

RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE
SPECIES _____ RATE (lb./acre)
TALL FESCUE _____ 80
KOBE LESPEDEZA _____ 40

NURSE PLANTS:
BETWEEN MAY 1 AND AUG. 15, ADD 10 lb/acre GERMAN MILLET OR 15 lb/acre SUDANGRASS. PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 40 lb/acre RYE (GRAIN)

SEEDING DATES:
BEST: AUG. 15 - SEPT. 15 POSSIBLE: AUG. 20 - OCT. 25
LATE WINTER: FEB. 15 - MAR. 21 FEB. 1 - APR. 15.

FALL IS BEST FOR TALL FESCUE AND LATER WINTER FOR LESPEDEZAS. OVERSEEDING OF KOBE LESPEDEZA OVER FALL-SEEDED TALL FESCUE IS VERY EFFECTIVE.

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10-10-10 FERTILIZER

MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE IN THE SECOND YEAR UNLESS GROWTH IS FULLY ADEQUATE. MAY BE MOWED ONCE OR TWICE A YEAR, BUT MOWING IS NOT NECESSARY. RESEED, FERTILIZE AND MULCH DAMAGED AREAS IMMEDIATELY.

RECOMMENDATIONS FOR GRASS-LINED CHANNELS

SEEDING MIXTURE
SPECIES _____ RATE (lb./acre)
TALL FESCUE _____ 200

NURSE PLANTS:
BETWEEN MAY 1 AND AUG. 15, ADD 10 lb/acre SUDANGRASS OR 15 lb/acre GERMAN MILLET. PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 40 lb/acre RYE (GRAIN)

SEEDING DATES:
BEST: AUG. 25 - OCT. POSSIBLE: FEB. - APR. 15

AVOID SEEDING FROM NOV. TO JAN. IF SEEDING MUST BE DONE AT THIS TIME, ADD 40 lb/acre RYE GRAIN AND USE A CHANNEL LINING THAT OFFERS MAXIMUM PROTECTION

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 1,000 lb/acre 10-10-10 FERTILIZER

MULCH:
USE ROLLED EROSION CONTROL PRODUCT TO COVER THE BOTTOM OF THE CHANNELS AND DITCHES, AND STAPLE SECURELY. THE LINING SHOULD EXTEND ABOVE THE HIGHEST CALCULATED DEPTH OF FLOW. ON CHANNEL SIDE SLOPES ABOVE THIS HEIGHT, AND IN DRAINAGES NOT REQUIRING TEMPORARY LININGS, APPLY 4,000 lb/acre GRAIN STRAW, AND ANCHOR STRAW BY STAPLING NETTING OVER THE TOP.

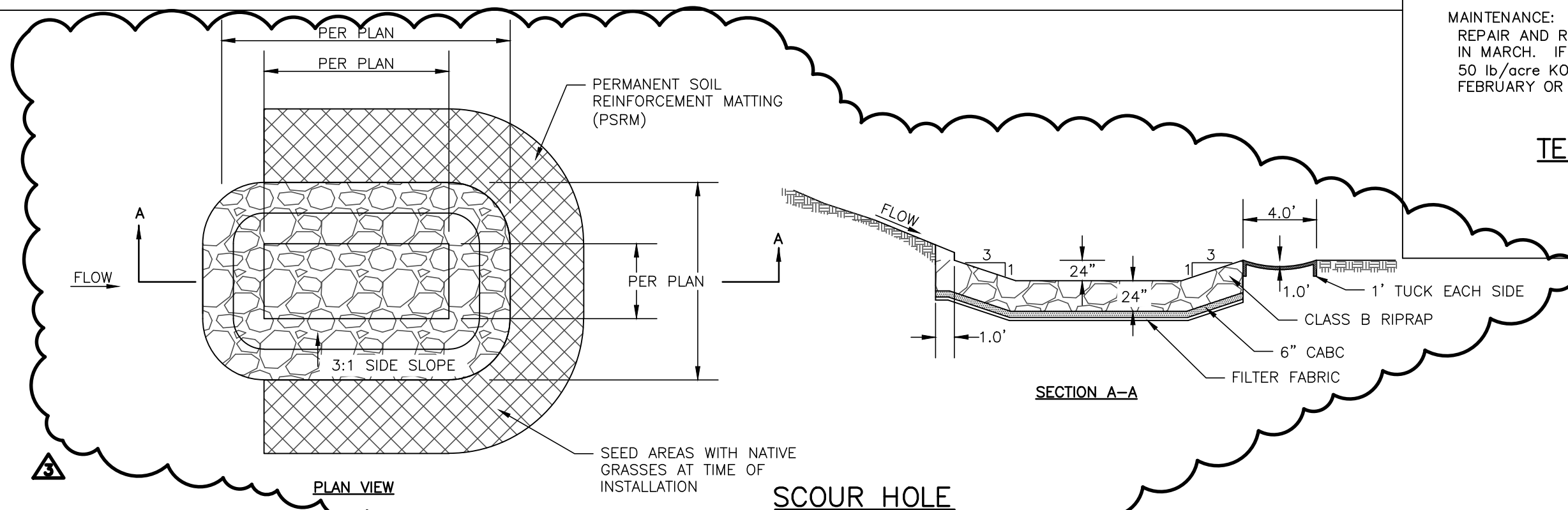
MULCH AND ANCHORING MATERIALS MUST NOT BE ALLOWED TO WASH DOWN SLOPES WHERE THEY CAN CLOG DRAINAGE DEVICES.

MAINTENANCE:
INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 lb/acre 10-10-10. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

NOTE:
SEE NCDENR'S EROSION AND SEDIMENT CONTROL PLANNING DESIGN MANUAL SECTION 6.11 FOR ADDITIONAL PERMANENT SEEDING OPTIONS.

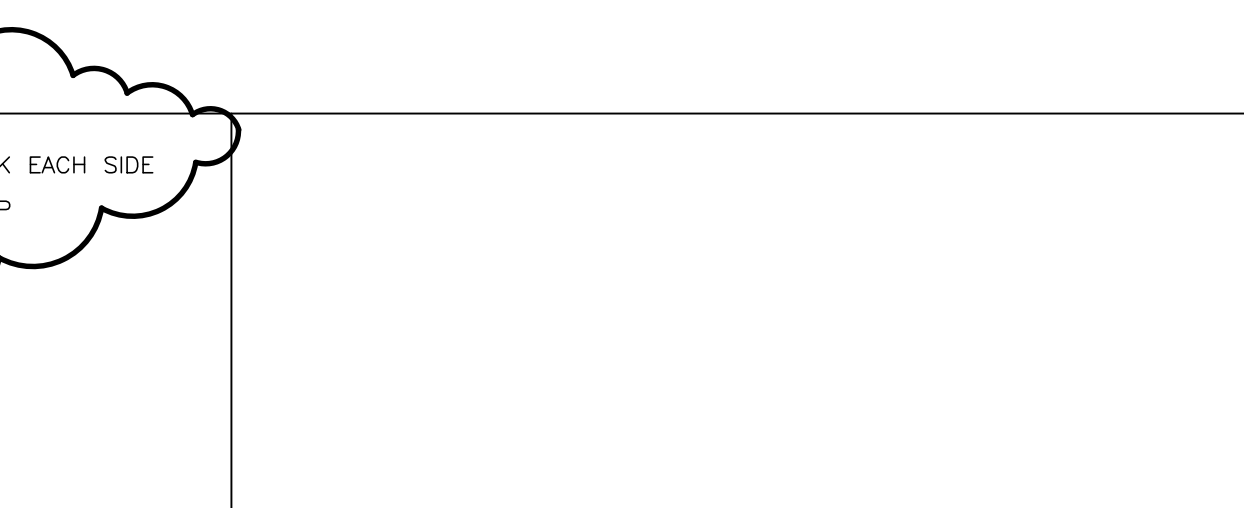
PERMANENT SEEDING SCHEDULE

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TEMPORARY SEEDING SCHEDULE

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NOTES:
POSITIVE GRADE MUST BE PROVIDED TO ASSURE DRAINAGE. IF SLOPE EXCEEDS 2% SEED AND MULCH DIVERSION. TRY NOT TO EXCEED 5% MAXIMUM D.A. = 5 ACRES WITHOUT SUPPORTING CALCULATIONS.
DIVERSIONS AT THE TOP OF SLOPES MUST EMPTY INTO AN APPROVED SLOPE DRAIN. BERM/DITCH IS MOST COMMONLY USED.

a. MACHINE COMPACTION OF ALL FILL IS REQUIRED. DIVERSIONS SUFFICIENT TO DIRECT ALL SEDIMENT-LADEN STORMWATER INTO A SEDIMENT CONTROL DEVICE MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING OF THE AREA (OR IN CONJUNCTION WITH THIS OPERATION) IF SEDIMENT CONTROLS AND DIVERSIONS ARE INSTALLED AS EACH CRITICAL POINT IS REACHED).
b. DIVERSIONS SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS.
c. DIVERSIONS SHOULD BE SEEDED AND MULCHED IF THEY ARE TO REMAIN IN PLACE OVER 30 DAYS.
d. CHECK DEVICE AFTER EACH RAIN, BUT ONCE A WEEK REGARDLESS. REPAIR AS NECESSARY.

MAINTENANCE

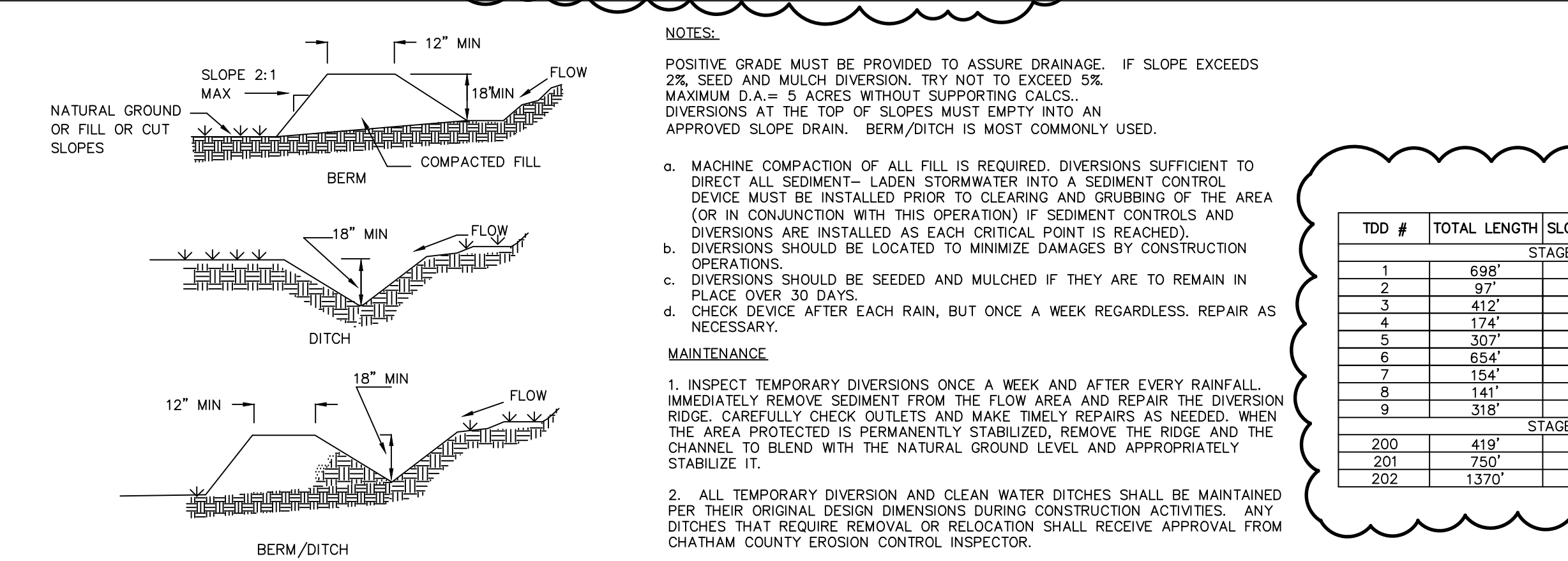
1. INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

2. ALL TEMPORARY DIVERSION AND CLEAN WATER DIVERSION DITCHES SHALL BE MAINTAINED PER THEIR ORIGINAL DESIGN DIMENSIONS DURING CONSTRUCTION ACTIVITIES. ANY DITCHES THAT REQUIRE REMOVAL OR RELOCATION SHALL RECEIVE APPROVAL FROM CHATHAM COUNTY EROSION CONTROL INSPECTOR.

TDD #	TOTAL LENGTH	SLOPE (%)	LINER	RECEIVING SLOPE DRAIN SIZE (IN.)	RECEIVING SLOPE DRAIN SIZE (IN.)	SIDE SLOPE (H:V:FT)	DEPTH (FT)	TOP WIDTH (FT)
STAGE 1 DIVERSIONS								
1	698'	1.8	STRAW W/NET	24	24	3	0.94	5.67
2	97'	2.1	STRAW W/NET	18	18	3	0.48	2.90
3	412'	3.2	STRAW W/NET	18	18	3	0.24	1.41
4	174'	1.7	STRAW W/NET	18	18	3	0.51	3.04
5	307'	7.2	SYNTHETIC MAT	18	18	3	0.34	2.05
6	654'	3.4	SYNTHETIC MAT	24	24	3	0.74	4.45
7	154'	13.0	SC250	24	24	3	0.30	1.80
8	141'	17.0	SC250	24	24	3	0.24	1.43
9	318'	16.4	SC250	24	24	3	0.28	1.71
STAGE 2 DIVERSIONS								
200	419'	2.6	STRAW W/NET	24	24	3	0.72	4.30
201	750'	3.9	SYNTHETIC MAT	24	24	3	0.70	4.20
202	1370'	4.1	SC250	24	24	3	0.84	5.07

TEMPORARY DIVERSION/CLEAN WATER DIVERSION DITCH

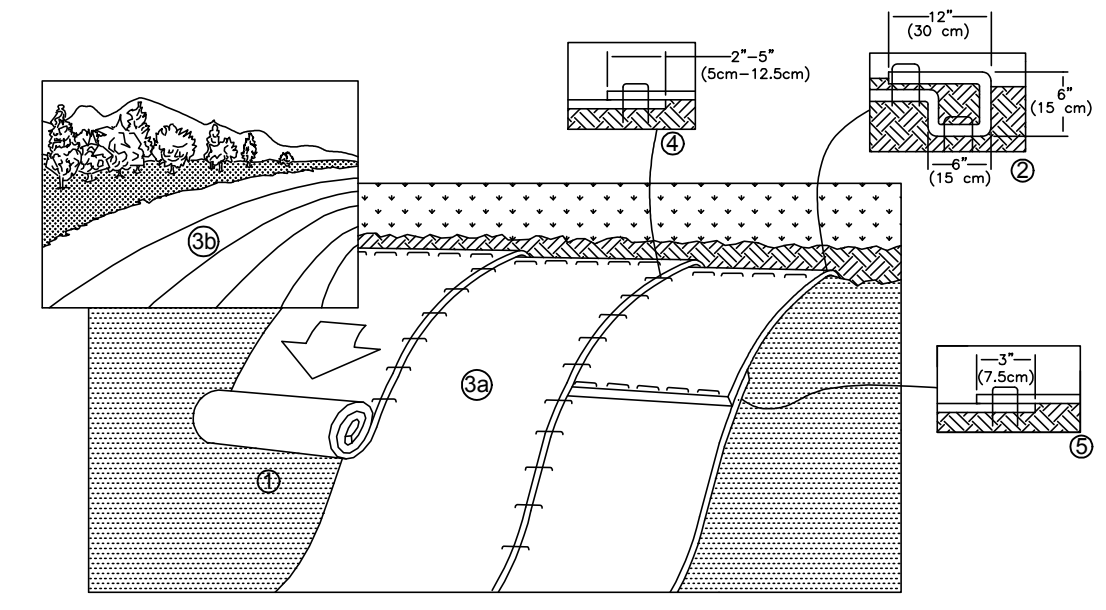
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INSTALLATION AND MAINTENANCE GUIDELINES

INSERT DISCHARGE HOSE FROM PUMP INTO DANDY DEWATERING BAG. A MINIMUM OF SIX INCHES (6") AND TIGHTLY SECURE WITH THE ATTACHED STRAP TO PREVENT WATER FROM FLOWING OUT OF THE UNIT WITHOUT BEING FILTERED. IF USING OPTIONAL ABSORBENTS, PLACE ABSORBENT BOOM INTO THE DANDY DEWATERING BAG. CLIP ABSORBENT BOOM TO TETHER PROVIDED INSIDE THE UNIT.

MAINTENANCE: REPLACE THE UNIT WHEN 1/2 FULL OF SEDIMENT OR WHEN SEDIMENT HAS REDUCED THE FLOW RATE OF THE PUMP DISCHARGE TO AN IMPRACTICAL RATE. IF USING OPTIONAL OIL ABSORBENTS, REMOVE AND REPLACE ABSORBENT WHEN NEAR SATURATION.

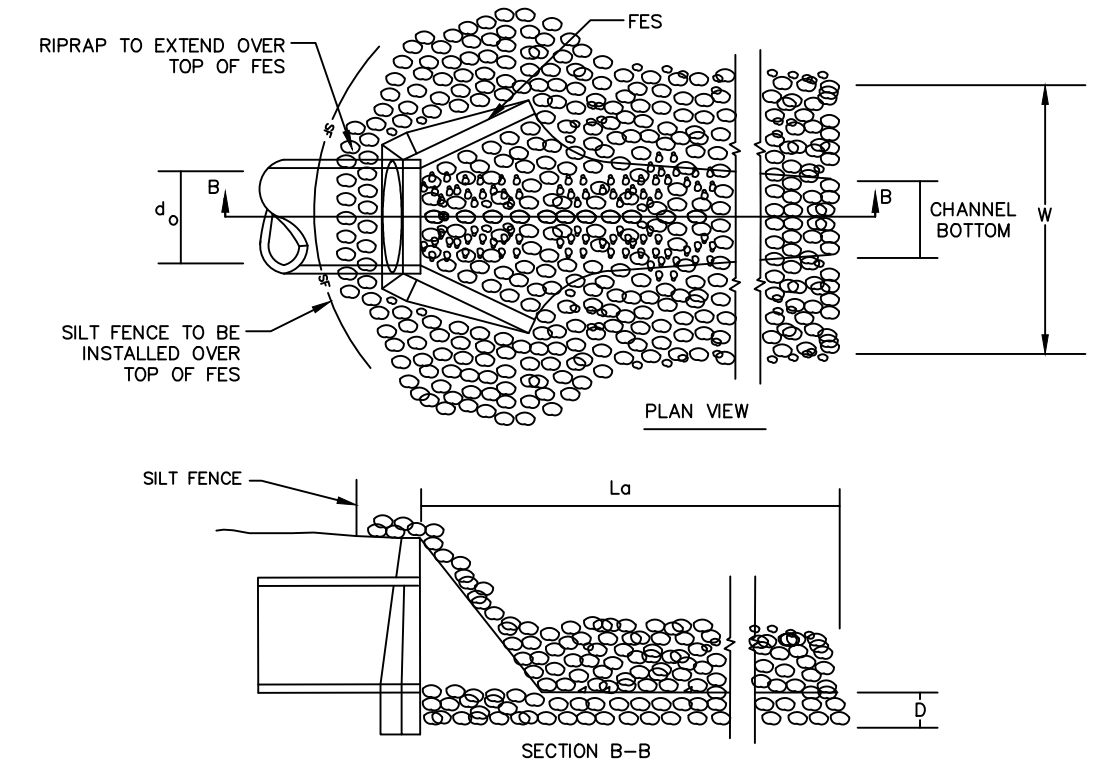


- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPs), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
 - BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPs IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECPs EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPs WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECPs BACK OVER SEED AND COMPACTED SOIL. SECURE RECPs OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECPs.
 - ROLL THE RECPs (A.) DOWN (FOR SLOPES 3:1 OR GREATER) OR (B.) HORIZONTALLY (FOR SLOPES LESS THAN 3:1) ACROSS THE SLOPE. RECPs WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPs MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
 - THE EDGES OF PARALLEL RECPs MUST BE STAPLED WITH APPROXIMATELY 2" -5" (5 CM -12.5 CM) OVERLAP DEPENDING ON RECP'S TYPE.
 - CONSECUTIVE RECPs SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP'S WIDTH.
- NOTE:** *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECPs.

TEMPORARY STABILIZATION FOR SLOPES GREATER THAN 10 FEET

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- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
 - RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
 - REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
 - APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
 - CONTINUE TILLAGE UNTIL A WELL - PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
 - SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
 - MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
 - INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON. IF STAND SHOULD BE OVER 60% DAMAGED REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
 - CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.
- * APPLY: AGRICULTURAL LIMESTONE - 2 TONS/ACRE OR 3 TONS/ACRE IN CLAY SOILS
FERTILIZER - 1000 LBS/ACRE (10-10-10)
SUPERPHOSPHATE - 500 LBS/ACRE (20%)
MULCH - 2 TONS/ACRE (SMALL GRAIN STRAW)ANCHOR - ASPHALT EMULSION AT 450 GAL./ACRE



OUTLET NO.	Do (IN.)	Ls (FT.)	W (FT.)	DEPTH (IN.)	LINING CLASSIFICATION
HW-13-100	30	25	8	36	CLASS 2
HW-13-130	18	12	5	24	CLASS 1
HW-13-200	30	10	4	24	CLASS 1
BMP #33	30	20	8	24	CLASS 1
BMP #34	18	12	5	24	CLASS 1

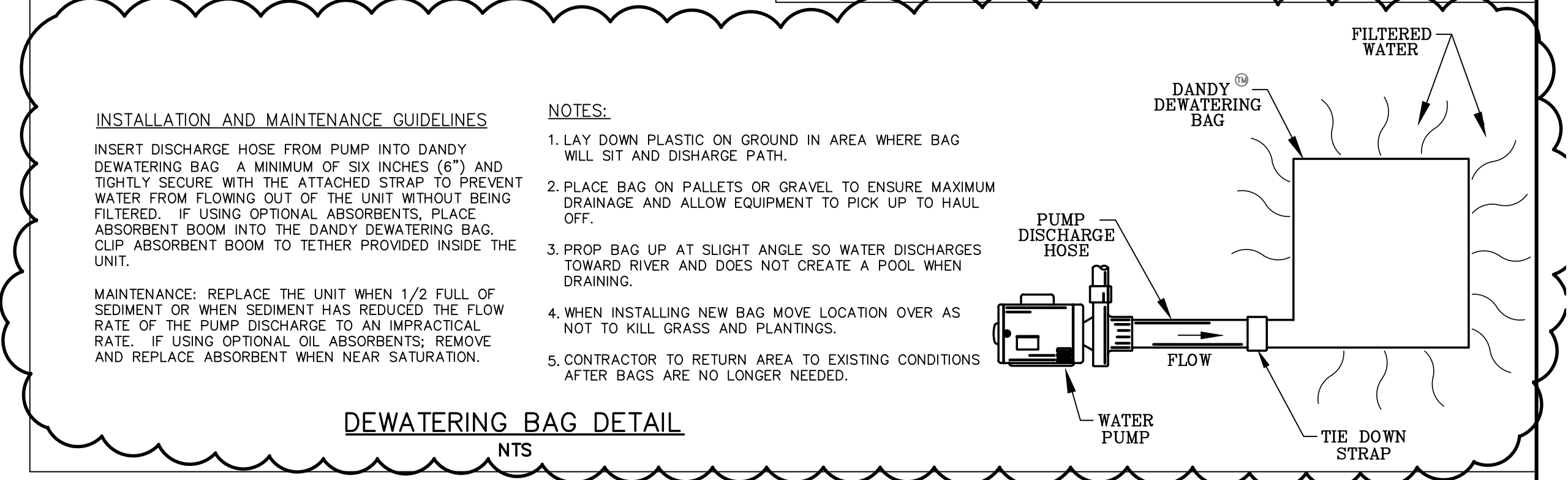
STONE CLASSIFICATIONS OF CLASS B REQUIRE A SUBLAYER OF FILTER FABRIC OR FS-2 FILTER STONE WITH A BEDDING THICKNESS OF 6".

RIPRAP OUTLET PROTECTION

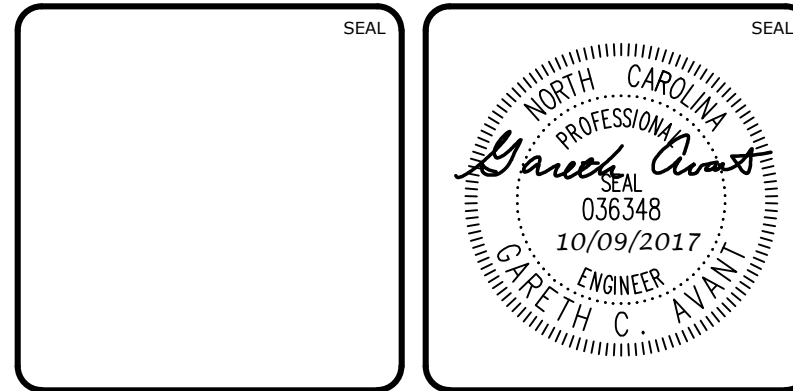
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DEWATERING BAG DETAIL

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REV. NO.	DESCRIPTIONS	DATE
3	REVISIONS PER COMMENTS RECEIVED FROM COUNTY EROSION CONTROL	2017.10.06
2	REVISIONS PER COMMENTS RECEIVED FROM NCDOT	2017.09.21
1	REVISIONS PER COMMENTS RECEIVED FROM COUNTY EROSION CONTROL	2017.09.13
0	SUBMITTAL TO AGENCIES	2017.07.26



