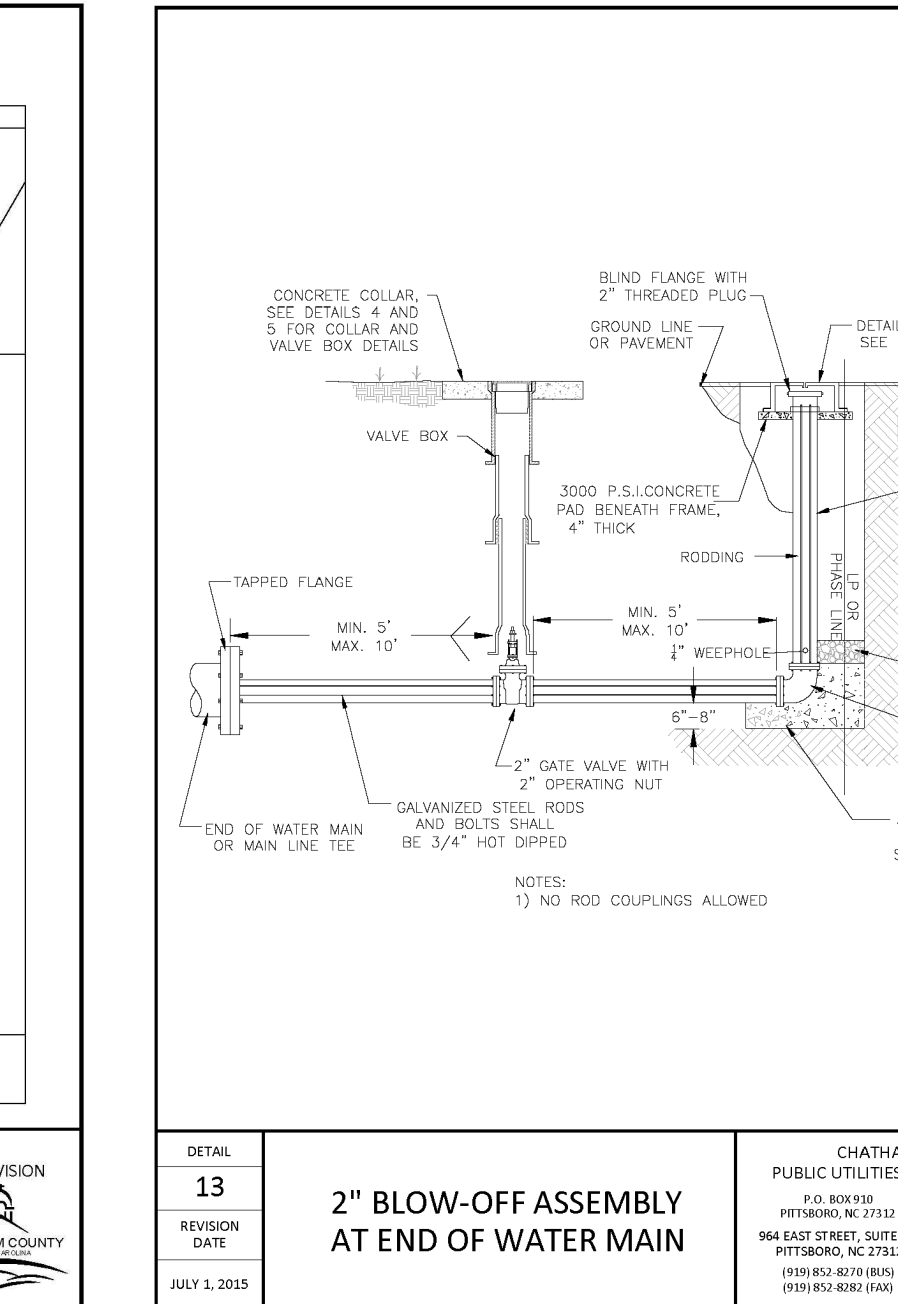
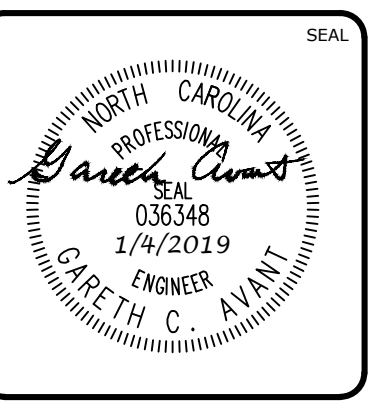
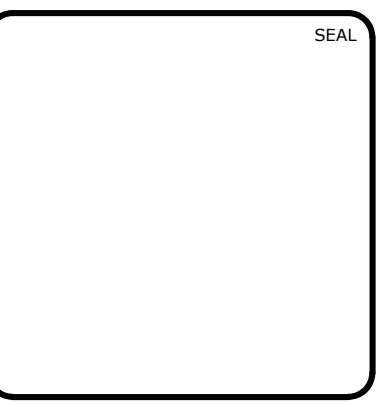


REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.

ALL ANGLES OTHER THAN 90°		90°		45°		30°		15°	
SIZE AND BEARING OF BEND	STAYING PIPE IN	MATERIALLY DIFF. COUPLER	ROD CLAY	DRY PACK	DRY PACK	DRY PACK	DRY PACK	DRY PACK	DRY PACK
8"									
11 1/4"	1,108	1	1	1	1	1	1	2	1
22 1/2"	2,207	1	2	2	1	1	1	3	1
45"	4,398	2	3	3	1	1	2	5	1
90"	7,996	2	4	5	1	1	2	8	1
PLUG	5,855	2	3	4	1	1	2	6	1
8"									
11 1/4"	1,870	1	1	2	1	1	1	2	1
22 1/2"	3,922	1	2	3	1	1	1	4	1
45"	7,084	2	4	5	1	1	2	8	1
90"	14,215	4	8	9	2	2	4	15	2
PLUG	10,053	3	5	6	2	2	3	10	1
12"									
11 1/4"	4,433	2	3	3	1	1	2	5	1
22 1/2"	8,870	3	5	5	2	2	3	9	1
45"	17,312	5	9	11	3	3	5	18	2
90"	31,983	8	18	19	4	4	8	32	4
PLUG	22,619	6	12	14	3	3	5	23	3
16"									
11 1/4"	2,861	2	4	5	1	1	2	8	1
22 1/2"	5,691	4	8	10	2	2	4	18	2
45"	10,779	8	16	19	4	4	8	31	4
90"	20,861	15	29	35	8	8	15	57	6
PLUG	16,213	10	21	25	5	5	10	41	5



REV. NO.	DESCRIPTIONS	DATE
8	STORMWATER POND REVISIONS	2019.01.04
7	REVISIONS PER NCDOT COMMENTS	2018.12.18
6	REVISIONS PER NCDOT COMMENTS	2018.12.13
5	REVISIONS PER NCDOT COMMENTS	2018.12.05
4	REVISIONS PER NCDOT COMMENTS	2018.11.02
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1	INITIAL SUBMITTAL	2018.09.18



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 by Newland COMMUNITIES

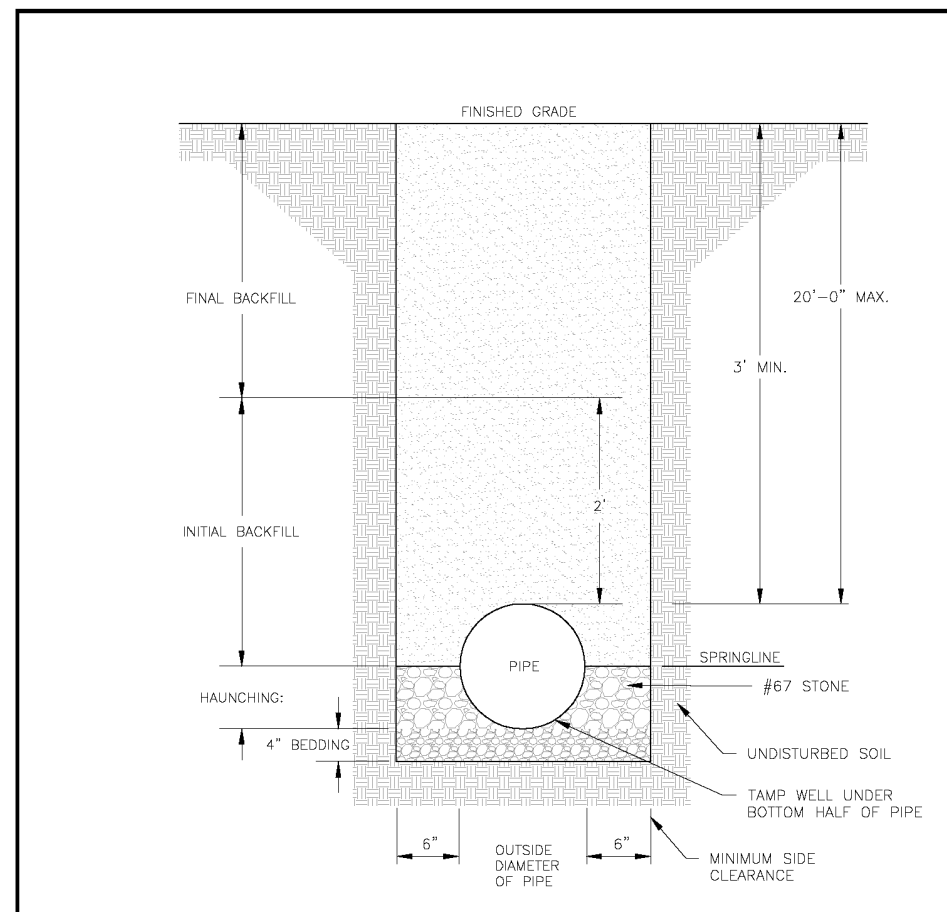
BRIAR CHAPEL BC PHASE 12
 CHATHAM COUNTY, NORTH CAROLINA
 UTILITY DETAILS

DATE: SEPTEMBER 18, 2018
 MCE PROJ. # 02735-0231
 DRAWN: LEG
 DESIGNED: N/A
 CHECKED: GCA
 PROJ. MGR: CHS

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

MFC FILE NUMBER: D3.X
 DRAWING NUMBER: D3.1

STATUS: FINAL DRAWINGS FOR CONSTRUCTION
 REVISION: 8



- NOTES:
- TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 - NO ROCKS OR BouldERS 2" OR LARGER IN DIAMETER TO BE USED IN BACKFILL.
 - ALL BACKFILL MATERIAL SHALL BE COMPACTED NATIVE MATERIAL.
 - BACKFILL SHALL BE DAMPED IN 6" LIFTS.
 - ACHIEVE 95% COMPACTION IN BACKFILL.

DETAIL	PVC PIPE TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 555 PETERSBORO, NC 27572 964 EAST STREET, SUITE 205 PETERSBORO, NC 27572 CHATHAM COUNTY
REVISION	36	
DATE	AUG 1, 2015	

DETECTABLE WARNING TAPE NOTES:

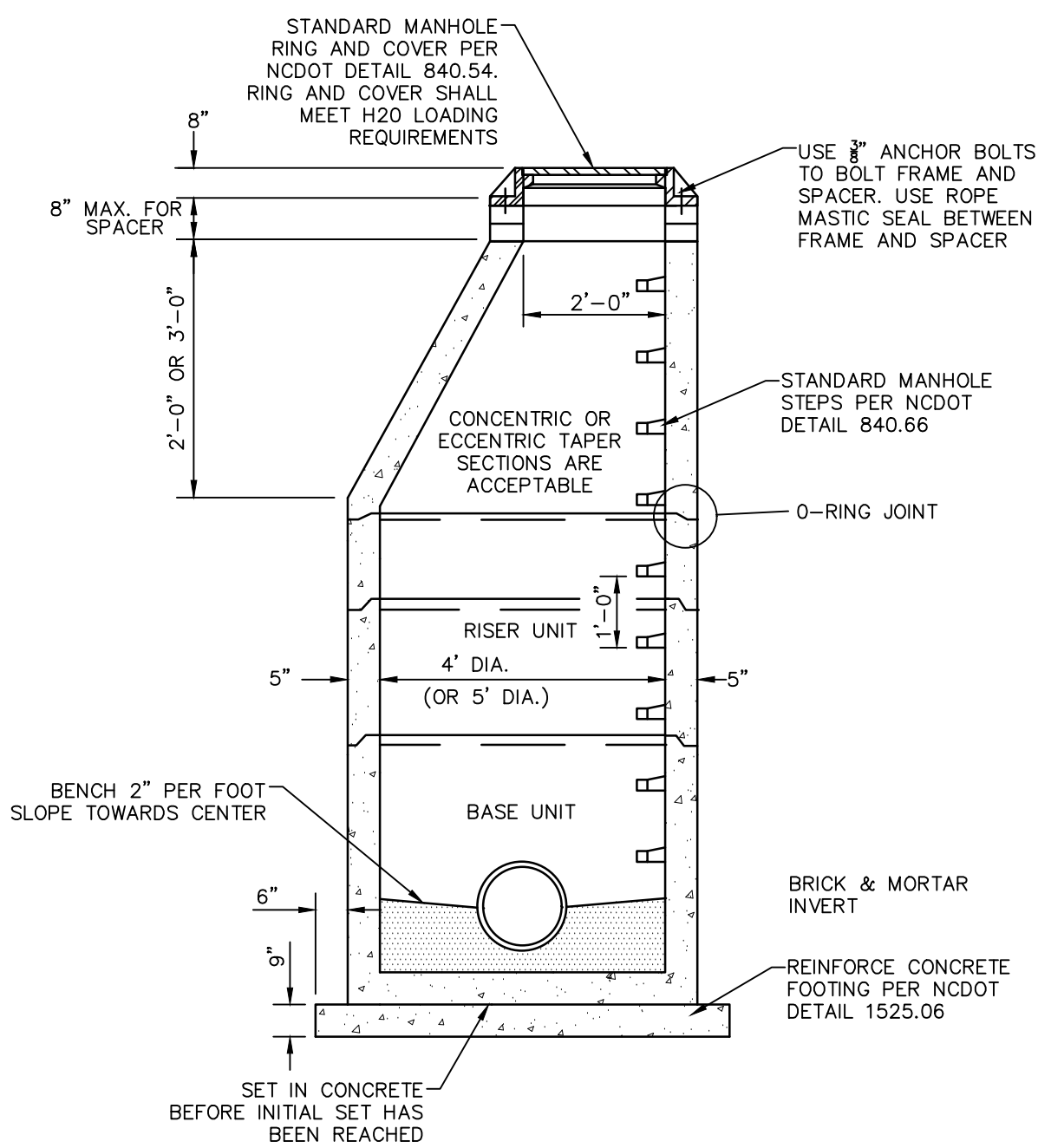
- THE TAPE SHALL BE AN INERT BONDED LAYER PLASTIC WITH A METALIZED FOIL CORE AND SHALL BE HIGHLY RESISTANT TO ALKALIS, ACID, OR OTHER DESTRUCTIVE CHEMICAL COMPONENTS LIKELY TO BE ENCOUNTERED IN SOILS.
- THE TAPE SHALL BE BRIGHTLY COLORED TO CONTRAST WITH SOIL AND SHALL BEAR AN IMPRINT IDENTIFYING THE TYPE OF LINE BURIED BELOW. THE TAPE SHALL BE A MINIMUM OF 2" WIDE.
- THE TAPE SHALL BE BURIED A MINIMUM OF 6" AND A MAXIMUM OF 12" BELOW THE GROUND SURFACE DIRECTLY ABOVE THE WATER LINE WITH PRINTED SIDE UP.

TRACER WIRE NOTES:

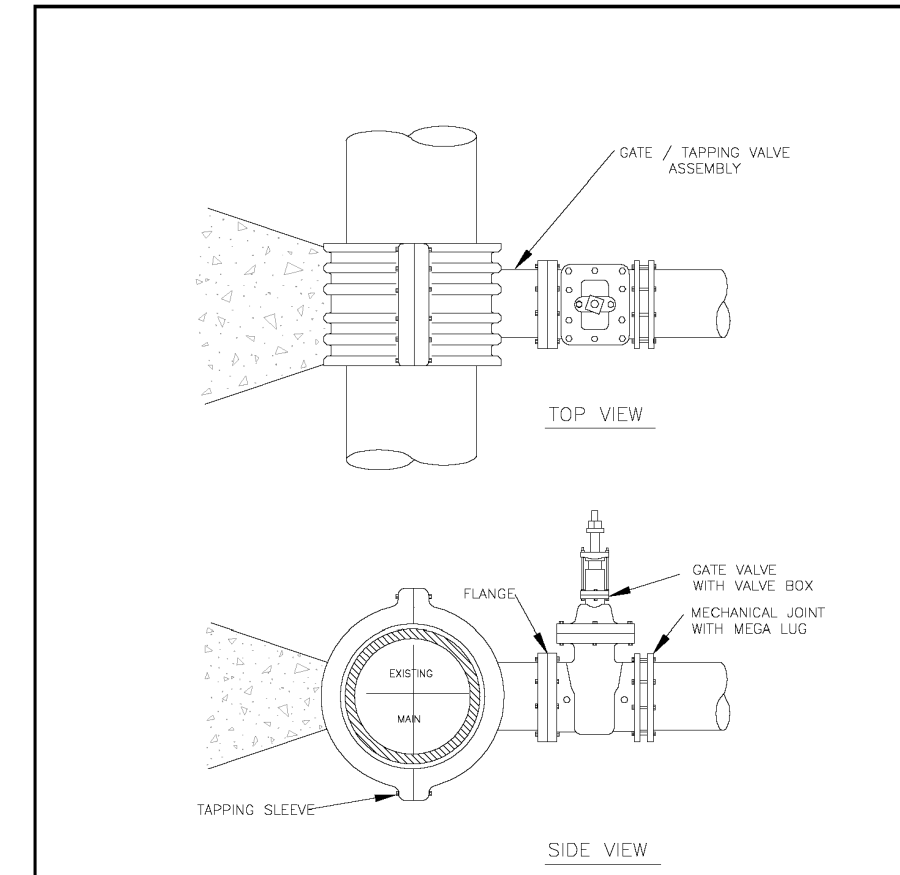
- TRACER WIRE IS TO BE STANDARD NO. 12 GAUGE COATED COPPER WIRE.
- LOCATION WIRE CONNECTIONS ARE TO BE A WATER TIGHT CONNECTION USING TWISTER DB PLUS WATERPROOF WIRE CONNECTORS OR AN APPROVED EQUAL.

NOTES:

- PROVIDE PRECAST MANHOLE COMPONENTS WHICH COMPLY WITH AASHTO M199.
- ASSEMBLE RISERS AND GRADE RINGS SO STIPS HAVE A SPACING OF 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
- WHERE THE MANHOLE IS EXPOSED TO ROADWAY TRAFFIC, PLACE THE TOP OF THE MANHOLE FLUSH WITH THE GROUND.
- REINFORCED CONCRETE FOOTING IS REQUIRED WHEN THE MANHOLE IS OVER 12' IN DEPTH OR ON A POOR SOIL BASE. THE FOOTING AND BASE SECTION MAY BE PRECAST.



