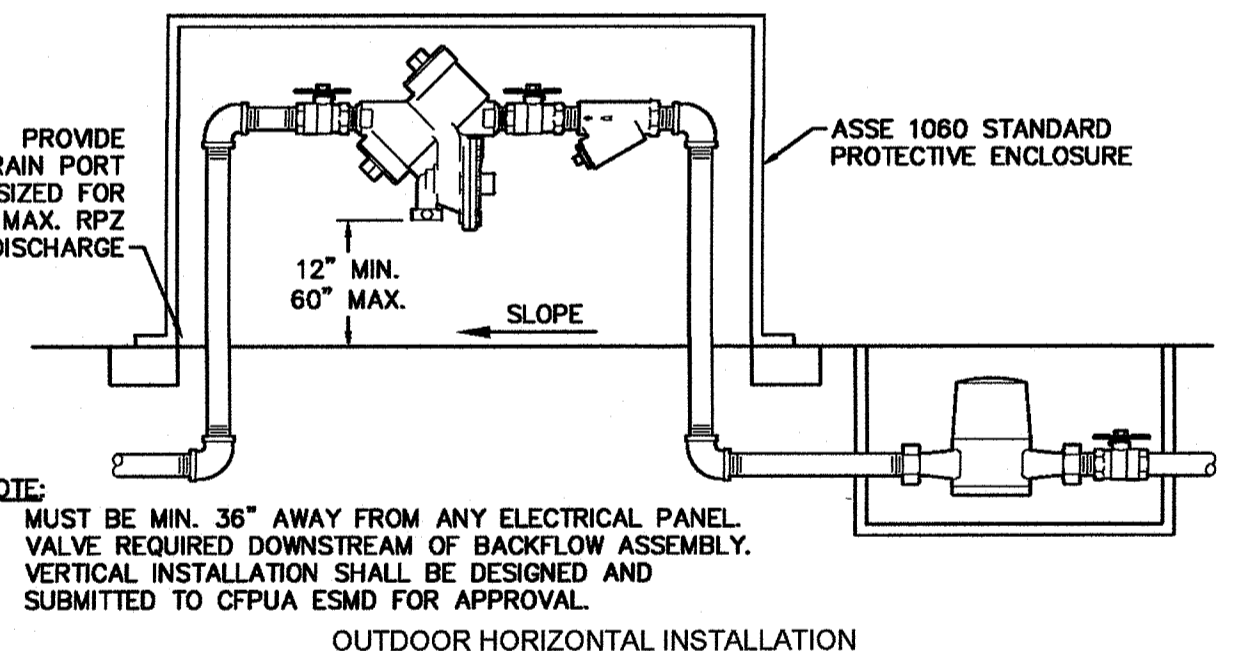
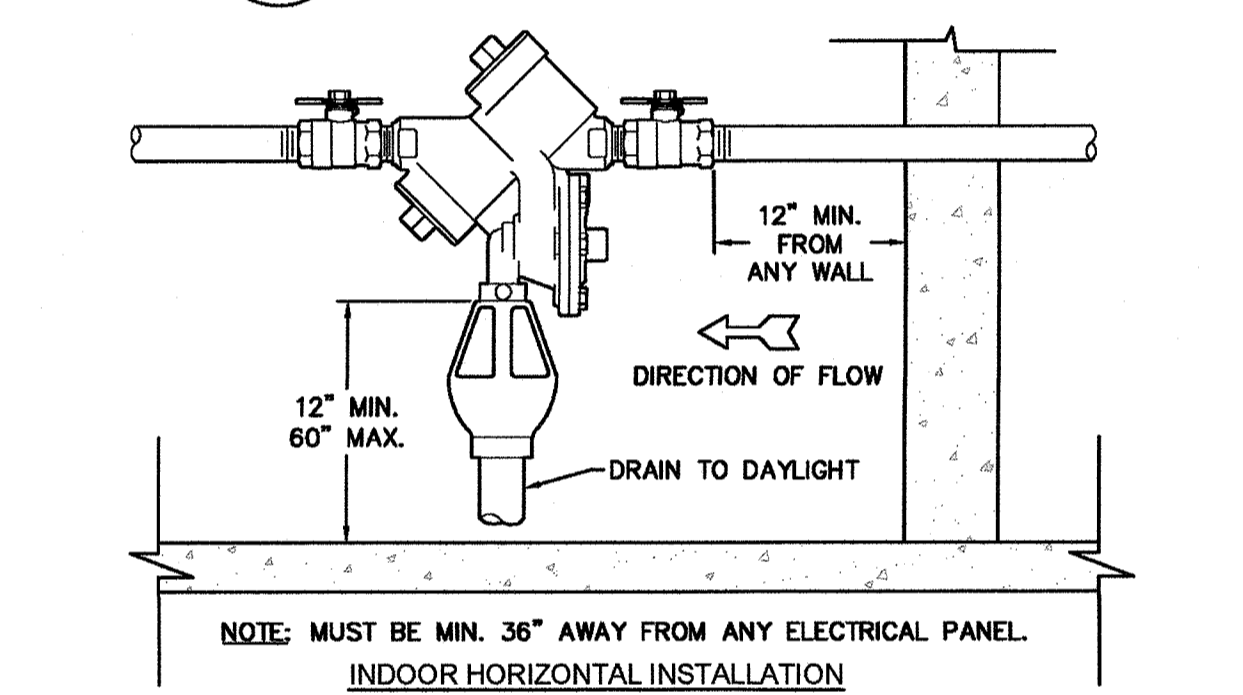


- NOTES:**
1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
 2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
 3. CONTINUOUS 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.