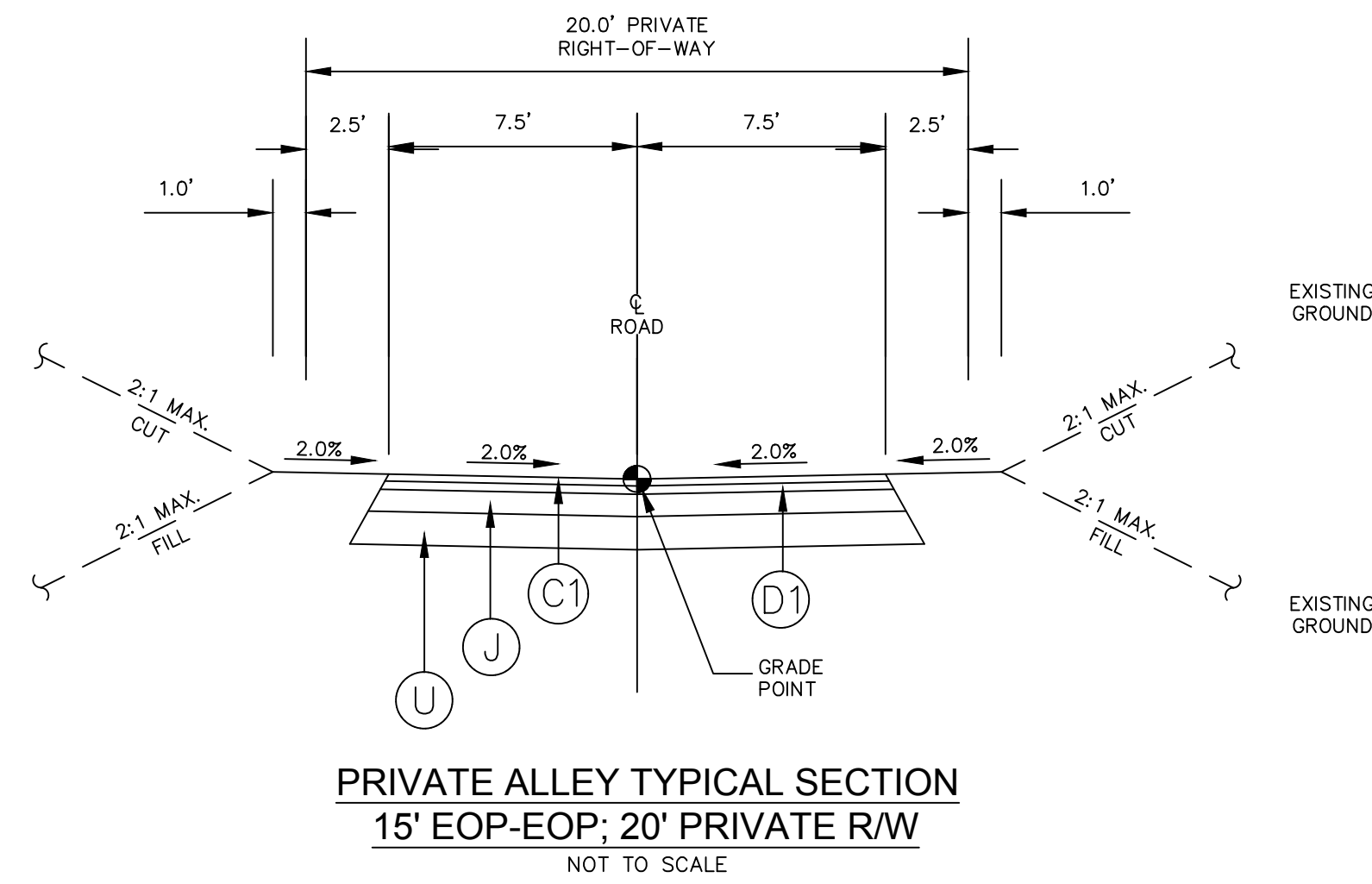
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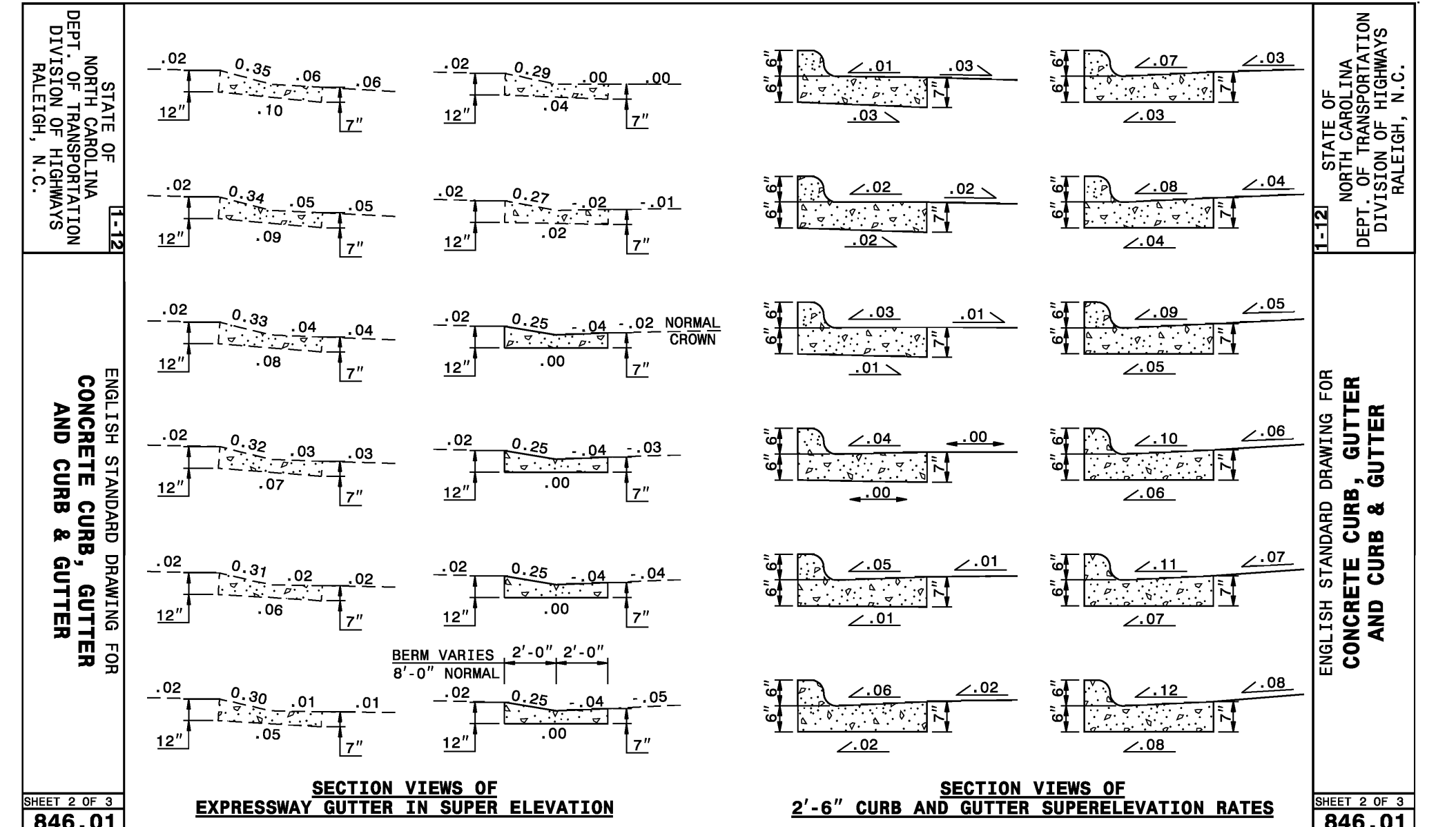
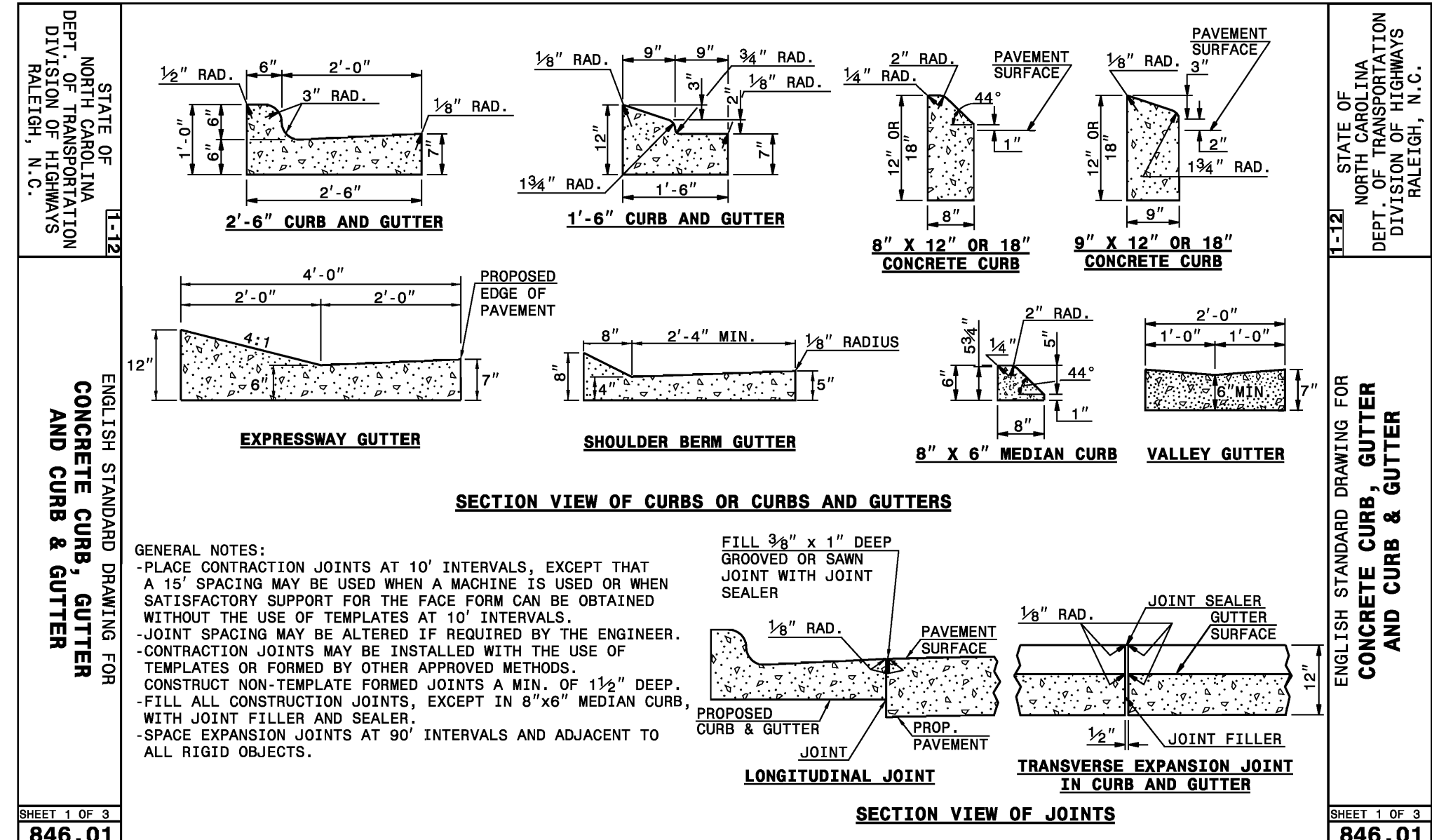
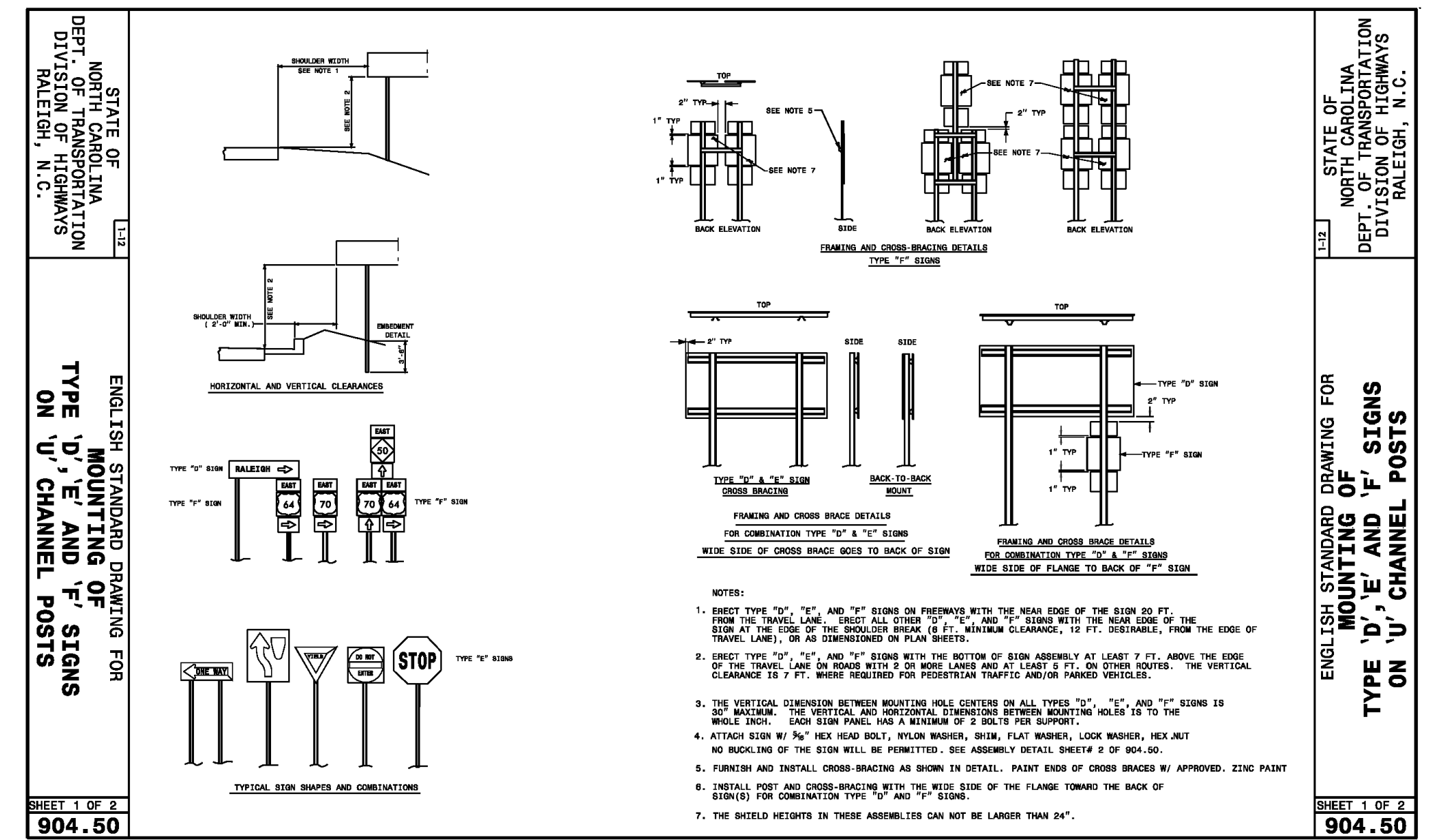
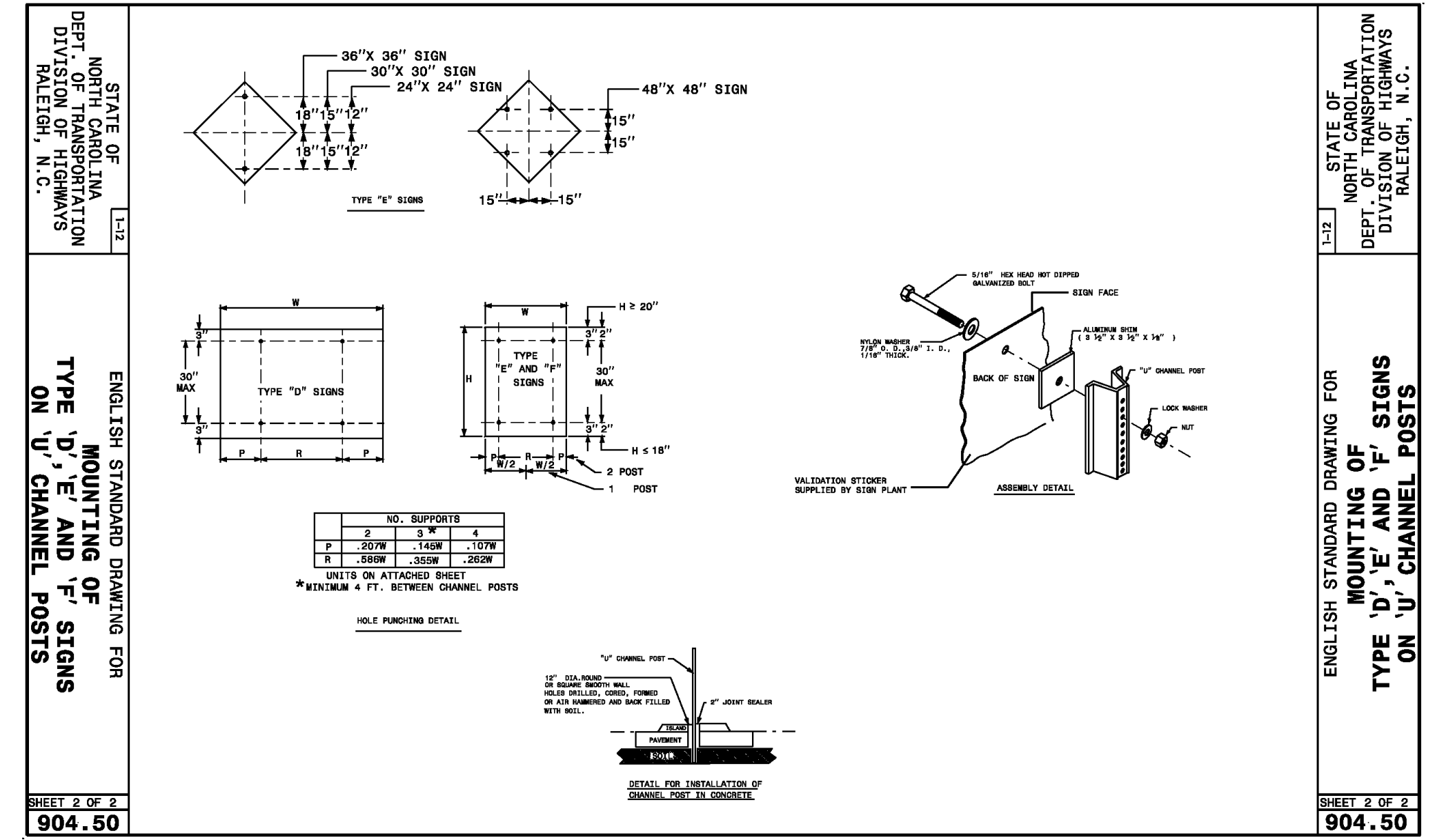
EROSION AND SEDIMENTATION CONTROL DETAILS

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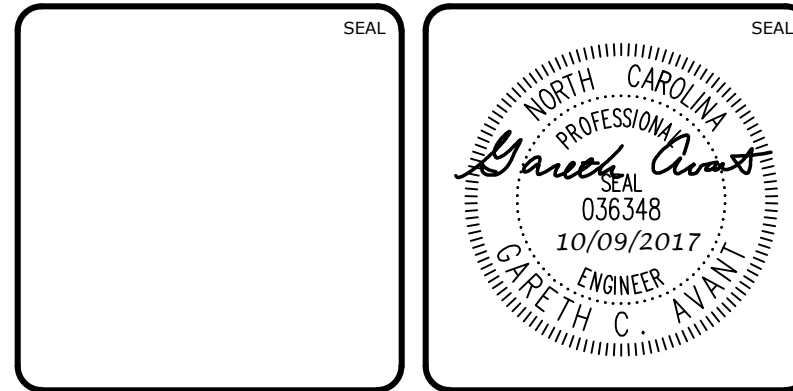


PAVEMENT SCHEDULE	
(C)	1.0" SF9.5A ASPHALT SURFACE COURSE AT AN AVERAGE RATE OF 110 LBS. PER SQ. YARD.
(D)	2.0" SF9.5B ASPHALT SURFACE COURSE AT AN AVERAGE RATE OF 224 LBS. PER SQ. YARD.
(J)	8" COMPACTED ABC STONE BASE COURSE
(K)	30" CURB AND GUTTER
(U)	COMPACTED SUBGRADE
(G)	GEOTEXTILE FABRIC (IF NECESSARY) COORDINATE WITH GEOTECHNICAL ENGINEER