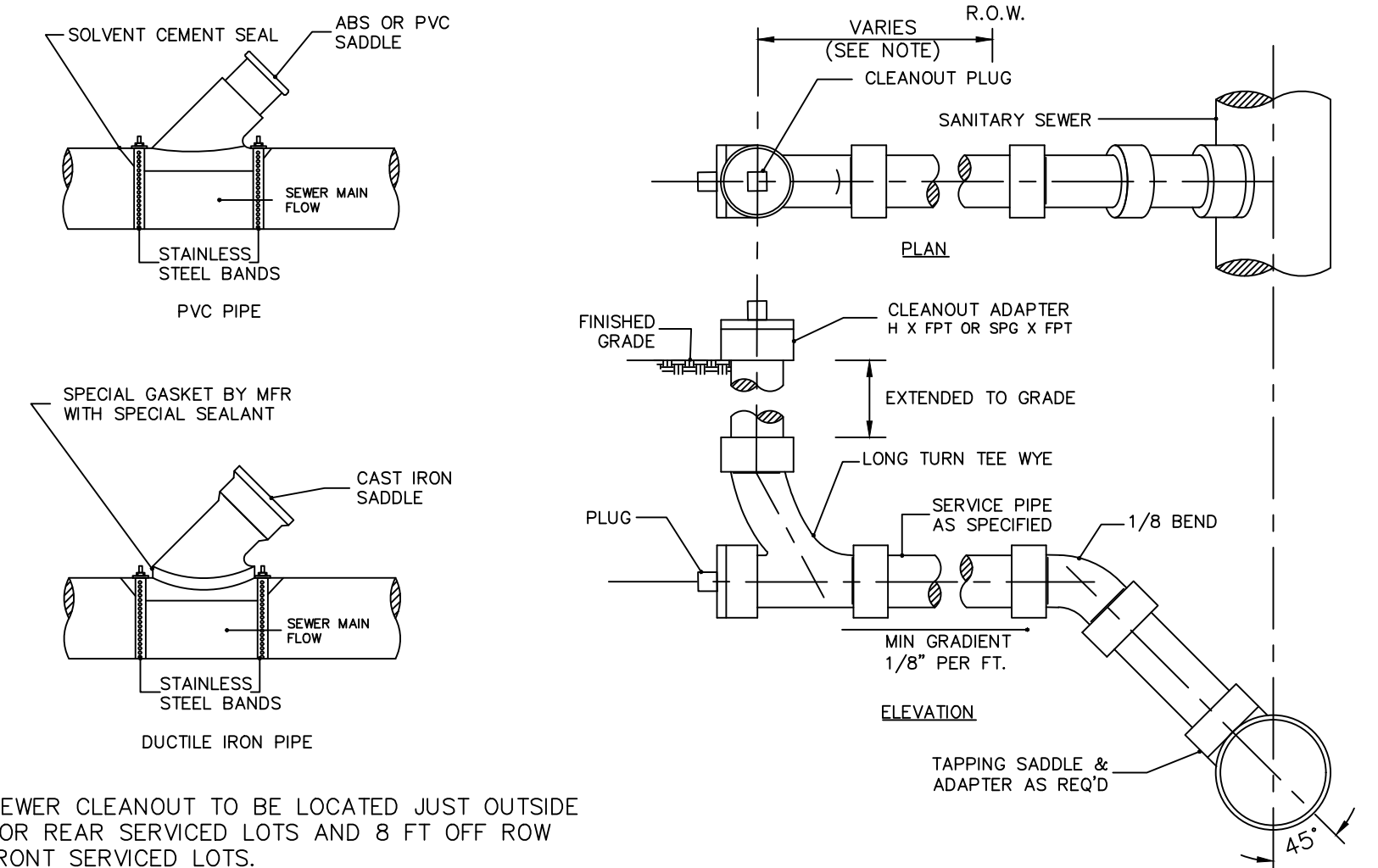
STANDARD SANITARY SEWER PRECAST CONCRETE MANHOLE
NTS



NOTES:

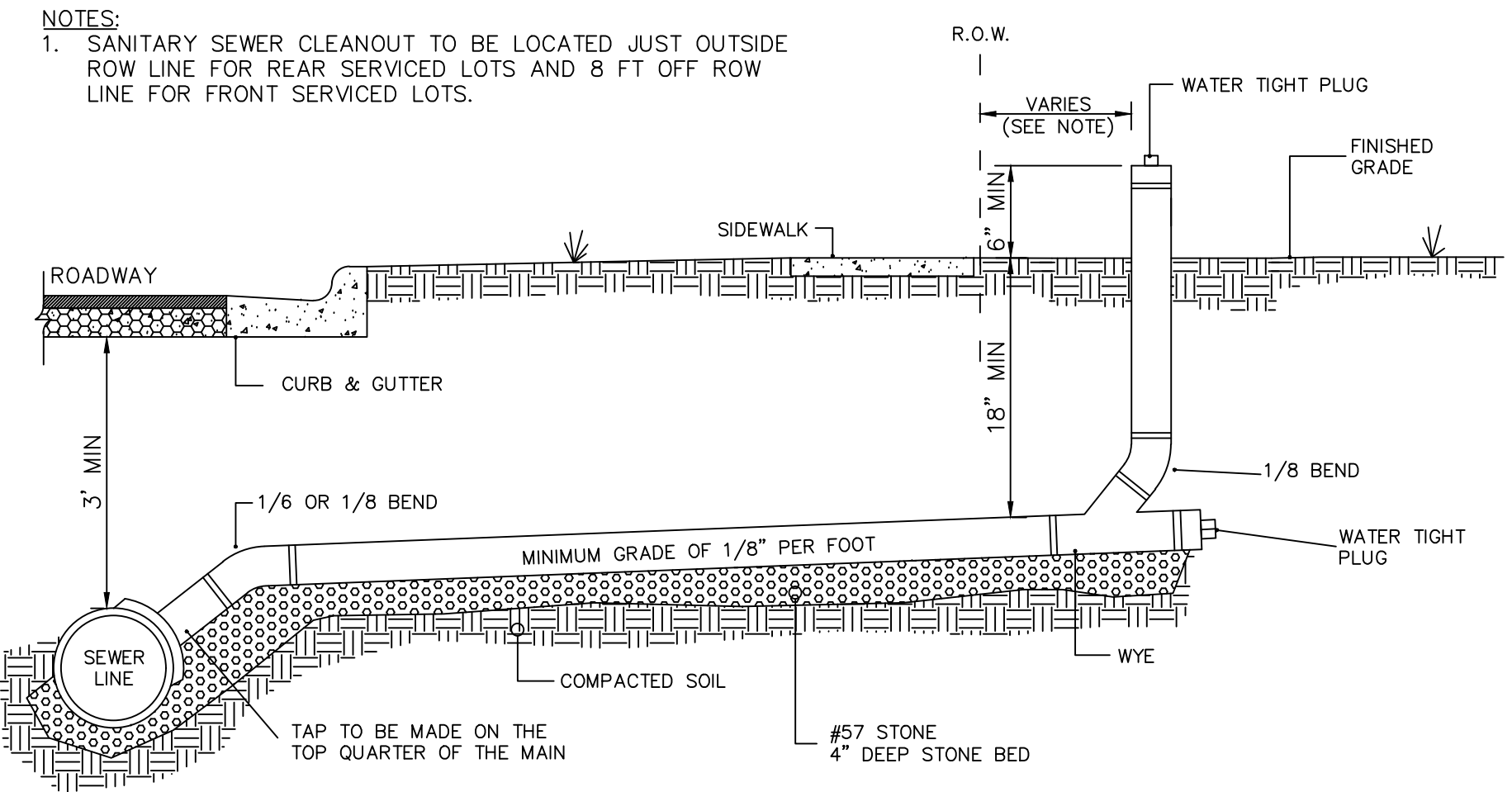
- CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
- 3000 PSI SOLID CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.
- SEE STANDARD REACTION BLOCK TABLES, DETAIL 28 AND 29 FOR AREA OF CONCRETE REQUIRED.

DETAIL	4" - 24" TAPPING SLEEVE ASSEMBLY	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 555 PETERSBORO, NC 27572 964 EAST STREET, SUITE 205 PETERSBORO, NC 27572 CHATHAM COUNTY
REVISION	8	
DATE	AUG 1, 2015	



SANITARY SEWER SERVICE CONNECTIONS
NTS

- NOTES:
- SANITARY SEWER CLEANOUT TO BE LOCATED JUST OUTSIDE ROW LINE FOR REAR SERVICED LOTS AND 8 FT OFF ROW LINE FOR FRONT SERVICED LOTS.



STANDARD SANITARY SEWER TAP AND SERVICE
NTS

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH STANDARD DRAWING FOR PRECAST CONCRETE SANITARY SEWER MANHOLE WITH CAST-IN-PLACE BOTTOM		BILL OF MATERIAL FOR 6'-0" FOOTING <table border="1"> <tr><th>BAR SIZE</th><th>LENGTH</th><th>NO.</th><th>WT. lbs.</th></tr> <tr><td>T1</td><td>#5 5'-6"</td><td>18</td><td>103</td></tr> <tr><td>T2</td><td>#5 6'-6"</td><td>20</td><td>136</td></tr> <tr><td>T3</td><td>#5 7'-6"</td><td>24</td><td>188</td></tr> </table>	BAR SIZE	LENGTH	NO.	WT. lbs.	T1	#5 5'-6"	18	103	T2	#5 6'-6"	20	136	T3	#5 7'-6"	24	188	STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. ENGLISH STANDARD DRAWING FOR PRECAST CONCRETE SANITARY SEWER MANHOLE WITH CAST-IN-PLACE BOTTOM													
			BAR SIZE	LENGTH	NO.	WT. lbs.																											
T1	#5 5'-6"	18	103																														
T2	#5 6'-6"	20	136																														
T3	#5 7'-6"	24	188																														
BILL OF MATERIAL FOR 7'-0" FOOTING <table border="1"> <tr><th>BAR SIZE</th><th>LENGTH</th><th>NO.</th><th>WT. lbs.</th></tr> <tr><td>T1</td><td>#5 5'-6"</td><td>18</td><td>103</td></tr> <tr><td>T2</td><td>#5 6'-6"</td><td>20</td><td>136</td></tr> <tr><td>T3</td><td>#5 7'-6"</td><td>24</td><td>188</td></tr> </table>	BAR SIZE	LENGTH	NO.	WT. lbs.	T1	#5 5'-6"	18	103	T2	#5 6'-6"	20	136	T3	#5 7'-6"	24	188	BILL OF MATERIAL FOR 8'-0" FOOTING <table border="1"> <tr><th>BAR SIZE</th><th>LENGTH</th><th>NO.</th><th>WT. lbs.</th></tr> <tr><td>T1</td><td>#5 5'-6"</td><td>18</td><td>103</td></tr> <tr><td>T2</td><td>#5 6'-6"</td><td>20</td><td>136</td></tr> <tr><td>T3</td><td>#5 7'-6"</td><td>24</td><td>188</td></tr> </table>	BAR SIZE	LENGTH	NO.	WT. lbs.	T1	#5 5'-6"	18	103	T2	#5 6'-6"	20	136	T3	#5 7'-6"	24	188
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T1	#5 5'-6"	18	103																														
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FOOTING DIMENSIONS: 6'-0" USE (T1), 7'-0" USE (T2) & 8'-0" USE (T3)

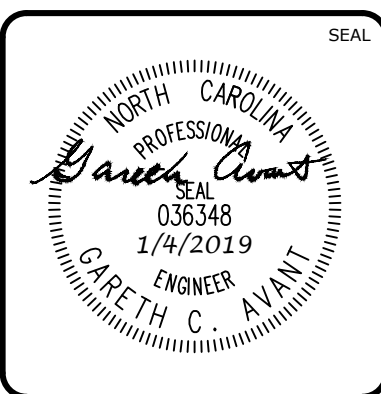
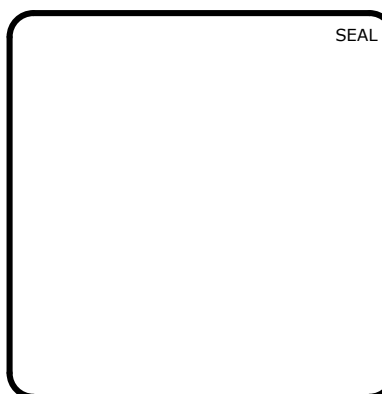
FOOTING DIMENSIONS: 6'-0" USE (T1), 7'-0" USE (T2) & 8'-0" USE (T3)

REINFORCED CONCRETE FOOTING FOR 5' PRECAST MANHOLE OR 4' PRECAST MANHOLE

PLACE REINFORCING STEEL SO THAT STEEL IS PLACED A MIN. OF 2" AND A MAX. OF 4" FROM THE TOP OF THE SLAB.

T1, T2 OR T3 BAR
7" HOOK (PER CRS1) 7" HOOK (PER CRS1)

REV. NO.	DESCRIPTIONS	DATE
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1	INITIAL SUBMITTAL	2018.09.18

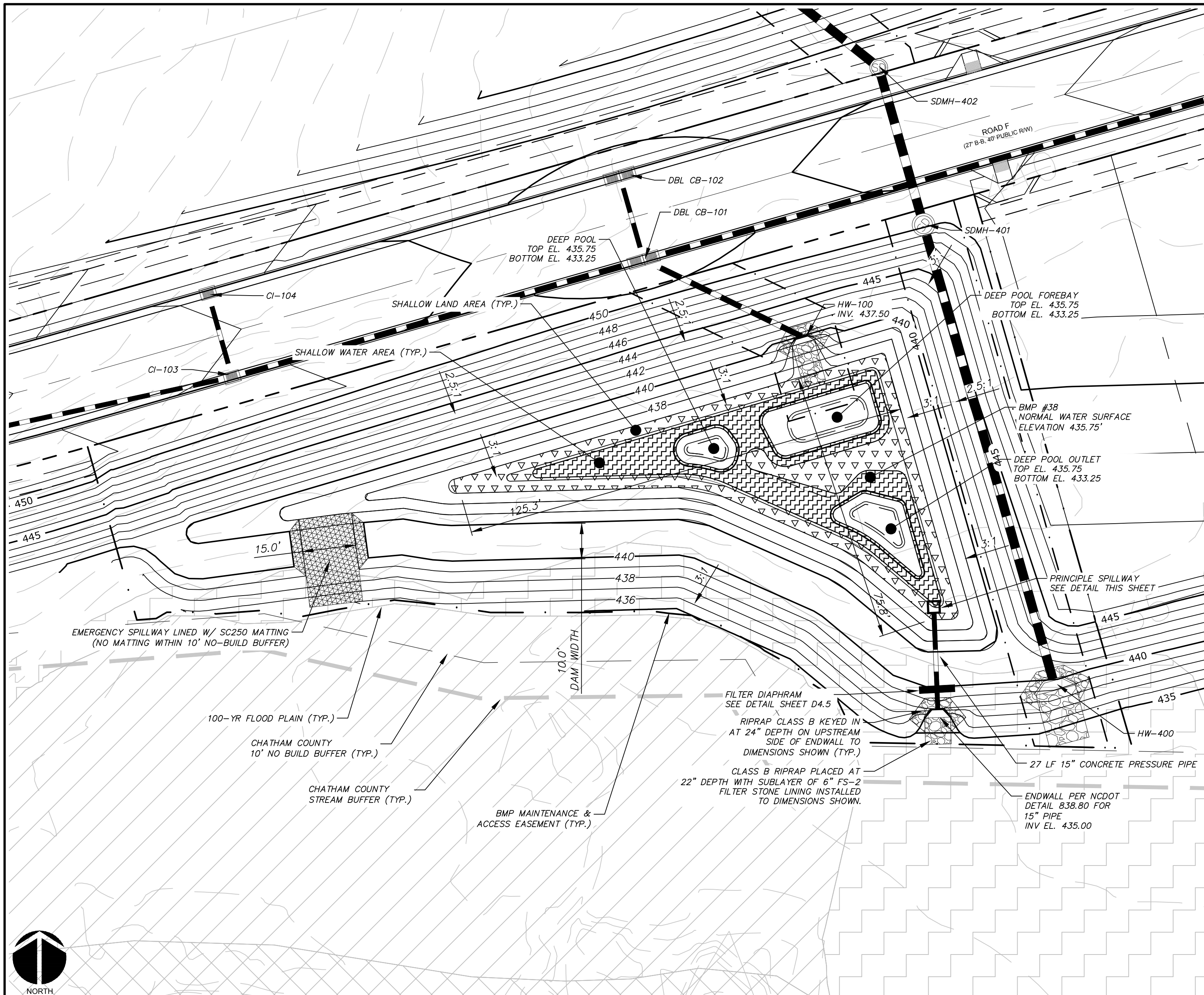


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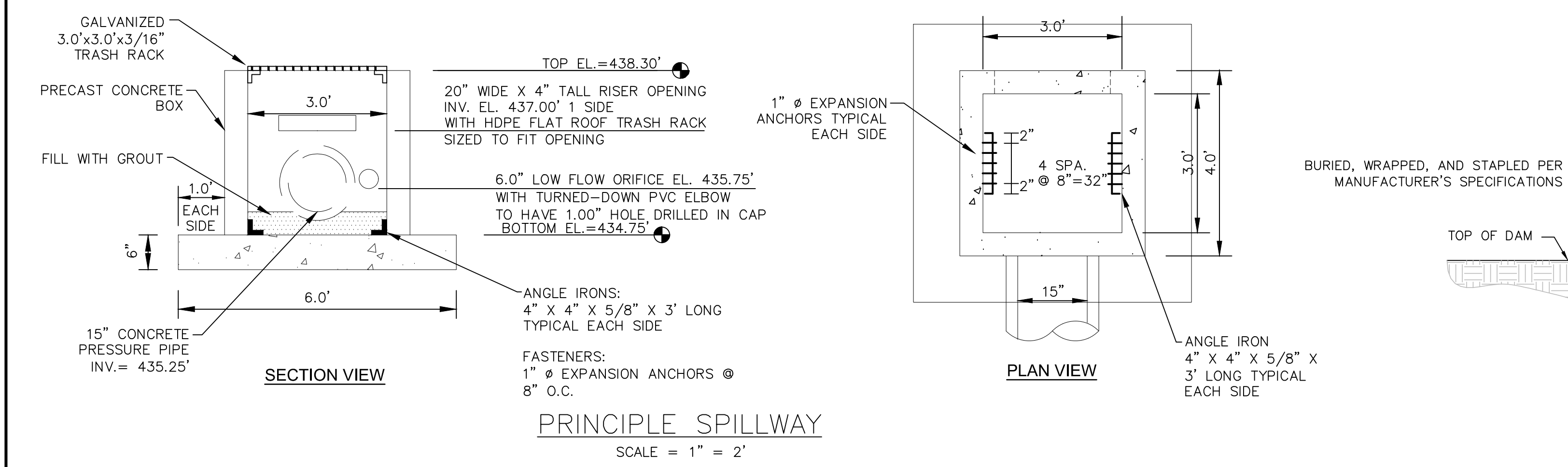
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BRIAR CHAPEL BC PHASE 12
CHATHAM COUNTY, NORTH CAROLINA
UTILITY DETAILS