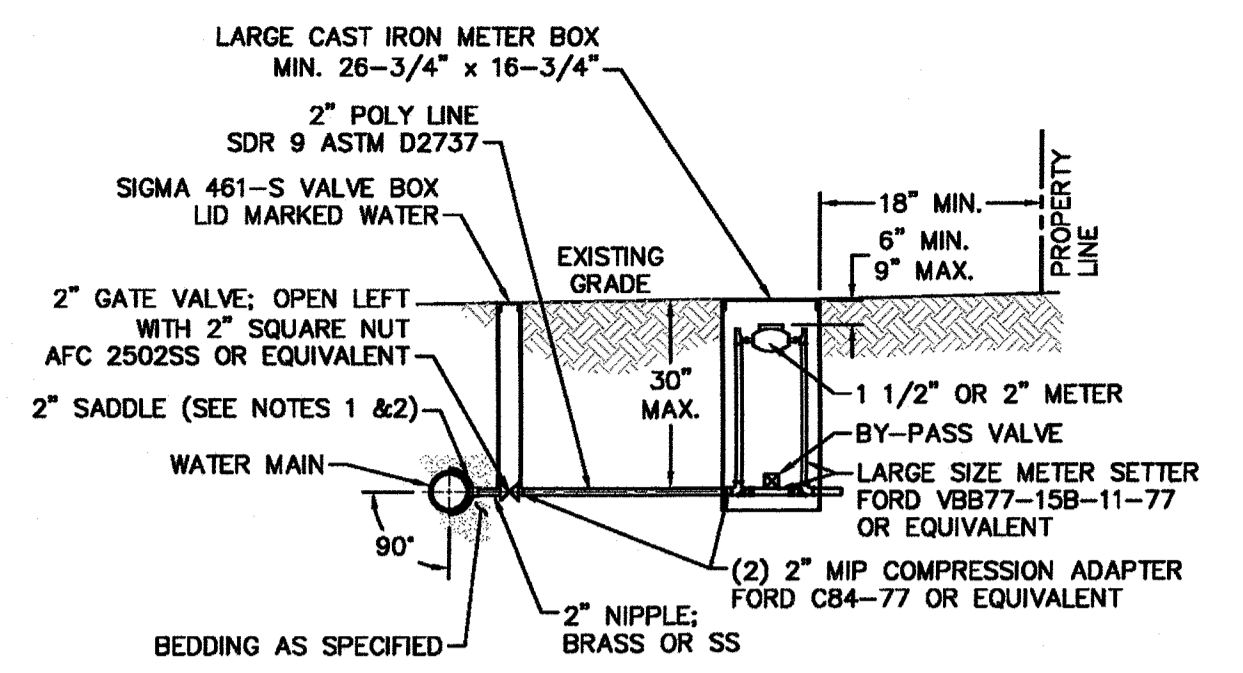
WD-10 FIRE HYDRANT ASSEMBLY
NOT TO SCALE



