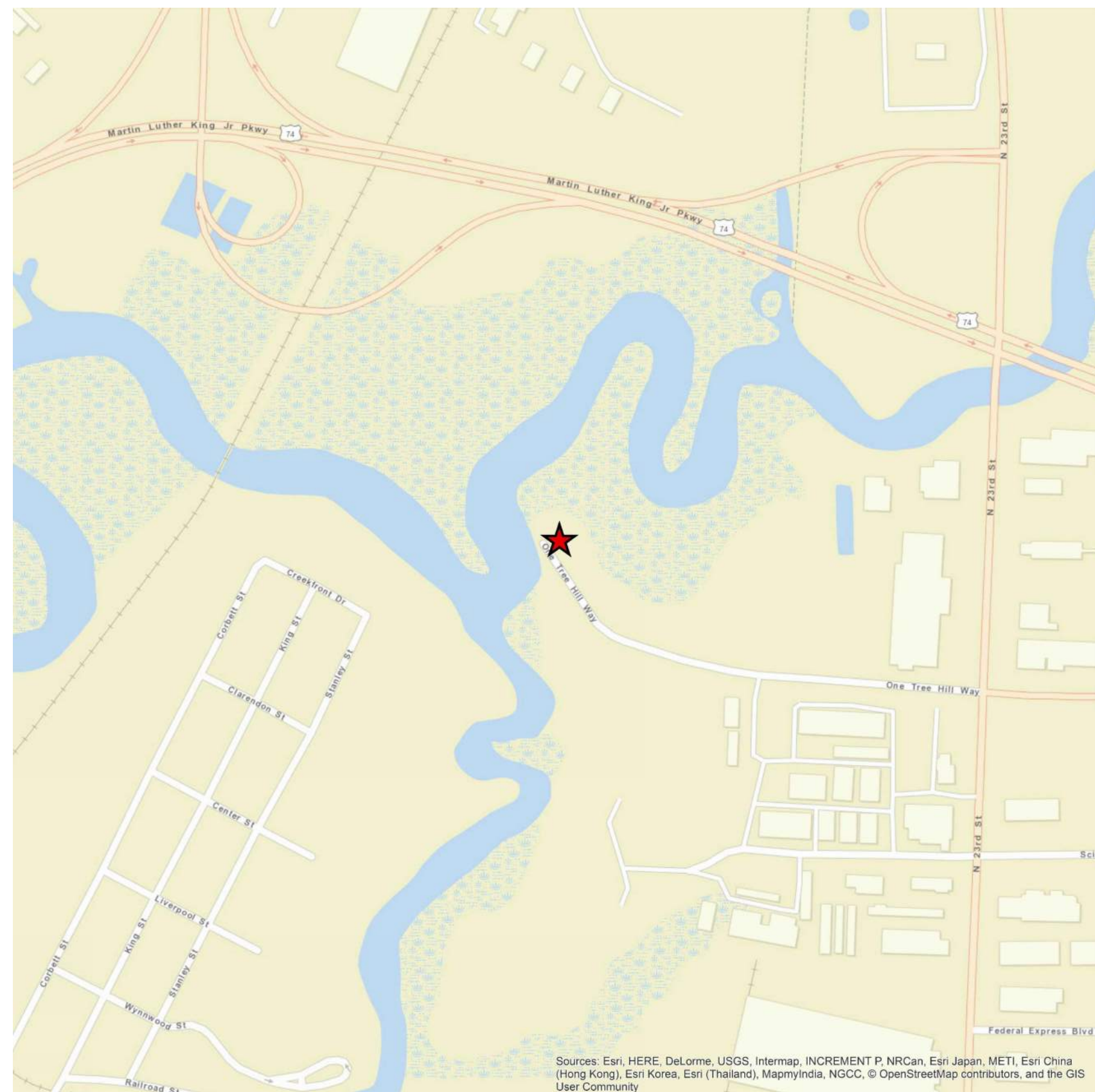


HDR Engineering, Inc.
of the Carolinas
N.C.B.E.L.S. License No. F-0116
101 N. 3rd Street, Suite 201
Wilmington, NC 28401-4034
910.398.9020



VICINITY MAP

1" = 400'

Contract Drawings For

Pump Station #10 Replacement

ISSUED FOR CONSTRUCTION

NC DWI Project No.
E-SRP-W-17-0029

HDR Project No.
00000010075083

Wilmington, NC
February 2019

APPROVED CONSTRUCTION PLAN	
NAME	DATE
PLANNING _____	
TRAFFIC _____	
FIRE _____	



CITY OF WILMINGTON
NORTH CAROLINA
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
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TREE INVENTORY - ALL TREES TO BE REMOVED

Tree # ID	Species	DBH	Ordinance Protection	Northing	Easting
1	Pinus taeda (loblolly pine)	15	Regulated	185733.357	2324886.896
2	Quercus hemisphaerica (darlington oak)	8	Regulated	185719.838	2324893.353
4	Quercus hemisphaerica (darlington oak)	8	Regulated	185735.565	2324833.709
6	Pinus taeda (loblolly pine)	15	Regulated	185695.39	2324868.994
8	Magnolia grandiflora (southern magnolia)	11	Significant	185695.166	2324872.476
10	Quercus hemisphaerica (darlington oak)	9	Regulated	185733.226	2324881.681
11	Carya glabra (pignut hickory)	10	Regulated	185736.462	2324870.971
12	Pinus taeda (loblolly pine)	27	Regulated	185760.221	2324850.324
13	Quercus hemisphaerica (darlington oak)	9	Regulated	185753.037	2324846.968
14	Quercus hemisphaerica (darlington oak)	11	Regulated	185750.653	2324834.943
15	Quercus hemisphaerica (darlington oak)	8	Regulated	185746.311	2324836.735
16	Quercus hemisphaerica (darlington oak)	12	Regulated	185768.254	2324829.038
17	Pinus taeda (loblolly pine)	28	Regulated	185747.595	2324821.257
18	Quercus hemisphaerica (darlington oak)	14.9	Regulated	185751.3	2324815.561
19	Pinus taeda (loblolly pine)	25	Regulated	185774.26	2324817.981
20	Pinus taeda (loblolly pine)	24	Regulated	185796.153	2324810.291
21	Quercus hemisphaerica (darlington oak)	8	Regulated	185783.401	2324812.388
22	Quercus hemisphaerica (darlington oak)	12	Regulated	185770.44	2324814.138
23	Quercus hemisphaerica (darlington oak)	8	Regulated	185767.753	2324794.96
24	Pinus taeda (loblolly pine)	25	Regulated	185781.321	2324776.328
25	Liquidambar styraciflua (sweetgum)	13	Regulated	185770.138	2324787.505
26	Pinus taeda (loblolly pine)	23	Regulated	185804.729	2324776.139
27	Pinus taeda (loblolly pine)	13	Regulated	185799.235	2324789.174
28	Pinus taeda (loblolly pine)	18	Regulated	185805.198	2324795.347
29	Pinus taeda (loblolly pine)	14	Regulated	185790.508	2324829.405
30	Pinus taeda (loblolly pine)	15	Regulated	185805.468	2324832.352
31	Pinus taeda (loblolly pine)	18	Regulated	185796.097	2324831.416
32	Pinus taeda (loblolly pine)	19	Regulated	185806.344	2324846.958
33	Liquidambar styraciflua (sweetgum)	10	Regulated	185807.738	2324838.637
34	Magnolia grandiflora (southern magnolia)	4	Regulated	185796.998	2324857.422
35	Prunus serotina (black cherry)	8	Significant	185794.968	2324862.214
36	Liquidambar styraciflua (sweetgum)	8	Regulated	185786.827	2324856.876
37	Prunus serotina (black cherry)	5	Regulated	185781.156	2324845.643
38	Pinus taeda (loblolly pine)	18	Regulated	185780.509	2324888.589
39	Liquidambar styraciflua (sweetgum)	11	Regulated	185788.311	2324874.101
40	Quercus hemisphaerica (darlington oak)	12	Regulated	185782.646	2324900.889
41	Pinus taeda (loblolly pine)	18	Regulated	185780.609	2324899.137
42	Liquidambar styraciflua (sweetgum)	9	Regulated	185792.131	2324899.895
43	Liriodendron tulipifera (tuliptree)	14	Regulated	185794.403	2324907.31
44	Carya glabra (pignut hickory)	8	Regulated	185794.427	2324909.329

TREES REQUIRING MITIGATION

Tree ID	Type	DBH
8	Southern Magnolia	11
24	Loblolly Pine	25
25	Sweetgum	13
26	Loblolly Pine	23
27	Loblolly Pine	13
30	Loblolly Pine	15
31	Loblolly Pine	18
33	Sweetgum	10
35	Black Cherry	8
42	Sweetgum	9
43	Yellow Poplar	14
44	Hickory	8

TREE MITIGATION CALCULATIONS

DISTURBED ACREAGE MINIMUM
1.49 ACRES / 15 TREES PER ACRE = 22.4

SIGNIFICANT TREES

Tree Type	Category	Total DBH	Mitigation%	DBH X Mitigation % / 3
Southern Magnolia	I	11	200%	7.3
Black Cherry	III	8	100%	2.7

REGULATED TREES

Tree Type	Category	Total DBH	Mitigation%	DBH X Mitigation % / 3
Loblolly Pine	III	94	50%	15.7
Sweetgum	II	32	75%	8.0
Yellow Poplar	I	14	100%	4.7
Hickory	II	8	75%	2.0

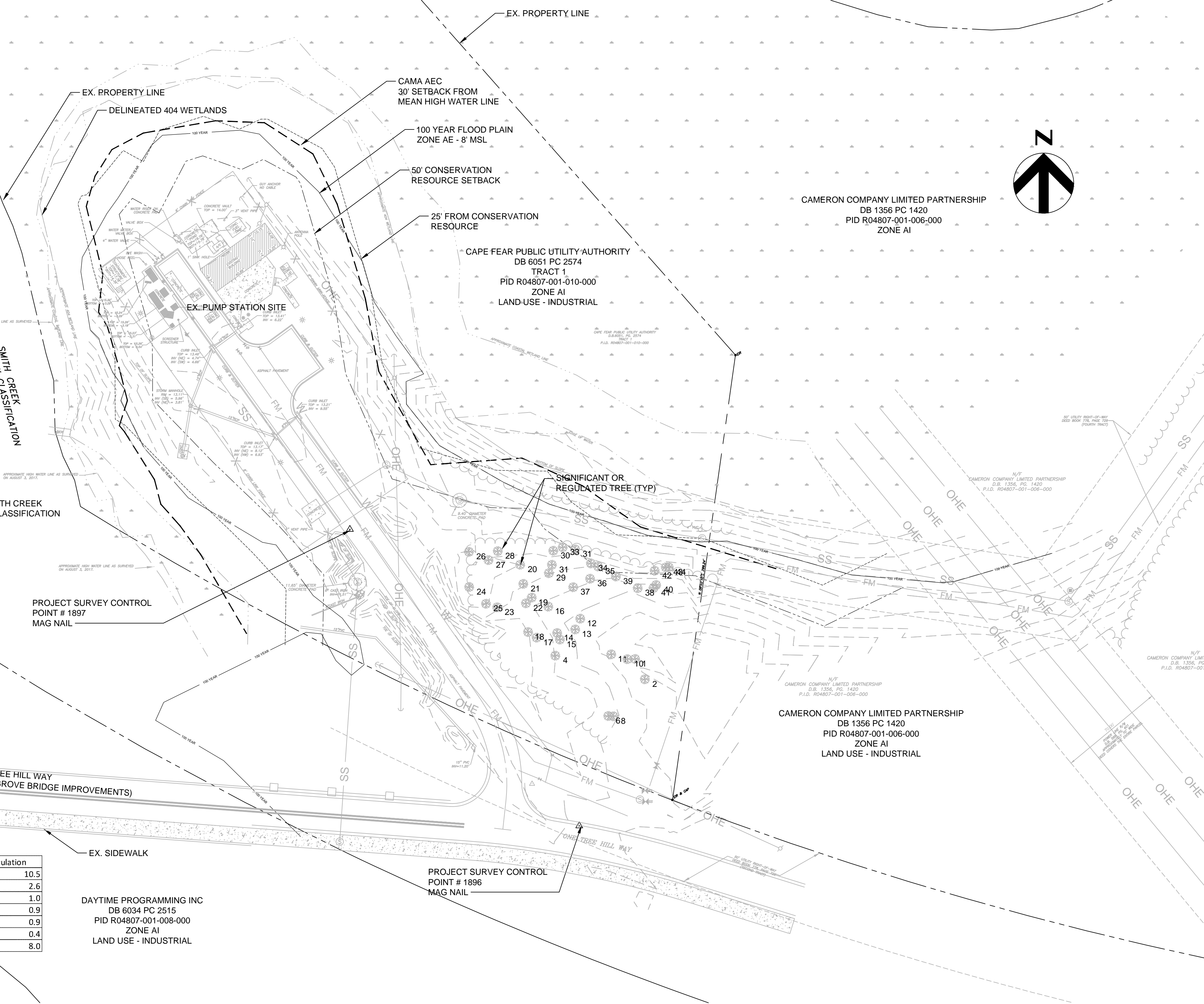
MITIGATION TOTALS

Category	Total Trees
I	22
II	13
III	30
TOTAL	65

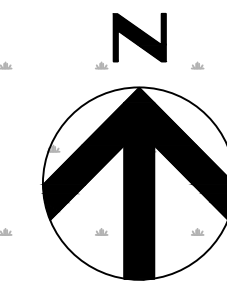
REPLACEMENT TREE MITIGATION

Tree Type	Quantity	Avg DBH	Total DBH	% Mitigation	Calculation
Loblolly Pine	3.2	19.7	63.04	50%	10.5
Sweetgum	1	10.2	10.2	75%	2.6
Southern Magnolia	0.4	7.5	3	100%	1.0
Hickory	0.4	9	3.6	75%	0.9
Yellow Poplar	0.2	14	2.8	100%	0.9
Black Cherry	0.4	6.5	2.6	50%	0.4
Laurel Oak	2.4	10	24	100%	8.0

*35 TREES 2 DBH AT AN EQUAL OR BETTER CATEGORY WILL BE PLANTED AT THE SITE OF THE EXISTING PUMP STATION AFTER DEMOLITION OF THE EXISTING PUMP STATION.



