

RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE SPECIES RATE (lb./acre)
 TALL FESCUE 60
 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./ac RYE (GRAIN)

SEEDING DATES: BEST: FALL: AUG. 15 - SEPT. 15, POSSIBLE: FEB. 1 - APR. 15. LATE WINTER: AUG. 20 - OCT. 25, 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./ac 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.

RECOMMENDATIONS FOR FALL

SEEDING MIXTURE SPECIES RATE (lb./acre)
 RYE (GRAIN) 120

SEEDING DATES: MOUNTAINS (ABOVE 2,500'): FEB. 15 - MAY 15
 (BELOW 2,500'): FEB. 1 - MAY 1
 COASTAL PLAIN: JAN. 1 - MAY 1
 DEC. 1 - APR. 15

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 IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

RECOMMENDATIONS FOR SUMMER

SEEDING MIXTURE SPECIES RATE (lb./acre)
 RYE (GRAIN) 120

SEEDING DATES: MOUNTAINS (ABOVE 2,500'): FEB. 15 - MAY 15
 (BELOW 2,500'): FEB. 1 - MAY 1
 COASTAL PLAIN: JAN. 1 - MAY 1
 DEC. 1 - APR. 15

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 IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

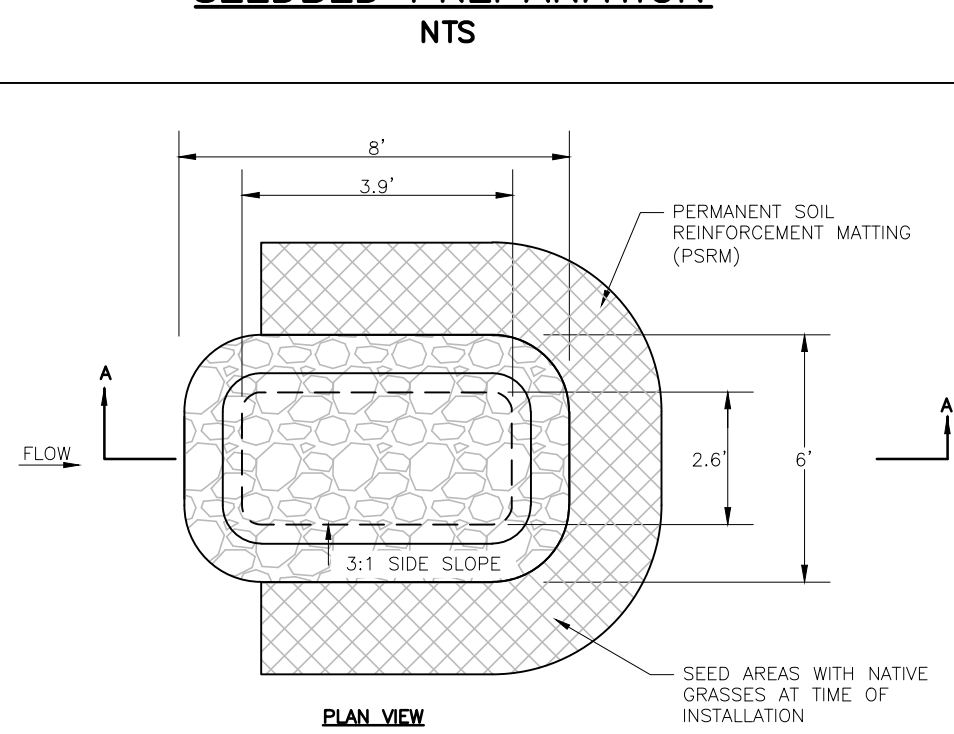
NOTE: SEE NCDENR'S EROSION AND SEDIMENT CONTROL PLANNING DESIGN MANUAL SECTION 6.11 FOR ADDITIONAL PERMANENT SEEDING OPTIONS.

PERMANENT SEEDING SCHEDULE

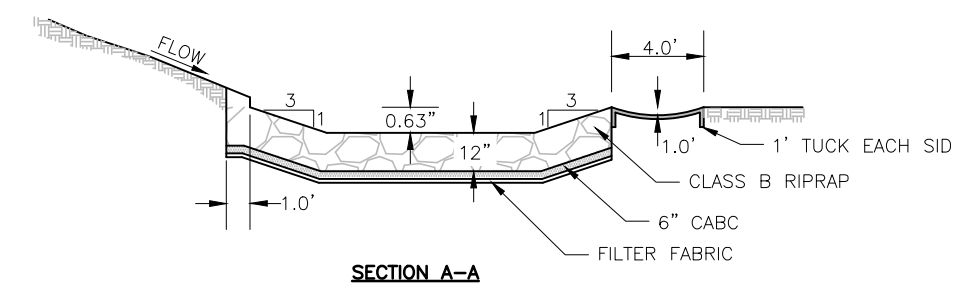
1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
5. CONTINUE TILLAGE UNTIL A WELL - PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. 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

SEEDBED PREPARATION



PERMANENT SCOUR HOLE



RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE SPECIES RATE (lb./acre)
 RYE (GRAIN) 120
 ANNUAL LESPEDEZA (KOBE IN PIEDMONT & COASTAL PLAIN, KOREAN IN MOUNTAINS) 50

OMIT ANNUAL LESPEDEZA WHEN DURATION OF TEMPORARY COVER IS NOT TO EXTEND BEYOND JUNE

SEEDING DATES: MOUNTAINS (ABOVE 2,500'): FEB. 15 - MAY 15
 (BELOW 2,500'): FEB. 1 - MAY 1
 COASTAL PLAIN: JAN. 1 - MAY 1
 DEC. 1 - APR. 15

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 IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

RECOMMENDATIONS FOR FALL

SEEDING MIXTURE SPECIES RATE (lb./acre)
 RYE (GRAIN) 120

SEEDING DATES: MOUNTAINS (ABOVE 2,500'): FEB. 15 - MAY 15
 (BELOW 2,500'): FEB. 1 - MAY 1
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SOIL AMENDMENTS: FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb./acre GROUND AGRICULTURAL LIMESTONE AND 750 lb./acre 10-10-10 FERTILIZER

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MAINTENANCE: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

RECOMMENDATIONS FOR SUMMER

SEEDING MIXTURE SPECIES RATE (lb./acre)
 RYE (GRAIN) 120

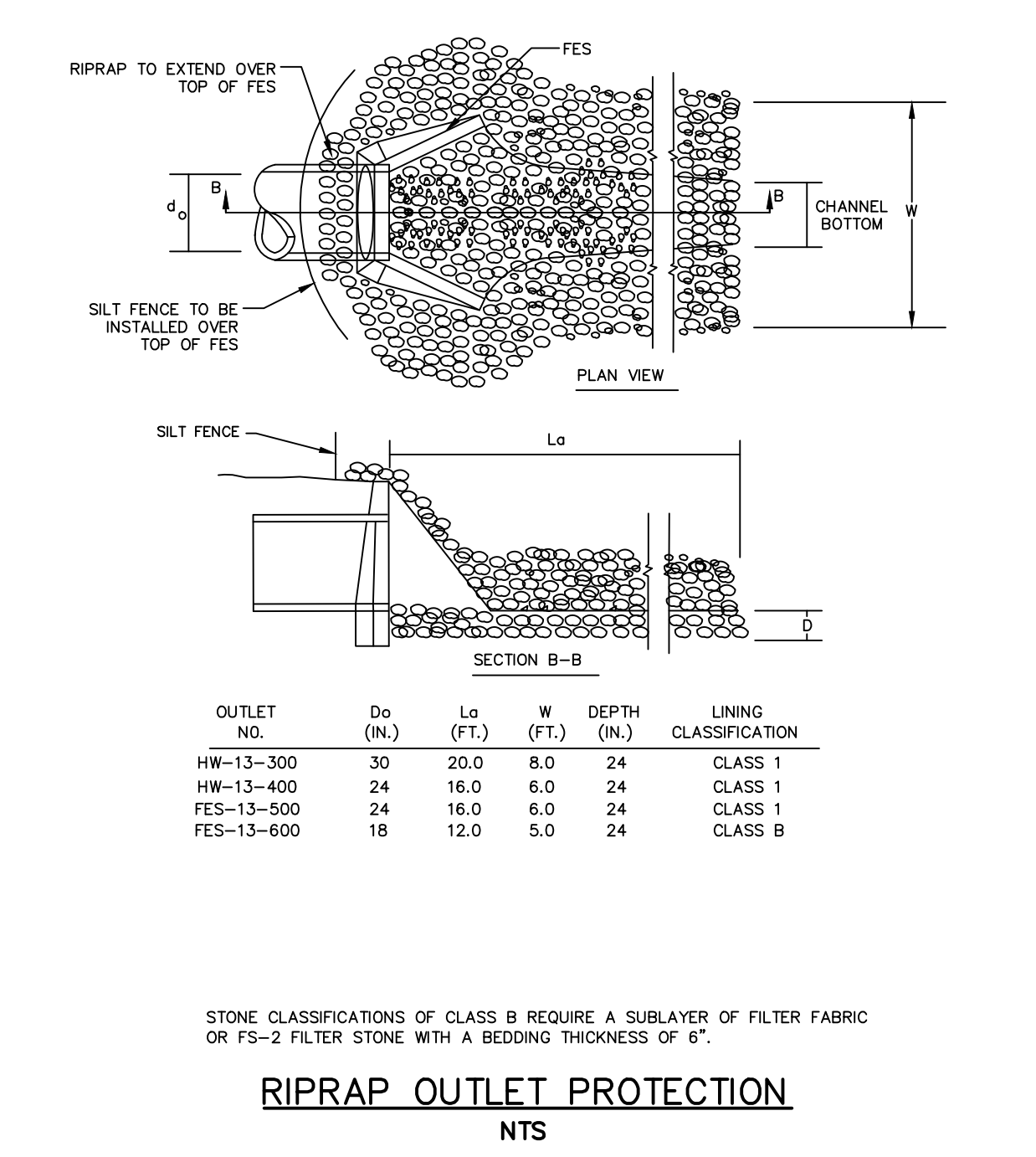
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 COASTAL PLAIN: JAN. 1 - MAY 1
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SOIL AMENDMENTS: FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb./acre GROUND AGRICULTURAL LIMESTONE AND 750 lb./acre 10-10-10 FERTILIZER

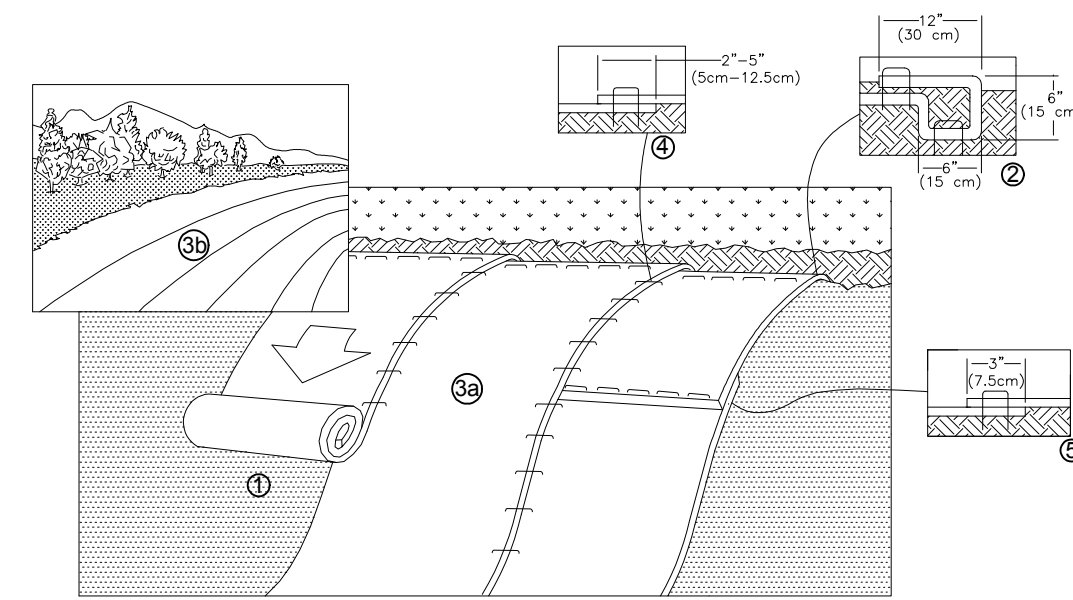
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MAINTENANCE: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

TEMPORARY SEEDING SCHEDULE



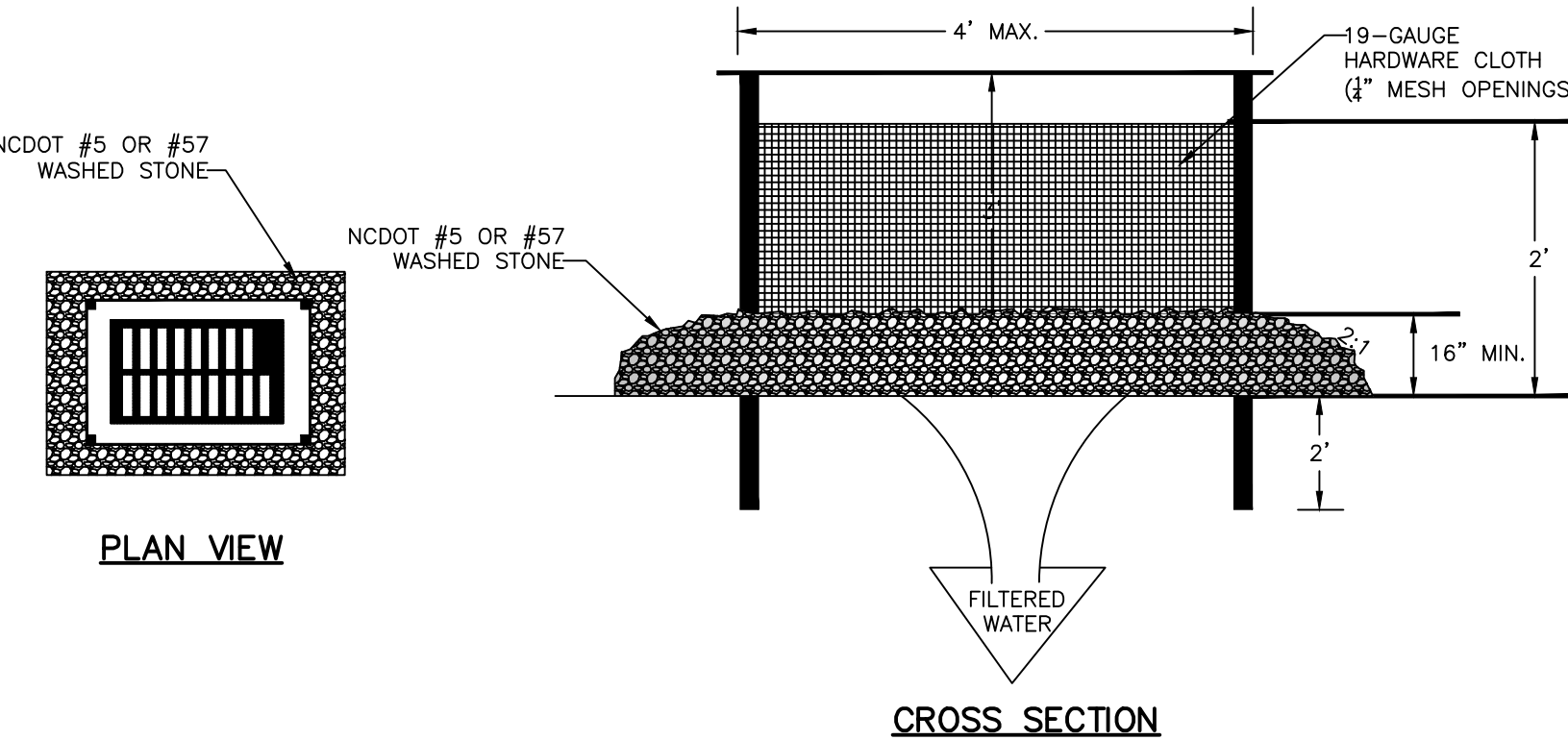
RIPRAP OUTLET PROTECTION



TEMPORARY STABILIZATION FOR SLOPES GREATER THAN 10 FEET

NOTES:

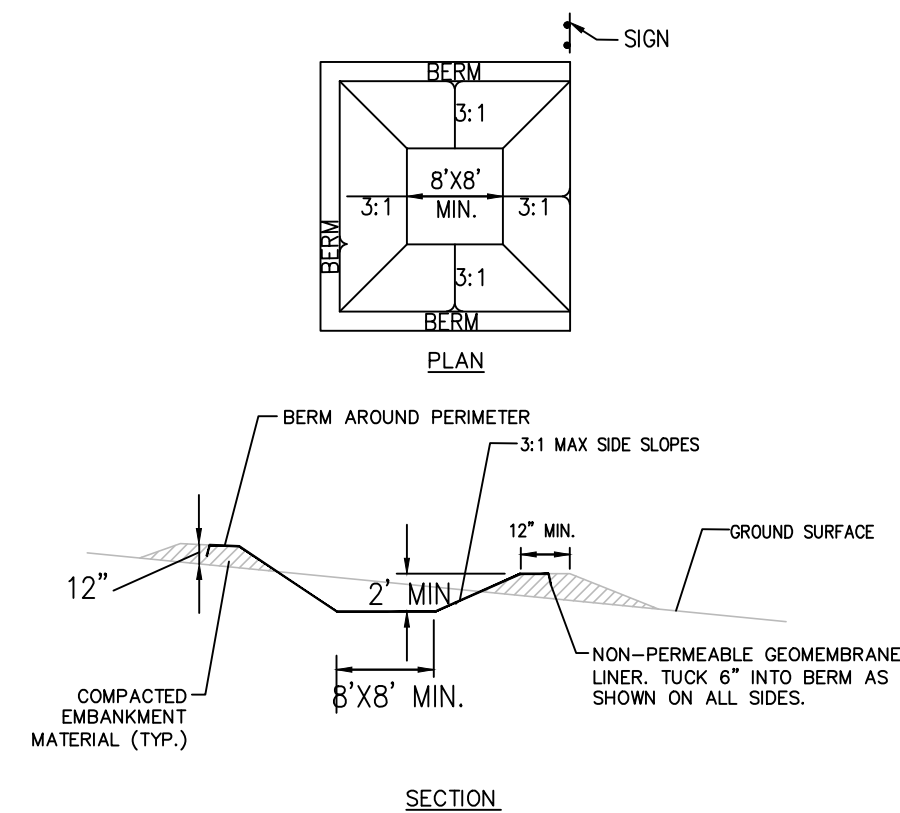
- UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET.
- DRIVE 5-FOOT STEEL POSTS 2 FEET INTO THE GROUND SURROUNDING THE INLET. SPACE POSTS EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4 FEET APART.
- SURROUND THE POSTS WITH WIRE MESH HARDWARE CLOTH. SECURE THE WIRE MESH TO THE STEEL POSTS AT THE TOP, MIDDLE, AND BOTTOM. PLACING A 2-FOOT FLAP OF THE WIRE MESH UNDER THE GRAVEL FOR ANCHORING IS RECOMMENDED.
- PLACE CLEAN GRAVEL (NO DOT #5 OR #57 STONE) ON A 2:1 SLOPE WITH A HEIGHT OF 16 INCHES AROUND THE WIRE, AND SMOOTH TO AN EVEN GRADE.
- ONCE THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE ACCUMULATED SEDIMENT, AND ESTABLISH FINAL GRADING ELEVATIONS.
- COMPACT THE AREA PROPERLY AND STABILIZED IT WITH GROUND COVER.



HARDWARE CLOTH & GRAVEL INLET PROTECTION

NTS

- 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\"/>
 - 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 SYSTEMSM, 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\"/>
 - CONSECUTIVE RECPs SPliced DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3\"/>
- NOTE: ^{IN} LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6\"/>

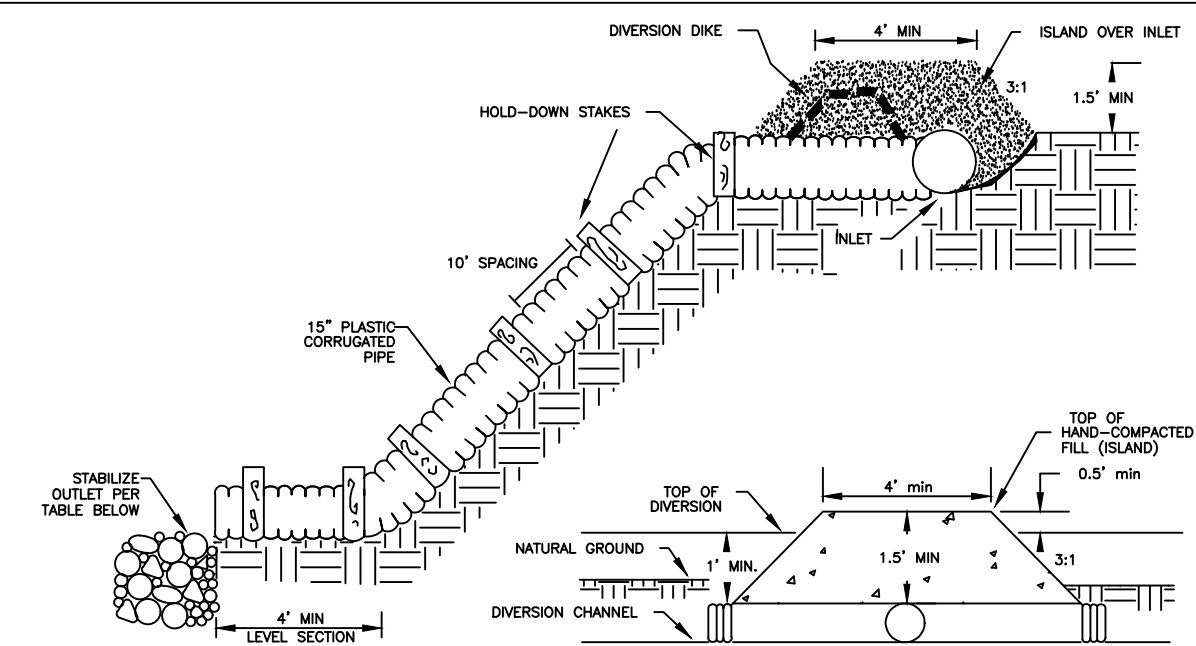


CONCRETE WASHOUT AREA

- CONCRETE WASHOUT AREA INSTALLATION NOTES:
- SEE PLAN FOR LOCATION OF CONCRETE WASHOUT AREA. (TO BE PLACED A MINIMUM OF 50 FT FROM INLETS, BODIES OF WATER, AND DRAINAGEWAYS.)
 - THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 - SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP TRIGS.
 - EXCAVATED MATERIAL SHALL BE USED IN PERIMETER BERM CONSTRUCTION.
- CONCRETE WASHOUT AREA MAINTENANCE NOTES:
- THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
 - AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED AND DISPOSED OF AT APPROVED WASTE SITE.
 - AFTER REMOVAL OF CONCRETE WASHOUT AREA, SEED DISTURBED AREA.
 - INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.

CONCRETE WASHOUT AREA

NTS



OUTLET PROTECTION SIZING

OUTLET SIZE	Lo (FT.)	W (FT.)	DEPTH (IN.)	LINING CLASSIFICATION
12"	6.0	3.0	22	CLASS B
15"	7.5	3.75	22	CLASS B
18"	9.0	4.5	22	CLASS B
24"	12.0	6.0	22	CLASS B

TEMPORARY SLOPE DRAIN

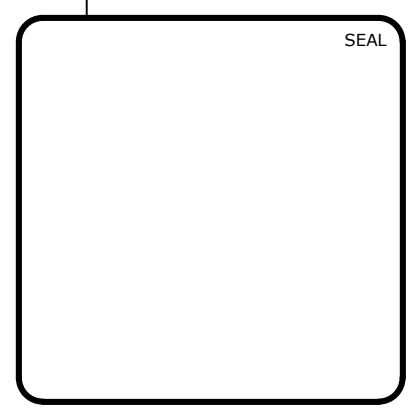
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TEMPORARY CONSTRUCTION ENTRANCE

NTS

- COARSE AGGREGATE (2\"/>
- TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS IS TO BE PROVIDED.
- ENTRANCES SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.
- MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOP DRESSING MAY BE NECESSARY. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.
- TEMPORARY PADS MUST BE LOCATED ON EACH SIDE OF ADJOINING ROADWAY.