WD-1 WATER METER VAULT
NOT TO SCALE

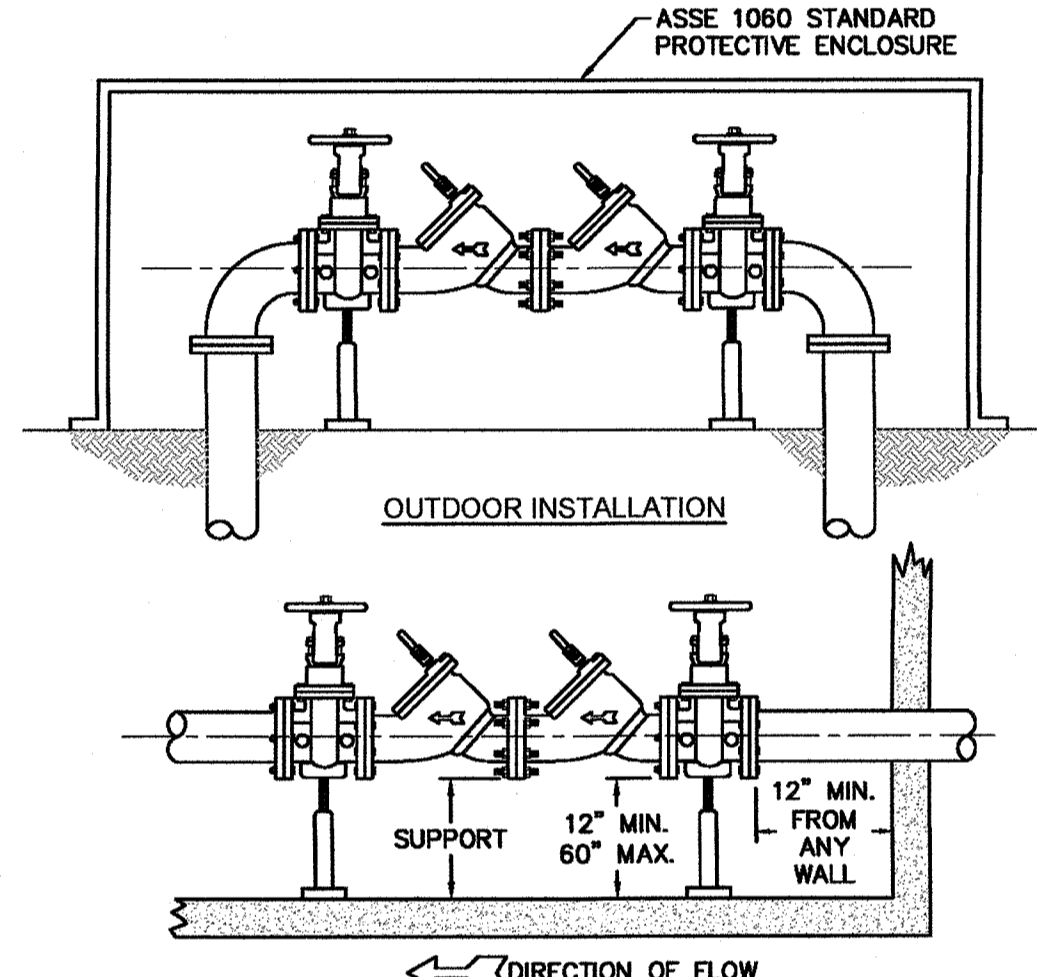


WD-12 REDUCED PRESSURE PRINCIPLE ASSEMBLY
NOT TO SCALE



- 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 AASHTO 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



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

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

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 _____

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

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)

CFPUA WATER DISTRIBUTION SYSTEM

STANDARD DETAILS

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

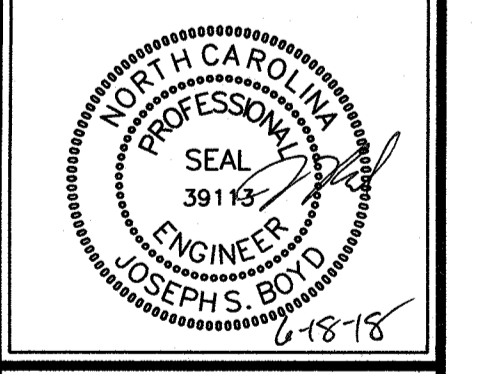
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

Stewardship. Sustainability. Service.

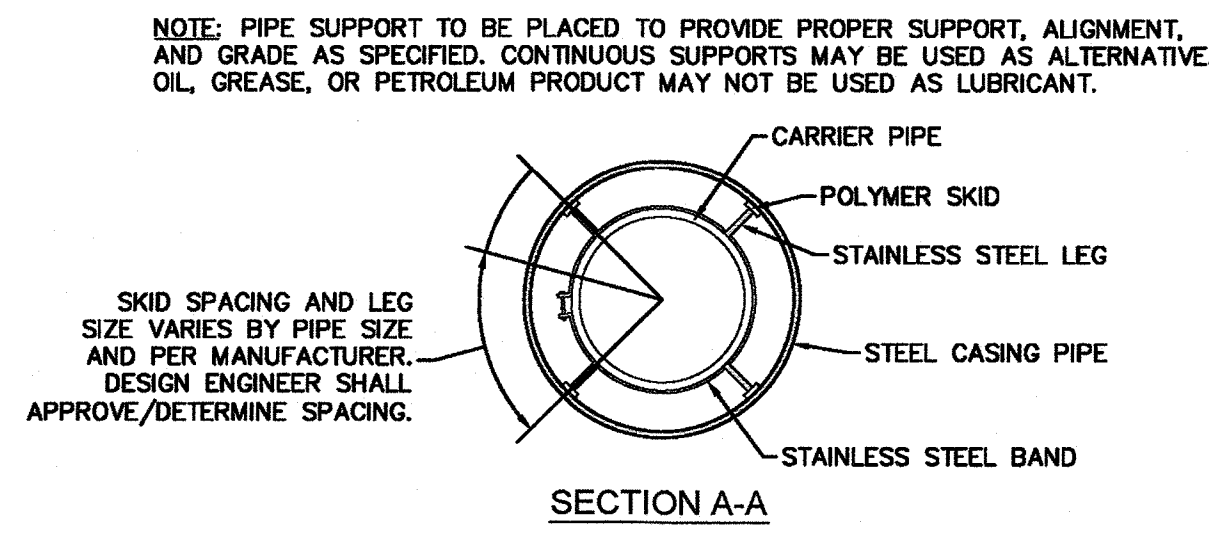
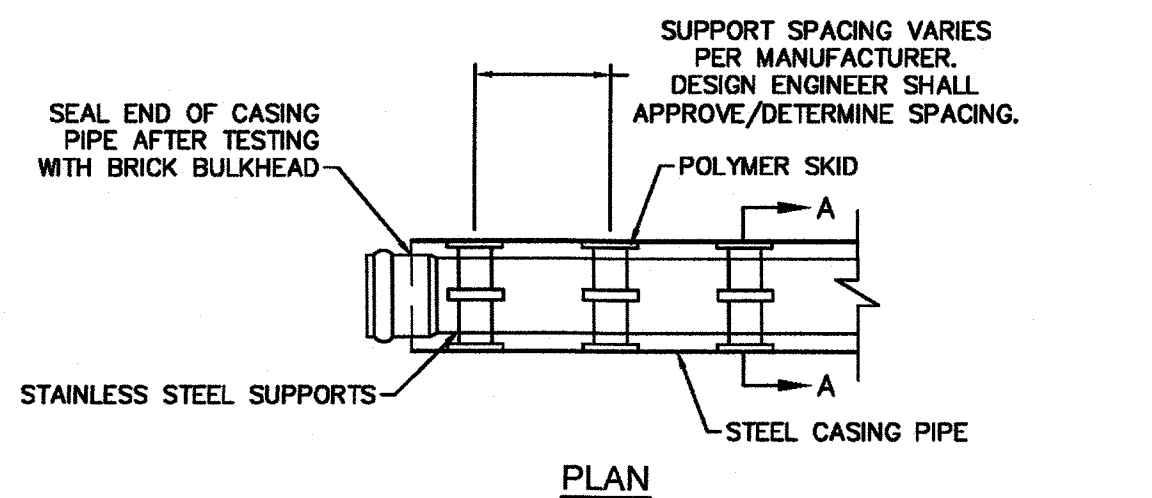
REV:	DESCRIPTION:	DATE:
1	Single Service Connection, Double Service Connection, and Large Meter Revised	10/26/12
2	Single Service Connection and Fire Hydrant Details Revised	7/23/13
3	Fire Hydrant Detail Revised	01/03/14
4	Revised Fire Hydrant Assembly To Show 5" STORZ Connection	04/10/15
5	Revised Fire 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