PRIVATE ALLEY TYPICAL SECTION
15' EOP-EOP; 20' PRIVATE RW
NOT TO SCALE



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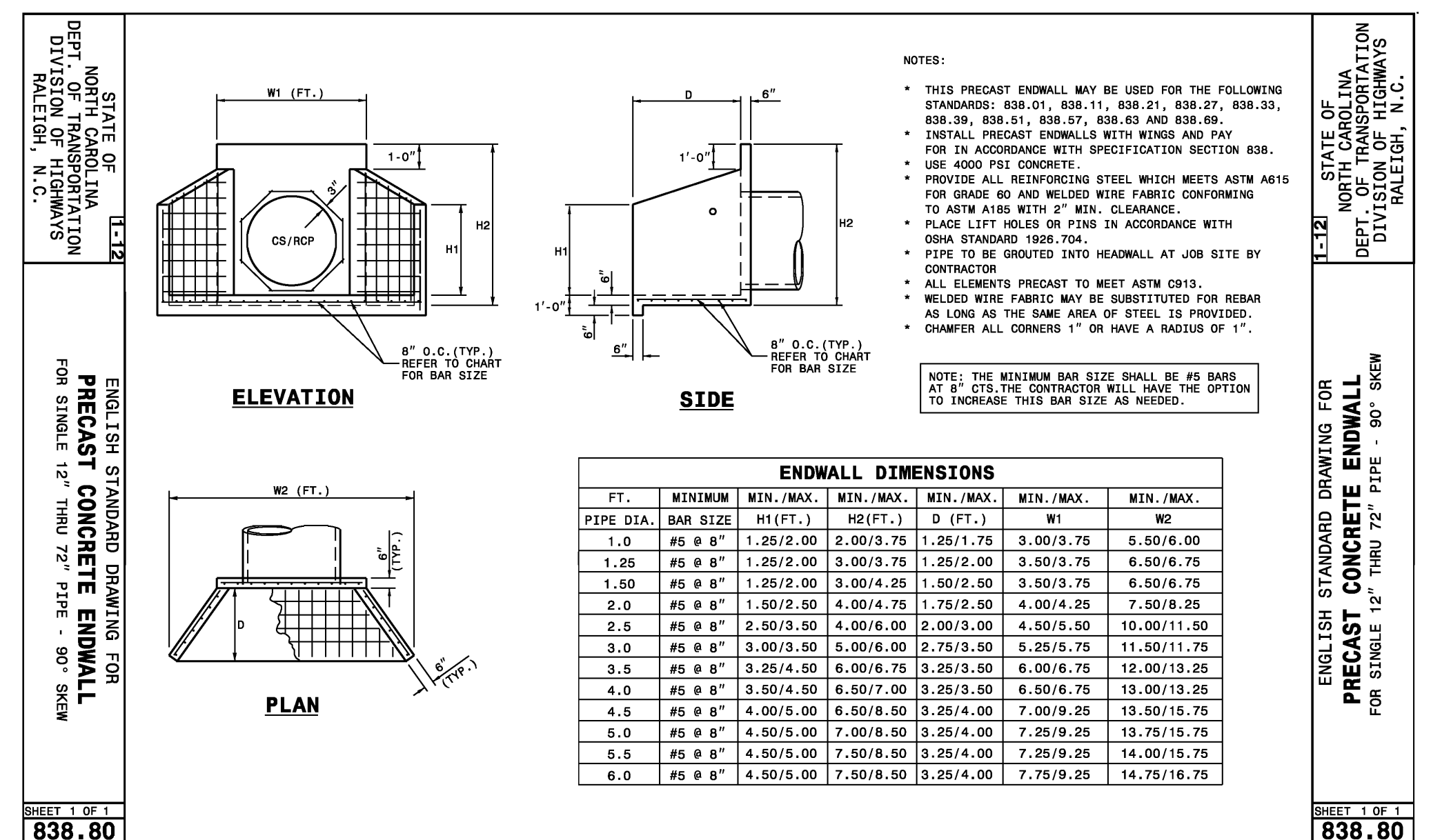
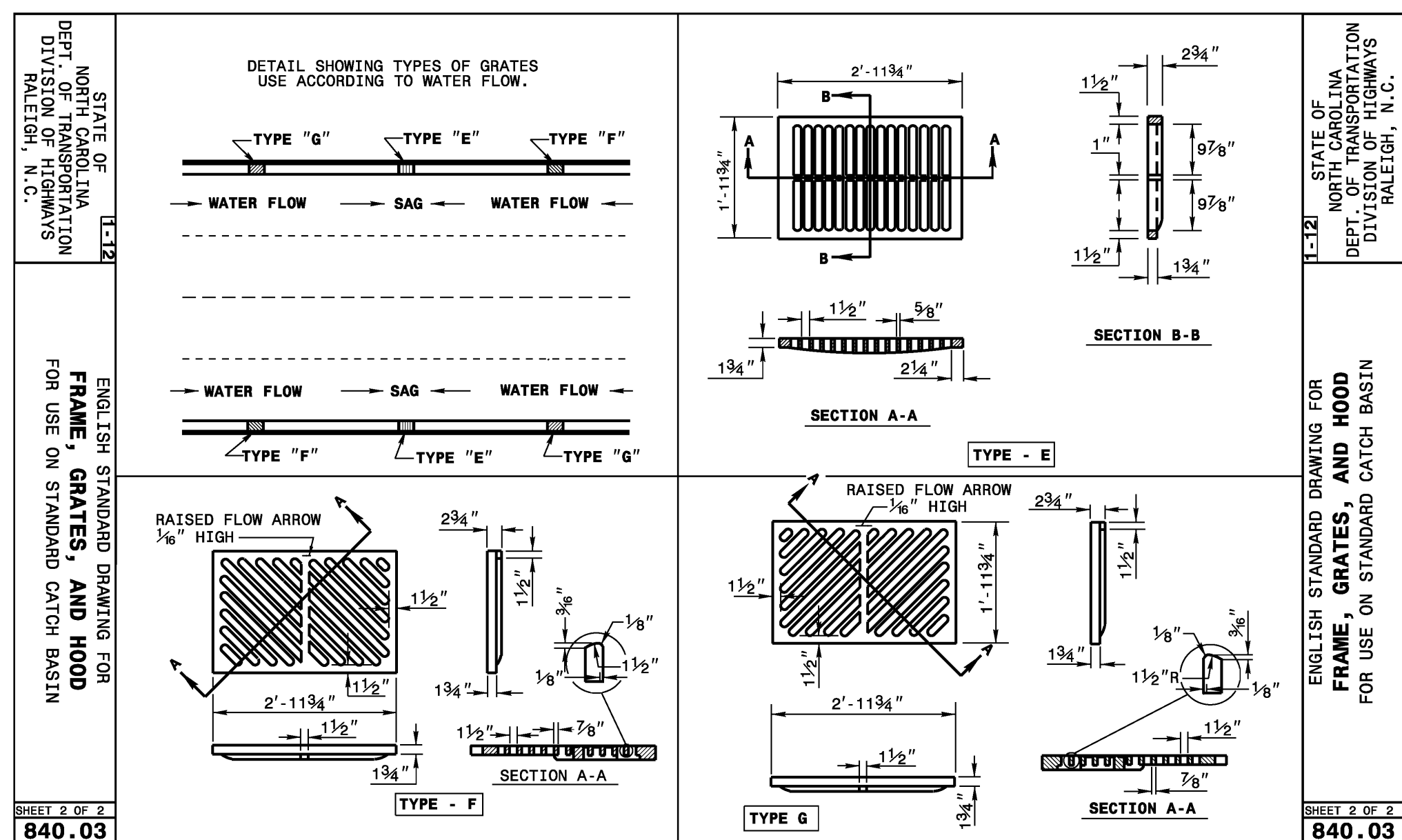
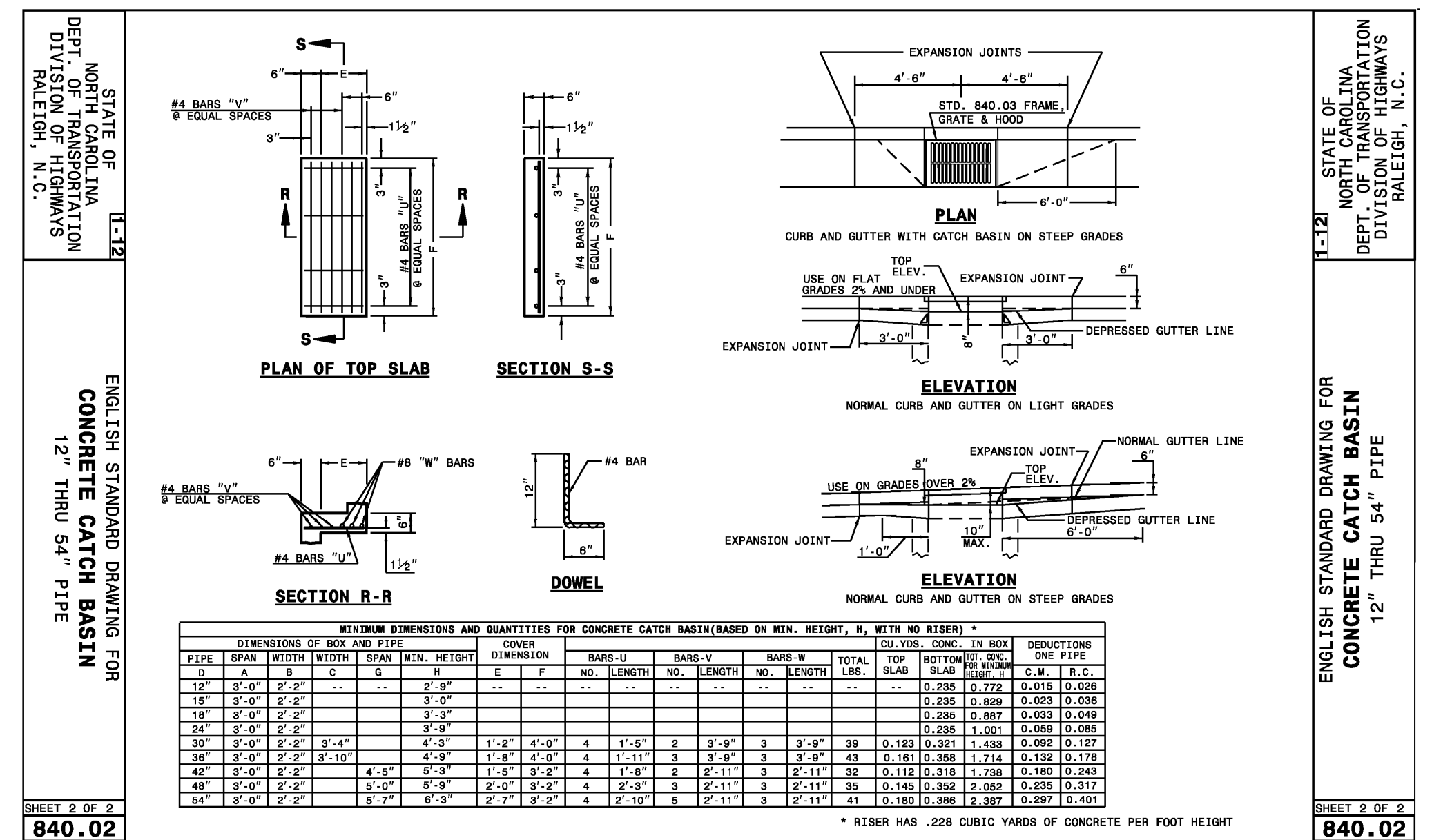
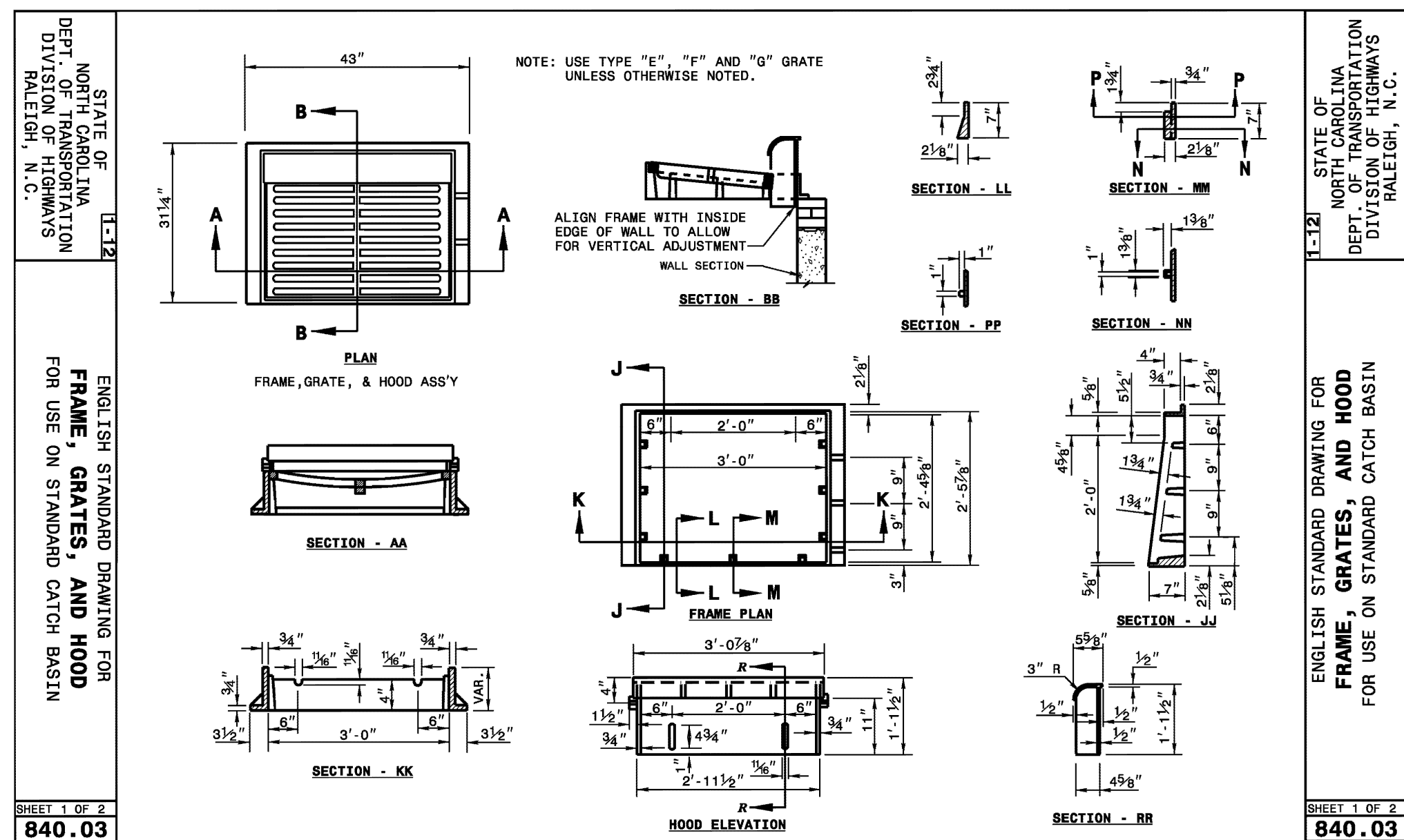
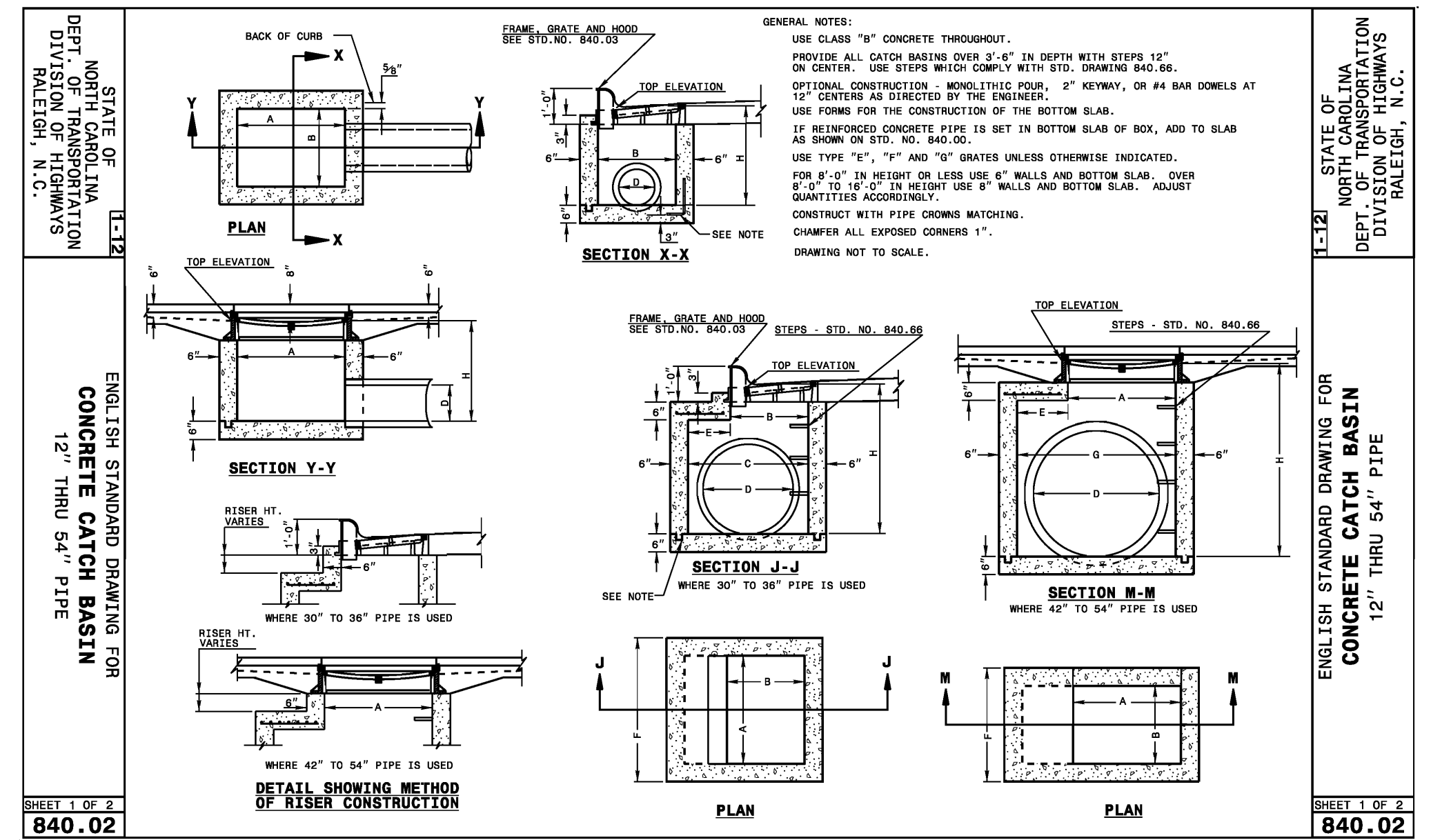
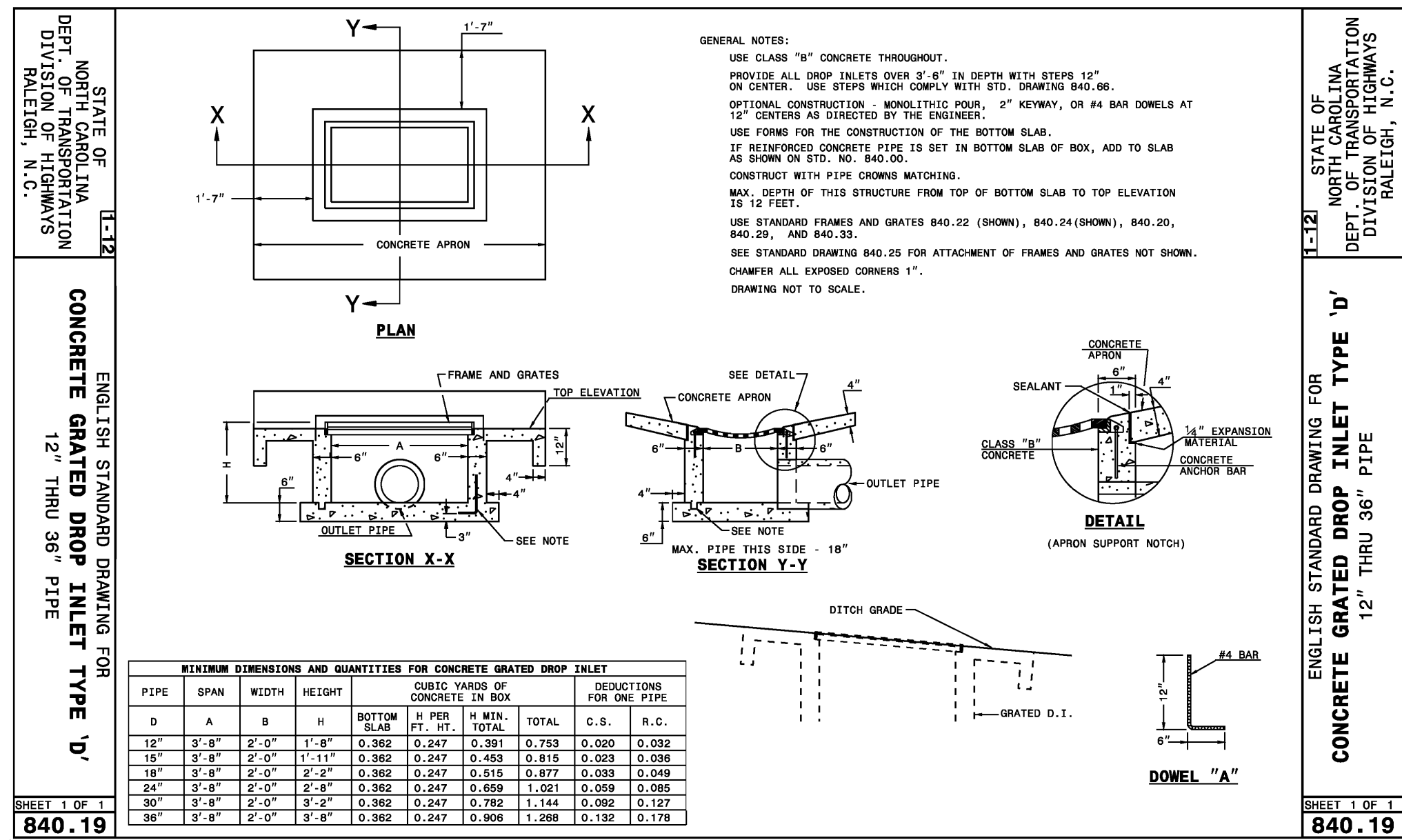
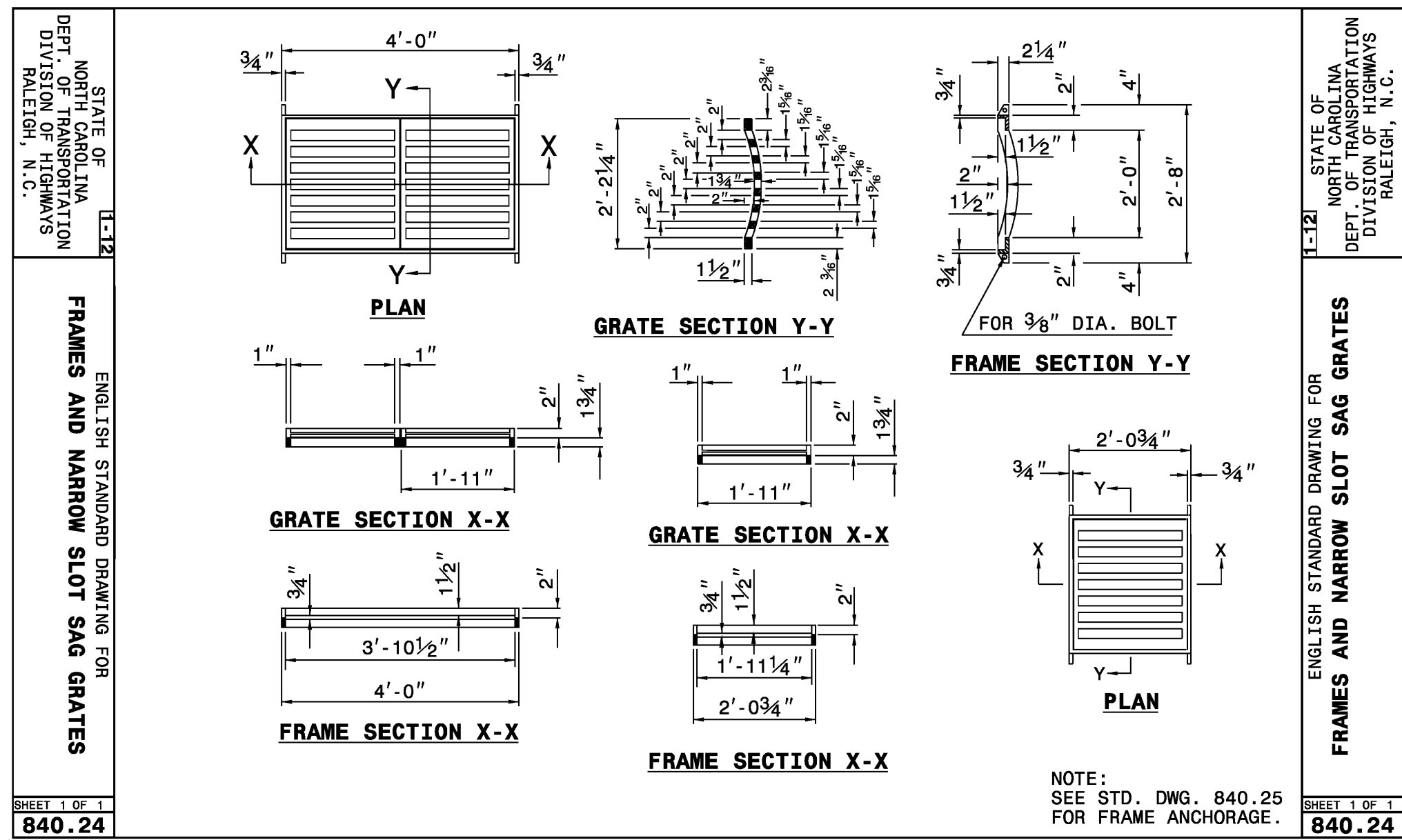


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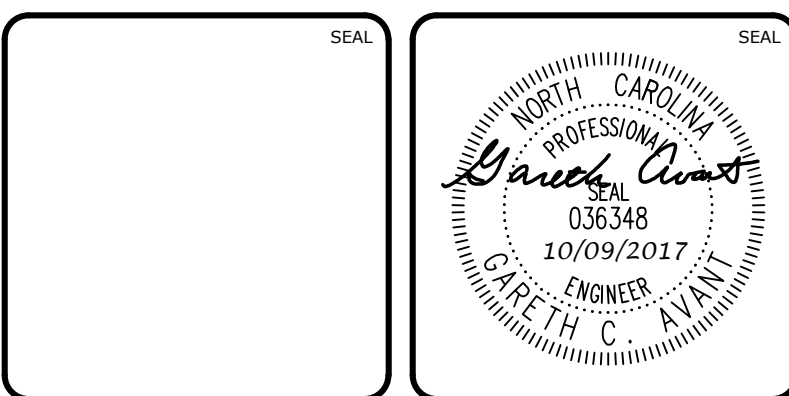
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NCDOT ROADWAY DETAILS

DATE: JULY 26, 2017	SCALE: D2.X	MFC FILE NUMBER: D2.1
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CHECKED: GCA		
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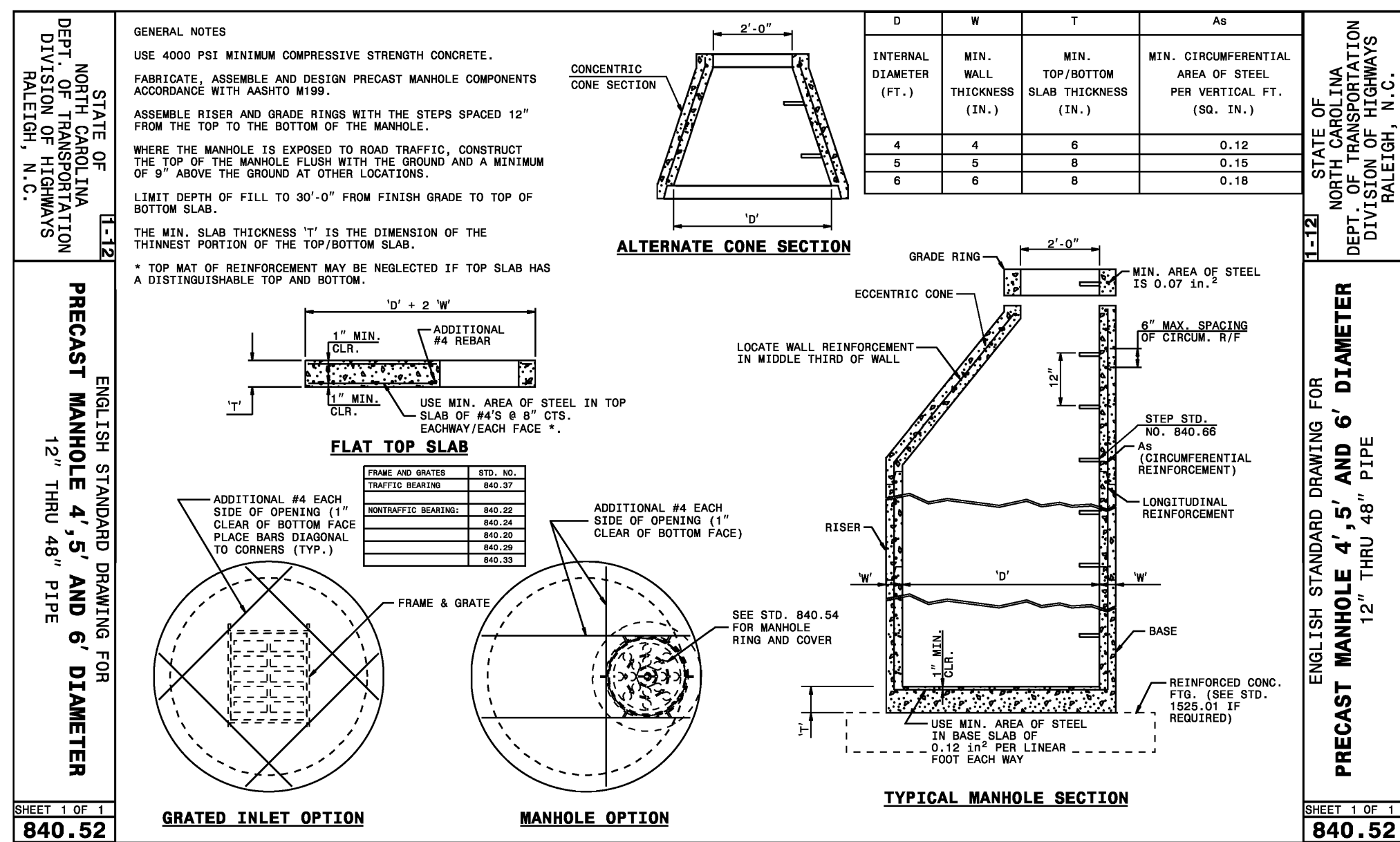
NCDOT DRAINAGE DETAILS

DATE: JULY 26, 2017
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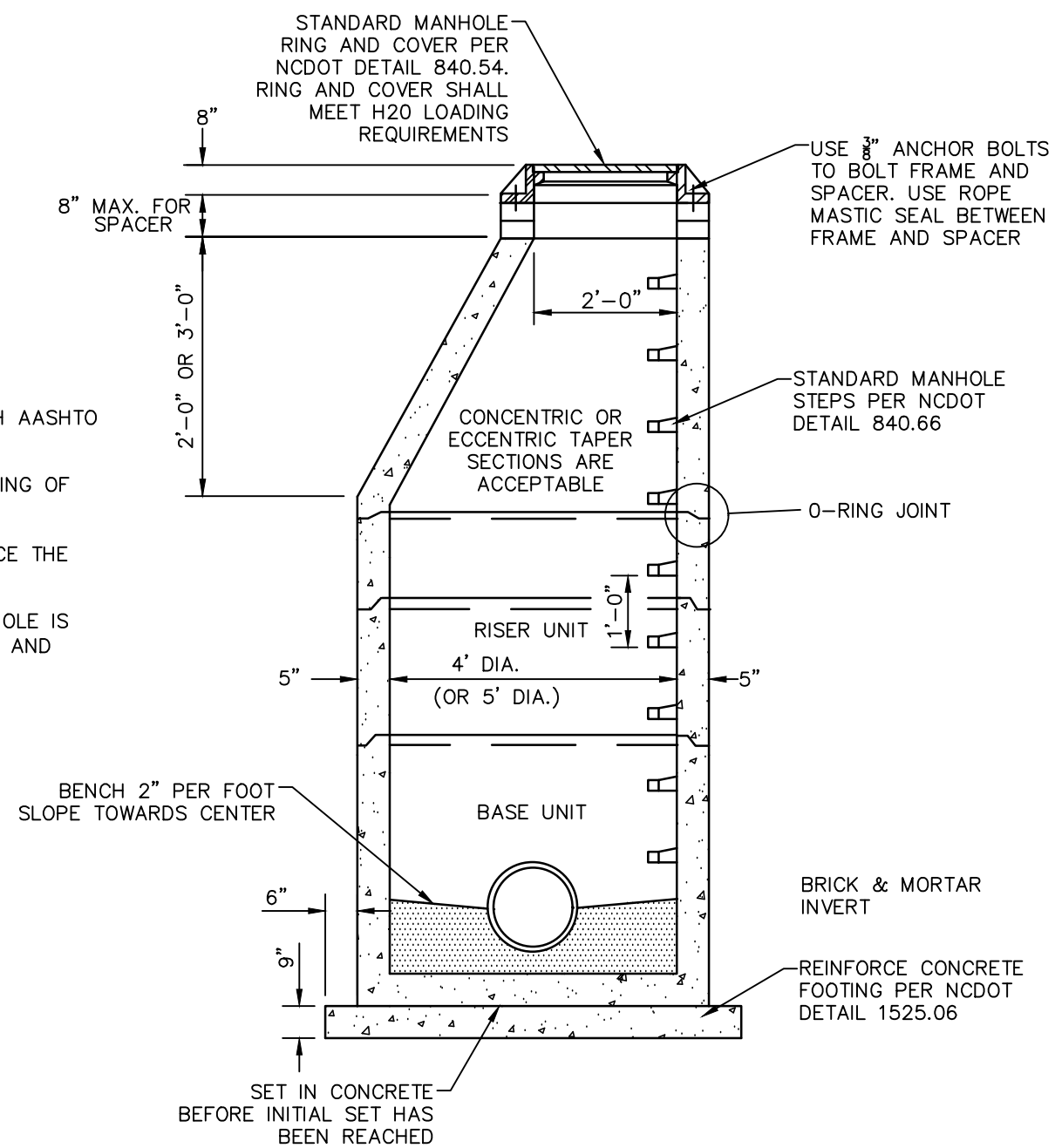
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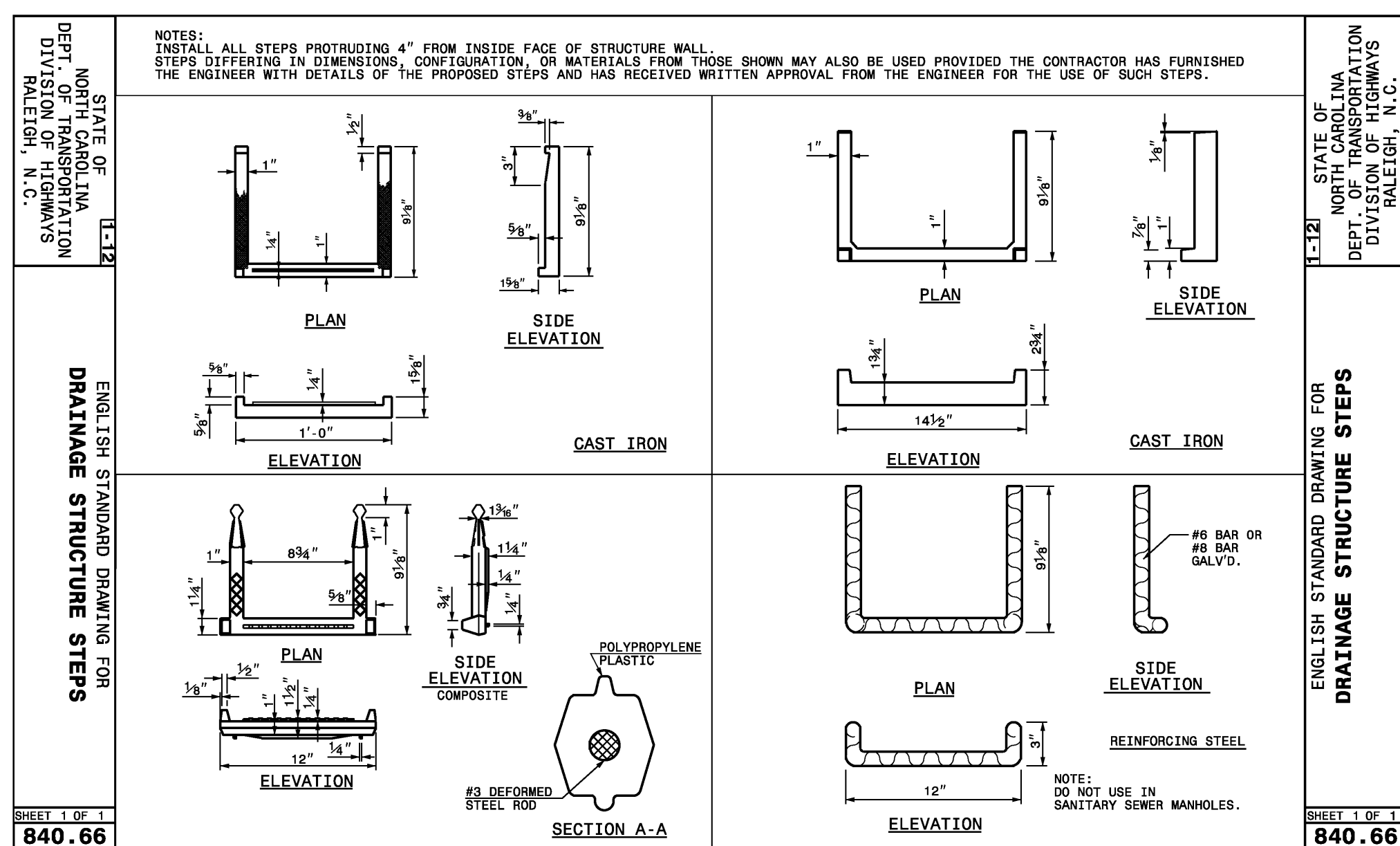
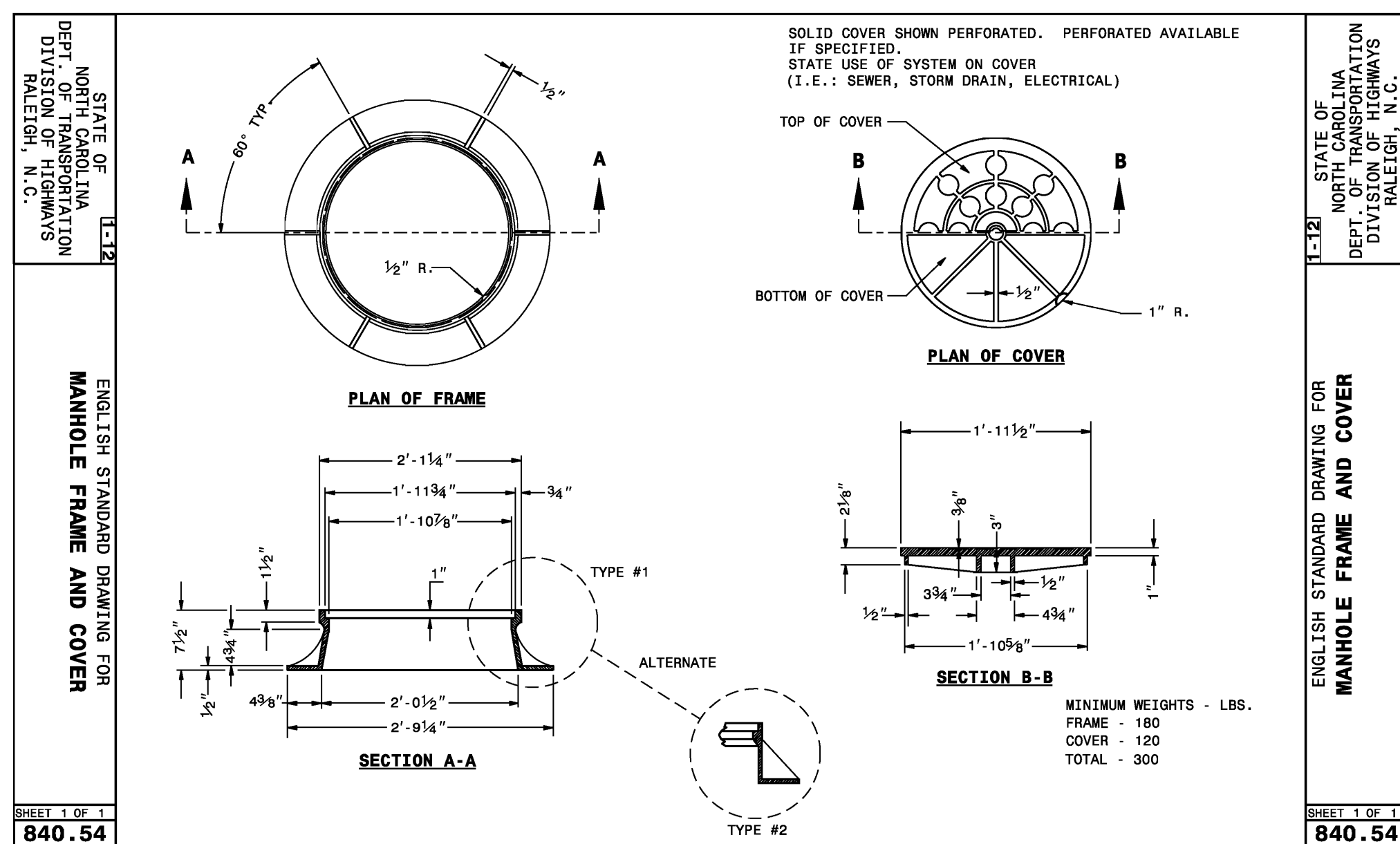
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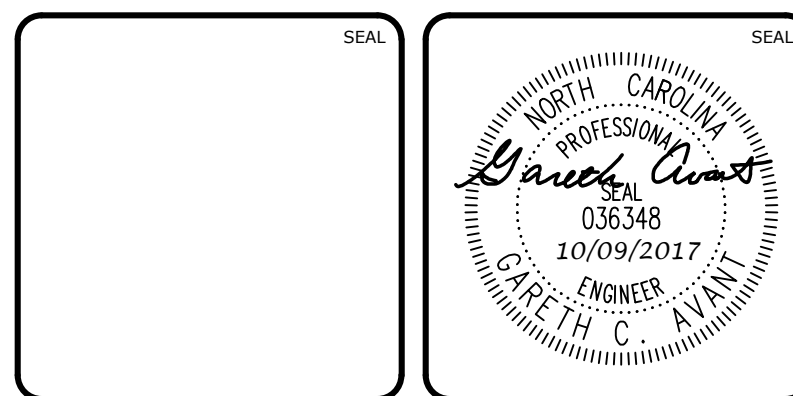
- NOTES:
1. PROVIDE PRECAST MANHOLE COMPONENTS WHICH COMPLY WITH AASHTO M199.
 2. ASSEMBLE RISERS AND GRADE RINGS SO STEPS HAVE A SPACING OF 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
 3. WHERE THE MANHOLE IS EXPOSED TO ROADWAY TRAFFIC, PLACE THE TOP OF THE MANHOLE FLUSH WITH THE GROUND.
 4. REINFORCED 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 STORM SEWER
PRECAST CONCRETE MANHOLE FOR OVER 12' IN DEPTH
NTS