- GENERAL INFORMATION
 - PREPARER - HDR
 - APPLICANT - CAPE FEAR PUBLIC UTILITY AUTHORITY
 - OWNER - CAPE FEAR PUBLIC UTILITY AUTHORITY
 - ADDRESS - 2201 ONE TREE HILL WAY
- SOIL TYPE - DOROVAN SOILS
- CAMA LAND CLASSIFICATION - URBAN
- CONSERVATION RESOURCES - NONE PRESENT
- HISTORIC SITES - NONE PRESENT
- FORESTED AREA - 13,900 SF



WILMINGTON
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TRAFFIC	_____
FIRE	_____

SURVEY CONTROL POINTS:
1896 N2324849.634 E185622.157 15.626' MAG NAIL
1897 N2324696.782 E185819.619 13.170' MAG NAIL

- SURVEY INFORMATION:
- CLASS OF SURVEY: CLASS A
 - POSITIONAL ACCURACY: 0.10' OR 0.030M (95% CONFIDENCE)
 - GPS FIELD PROCEDURE: VRS/RTK
 - DATE OF SURVEY: JULY 31, 2014
 - DATUM/EPOCH: NAD 83/2011
 - PUBLISHED/FIXED-CONTROL USE: NC RTN
 - GEOID MODEL: 12A
 - COMBINED SCALE FACTOR: POINT # 1897 = 1.000277 GROUND TO GRID
 - UNITS: US SURVEY FOOT

PROJECT MANAGER G. ERIC WILLIAMS, PE
DESIGNED BY J. VANDENBOSCH, PE
CHECKED BY _____
DRAWN BY _____
PROJECT NUMBER 100075083



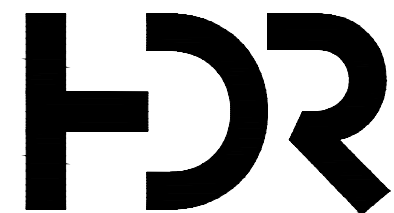
PUMP STATION #10 REPLACEMENT

EXISTING SITE INVENTORY



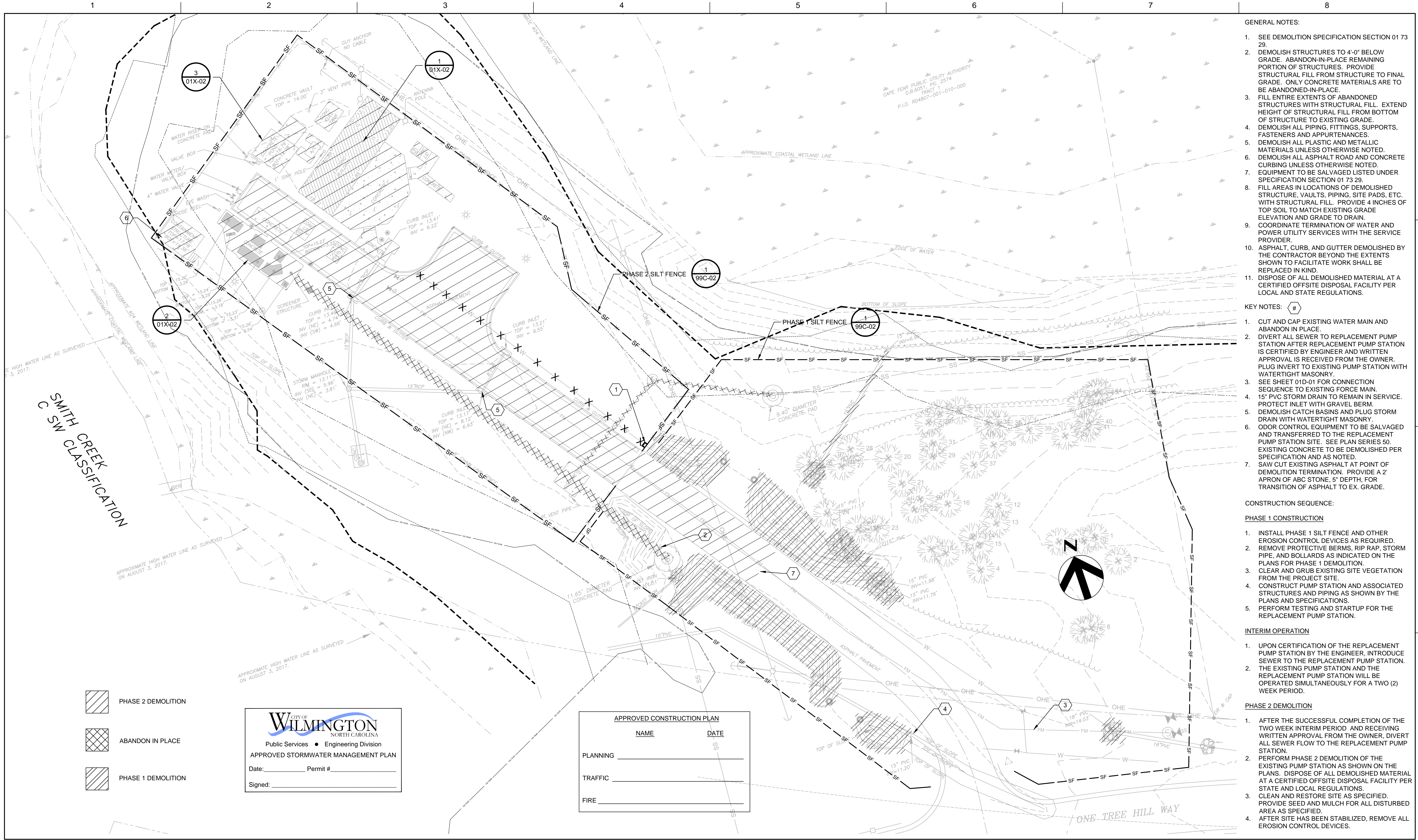
FILENAME 00V-01B.dwg
SCALE 1" = 40'

SHEET 01V-01



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ISSUE	DATE	DESCRIPTION
0	10/2018	ISSUED FOR CONSTRUCTION



- GENERAL NOTES:**
- SEE DEMOLITION SPECIFICATION SECTION 01 73 29.
 - DEMOLISH STRUCTURES TO 4'-0" BELOW GRADE. ABANDON-IN-PLACE REMAINING PORTION OF STRUCTURES. PROVIDE STRUCTURAL FILL FROM STRUCTURE TO FINAL GRADE. ONLY CONCRETE MATERIALS ARE TO BE ABANDONED-IN-PLACE.
 - FILL ENTIRE EXTENTS OF ABANDONED STRUCTURES WITH STRUCTURAL FILL. EXTEND HEIGHT OF STRUCTURAL FILL FROM BOTTOM OF STRUCTURE TO EXISTING GRADE.
 - DEMOLISH ALL PIPING, FITTINGS, SUPPORTS, FASTENERS AND APPURTENANCES.
 - DEMOLISH ALL PLASTIC AND METALLIC MATERIALS UNLESS OTHERWISE NOTED.
 - DEMOLISH ALL ASPHALT ROAD AND CONCRETE CURBING UNLESS OTHERWISE NOTED.
 - EQUIPMENT TO BE SALVAGED LISTED UNDER SPECIFICATION SECTION 01 73 29.
 - FILL AREAS IN LOCATIONS OF DEMOLISHED STRUCTURE, VAULTS, PIPING, SITE PADS, ETC. WITH STRUCTURAL FILL. PROVIDE 4 INCHES OF TOP SOIL TO MATCH EXISTING GRADE ELEVATION AND GRADE TO DRAIN.
 - COORDINATE TERMINATION OF WATER AND POWER UTILITY SERVICES WITH THE SERVICE PROVIDER.
 - ASPHALT, CURB, AND GUTTER DEMOLISHED BY THE CONTRACTOR BEYOND THE EXTENTS SHOWN TO FACILITATE WORK SHALL BE REPLACED IN KIND.
 - DISPOSE OF ALL DEMOLISHED MATERIAL AT A CERTIFIED OFFSITE DISPOSAL FACILITY PER LOCAL AND STATE REGULATIONS.

- KEY NOTES: (#)**
- CUT AND CAP EXISTING WATER MAIN AND ABANDON IN PLACE.
 - DIVERT ALL SEWER TO REPLACEMENT PUMP STATION AFTER REPLACEMENT PUMP STATION IS CERTIFIED BY ENGINEER AND WRITTEN APPROVAL IS RECEIVED FROM THE OWNER. PLUG INVERT TO EXISTING PUMP STATION WITH WATERTIGHT MASONRY.
 - SEE SHEET 01D-01 FOR CONNECTION SEQUENCE TO EXISTING FORCE MAIN.
 - 15" PVC STORM DRAIN TO REMAIN IN SERVICE. PROTECT INLET WITH GRAVEL BERM.
 - DEMOLISH CATCH BASINS AND PLUG STORM DRAIN WITH WATERTIGHT MASONRY.
 - ODOR CONTROL EQUIPMENT TO BE SALVAGED AND TRANSFERRED TO THE REPLACEMENT PUMP STATION SITE. SEE PLAN SERIES 50. EXISTING CONCRETE TO BE DEMOLISHED PER SPECIFICATION AND AS NOTED.
 - SAW CUT EXISTING ASPHALT AT POINT OF DEMOLITION TERMINATION. PROVIDE A 2' APRON OF ABC STONE 15" DEPTH, FOR TRANSITION OF ASPHALT TO EX. GRADE.

- CONSTRUCTION SEQUENCE:**
- PHASE 1 CONSTRUCTION**
- INSTALL PHASE 1 SILT FENCE AND OTHER EROSION CONTROL DEVICES AS REQUIRED.
 - REMOVE PROTECTIVE BERMS, RIP RAP, STORM PIPE, AND BOLLARDS AS INDICATED ON THE PLANS FOR PHASE 1 DEMOLITION.
 - CLEAR AND GRUB EXISTING SITE VEGETATION FROM THE PROJECT SITE.
 - CONSTRUCT PUMP STATION AND ASSOCIATED STRUCTURES AND PIPING AS SHOWN BY THE PLANS AND SPECIFICATIONS.
 - PERFORM TESTING AND STARTUP FOR THE REPLACEMENT PUMP STATION.

- INTERIM OPERATION**
- UPON CERTIFICATION OF THE REPLACEMENT PUMP STATION BY THE ENGINEER, INTRODUCE SEWER TO THE REPLACEMENT PUMP STATION.
 - THE EXISTING PUMP STATION AND THE REPLACEMENT PUMP STATION WILL BE OPERATED SIMULTANEOUSLY FOR A TWO (2) WEEK PERIOD.

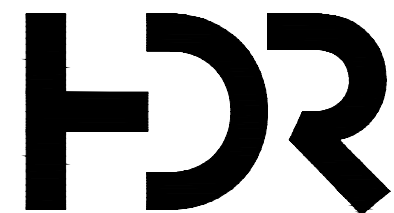
- PHASE 2 DEMOLITION**
- AFTER THE SUCCESSFUL COMPLETION OF THE TWO WEEK INTERIM PERIOD AND RECEIVING WRITTEN APPROVAL FROM THE OWNER, DIVERT ALL SEWER FLOW TO THE REPLACEMENT PUMP STATION.
 - PERFORM PHASE 2 DEMOLITION OF THE EXISTING PUMP STATION AS SHOWN ON THE PLANS. DISPOSE OF ALL DEMOLISHED MATERIAL AT A CERTIFIED OFFSITE DISPOSAL FACILITY PER STATE AND LOCAL REGULATIONS.
 - CLEAN AND RESTORE SITE AS SPECIFIED. PROVIDE SEED AND MULCH FOR ALL DISTURBED AREA AS SPECIFIED.
 - AFTER SITE HAS BEEN STABILIZED, REMOVE ALL EROSION CONTROL DEVICES.

- PHASE 2 DEMOLITION
- ABANDON IN PLACE
- PHASE 1 DEMOLITION

CITY OF WILMINGTON
NORTH CAROLINA
Public Services • Engineering Division
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FIRE _____	_____



HDR Engineering Inc.
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NC BELS License # F-0116
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Wilmington NC, 28401
910-398-9020

ISSUE	DATE	DESCRIPTION
0	10/2018	ISSUED FOR CONSTRUCTION

PROJECT MANAGER G. ERIC WILLIAMS, PE
DESIGNED BY J. VANDENBOSCH, PE
CHECKED BY M. KASPER, PE
DRAWN BY _____

PROJECT NUMBER 100075083



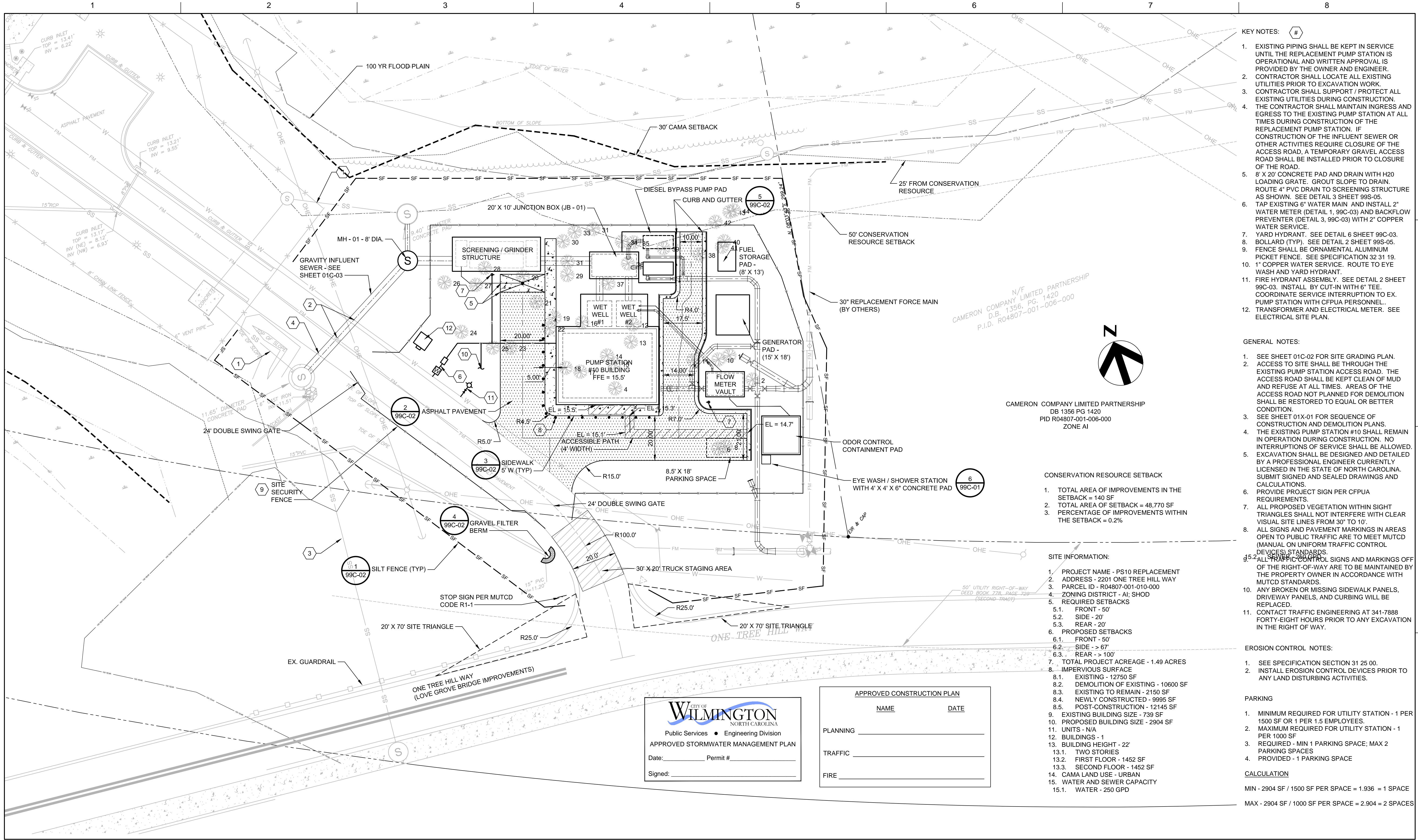
**PUMP STATION #10
REPLACEMENT**



FILENAME 00X-01.dwg
SCALE 1" = 20'

SHEET
01X-01

SITE DEMOLITION PLAN



- KEY NOTES:**
- EXISTING PIPING SHALL BE KEPT IN SERVICE UNTIL THE REPLACEMENT PUMP STATION IS OPERATIONAL AND WRITTEN APPROVAL IS PROVIDED BY THE OWNER AND ENGINEER.
 - CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES PRIOR TO EXCAVATION WORK.
 - CONTRACTOR SHALL SUPPORT / PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
 - THE CONTRACTOR SHALL MAINTAIN INGRESS AND EGRESS TO THE EXISTING PUMP STATION AT ALL TIMES DURING CONSTRUCTION OF THE REPLACEMENT PUMP STATION. IF CONSTRUCTION OF THE INFLUENT SEWER OR OTHER ACTIVITIES REQUIRE CLOSURE OF THE ACCESS ROAD, A TEMPORARY GRAVEL ACCESS ROAD SHALL BE INSTALLED PRIOR TO CLOSURE OF THE ROAD.
 - 8' X 20' CONCRETE PAD AND DRAIN WITH H2O LOADING GRATE. GROUT SLOPE TO DRAIN. ROUTE 4" PVC DRAIN TO SCREENING STRUCTURE AS SHOWN. SEE DETAIL 3 SHEET 99S-05.
 - TAP EXISTING 6" WATER MAIN AND INSTALL 2" WATER METER (DETAIL 1, 99C-03) AND BACKFLOW PREVENTER (DETAIL 3, 99C-03) WITH 2" COPPER WATER SERVICE.
 - YARD HYDRANT. SEE DETAIL 6 SHEET 99C-03.
 - BOLLARD (TYP). SEE DETAIL 2 SHEET 99S-05.
 - FENCE SHALL BE ORNAMENTAL ALUMINUM PICKET FENCE. SEE SPECIFICATION 32 31 19.
 - 1" COPPER WATER SERVICE. ROUTE TO EYE WASH AND YARD HYDRANT.
 - FIRE HYDRANT ASSEMBLY. SEE DETAIL 2 SHEET 99C-03. INSTALL BY CUT-IN WITH 6" TEE. COORDINATE SERVICE INTERRUPTION TO EX. PUMP STATION WITH CFPUA PERSONNEL.
 - TRANSFORMER AND ELECTRICAL METER. SEE ELECTRICAL SITE PLAN.