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

Job No. 03-170546
Date 03/29/18
Drawn By TMG
Designer JSB

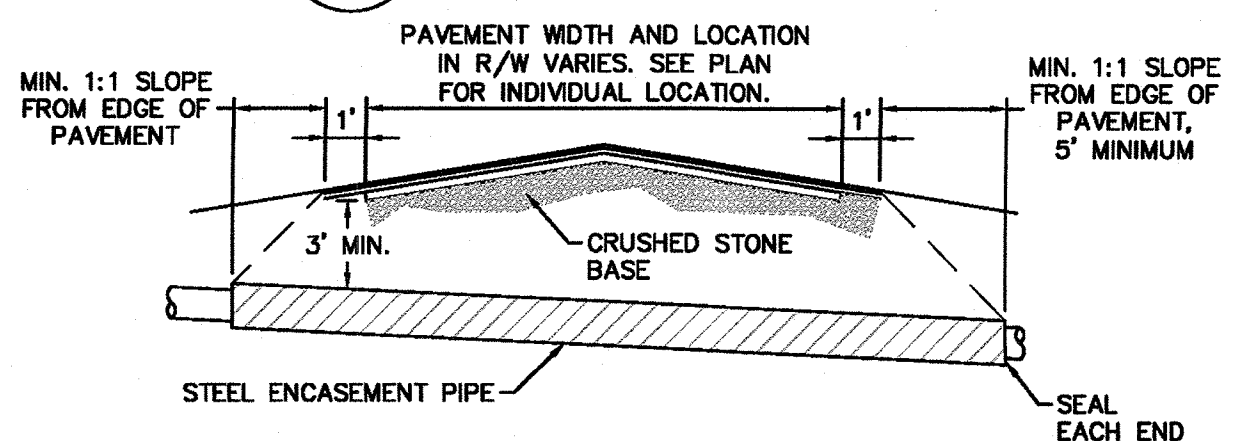


Revisions
1 COW REVIEW COMMENTS 06.18.18



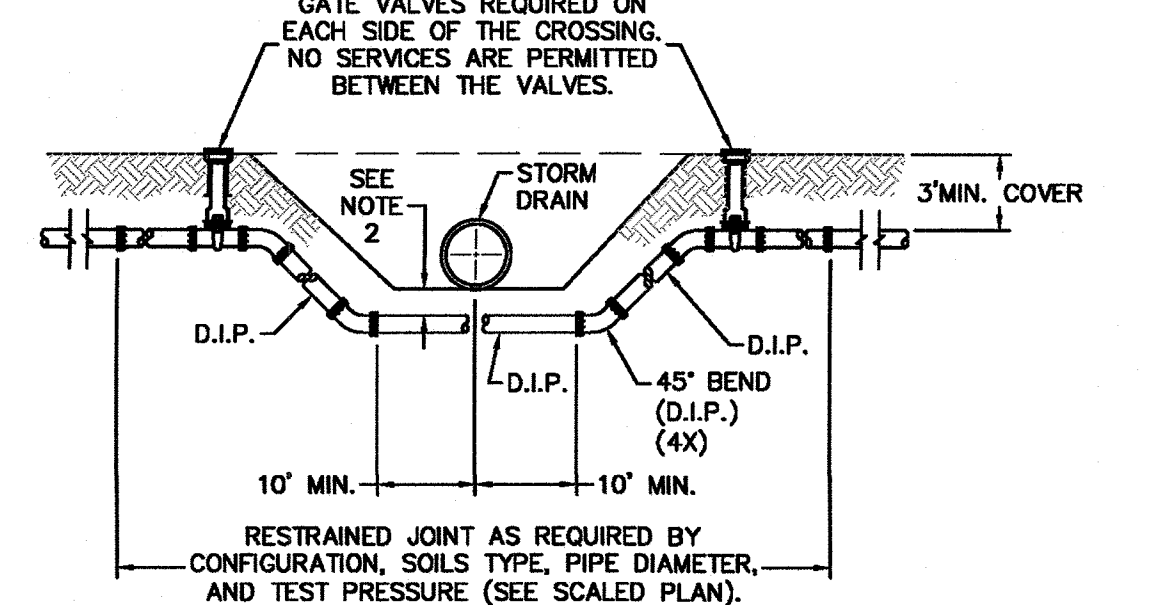
NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.

NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.