DATE: SEPTEMBER 18, 2018	SCALE: D3.X	M&C FILE NUMBER: D3.2
M&C PROJ. # 02735-0231	HORIZONTAL: N/A	DRAWING NUMBER: D3.2
DRAWN: LEG	VERTICAL: N/A	
DESIGNED: LEG		
CHECKED: GCA		
PROJ. MGR: CHS		
STATUS: FINAL DRAWINGS FOR CONSTRUCTION	REVISION: 8	



STORMWATER WETLAND #38 PLAN VIEW
SCALE = 1" = 20'



PRINCIPLE SPILLWAY
SCALE = 1" = 2'

STORMWATER WETLAND PLANTING SCHEDULE

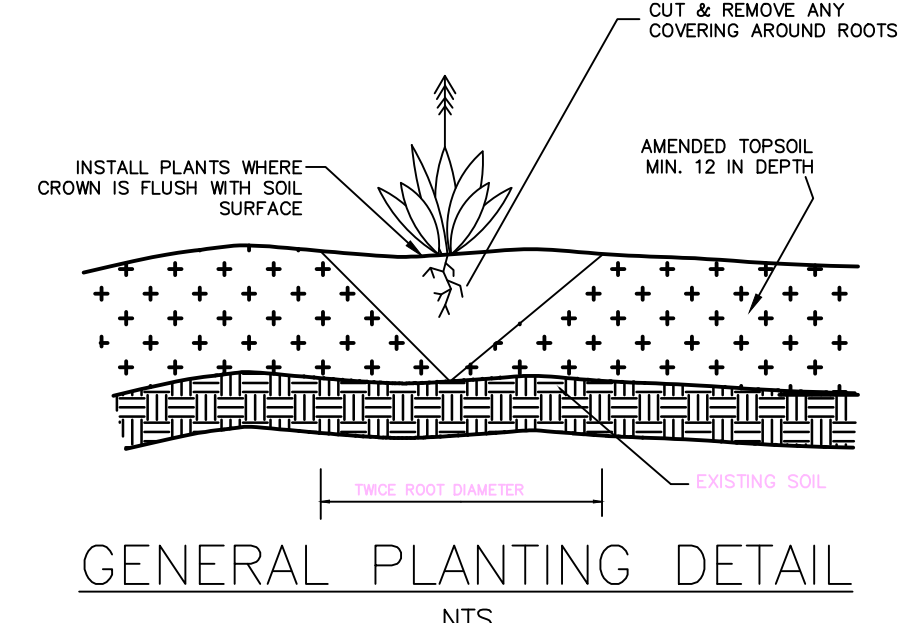
DEEP POOL ZONE: ALLOWABLE PLANT SPECIES						
COMMON NAME	BOTANICAL NAME	DEPTH RANGE (INCHES BELOW NORMAL POOL)	SPACING (O.C., FT)	QUANTITY	PERCENTAGE	SIZE
SPATTERDOCK	NUPHAR POLYSPALUM	6-18	5	10	33%	2 IN PLUG (MIN)
FRAGRANT WHITE LILY	NYPHAEAE LUTEA	6-18	5	10	33%	2 IN PLUG (MIN)
AMERICAN LOTUS	NELUMBO LUTEA	6-18	5	10	33%	2 IN PLUG (MIN)

SHALLOW WATER ZONE: ALLOWABLE PLANT SPECIES						
COMMON NAME	BOTANICAL NAME	DEPTH RANGE (INCHES BELOW NORMAL POOL)	SPACING (O.C., FT)	QUANTITY	PERCENTAGE	SIZE
ARROW ARUM	PELTANDRA VIRGINICA	0-6	3.0	34	10%	PINT
PICKERELWEED	PONTERDERIA CORDATA	0-6	3.0	34	10%	2 IN PLUG (MIN)
DUCK POTATO	SAGITTARIA LATIFOLIA	0-6	3.0	34	10%	BARE ROOT
SOFTSTEM BULRUSH	SCHENOPLECTUS TABERNAMONTANI	0-6	3.0	34	10%	2 IN PLUG (MIN)
SWEETFLAG	ACORUS CALAMUS	0-6	3.0	34	10%	BARE ROOT
THREE WAY SEDGE	DULICHUM ARUNDINACEUM	0-6	3.0	34	10%	BARE ROOT
SPIKERUSH	ELEOCHARIS OBUSA	0-6	3.0	34	10%	2 IN PLUG (MIN)
SOUTHERN BLUE FLAG IRIS	IRIS VIRGINICA	0-6	3.0	34	10%	2 IN PLUG (MIN)
LIZARD'S TAIL	SAURURUS CERNUUS	0-6	3.0	34	10%	3 IN PLUG (MIN)
SOFT RUSH	JUNCUS EFFUSUS	0-6	3.0	34	10%	2 IN PLUG (MIN)

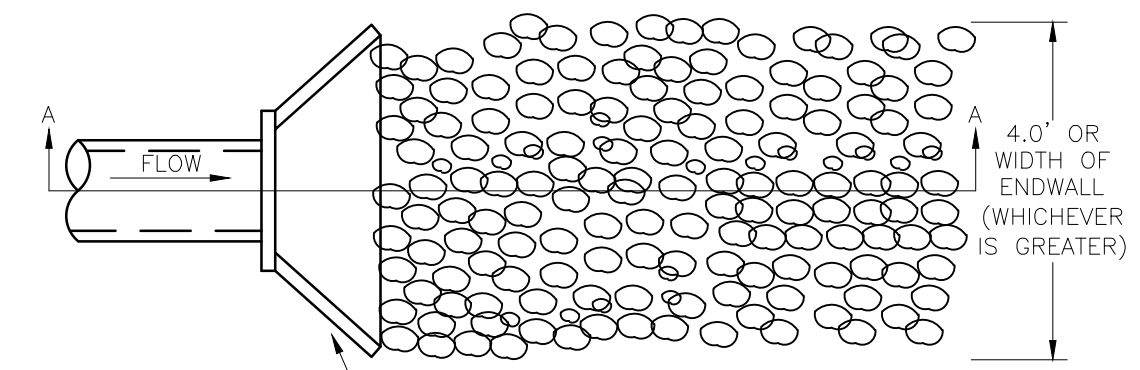
SHALLOW LAND ZONE: ALLOWABLE PLANT SPECIES						
COMMON NAME	BOTANICAL NAME	DEPTH RANGE (INCHES ABOVE NORMAL POOL)	SPACING (O.C., FT)	QUANTITY	PERCENTAGE	SIZE
SWAMP MILKWEED	ASCLEPIAS INCARNATA	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
FRINGED SEDGE	CAREX CRINITA	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
GREAT BLADDER SEDGE	CAREX INTUMESCENS	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
HOP SEDGE	CAREX LUPULINA	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
SHALLOW SEDGE	CAREX LURIDA	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
SCARLET ROSE MALLOW	HIBISCUS COCCINEUS	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
ROSE MALLOW	HIBISCUS MOSCHEUTOS	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
SPIDER LILY	HYMENOCALLIS EULAE	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
SWAMP LILY	CRINUM ERUBESCENS	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
CARDINAL FLOWER	LOBELIA CARDINALIS	0-12	3.0	36	9.0%	2 IN PLUG (MIN)
SWAMP SUNFLOWER	HELIANTHUS ANGUSTIFOLIUS	0-12	3.0	36	9.0%	2 IN PLUG (MIN)

STORMWATER WETLAND PLANTING LEGEND:

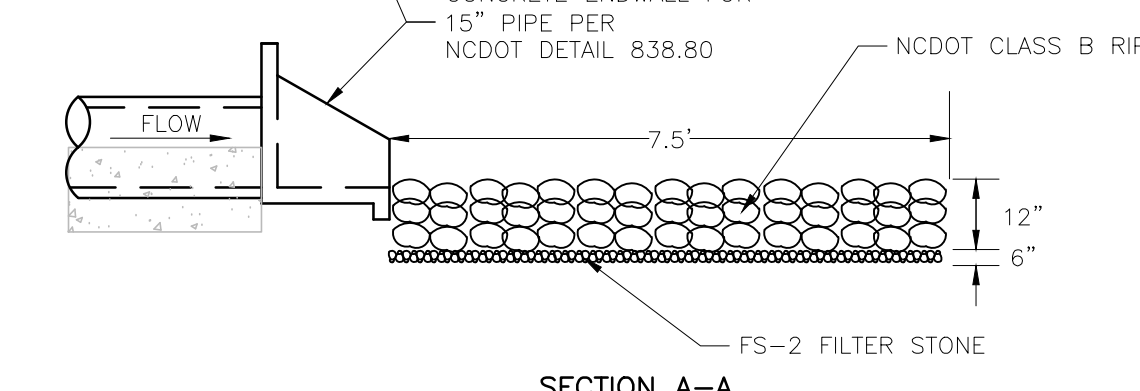
- DEEP POOL (9" BELOW - 30" BELOW)
- SHALLOW WATER (NORMAL POOL - 9" BELOW)
- SHALLOW LAND (NORMAL POOL - 15" ABOVE)



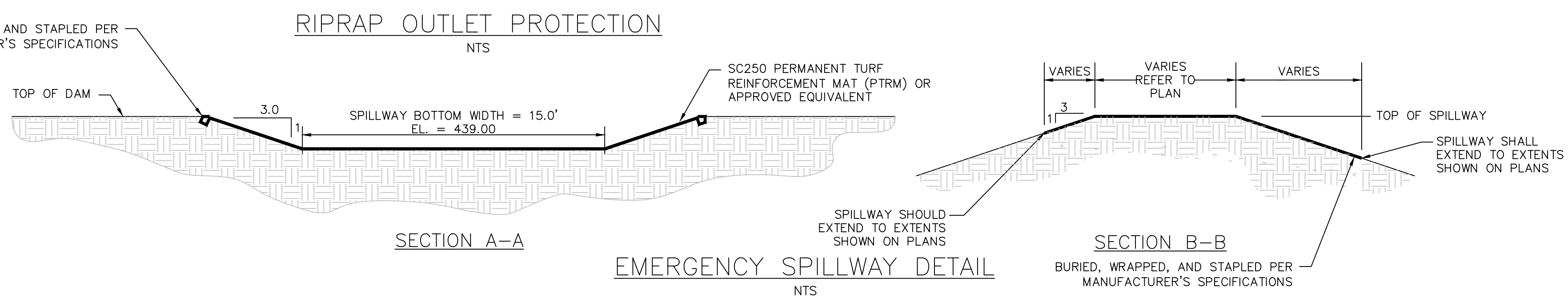
GENERAL PLANTING DETAIL
NTS



PLAN VIEW

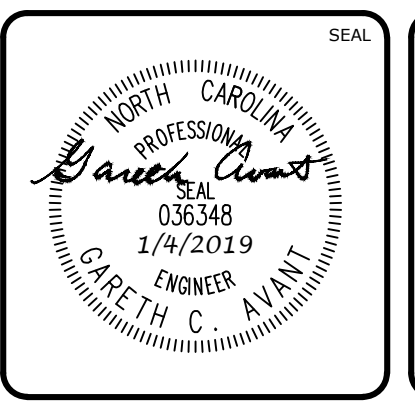
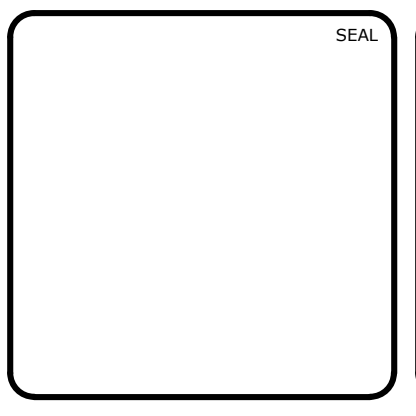


SECTION A-A



EMERGENCY SPILLWAY DETAIL
NTS

REV. NO.	DESCRIPTIONS/REVISIONS	DATE
8	STORMWATER POND REVISIONS	2019.01.04
7	REVISIONS PER NCDOT COMMENTS	2018.12.18
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1	INITIAL SUBMITTAL	2018.09.18