- GENERAL NOTES:**
- SEE SHEET 01C-02 FOR SITE GRADING PLAN.
 - ACCESS TO SITE SHALL BE THROUGH THE EXISTING PUMP STATION ACCESS ROAD. THE ACCESS ROAD SHALL BE KEPT CLEAN OF MUD AND REFUSE AT ALL TIMES. AREAS OF THE ACCESS ROAD NOT PLANNED FOR DEMOLITION SHALL BE RESTORED TO EQUAL OR BETTER CONDITION.
 - SEE SHEET 01X-01 FOR SEQUENCE OF CONSTRUCTION AND DEMOLITION PLANS.
 - THE EXISTING PUMP STATION #10 SHALL REMAIN IN OPERATION DURING CONSTRUCTION. NO INTERRUPTIONS OF SERVICE SHALL BE ALLOWED. EXCAVATION SHALL BE DESIGNED AND DETAILED BY A PROFESSIONAL ENGINEER CURRENTLY LICENSED IN THE STATE OF NORTH CAROLINA. SUBMIT SIGNED AND SEALED DRAWINGS AND CALCULATIONS.
 - PROVIDE PROJECT SIGN PER CFPUA REQUIREMENTS.
 - ALL PROPOSED VEGETATION WITHIN SIGHT TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SITE LINES FROM 30' TO 10'.
 - ALL SIGNS AND PAVEMENT MARKINGS IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
 - ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF OF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
 - ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY PANELS, AND CURBING WILL BE REPLACED.
 - CONTACT TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT OF WAY.

CAMERON COMPANY LIMITED PARTNERSHIP
DB 1356 PG 1420
PID R04807-001-006-000
ZONE AI

- CONSERVATION RESOURCE SETBACK**
- TOTAL AREA OF IMPROVEMENTS IN THE SETBACK = 140 SF
 - TOTAL AREA OF SETBACK = 48,770 SF
 - PERCENTAGE OF IMPROVEMENTS WITHIN THE SETBACK = 0.2%

- SITE INFORMATION:**
- PROJECT NAME - PS10 REPLACEMENT
 - ADDRESS - 2201 ONE TREE HILL WAY
 - PARCEL ID - R04807-001-010-000
 - ZONING DISTRICT - AI; SHOD
 - REQUIRED SETBACKS
 - FRONT - 50'
 - SIDE - 20'
 - REAR - 20'
 - PROPOSED SETBACKS
 - FRONT - 50'
 - SIDE - > 67'
 - REAR - > 100'
 - TOTAL PROJECT ACREAGE - 1.49 ACRES
 - IMPERVIOUS SURFACE
 - EXISTING - 12750 SF
 - DEMOLITION OF EXISTING - 10600 SF
 - EXISTING TO REMAIN - 2150 SF
 - NEWLY CONSTRUCTED - 9995 SF
 - POST-CONSTRUCTION - 12145 SF
 - EXISTING BUILDING SIZE - 739 SF
 - PROPOSED BUILDING SIZE - 2904 SF
 - UNITS - N/A
 - BUILDINGS - 1
 - BUILDING HEIGHT - 22'
 - TWO STORIES
 - FIRST FLOOR - 1452 SF
 - SECOND FLOOR - 1452 SF
 - CAMA LAND USE - URBAN
 - WATER AND SEWER CAPACITY
 - WATER - 250 GPD

- EROSION CONTROL NOTES:**
- SEE SPECIFICATION SECTION 31 25 00.
 - INSTALL EROSION CONTROL DEVICES PRIOR TO ANY LAND DISTURBING ACTIVITIES.

- PARKING**
- MINIMUM REQUIRED FOR UTILITY STATION - 1 PER 1500 SF OR 1 PER 1.5 EMPLOYEES.
 - MAXIMUM REQUIRED FOR UTILITY STATION - 1 PER 1000 SF
 - REQUIRED - MIN 1 PARKING SPACE; MAX 2 PARKING SPACES
 - PROVIDED - 1 PARKING SPACE

CALCULATION

MIN - 2904 SF / 1500 SF PER SPACE = 1.936 = 1 SPACE
 MAX - 2904 SF / 1000 SF PER SPACE = 2.904 = 2 SPACES

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PROJECT NUMBER	100075083

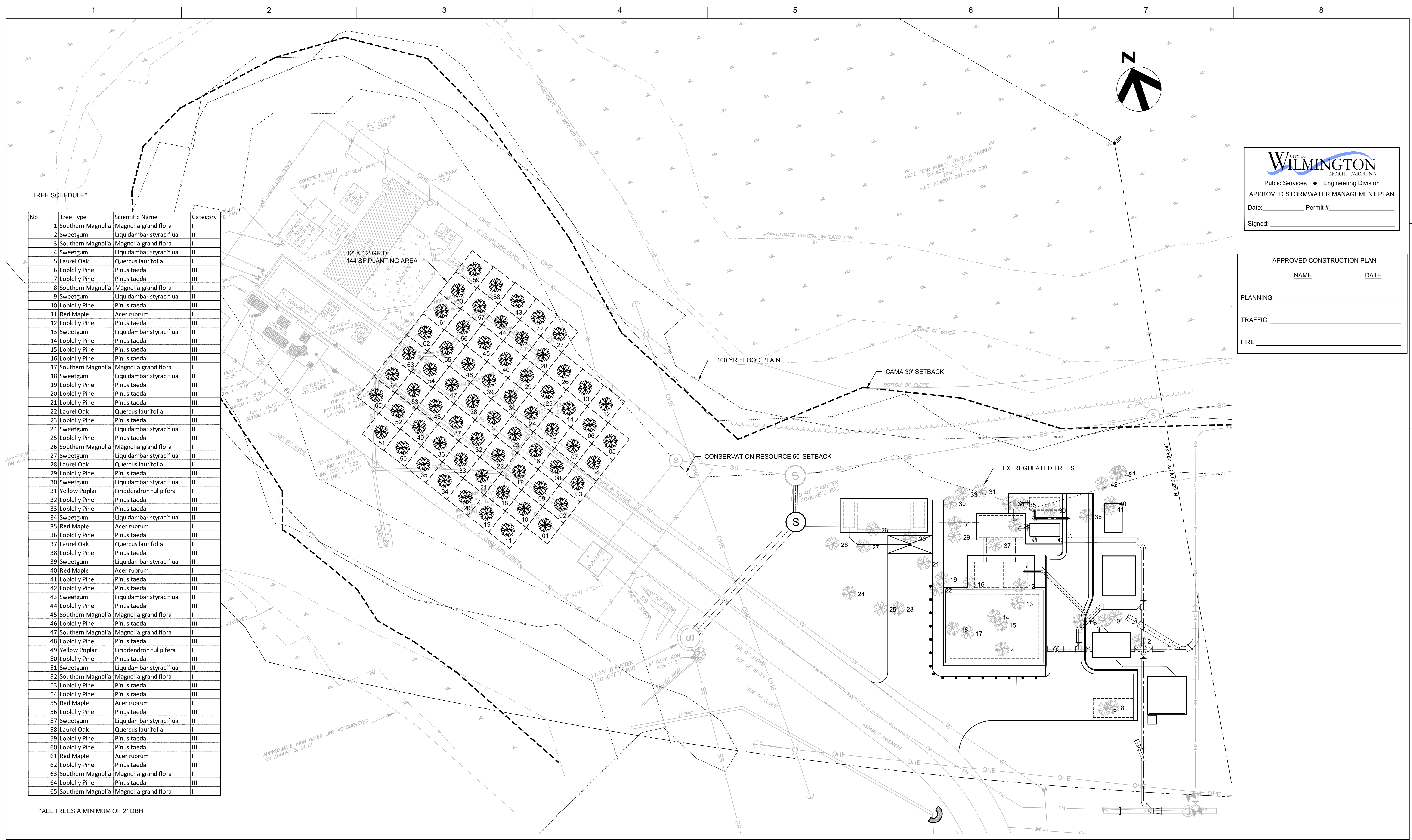


PUMP STATION #10 REPLACEMENT



FILENAME 00C-01B.dwg
SCALE 1" = 20'

SHEET
01C-01



TREE SCHEDULE*

No.	Tree Type	Scientific Name	Category
1	Southern Magnolia	Magnolia grandiflora	I
2	Sweetgum	Liquidambar styraciflua	II
3	Southern Magnolia	Magnolia grandiflora	I
4	Sweetgum	Liquidambar styraciflua	II
5	Laurel Oak	Quercus laurifolia	I
6	Loblolly Pine	Pinus taeda	III
7	Loblolly Pine	Pinus taeda	III
8	Southern Magnolia	Magnolia grandiflora	I
9	Sweetgum	Liquidambar styraciflua	II
10	Loblolly Pine	Pinus taeda	III
11	Red Maple	Acer rubrum	I
12	Loblolly Pine	Pinus taeda	III
13	Sweetgum	Liquidambar styraciflua	II
14	Loblolly Pine	Pinus taeda	III
15	Loblolly Pine	Pinus taeda	III
16	Loblolly Pine	Pinus taeda	III
17	Southern Magnolia	Magnolia grandiflora	I
18	Sweetgum	Liquidambar styraciflua	II
19	Loblolly Pine	Pinus taeda	III
20	Loblolly Pine	Pinus taeda	III
21	Loblolly Pine	Pinus taeda	III
22	Laurel Oak	Quercus laurifolia	I
23	Loblolly Pine	Pinus taeda	III
24	Sweetgum	Liquidambar styraciflua	II
25	Loblolly Pine	Pinus taeda	III
26	Southern Magnolia	Magnolia grandiflora	I
27	Sweetgum	Liquidambar styraciflua	II
28	Laurel Oak	Quercus laurifolia	I
29	Loblolly Pine	Pinus taeda	III
30	Sweetgum	Liquidambar styraciflua	II
31	Yellow Poplar	Liriodendron tulipifera	I
32	Loblolly Pine	Pinus taeda	III
33	Loblolly Pine	Pinus taeda	III
34	Sweetgum	Liquidambar styraciflua	II
35	Red Maple	Acer rubrum	I
36	Loblolly Pine	Pinus taeda	III
37	Laurel Oak	Quercus laurifolia	I
38	Loblolly Pine	Pinus taeda	III
39	Sweetgum	Liquidambar styraciflua	II
40	Red Maple	Acer rubrum	I
41	Loblolly Pine	Pinus taeda	III
42	Loblolly Pine	Pinus taeda	III
43	Sweetgum	Liquidambar styraciflua	II
44	Loblolly Pine	Pinus taeda	III
45	Southern Magnolia	Magnolia grandiflora	I
46	Loblolly Pine	Pinus taeda	III
47	Southern Magnolia	Magnolia grandiflora	I
48	Loblolly Pine	Pinus taeda	III
49	Yellow Poplar	Liriodendron tulipifera	I
50	Loblolly Pine	Pinus taeda	III
51	Sweetgum	Liquidambar styraciflua	II
52	Southern Magnolia	Magnolia grandiflora	I
53	Loblolly Pine	Pinus taeda	III
54	Loblolly Pine	Pinus taeda	III
55	Red Maple	Acer rubrum	I
56	Loblolly Pine	Pinus taeda	III
57	Sweetgum	Liquidambar styraciflua	II
58	Laurel Oak	Quercus laurifolia	I
59	Loblolly Pine	Pinus taeda	III
60	Loblolly Pine	Pinus taeda	III
61	Red Maple	Acer rubrum	I
62	Loblolly Pine	Pinus taeda	III
63	Southern Magnolia	Magnolia grandiflora	I
64	Loblolly Pine	Pinus taeda	III
65	Southern Magnolia	Magnolia grandiflora	I

*ALL TREES A MINIMUM OF 2" DBH

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TRAFFIC _____	_____
FIRE _____	_____



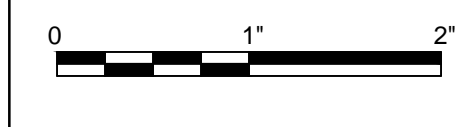
HDR Engineering Inc.
of the Carolinas
NC BELS License # F-0116
101 N. Third Street
Wilmington NC, 28401
910-398-9020

ISSUE	DATE	DESCRIPTION
0	10/2018	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	G. ERIC WILLIAMS, PE
DESIGNED BY	J. VANDENBOSCH, PE
CHECKED BY	
DRAWN BY	
PROJECT NUMBER	100075083



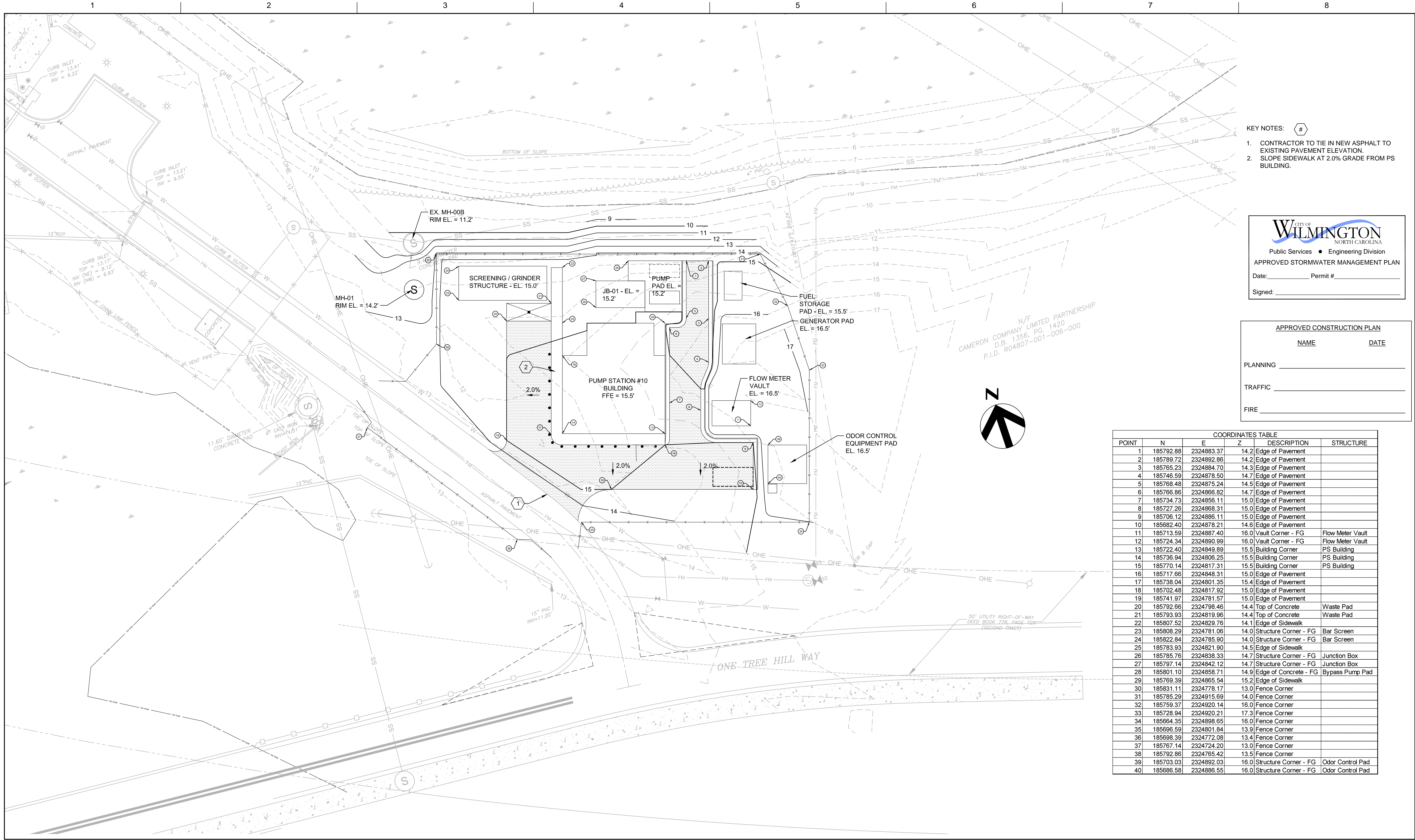
PUMP STATION #10 REPLACEMENT



TREE PLAN

FILENAME | 00C-01C.dwg
SCALE | 1" = 20'

SHEET
01C-01A



- KEY NOTES: #
- CONTRACTOR TO TIE IN NEW ASPHALT TO EXISTING PAVEMENT ELEVATION.
 - SLOPE SIDEWALK AT 2.0% GRADE FROM PS BUILDING.