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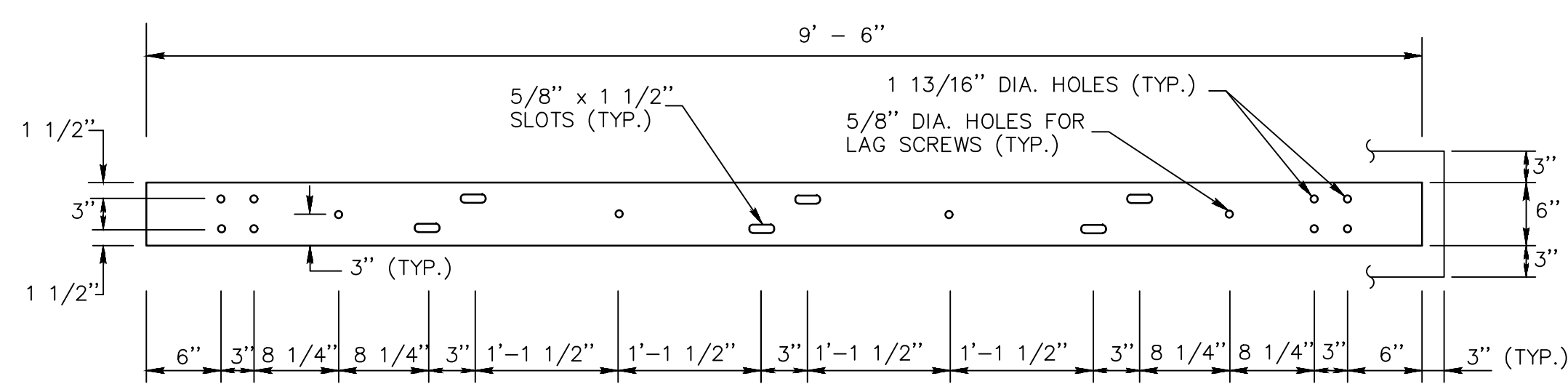
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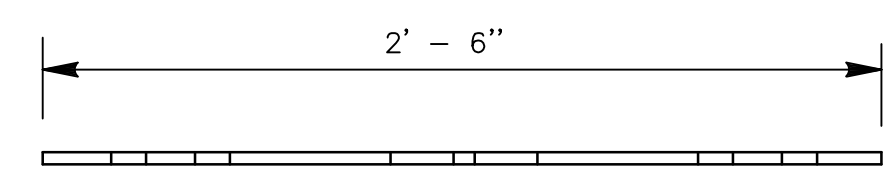
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NCDOT DRAINAGE DETAILS

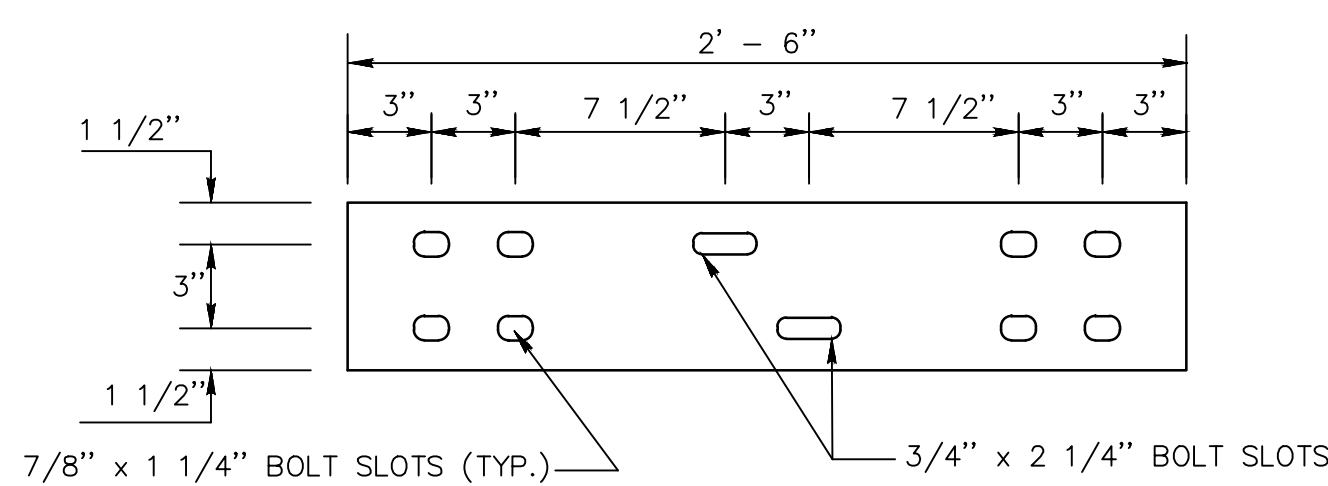
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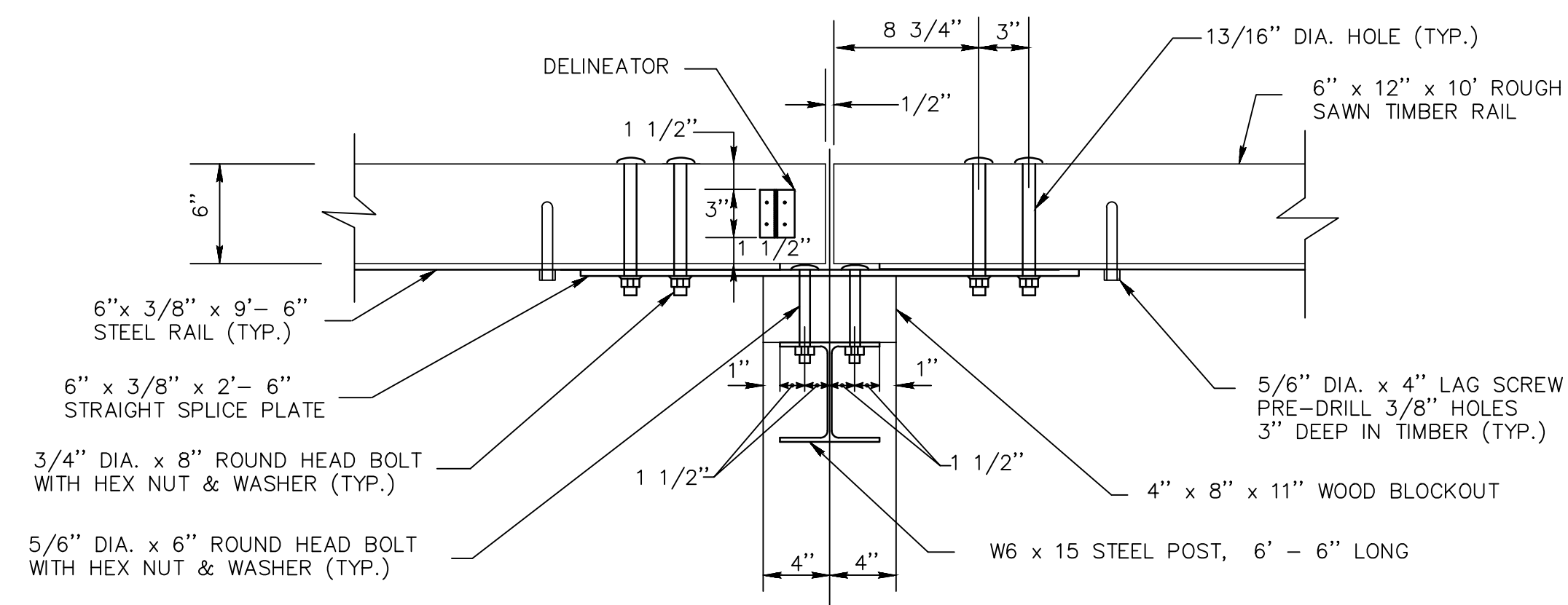
STANDARD STEEL RAIL DETAIL
6" x 3/8" x 9' - 6"
NTS



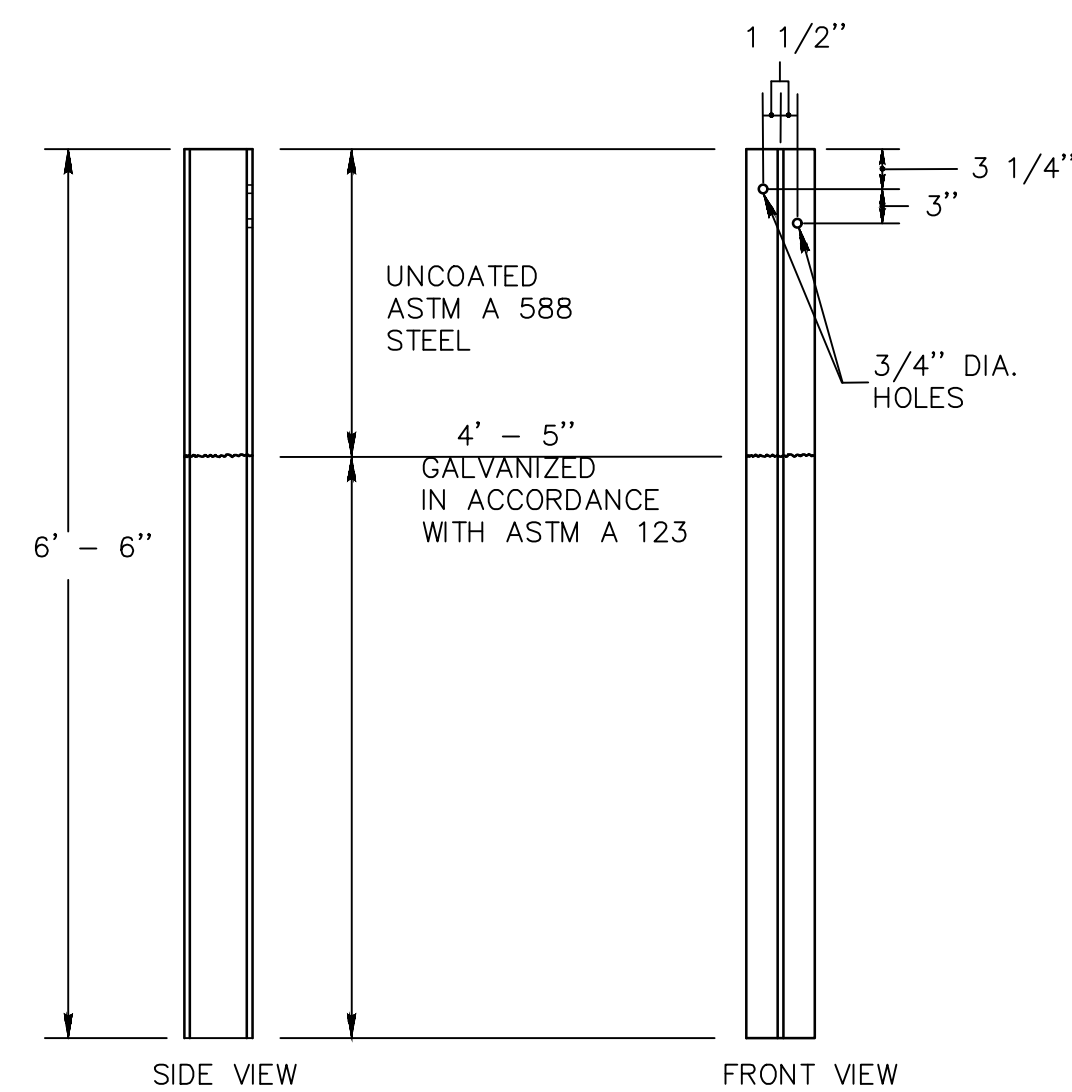
STRAIGHT SPLICE PLATE ELEVATION
NTS



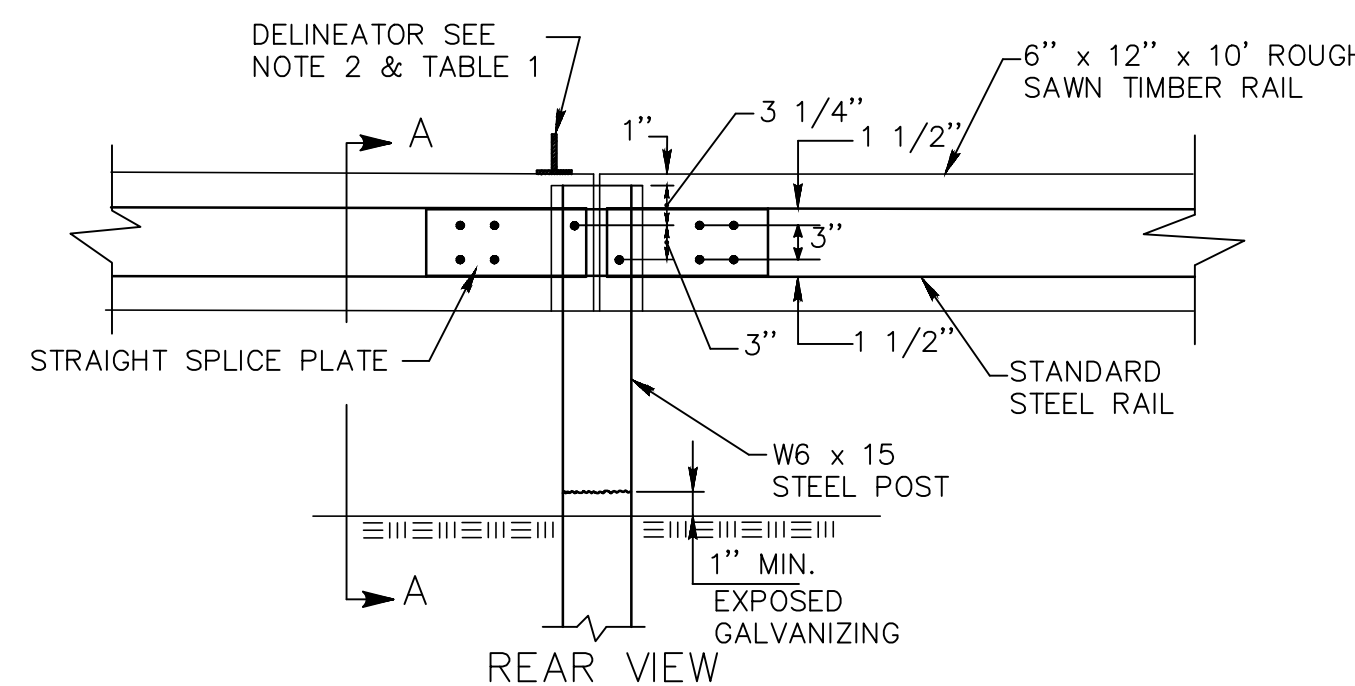
SPLICE PLATE DETAIL
6" x 3/8" x 2'-6"
NTS



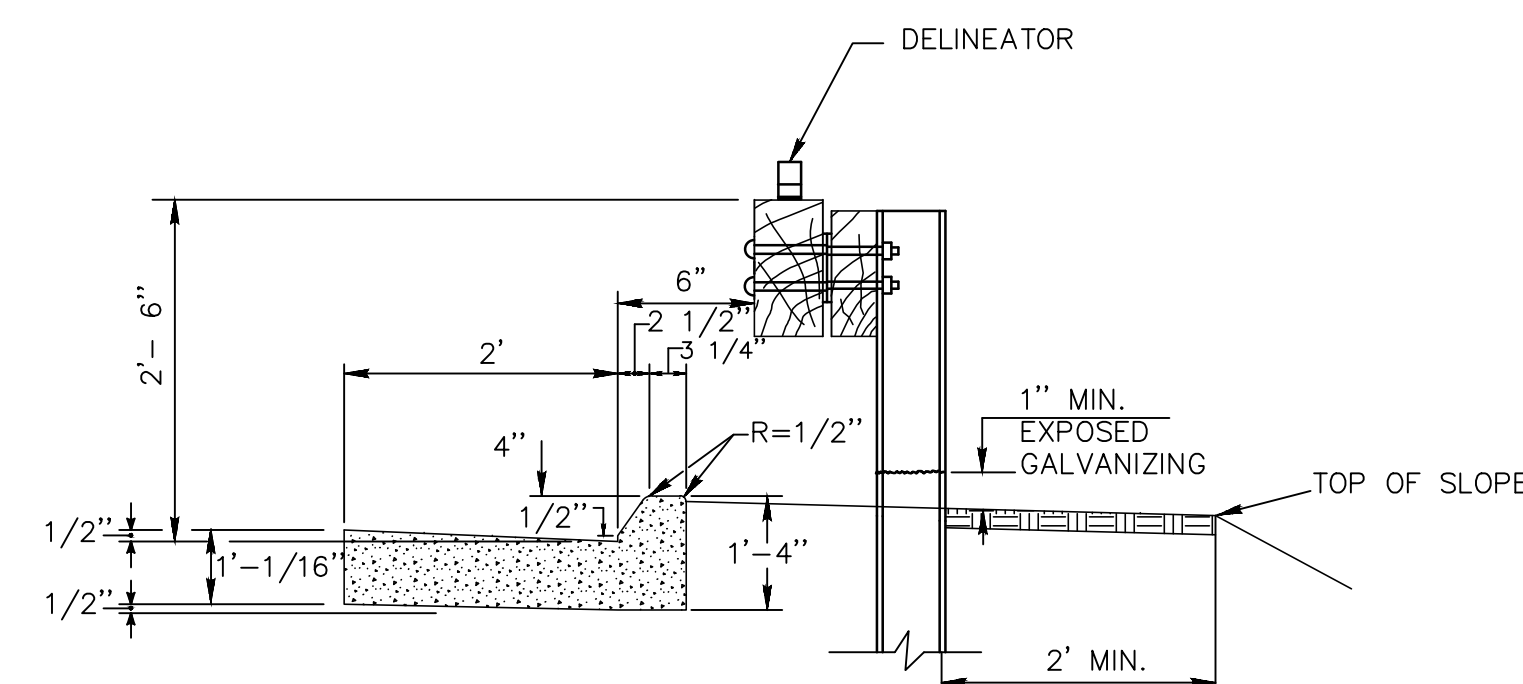
POST CONNECTION FOR STRAIGHT SECTIONS
NTS



POST DETAIL
W6 x 15
NTS



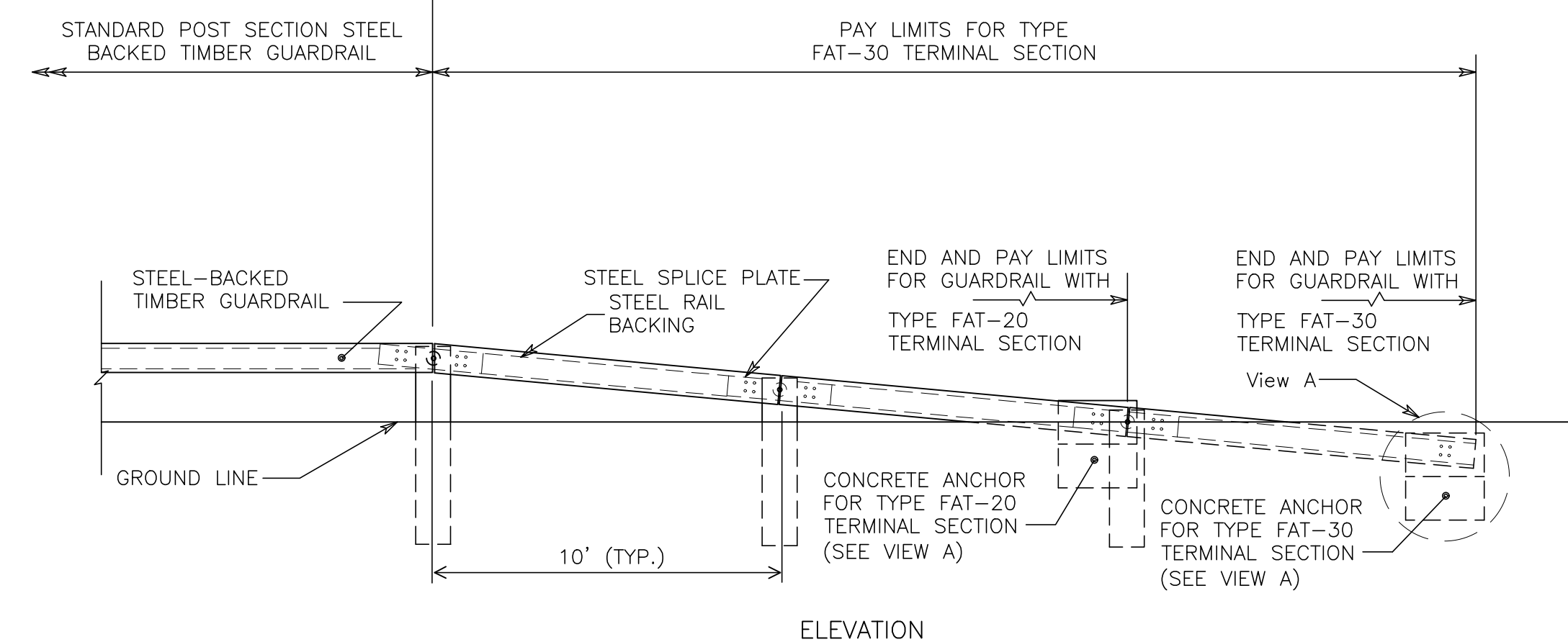
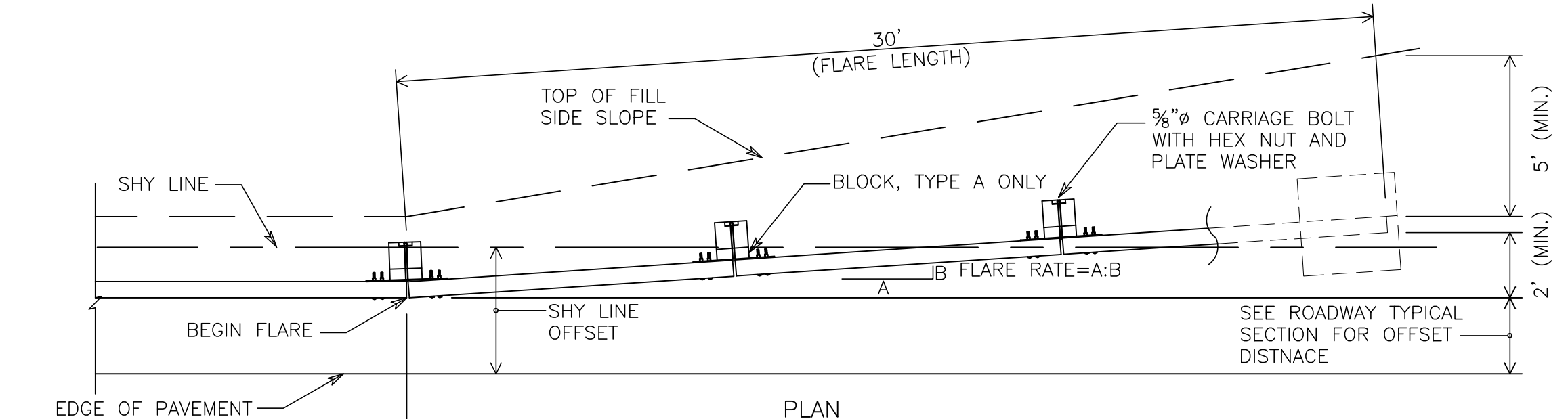
POST CONNECTION ELEVATION
NTS