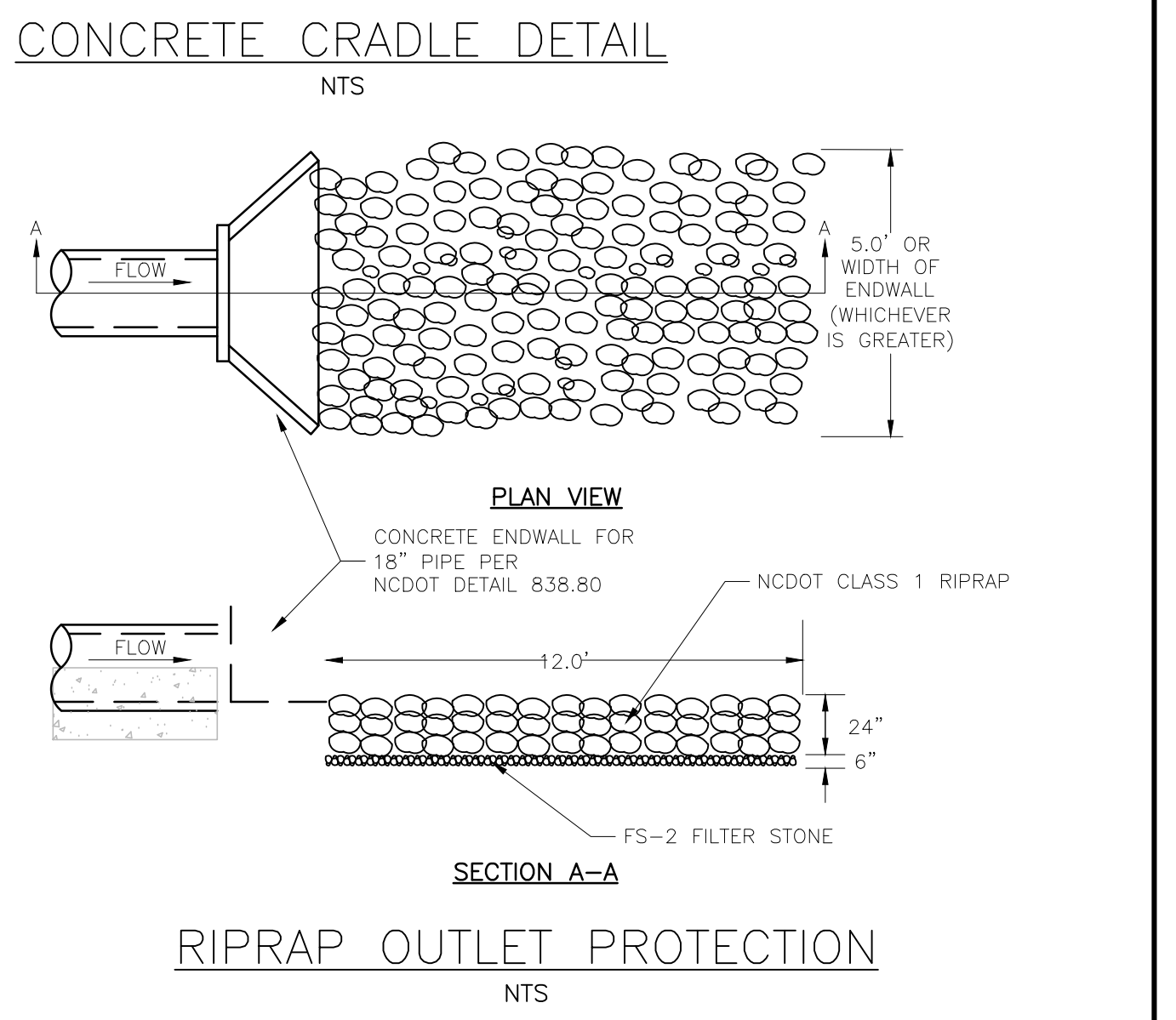
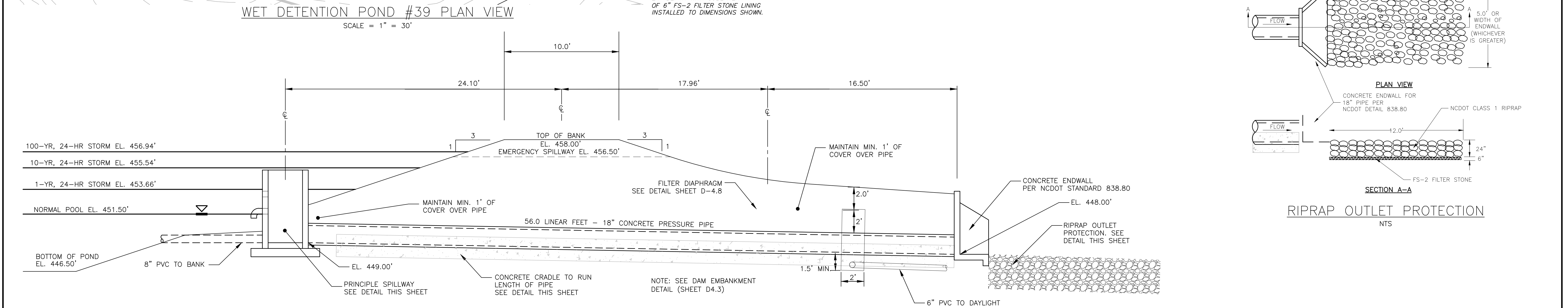
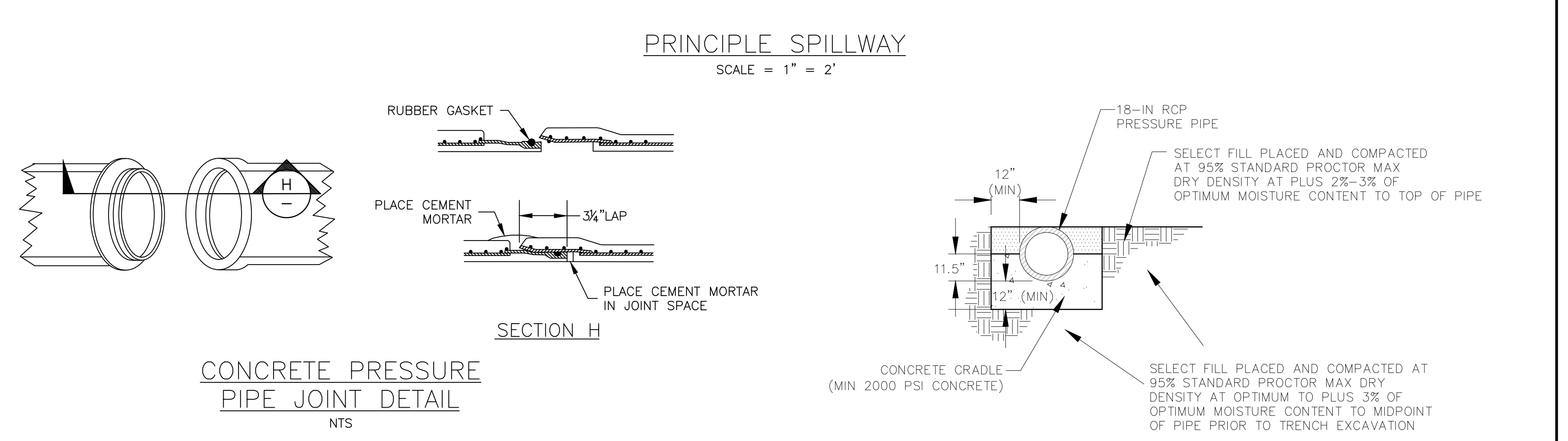
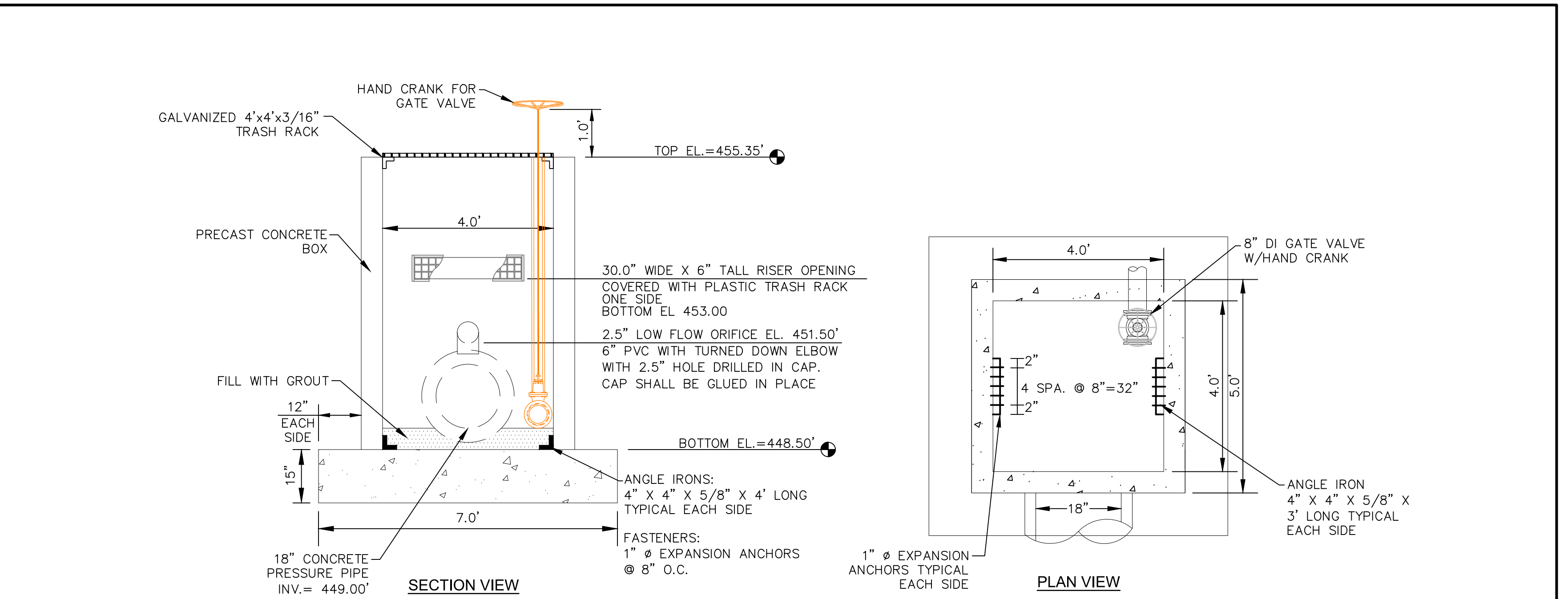
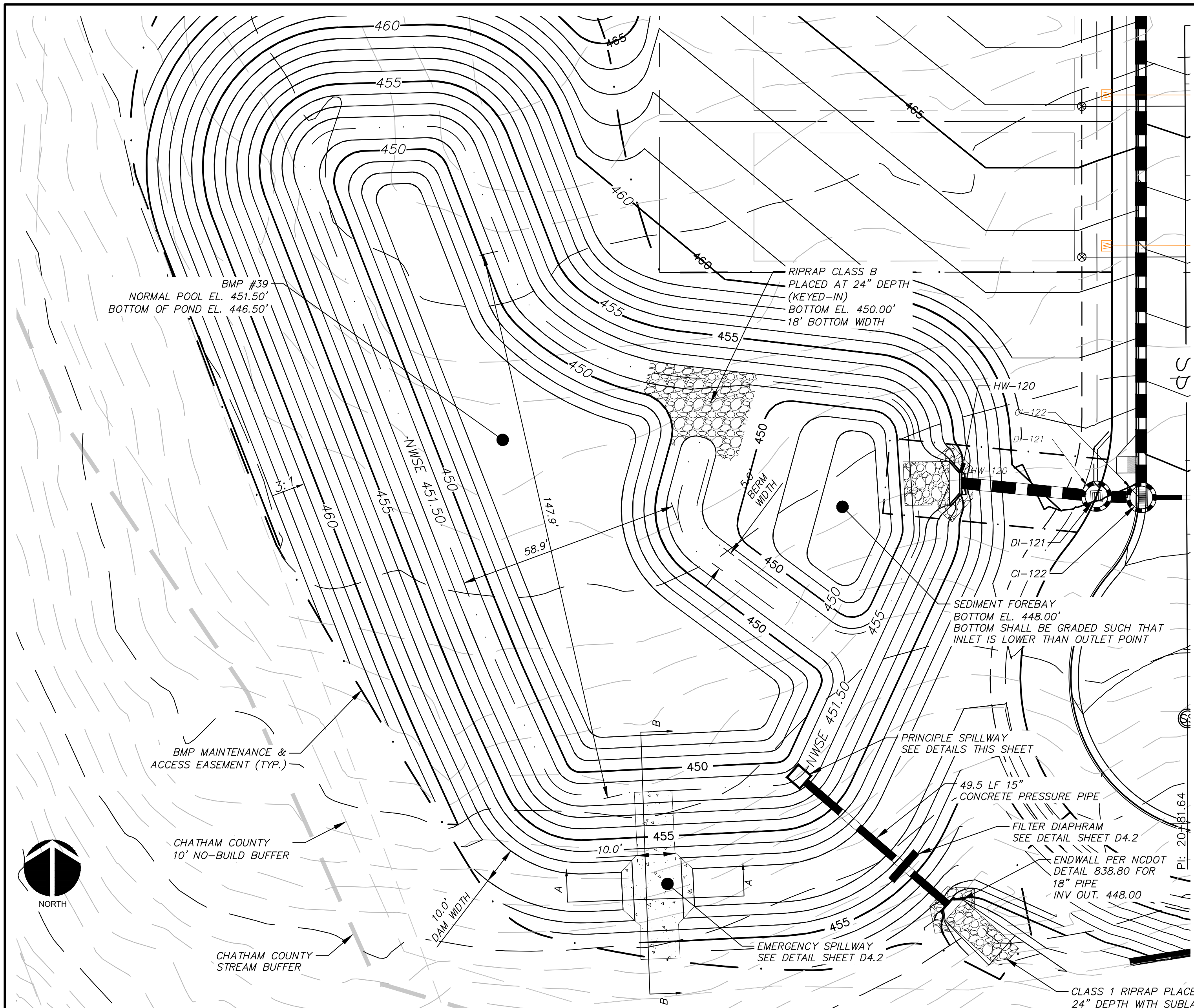


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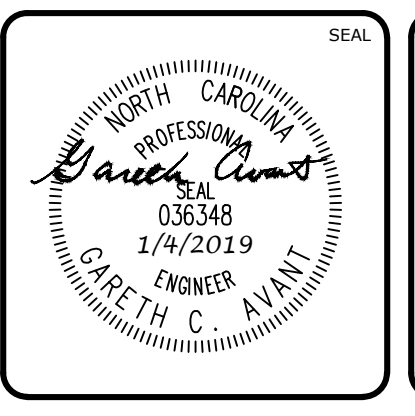
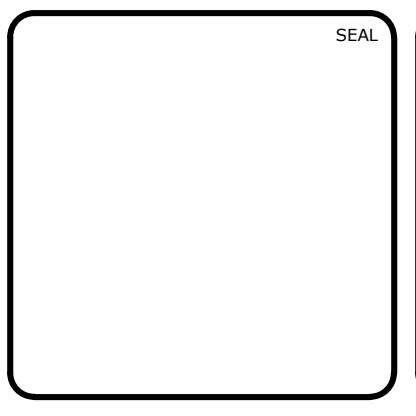
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**BRIAR CHAPEL
BC PHASE 12
CHATHAM COUNTY, NORTH CAROLINA**
BMP #38 PLAN & DETAILS

DATE: SEPTEMBER 18, 2018	SCALE: D4.X
MCE PROJ. # 02735-0231	HORIZONTAL: AS NOTED
DRAWN: LEG	VERTICAL: D4.1
DESIGNED: LEG	N/A
CHECKED: GCA	
PROJ. MGR.: CHS	
STATUS: FINAL DRAWINGS FOR CONSTRUCTION	REVISION: 8



REV. NO.	DESCRIPTIONS	DATE
8	STORMWATER POND REVISIONS	2019.01.04
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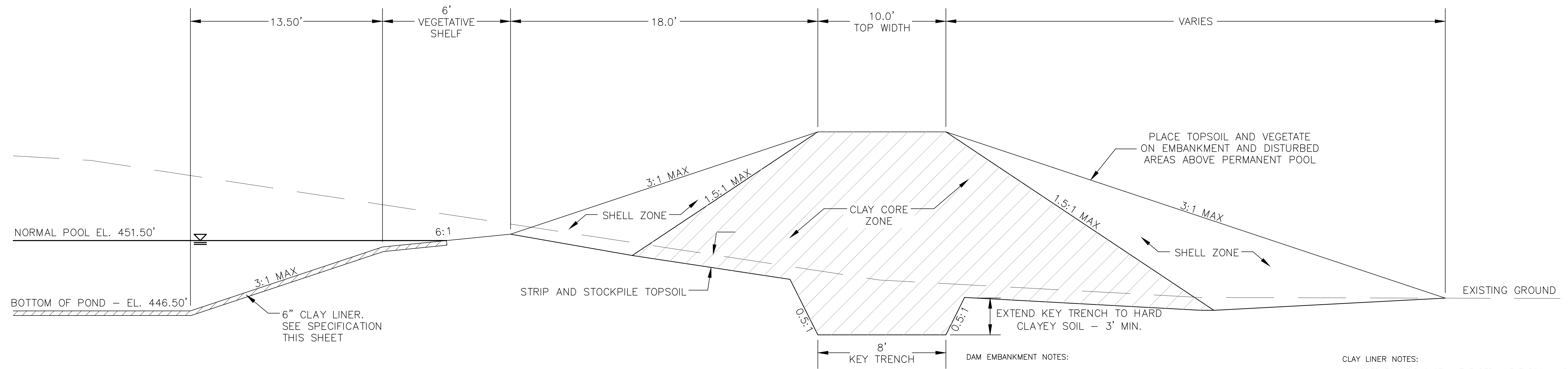


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BRIAR CHAPEL BC PHASE 12
CHATHAM COUNTY, NORTH CAROLINA
BMP #39 PLAN & DETAILS

DATE: SEPTEMBER 18, 2018	SCALE: HORIZONTAL: AS NOTED	M&C FILE NUMBER: D4.X
M&C PROJ. #: 02735-0231	VERTICAL: N/A	DRAWING NUMBER: D4.2
DRAWN: LEG		
DESIGNED: LEG		
CHECKED: SCA		
PROJ. MGR.: CHS		
STATUS: FINAL DRAWINGS FOR CONSTRUCTION		REVISION: 8



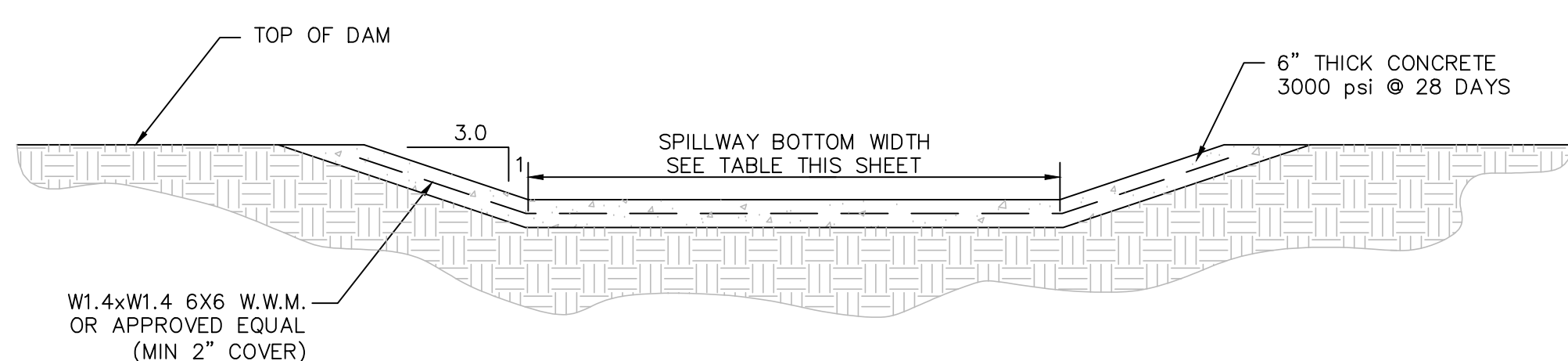
DAM EMBANKMENT DETAIL
NTS

DAM EMBANKMENT NOTES:

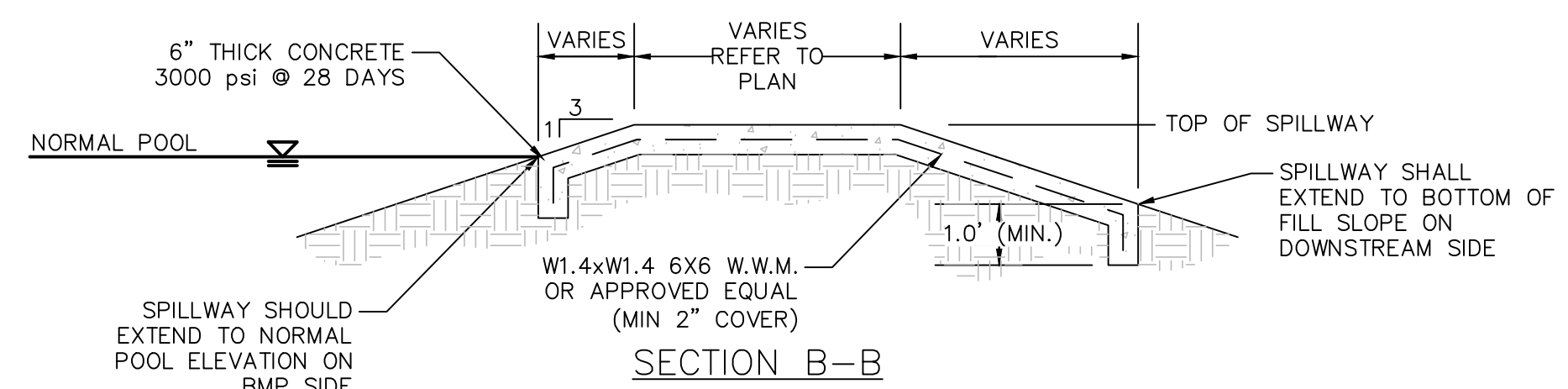
- 1) TOPSOIL BENEATH THE EMBANKMENT SHALL BE REMOVED AND STOCKPILED. THE FOUNDATION WILL BE PROOF ROLLED AND ANY SOFT OR ORGANIC MATERIALS WILL BE REMOVED.
- 2) ALL MATERIAL SHALL BE COMPACTED IN 6-8 INCH LIFTS TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY OR HIGHER (ASTM D-698). THE CLAY CORE ZONE WILL HAVE A MOISTURE CONTENT OF OPTIMUM TO 4 PERCENT ABOVE OPTIMUM MOISTURE CONTENT. THE SHELL ZONE FILL WILL HAVE A MOISTURE CONTENT FROM 2 PERCENT BELOW OPTIMUM MOISTURE CONTENT TO 4 PERCENT ABOVE OPTIMUM.
- 3) EMBANKMENT FILL:
SHELL ZONE: SOILS WITH LESS THAN 30% PASSING THE NO. 200 SIEVE OR A PI OF LESS THAN 10 WHEN THE PERCENTAGE OF MATERIAL PASSING THE NO. 200 SIEVE IS GREATER THAN 30 PERCENT. SOILS WHICH ARE CLASSIFIED AS CLAYS (CH OR CL) SHOULD NOT BE USED AT THE FACE OF THE SHELL ZONES.
CLAY CORE ZONE: CH, CL OR SC MATERIAL WITH A PI RANGING BETWEEN 15 AND 60
- 4) NO FILL SHALL CONTAIN ROCKS OR GRAVEL LARGER THAN 4 INCHES IN DIAMETER.
- 5) A PROFESSIONAL GEOTECHNICAL ENGINEER SHALL APPROVE ALL MATERIALS USED FOR THE EMBANKMENT AND SUPERVISE CONSTRUCTION.
- 6) ALL DISTURBED AREAS ABOVE PERMANENT POOL SHALL BE SEEDED USING THE FOLLOWING GRASS SEED MIX MANUFACTURED BY ERNST SEED COMPANY: Carolina FACW Meadow Mix ERNMX-182

CLAY LINER NOTES:

IN ORDER TO HELP SUSTAIN THE PERMANENT POOL AND TO PREVENT WATER FROM INFILTRATING TOO QUICKLY INTO THE UNDERLYING SOIL, THE CONTRACTOR SHALL INSTALL A 6" THICK CLAY LINER ON THE BOTTOM OF THE BMP AREA UP TO THE NORMAL POOL ELEVATION. THE LINER CAN BE ACCOMPLISHED BY BLENDING EXISTING SITE SOILS WITH CLAY TO ACHIEVE A LOW PERMEABILITY MIXTURE OR BY INSTALLING A GEOSYNTHETIC LINER MADE OF A BENTOMAT CL. IF THE CONTRACTOR CHOOSES TO BLEND THE EXISTING SITE SOILS WITH CLAY, THE ONSITE GEOTECHNICAL ENGINEER SHALL DETERMINE THE AMOUNT OF CLAY TO ADD, THE DEGREE OF COMPACTION, AND WILL OVERSEE THE INSTALLATION OF THE CLAY LINER. THE MAXIMUM PERMEABILITY RATE FOR THE LINER SHALL BE 0.01 IN/HR IN ACCORDANCE WITH THE NCDENR BMP MANUAL. THE PROPOSED MATERIAL FOR THIS LINER SHALL BE TESTED BY THE ONSITE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT. THE RESULTS OF THIS TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR REVIEW PRIOR TO PLACEMENT. UPON COMPLETION OF LINER INSTALLATION, A 4" MINIMUM LAYER OF TOPSOIL SHALL BE ADDED OVER THE LINER TO PROVIDE A HEALTHY MEDIA FOR VEGETATION GROWTH.