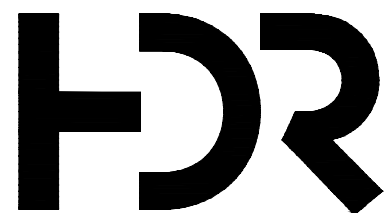
WILMINGTON
NORTH CAROLINA
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

APPROVED CONSTRUCTION PLAN

NAME	DATE
PLANNING	_____
TRAFFIC	_____
FIRE	_____

COORDINATES TABLE

POINT	N	E	Z	DESCRIPTION	STRUCTURE
1	185792.88	2324883.37	14.2	Edge of Pavement	
2	185789.72	2324892.86	14.2	Edge of Pavement	
3	185765.23	2324884.70	14.3	Edge of Pavement	
4	185746.59	2324878.50	14.7	Edge of Pavement	
5	185768.48	2324875.24	14.5	Edge of Pavement	
6	185766.86	2324866.82	14.7	Edge of Pavement	
7	185734.73	2324856.11	15.0	Edge of Pavement	
8	185727.26	2324868.31	15.0	Edge of Pavement	
9	185706.12	2324866.11	15.0	Edge of Pavement	
10	185682.40	2324878.21	14.6	Edge of Pavement	
11	185713.59	2324887.40	16.0	Vault Corner - FG	Flow Meter Vault
12	185724.34	2324890.99	16.0	Vault Corner - FG	Flow Meter Vault
13	185722.40	2324849.89	15.5	Building Corner	PS Building
14	185736.94	2324806.25	15.5	Building Corner	PS Building
15	185770.14	2324817.31	15.5	Building Corner	PS Building
16	185717.66	2324848.31	15.0	Edge of Pavement	
17	185738.04	2324801.35	15.4	Edge of Pavement	
18	185702.48	2324817.92	15.0	Edge of Pavement	
19	185741.97	2324781.57	15.0	Edge of Pavement	
20	185792.66	2324798.46	14.4	Top of Concrete	Waste Pad
21	185793.93	2324819.96	14.4	Top of Concrete	Waste Pad
22	185807.52	2324829.76	14.1	Edge of Sidewalk	
23	185808.29	2324781.06	14.0	Structure Corner - FG	Bar Screen
24	185822.84	2324785.90	14.0	Structure Corner - FG	Bar Screen
25	185783.93	2324821.90	14.5	Edge of Sidewalk	
26	185785.76	2324838.33	14.7	Structure Corner - FG	Junction Box
27	185797.14	2324842.12	14.7	Structure Corner - FG	Junction Box
28	185801.10	2324858.71	14.9	Edge of Concrete - FG	Bypass Pump Pad
29	185769.39	2324865.54	15.2	Edge of Sidewalk	
30	185831.11	2324778.17	13.0	Fence Corner	
31	185785.29	2324915.69	14.0	Fence Corner	
32	185759.37	2324920.14	16.0	Fence Corner	
33	185728.84	2324920.21	17.3	Fence Corner	
34	185664.35	2324898.65	16.0	Fence Corner	
35	185696.59	2324801.84	13.9	Fence Corner	
36	185698.39	2324772.08	13.4	Fence Corner	
37	185767.14	2324724.20	13.0	Fence Corner	
38	185792.86	2324765.42	13.5	Fence Corner	
39	185703.03	2324892.03	16.0	Structure Corner - FG	Odor Control Pad
40	185686.58	2324886.55	16.0	Structure Corner - FG	Odor Control Pad



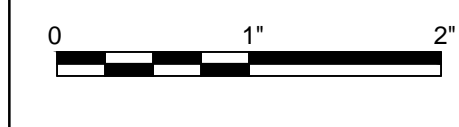
HDR Engineering Inc.
of the Carolinas
NC BELS License # F-0116
101 N. Third Street
Wilmington NC, 28401
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DESIGNED BY	J. VANDENBOSCH, PE
CHECKED BY	M. KASPER, PE
DRAWN BY	
PROJECT NUMBER	100075083

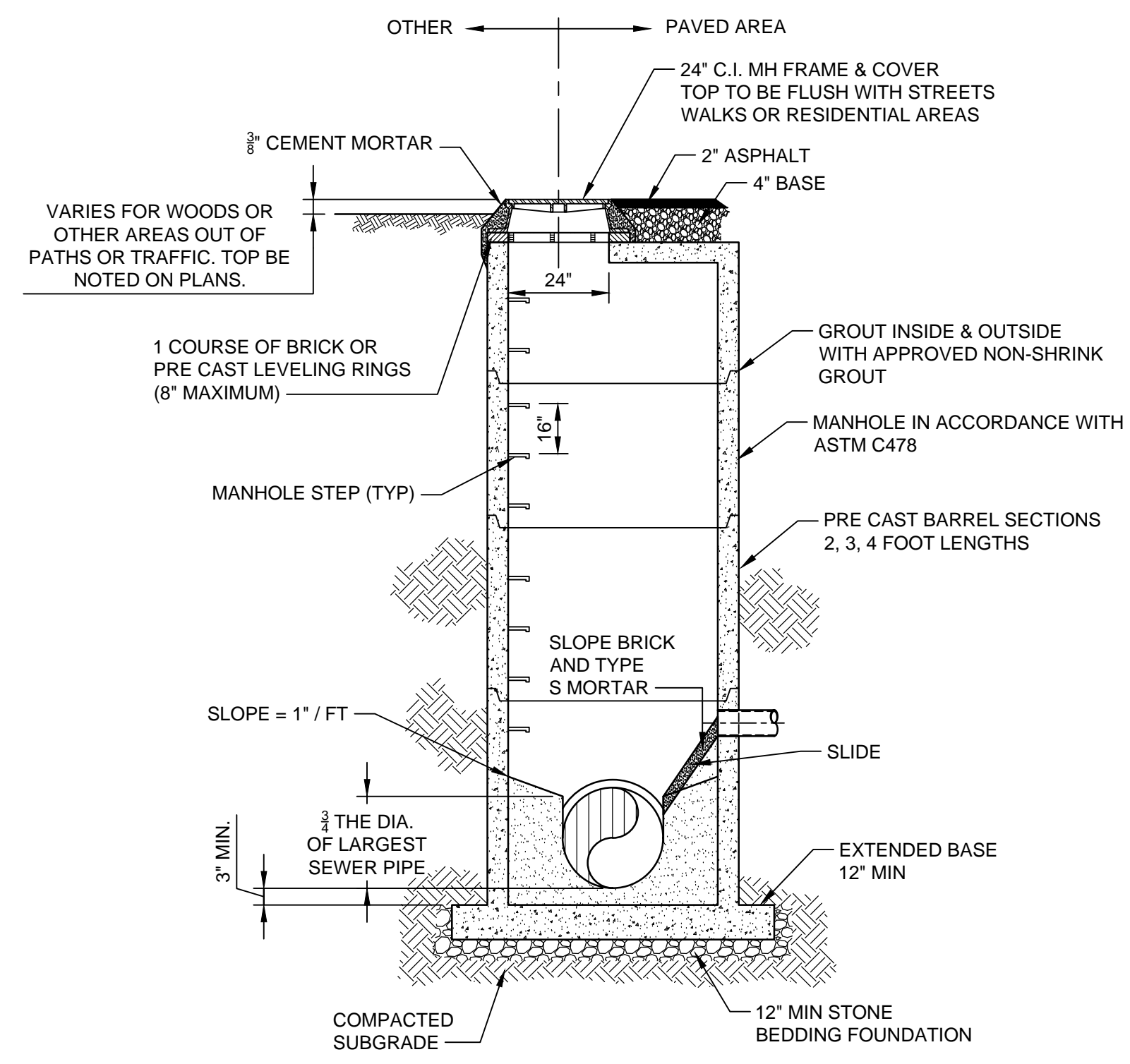


PUMP STATION #10 REPLACEMENT

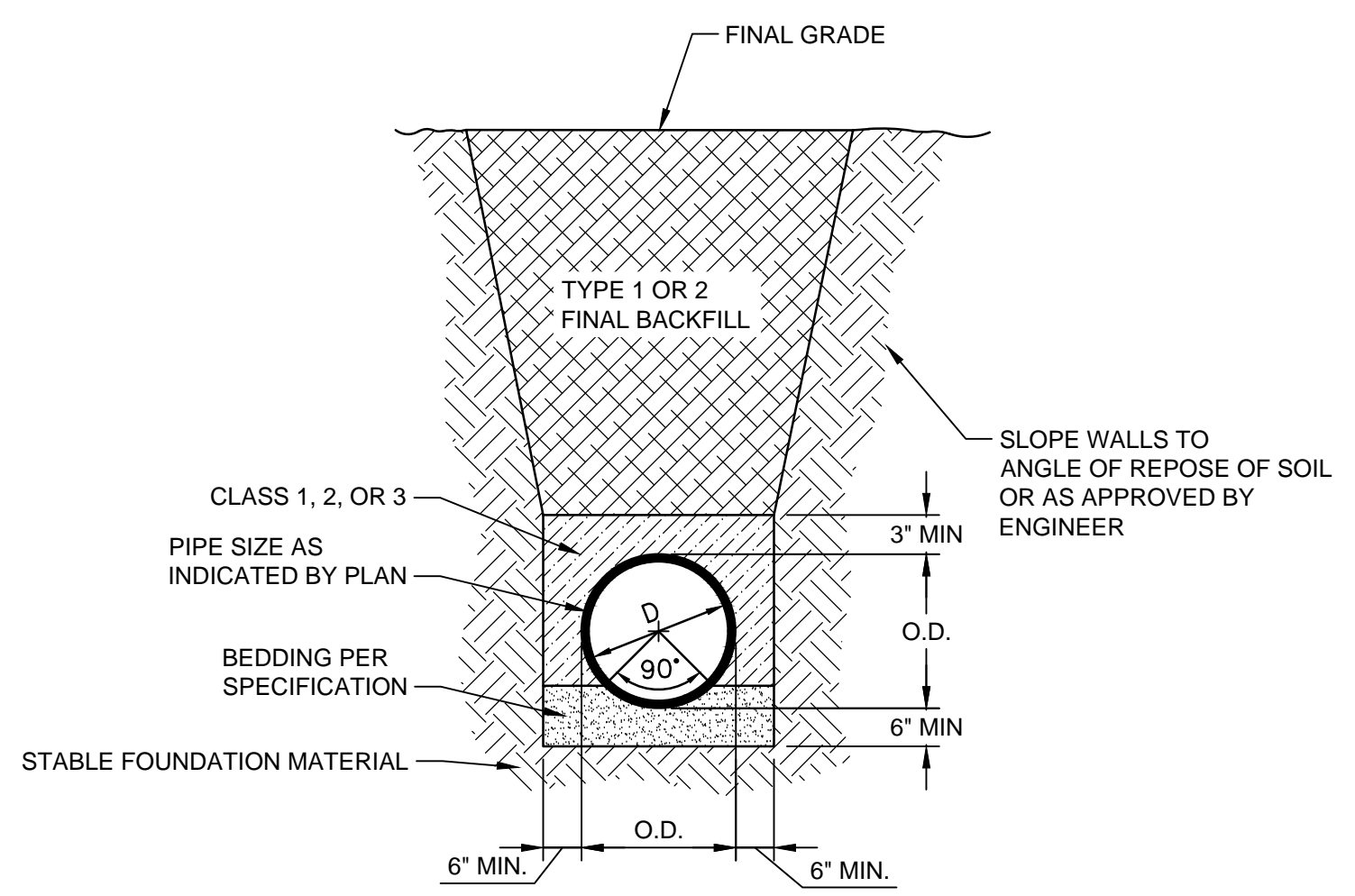


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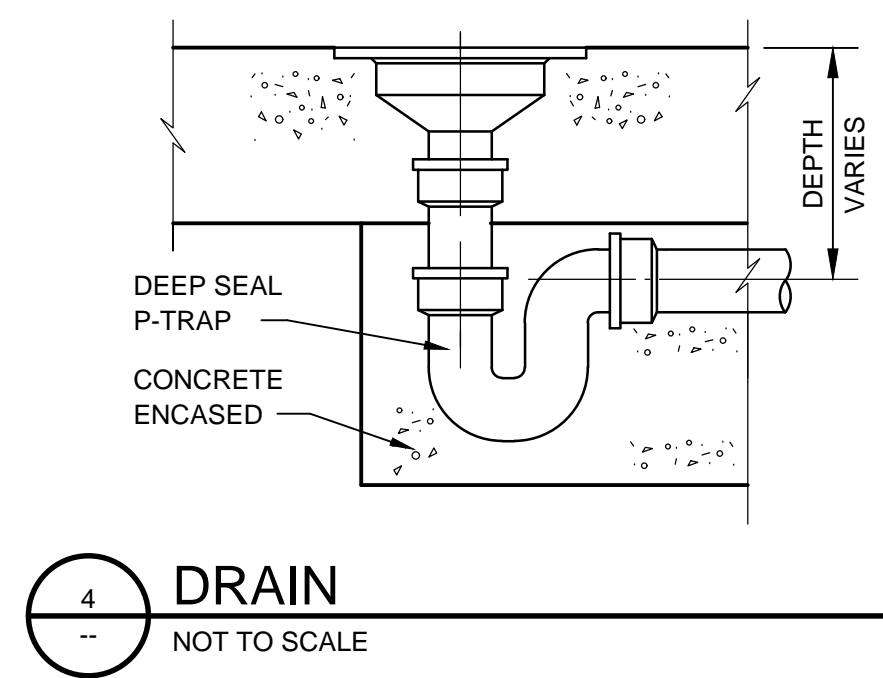
SHEET
01C-02



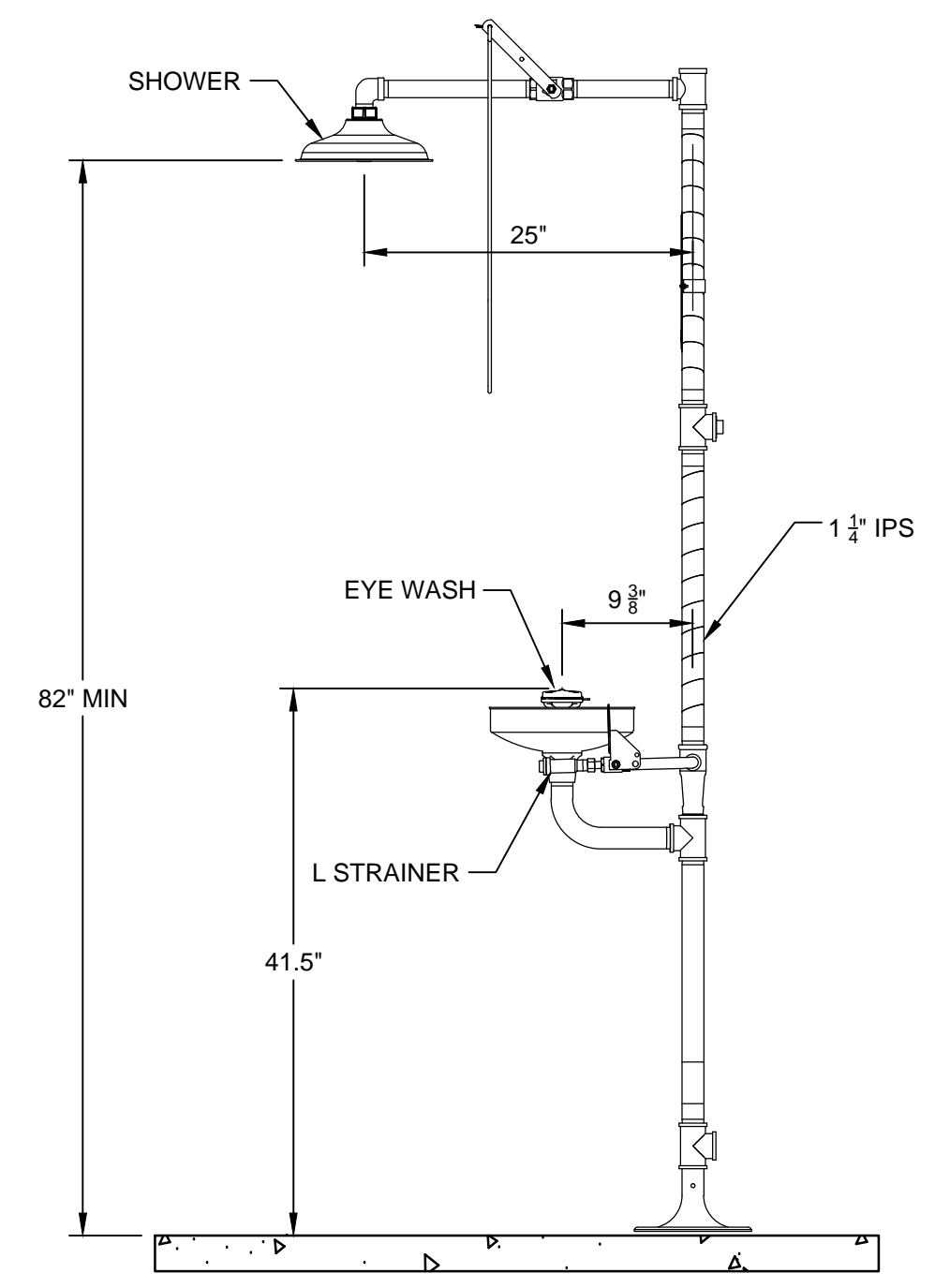
1 PRECAST MANHOLE - FLAT TOP
NOT TO SCALE