REV. NO.	DESCRIPTIONS	DATE
5	REVISIONS PER COUNTY EROSION CONTROL COMMENTS	2019.01.09
4	REVISIONS PER NCDOT COMMENTS	2019.01.07
3	REVISIONS PER NCDOT COMMENTS	2018.12.17
2	REVISIONS PER CHATHAM COUNTY PUBLIC WORKS	2018.11.06
1	INITIAL SUBMITTAL	2018.10.23



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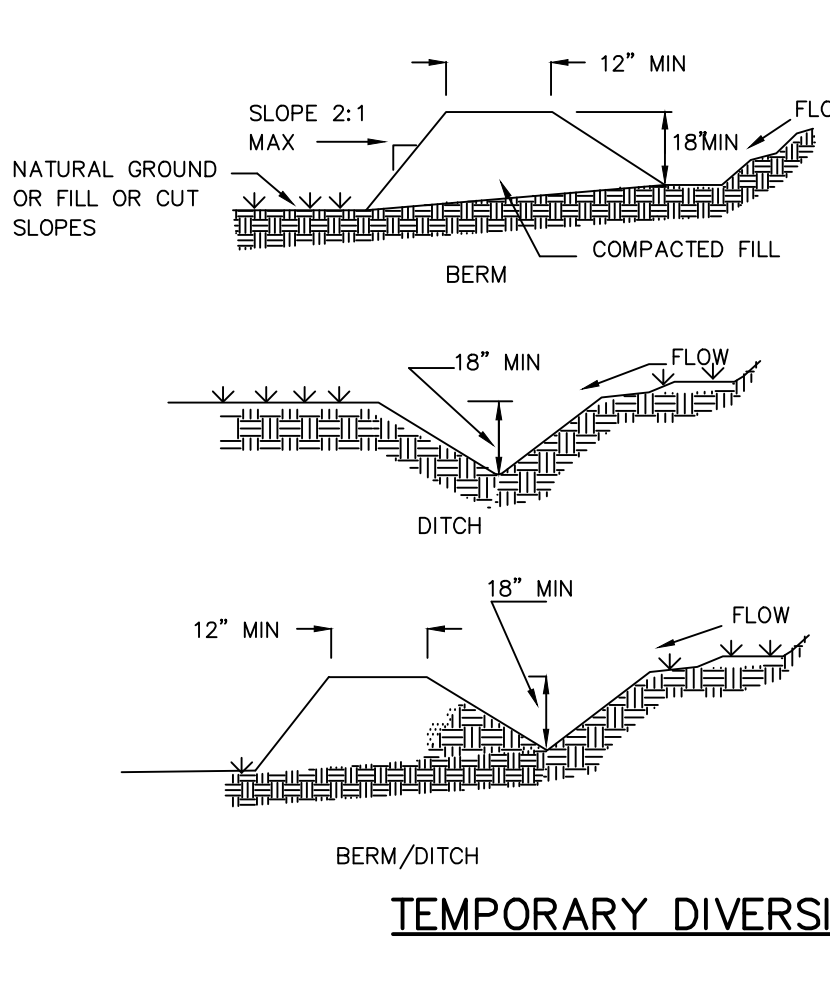
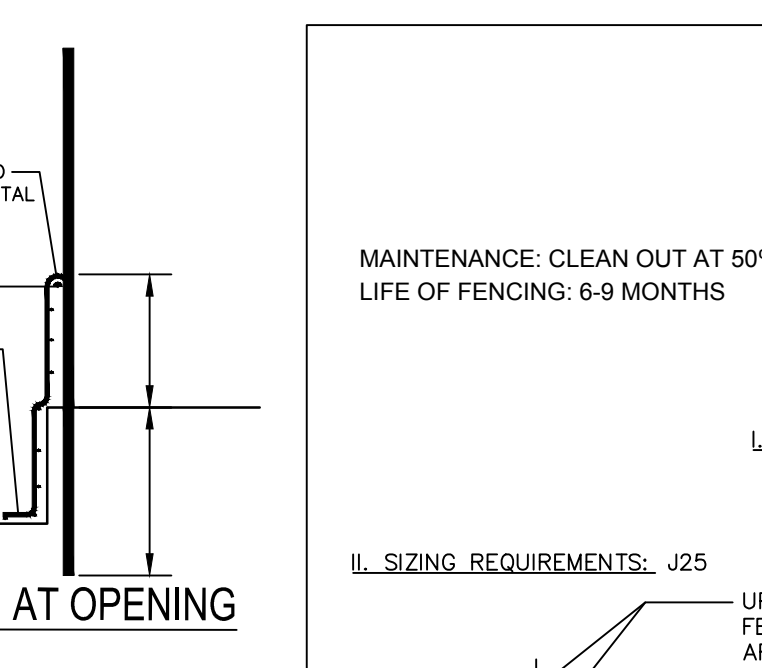
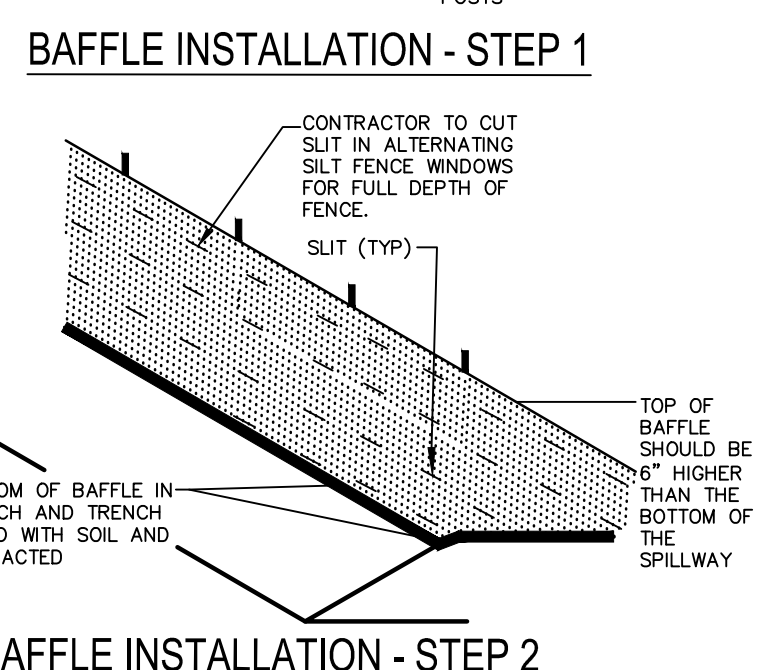
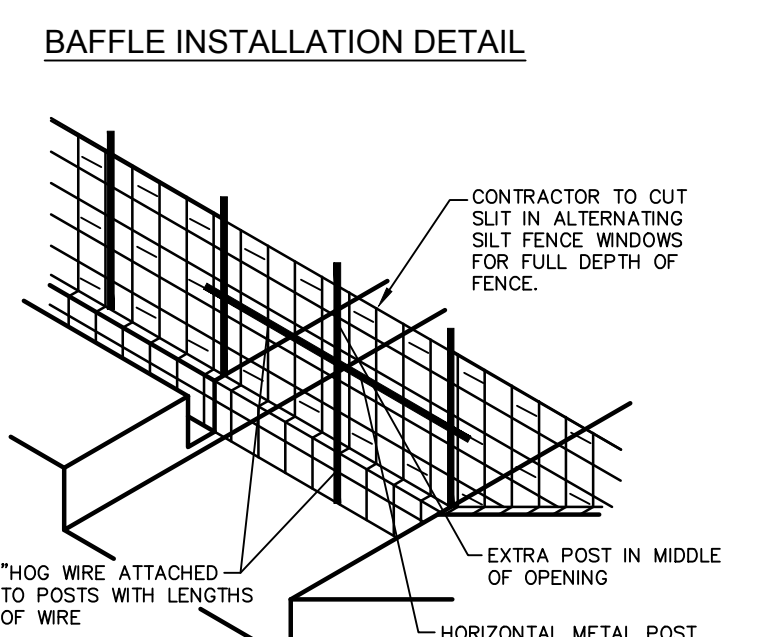
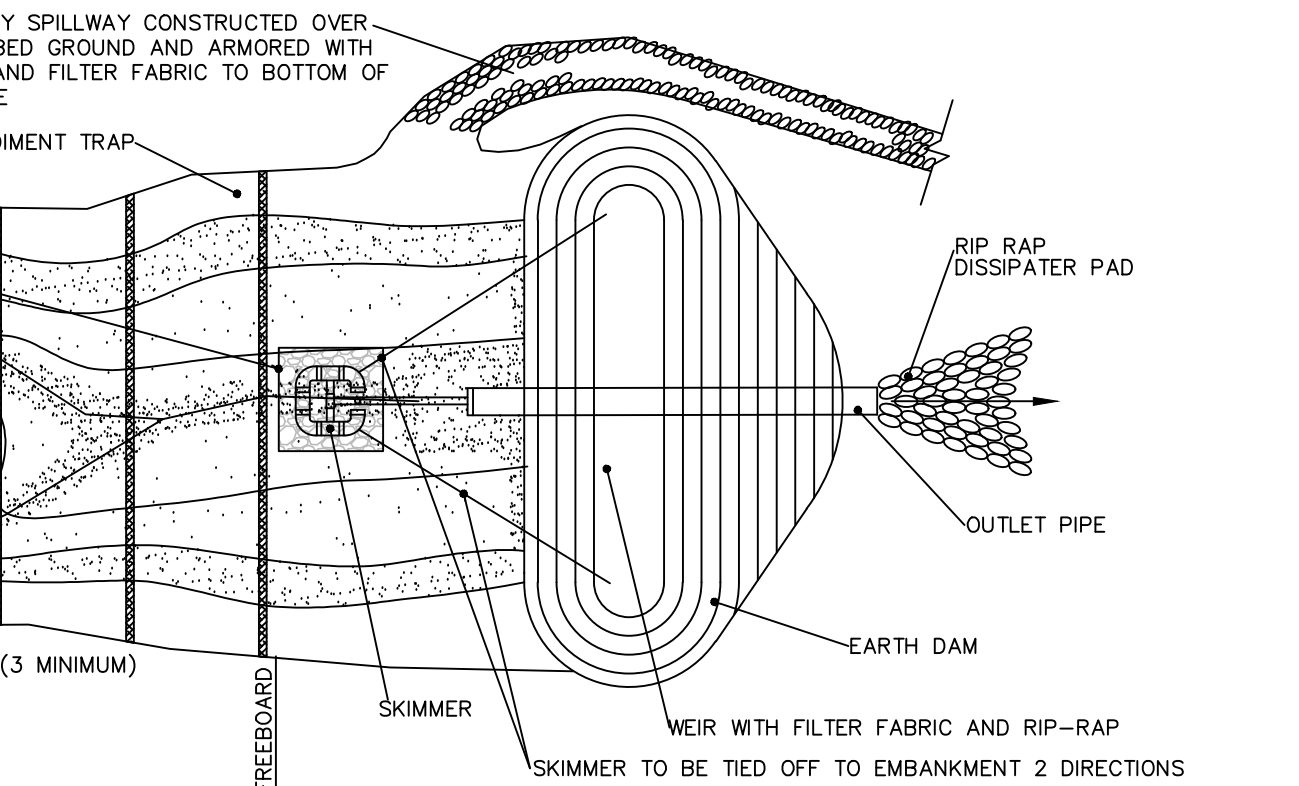
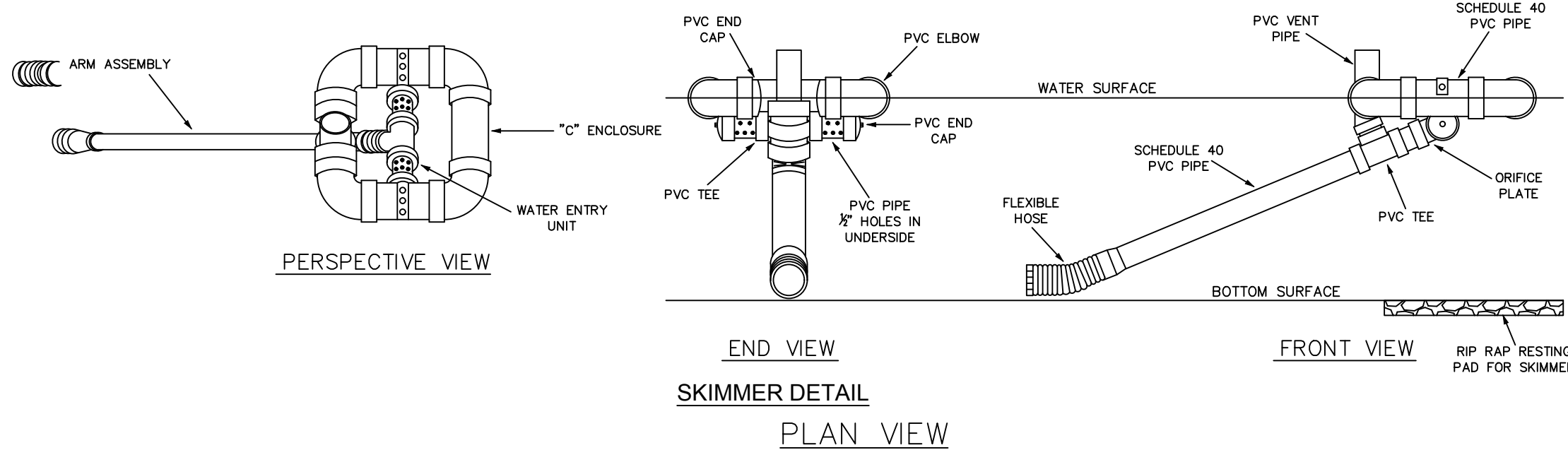
BRIAR CHAPEL™

by
Newland COMMUNITIES

**BRIAR CHAPEL
 PHASE 13 - SECTION 3
 CHATHAM COUNTY, NORTH CAROLINA**

**EROSION AND SEDIMENTATION CONTROL
 DETAILS**

DATE: OCTOBER 23, 2018	SCALE: D1.X	HBC FILE NUMBER: D1.1
MCE PROJ. # 02735-0239	HORIZONTAL: N/A	DRAWING NUMBER: D1.1
DRAWN: BSS	VERTICAL: N/A	
DESIGNED: BSS		
CHECKED: GCA		
PROJ. MGR.: CHS		
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY		REVISION: 5

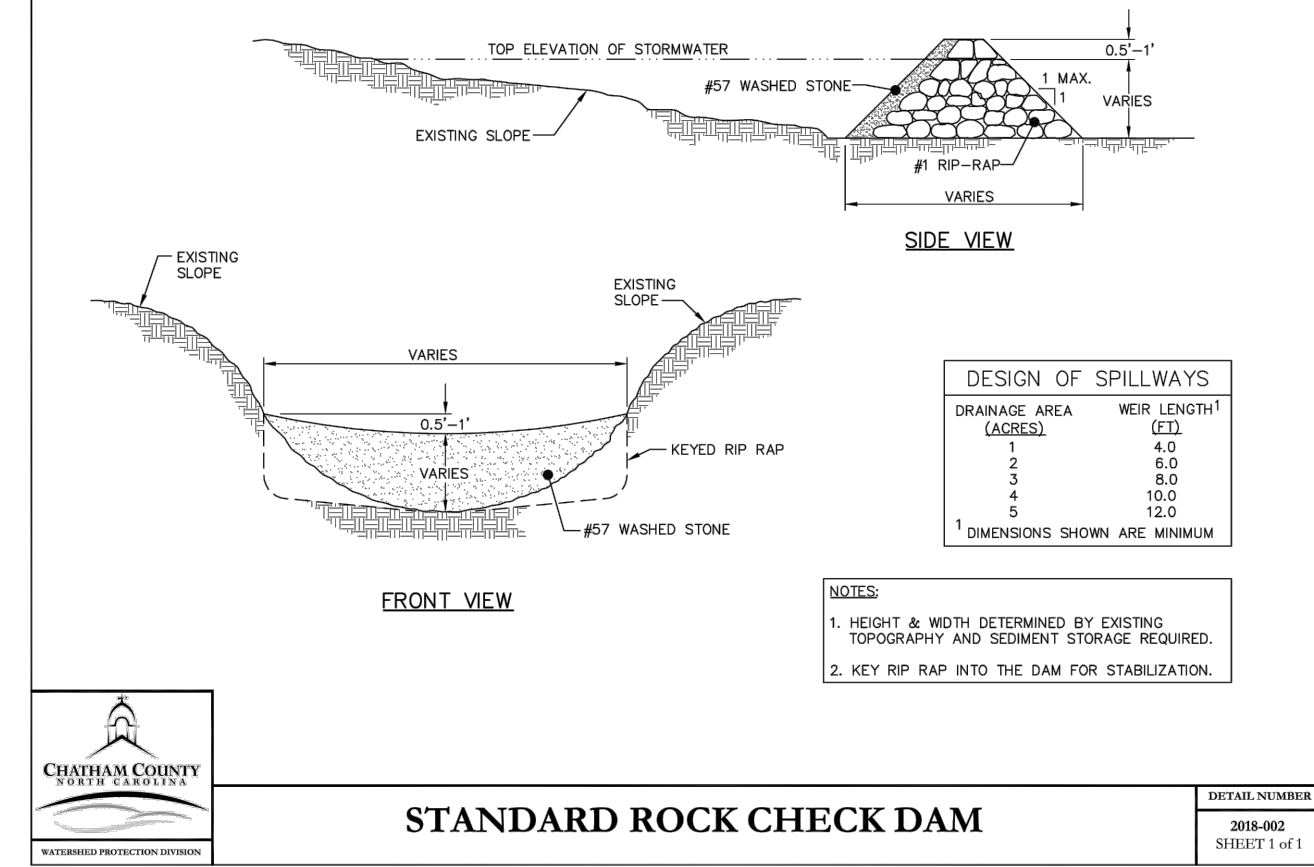


NOTES:

- 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 CALCS. DIVERSIONS AT THE TOP OF SLOPES MUST BE EMPTY INTO AN APPROVED SLOPE DRAIN. BERM/DITCH IS MOST COMMONLY USED.
- 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).
- DIVERSIONS SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS.
- DIVERSIONS SHOULD BE SEEDDED AND MULCHED IF THEY ARE TO REMAIN IN PLACE OVER 30 DAYS.
- CHECK DEVICE AFTER EACH RAIN, BUT ONCE A WEEK REGARDLESS. REPAIR AS NECESSARY.

MAINTENANCE:

- 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.
- ALL TEMPORARY DIVERSION AND CLEAN WATER DIVERSIONS 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.



DESIGN OF SPILLWAYS

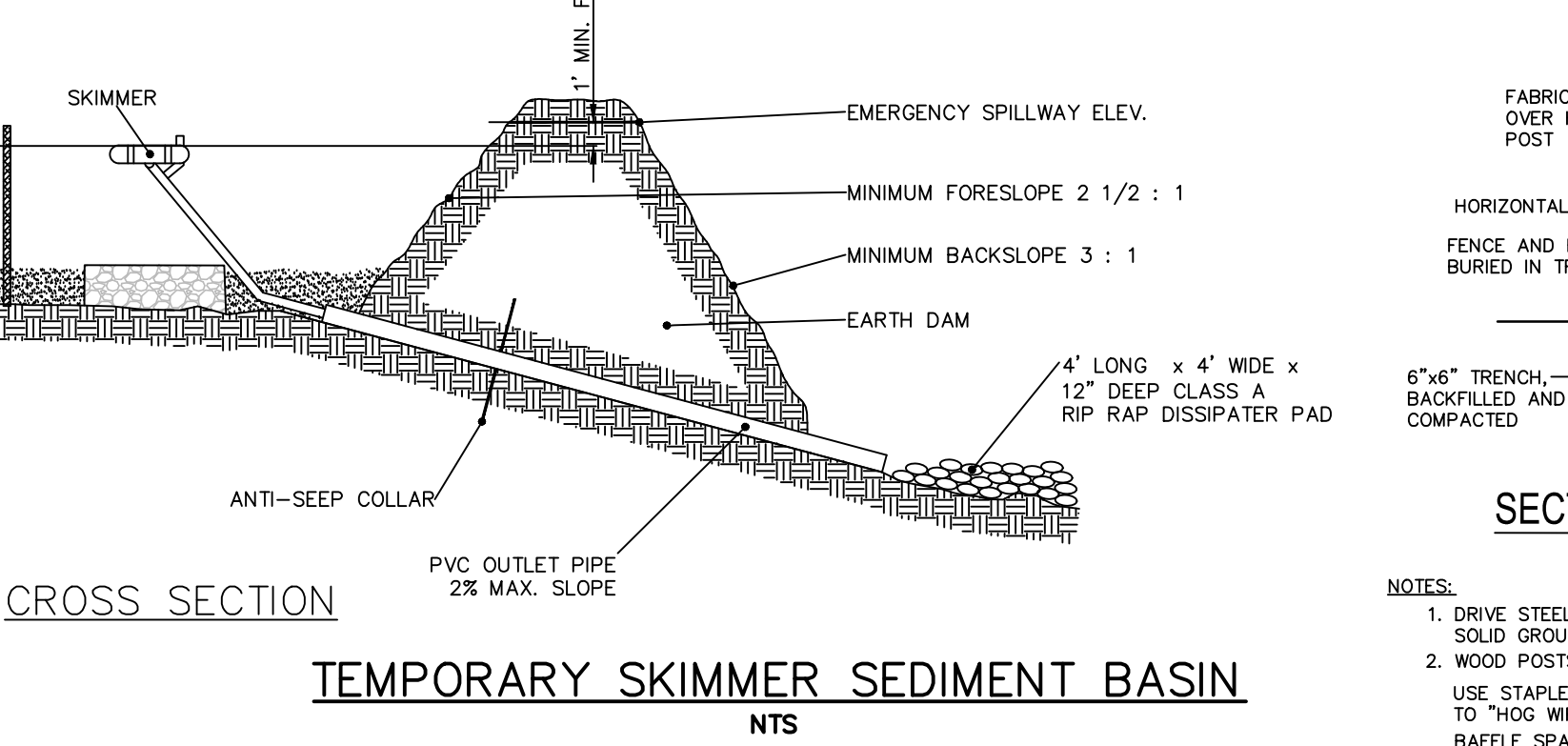
DRAINAGE AREA (ACRES)	WEIR LENGTH (FT)
1.0	4.0
2.0	6.0
3.0	8.0
4.0	10.0
5.0	12.0

NOTES:

- HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
- KEY RIP-RAP INTO THE DAM FOR STABILIZATION.

NOTES:

- ANY EXISTING SKIMMER SEDIMENT BASINS PREVIOUSLY APPROVED SHALL MAINTAINED PER THEIR ORIGINAL DIMENSIONS AND IN ACCORDANCE WITH THIS DETAIL.