SECTION A-A

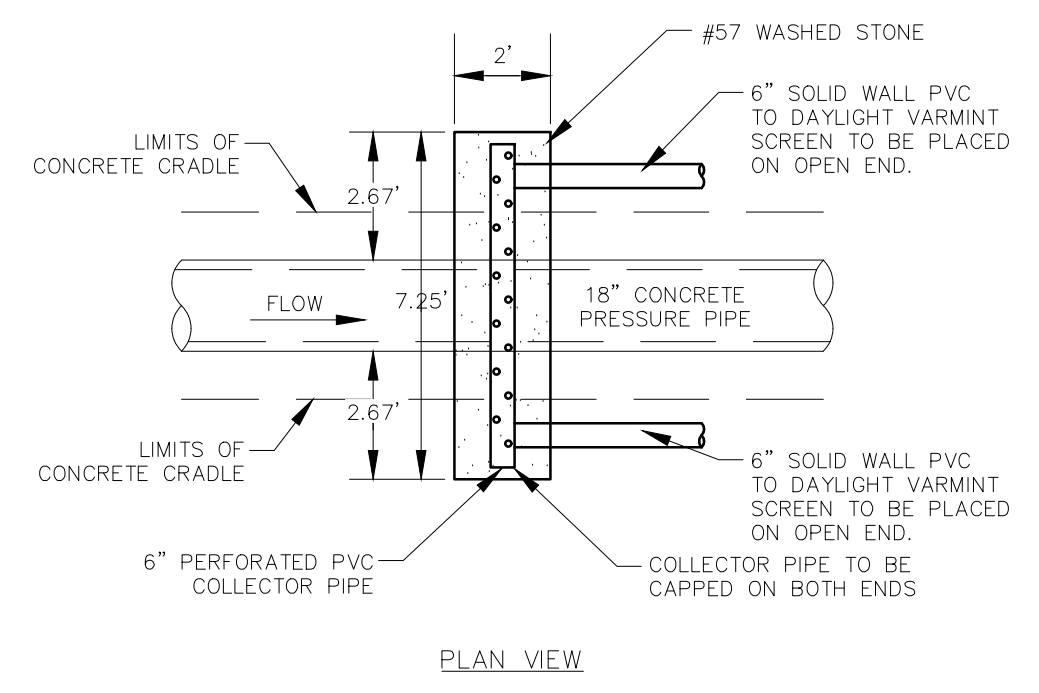


SECTION B-B

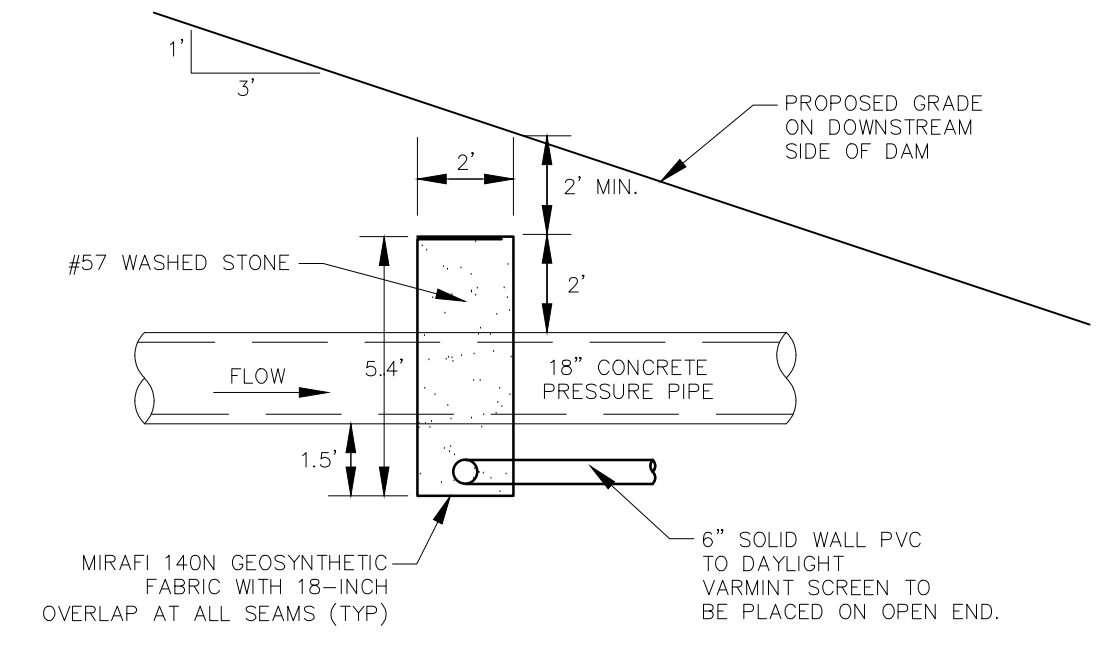
	NORMAL POOL EL.	TOP DAM EL.	SPILLWAY BOTTOM EL.	SPILLWAY BOTTOM WIDTH
BMP #39	451.50	458.00	456.00	10'

NOTE:
EXPANSION/CONTRACTION JOINTS PER AMERICAN CONCRETE INSTITUTE (ACI) STANDARDS FOR SLABS ON GRADE.

EMERGENCY SPILLWAY DETAIL
NTS

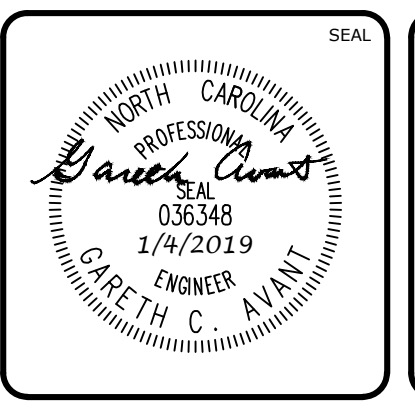
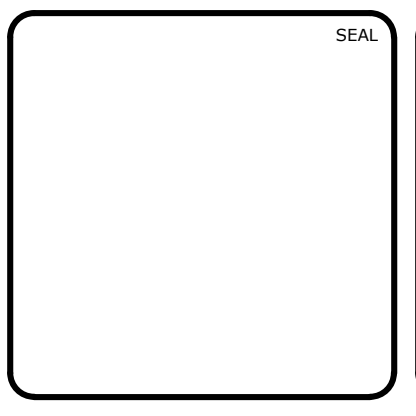


PLAN VIEW



FILTER DIAPHRAGM DETAIL
NTS

REV. NO.	DESCRIPTIONS	DATE
8	STORMWATER POND REVISIONS	2019.01.04
7	REVISIONS PER NCDOT COMMENTS	2018.12.18
6	REVISIONS PER NCDOT COMMENTS	2018.12.13
5	REVISIONS PER NCDOT COMMENTS	2018.12.05
4	REVISIONS PER NCDOT PWSS COMMENTS	2018.11.02
3	REVISIONS PER CHATHAM COUNTY EROSION CONTROL COMMENTS	2018.10.15
2	REVISIONS PER COUNTY WATER COMMENTS	2018.10.01
1	INITIAL SUBMITTAL	2018.09.18



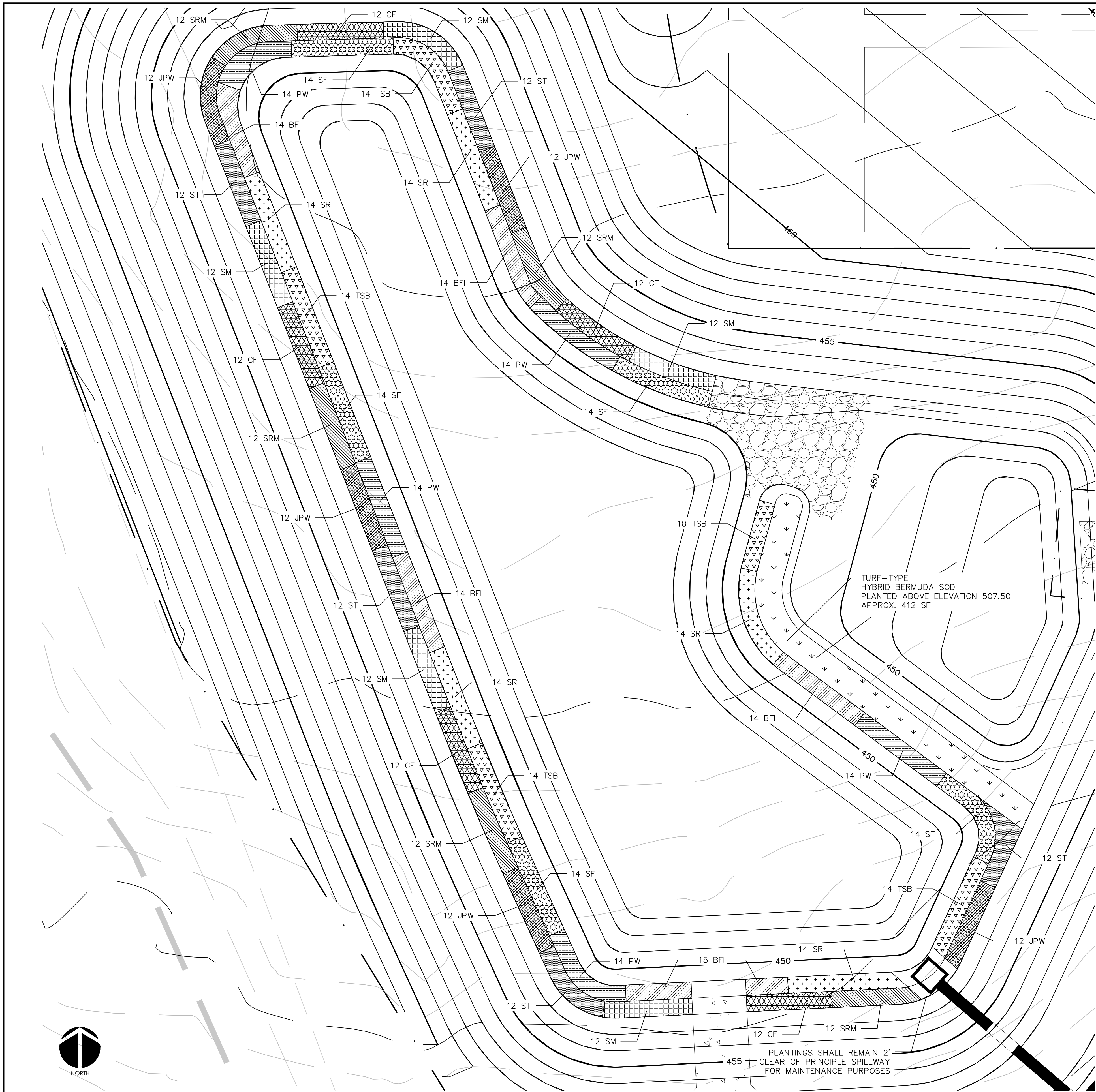
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BC PHASE 12
CHATHAM COUNTY, NORTH CAROLINA**

BMP #39 PLAN & DETAILS

DATE: SEPTEMBER 18, 2018	SCALE: N/A	M&C FILE NUMBER: D4.X
MCE PROJ. # 02735-0231	HORIZONTAL: AS NOTED	DRAWING NUMBER: D4.3
DRAWN: LEG	VERTICAL: N/A	
DESIGNED: LEG		
CHECKED: GCA		
PROJ. MGR.: CHS		
STATUS: FINAL DRAWINGS FOR CONSTRUCTION	REVISION: 8	



WET DETENTION POND #39 PLANTING PLAN

SCALE = 1" = 20'

PLANTING SCHEDULE						
SYM.	ABB.	COMMON NAME	BOTANICAL NAME	QUANTITY	SPACING	CONTAINER SIZE AT PLANTING
SHALLOW WATER PLANTINGS						
SF		SWEETFLAG	<i>Acorus subcordatum</i>	70	24"-30" O.C.	1 QT.
PW		PICKERELWEED	<i>Pontederia cordata</i>	70	24"-30" O.C.	1 QT.
BFI		BLUE FLAG IRIS	<i>Iris virginica</i>	71	24"-30" O.C.	1 QT.
SR		SOFT RUSH	<i>Juncus effusus var. pygmaeus or solutus</i>	70	24"-30" O.C.	1 QT.
TSB		THREE SQUARE BULRUSH	<i>Schoenoplectus americanus</i>	66	24"-30" O.C.	1 QT.
SHALLOW LAND PLANTINGS						
SM		SWAMP MILKWEED	<i>Asclepias incarnata</i>	60	24"-30" O.C.	1 QT.
CF		CARDINAL FLOWER	<i>Lobelia cardinalis</i>	60	24"-30" O.C.	1 QT.
SRM		SCARLET ROSE MALLOW	<i>Hibiscus coccineus</i>	60	24"-30" O.C.	1 QT.
JPW		DWARF JOE PYE WEED	<i>Eupatoriadelphus dubius</i>	60	24"-30" O.C.	1 QT.
ST		SPOTTED TRUMPETWEED	<i>Eupatoriadelphus maculatus</i>	60	24"-30" O.C.	1 QT.

GENERAL PLANTING NOTES:

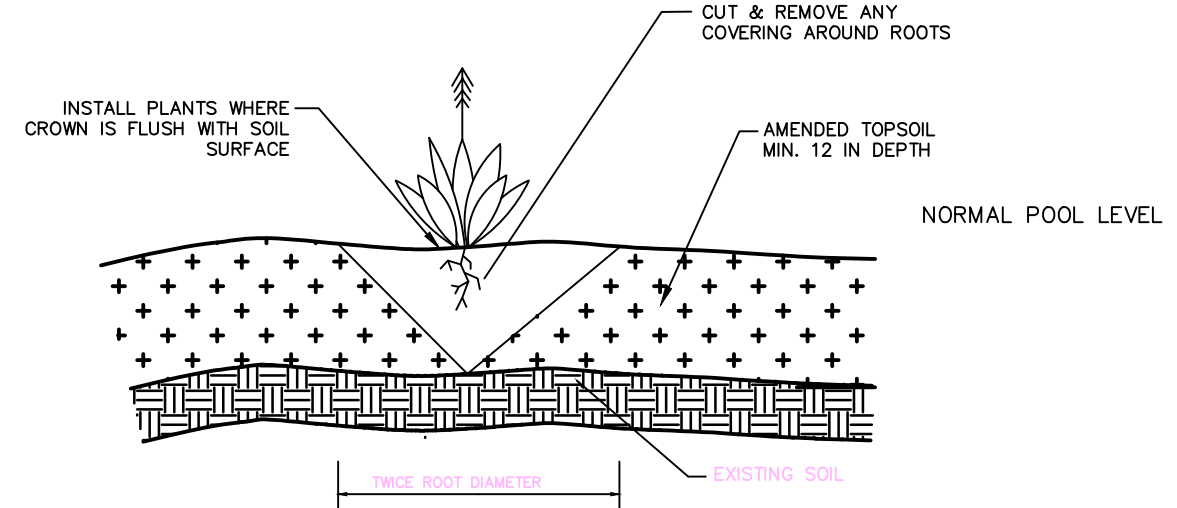
1. AVOID COMPACTING TOPSOIL TO PROMOTE HEALTHY ENVIRONMENTAL CONDITIONS FOR THE PLANTS.
2. ALL PLANTS SHOULD BE PLANTED IN THE INDICATED RANGE TO ENSURE SURVIVAL.
3. SHALLOW WATER AND SHALLOW LAND AREAS TO BE PLANTED WITH BARE ROOT, PLUGS, OR CONTAINER LIVE PLANTINGS AS SPECIFIED.
4. EXCAVATE A HOLE TWICE THE DIAMETER OF ROOT BALL AND EQUAL TO THE ROOT DEPTH OF THE INDIVIDUAL PLANT. PLACE PLANT IN HOLE WITH CROWN FLUSH WITH SOIL SURFACE. BACKFILL WITH TOPSOIL AND LIGHTLY PLANT.
5. BEGIN PLANTING DURING LOCAL GROWING SEASON IN ORDER TO ENSURE THAT PLANTS HAVE ADEQUATE TIME TO ESTABLISH BEFORE WINTER MONTHS.
6. OBTAIN PLANTS FROM: COASTAL PLAIN CONSERVATION NURSERY (252-482-5707), MELLOW MARSH FARMS (919-742-1200), CURE NURSERY (919-542-6186) OR ENGINEER APPROVED SUBSTITUTE.
7. REFER TO EROSION CONTROL DETAIL SHEET D1.2 FOR SEEDBED PREPARATION AND SEEDING SCHEDULES FOR AREAS NOT SPECIFIED IN THIS PLAN.