3 PIPE TRENCH DETAIL
NOT TO SCALE

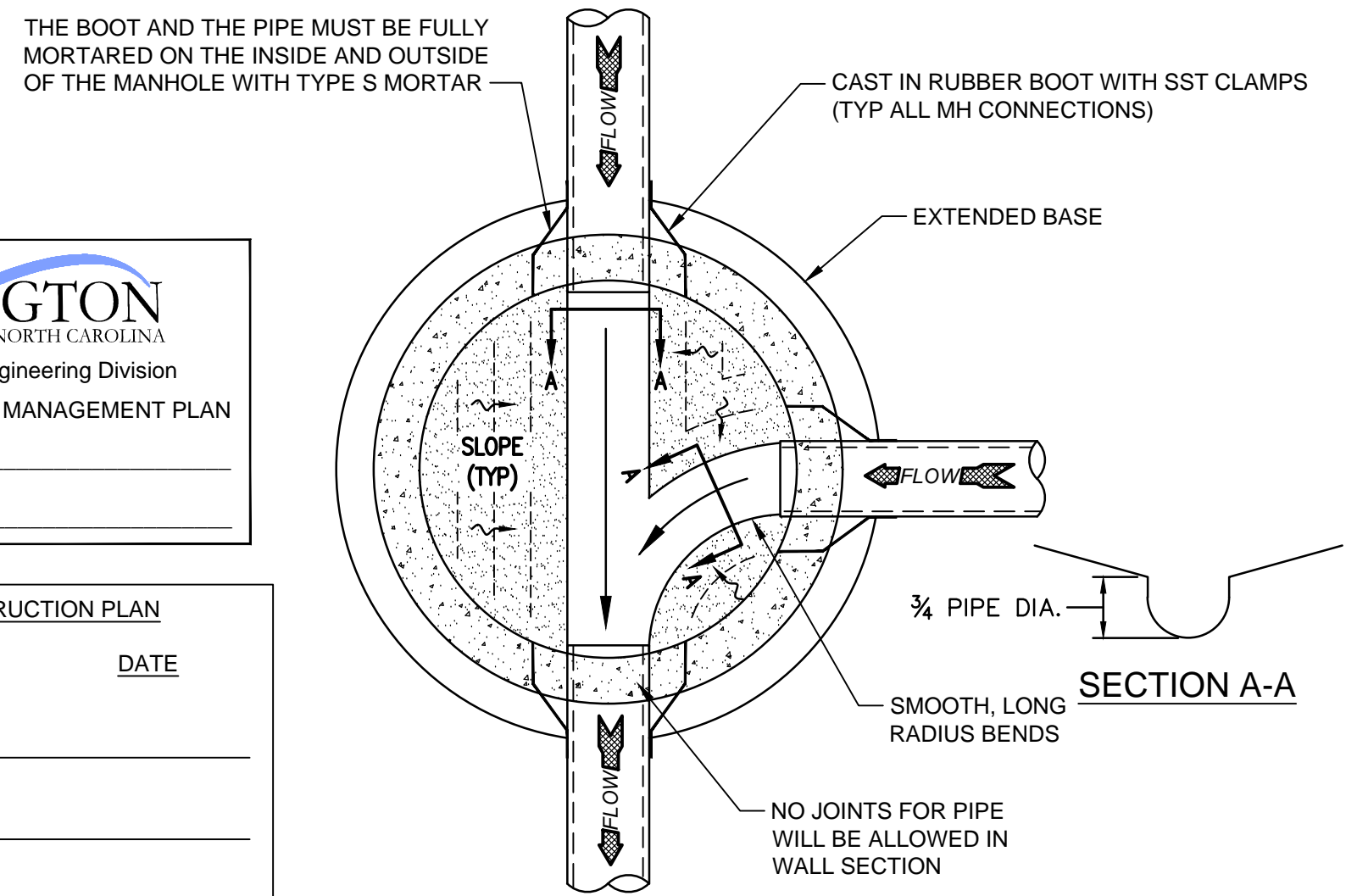


4 DRAIN
NOT TO SCALE

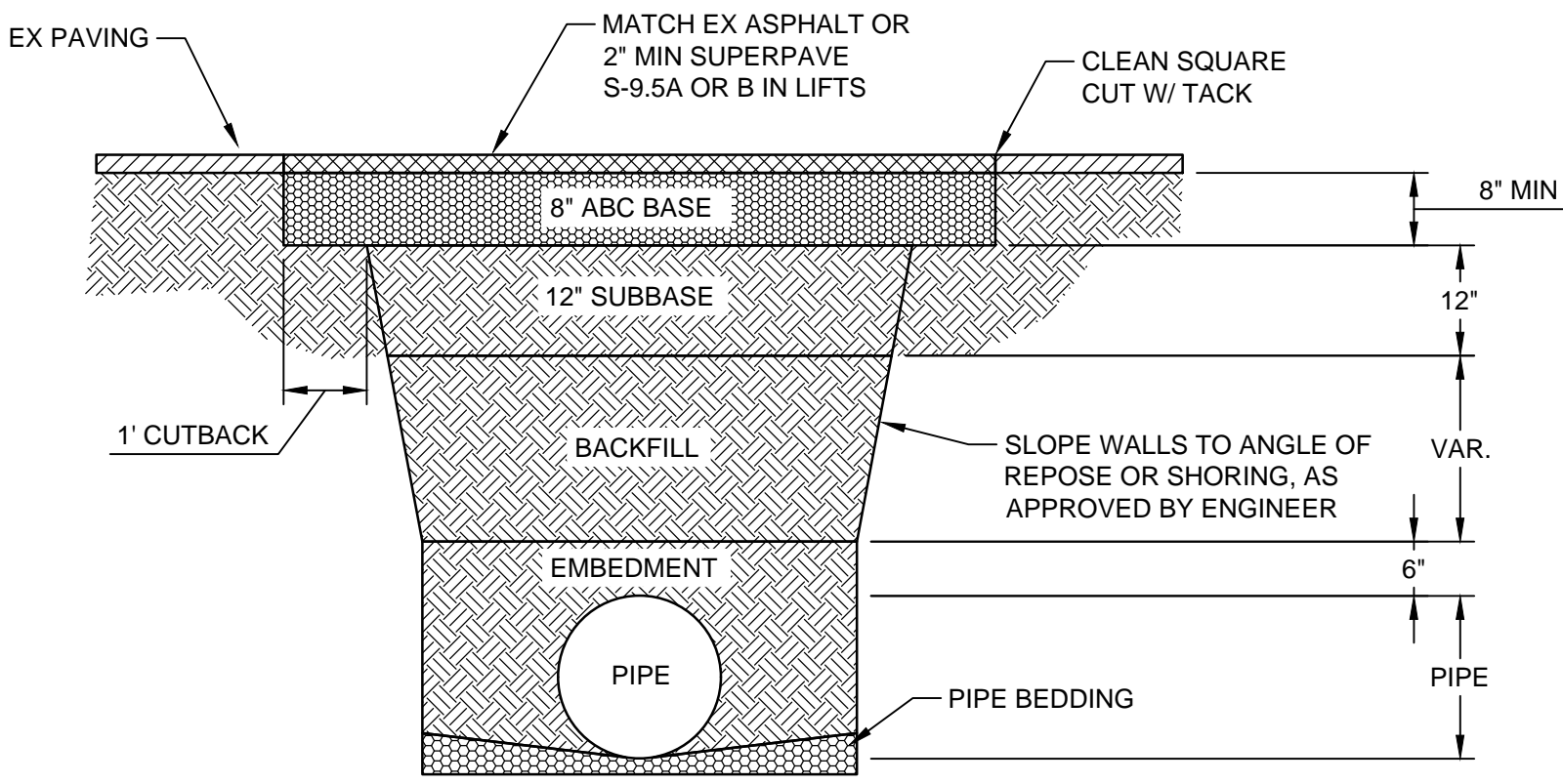


6 SHOWER AND EYE WASH STATION
NOT TO SCALE

NOTES:
1. DIMENSIONS ARE APPROXIMATE AND MAY VARY BASED ON MANUFACTURER.
2. UNIT SHALL COMPLY WITH ANSI Z358.1, MOST CURRENT VERSION.

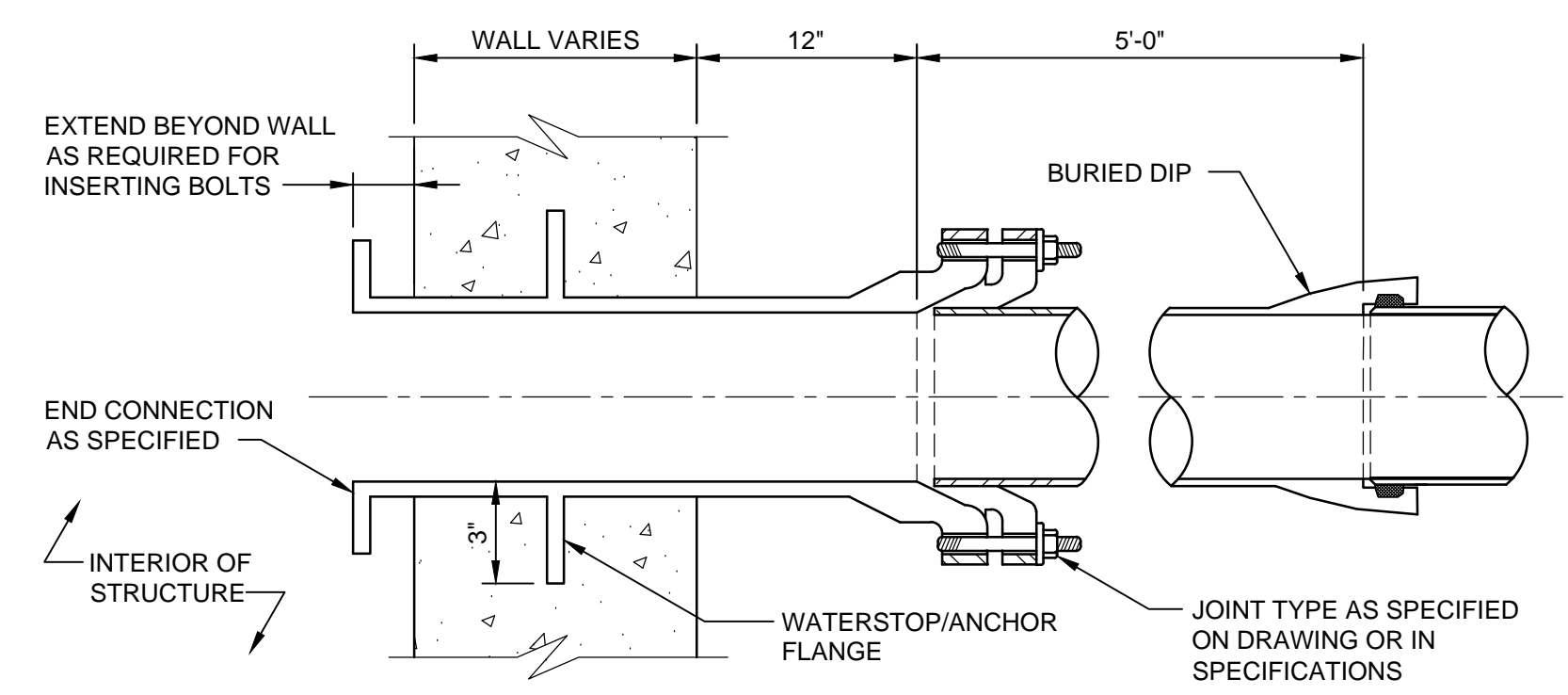


2 MANHOLE FLOOR PLAN
NOT TO SCALE



5 ASPHALT OPEN CUT SECTION
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 OWNER TO ACHIEVE COMPACTION, (IE #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC.)
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY OF WILMINGTON STREETS.
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MIN LIFTS.
5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (IE JUMPING JACK), HOWEVER, VIBRATORY ROLLERS GREATER THAN 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.



7 CAST IN PLACE WALL PENETRATION
NOT TO SCALE

NOTE:
TYPICAL PENETRATION OF BURIED DIP THROUGH CONCRETE CAST-IN-PLACE STRUCTURE UNLESS OTHERWISE INDICATED.

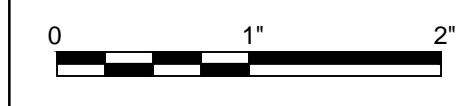
CITY OF WILMINGTON
NORTH CAROLINA
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
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APPROVED CONSTRUCTION PLAN	
NAME	DATE
PLANNING	_____
TRAFFIC	_____
FIRE	_____

PROJECT MANAGER	G. ERIC WILLIAMS, PE
DESIGNED BY	J. VANDENBOSCH, PE
CHECKED BY	M. KASPER, PE
DRAWN BY	
PROJECT NUMBER	100075083