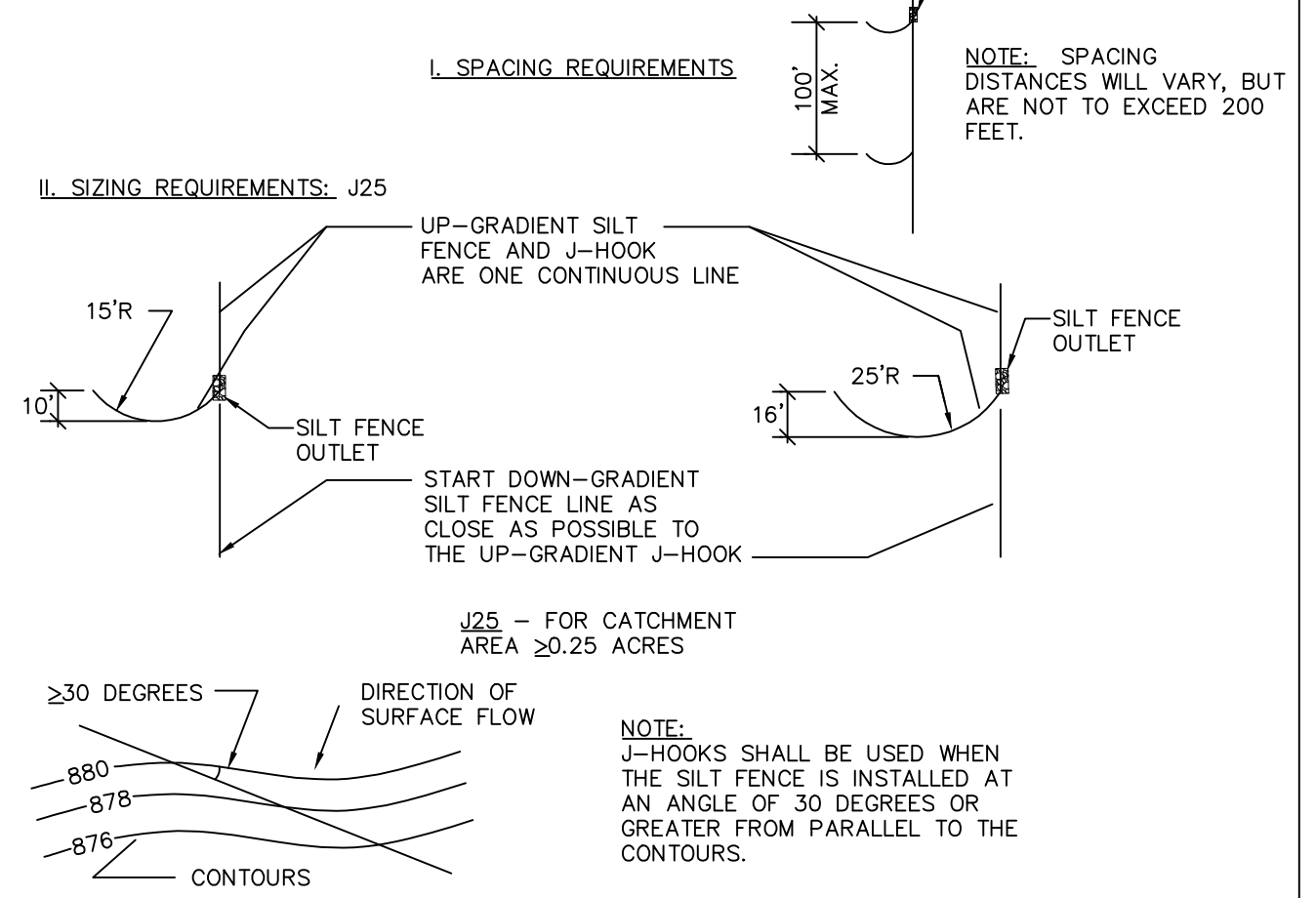
TEMPORARY SKIMMER SEDIMENT BASIN NTS

BASIN #	DISTURBED AREA (ac)	TOTAL DRAINAGE AREA (ac)	REQUIRED STORAGE	REQUIRED SURFACE AREA	MINIMUM DEPTH	BOTTOM ELEVATION	TOP WIDTH	TOP LENGTH	PROVIDED STORAGE	PROVIDED SURFACE AREA	STORAGE/SPILLWAY ELEVATION	SPILLWAY WIDTH	TOP OF DAM ELEVATION	SKIMMER SIZE	SKIMMER ORIFICE DIAMETER
STAGE 1 & 2															
BMP #41	7.88	7.88	28,350 CF	14,010 SF	3.0'	480.5'	PER PLAN	PER PLAN	40,699 CF	17,071 SF	486.7'	20.0'	489.25'	4.0"	3.3"
SB #2	2.91	2.91	10,470 CF	5,180 SF	3.0'	492.0'	52'	104'	11,040 CF	5,408 SF	495.0'	13.0'	497.0'	2.5"	1.9"
BMP #42	5.96	5.96	17,070 CF	8,440 SF	3.0'	475.0'	PER PLAN	PER PLAN	48,439 CF	11,855 SF	438.0'	10.0'	440.0'	4.0"	3.6"

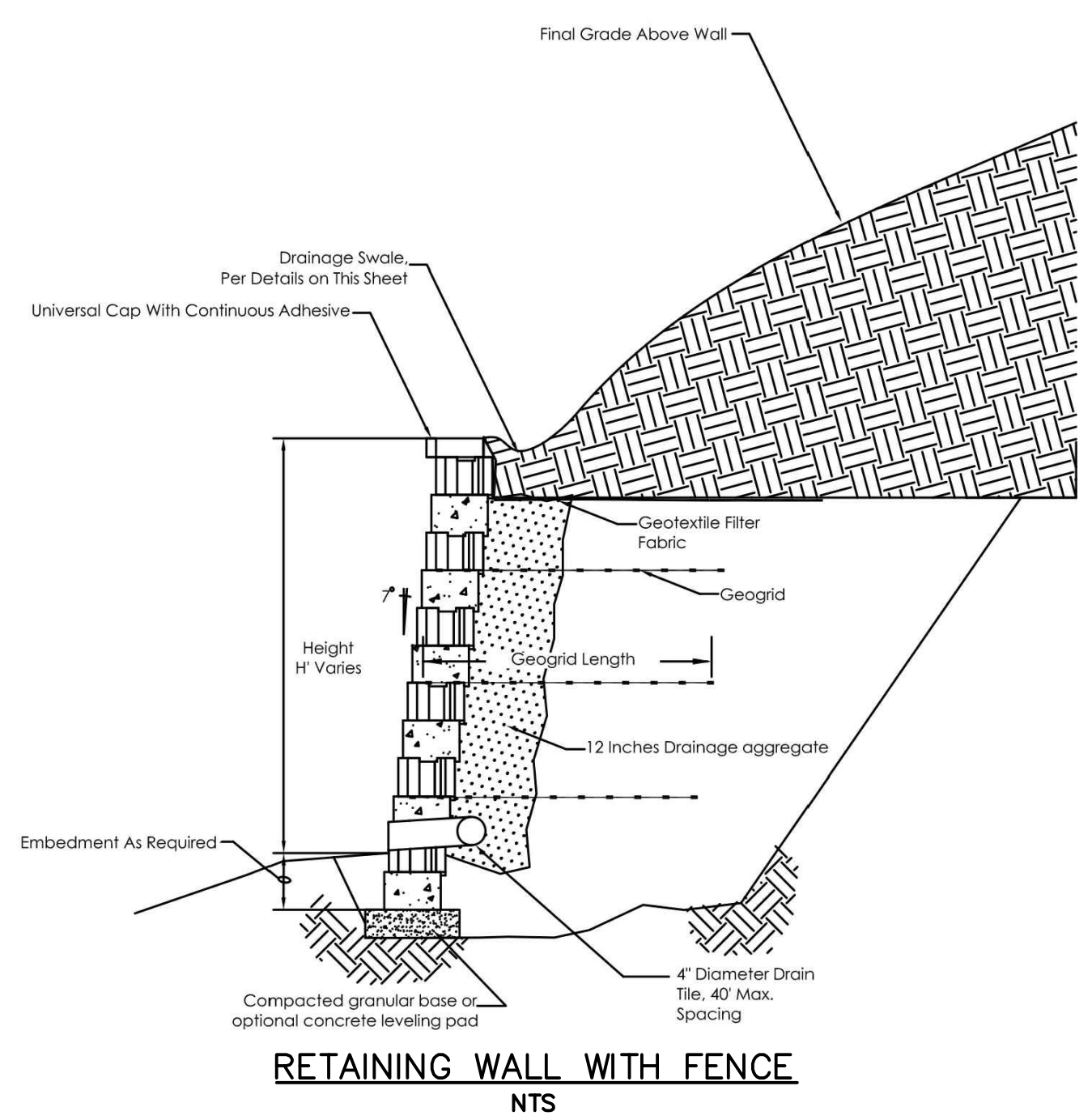
*SKIMMER SHALL ATTACH TO PERMANENT RISER AT THE LOW FLOW ORIFICE ELEVATION ON BMP #41 AND TO THE EMERGENCY DRAWDOWN DEVICE OF BMP #42.

**CONTRACTOR SHALL PLUG THE LOW FLOW ORIFICE OF BMP #41 AND THE LOW FLOW AND SECONDARY ORIFICES OF BMP #42 THROUGH STAGE 2 EROSION CONTROL.

MAINTENANCE: CLEAN OUT AT 50% CAPACITY LIFE OF FENCING: 6-9 MONTHS



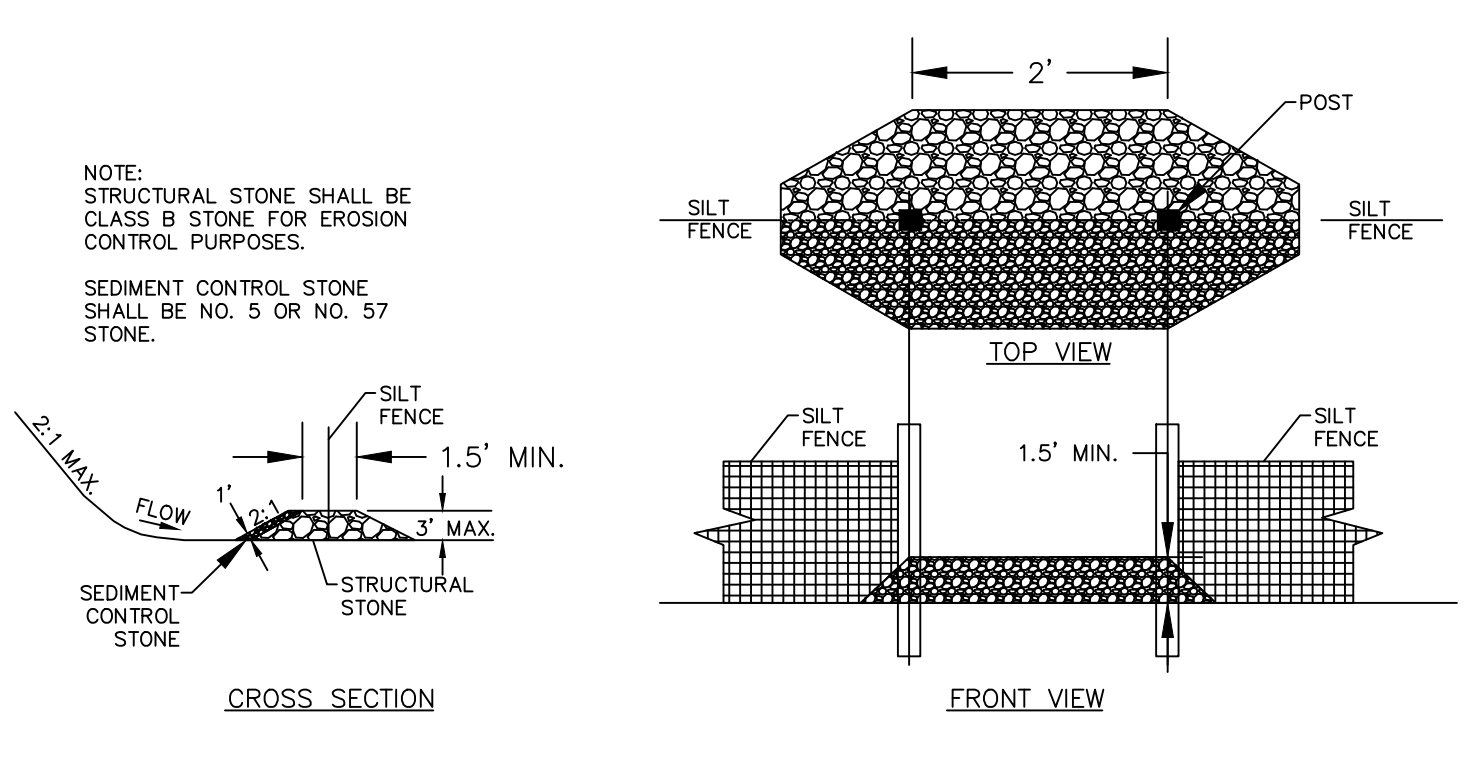
TEMPORARY SILT FENCE J HOOK NTS



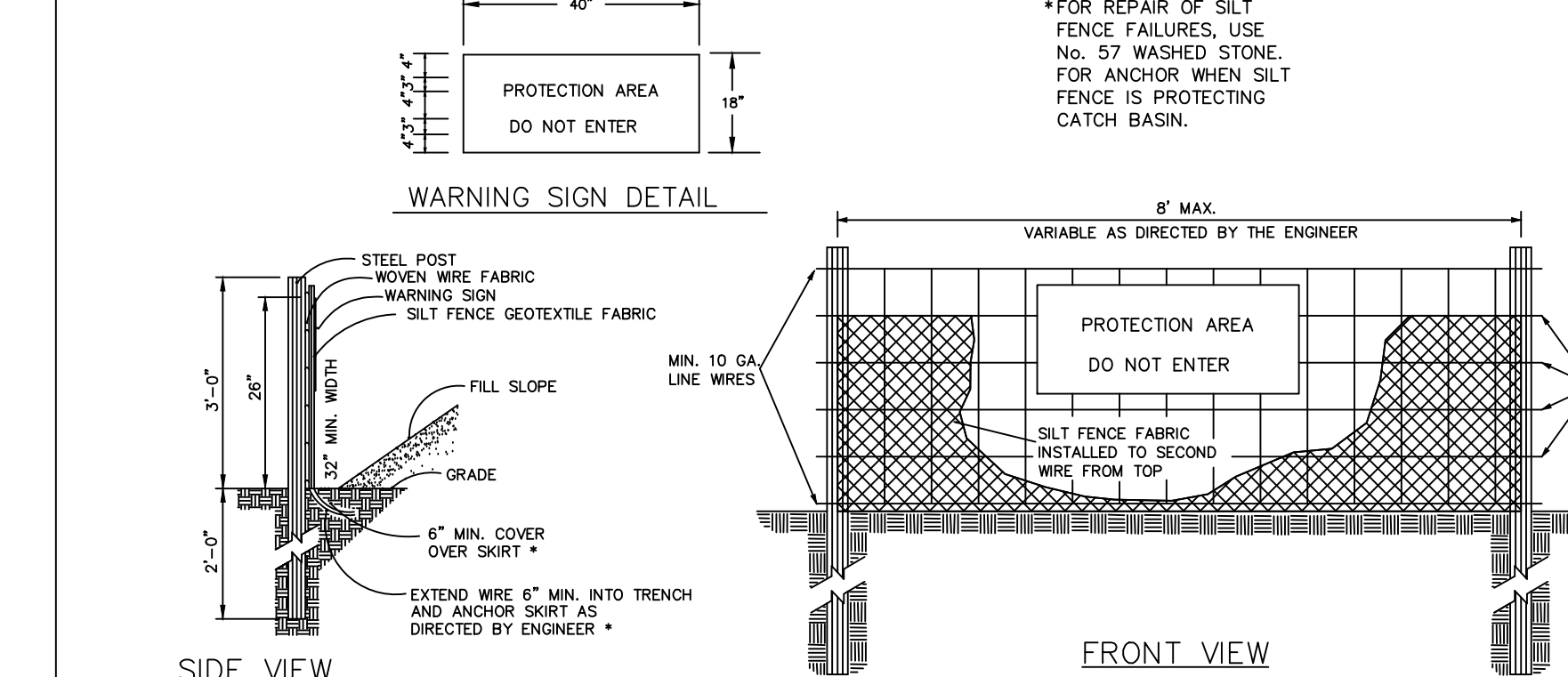
RETAINING WALL WITH FENCE NTS

RETAINING WALL NOTES:

- CONTRACTOR SHALL PROCURE A QUALIFIED SEGMENTAL BLOCK RETAINING WALL DESIGNER FOR THE PROJECT. SEGMENTAL BLOCK RETAINING WALL INFORMATION SHOWN ON THESE PLANS IS FOR LOCATION AND GRADE INFORMATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING NECESSARY INFORMATION TO WALL DESIGNER AS REQUIRED FOR PROPER DESIGN OF RETAINING WALLS.
- CONTRACTOR SHALL PROVIDE DETAILED SHOP DRAWINGS SEALED BY A LICENSED PROFESSIONAL ENGINEER SPECIALIZING IN SEGMENTAL BLOCK RETAINING WALL DESIGN FOR THE WALL FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION AS PART OF THE SHOP DRAWING SUBMITTAL PROCESS.
- TOP GRADE OF WALL AND BOTTOM GRADE OF WALL SPECIFIED IN PLANS ARE INTENDED TO BE THE FINISHED PAVEMENT OR EARTH GRADE. THE WALL DESIGNER SHALL ADJUST SHOP DRAWING WALL ELEVATIONS FOR THE TOP AND BOTTOM OF WALL TO MEET SPECIFIC PRODUCT DESIGN CRITERIA AND WALL GEOMETRY AS NECESSARY TO ACHIEVE DESIRED FINISHED GRADES. THE HORIZONTAL WALL LOCATION AS SHOWN IS THE FINISHED LOCATION OF THE BOTTOM OF WALL. THE WALL DESIGNER SHALL COORDINATE WITH THE ENGINEER TO VERIFY WHETHER CONFLICTS EXIST. THE WALL DESIGNER SHALL NOTIFY THE ENGINEER IN CASE OF ANY CONFLICTS, INCLUDING BUT NOT LIMITED TO EXISTING OR PROPOSED UTILITIES, WALL BATTER, GEGRID PLACEMENT, ETC., OR IF ANY ASPECT OF WALL PLACEMENT CAN NOT BE ACCOMPLISHED. ALL WORK RELATED TO THE RETAINING WALL CONSTRUCTION SHALL BE ACCOMPLISHED WITHIN THE BOUNDARIES OF THE PROJECT PROPERTY, WITHOUT IMPACTING BUFFERS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND WALL DESIGNER TO ASSURE THAT THE REQUIRED SOIL BEARING PRESSURE, SUBSURFACE DRAINAGE AND SURFACE DRAINAGE ARE ACHIEVED AS RELATED TO THE RETAINING WALL DESIGN. THIS SHOULD BE VERIFIED BY A GEOTECHNICAL ENGINEER. SPECIAL ATTENTION IS REQUIRED TO ENSURE BEARING CAPACITY HAS BEEN ACHIEVED AT LOCATIONS WHERE PIPE PENETRATIONS ARE TO OCCUR. IT SHALL BE THE RESPONSIBILITY OF BOTH THE OWNER AND THE CONTRACTOR TO PROVIDE QUALITY CONTROL / QUALITY ASSURANCE TESTING ASSOCIATED WITH THE WALL CONSTRUCTION. THE WALL DESIGNER SHALL PROVIDE ANY CERTIFICATIONS AS MAY BE REQUIRED TO SHOW COMPLIANCE WITH ORIGINAL DESIGN DOCUMENTS AS RELATED TO THE WALL DESIGN AND CONSTRUCTION.



SILT FENCE OUTLET NTS



COMBINATION SILT/TREE PROTECTION FENCE NTS

NOTES:

- WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
- LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
- SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
- PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
- FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
- ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
- MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
- ADDITIONAL SIGNS MAY BE REQUIRED BY CHATHAM COUNTY BASED ON ACTUAL FIELD CONDITIONS.
- PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
- FLOW SHALL NOT RUN PARALLEL WITH THE FENCE.
- END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
- SEE NCDENR PRACTICE & SPECIFICATIONS MANUAL SEDIMENTS FENCE SECTION FOR CONDITIONS WHERE PRACTICE APPLIES AND DESIGN CRITERIA.

DOUBLE ROW SILT FENCE:

- DOUBLE ROW SILT FENCE LOCATIONS CALLED OUT ON PLANS.
- ALL DOUBLE ROW SILT FENCE SHALL BE PLACED A MINIMUM OF 6 FEET APART AND SHALL BE STABILIZED WITHIN THE TWO ROWS.
- ALL DOUBLE ROW SILT FENCE MUST START AT THE BOTTOM OF THE SLOPE AND MUST NOT CONTINUE UP SLOPE.
- DOUBLE ROW SILT FENCE AT STREAM CROSSING MAY BE PLACED AT 2-3' APART IN WHERE SPACE IS LIMITED DUE TO LIMITING STREAM IMPACTS. AREA WITHIN ROWS MUST BE STABILIZED.

TDD #	TOTAL LENGTH	SLOPE (%)	LINER	RECEIVING SLOPE DRAIN SIZE (IN.)
STAGE 1 DIVERSIONS				
1	732'	2.7	SYNTHETIC MAT	24
2	102'	6.9	STRAW W/NET	24
3	266'	2.6	STRAW W/NET	(2) 24
4	277'	2.5	STRAW W/NET	(2) 24
5	107'	0.9	STRAW W/NET	12
6	127'	11.0	STRAW W/NET	12
7	148'	9.5	STRAW W/NET	24
8	334'	0.6	STRAW W/NET	24
9	741'	7.0	P550	24
10	146'	13.7	SC250	24
11	139'	14.4	C350	24
12	198'	8.1	C350	24
CWD 1	361'	6.1	P550	24 (RCP)
CWD 2	325'	1.2	STRAW W/NET	24 (RCP)
CWD 3	108'	3.7	STRAW W/NET	18
CWD 4	666'	3.2	STRAW W/NET	18
STAGE 2 DIVERSIONS				
21	487'	2.7	SYNTHETIC MAT	24
22	576'	7.1	P550	(2) 24
PERMANENT DIVERSIONS				
1	770'	2.9	STRAW W/ NET	18 (RCP)
2	389'	2.7	SYNTHETIC MAT	18 (RCP)
3	627'	4.9	SYNTHETIC MAT	SCOUR HOLE

TEMPORARY DIVERSION DITCHES

REV. NO.	DESCRIPTIONS	DATE
5	REVISIONS PER COUNTY EROSION CONTROL COMMENTS	2019.01.09
4	REVISIONS PER NCDOT COMMENTS	2019.01.07
3	REVISIONS PER NCDOT COMMENTS	2018.12.17
2	REVISIONS PER CHATHAM COUNTY PUBLIC WORKS	2018.11.06
1	INITIAL SUBMITTAL	2018.10.23

Professional Engineer Seal for **Daren Adams**, License No. 036348, State of North Carolina, dated 1/9/2019.