SHALLOW WATER PLANTING NOTES:

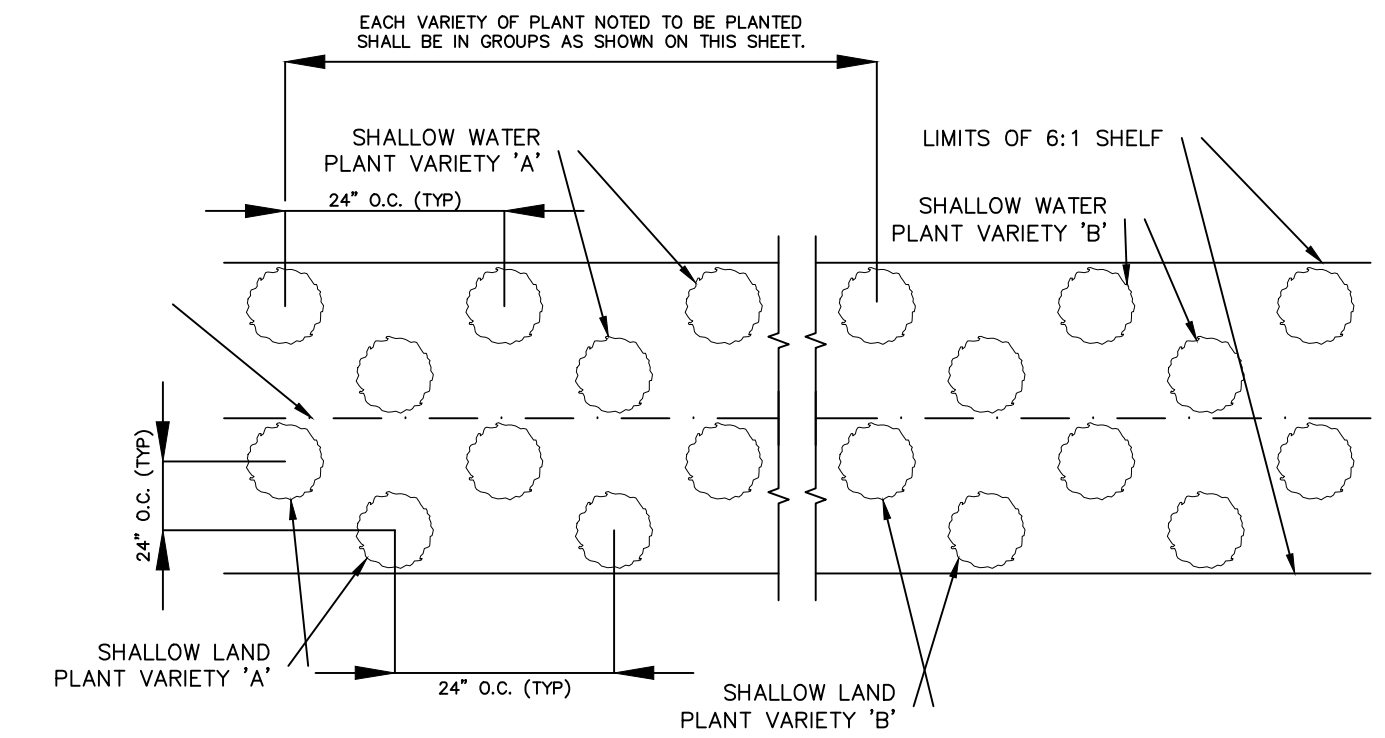
1. 70% OF PICKERELWEED SHOULD BE PLANTED WITHIN 5-6 INCHES BELOW NORMAL POOL.
2. 70% OF SWEETFLAG AND 70% OF SOUTHERN BLUE FLAG IRIS SHOULD BE PLANTED IN THE 2-3 INCHES BELOW NORMAL POOL.
3. 70% OF SOFT RUSH SHOULD BE PLANTED AT THE NORMAL POOL ELEVATION.

SHALLOW LAND PLANTING NOTES:

1. PLANTS IN THIS GROUP SHOULD NOT BE PLANTED IN AREAS THAT ARE INUNDATED FOR EXTENDED PERIODS.



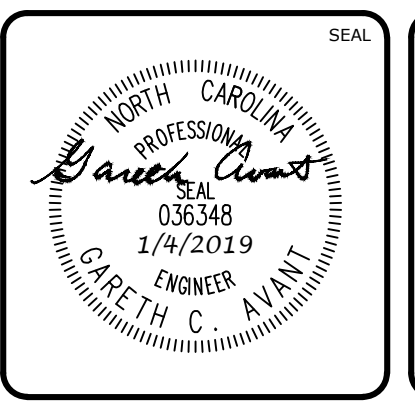
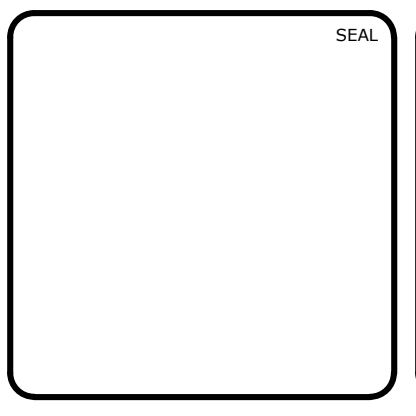
GENERAL PLANTING DETAIL
NTS



VEGETATED PLANTING SHELF DETAIL
NTS

- NOTES:
1. CONTINUE PLANTING SCHEME SHOWN FOR EACH OF THE 5 PLANT VARIETIES NOTED BELOW AROUND ENTIRE LENGTH OF THE SHALLOW WATER PLANTING ZONE
 2. CONTINUE PLANTING SCHEME SHOWN FOR EACH OF THE 5 PLANT VARIETIES NOTED BELOW AROUND ENTIRE LENGTH OF THE SHALLOW LAND PLANTING ZONE
 3. OTHER SPECIES WITH SIMILAR GROWTH HABITS AND MAY BE APPROVED AS LISTED IN THE "NCDOT STORMWATER DESIGN MANUAL" SECTION C-3.

REV. NO.	DESCRIPTIONS	DATE
8	STORMWATER POND REVISIONS	2019.01.04
7	REVISIONS PER NCDOT COMMENTS	2018.12.18
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5	REVISIONS PER NCDOT COMMENTS	2018.12.05
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3	REVISIONS PER CHATHAM COUNTY EROSION CONTROL COMMENTS	2018.10.15
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1	INITIAL SUBMITTAL	2018.09.18



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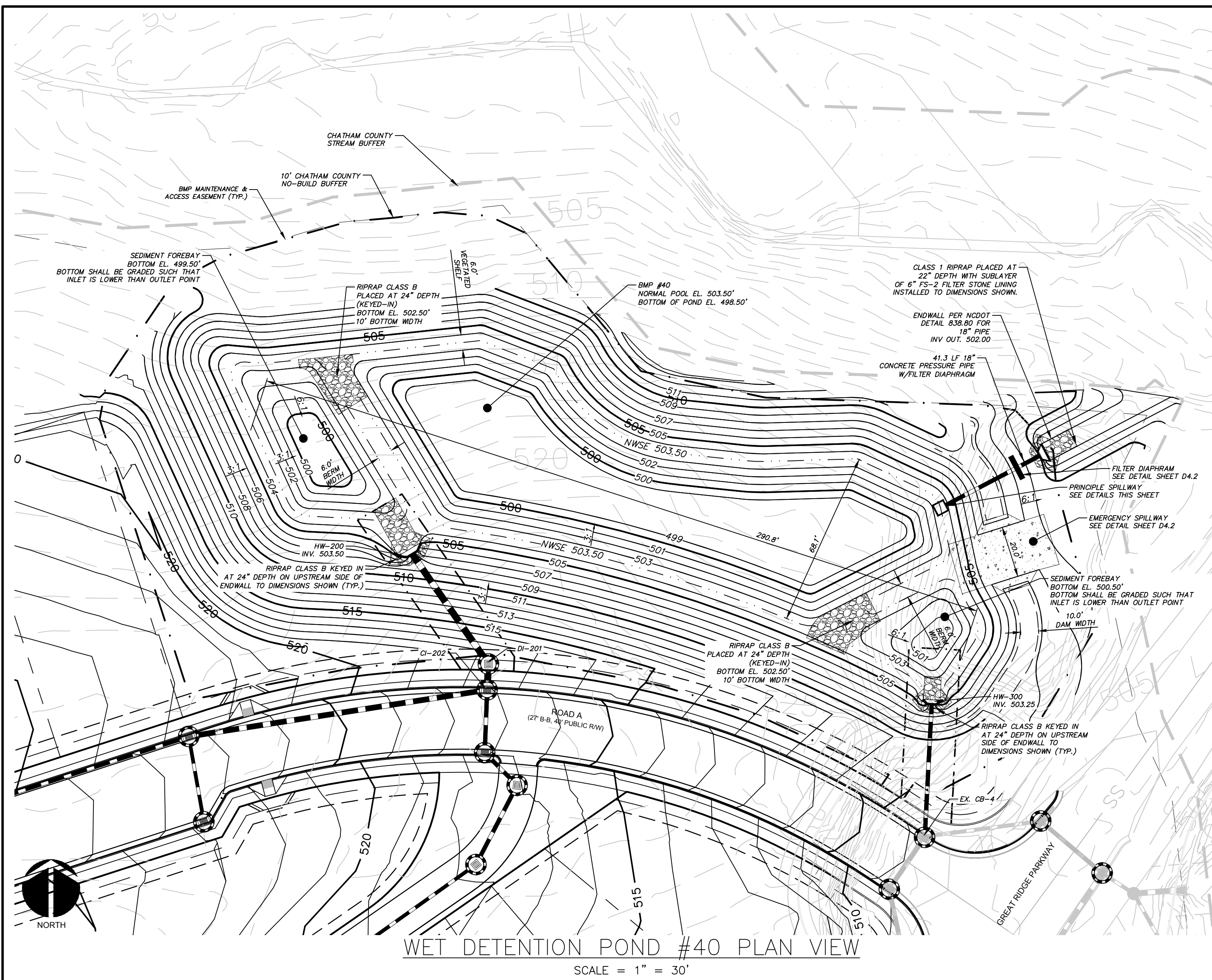
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 BC PHASE 12
 CHATHAM COUNTY, NORTH CAROLINA**
BMP #39 PLAN & DETAILS

DATE: SEPTEMBER 18, 2018
 MCE PROJ. # 02735-0231
 DRAWN: LEG
 DESIGNED: LEG
 CHECKED: GCA
 PROJ. MGR.: CHS

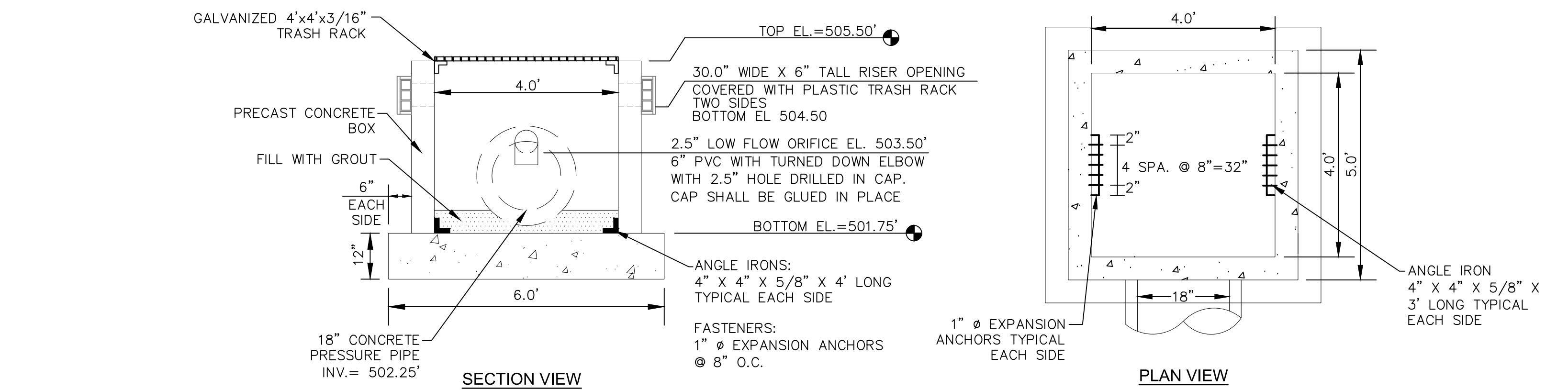
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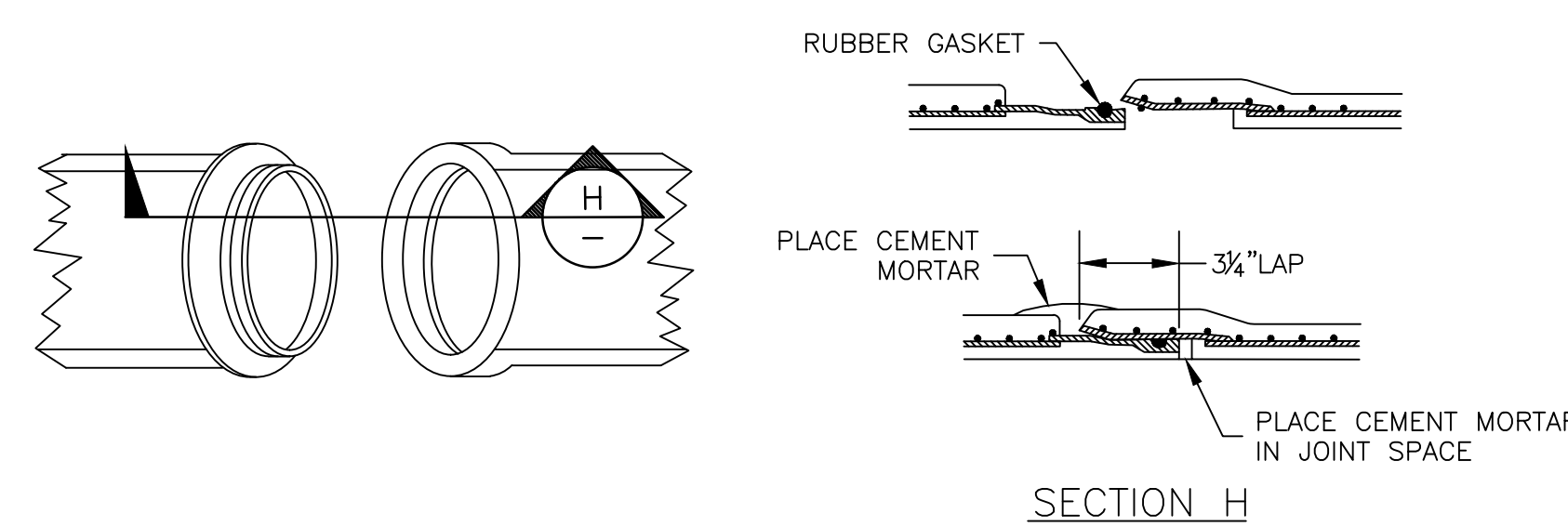
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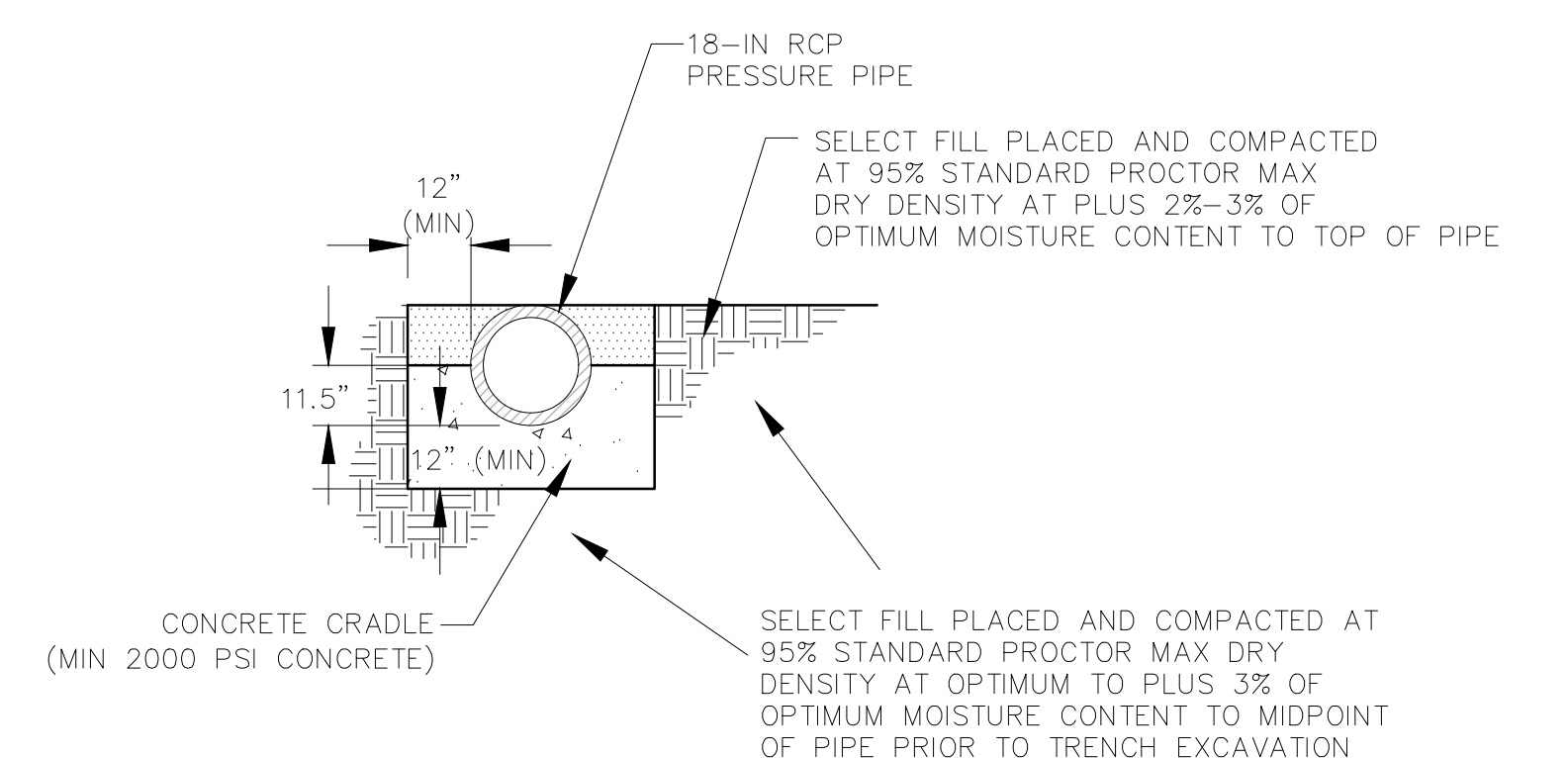
WET DETENTION POND #40 PLAN VIEW
SCALE = 1" = 30'



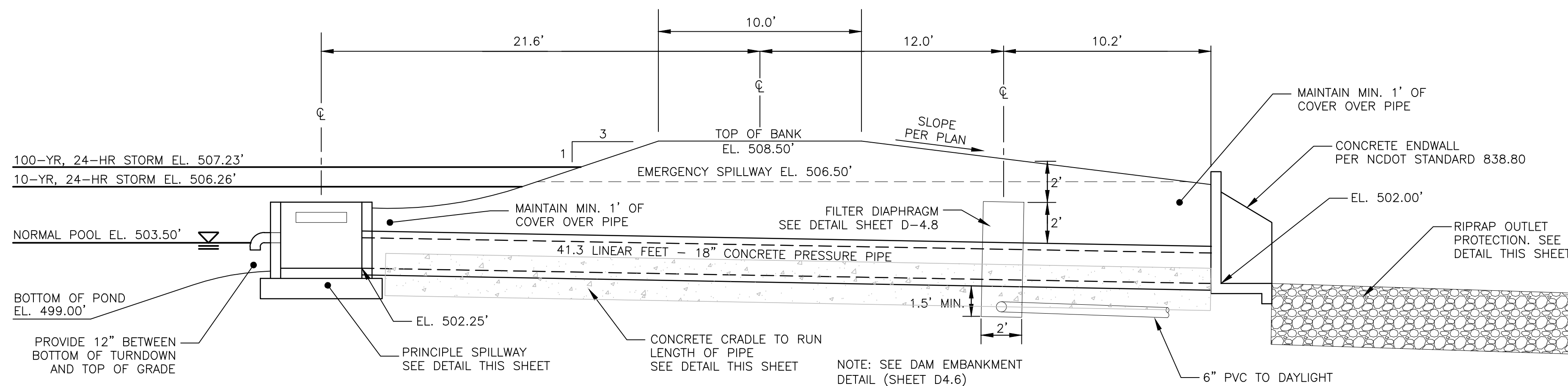
PRINCIPLE SPILLWAY
SCALE = 1" = 2'