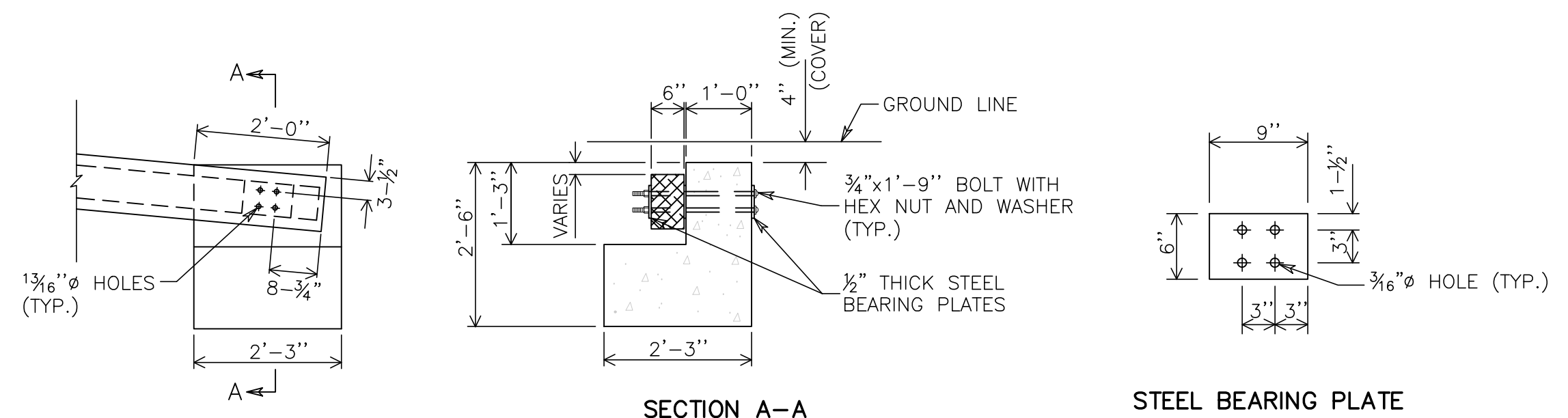
STANDARD SECTION WITH CURB
NTS

TABLE 1
DELINEATOR SPACING

CURVE RADIUS	SPACE
< 300'	20'
> 300'	50'



APPROACH AND DEPARTURE FLARE WITH FLARED ANCHOR TERMINAL (FAT)
NTS

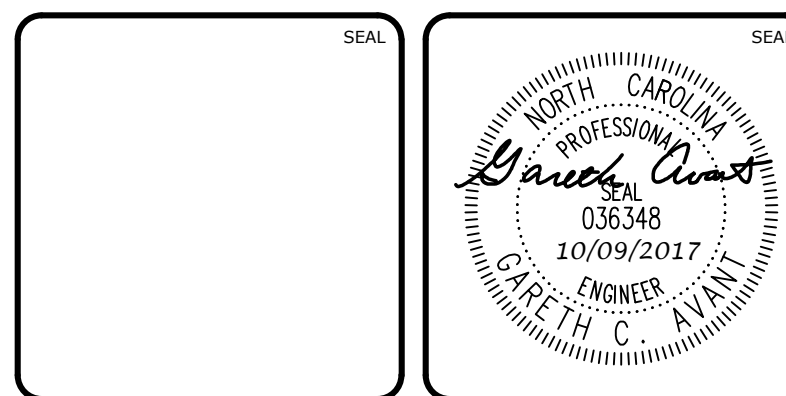


CONCRETE ANCHOR
NTS

NOTES

- MATERIALS AND CONSTRUCTION OF THE GUARDRAIL SHALL CONFORM TO SPECIAL PROVISION PROVIDED WITH THE PROJECT ALL HARDWARE IN CONTACT WITH THE GROUND SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIAL PROVISION.
- DELINEATOR REFLECTORS SHALL BE BROWN PLASTIC INVERTED T-SECTIONS CONFORMING TO DURAFLEX CORP. SLEXX 2020, OR APPROVED EQUAL. REFLECTIVE SHEETING SHALL BE SQUARE, AND A MINIMUM OF 19 SQ. IN., AND CONFORM TO SECTION M.18.09. DELINEATORS SHALL BE ATTACHED WITH FOUR (4) 1" - LONG, GALVANIZED WOOD SCREWS. REFLECTORS SHALL BE SPACED IN ACCORDANCE WITH THE TABLE, AND POSITIONED PERPENDICULAR TO THE ADJACENT EDGE OF LANE. DO NOT ATTACH REFLECTORS ON FLAIR OR TERMINAL SECTIONS. REFLECTIVE SHEETING SHALL BE SILVER-WHITE ON ALL RAIL SECTIONS ADJACENT TO THE RIGHT SHOULDER, AND YELLOW ON RAIL SECTIONS ADJACENT TO THE LEFT SHOULDER OF TRAVEL LANES.
- TWO ADDITIONAL 5/8" DIA. X 4" LONG LAG SCREWS AND WASHERS SHALL BE INSTALLED AT ALL MID-SPAN POINTS FOR STANDARD SYSTEMS.
- ALL CONNECTION HARDWARE SHALL BE SUFFICIENTLY TIGHTENED TO ACCOMMODATE FOR SHRINKAGE OF THE WOOD ELEMENTS.
- FOR THE END ANCHOR TYPE II, EXTEND THE FLARE INTO THE CUT SLOPE UNTIL A MINIMUM 12" OF COVER IS OBTAINED OVER THE GUARDRAIL END.
- FOR THE END ANCHOR TYPE I, EXTEND THE FLARE OUT SIDE THE CLEAR ZONE AND BURY THE GUARDRAIL END TO OBTAIN A MINIMUM COVER OF 4".
- BEGIN THE CUT FLARE AT THE NEAREST POST TO A TRANSITION POINT BETWEEN FILL AND CUT AS DIRECTED BY THE ENGINEER.
- THE GUARDRAIL FLARE SHOWN ON THE MISCELLANEOUS DETAILS IS THE MINIMUM LENGTH AND RATE REQUIRED AS DIRECTED BY THE ENGINEER. FLARE THE GUARDRAIL SO THAT THE TERMINAL SECTION IS OUTSIDE THE CLEAR ZONE.

REV. NO.	DESCRIPTIONS REVISIONS	DATE
3	REVISIONS PER COMMENTS RECEIVED FROM COUNTY EROSION CONTROL	2017.10.06
2	REVISIONS PER COMMENTS RECEIVED FROM HCDOT	2017.09.21
1	REVISIONS PER COMMENTS RECEIVED FROM COUNTY EROSION CONTROL	2017.09.13
0	SUBMITTAL TO AGENCIES	2017.07.26

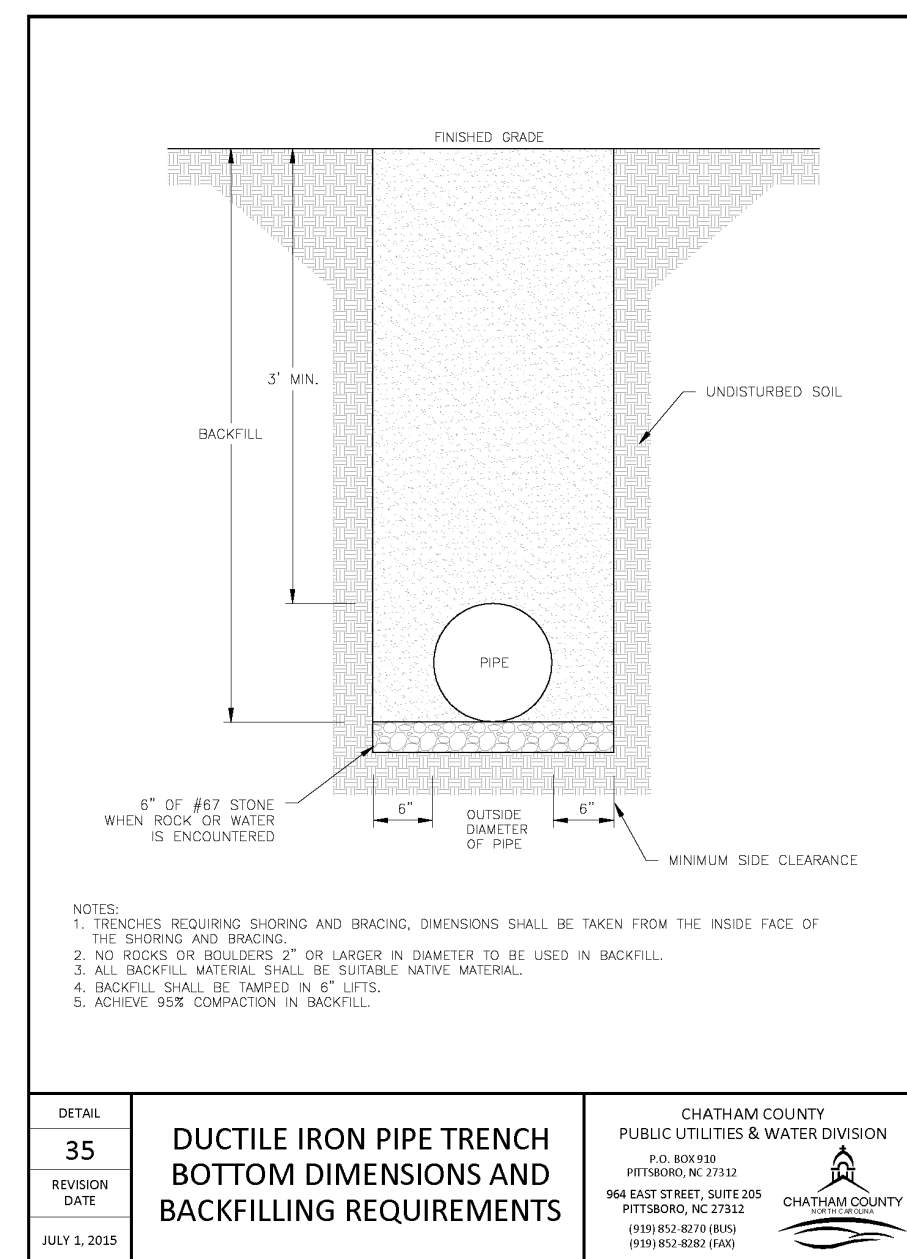


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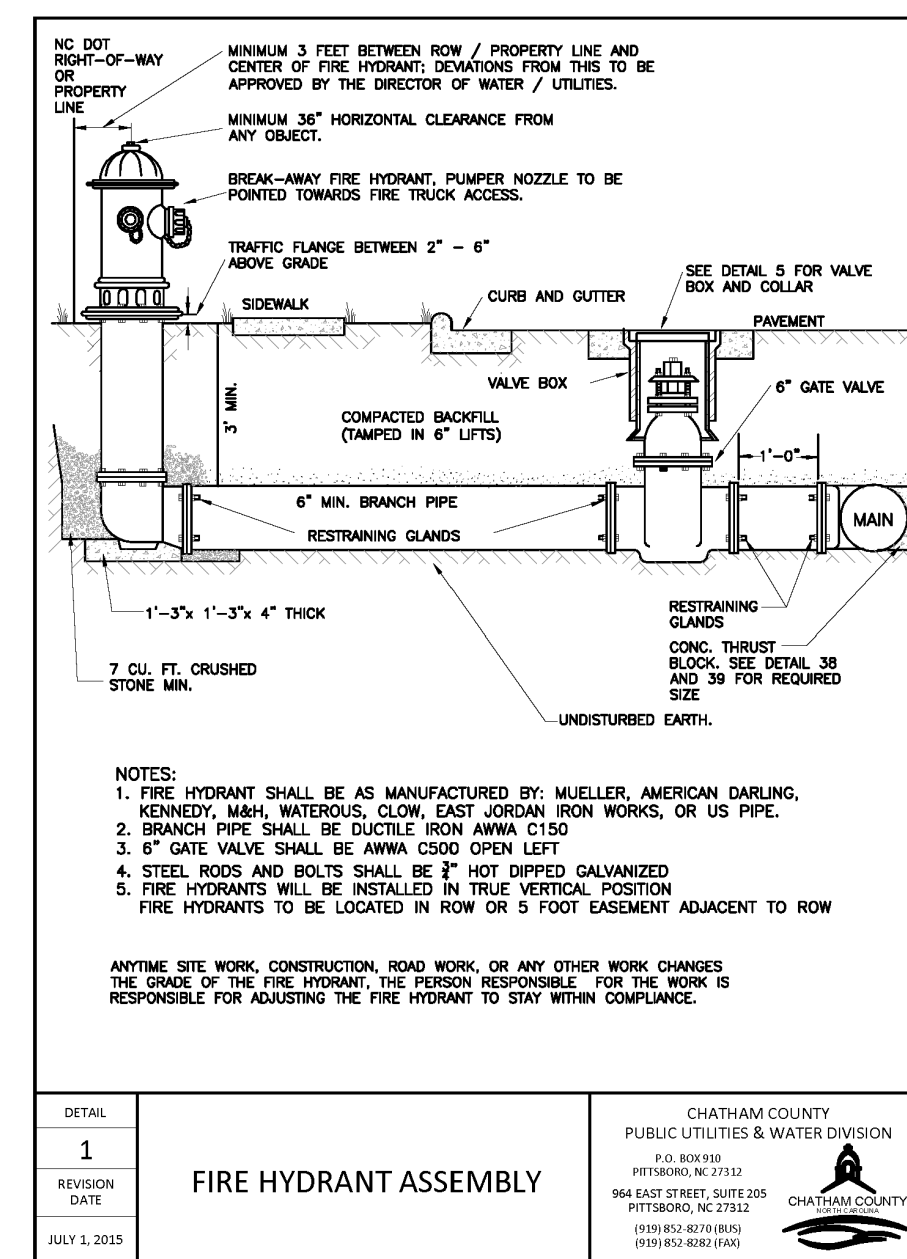
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**BRIAR CHAPEL
PHASE 13 - SECTION 1 & 2
CHATHAM COUNTY, NORTH CAROLINA**
GUARDRAIL DETAILS

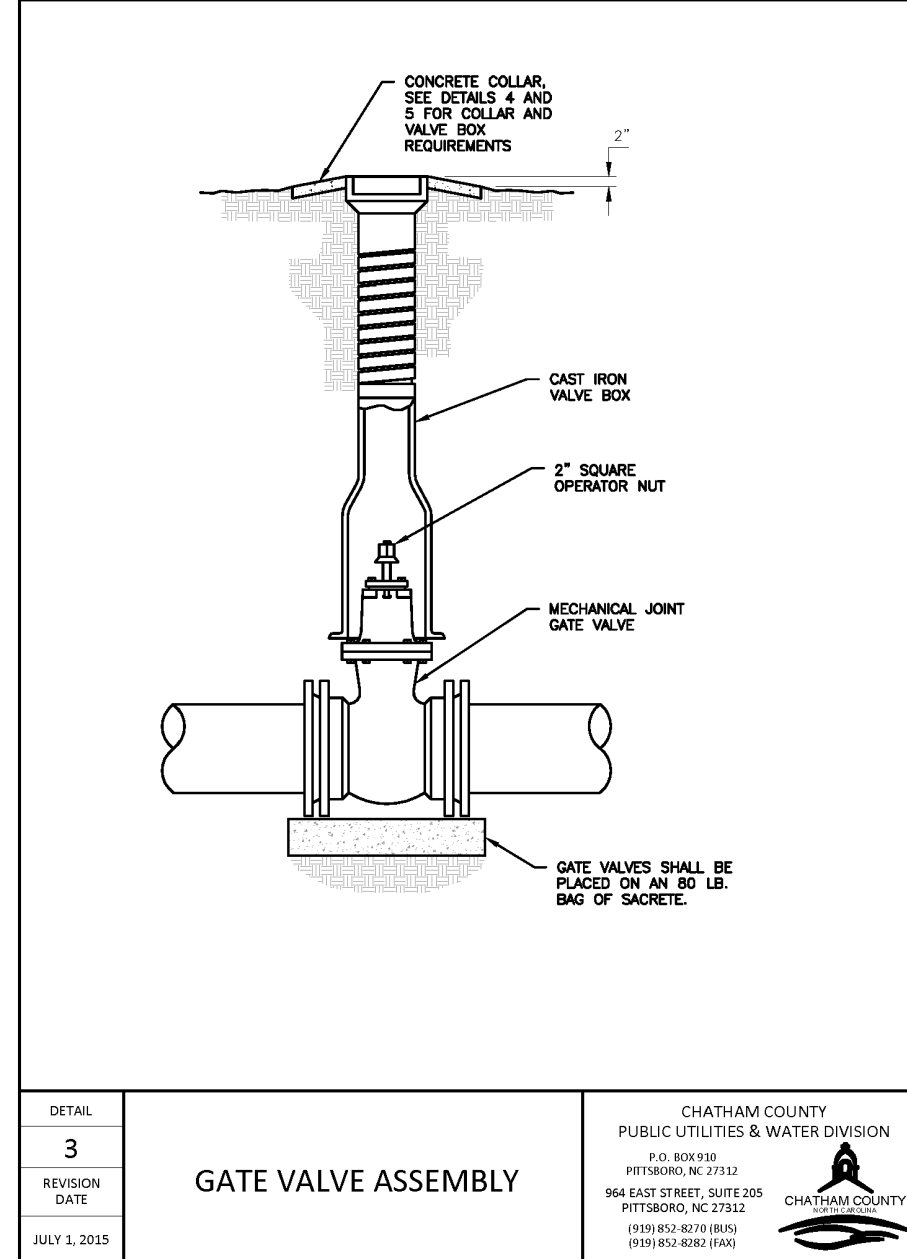
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DESIGNED: BSS		
CHECKED: GCA		
PROJ. MGR.: CHS		
STATUS: FOR REVIEW PURPOSES ONLY	REVISION: 3	



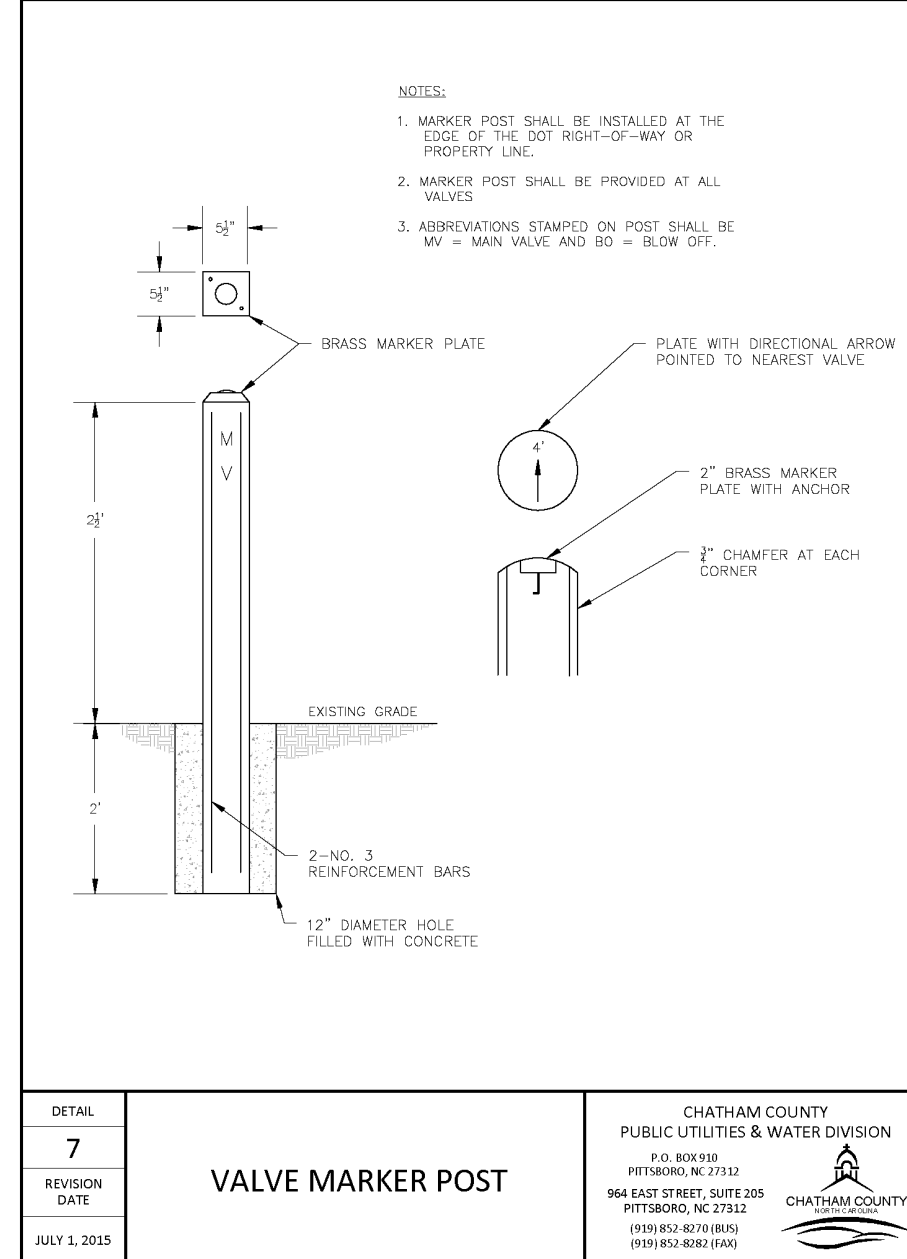
DETAIL	35	DUCTILE IRON PIPE TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



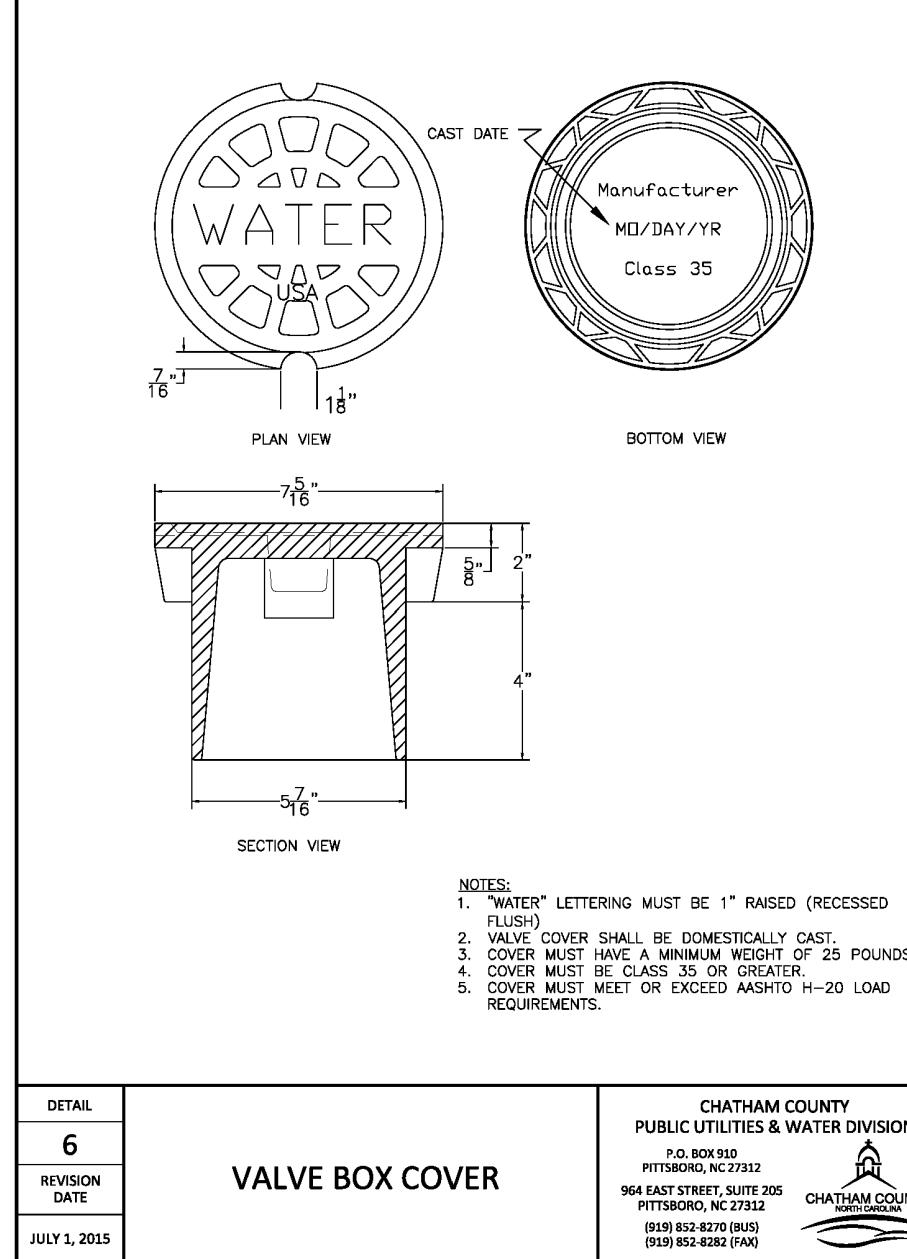
DETAIL	1	FIRE HYDRANT ASSEMBLY	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



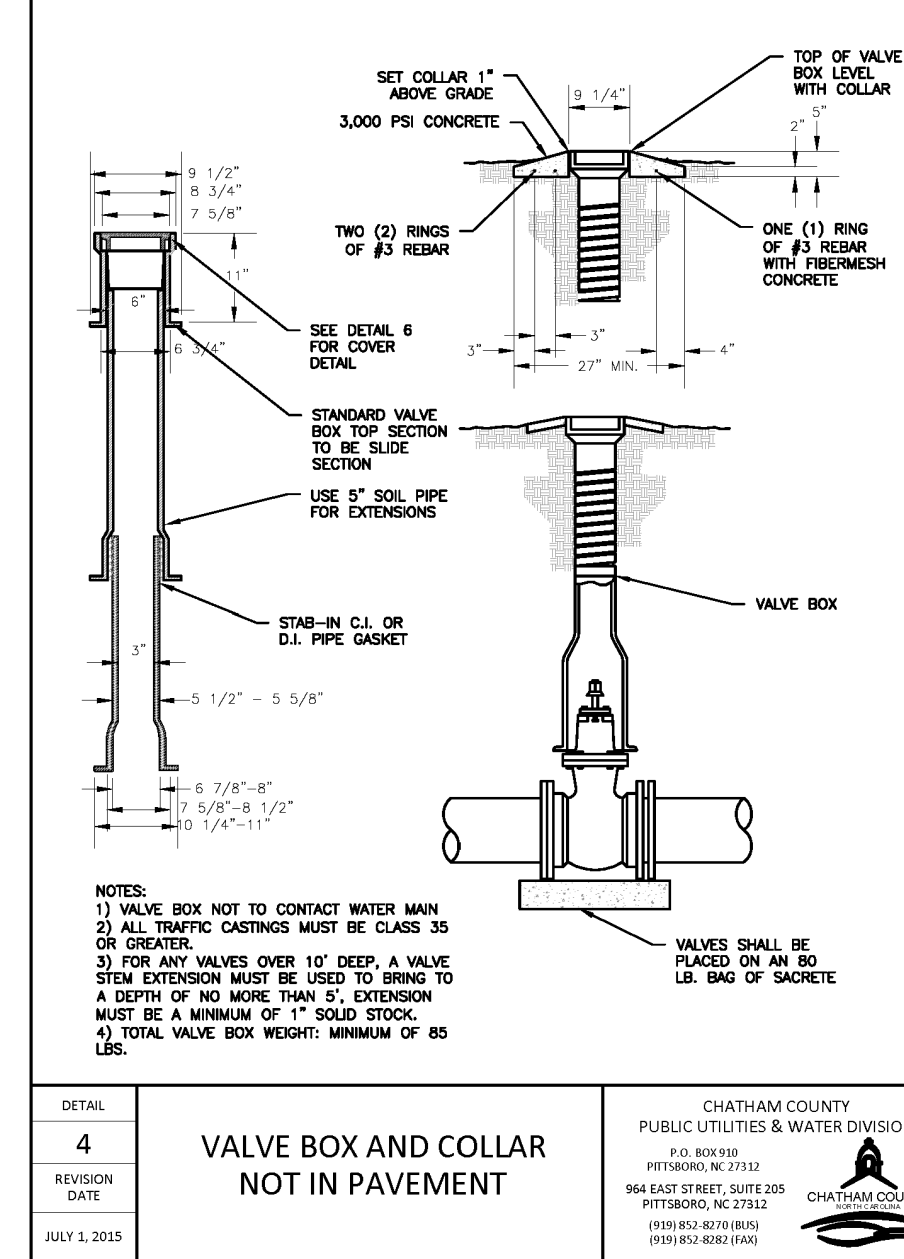
DETAIL	3	GATE VALVE ASSEMBLY	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