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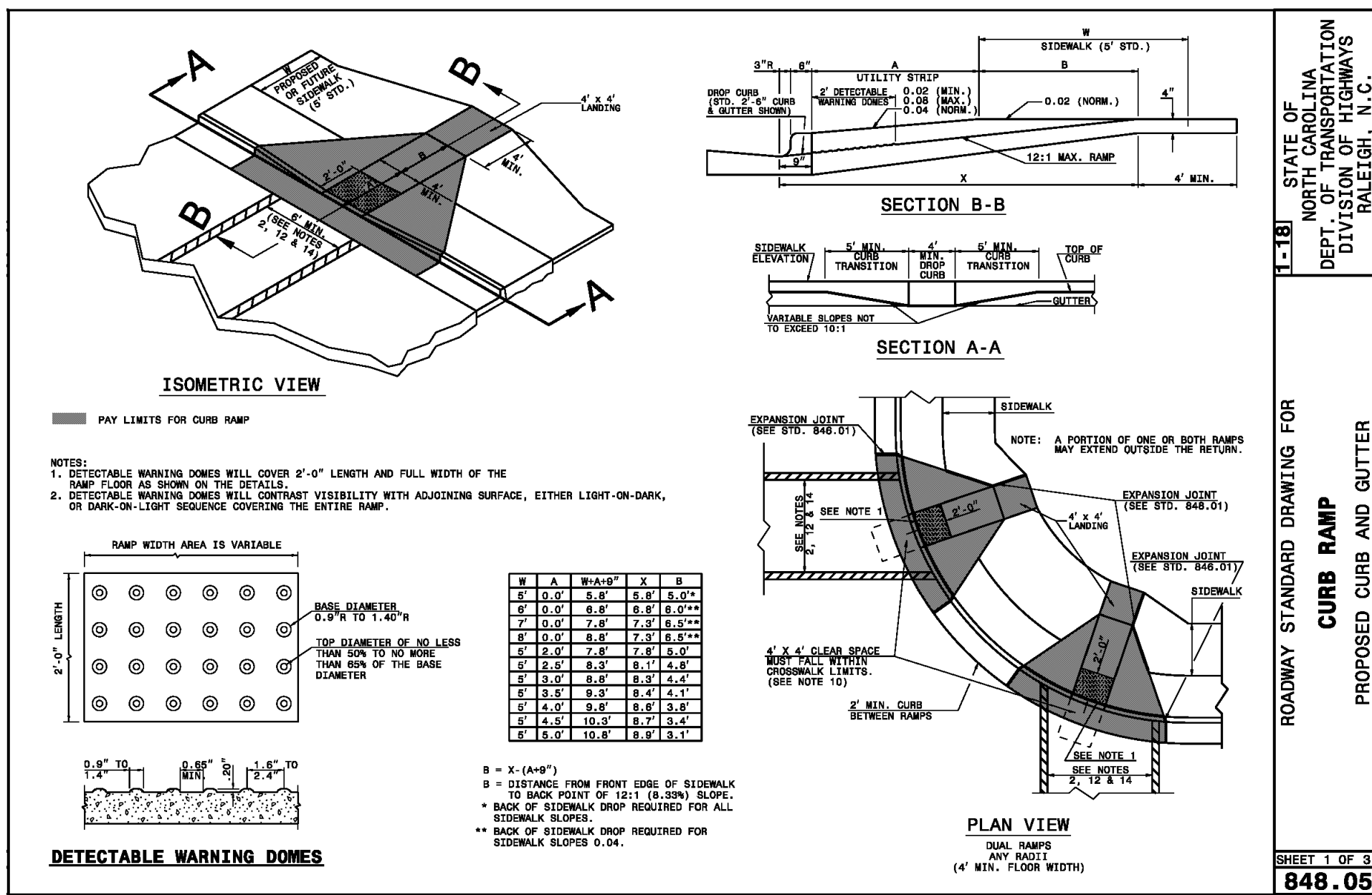
**BRIAR CHAPEL
PHASE 13 - SECTION 3
CHATHAM COUNTY, NORTH CAROLINA**
EROSION AND SEDIMENTATION CONTROL
DETAILS

DATE: OCTOBER 23, 2018
MCE PROJ. # 02735-0239
DRAWN: BSS
DESIGNED: BSS
CHECKED: GCA
PROJ. MGR: CHS

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

HBC FILE NUMBER: D1.X
DRAWING NUMBER: D1.2

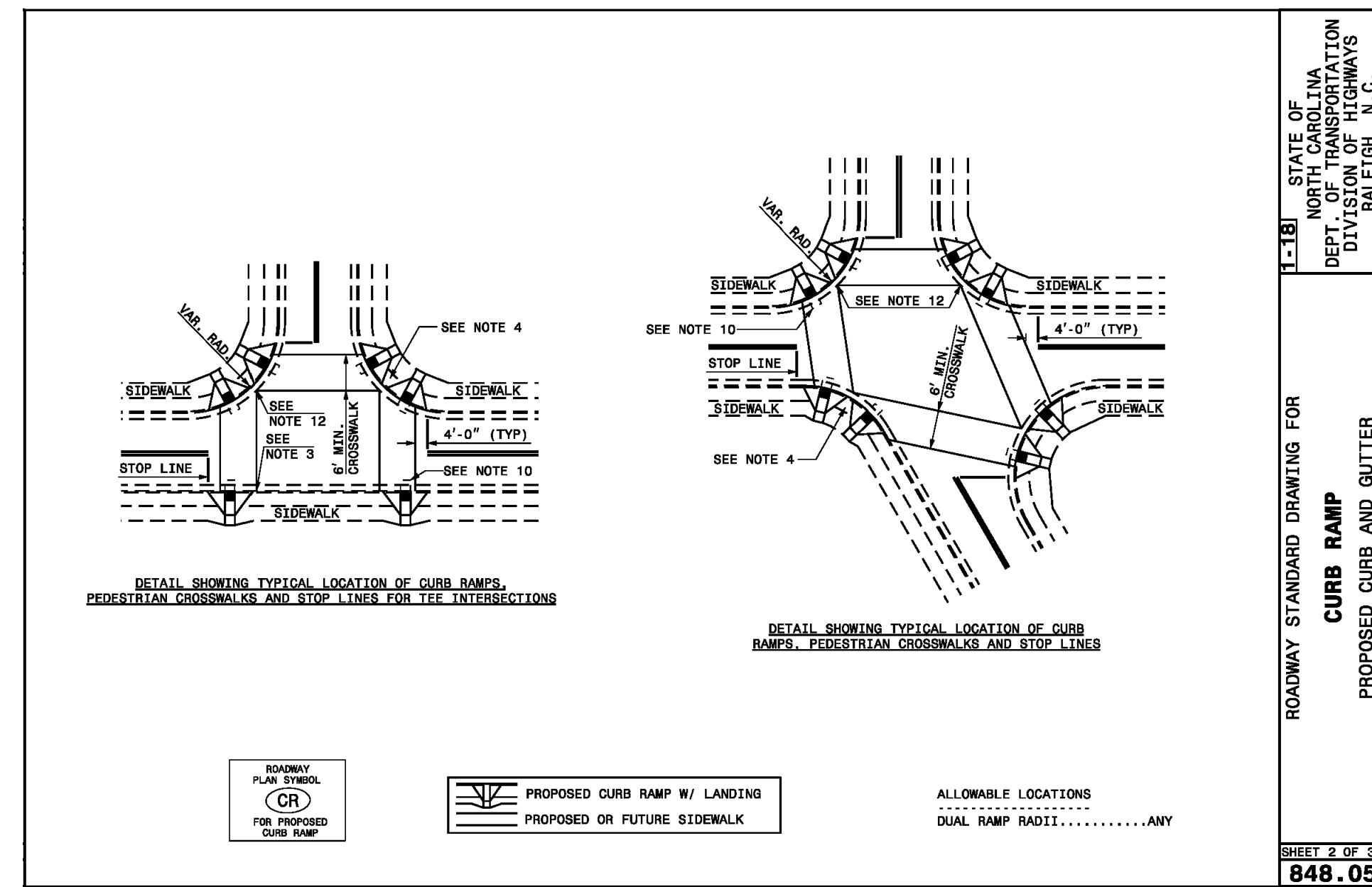
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 5



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

ROADWAY STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 1 OF 3
848.05



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

ROADWAY STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

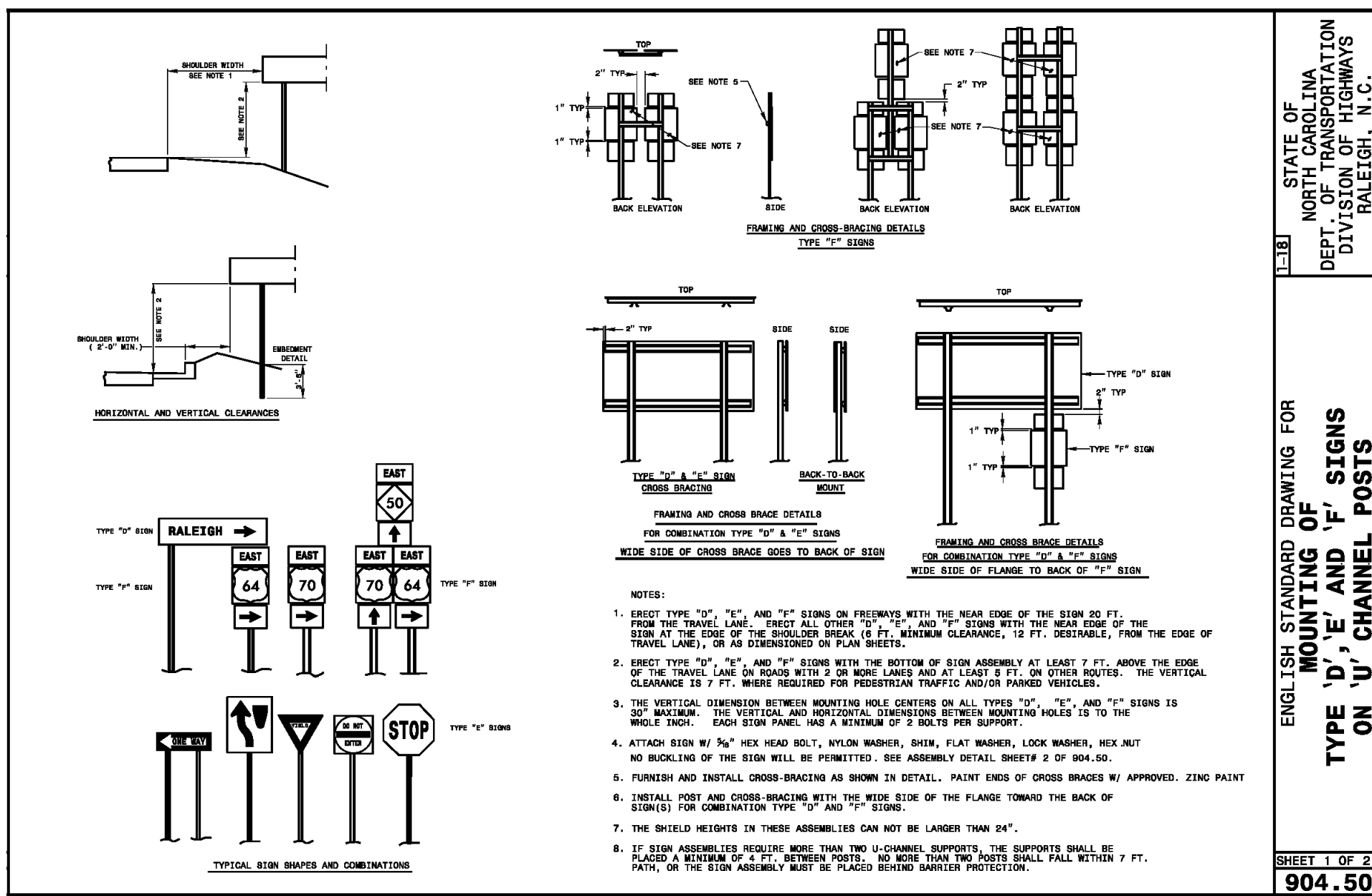
SHEET 2 OF 3
848.05

- NOTES:
- CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
 - LOCATE CURB RAMP AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMP OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
 - COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
 - SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
 - REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
 - TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
 - CONSTRUCT CURB RAMP A MINIMUM OF 4' WIDE.
 - CONSTRUCT THE RUNNING SLOPE OF THE RAMP 0.33% MAXIMUM.
 - ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMP WILL BE 2% MAXIMUM.
 - CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
 - CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
 - CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
 - TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGIA AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
 - SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'x5' LANDING AT THE TOP OF A RAMP, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
 - CURB RAMP WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
 - PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
 - PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
 - CURB RAMP THROUGH MEDIAN ISLANDS, SINGLE RAMP AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

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ROADWAY STANDARD DRAWING FOR
CURB RAMP
NOTES

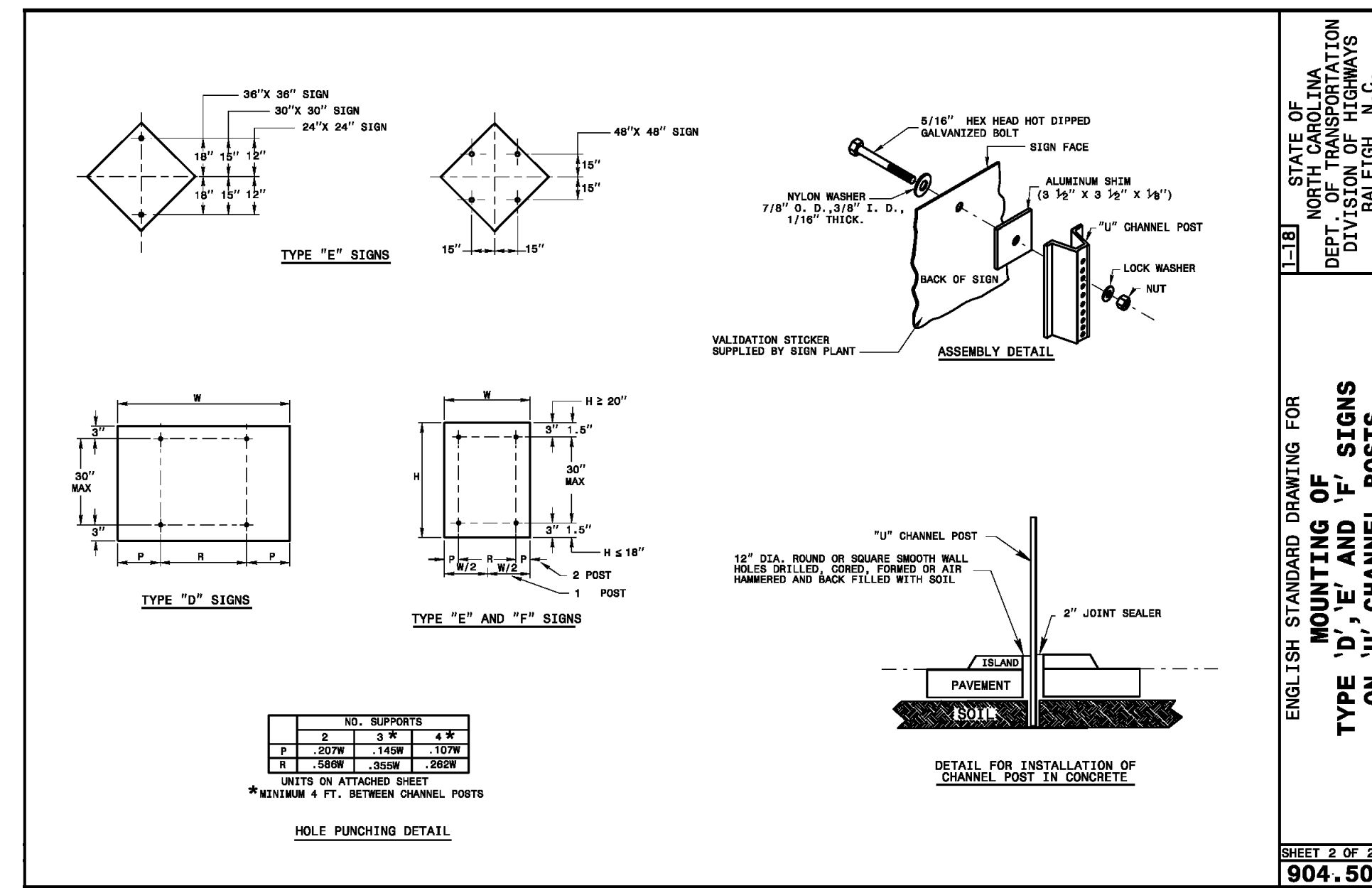
SHEET 3 OF 3
848.05



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

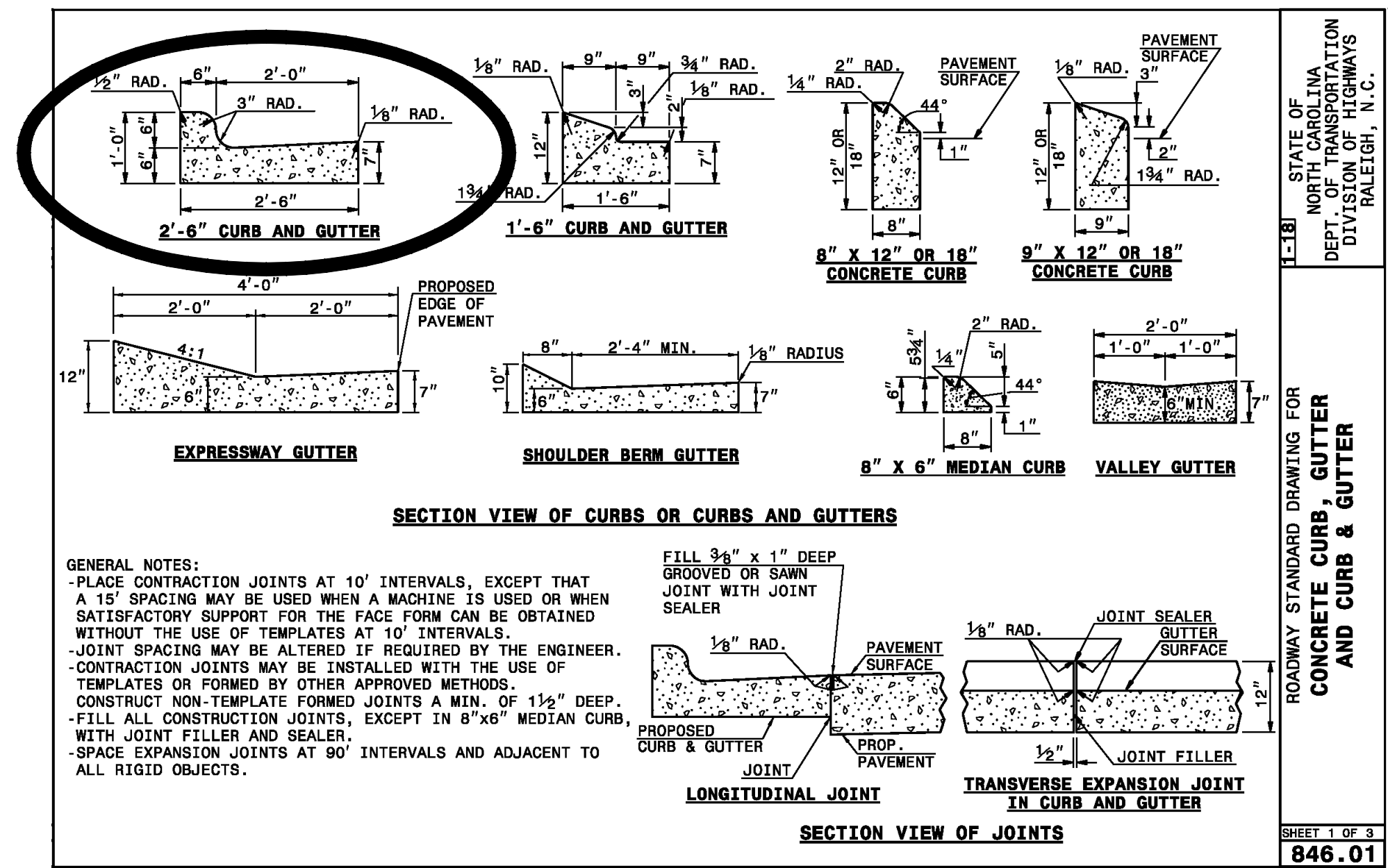
SHEET 1 OF 2
904.50



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

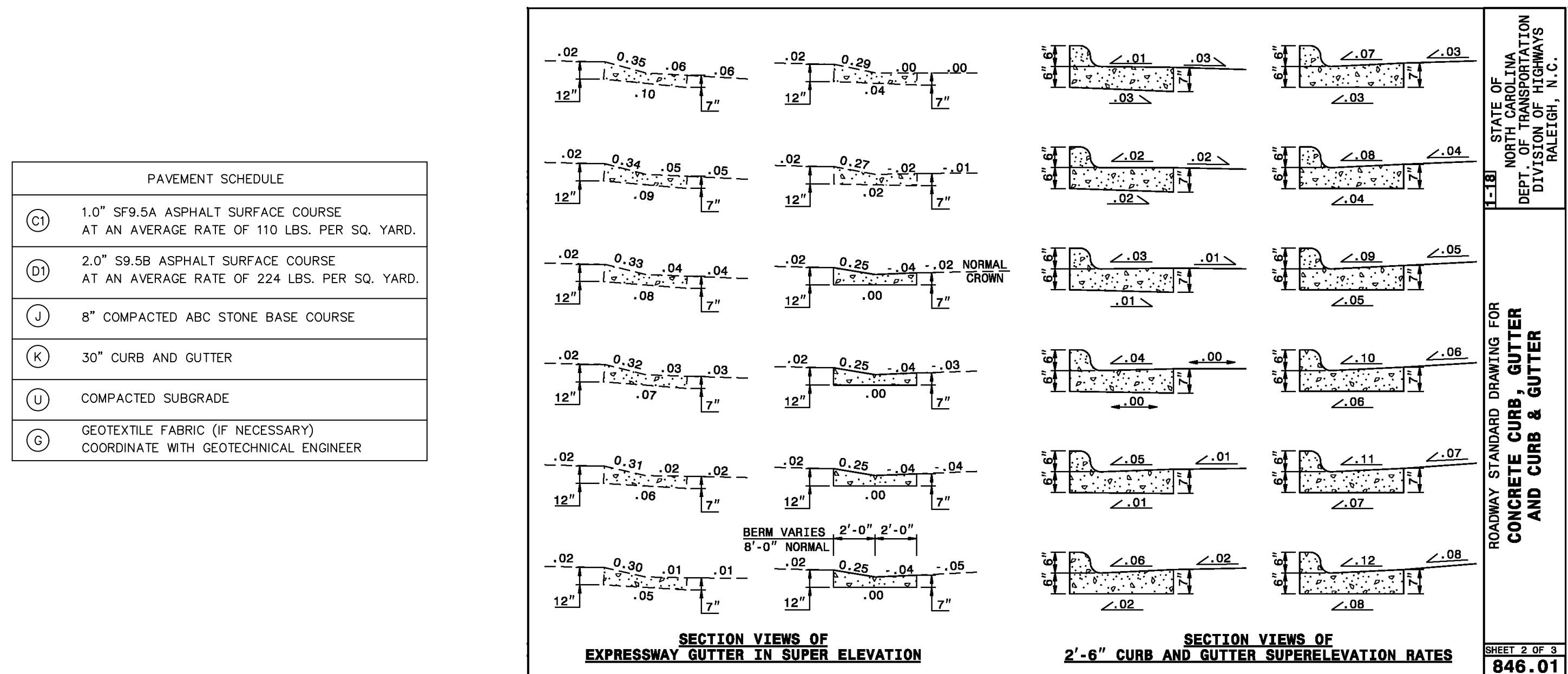
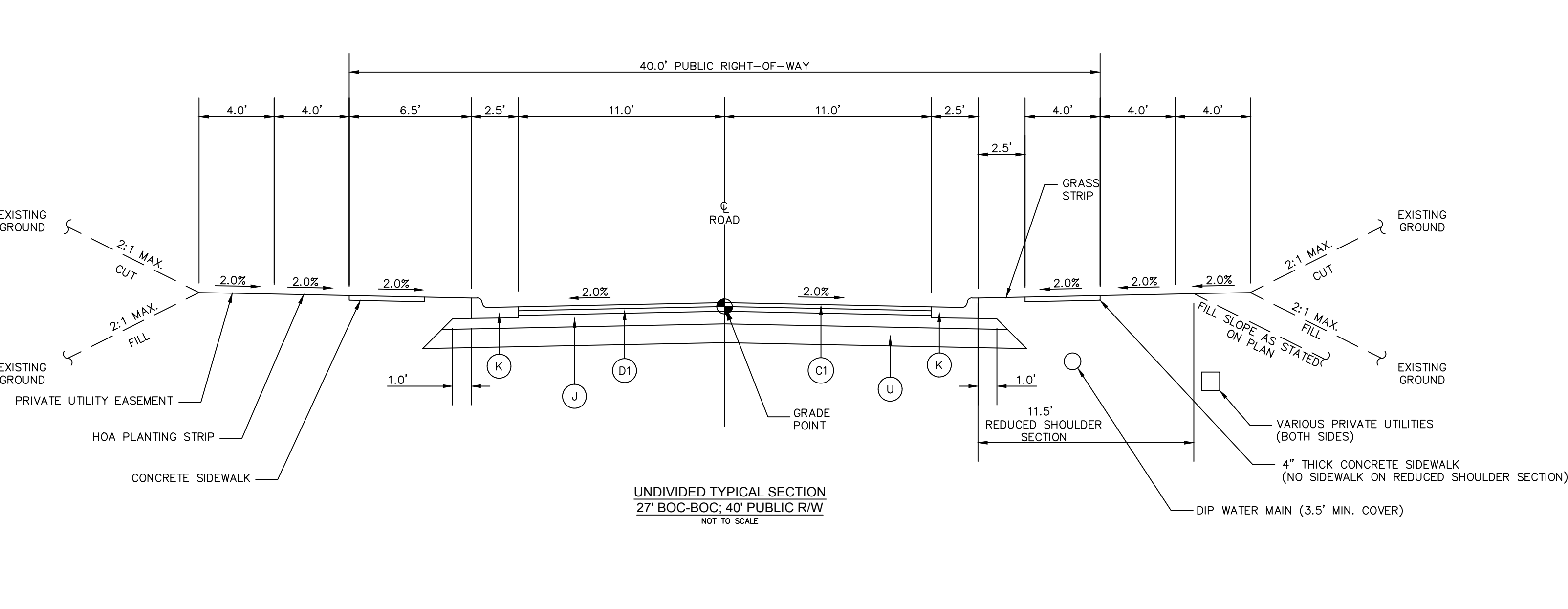
SHEET 2 OF 2
904.50