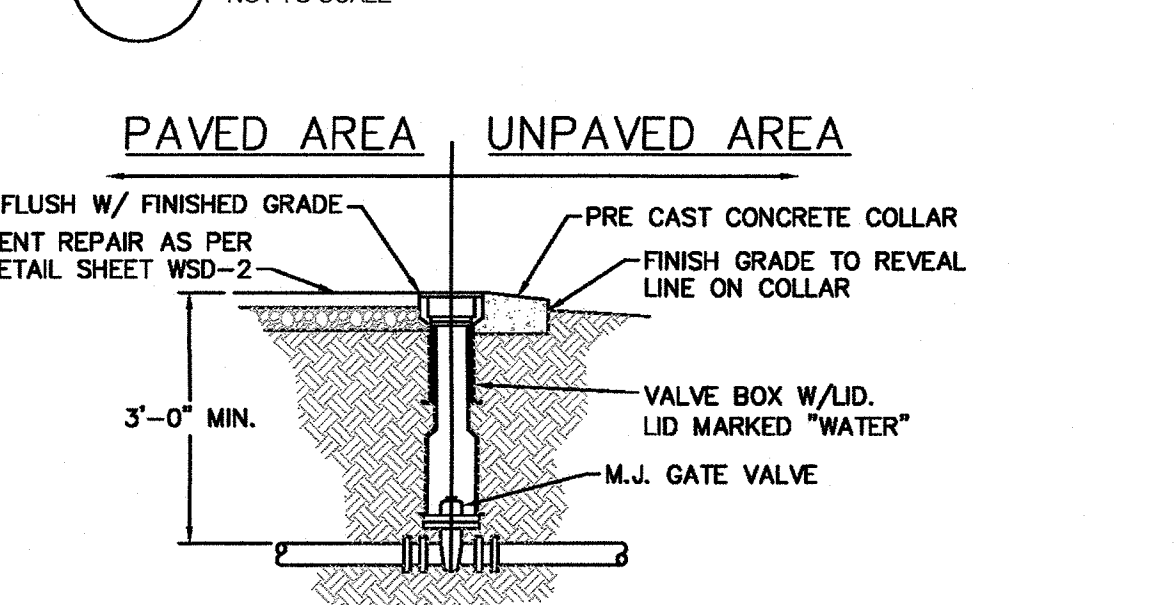
NOTES:
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

WD-16 TYPICAL BORING/JACKING DETAIL
NOT TO SCALE

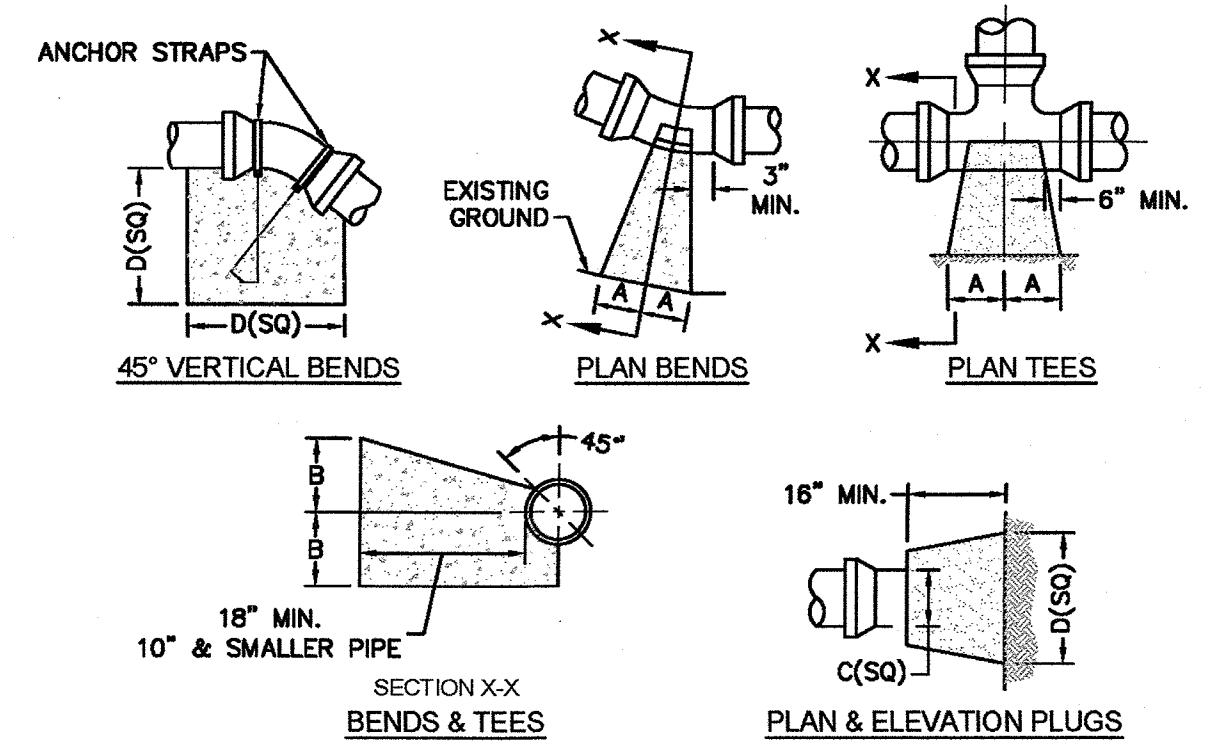


NOTES:
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:
a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.
b. ALL OTHER LOCATIONS, 30" MIN.
c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS, 18" MIN. CLEARANCE IS REQUIRED.