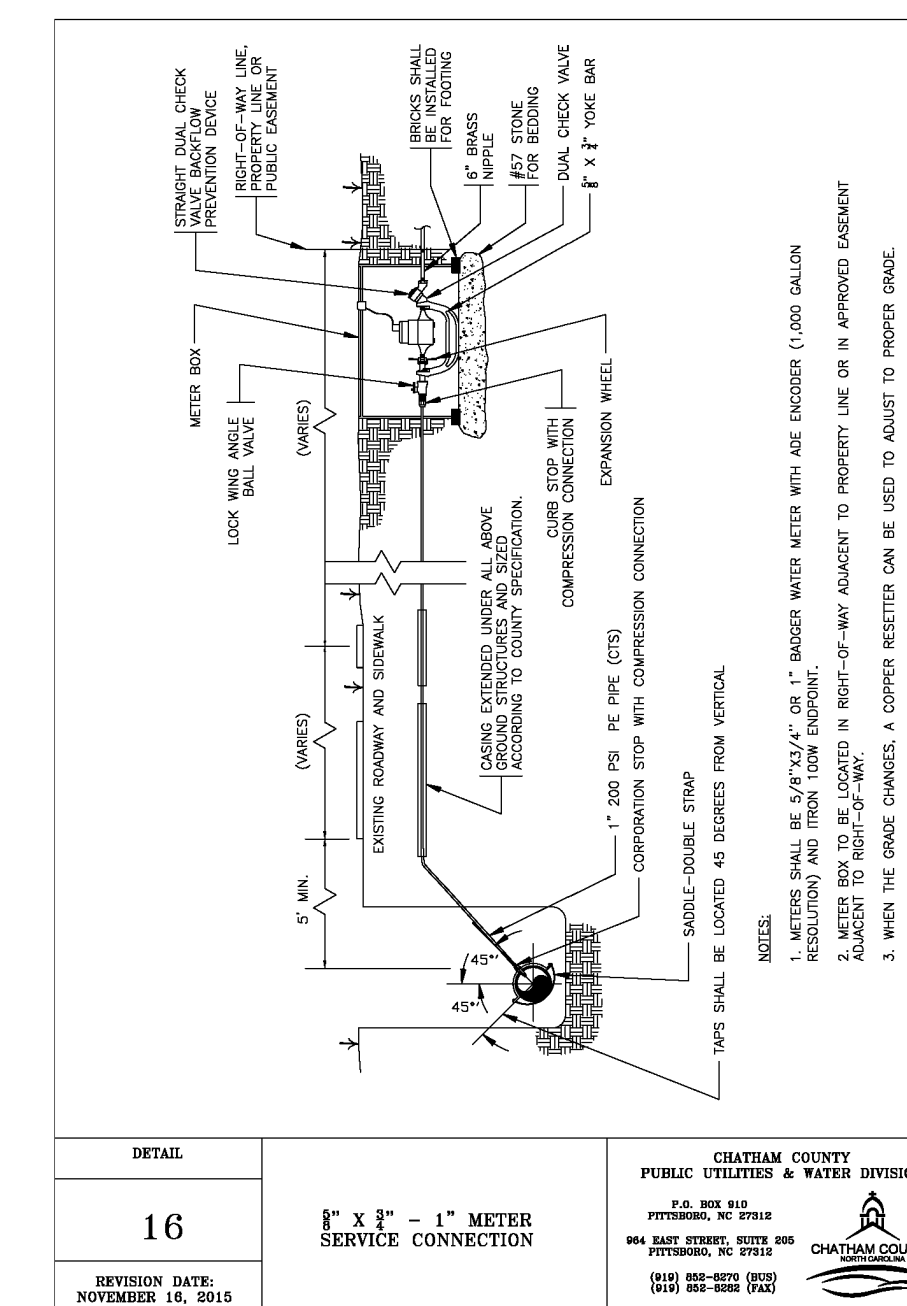
DETAIL	7	VALVE MARKER POST	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



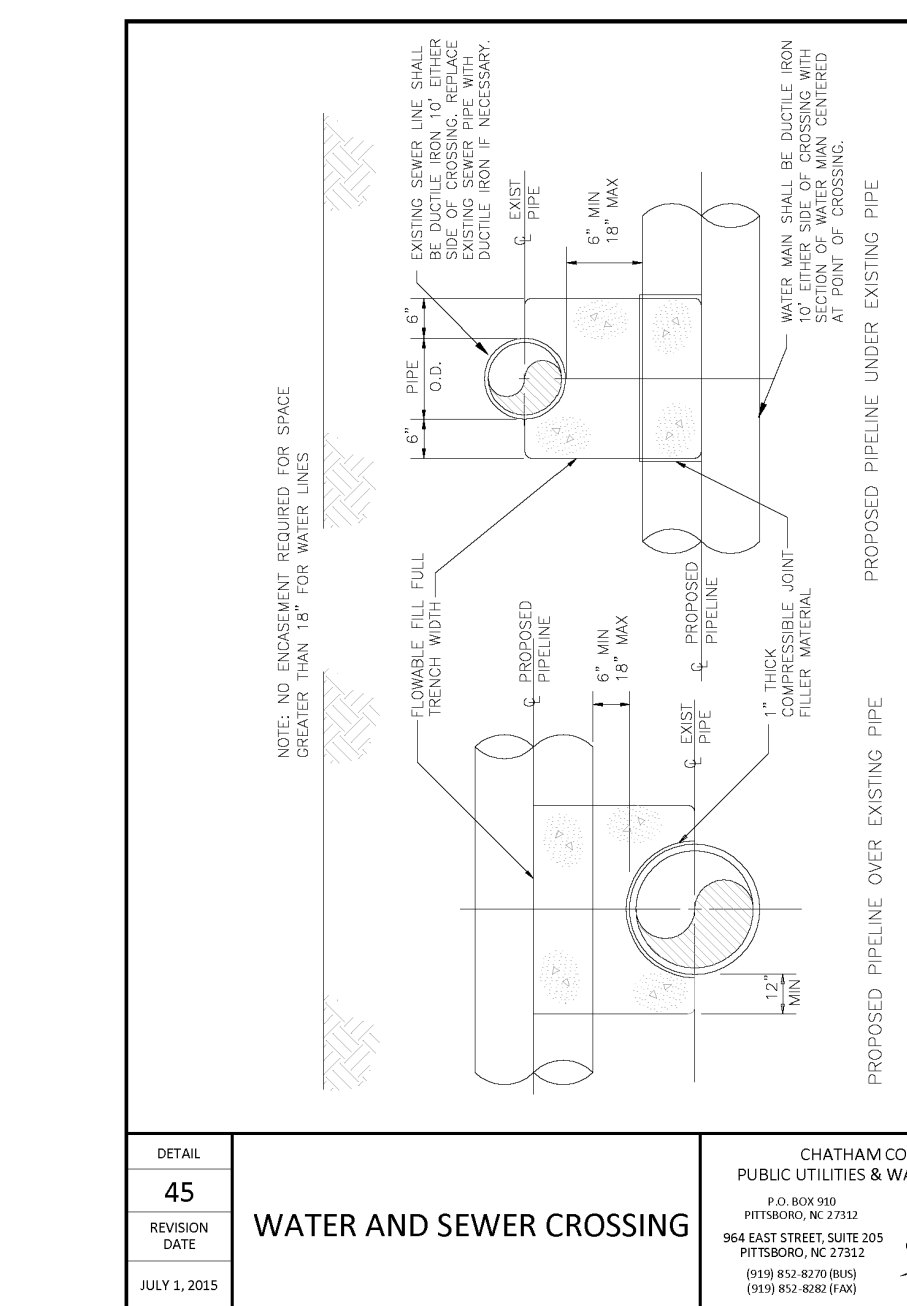
DETAIL	6	VALVE BOX COVER	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



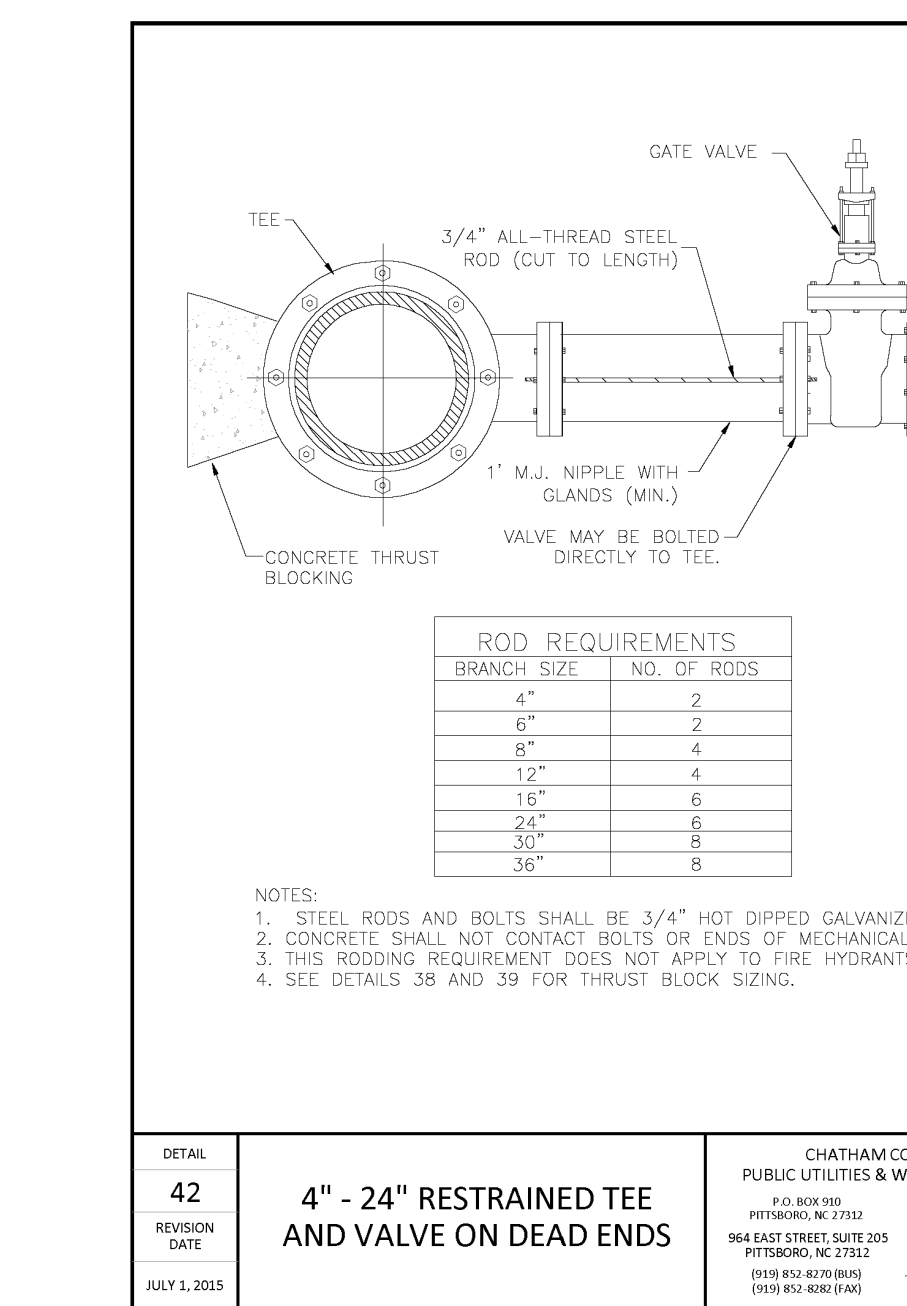
DETAIL	4	VALVE BOX AND COLLAR NOT IN PAVEMENT	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



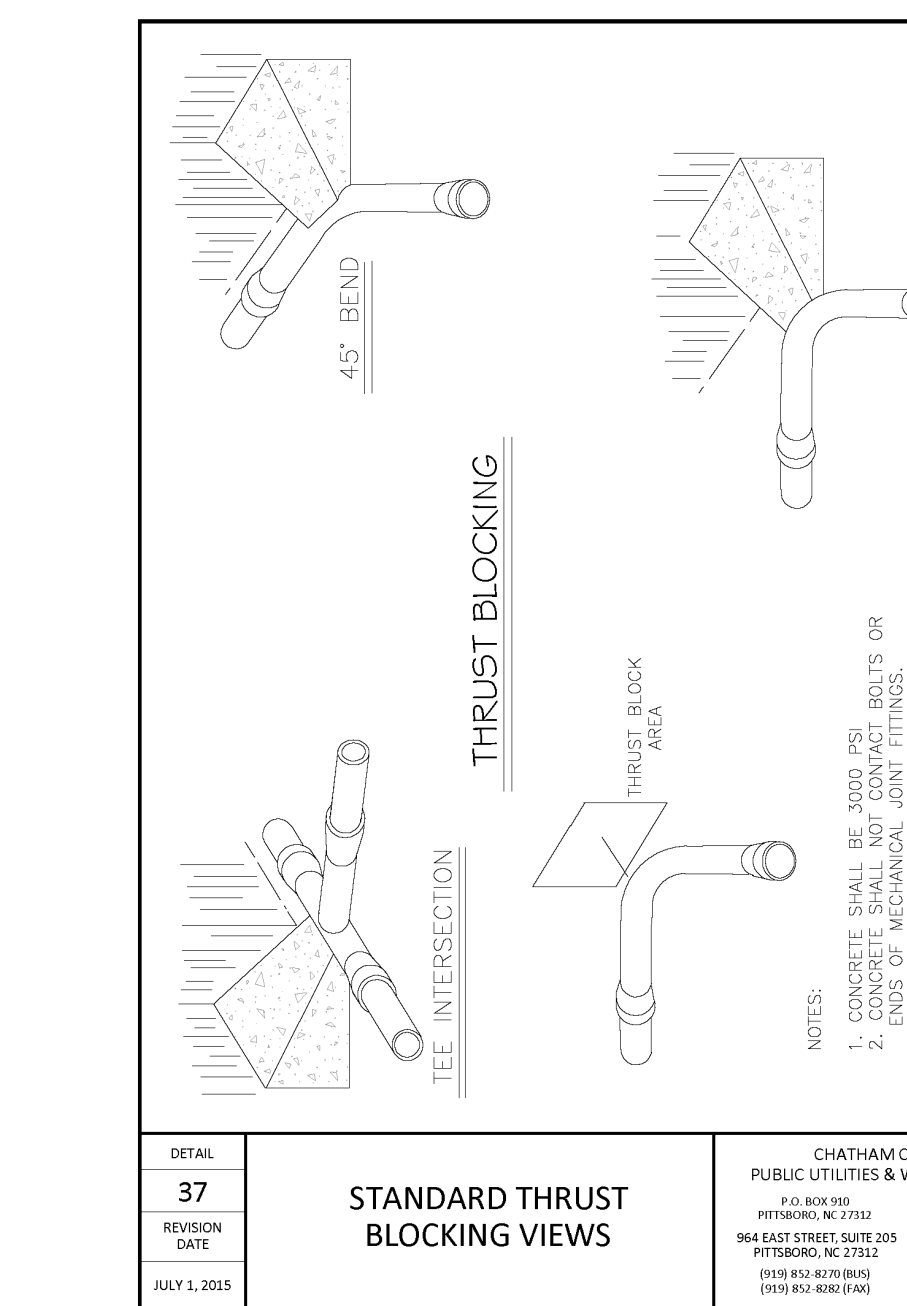
DETAIL	16	1\"/>	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	NOVEMBER 16, 2015		



DETAIL	45	WATER AND SEWER CROSSING	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



DETAIL	42	4\"/>	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		



DETAIL	37	STANDARD THRUST BLOCKING TYPES	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		

DETAIL	38	CONCRETE THRUST BLOCKING QUANTITY TABLE, 6\"/>	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		

DETAIL	39	CONCRETE THRUST BLOCKING QUANTITY TABLE, 24\"/>	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 900 PITTSBORO, NC 27312 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 (919) 843-8070 FAX (919) 843-8000
REVISION	DATE		
1	JULY 1, 2015		

NO.	REVISION	DATE
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2	REVISIONS PER COMMENTS RECEIVED FROM NCDOT	2017.09.21
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PHASE 13 - SECTION 1 & 2
CHATHAM COUNTY, NORTH CAROLINA

UTILITY DETAILS

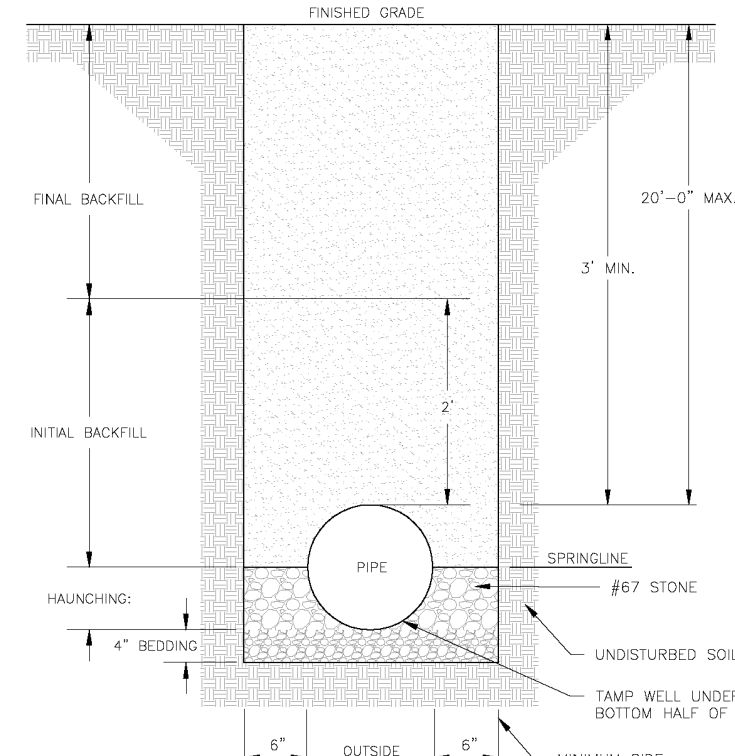
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DESIGNED:	BSS	CHECKED:	GCA		
PROJ. MGR.:	CHS				
STATUS:	FOR REVIEW PURPOSES ONLY				
REVISION:	3				

DETECTABLE WARNING TAPE NOTES:

1. 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.
2. 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.
3. 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.

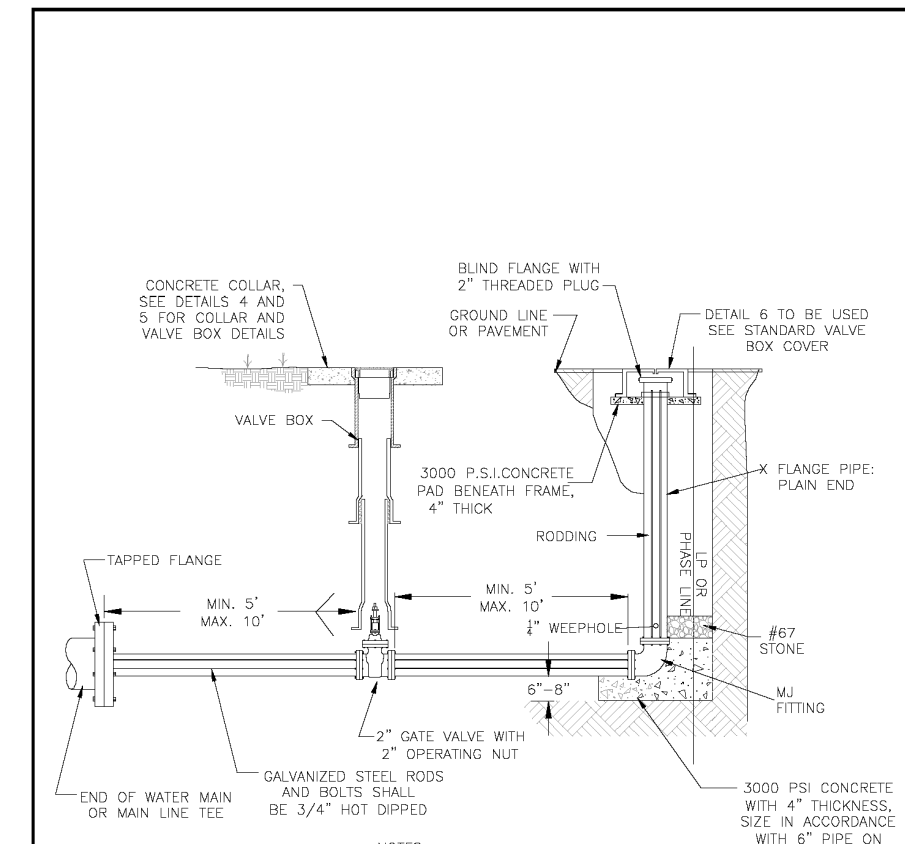
TRACER WIRE NOTES:

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



- NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 2. NO RIGID OR BULKY 3" OR LARGER IN DIAMETER TO BE USED IN BACKFILL.
 3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
 4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
 5. ACHIEVE 90% COMPACTION IN BACKFILL.

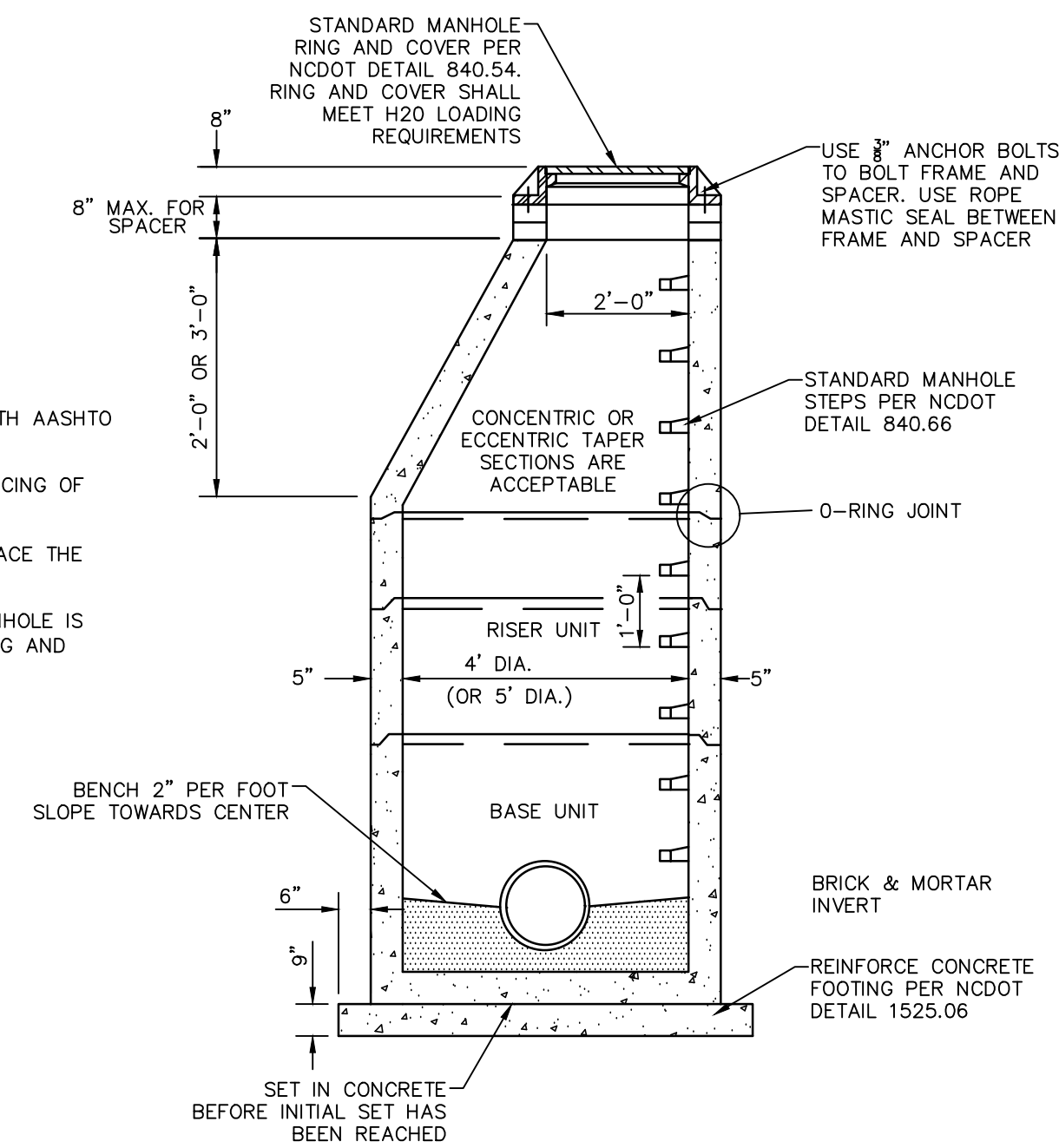
DETAIL	36	PVC PIPE TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 100 PITTSBORO, NC 27712 964 EAST STREET, SUITE 305 PITTSBORO, NC 27712 PH: 919-420-8900 FAX: 919-420-8900
REVISION	DATE	DESCRIPTION	
JULY 1, 2015			



- NOTES:
1. NO JOOD COUPLINGS ALLOWED

DETAIL	13	2" BLOW-OFF ASSEMBLY AT END OF WATER MAIN	CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION P.O. BOX 100 PITTSBORO, NC 27712 964 EAST STREET, SUITE 305 PITTSBORO, NC 27712 PH: 919-420-8900 FAX: 919-420-8900
REVISION	DATE	DESCRIPTION	
JULY 1, 2015			

- NOTES:
1. PROVIDE PRECAST MANHOLE COMPONENTS WHICH COMPLY WITH AASHTO M199.
 2. ASSEMBLE RISERS AND GRADE RINGS SO STEPS HAVE A SPACING OF 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
 3. WHERE THE MANHOLE IS EXPOSED TO ROADWAY TRAFFIC, PLACE THE TOP OF THE MANHOLE FLUSH WITH THE GROUND.
 4. 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

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

SHEET 2 OF 2
1525.06

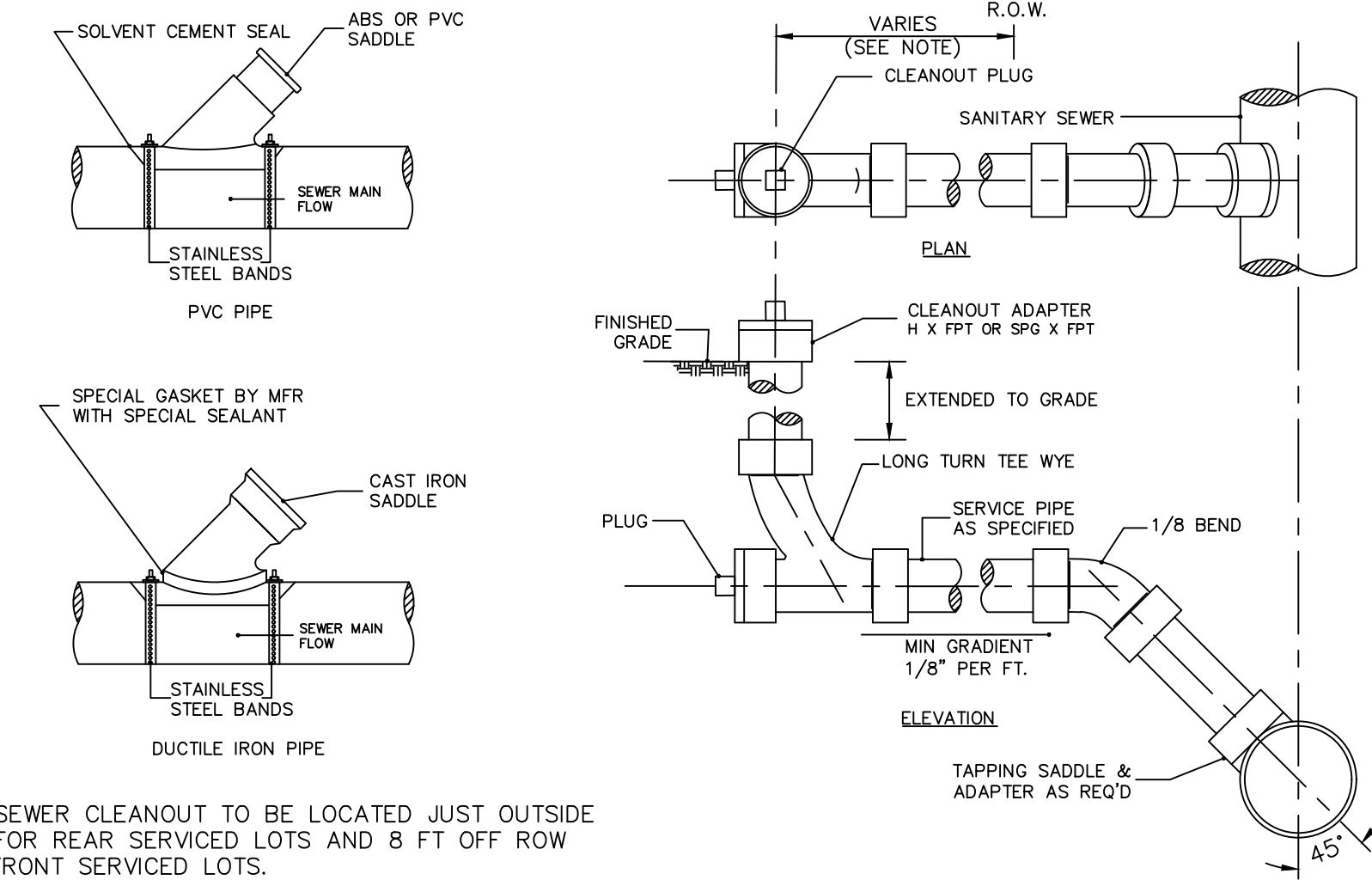
BILL OF MATERIAL FOR 6'-0" FOOTING			
BAR	SIZE	LENGTH	NO. WT. lbs.
T1	#5	5'-6"	18 103
CLASS "A" CONC. YD ³ 9" THICK 1.00			