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RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
CONCRETE CURB, GUTTER AND CURB & GUTTER

SHEET 1 OF 3
846.01

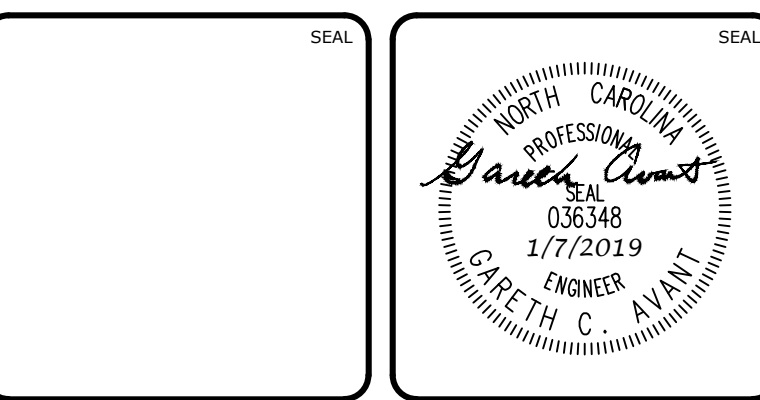


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ROADWAY STANDARD DRAWING FOR
CONCRETE CURB, GUTTER AND CURB & GUTTER

SHEET 2 OF 3
846.01

REV. NO.	DATE	DESCRIPTIONS	REVISIONS
4	2019.01.07	REVISIONS PER NCDOT COMMENTS	
3	2018.12.17	REVISIONS PER NCDOT COMMENTS	
2	2018.11.06	REVISIONS PER CHATHAM COUNTY PUBLIC WORKS	
1	2018.10.23	INITIAL SUBMITTAL	



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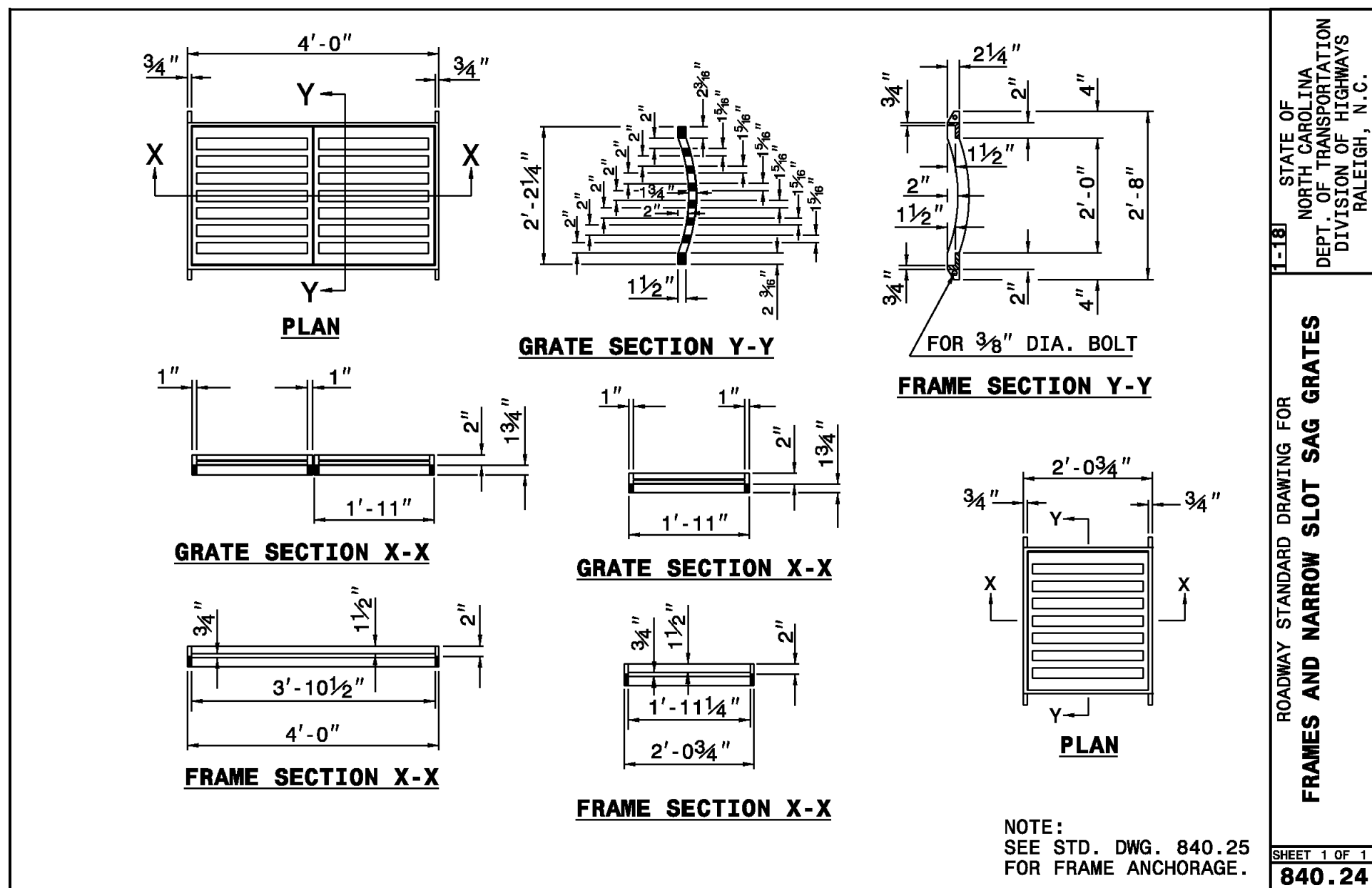
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CHATHAM COUNTY, NORTH CAROLINA

NCDOT ROADWAY DETAILS

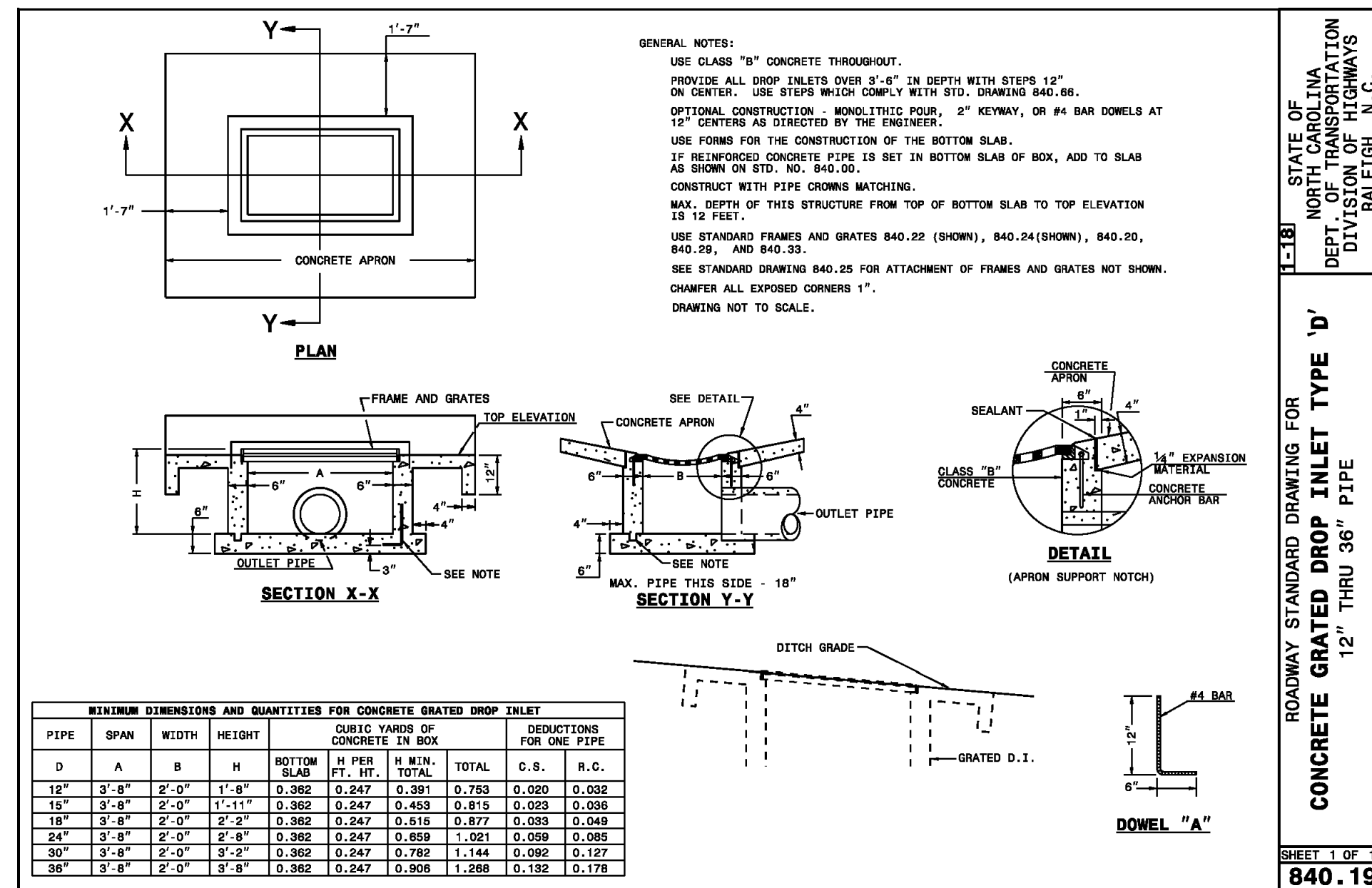
DATE: OCTOBER 23, 2018	SCALE: D2.X
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DRAWN: BSS	VERTICAL: D2.1
DESIGNED: BSS	
CHECKED: GCA	
PROJ. MGR.: CHS	
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY	REVISION: 4



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RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
FRAMES AND NARROW SLOT SAG GRATES

SHEET 1 OF 1
840.24

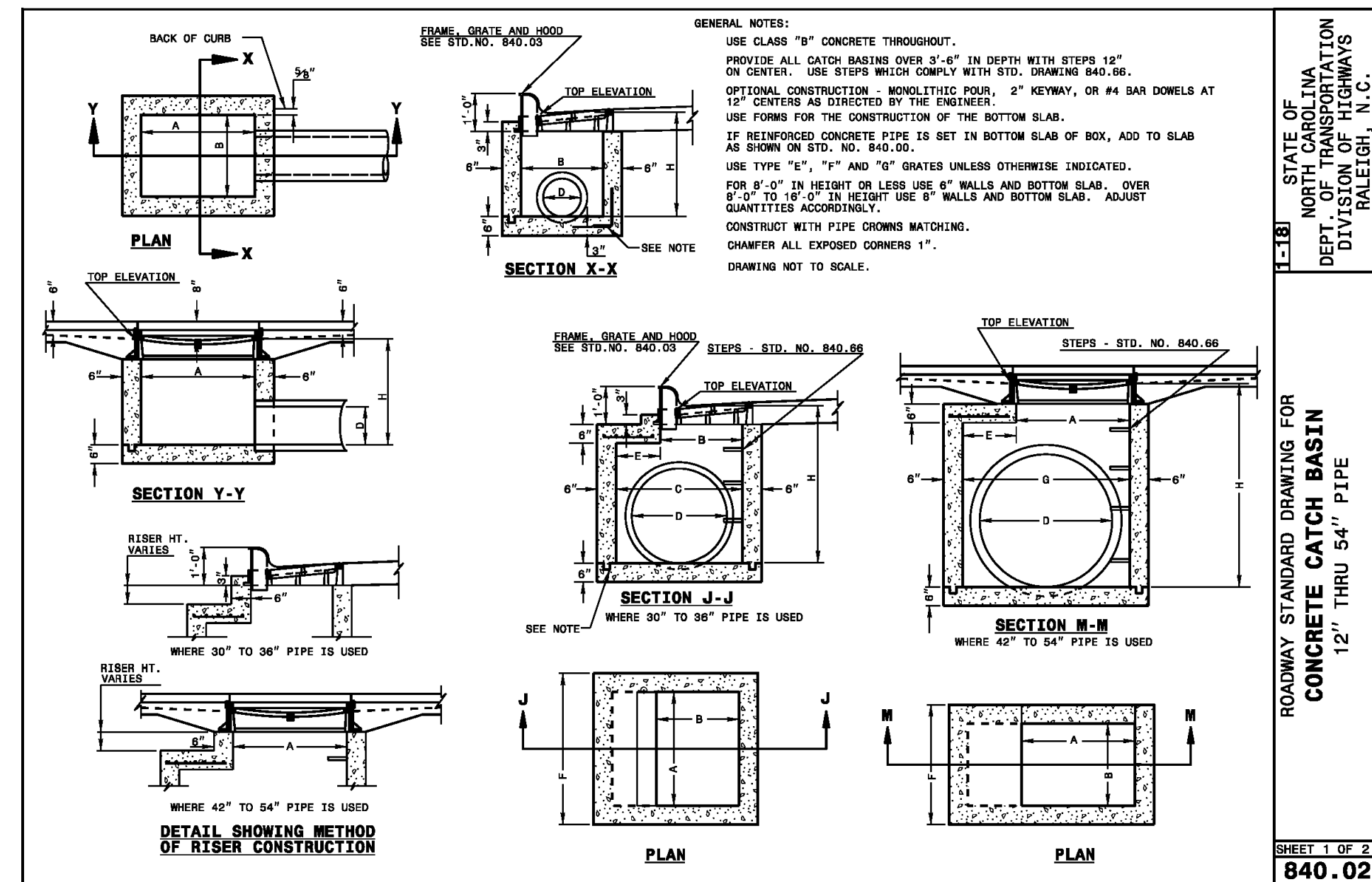


PIPE	SPAN	WIDTH	HEIGHT	MIN. SLAB	MIN. TOTAL	MIN. TOTAL	D.S.	R.C.
12"	3'-0"	2'-0"	1'-11"	0.362	0.247	0.361	0.000	0.000
15"	3'-0"	2'-0"	1'-11"	0.362	0.247	0.361	0.000	0.000
18"	3'-0"	2'-0"	2'-2"	0.362	0.247	0.516	0.877	0.049
24"	3'-0"	2'-0"	2'-8"	0.362	0.247	0.659	1.001	0.085
30"	3'-0"	2'-0"	3'-2"	0.362	0.247	0.782	1.144	0.127
36"	3'-0"	2'-0"	3'-8"	0.362	0.247	0.908	1.288	0.178

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ROADWAY STANDARD DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'D'
12" THRU 36" PIPE

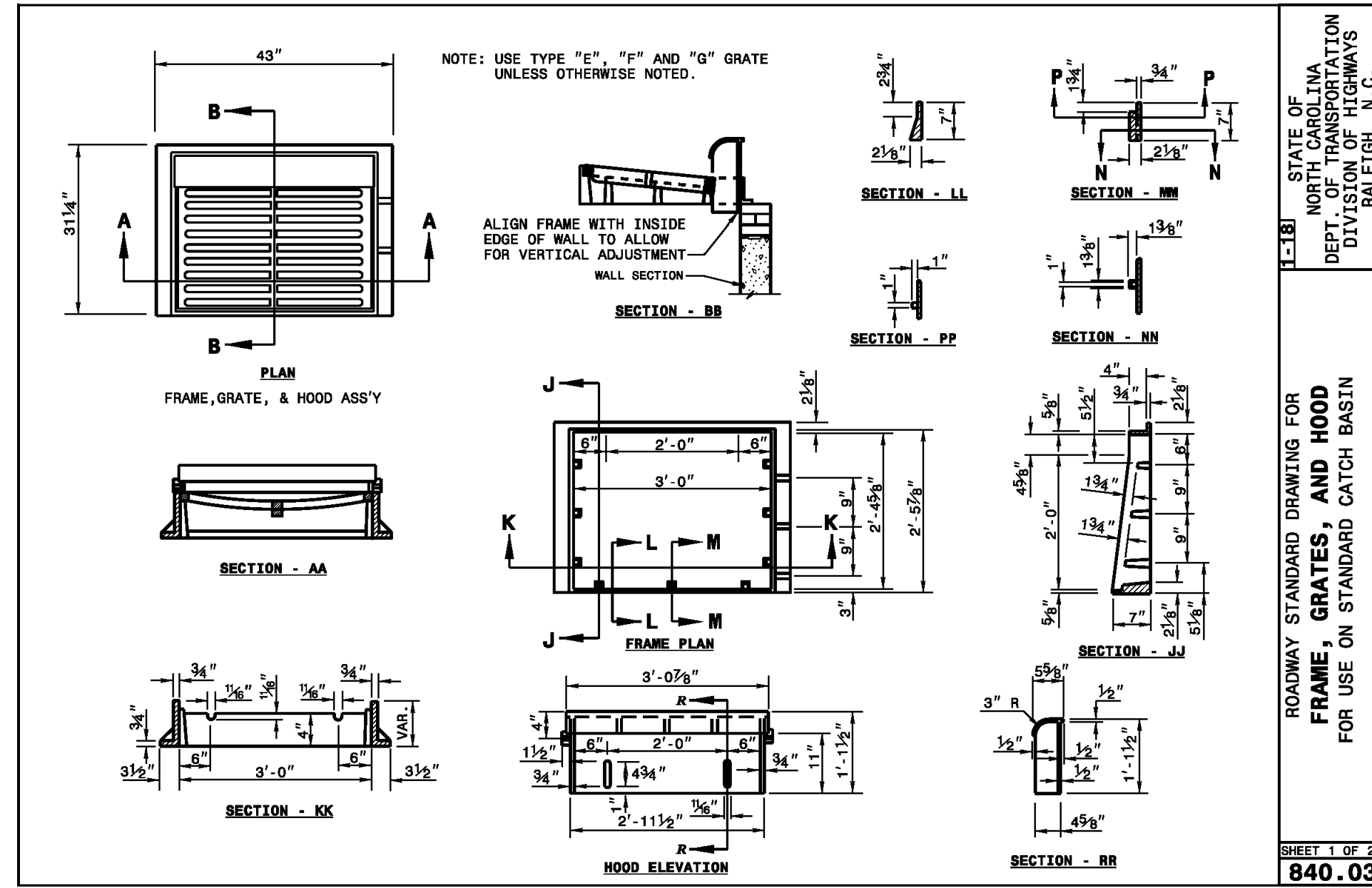
SHEET 1 OF 1
840.19



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ROADWAY STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

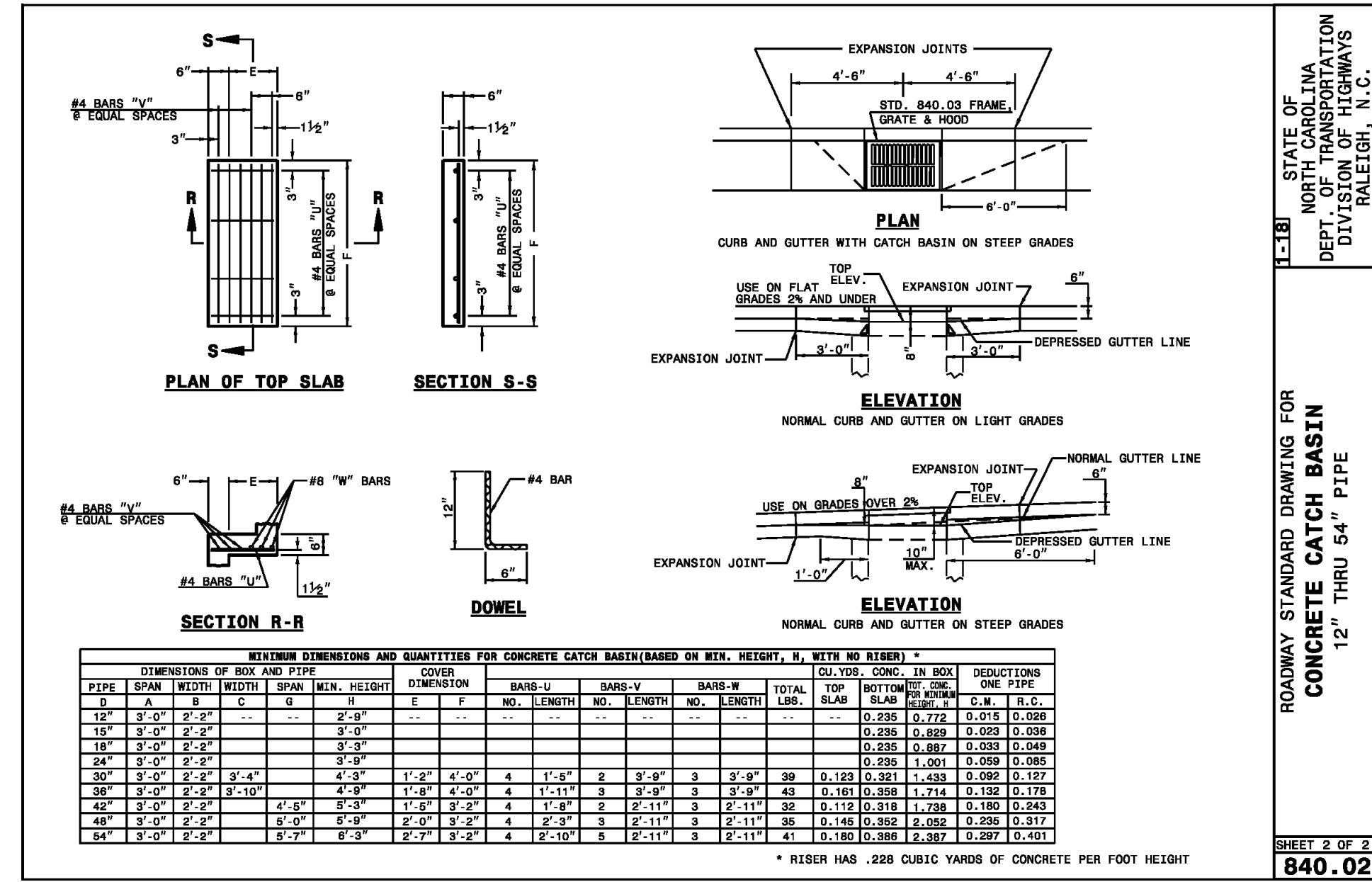
SHEET 1 OF 2
840.02



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ROADWAY STANDARD DRAWING FOR
FRAMES, GRATES, AND HOOD
FOR USE ON STANDARD CATCH BASIN