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



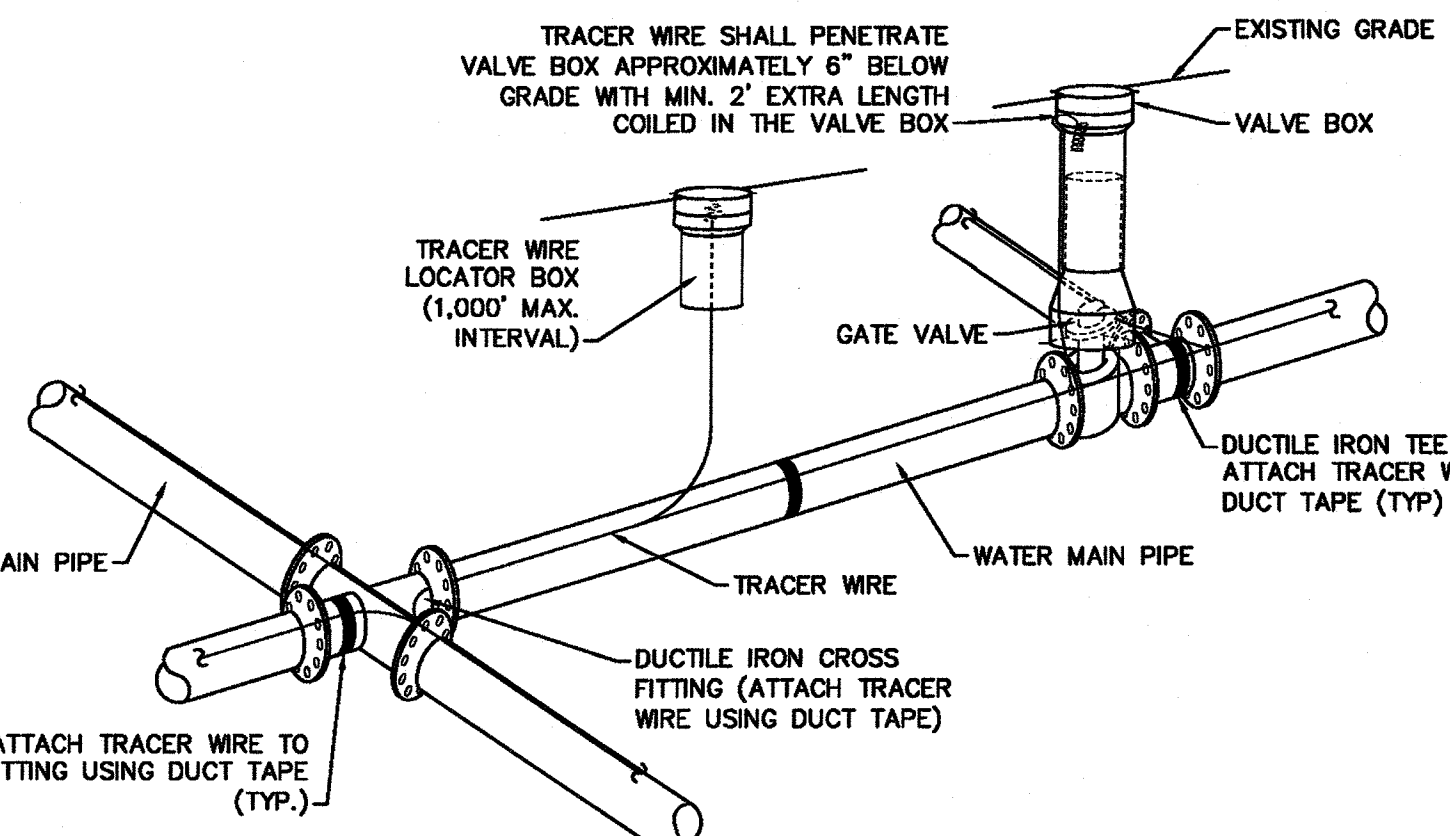
WD-3 VALVE DETAIL
NOT TO SCALE



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

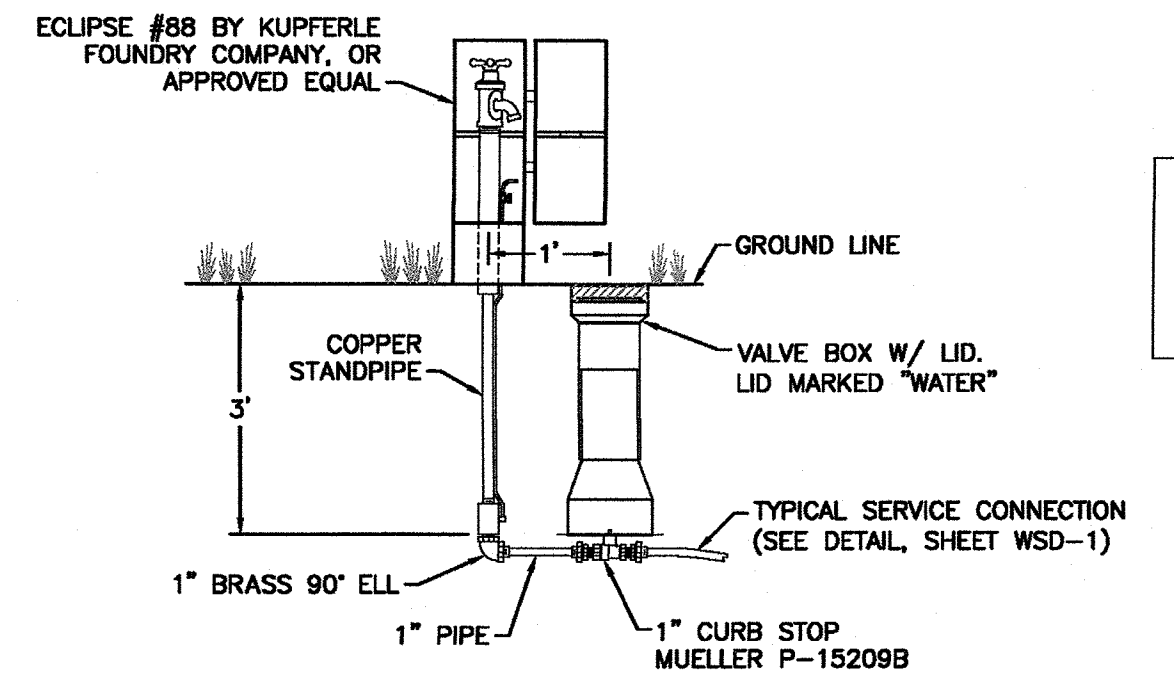
NOTES:
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