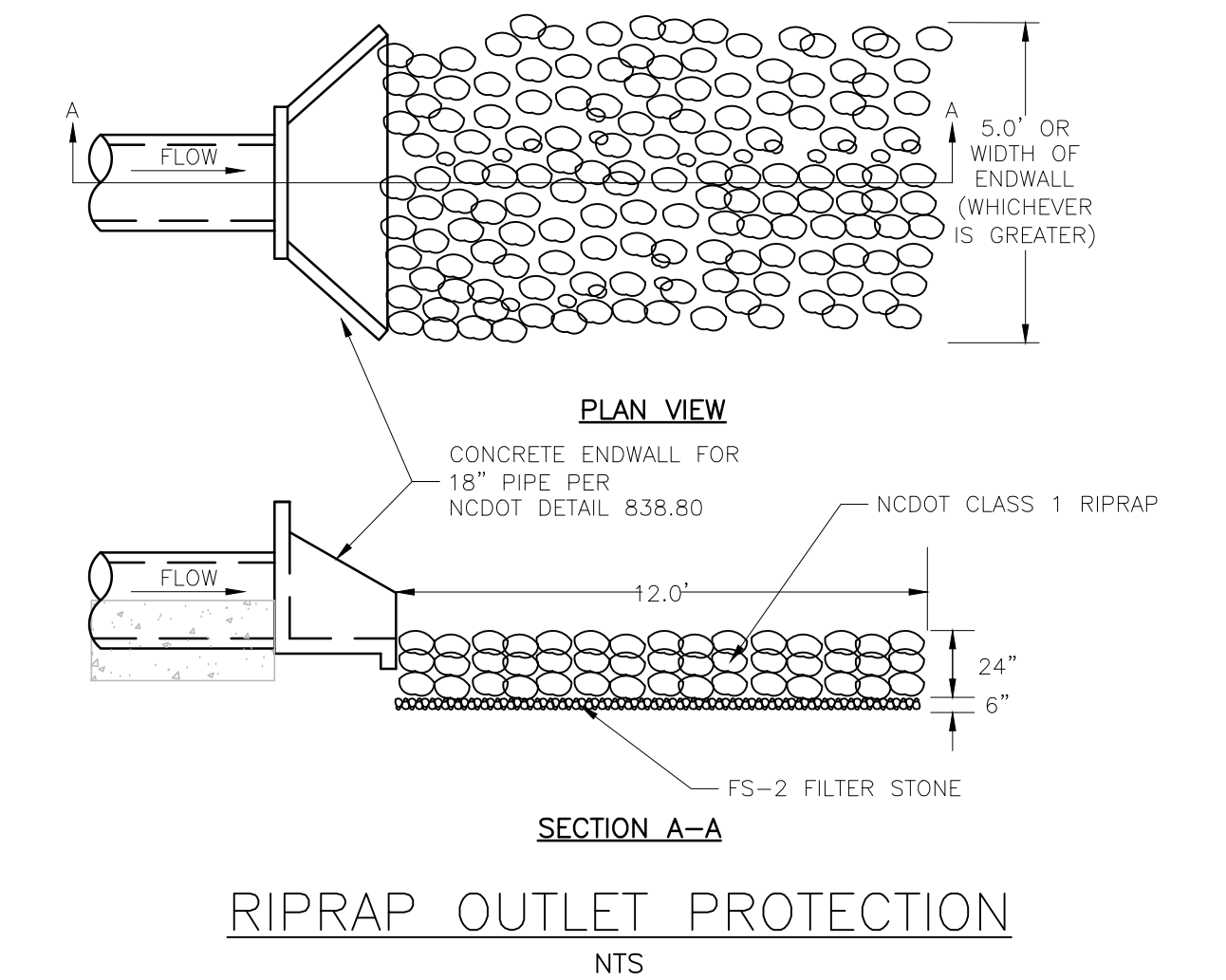
CONCRETE PRESSURE PIPE JOINT DETAIL
NTS



CONCRETE CRADLE DETAIL
NTS

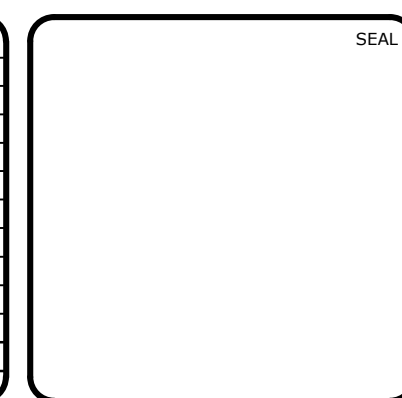


SECTION AT PRINCIPLE SPILLWAY
SCALE = NTS



RIPRAP OUTLET PROTECTION
NTS

REV. NO.	DESCRIPTIONS	DATE
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1	INITIAL SUBMITTAL	2018.09.18



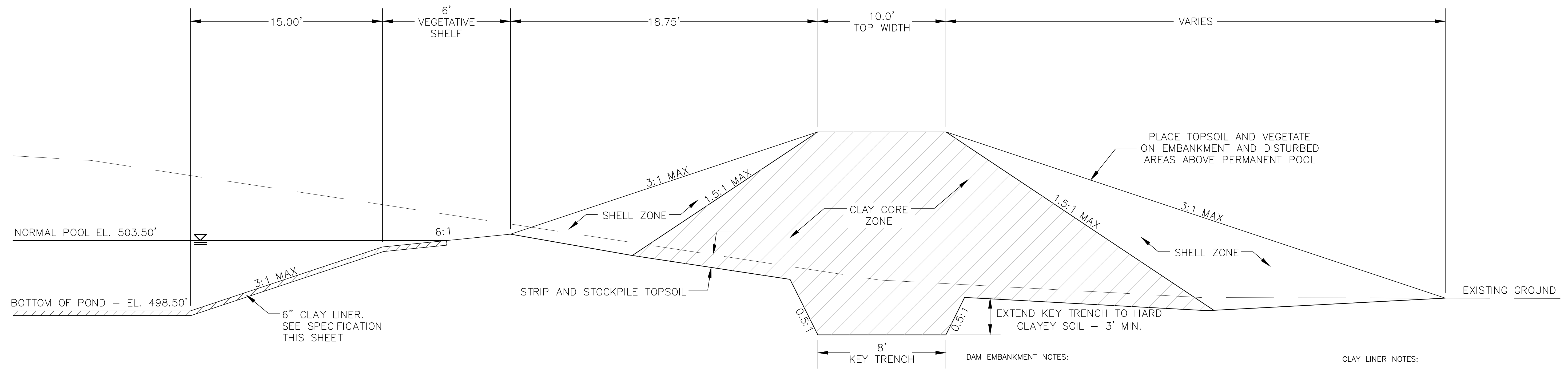
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CHATHAM COUNTY, NORTH CAROLINA**

BMP #40 PLAN & DETAILS

DATE: SEPTEMBER 18, 2018	SCALE: HORIZONTAL: AS NOTED	M&C FILE NUMBER: D4.X
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CHECKED: GCA		
PROJ. MGR.: CHS		
STATUS: FINAL DRAWINGS FOR CONSTRUCTION	REVISION: 8	



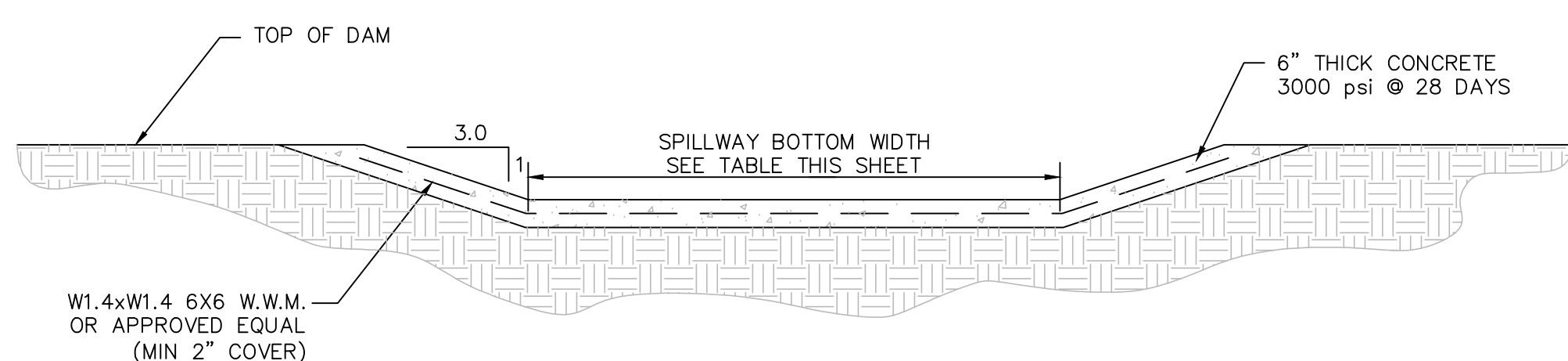
DAM EMBANKMENT DETAIL
NTS

DAM EMBANKMENT NOTES:

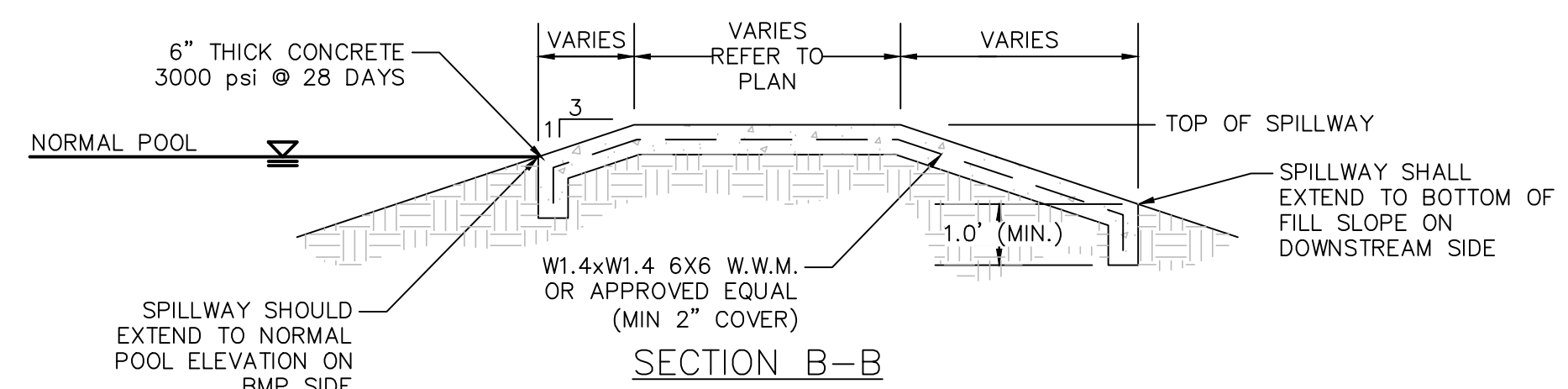
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- 2) ALL MATERIAL SHALL BE COMPACTED IN 6-8 INCH LIFTS TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY OR HIGHER (ASTM D-698). THE CLAY CORE ZONE WILL HAVE A MOISTURE CONTENT OF OPTIMUM TO 4 PERCENT ABOVE OPTIMUM MOISTURE CONTENT. THE SHELL ZONE FILL WILL HAVE A MOISTURE CONTENT FROM 2 PERCENT BELOW OPTIMUM MOISTURE CONTENT TO 4 PERCENT ABOVE OPTIMUM.
- 3) EMBANKMENT FILL:
SHELL ZONE: SOILS WITH LESS THAN 30% PASSING THE NO. 200 SIEVE OR A PI OF LESS THAN 10 WHEN THE PERCENTAGE OF MATERIAL PASSING THE NO. 200 SIEVE IS GREATER THAN 30 PERCENT. SOILS WHICH ARE CLASSIFIED AS CLAYS (CH OR CL) SHOULD NOT BE USED AT THE FACE OF THE SHELL ZONES.
CLAY CORE ZONE: CH, CL OR SC MATERIAL WITH A PI RANGING BETWEEN 15 AND 60
- 4) NO FILL SHALL CONTAIN ROCKS OR GRAVEL LARGER THAN 4 INCHES IN DIAMETER.
- 5) A PROFESSIONAL GEOTECHNICAL ENGINEER SHALL APPROVE ALL MATERIALS USED FOR THE EMBANKMENT AND SUPERVISE CONSTRUCTION.
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CLAY LINER NOTES:

IN ORDER TO HELP SUSTAIN THE PERMANENT POOL AND TO PREVENT WATER FROM INFILTRATING TOO QUICKLY INTO THE UNDERLYING SOIL, THE CONTRACTOR SHALL INSTALL A 6" THICK CLAY LINER ON THE BOTTOM OF THE BMP AREA UP TO THE NORMAL POOL ELEVATION. THE LINER CAN BE ACCOMPLISHED BY BLENDING EXISTING SITE SOILS WITH CLAY TO ACHIEVE A LOW PERMEABILITY MIXTURE OR BY INSTALLING A GEOSYNTHETIC LINER MADE OF A BENTONAT CL. IF THE CONTRACTOR CHOOSES TO BLEND THE EXISTING SITE SOILS WITH CLAY, THE ONSITE GEOTECHNICAL ENGINEER SHALL DETERMINE THE AMOUNT OF CLAY TO ADD, THE DEGREE OF COMPACTION, AND WILL OVERSEE THE INSTALLATION OF THE CLAY LINER. THE MAXIMUM PERMEABILITY RATE FOR THE LINER SHALL BE 0.01 IN/HR IN ACCORDANCE WITH THE NCDENR BMP MANUAL. THE PROPOSED MATERIAL FOR THIS LINER SHALL BE TESTED BY THE ONSITE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT. THE RESULTS OF THIS TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR REVIEW PRIOR TO PLACEMENT. UPON COMPLETION OF LINER INSTALLATION, A 4" MINIMUM LAYER OF TOPSOIL SHALL BE ADDED OVER THE LINER TO PROVIDE A HEALTHY MEDIA FOR VEGETATION GROWTH.



SECTION A-A

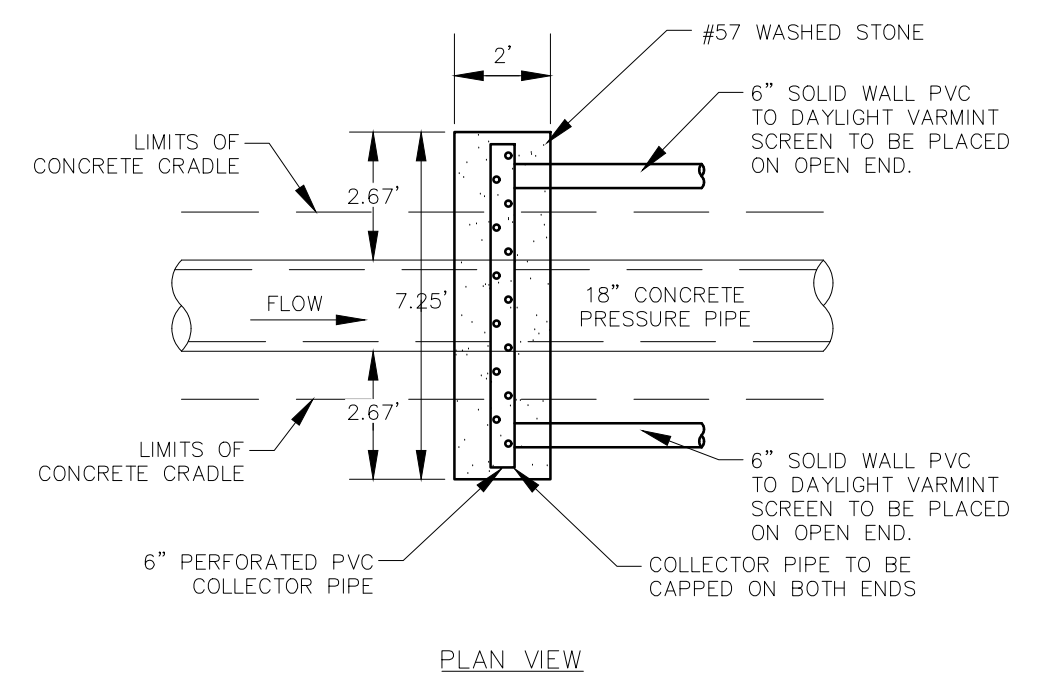


SECTION B-B

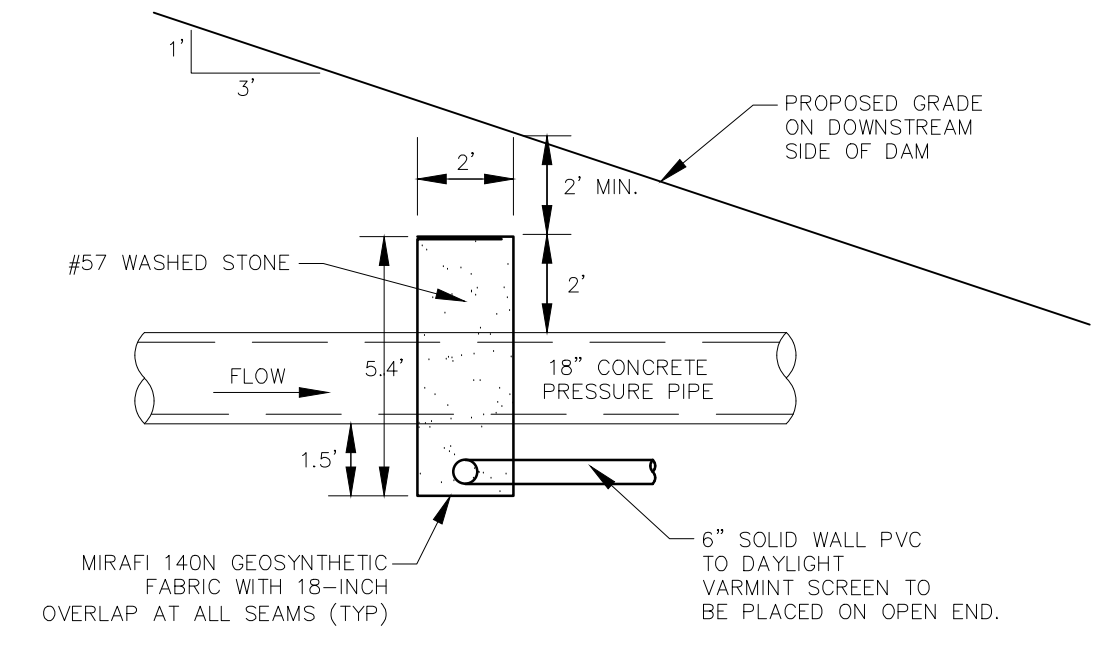
BMP #40	NORMAL POOL EL.	TOP DAM EL.	SPILLWAY BOTTOM EL.	SPILLWAY BOTTOM WIDTH
	503.50	508.50	506.50	20'

NOTE:
EXPANSION/CONTRACTION JOINTS PER AMERICAN CONCRETE INSTITUTE (ACI) STANDARDS FOR SLABS ON GRADE.