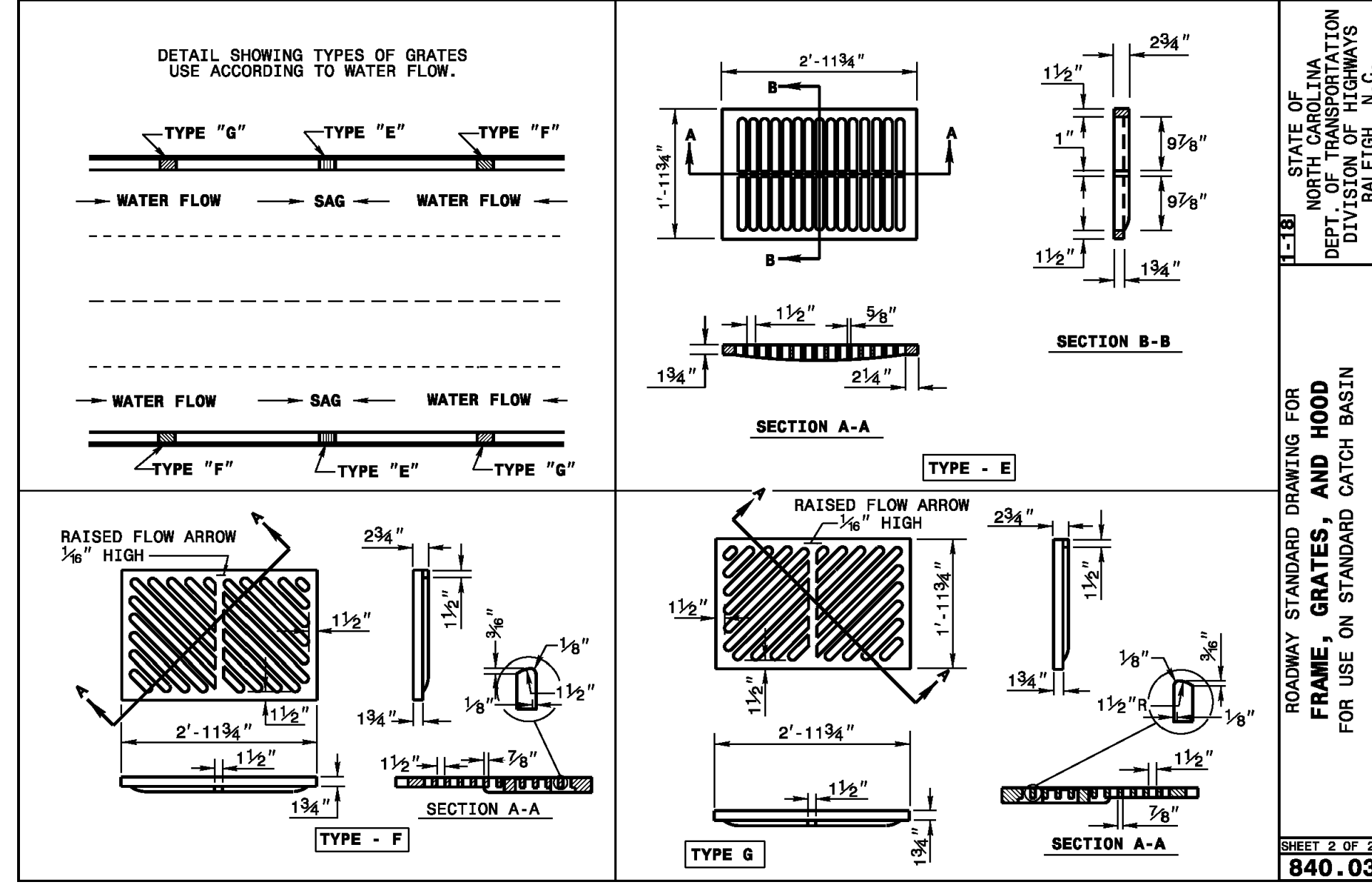
SHEET 1 OF 2
840.03



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ROADWAY STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

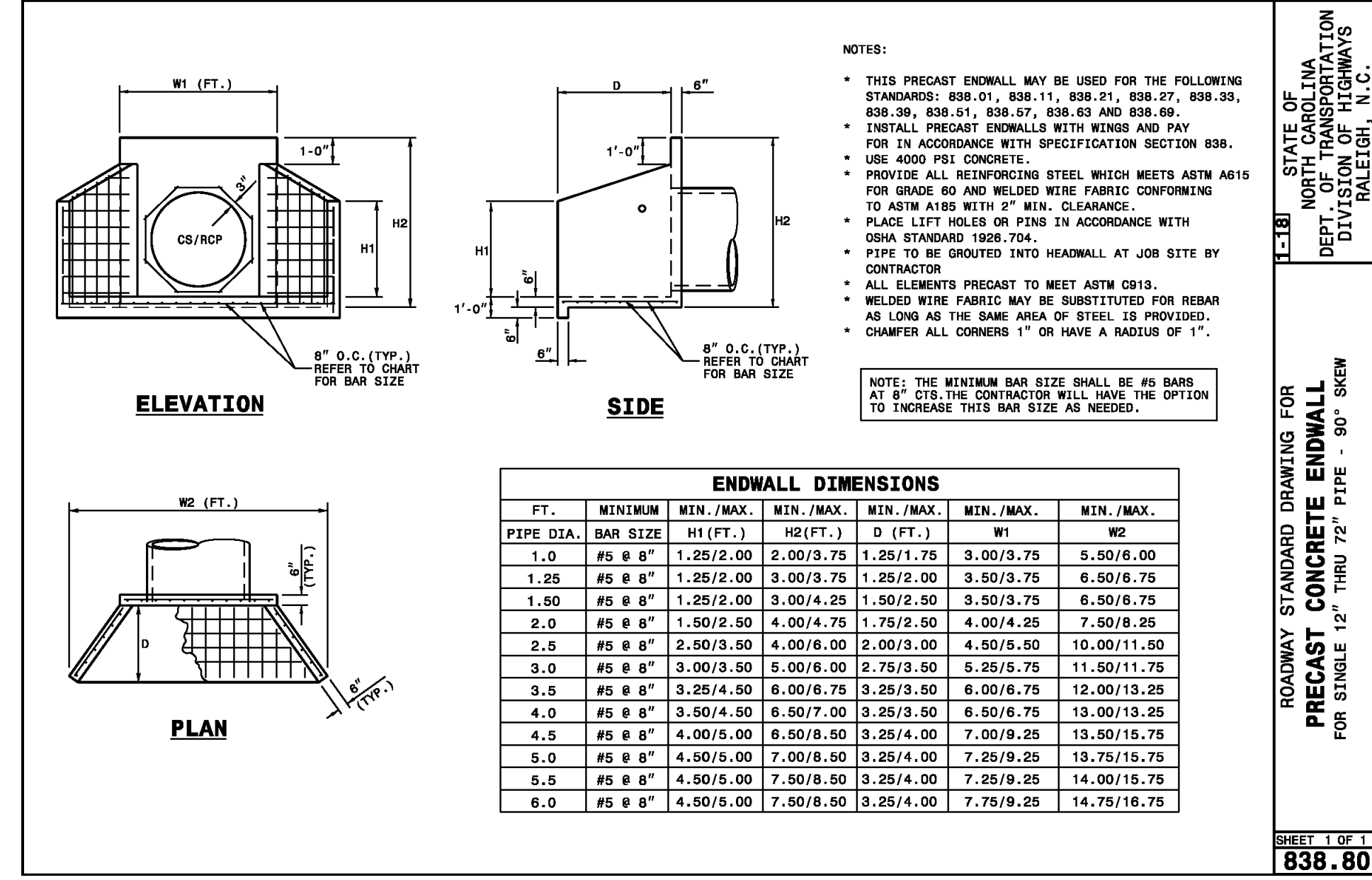
SHEET 2 OF 2
840.02



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ROADWAY STANDARD DRAWING FOR
FRAMES, GRATES, AND HOOD
FOR USE ON STANDARD CATCH BASIN

SHEET 2 OF 2
840.03

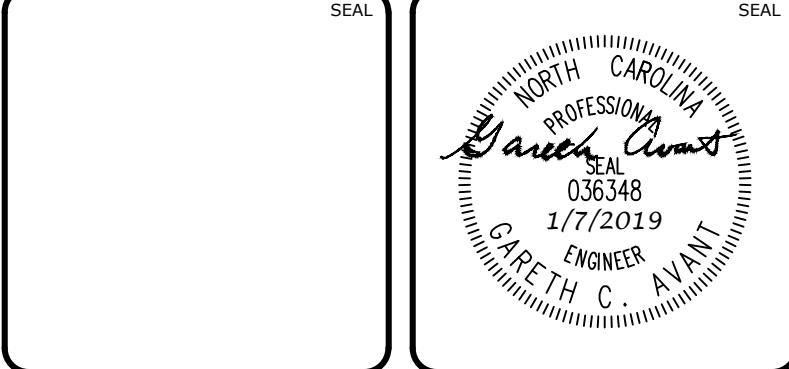


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ROADWAY STANDARD DRAWING FOR
PRECAST CONCRETE ENDWALL
FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

SHEET 1 OF 1
838.80

REV. NO.	DESCRIPTION	DATE
4	REVISIONS PER NCDOT COMMENTS	2019.01.07
3	REVISIONS PER NCDOT COMMENTS	2018.12.17
2	REVISIONS PER CHATHAM COUNTY PUBLIC WORKS	2018.11.06
1	INITIAL SUBMITTAL	2018.10.23



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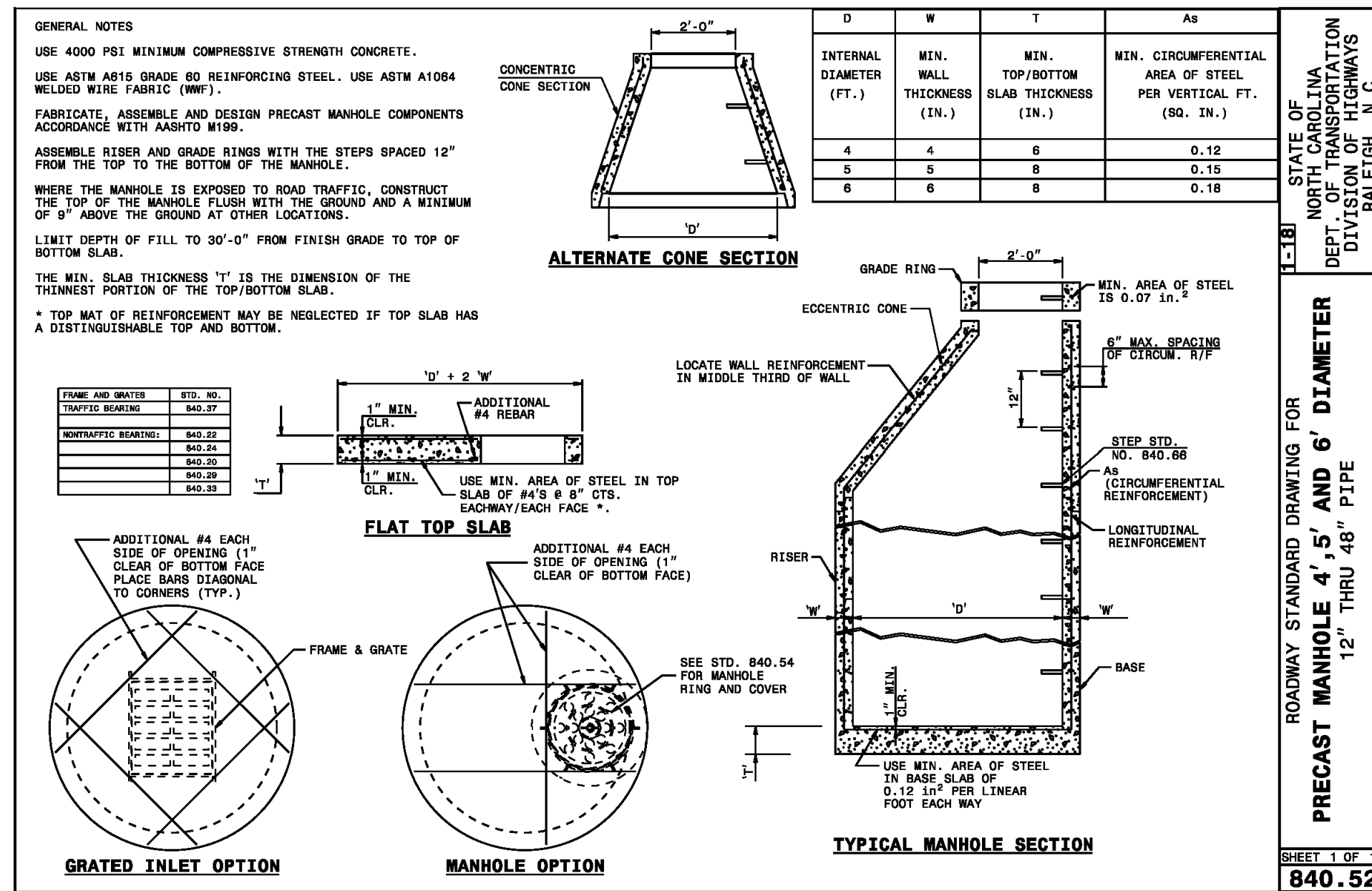
NCDOT DRAINAGE DETAILS

DATE: OCTOBER 23, 2018
MCE PROJ. # 02735-0239
DRAWN: BSS
DESIGNED: BSS
CHECKED: GCA
PROJ. MGR.: CHS

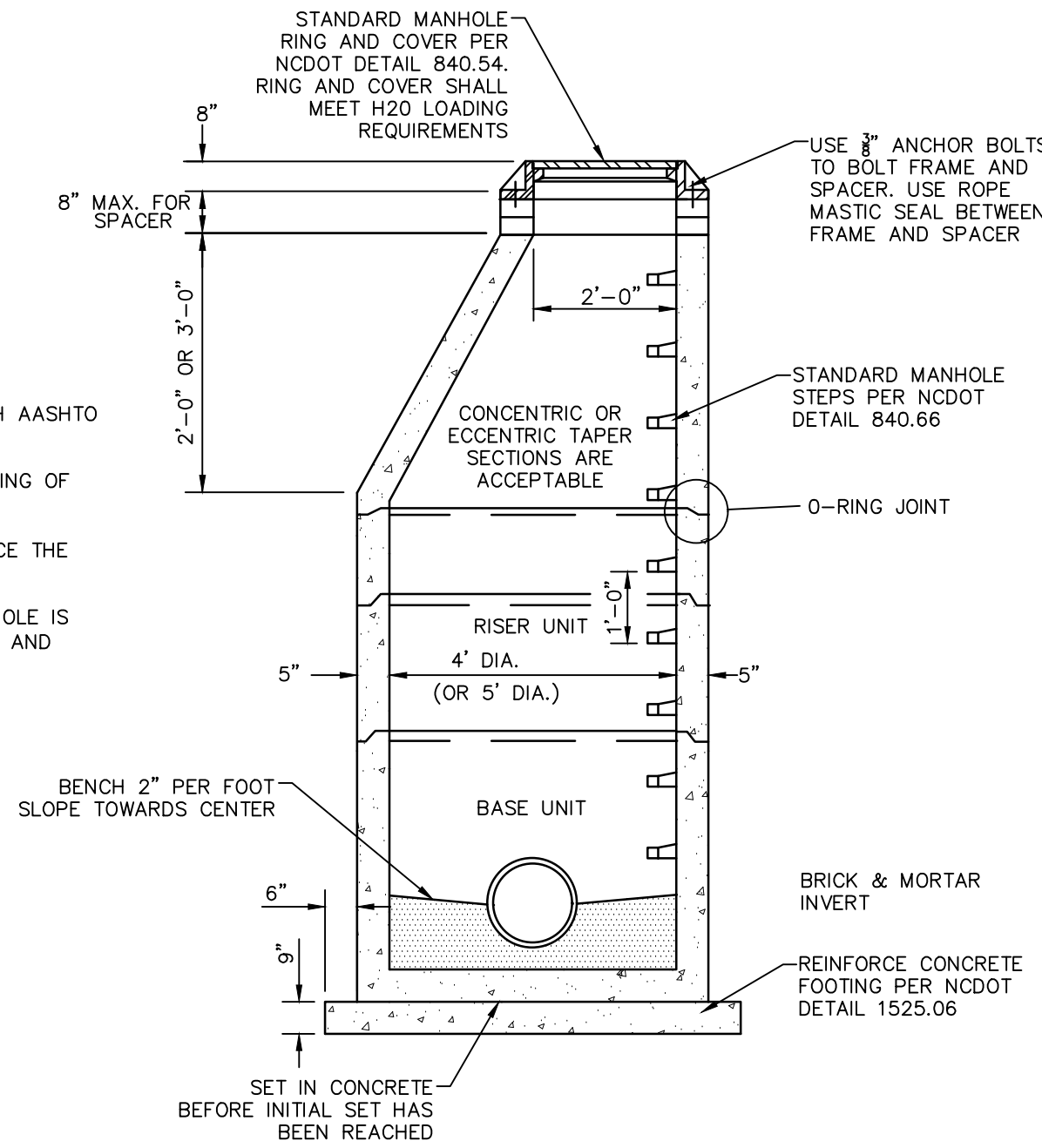
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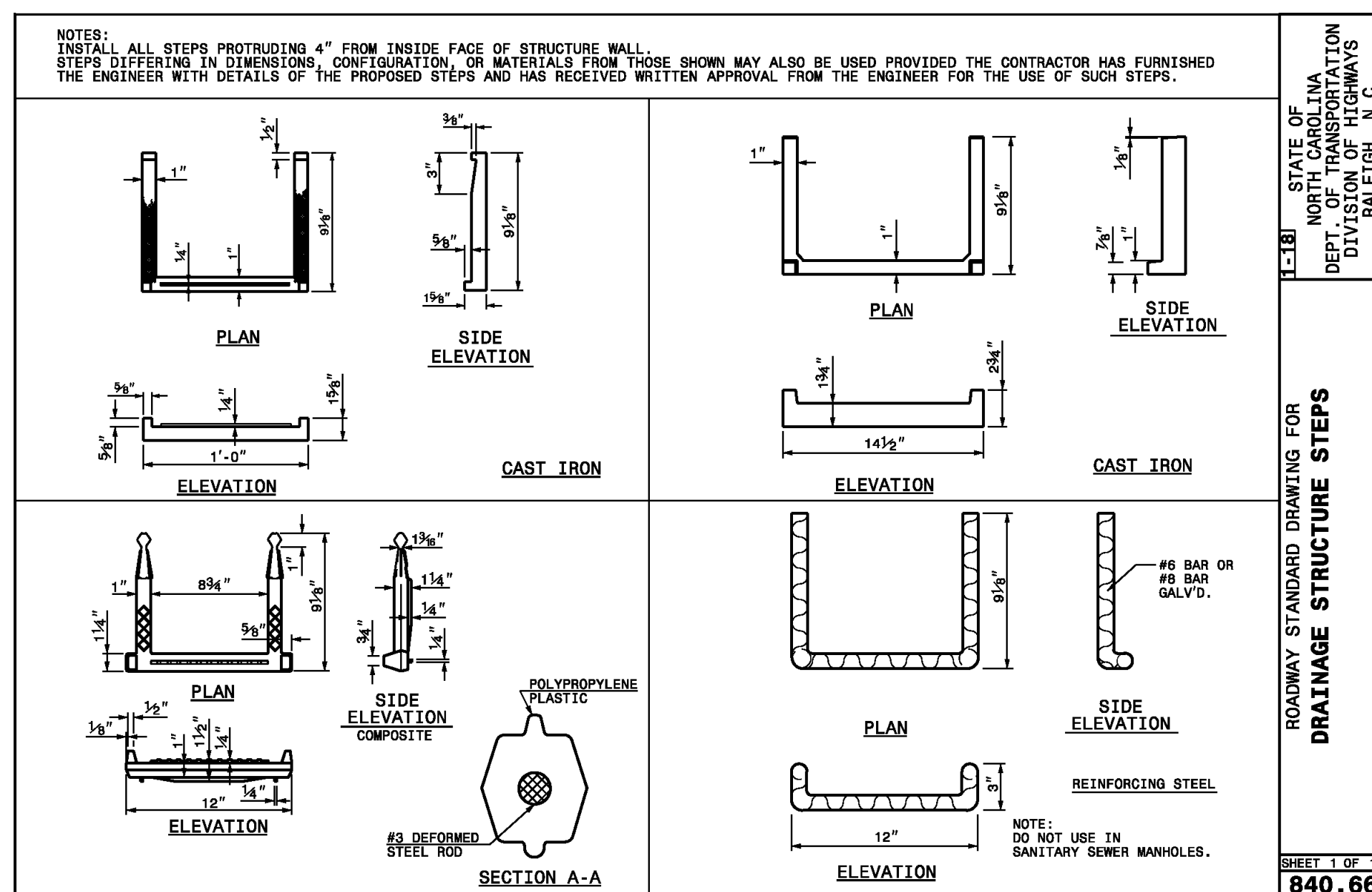
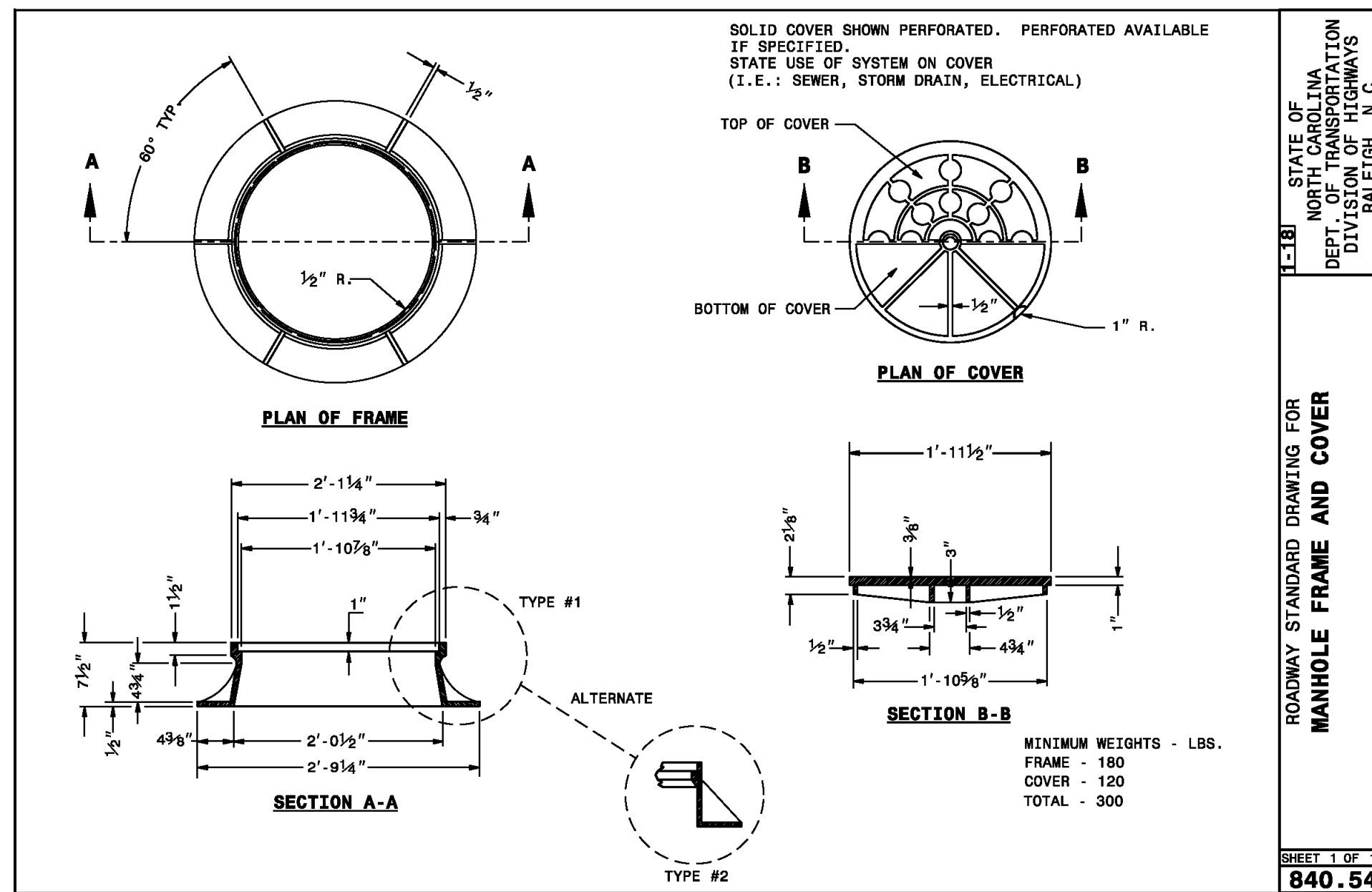
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REVISION: 4