WD-4 THRUST BLOCK DETAIL
NOT TO SCALE

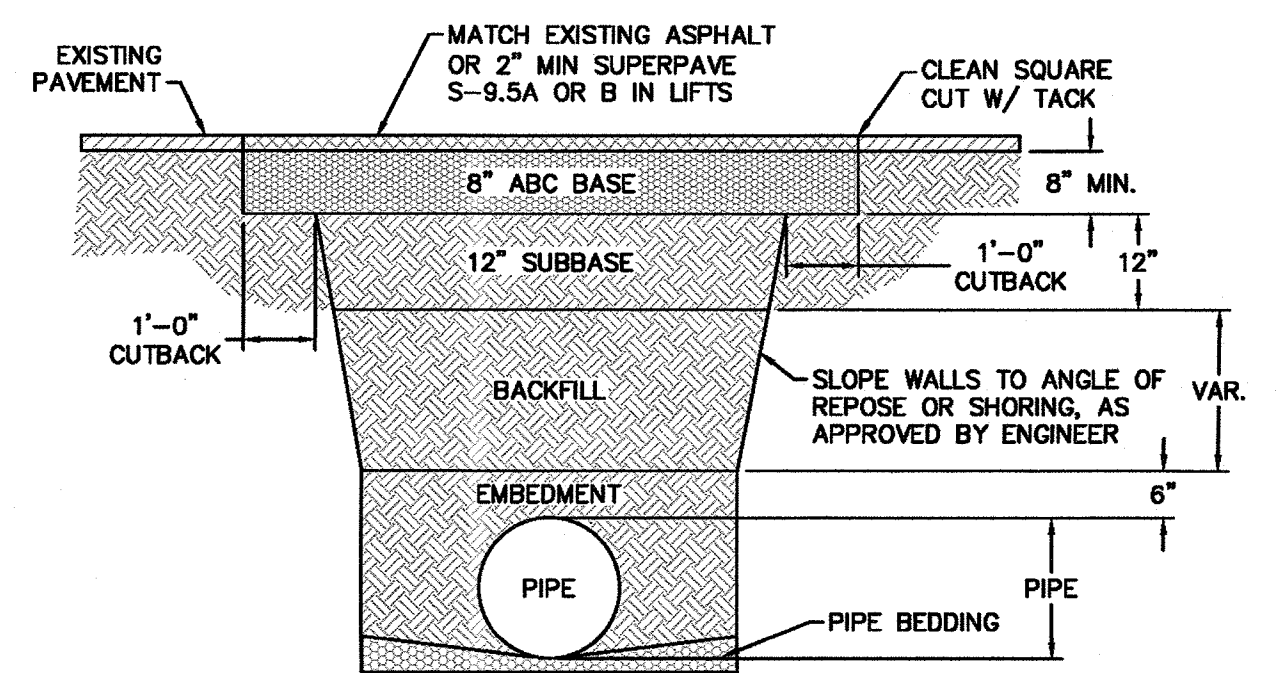


NOTES:
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
2. WIRE SHALL BE STRAPPED TO ALL PVC WATER MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