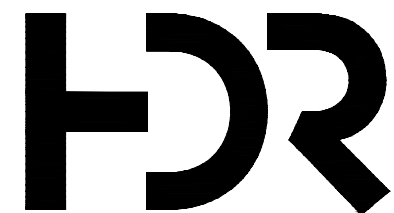


PUMP STATION #10 REPLACEMENT



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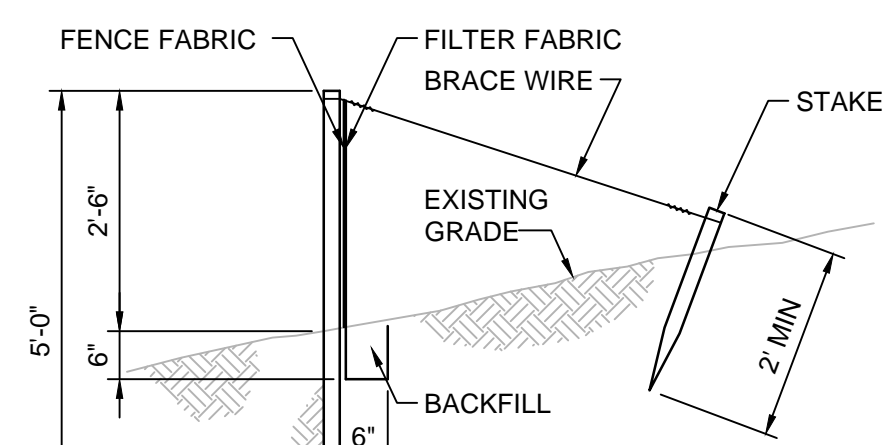
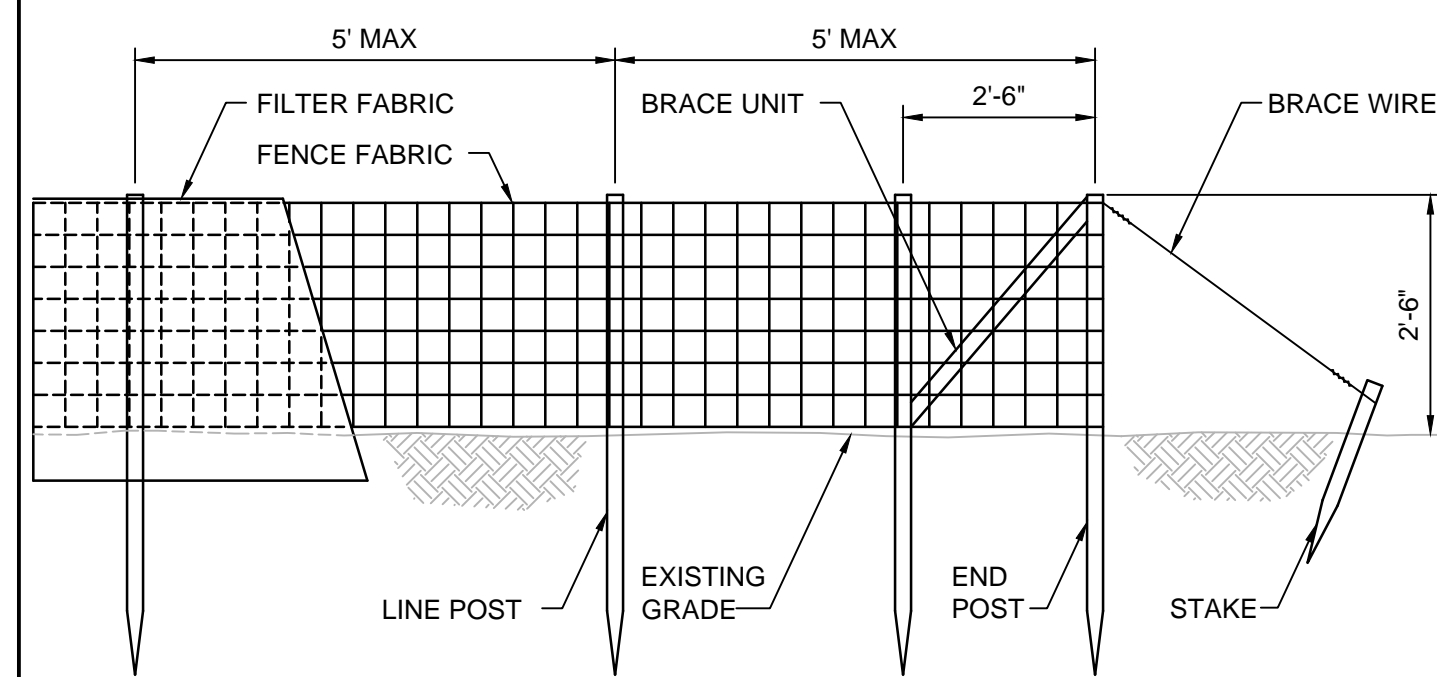
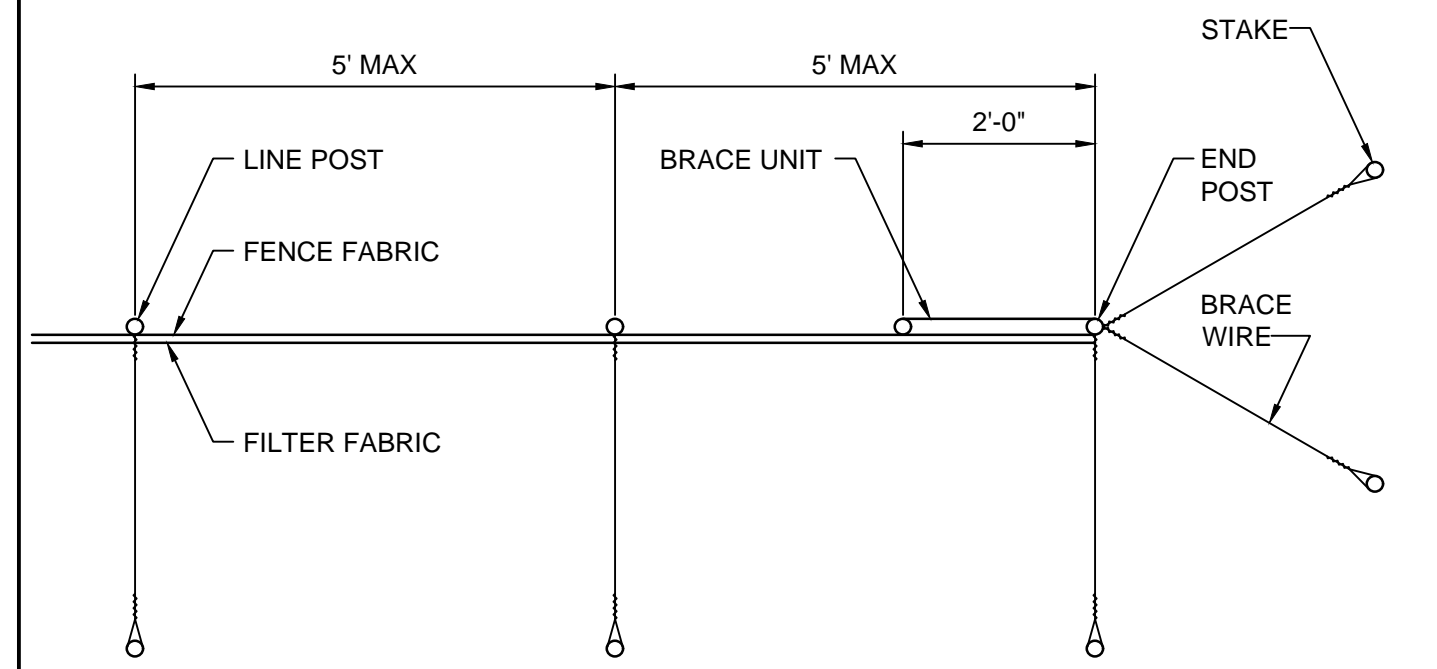
SHEET
99C-01



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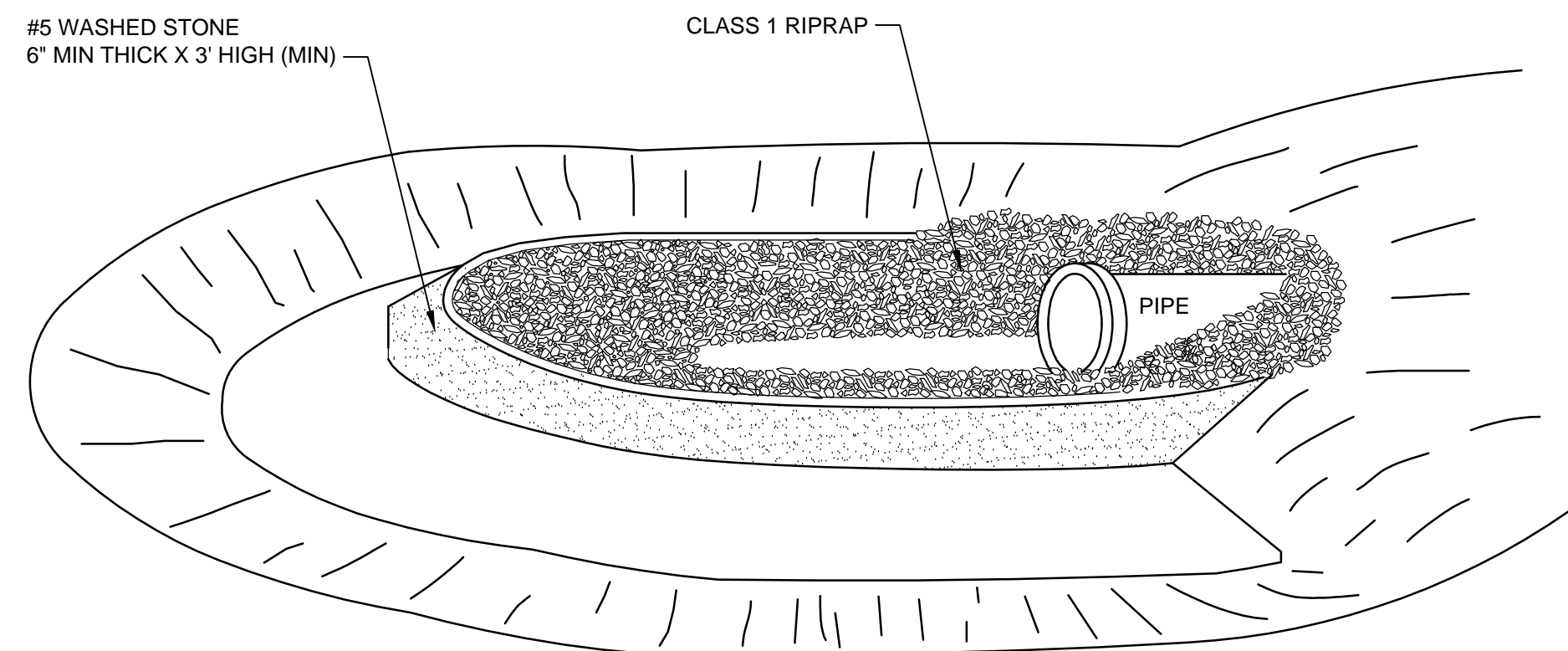
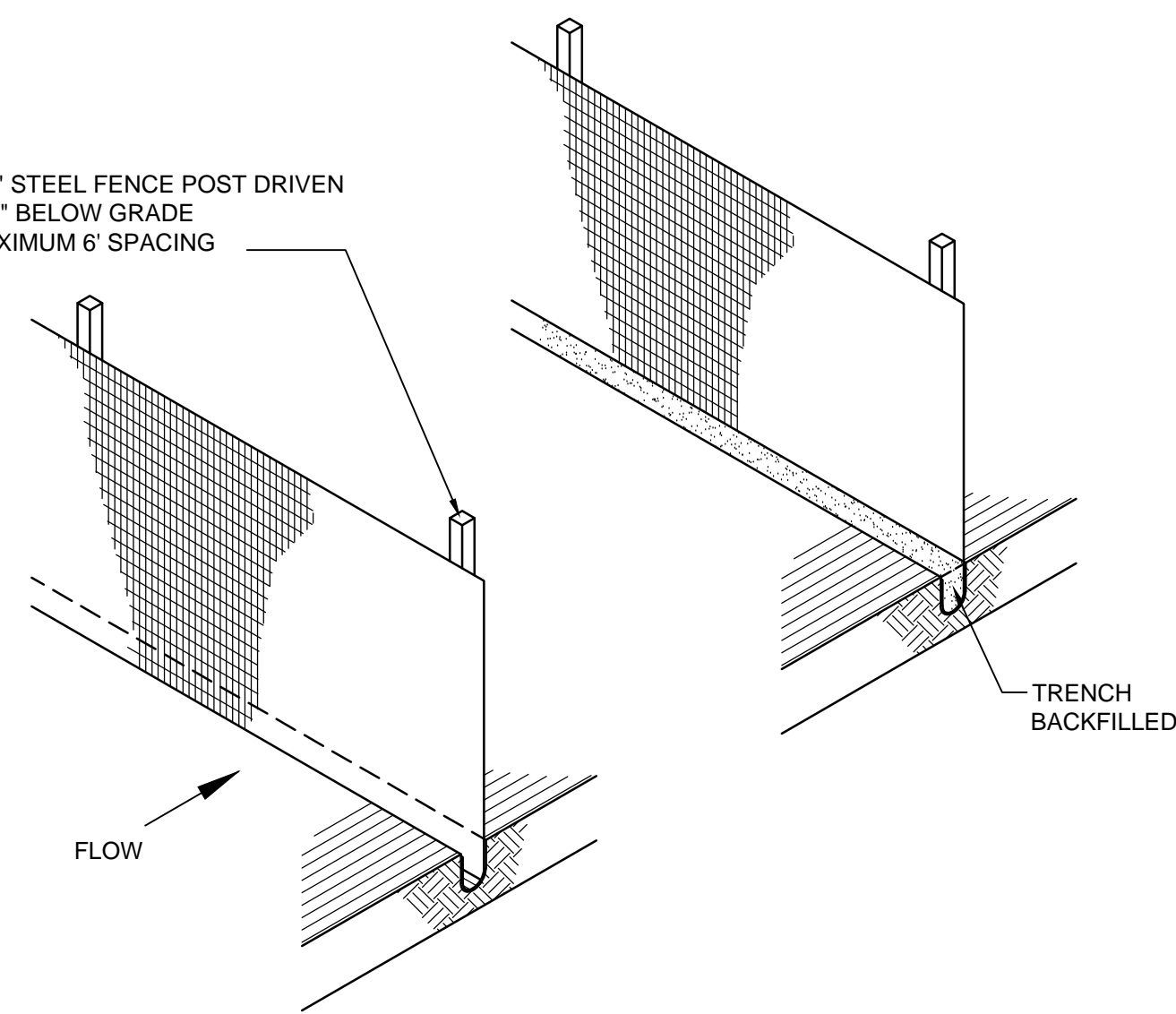
ISSUE	DATE	DESCRIPTION
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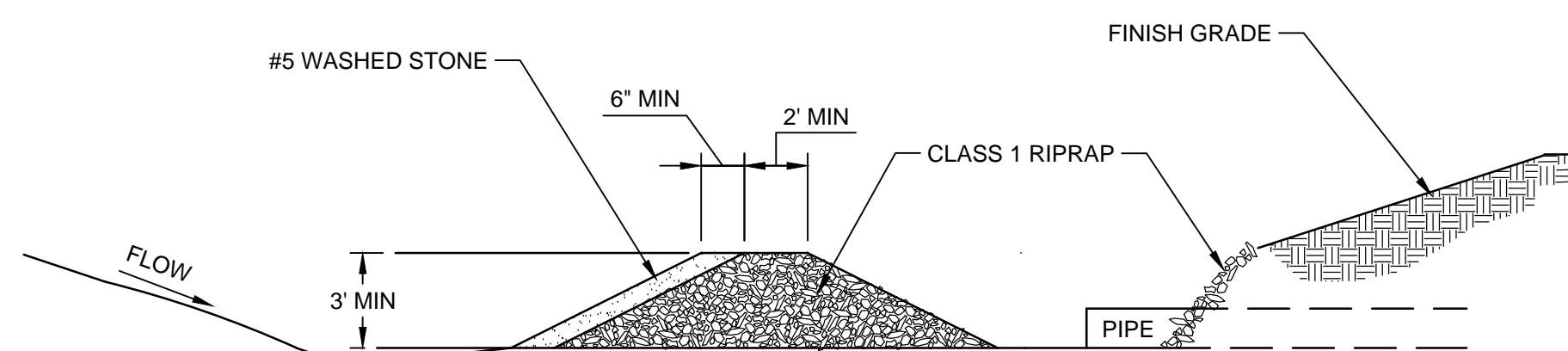


1 SILT FENCE
NOT TO SCALE

- NOTES:**
- STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE.
 - SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
 - THE TRENCH SHOULD BE A MINIMUM OF 6" DEEP AND 3"-4" WIDE TO ALLOW FOR THE SILT FENCE TO BE PLACED IN THE GROUND AND BACKFILLED.
 - SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POSTS.
 - INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
 - SILT FENCE SHALL BE REMOVED WHEN IT HAS SERVED ITS USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
 - SEDIMENT TRAPPED BY THIS PRACTICE SHALL BE UNIFORMLY DISTRIBUTED ON THE SOURCE AREA PRIOR TO TOPSOILING.