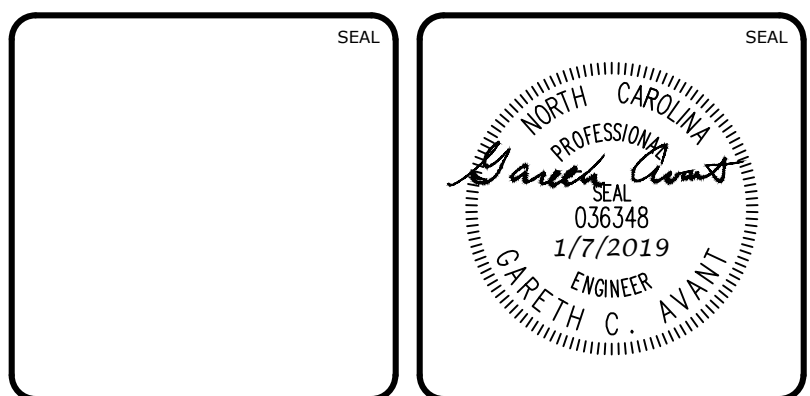
- NOTES:**
- PROVIDE PRECAST MANHOLE COMPONENTS WHICH COMPLY WITH AASHTO M199.
 - ASSEMBLE RISERS AND GRADE RINGS SO STEPS HAVE A SPACING OF 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
 - WHERE THE MANHOLE IS EXPOSED TO ROADWAY TRAFFIC, PLACE THE TOP OF THE MANHOLE FLUSH WITH THE GROUND.
 - REINFORCED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



REV. NO.	DESCRIPTIONS	DATE
4	REVISIONS PER NCDOT COMMENTS	2019.01.07
3	REVISIONS PER NCDOT COMMENTS	2018.12.17
2	REVISIONS PER CHATHAM COUNTY PUBLIC WORKS	2018.11.06
1	INITIAL SUBMITTAL	2018.10.23



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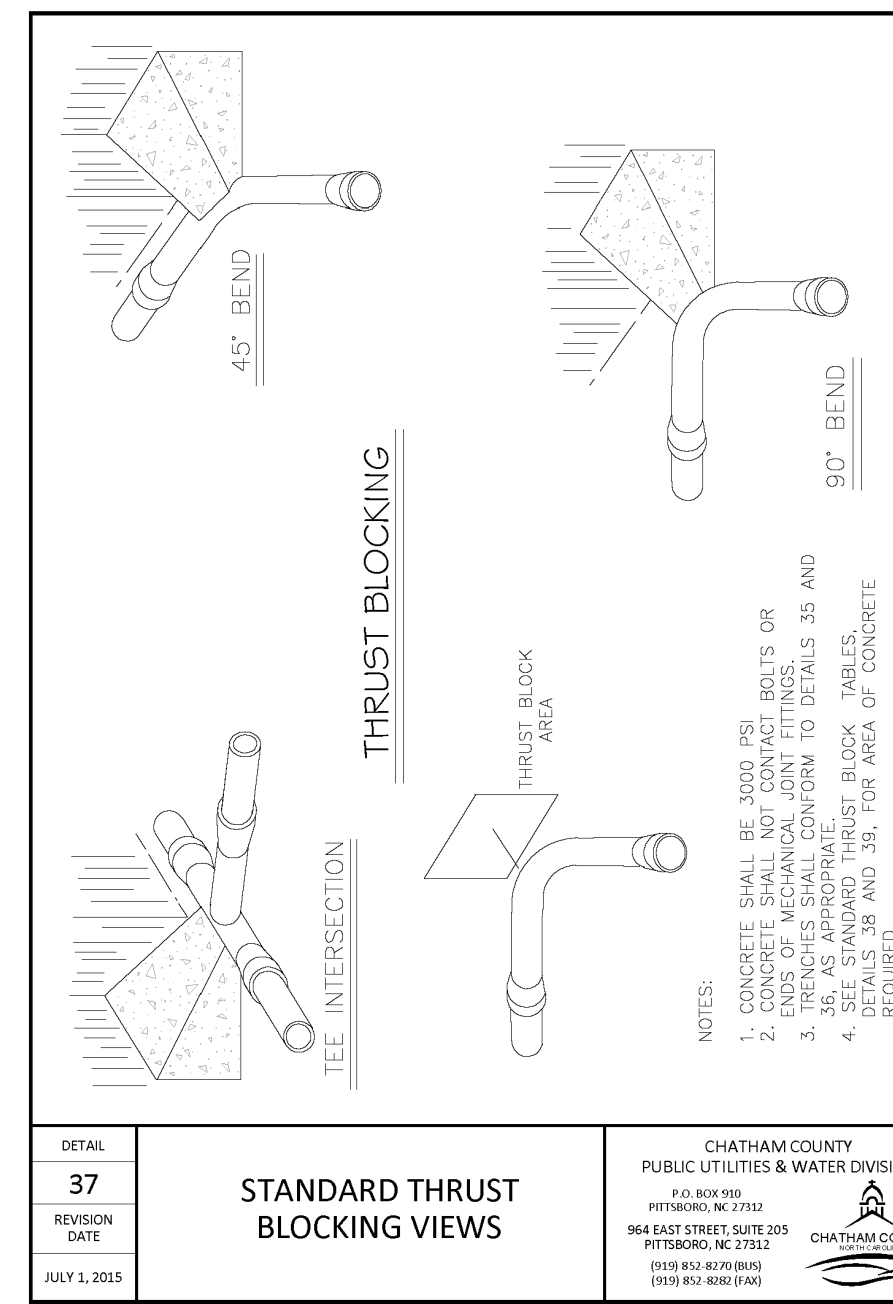
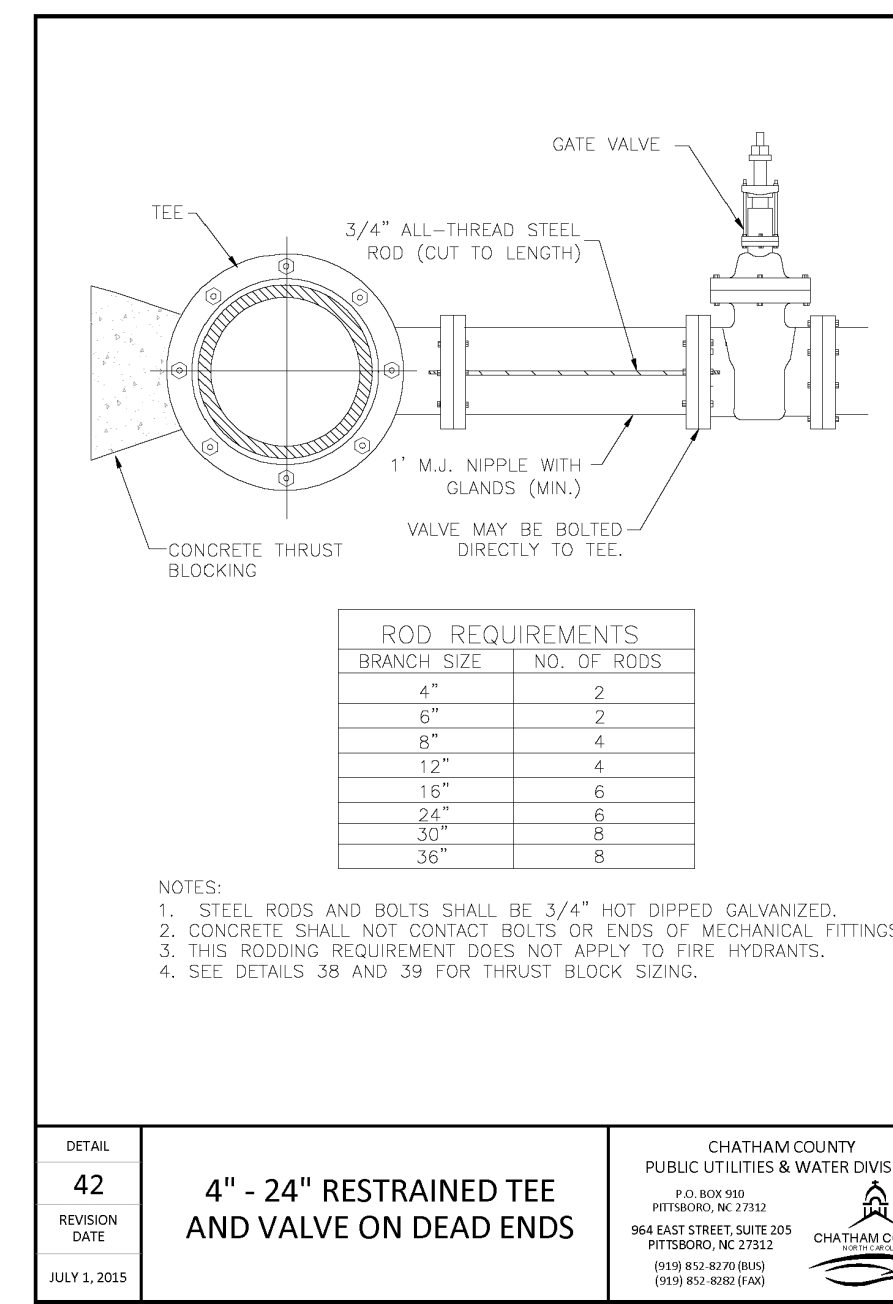
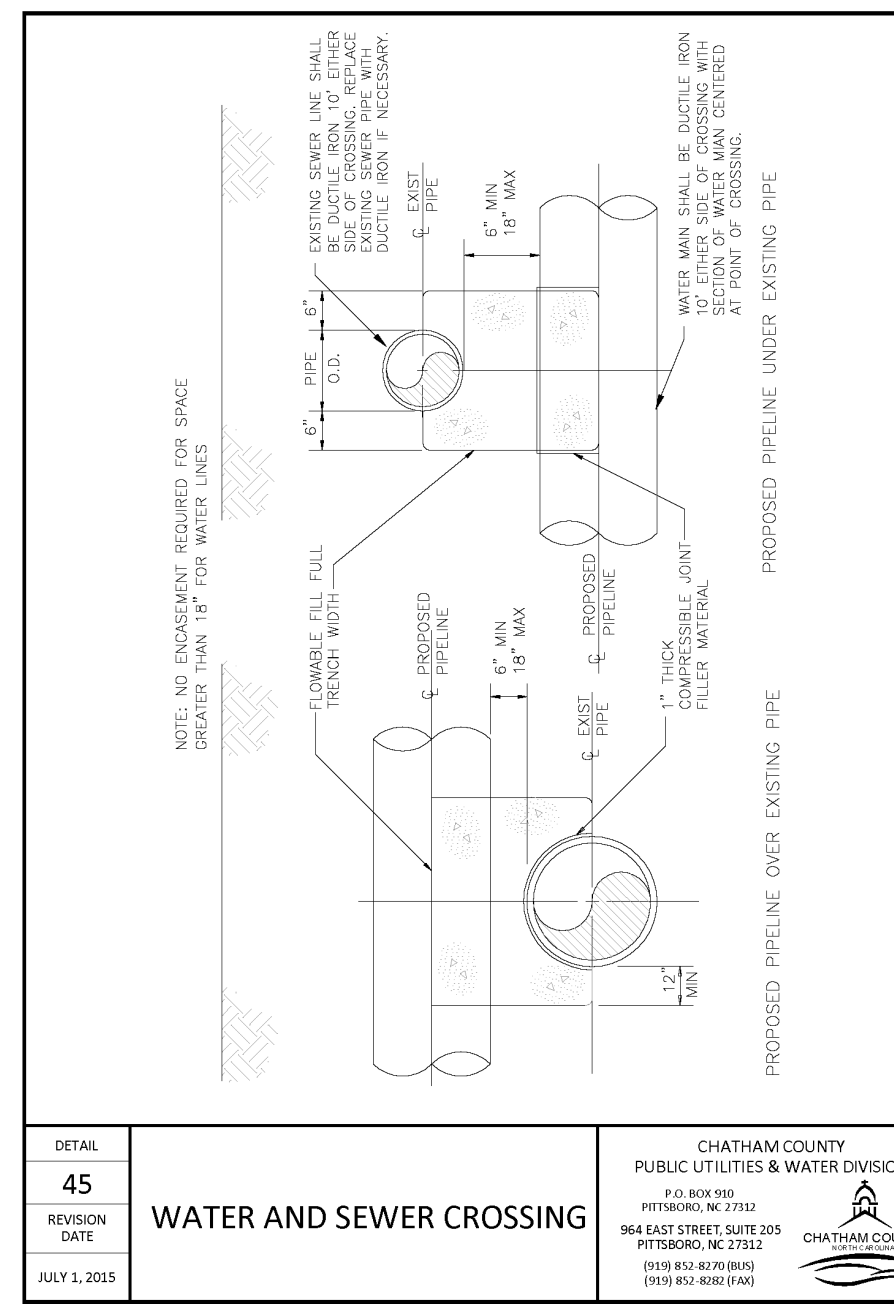
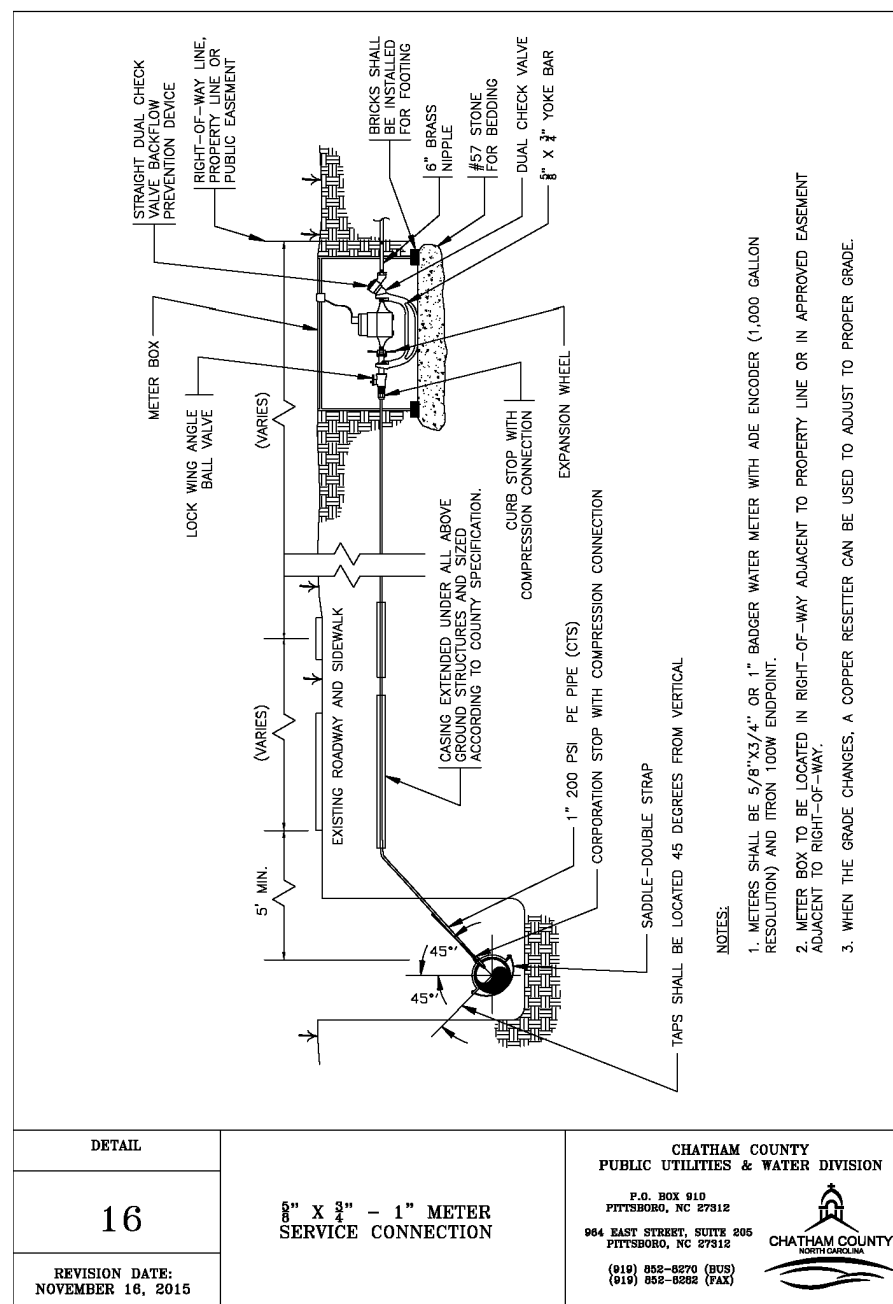
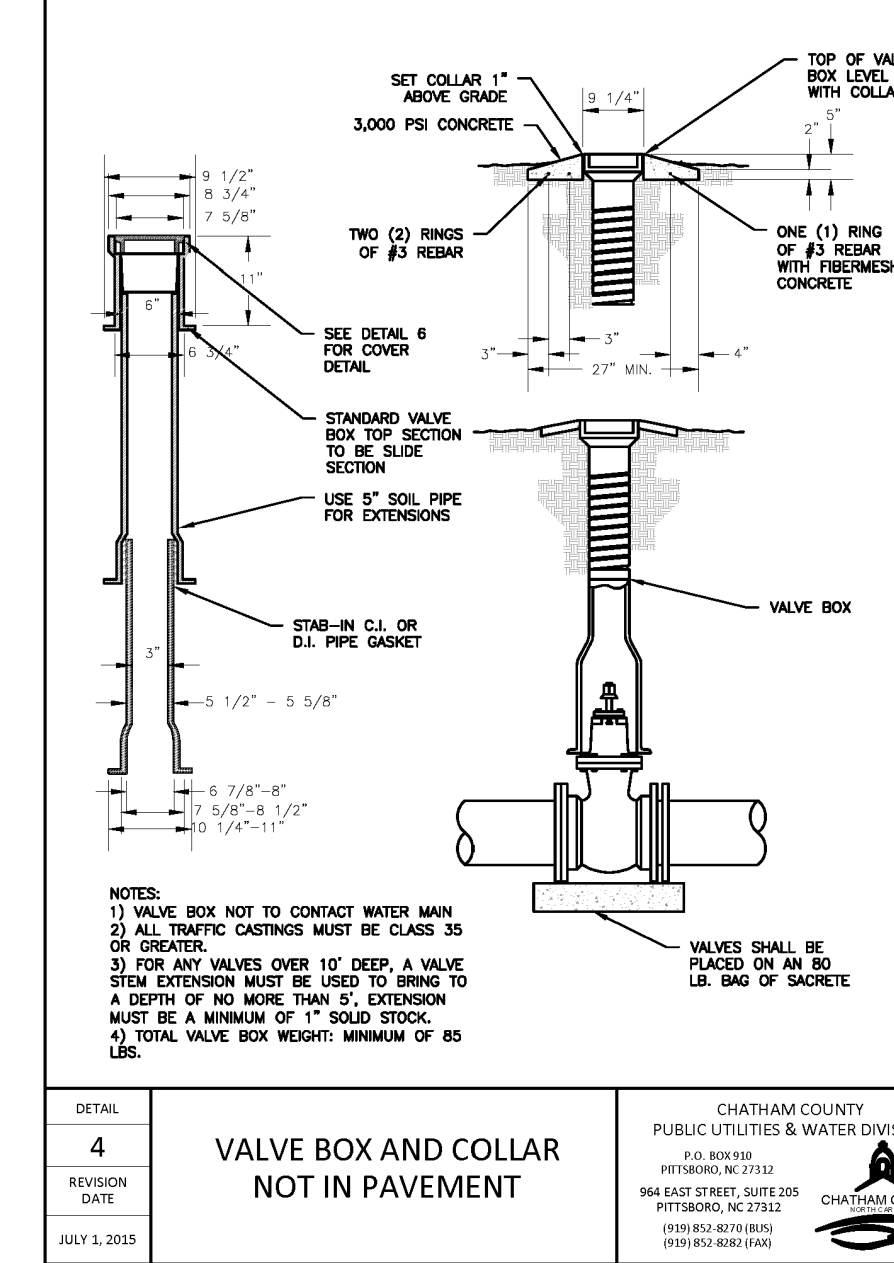
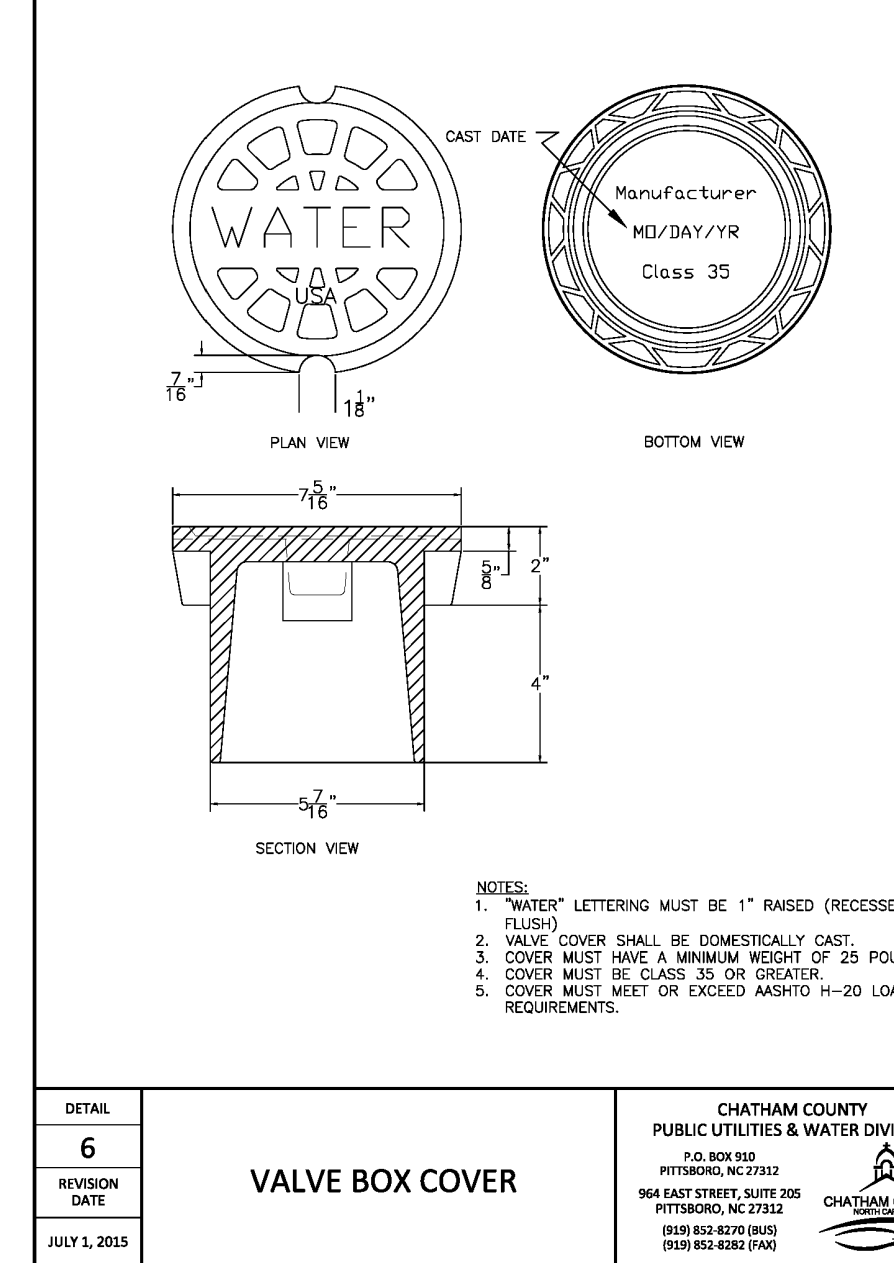
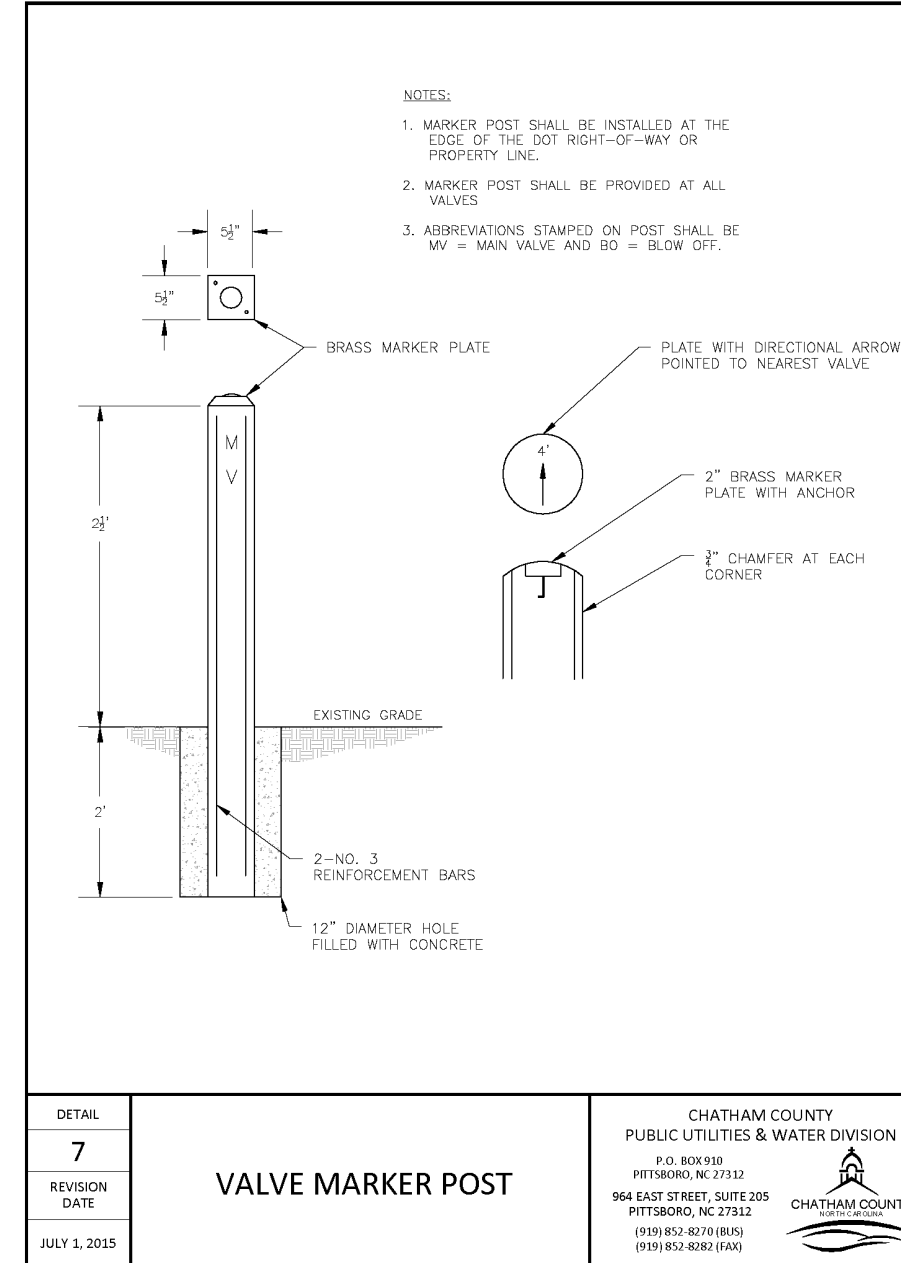
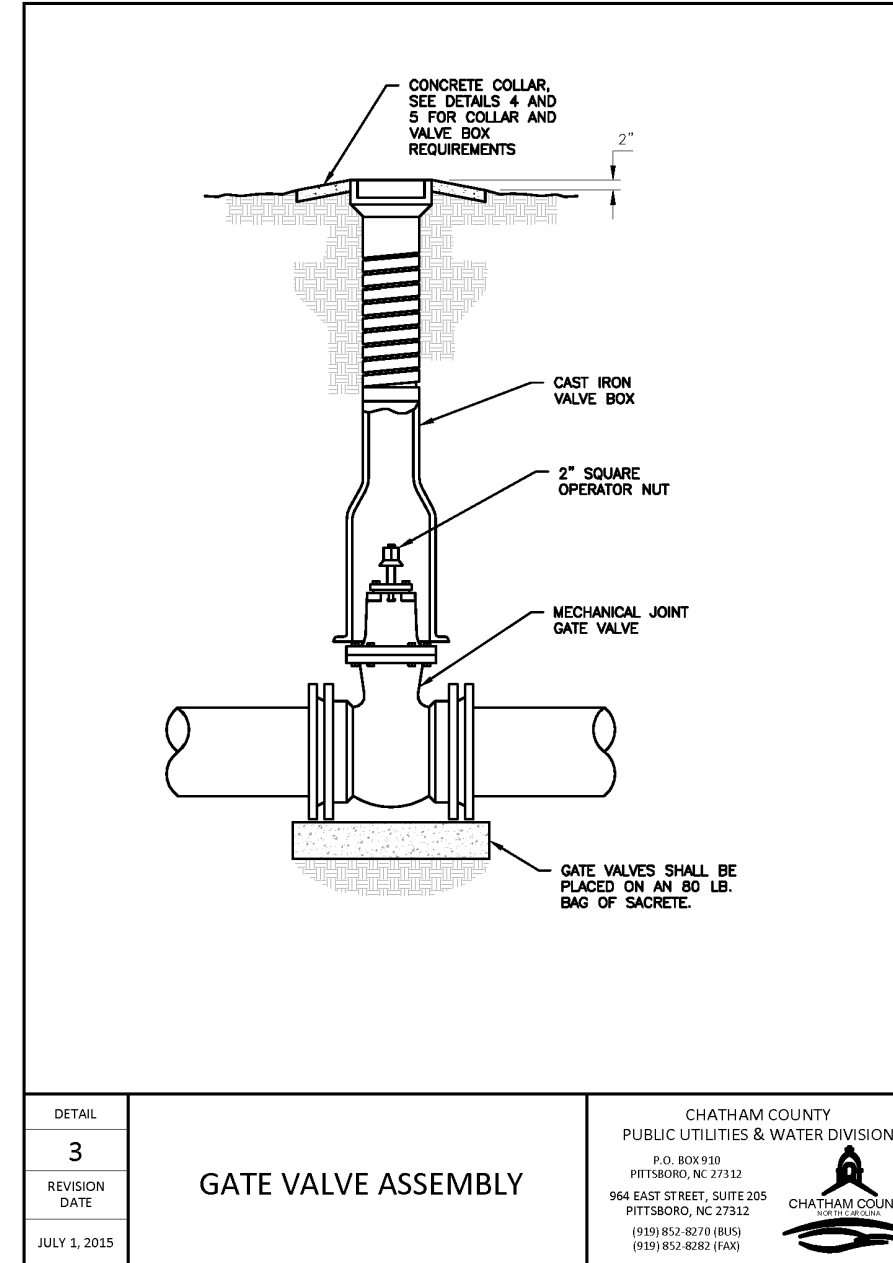
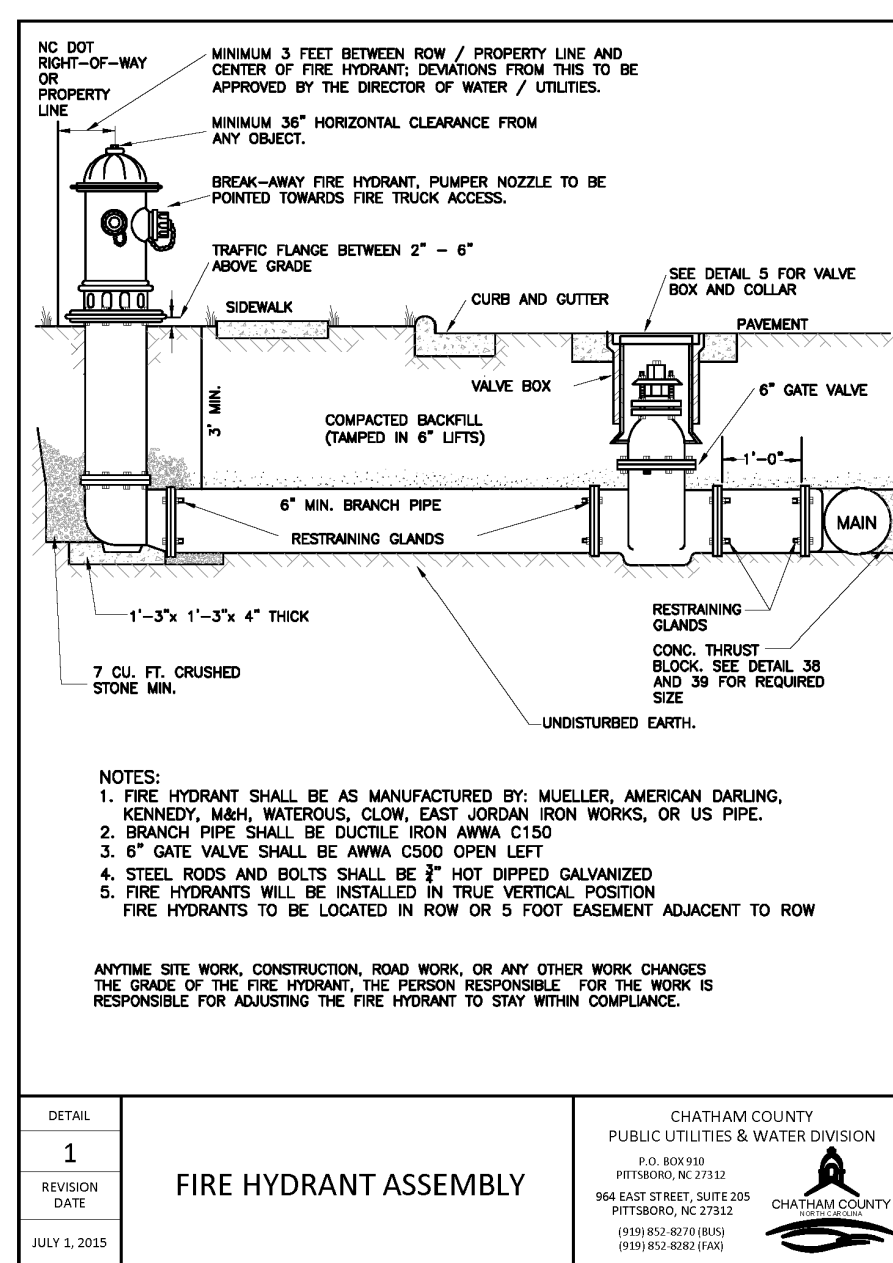
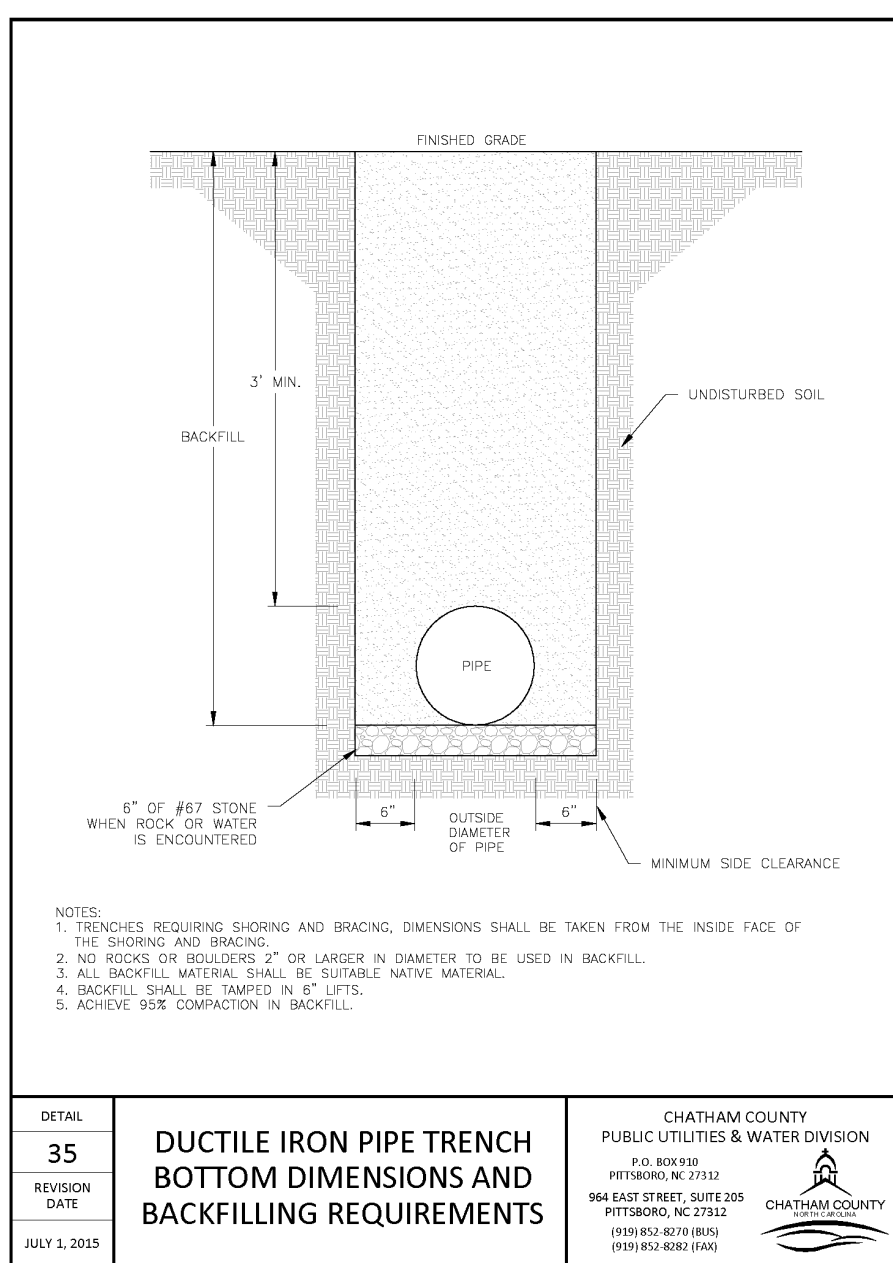
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BRIAR CHAPEL
 PHASE 13 - SECTION 3
 CHATHAM COUNTY, NORTH CAROLINA