WD-17 TRACER WIRE DETAIL
NOT TO SCALE

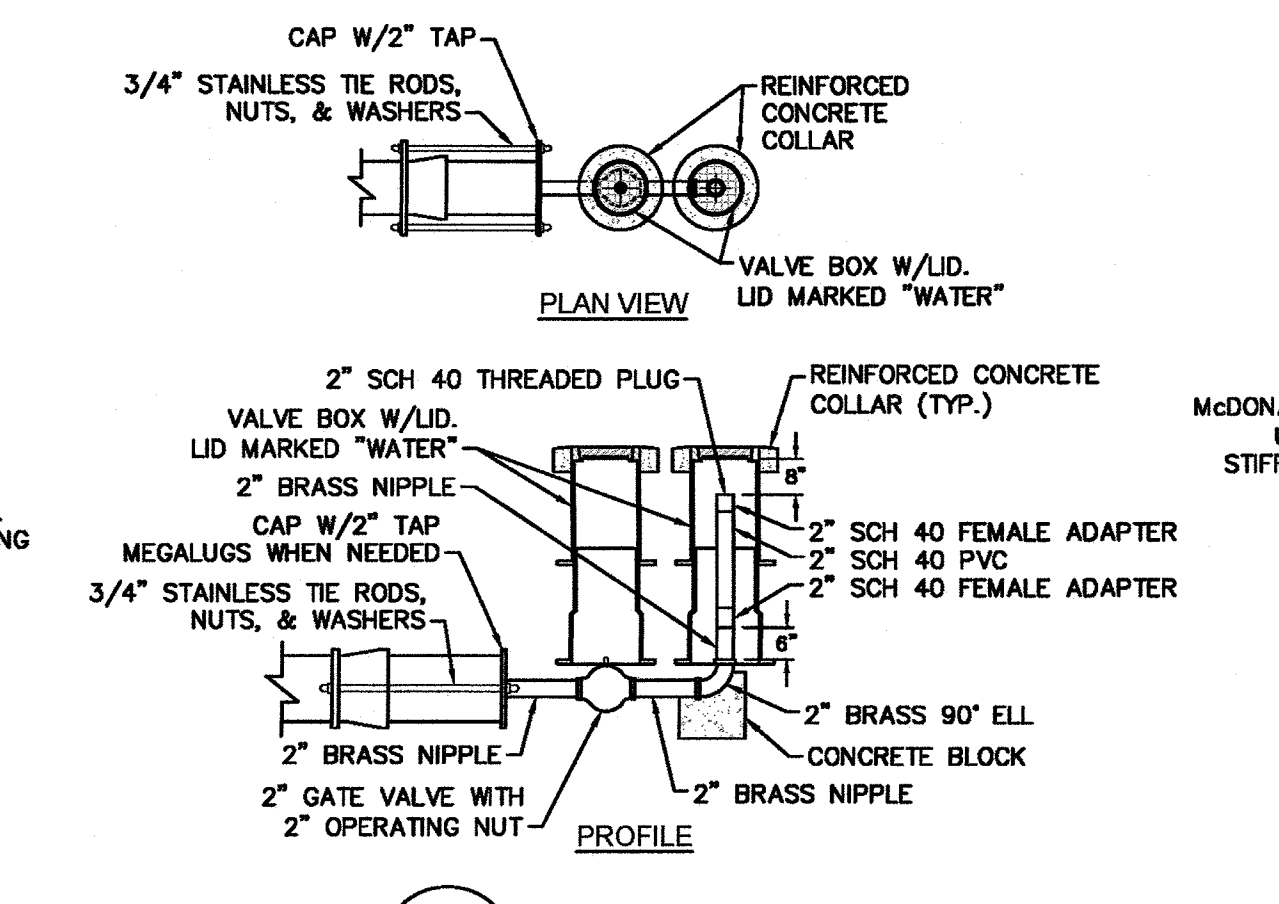


WD-6 SAMPLING STATION
NOT TO SCALE

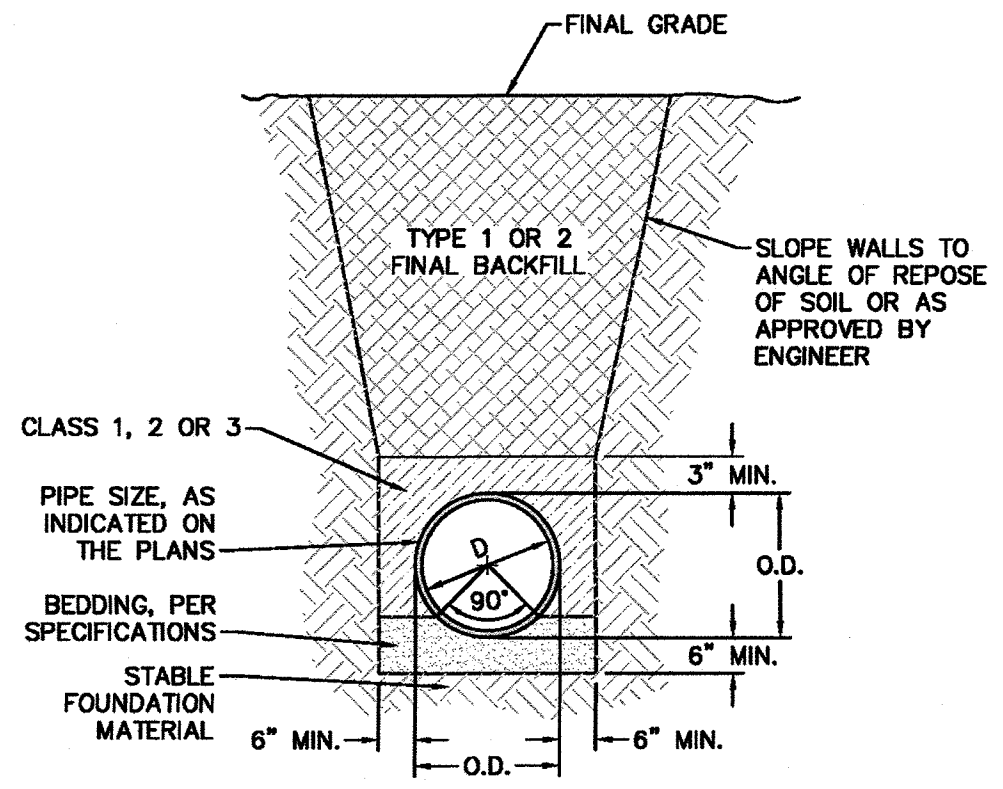


NOTES:
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
3. 8-INCH OF ABC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

WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE



WD-5 2" BLOW-OFF
NOT TO SCALE



WD-13 TYPICAL TRENCH DETAIL
NOT TO SCALE



WD-9 DOUBLE SERVICE CONNECTION
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

City of Wilmington
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

CFPUA WATER DISTRIBUTION SYSTEM

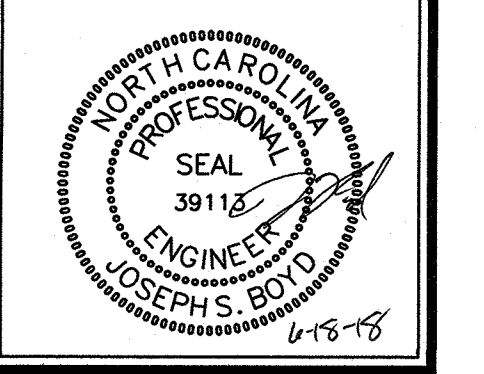
STANDARD DETAILS

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

SHEET NO:
WSD-2

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

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



Revisions
1 COW REVIEW COMMENTS 06.18.18