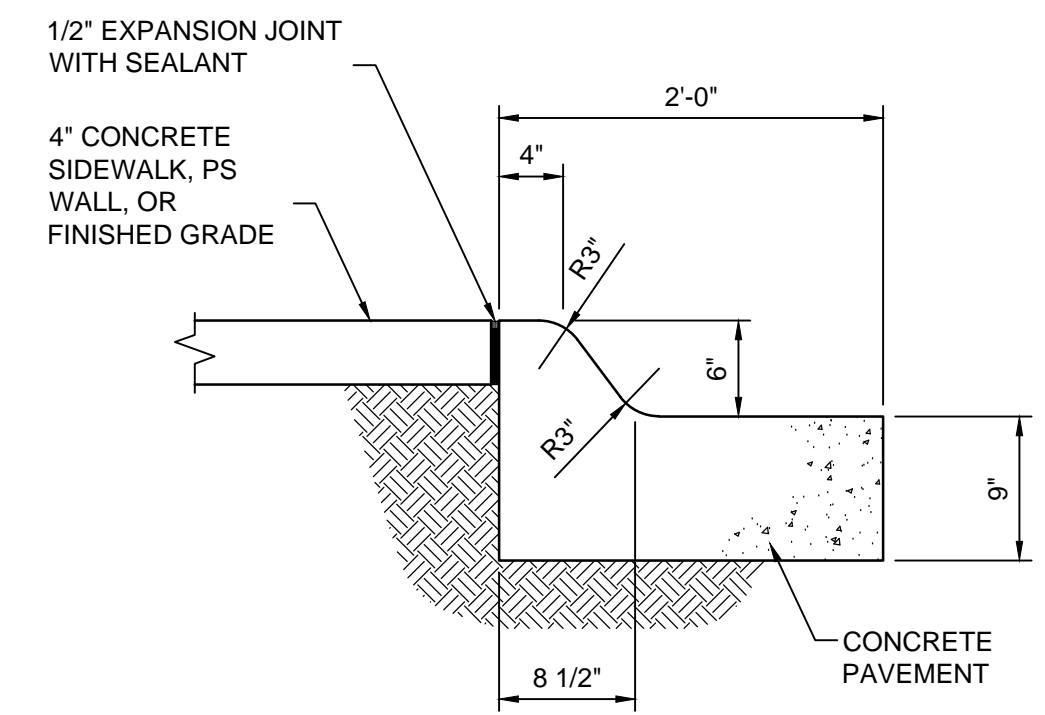


PERSPECTIVE VIEW

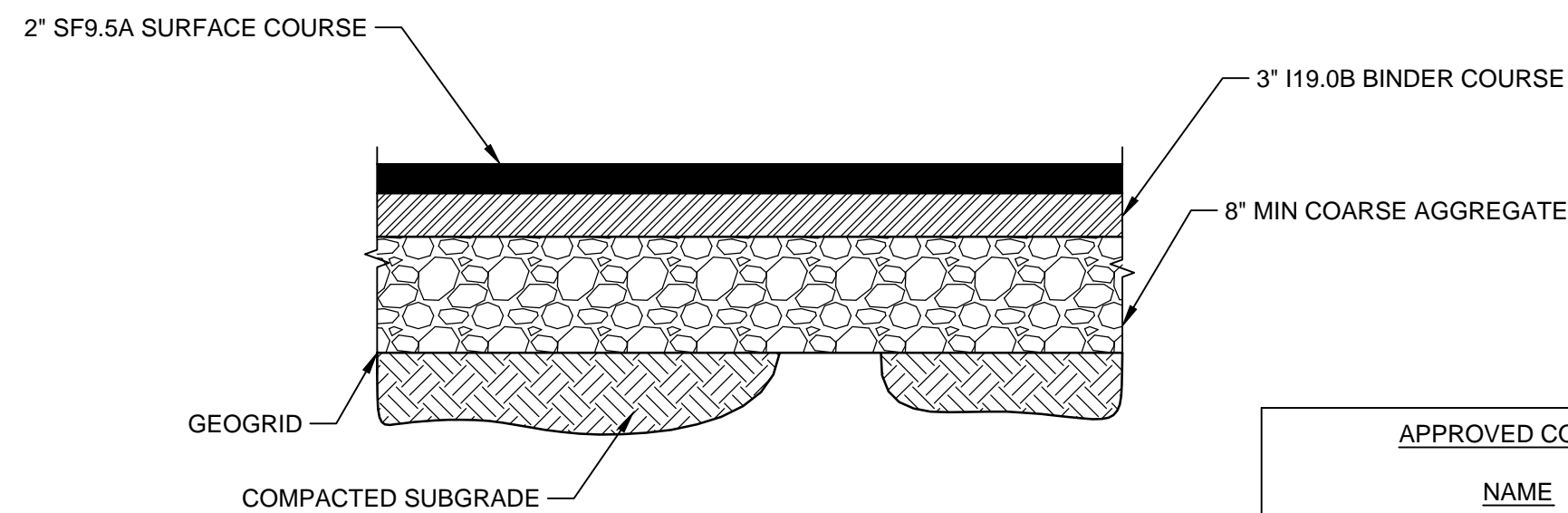


SECTION

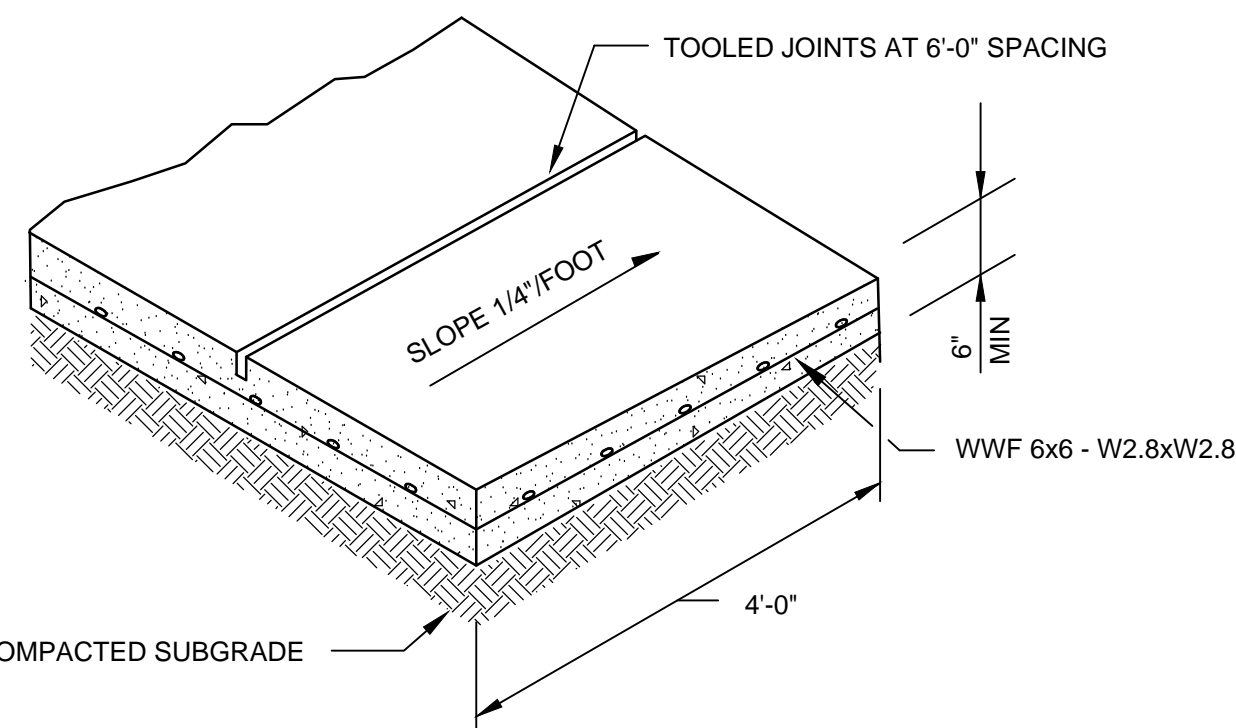
4 GRAVEL FILTER BERM
NOT TO SCALE



5 CURB AND GUTTER
NOT TO SCALE



2 ASPHALT PAVING SECTION
NOT TO SCALE



AT ALL UTILITY POLES METER BOXES ETC, PROVIDE 1/2" PREMOLDED JT FILLER (FULL DEPTH) ALL AROUND.

PLACE 3/4" INCH PREFORMED EXPANSION JOINTS AT INTERVALS OF 20 FEET AND AT ALL JUNCTIONS WITH PREVIOUSLY PLACED SIDEWALKS, CURBS OR OTHER STRUCTURES. SEAL SIDEWALK JOINTS WITH POLYURETHANE SEALANT.

DEPTH OF TOOLED JOINT SHALL BE EQUAL TO 1/4 x HEIGHT.

3 CONCRETE SIDEWALK
NOT TO SCALE

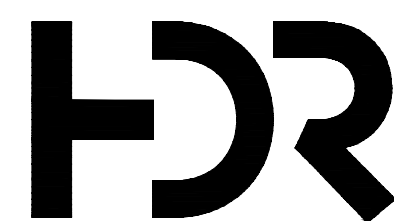
APPROVED CONSTRUCTION PLAN

NAME	DATE
PLANNING _____	_____
TRAFFIC _____	_____
FIRE _____	_____

PERMANENT SEEDING			TEMPORARY SEEDING ALL AREAS		
SEASON	TYPE	RATE (LBS/AC)	SEASON	TYPE	RATE (LBS/AC)
FALL/SPRING	TALL FESCUE	80	ALL	RYE (GRAIN)	120
	BERMUDA	50		KOBE LESPEDEZA	50
	KOBE LESPEDEZA	40			
SUMMER	BERMUDA	50			
	CENTIPEDE	5			
	GERMAN MILLET	10			

- SEEDING NOTES:**
- APPLY LIMESTONE AT A RATE OF 4,000 LBS PER AC AND FERTILIZER, 5-10-5, AT A RATE OF 500 LBS PER AC.
 - PROVIDE MULCH AT A RATE OF 4 TO 5 STRAWS IN DEPTH OR 1.5 TONS PER AC.
 - SEE SPECIFICATION SECTION 31 25 00 FOR ADDITIONAL REQUIREMENTS.

6 SEEDING SCHEDULE
NOT TO SCALE



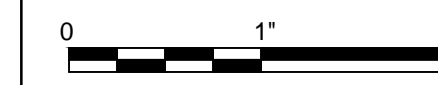
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ISSUE	DATE	DESCRIPTION
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CHECKED BY M. KASPER, PE
DRAWN BY _____
PROJECT NUMBER 100075083



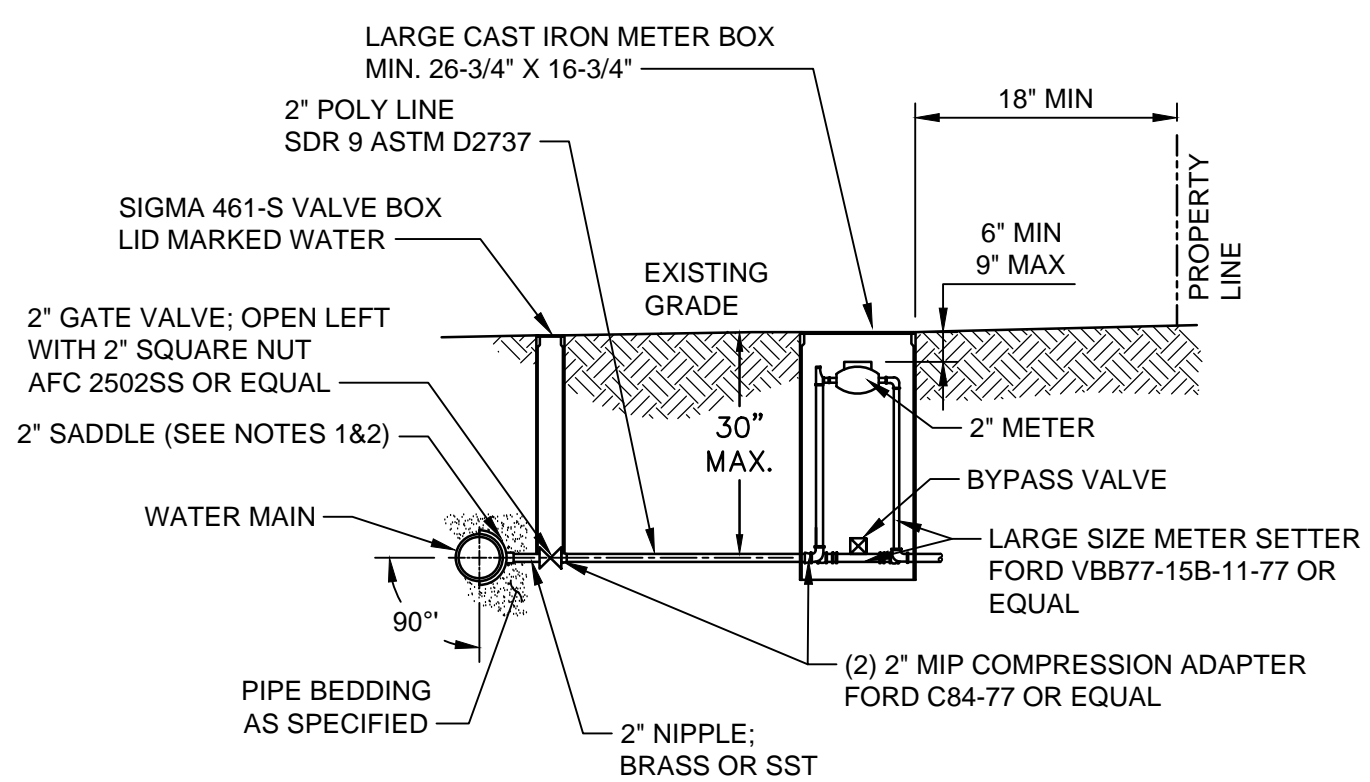
PUMP STATION #10 REPLACEMENT



CIVIL DETAILS

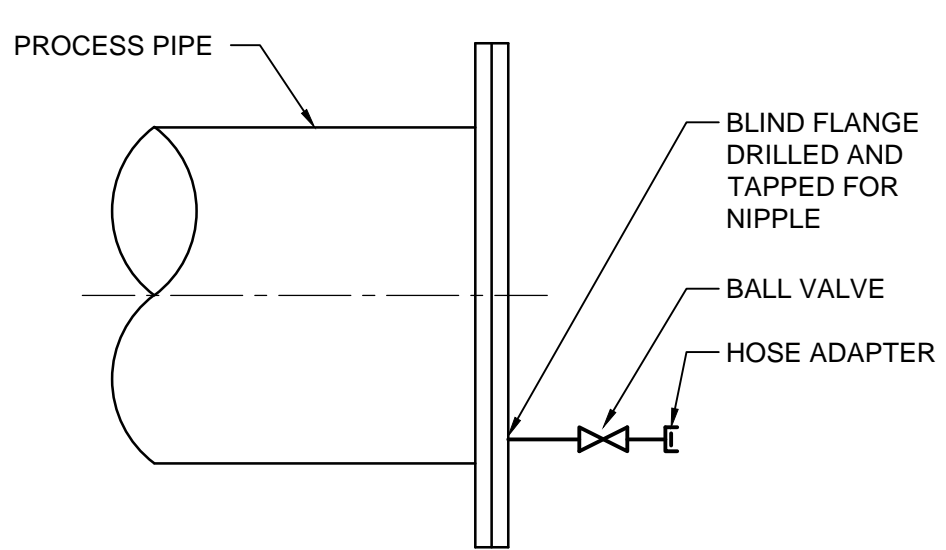
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SCALE 1/4" = 1'0"

SHEET
99C-02



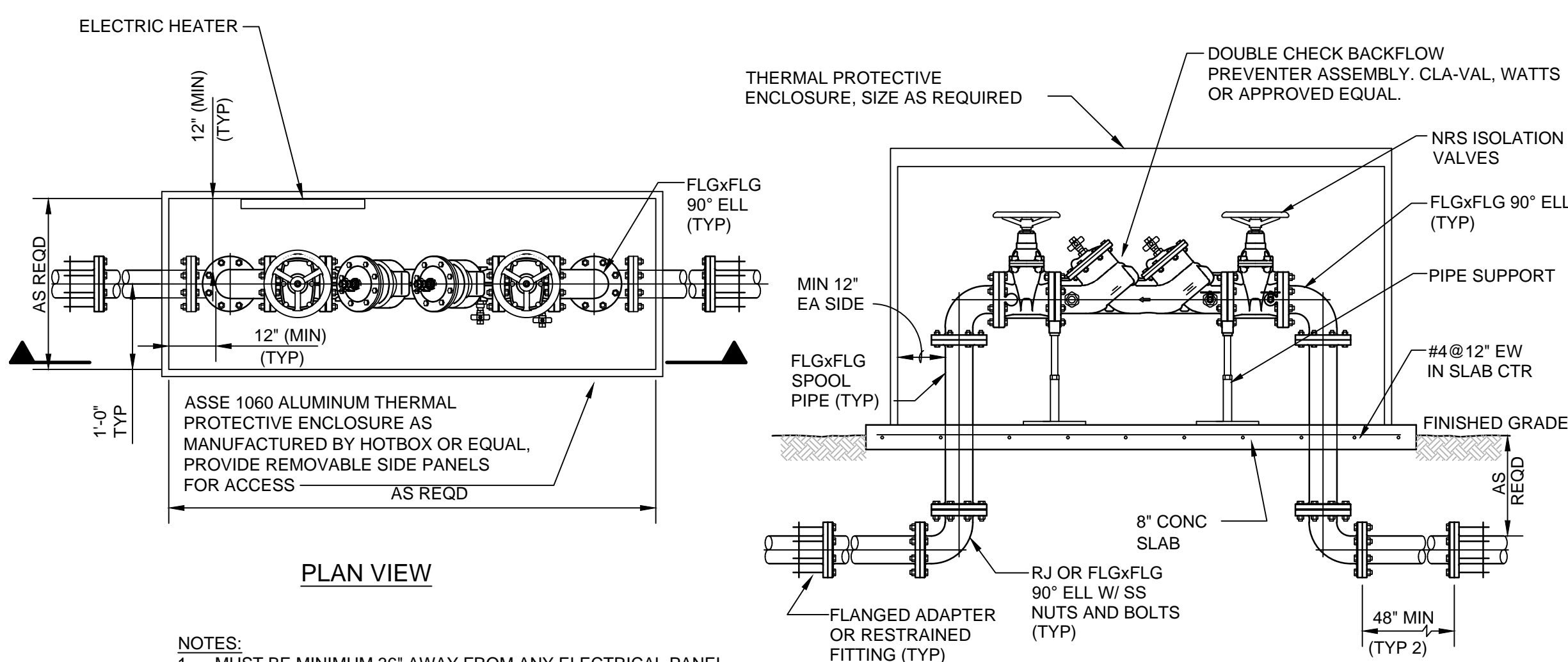
- NOTES:**
- ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
 - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: MCDONALD 3800, FORD S90 (DOUBLE STRAP) OR EQUAL.
 - METER BOXES SHALL CONFORM TO ASTM A48, CLASS 30B, AND AASHTO H20 LOADING STANDARDS (OLDCASTLE PRECAST MODEL B1730 OR EQUAL).
 - 3" CLEAN FILL REQUIRED ALL AROUND 2" POLY SERVICE LINE.