BILL OF MATERIAL FOR 7'-0" FOOTING			
BAR	SIZE	LENGTH	NO. WT. lbs.
T2	#5	6'-6"	20 136
CLASS "A" CONC. YD ³ 9" THICK 1.36			

BILL OF MATERIAL FOR 8'-0" FOOTING			
BAR	SIZE	LENGTH	NO. WT. lbs.
T3	#5	7'-6"	24 188
CLASS "A" CONC. YD ³ 12" THICK 2.37			

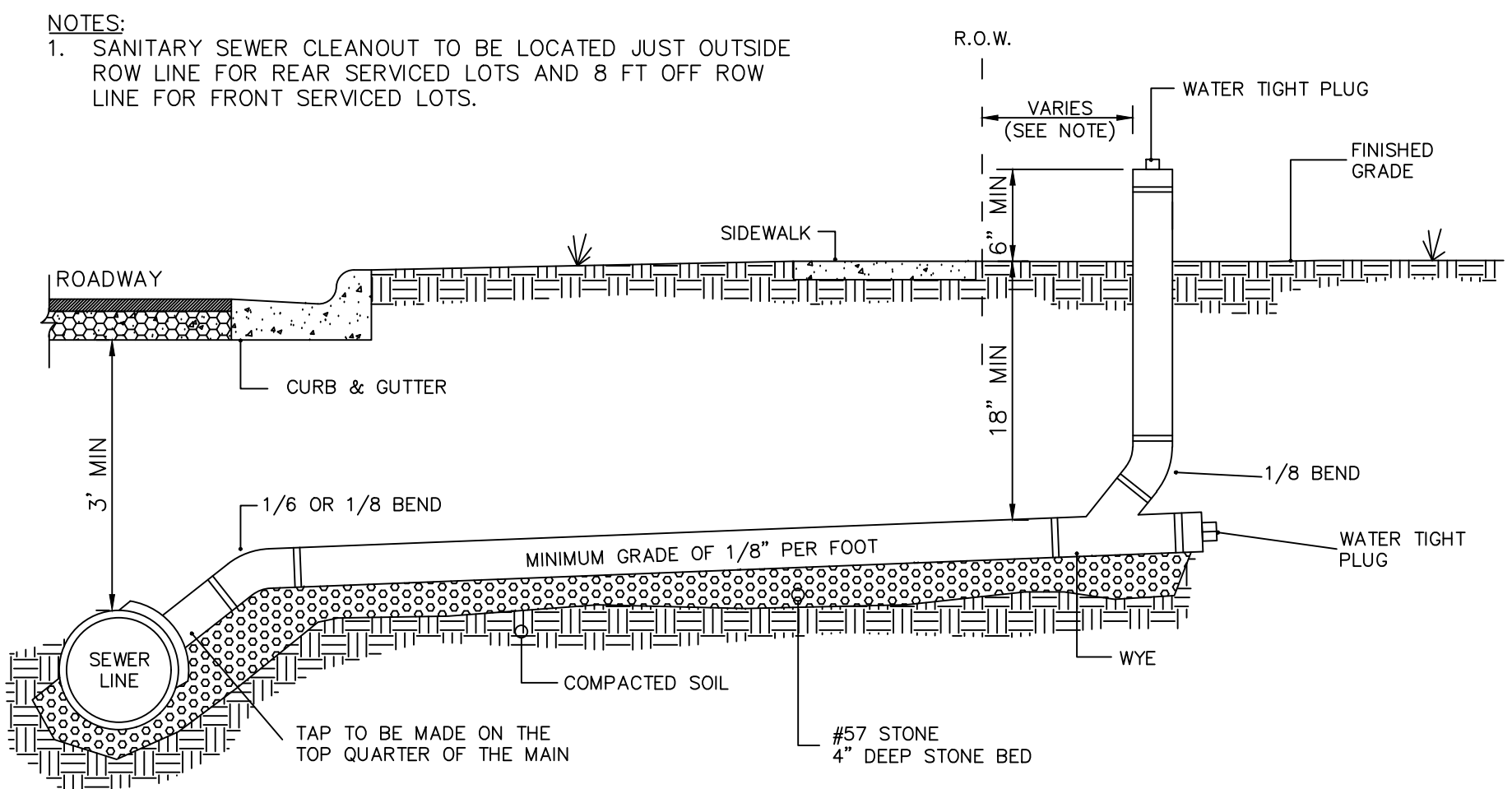
PLACE REINFORCING STEEL SO THAT STEEL IS PLACED A MIN. OF 2" AND A MAX. OF 4" FROM THE TOP OF THE SLAB.

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



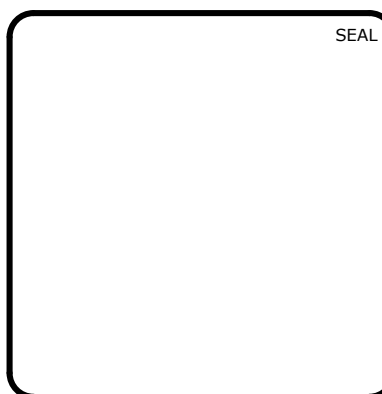
- NOTES:
1. SANITARY SEWER CLEANOUT TO BE LOCATED JUST OUTSIDE ROW LINE FOR REAR SERVICED LOTS AND 8 FT OFF ROW LINE FOR FRONT SERVICED LOTS.

SANITARY SEWER SERVICE CONNECTIONS
NTS



STANDARD SANITARY SEWER TAP AND SERVICE
NTS

REV. NO.	DESCRIPTION	DATE
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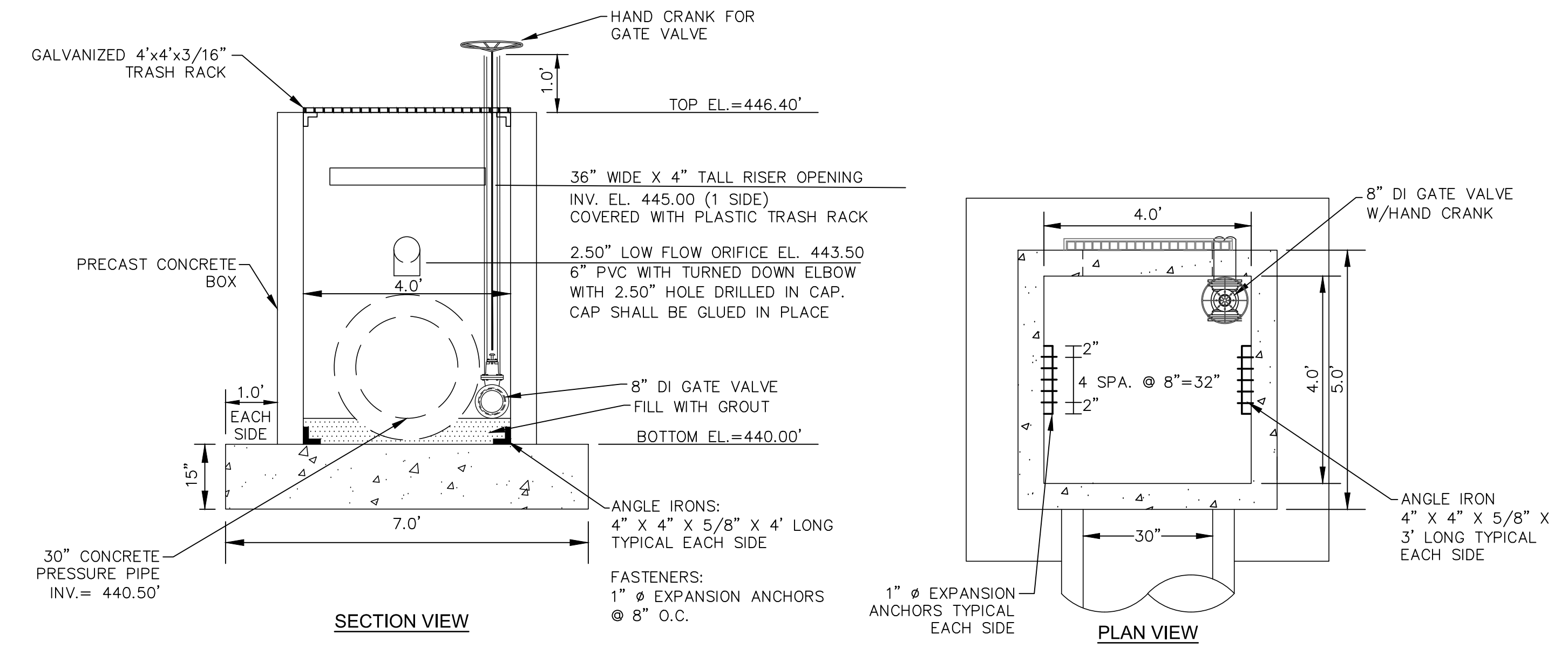
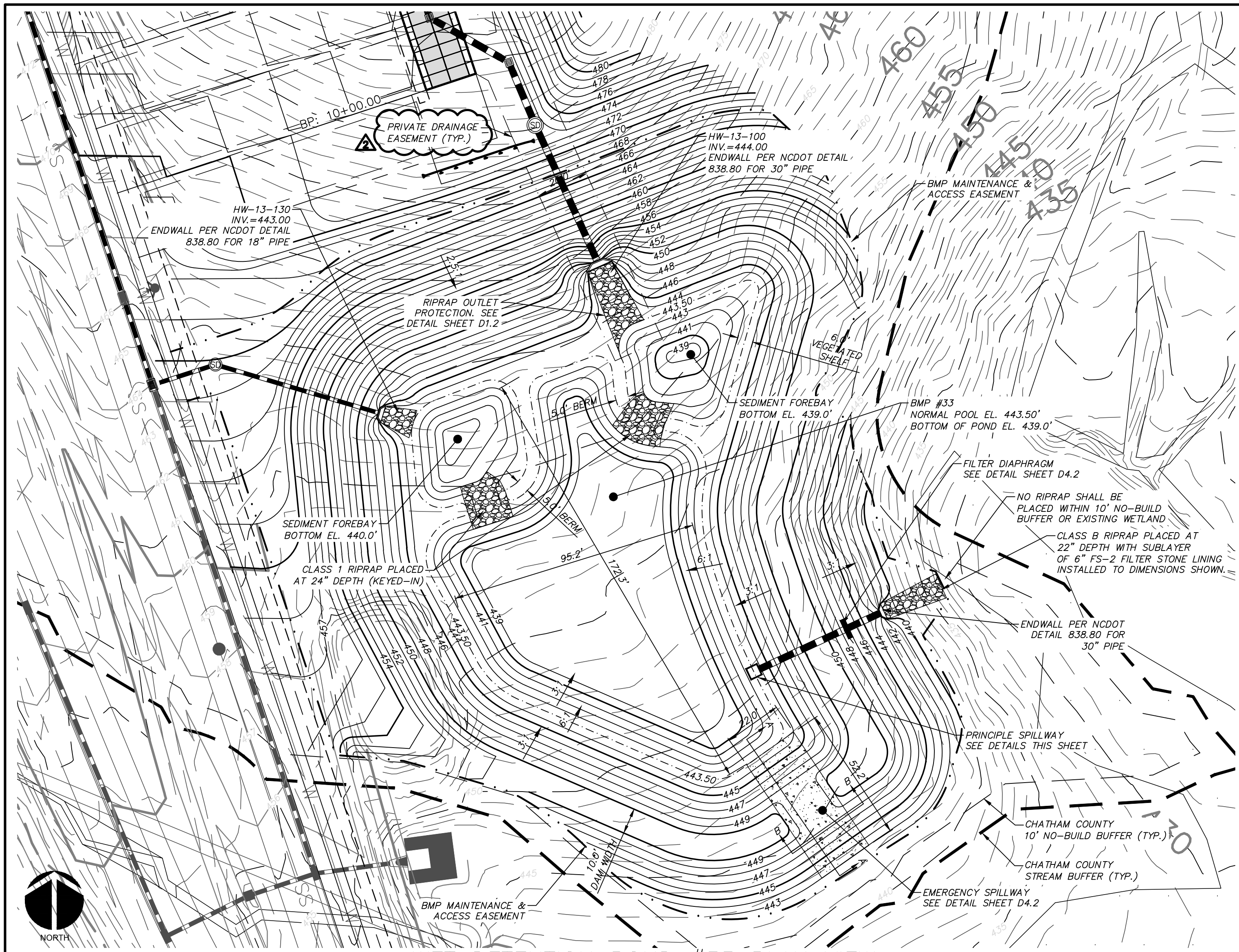


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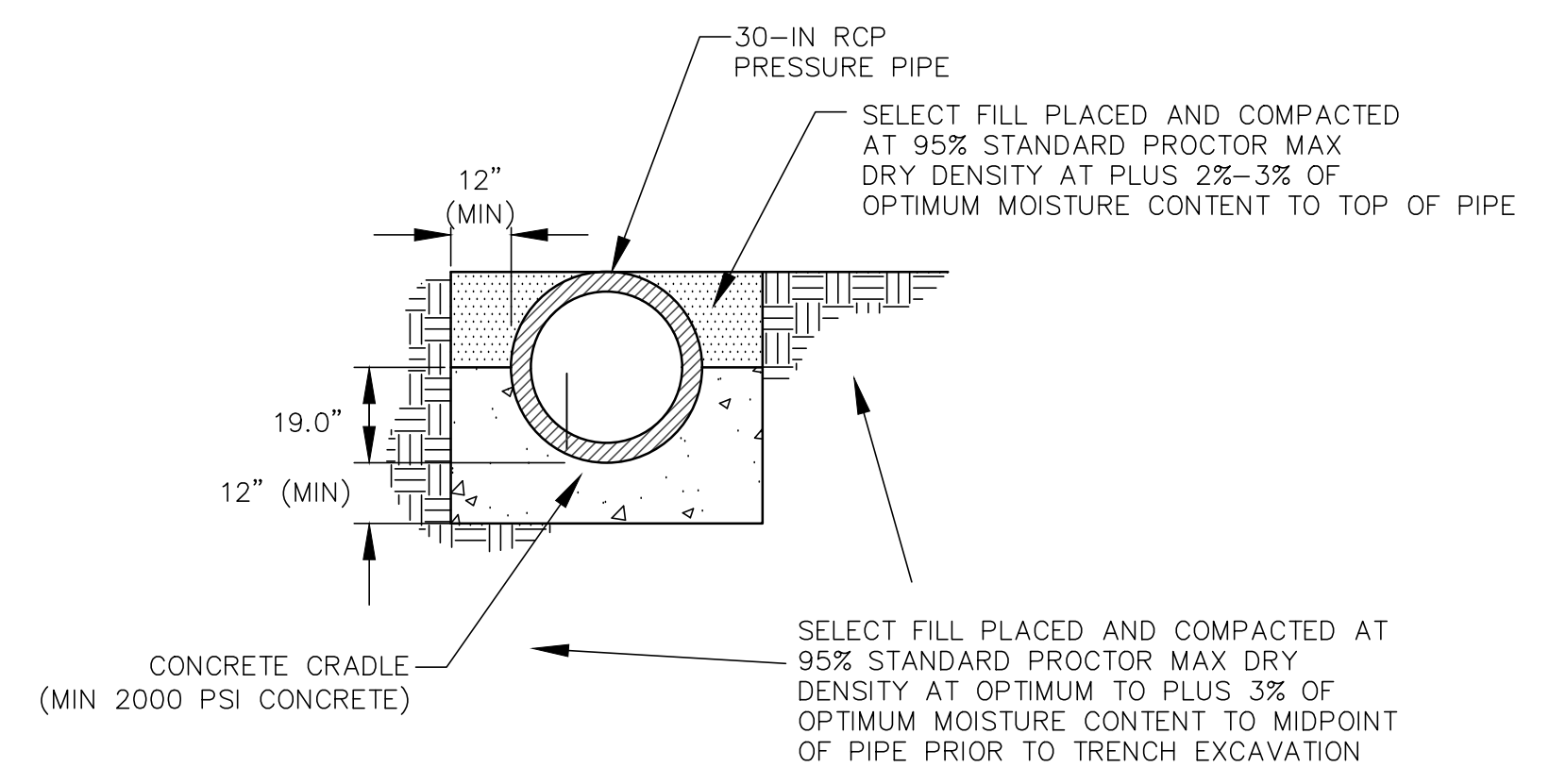
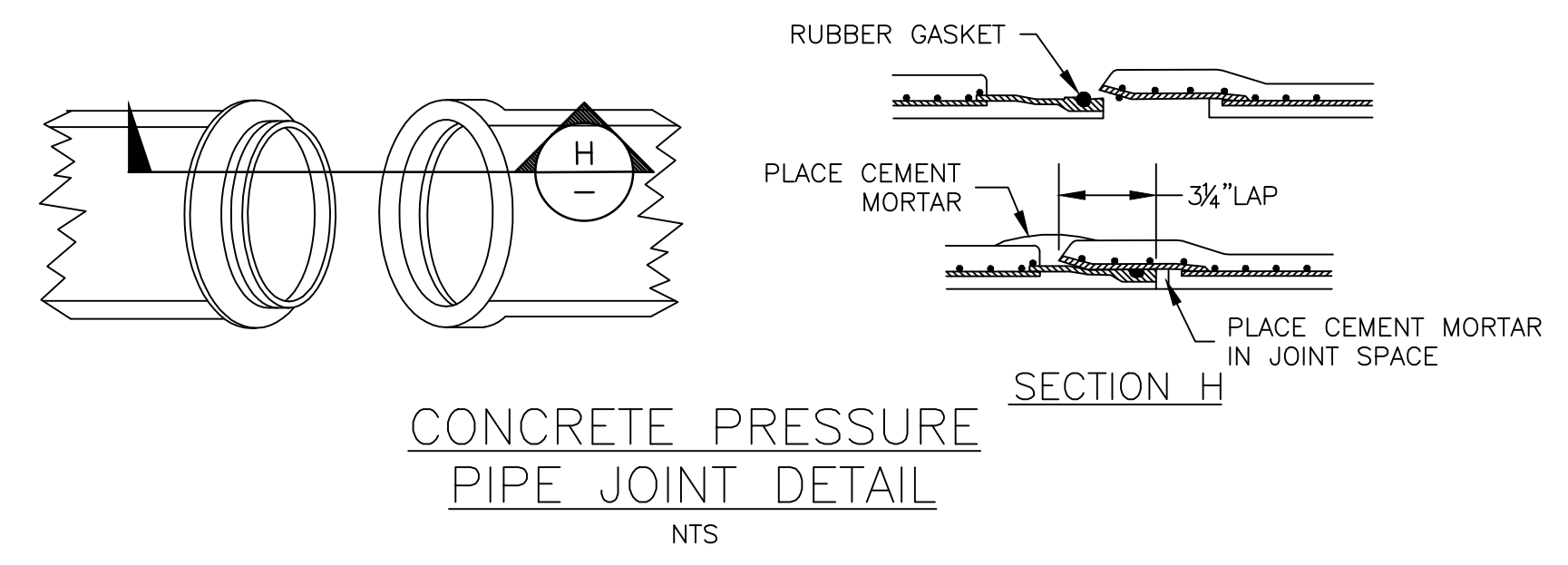
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CHATHAM COUNTY, NORTH CAROLINA**
UTILITY DETAILS

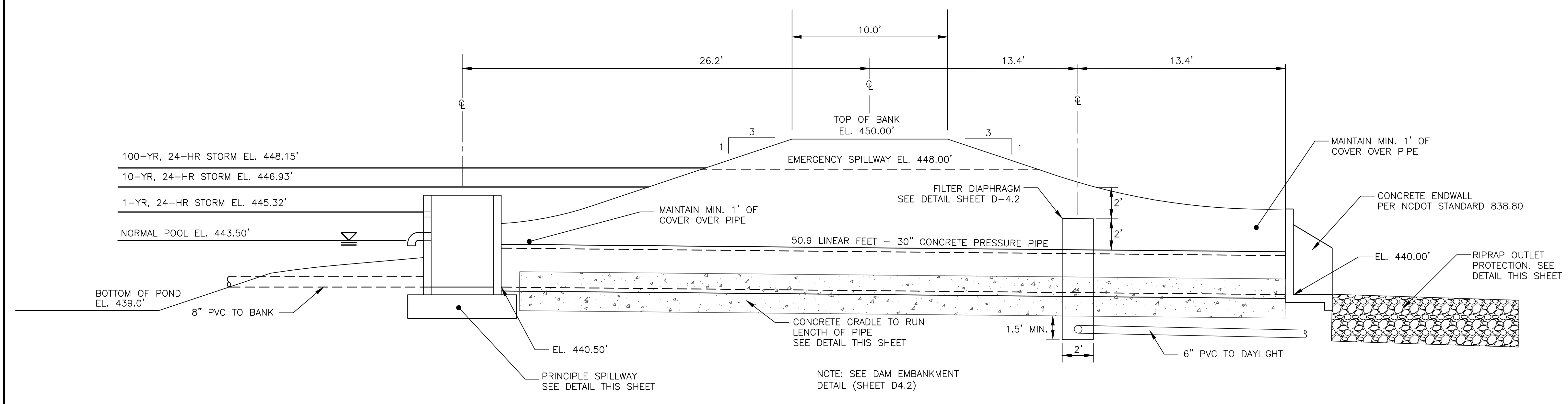
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PROJ. MGR.	CHS				
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REVISION: 3					



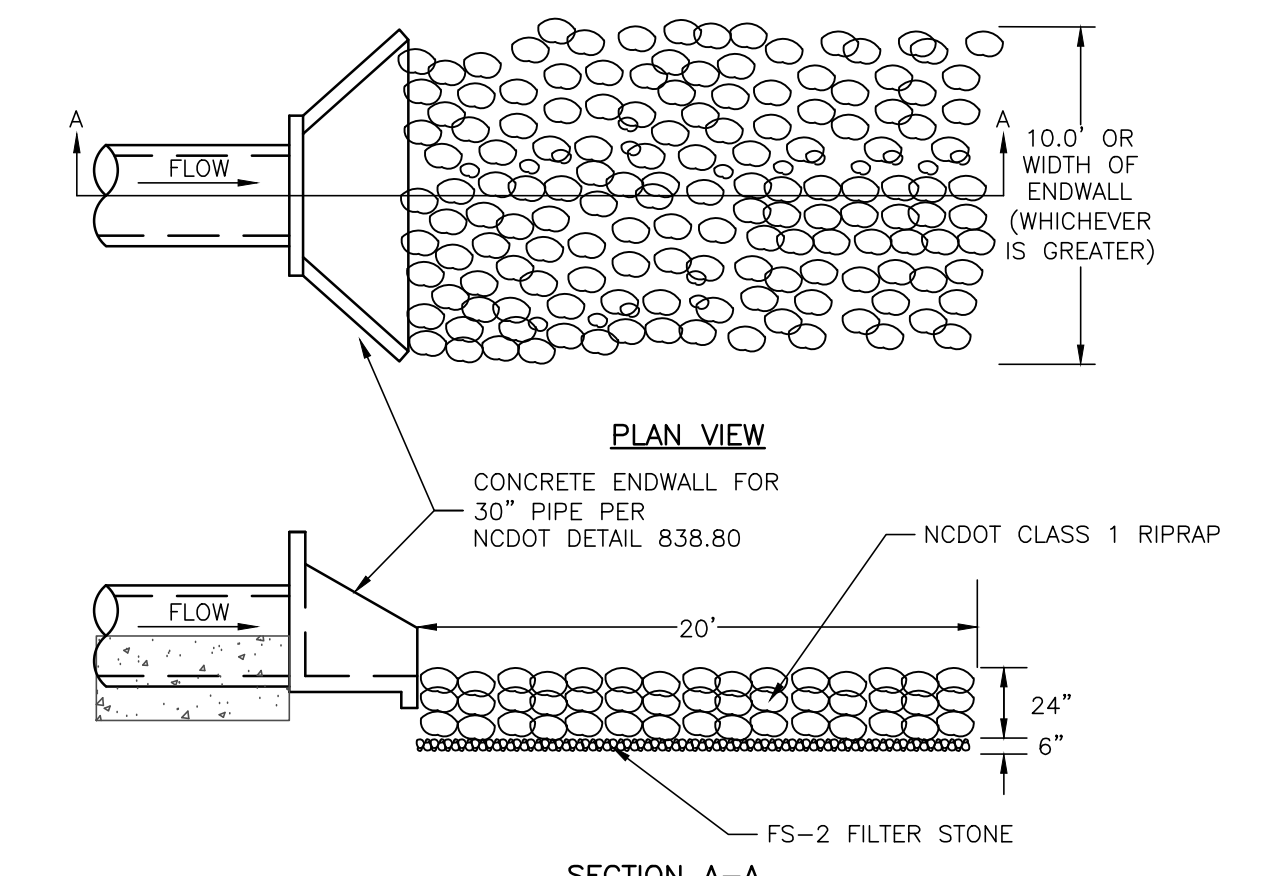
PRINCIPLE SPILLWAY
SCALE = 1" = 2'



CONCRETE CRADLE DETAIL
NTS

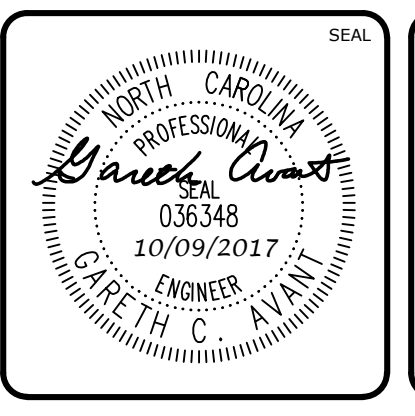
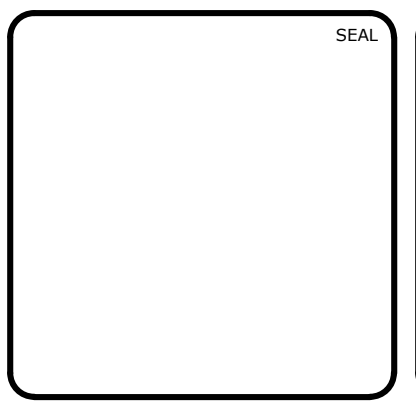


SECTION AT PRINCIPLE SPILLWAY
SCALE = 1" = 4'