EMERGENCY SPILLWAY DETAIL
NTS

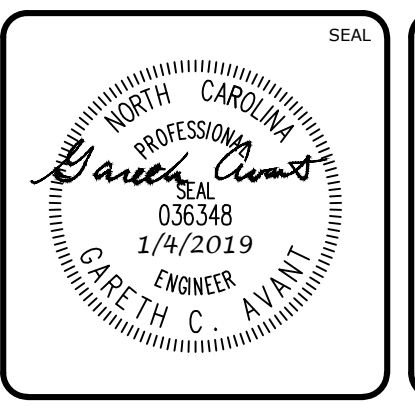
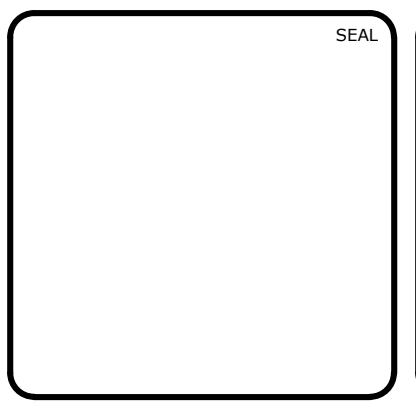


PLAN VIEW



FILTER DIAPHRAGM DETAIL
NTS

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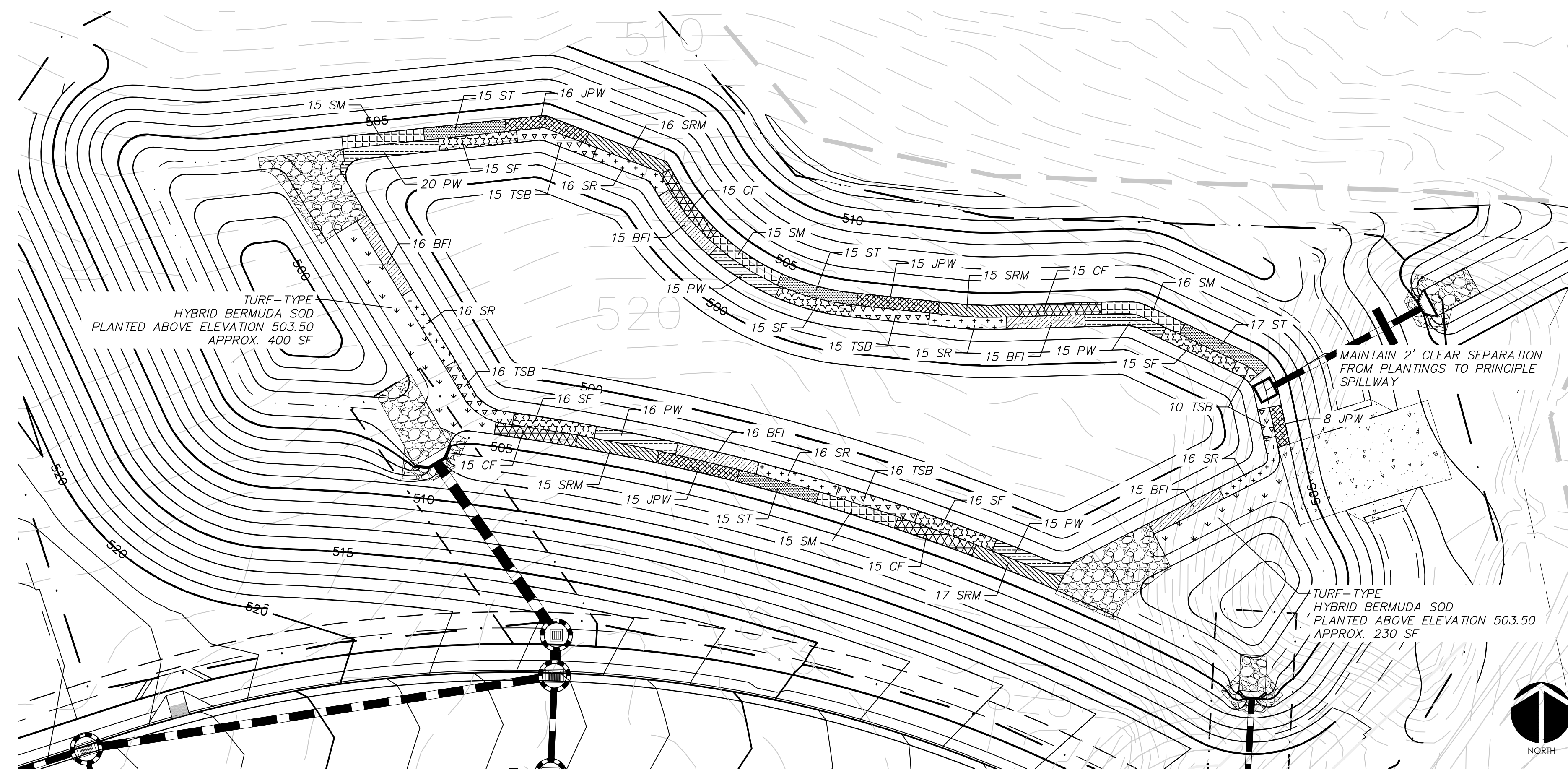
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BMP #40 PLAN & DETAILS

DATE: SEPTEMBER 18, 2018	SCALE: N/A	M&C FILE NUMBER: D4.X
MCE PROJ. # 02735-0231	HORIZONTAL: AS NOTED	DRAWING NUMBER: D4.6
DRAWN: LEG	VERTICAL: N/A	
DESIGNED: LEG		
CHECKED: GCA		
PROJ. MGR.: CHS		
STATUS: FINAL DRAWINGS FOR CONSTRUCTION	REVISION: 8	



WET DETENTION POND #40 PLANTING PLAN
SCALE = 1" = 20'

PLANTING SCHEDULE						
SYM.	ABB.	COMMON NAME	BOTANICAL NAME	QUANTITY	SPACING	CONTAINER SIZE AT PLANTING
SHALLOW WATER PLANTINGS						
SF		SWEETFLAG	<i>Acorus subcordatum</i>	77	24"-30" O.C.	1 QT.
PW		PICKERELWEED	<i>Pontederia cordata</i>	81	24"-30" O.C.	1 QT.
BFI		BLUE FLAG IRIS	<i>Iris virginica</i>	77	24"-30" O.C.	1 QT.
SR		SOFT RUSH	<i>Juncus effusus var. pyraei or solutus</i>	79	24"-30" O.C.	1 QT.
TSB		THREE SQUARE BULRUSH	<i>Schoenoplectus americanus</i>	72	24"-30" O.C.	1 QT.
SHALLOW LAND PLANTINGS						
SM		SWAMP MILKWEED	<i>Asclepias incarnata</i>	61	24"-30" O.C.	1 QT.
CF		CARDINAL FLOWER	<i>Loebelia cardinalis</i>	60	24"-30" O.C.	1 QT.
SRM		SCARLET ROSE MALLOW	<i>Hibiscus coccineus</i>	63	24"-30" O.C.	1 QT.
JPW		DWARF JOE PYE WEED	<i>Eupatoriadelphus dubius</i>	54	24"-30" O.C.	1 QT.
ST		SPOTTED TRUMPETWEED	<i>Eupatoriadelphus maculatus</i>	62	24"-30" O.C.	1 QT.

GENERAL PLANTING NOTES:

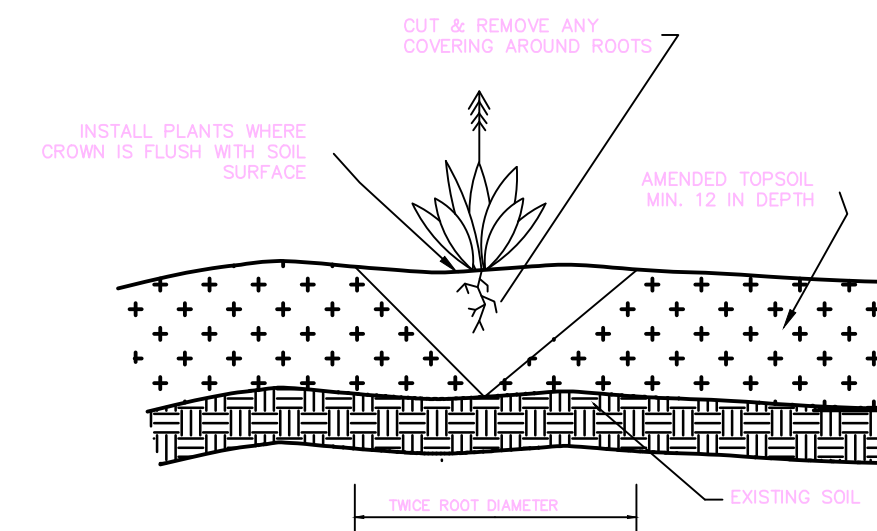
1. AVOID COMPACTING TOPSOIL TO PROMOTE HEALTHY ENVIRONMENTAL CONDITIONS FOR THE PLANTS.
2. ALL PLANTS SHOULD BE PLANTED IN THE INDICATED RANGE TO ENSURE SURVIVAL.
3. SHALLOW WATER AND SHALLOW LAND AREAS TO BE PLANTED WITH BARE ROOT, PLUGS, OR CONTAINER LIVE PLANTINGS AS SPECIFIED.
4. EXCAVATE A HOLE TWICE THE DIAMETER OF ROOT BALL AND EQUAL TO THE ROOT DEPTH OF THE INDIVIDUAL PLANT. PLACE PLANT IN HOLE WITH CROWN FLUSH WITH SOIL SURFACE. BACKFILL WITH TOPSOIL AND LIGHTLY PLANT.
5. BEGIN PLANTING DURING LOCAL GROWING SEASON IN ORDER TO ENSURE THAT PLANTS HAVE ADEQUATE TIME TO ESTABLISH BEFORE WINTER MONTHS.
6. OBTAIN PLANTS FROM: COASTAL PLAIN CONSERVATION NURSERY (252-482-5707), MELLOW MARSH FARMS (919-742-1200), CURE NURSERY (919-542-6186) OR ENGINEER APPROVED SUBSTITUTE.
7. REFER TO EROSION CONTROL DETAIL SHEET D1.2 FOR SEEDBED PREPARATION AND SEEDING SCHEDULES FOR AREAS NOT SPECIFIED IN THIS PLAN.

SHALLOW WATER PLANTING NOTES:

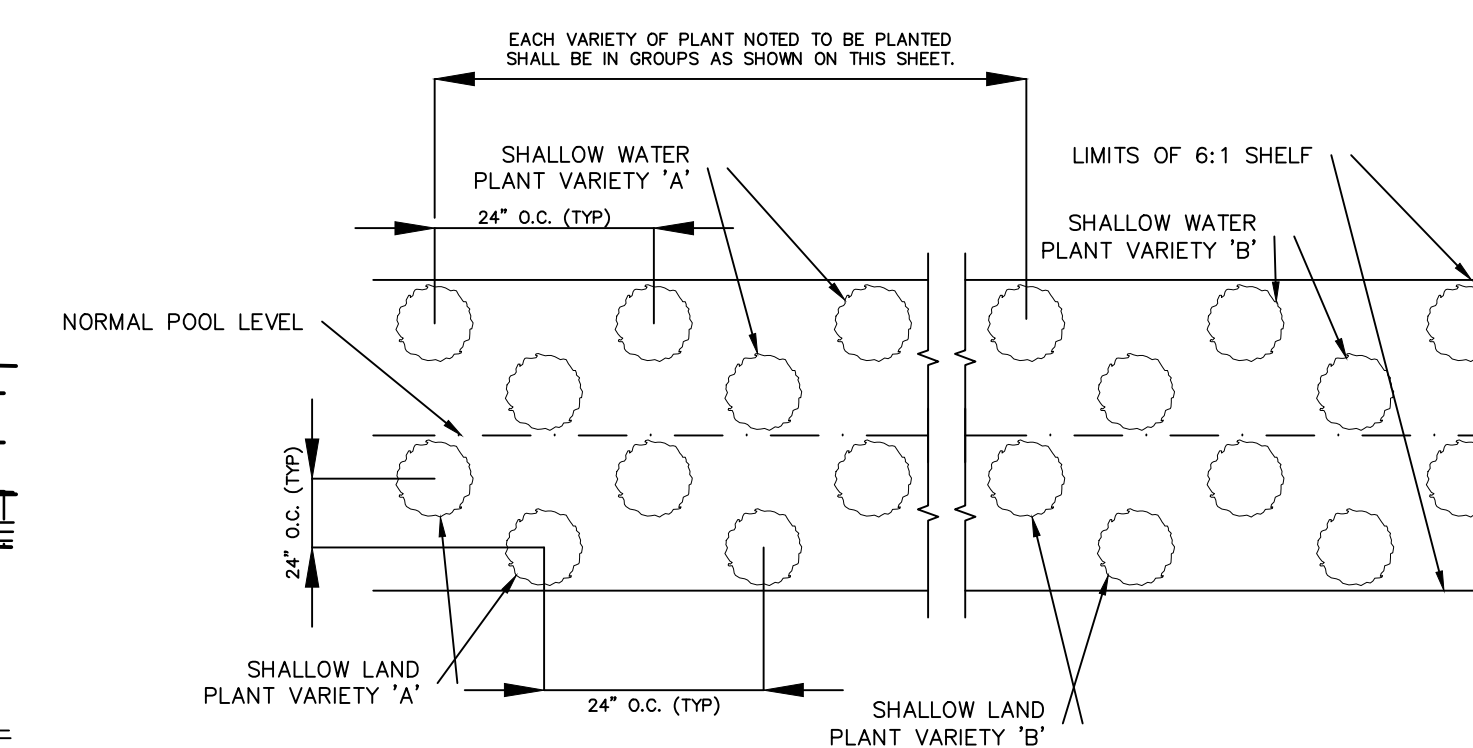
1. 70% OF PICKERELWEED SHOULD BE PLANTED WITHIN 5-6 INCHES BELOW NORMAL POOL.
2. 70% OF SWEETFLAG AND 70% OF SOUTHERN BLUE FLAG IRIS SHOULD BE PLANTED IN THE 2-3 INCHES BELOW NORMAL POOL.
3. 70% OF SOFT RUSH SHOULD BE PLANTED AT THE NORMAL POOL ELEVATION.

SHALLOW LAND PLANTING NOTES:

1. PLANTS IN THIS GROUP SHOULD NOT BE PLANTED IN AREAS THAT ARE INUNDATED FOR EXTENDED PERIODS.



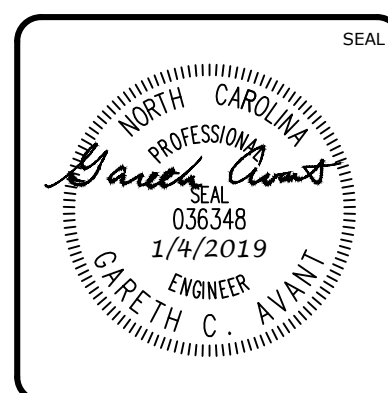
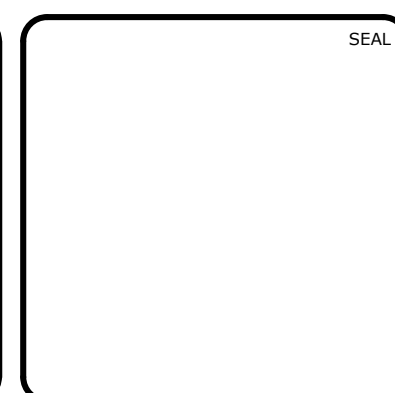
GENERAL PLANTING DETAIL
NTS



VEGETATED PLANTING SHELF DETAIL
NTS

- NOTES:
1. CONTINUE PLANTING SCHEME SHOWN FOR EACH OF THE 5 PLANT VARIETIES NOTED BELOW AROUND ENTIRE LENGTH OF THE SHALLOW WATER PLANTING ZONE
 2. CONTINUE PLANTING SCHEME SHOWN FOR EACH OF THE 5 PLANT VARIETIES NOTED BELOW AROUND ENTIRE LENGTH OF THE SHALLOW LAND PLANTING ZONE
 3. OTHER SPECIES WITH SIMILAR GROWTH HABITS AND MAY BE APPROVED AS LISTED IN THE "NCDEQ STORMWATER DESIGN MANUAL" SECTION C-3.

REV. NO.	DESCRIPTIONS / REVISIONS	DATE
8	STORMWATER POND REVISIONS	2019.01.04
7	REVISIONS PER NCDOT COMMENTS	2018.12.18
6	REVISIONS PER NCDOT COMMENTS	2018.12.13
5	REVISIONS PER NCDOT COMMENTS	2018.12.05
4	REVISIONS PER NCDOT PWSS COMMENTS	2018.11.02
3	REVISIONS PER CHATHAM COUNTY EROSION CONTROL COMMENTS	2018.10.15
2	REVISIONS PER COUNTY WATER COMMENTS	2018.10.01
1	INITIAL SUBMITTAL	2018.09.18



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BRIAR CHAPEL™
by
Newland COMMUNITIES

**BRIAR CHAPEL
BC PHASE 12
CHATHAM COUNTY, NORTH CAROLINA**
BMP #40 PLAN & DETAILS

DATE: SEPTEMBER 18, 2018	SCALE: AS NOTED	M&C FILE NUMBER: D4.X
M&C PROJ. # 02735-0231	HORIZONTAL: AS NOTED	DRAWING NUMBER: D4.7
DRAWN: LEG	VERTICAL: N/A	
DESIGNED: LEG		
CHECKED: GCA		
PROJ. MGR.: CHS		

STATUS: FINAL DRAWINGS FOR CONSTRUCTION	REVISION: 8
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