1 WATER SERVICE METER ASSEMBLY
NOT TO SCALE



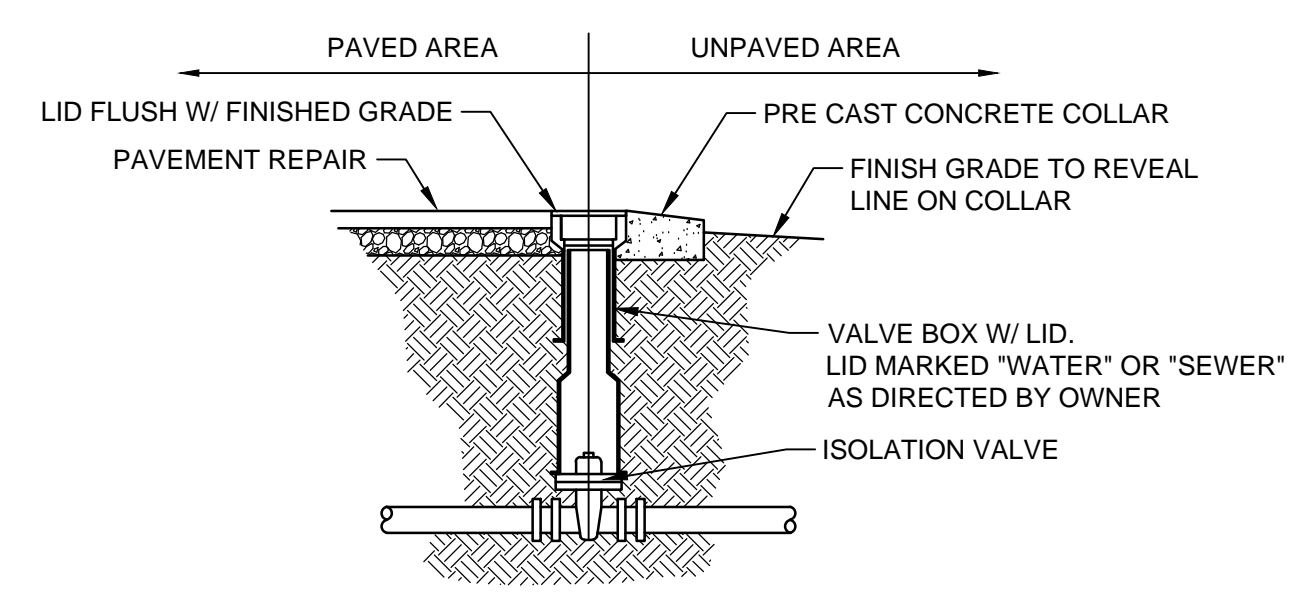
- NOTES:**
- USE TAPPING SADDLE OR WELDED BOSS FOR PIPE LESS THAN 6" DIAMETER OR WHEN REQUIRED BY PIPE WALL THICKNESS. USE TAPPING SADDLE ON ALL NON-METALLIC PIPE.
 - PROVIDE 2-INCH FLUSHING CONNECTION.

4 HOSE FLUSHING CONNECTION
NOT TO SCALE



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

3 DOUBLE CHECK VALVE ASSEMBLY
NOT TO SCALE

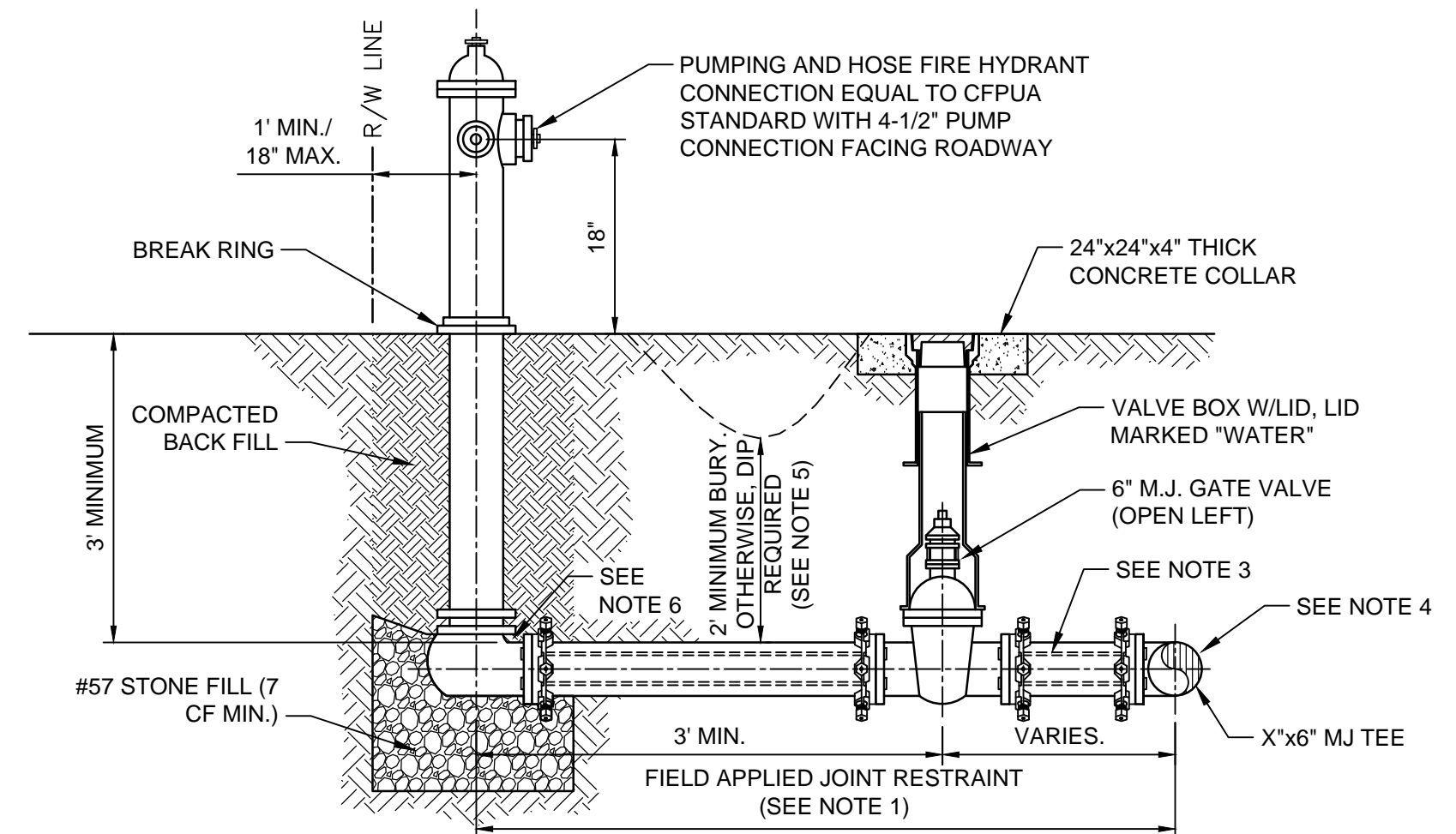


5 BURIED VALVE ASSEMBLY
NOT TO SCALE

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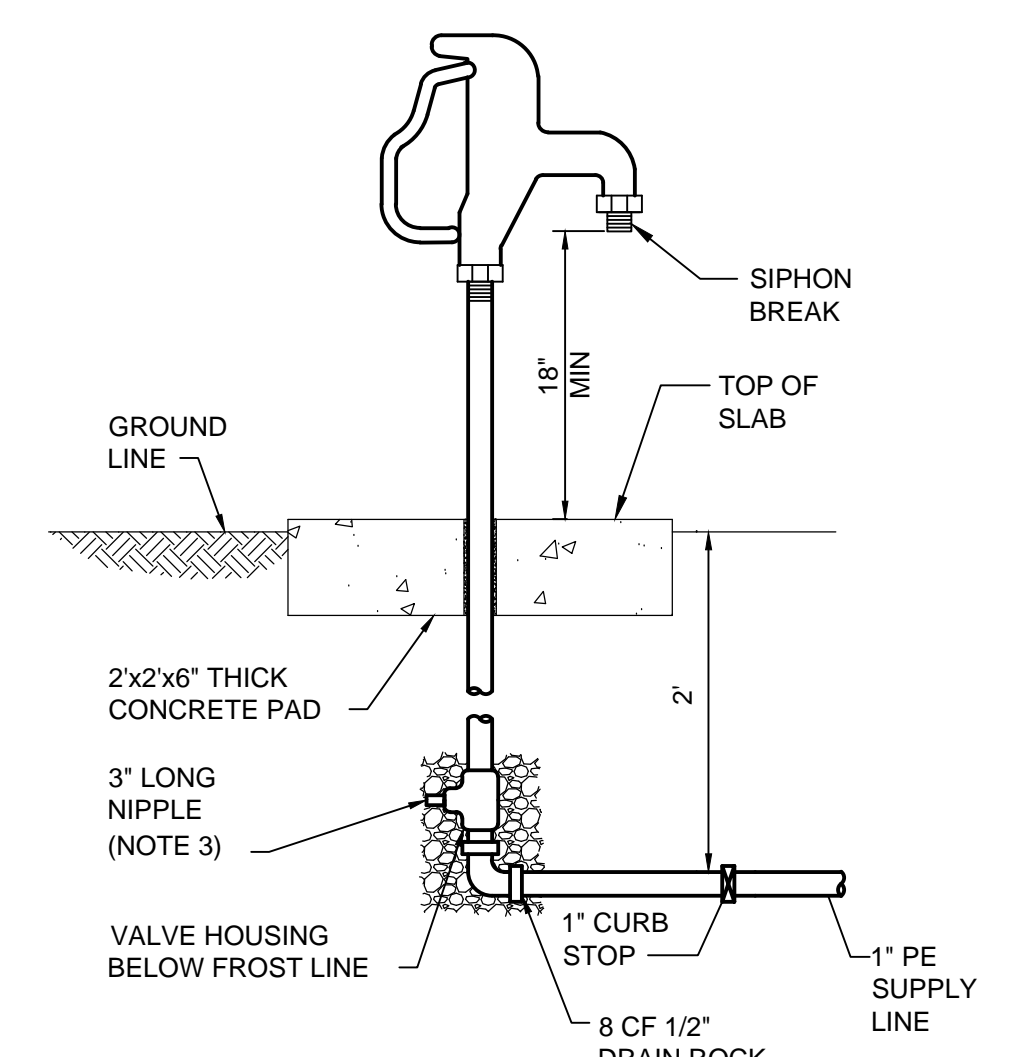
APPROVED CONSTRUCTION PLAN

NAME	DATE
PLANNING	_____
TRAFFIC	_____
FIRE	_____



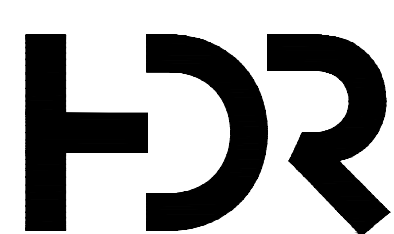
- NOTES:**
- JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI OR C-900 PVC PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
 - WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.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

2 FIRE HYDRANT ASSEMBLY
NOT TO SCALE



- NOTE:**
- NON-FREEZE POST TYPE.
 - HOSE BIBB SHALL ACCOMMODATE STANDARD 3/4" GARDEN HOSE.
 - MATCH DRAIN PORT SIZE PROVIDED BY MANUFACTURER.

6 YARD HYDRANT
NOT TO SCALE



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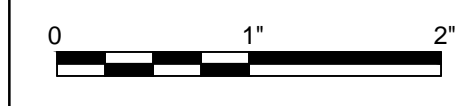
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DESIGNED BY J. VANDENBOSCH, PE
CHECKED BY M. KASPER, PE
DRAWN BY _____

PROJECT NUMBER 100075083



PUMP STATION #10 REPLACEMENT



FILENAME 99C-03.dwg
SCALE 1/4" = 1'0"

SHEET 99C-03

CIVIL DETAILS

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

APPROVED CONSTRUCTION PLAN	
NAME	DATE
PLANNING _____	
TRAFFIC _____	
FIRE _____	

NOTES:

- JOINT MATERIAL TO COMPLY WITH CURRENT NCDOT STANDARDS.
- SANITARY SEWER CLEAN-OUTS, WATER METERS, MANHOLES, AND VALVE LIDS TO BE LOCATED OUTSIDE SIDEWALK WHERE FEASIBLE.
- MINIMUM SIDEWALK WIDTH TO BE 6' MINIMUM IF PLACED AT BACK OF CURB.
- CONCRETE FOR ALL SIDEWALKS (EXCEPT ANY PORTION CONTAIN WITHIN A DRIVEWAY APRON) SHALL BE CLASS "A" - 3,000 PSI.
- MINIMUM REPLACEMENT FOR REPAIRS IS A 5' X 5' PANEL.
- 4" STONE BASE MAY BE REQUIRED FOR POOR SOIL CONDITIONS.
- MINIMUM DEPTH FOR TUNNELING BELOW SIDEWALK IS 12"
- MAX ADJACENT GROUND SLOPE WITHOUT RAILING IS 2:1
- 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.

STANDARD DETAIL
SIDEWALK
 DATE: OCTOBER, 2010
 DRAWN: FB/JSR
 CHECKED: DEC
 SCALE: NOT TO SCALE
CITY OF WILMINGTON
 NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, N.C. 28402
 (910) 341-7807
 SD 3-10

NOTE: REMOVE STAKING WIRES AND POSTS AFTER ONE GROWING SEASON

DECIDUOUS TREE PLANTING DETAIL
 1 1/2" = 1'-0"
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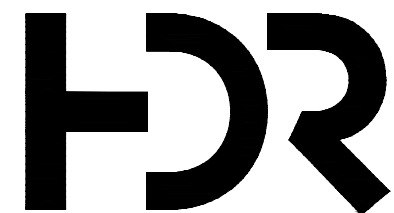
NOTE: REMOVE STAKING WIRES AND POSTS AFTER ONE GROWING SEASON

CONIFEROUS TREE PLANTING DETAIL
 1 1/2" = 1'-0"
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NOTES:

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

STANDARD DETAIL
CURBING
 DATE: AUGUST, 2011
 DRAWN: FB/JSR
 CHECKED: DEC
 SCALE: NOT TO SCALE
CITY OF WILMINGTON
 NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1810
 WILMINGTON, N.C. 28402
 (910) 341-7807
 SD 3-11



HDR Engineering Inc.
 of the Carolinas
 NC BELS License # F-0116
 101 N. Third Street
 Wilmington, NC, 28401
 910-398-9020

ISSUE	DATE	DESCRIPTION
0	10/2018	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	G. ERIC WILLIAMS, PE
DESIGNED BY	J. VANDENBOSCH, PE
CHECKED BY	
DRAWN BY	
PROJECT NUMBER	100075083



PUMP STATION #10 REPLACEMENT



CIVIL DETAILS

FILENAME | 99C-04.dwg
 SCALE | 1/4" = 1'0"

SHEET
99C-04