RIPRAP OUTLET PROTECTION
NTS

REV. NO.	DESCRIPTIONS	DATE
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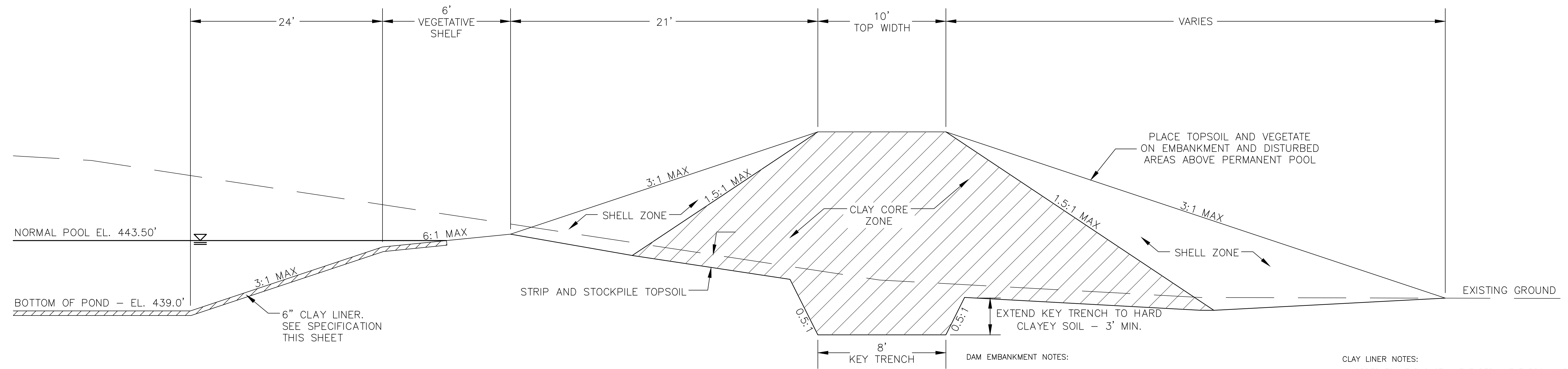


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BRIAR CHAPEL
 PHASE 13 - SECTION 1 & 2
 CHATHAM COUNTY, NORTH CAROLINA
BMP #33 PLAN & DETAILS

DATE: JULY 26, 2017	SCALE: HORIZONTAL: AS NOTED	MAC FILE NUMBER: D4.X
MCE PROJ. #: 02735-0198	VERTICAL: N/A	DRAWING NUMBER: D4.1
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REVISION: 3		



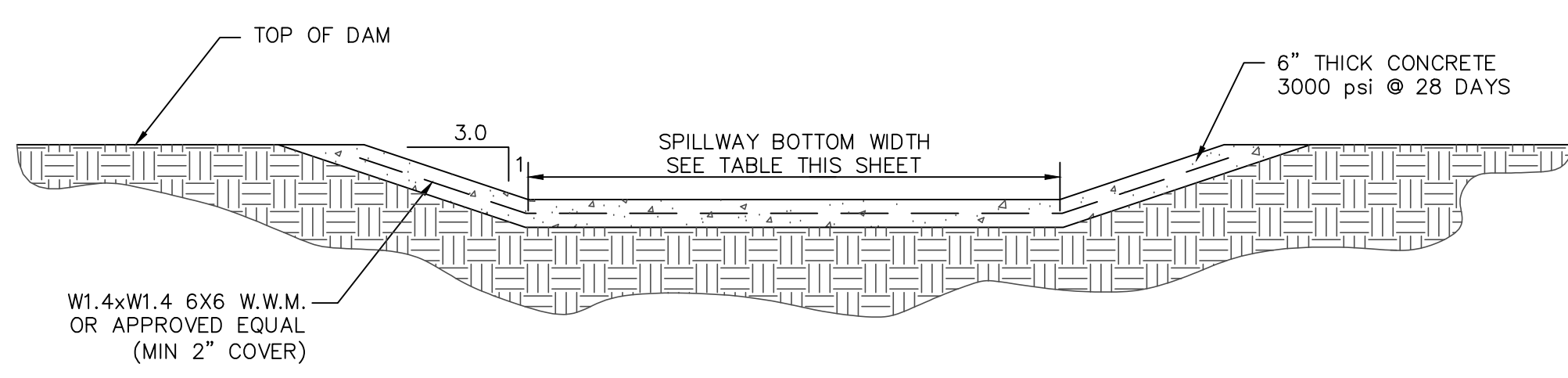
DAM EMBANKMENT DETAIL
NTS

DAM EMBANKMENT NOTES:

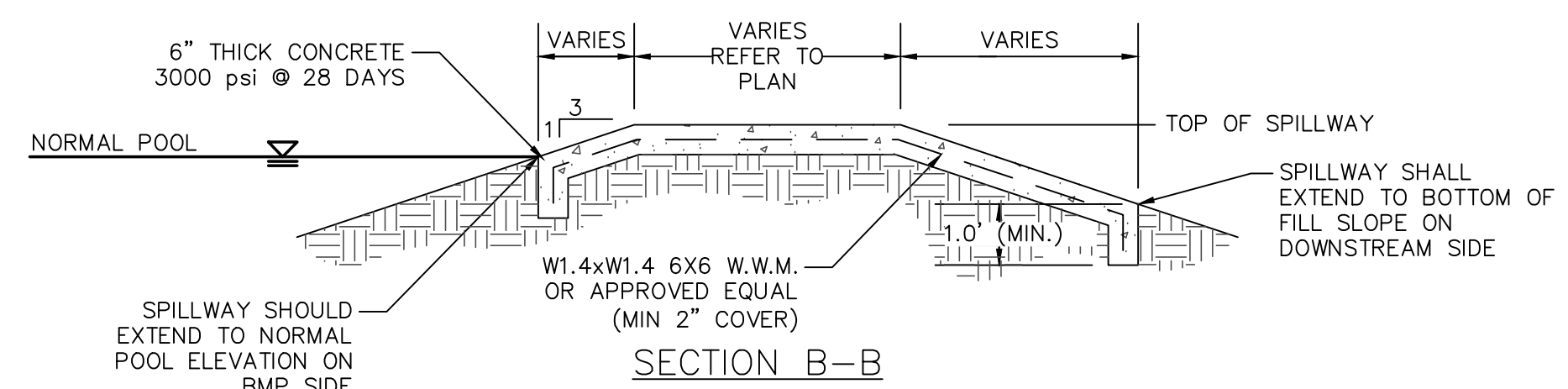
- 1) TOPSOIL BENEATH THE EMBANKMENT SHALL BE REMOVED AND STOCKPILED. THE FOUNDATION WILL BE PROOF ROLLED AND ANY SOFT OR ORGANIC MATERIALS WILL BE REMOVED.
- 2) ALL MATERIAL SHALL BE COMPACTED IN 6-8 INCH LIFTS TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY OR HIGHER (ASTM D-698). THE CLAY CORE ZONE 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

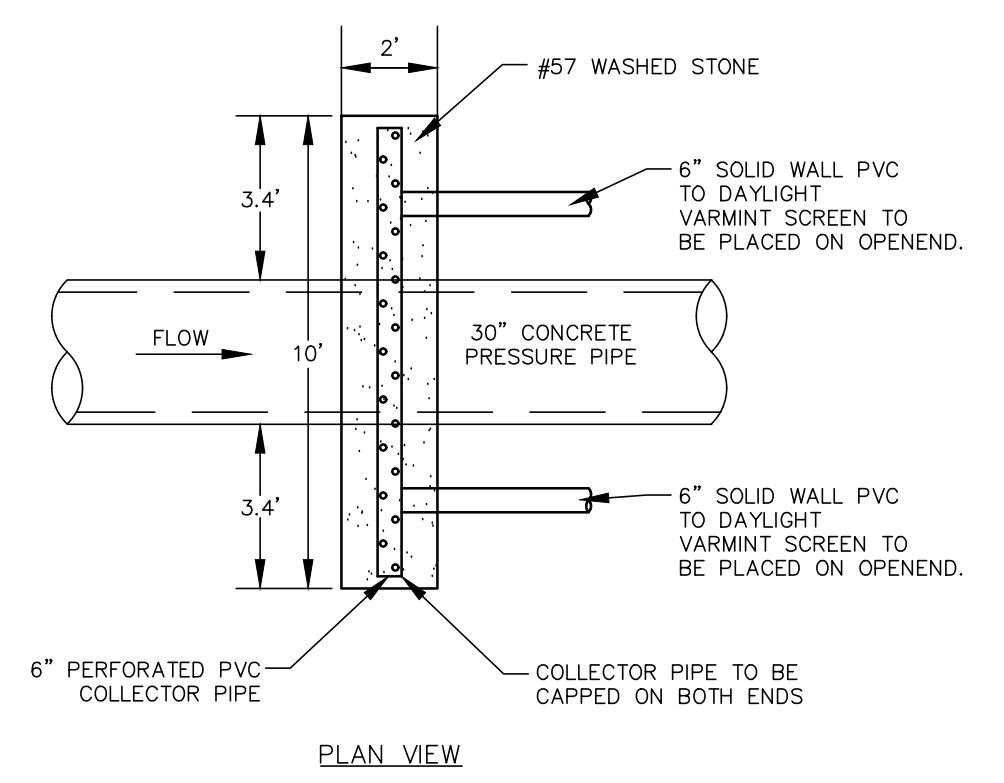


SECTION B-B

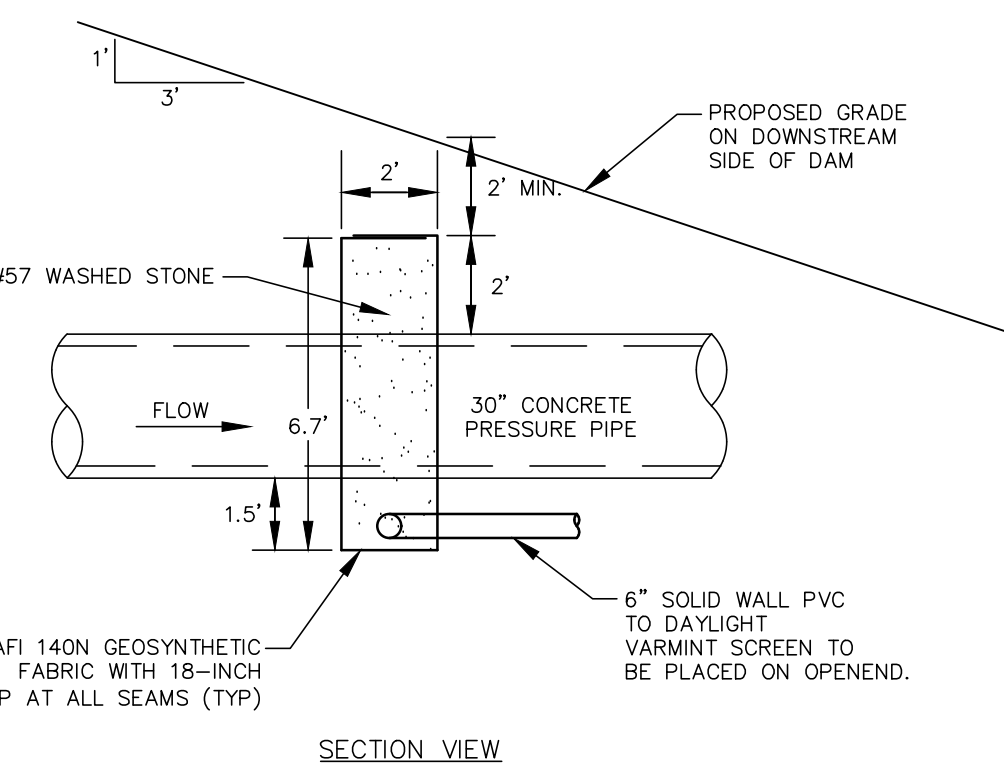
BMP #33	NORMAL POOL EL.	TOP DAM EL.	SPILLWAY BOTTOM EL.	SPILLWAY BOTTOM WIDTH
#33	443.50	450.00	448.00	10'

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

EMERGENCY SPILLWAY DETAIL
NTS



PLAN VIEW



SECTION VIEW

FILTER DIAPHRAGM DETAIL
NTS

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

ENGLISH STANDARD DRAWING FOR
PRECAST CONCRETE ENDWALL
FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

SHEET 1 OF 1
838.80

ELEVATION

SIDE

PLAN

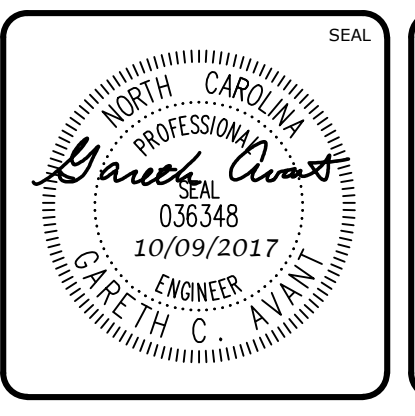
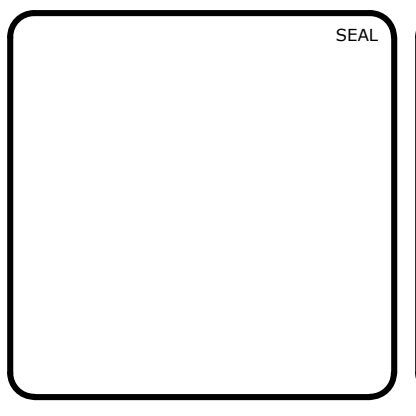
NOTES:

- THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
- INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.
- USE 4000 PSI CONCRETE.
- PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.
- PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
- PIPE TO BE GROUDED INTO HEADWALL AT JOB SITE BY CONTRACTOR.
- ALL ELEMENTS PRECAST TO MEET ASTM C913.
- WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
- CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 6" CTS. THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.

ENDWALL DIMENSIONS						
PIPE DIA.	MINIMUM BAR SIZE	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.
1.0	#5 @ 8"	1.25/2.00	2.00/3.75	1.25/1.75	3.00/3.75	5.50/6.00
1.25	#5 @ 8"	1.25/2.00	3.00/3.75	1.25/2.00	3.50/3.75	6.50/6.75
1.50	#5 @ 8"	1.25/2.00	3.00/4.25	1.50/2.50	3.50/3.75	6.50/6.75
2.0	#5 @ 8"	1.50/2.50	4.00/4.75	1.75/2.50	4.00/4.25	7.50/8.25
2.5	#5 @ 8"	2.50/3.50	4.00/6.00	2.00/3.00	4.50/5.50	10.00/11.50
3.0	#5 @ 8"	3.00/3.50	5.00/6.00	2.75/3.50	5.25/5.75	11.50/11.75
3.5	#5 @ 8"	3.25/4.50	6.00/6.75	3.25/3.50	6.00/6.75	12.00/13.25
4.0	#5 @ 8"	3.50/4.50	6.50/7.00	3.25/3.50	6.50/6.75	13.00/13.25
4.5	#5 @ 8"	4.00/5.00	6.50/8.50	3.25/4.00	7.00/9.25	13.50/15.75
5.0	#5 @ 8"	4.50/5.00	7.00/8.50	3.25/4.00	7.25/9.25	13.75/15.75
5.5	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.25/9.25	14.00/15.75
6.0	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.75/9.25	14.75/16.75

REV. NO.	DESCRIPTIONS	DATE
3	REVISIONS PER COMMENTS RECEIVED FROM COUNTY EROSION CONTROL	2017.10.06
2	REVISIONS PER COMMENTS RECEIVED FROM NCDOT	2017.09.21
1	REVISIONS PER COMMENTS RECEIVED FROM COUNTY EROSION CONTROL	2017.09.13
0	SUBMITTAL TO AGENCIES	2017.07.26



MCKIM & CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
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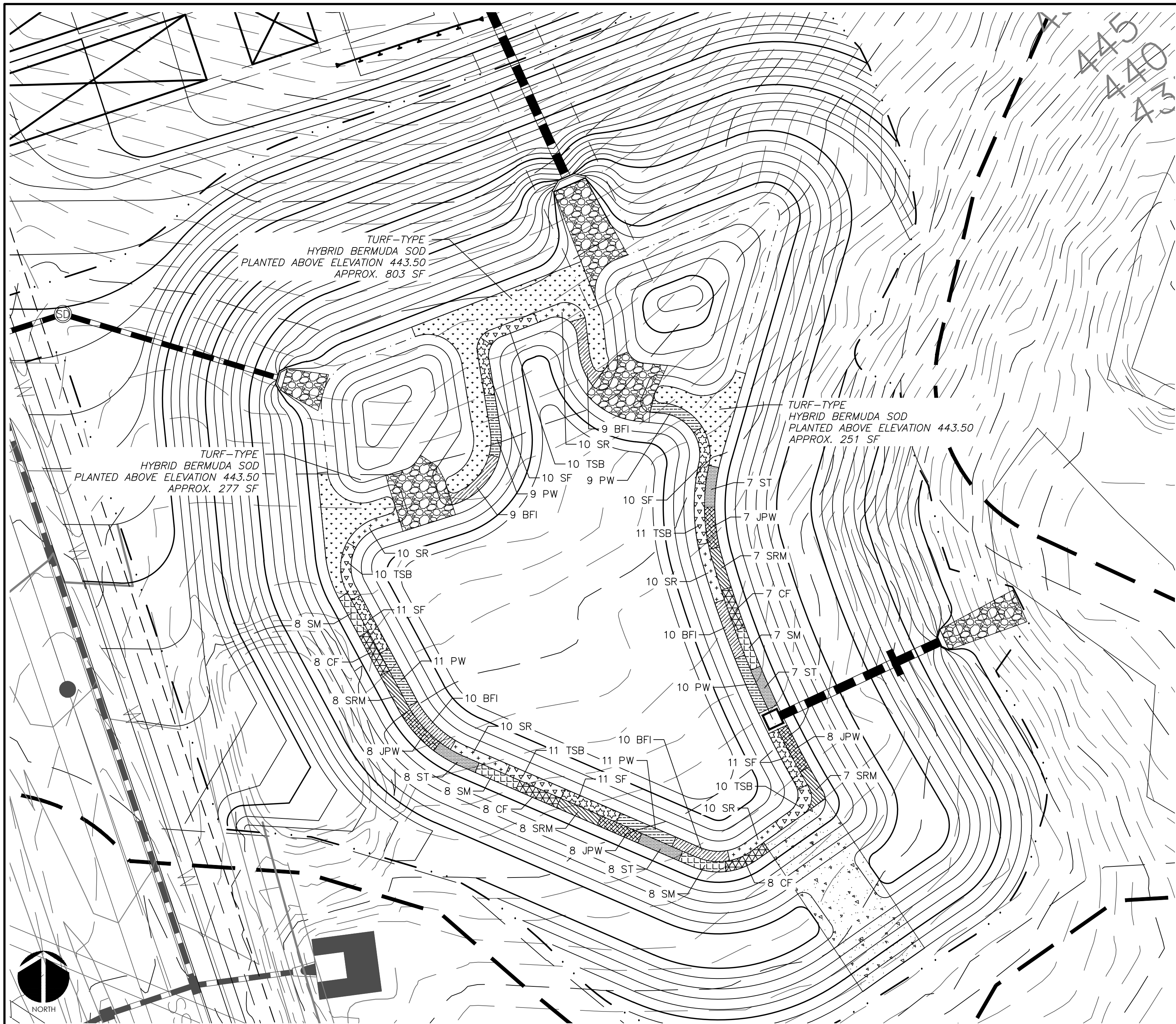
BRIAR CHAPEL
PHASE 13 - SECTION 1 & 2
CHATHAM COUNTY, NORTH CAROLINA
BMP #33 PLAN & DETAILS

DATE: JULY 26, 2017
MCE PROJ. #: 02735-0198
DRAWN: BSS
DESIGNED: BSS
CHECKED: GCA
PROJ. MGR.: CHS

SCALE: HORIZONTAL: AS NOTED
VERTICAL: N/A

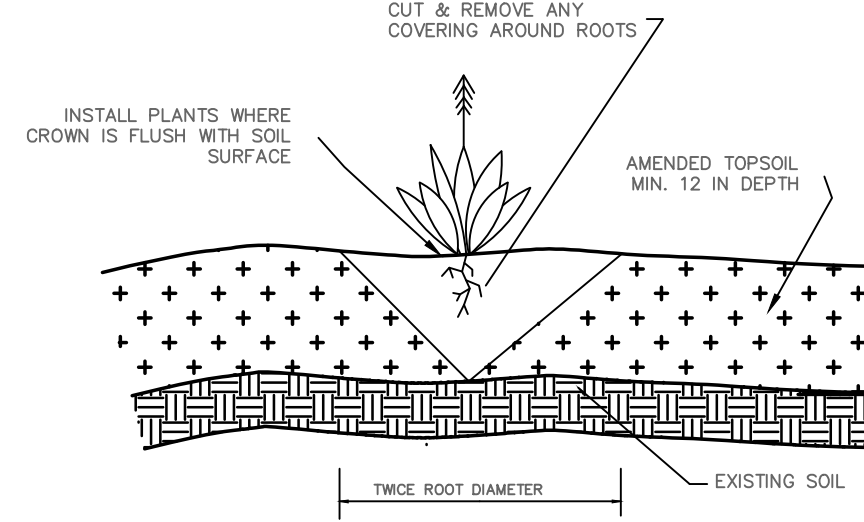
M&C FILE NUMBER: D4.X
DRAWING NUMBER: D4.2

STATUS: FOR REVIEW PURPOSES ONLY
REVISION: 3

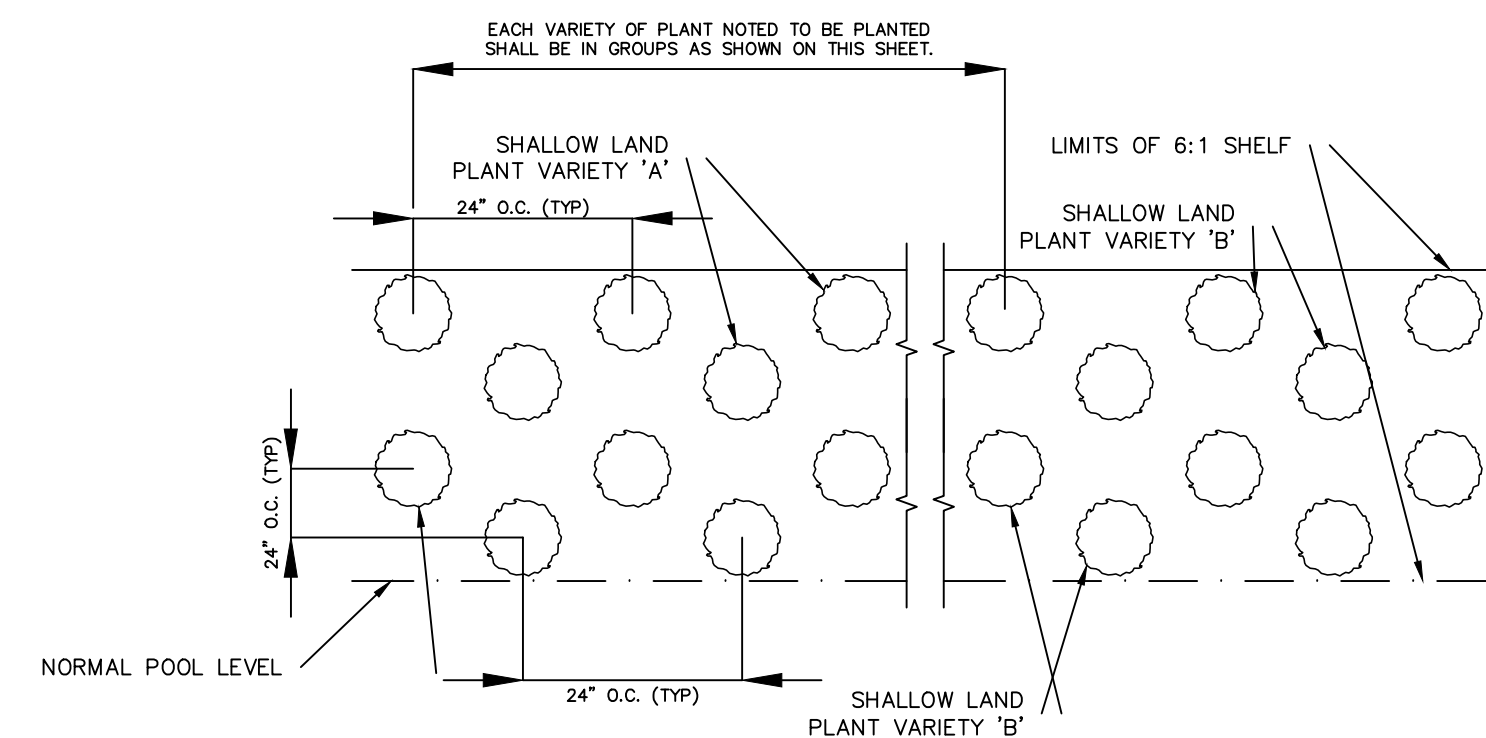


WET DETENTION POND #33 PLANTING PLAN
SCALE = 1" = 20'

PLANTING SCHEDULE						
SYM.	ABB.	COMMON NAME	BOTANICAL NAME	QUANTITY	SPACING	CONTAINER SIZE AT PLANTING
SHALLOW WATER PLANTINGS						
[Symbol]	SF	SWEETFLAG	<i>Acorus subcordatum</i>	53	24"-30" O.C.	1 QT.
[Symbol]	PW	PICKERELWEED	<i>Pontederia cordata</i>	50	24"-30" O.C.	1 QT.
[Symbol]	BFI	BLUE FLAG IRIS	<i>Iris virginica</i>	48	24"-30" O.C.	1 QT.
[Symbol]	SR	SOFT RUSH	<i>Juncus effusus var. pygmaei or solutus</i>	50	24"-30" O.C.	1 QT.
[Symbol]	TSB	THREE SQUARE BULRUSH	<i>Schoenoplectus americanus</i>	52	24"-30" O.C.	1 QT.
SHALLOW LAND PLANTINGS						
[Symbol]	SM	SWAMP MILKWEED	<i>Asclepias incarnata</i>	31	24"-30" O.C.	1 QT.
[Symbol]	CF	CARDINAL FLOWER	<i>Lobelia cardinalis</i>	31	24"-30" O.C.	1 QT.
[Symbol]	SRM	SCARLET ROSE MALLOW	<i>Hibiscus coccineus</i>	30	24"-30" O.C.	1 QT.
[Symbol]	JPW	DWARF JOE PYE WEED	<i>Eupatoriadelphus dubius</i>	31	24"-30" O.C.	1 QT.
[Symbol]	ST	SPOTTED TRUMPETWEED	<i>Eupatoriadelphus maculatus</i>	30	24"-30" O.C.	1 QT.



GENERAL PLANTING DETAIL
NTS



VEGETATED PLANTING SHELF DETAIL
NTS

NOTES:
1. CONTINUE PLANTING SCHEME SHOWN FOR EACH OF THE 6 PLANT VARIETIES NOTED BELOW AROUND ENTIRE LENGTH OF THE SHALLOW LAND PLANTING-ZONE
2. OTHER SPECIES WITH SIMILAR GROWTH HABITS AND MAY BE APPROVED AS LISTED IN THE "NCDEQ STORMWATER DESIGN MANUAL" TABLE 3.

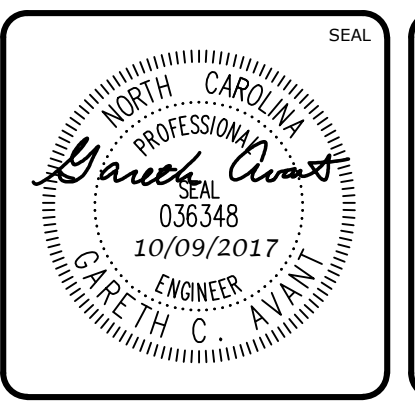
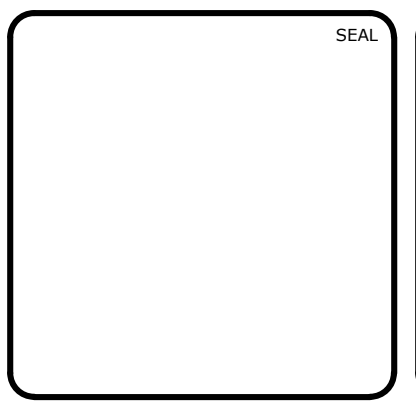
GENERAL PLANTING NOTES:

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 LAND PLANTING NOTES:

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

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BMP #33 PLAN & DETAILS

DATE: JULY 26, 2017	SCALE: D4.X	M&C FILE NUMBER: D4.X
M&C PROJ. #: 02735-0198	HORIZONTAL: AS NOTED	DRAWING NUMBER: D4.3
DRAWN: BSS	VERTICAL: N/A	
DESIGNED: BSS		
CHECKED: GCA		
PROJ. MGR.: CHS		
STATUS: FOR REVIEW PURPOSES ONLY		
REVISION: 3		