NCDOT DRAINAGE DETAILS

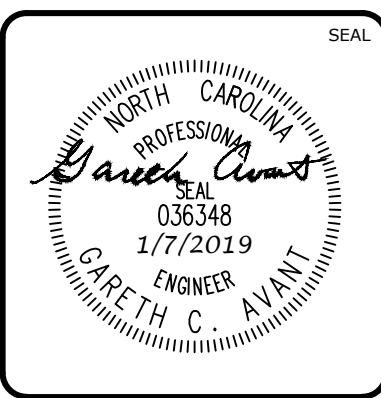
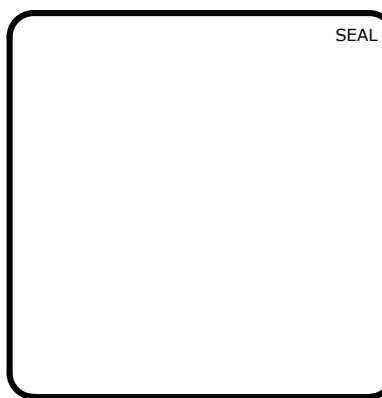
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MCE PROJ. # 02735-0239	HORIZONTAL: N/A	DRAWING NUMBER: D2.3
DRAWN: BSS	VERTICAL: N/A	
DESIGNED: BSS		
CHECKED: GCA		
PROJ. MGR.: CHS		
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY	REVISION: 4	



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I. ALL AREAS GIVEN IN SQUARE FEET									
SIZE OF BEND	SIZE OF BEND	REACTION	REACTION	REACTION	REACTION	REACTION	REACTION	REACTION	REACTION
8"	11 1/4"	1,108	1	1	1	1	1	2	1
	22 1/2"	2,207	1	2	2	1	1	3	1
	45"	4,326	2	3	3	1	1	5	1
	90"	7,996	2	4	5	1	1	2	8
	PLUG	5,655	2	3	4	1	1	2	6
12"	11 1/4"	1,970	1	1	2	1	1	2	1
	22 1/2"	3,922	1	2	3	1	1	4	1
	45"	7,894	2	4	5	1	1	2	8
	90"	14,218	4	8	9	2	2	4	15
	PLUG	10,553	3	5	6	2	2	3	10
16"	11 1/4"	4,433	2	3	3	1	1	2	5
	22 1/2"	8,826	3	5	6	2	2	3	9
	45"	17,312	5	9	11	3	3	5	18
	90"	31,083	8	16	19	4	4	8	32
	PLUG	22,618	6	12	14	3	3	6	23
24"	11 1/4"	7,881	2	4	5	1	1	2	8
	22 1/2"	15,821	4	8	10	2	2	4	16
	45"	30,779	8	16	19	4	4	8	31
	90"	56,861	15	29	35	8	8	15	57
	PLUG	40,212	10	21	25	5	5	10	41

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I. ALL AREAS GIVEN IN SQUARE FEET									
SIZE OF BEND	SIZE OF BEND	REACTION	REACTION	REACTION	REACTION	REACTION	REACTION	REACTION	REACTION
24"	11 1/4"	17,234	5	9	11	3	3	5	18
	22 1/2"	35,325	9	18	22	5	5	9	36
	45"	69,262	18	35	42	9	9	18	70
	90"	127,936	32	64	77	18	18	32	128
	PLUG	90,478	23	48	58	12	12	23	91
30"	11 1/4"	27,709	7	14	17	4	4	7	2
	22 1/2"	55,163	14	28	34	7	7	14	56
	45"	109,206	28	55	68	14	14	28	109
	90"	199,605	55	109	133	28	28	55	200
	PLUG	141,372	38	71	88	18	18	38	142
36"	11 1/4"	39,801	10	20	24	5	5	10	45
	22 1/2"	79,239	20	40	48	10	10	20	90
	45"	158,418	39	78	96	20	20	39	156
	90"	287,805	77	154	192	39	39	77	288
	PLUG	203,679	51	102	122	26	26	51	204
48"	11 1/4"	70,835	18	36	43	9	9	18	71
	22 1/2"	141,218	36	71	85	18	18	36	142
	45"	277,077	70	139	166	35	35	70	277
	90"	511,742	128	256	320	64	64	128	512
	PLUG	381,211	81	161	212	48	48	91	362

REV. NO.	DESCRIPTION	DATE
4	REVISIONS PER NCDOT COMMENTS	2019.01.07
3	REVISIONS PER NCDOT COMMENTS	2018.12.17
2	REVISIONS PER CHATHAM COUNTY PUBLIC WORKS	2018.11.06
1	INITIAL SUBMITTAL	2018.10.23



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BRIAR CHAPEL™
 by Newland COMMUNITIES

BRIAR CHAPEL PHASE 13 - SECTION 3
 CHATHAM COUNTY, NORTH CAROLINA
UTILITY DETAILS

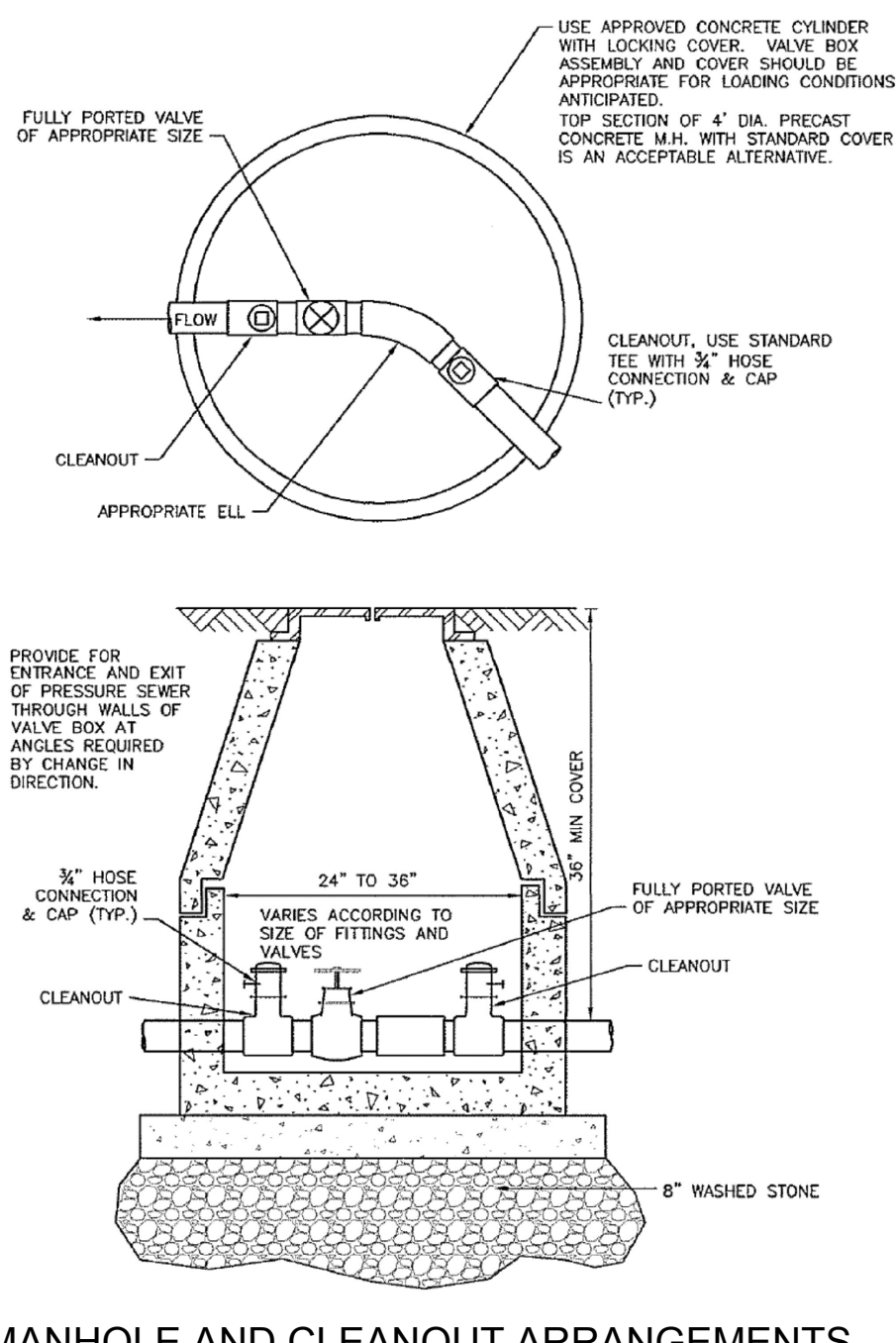
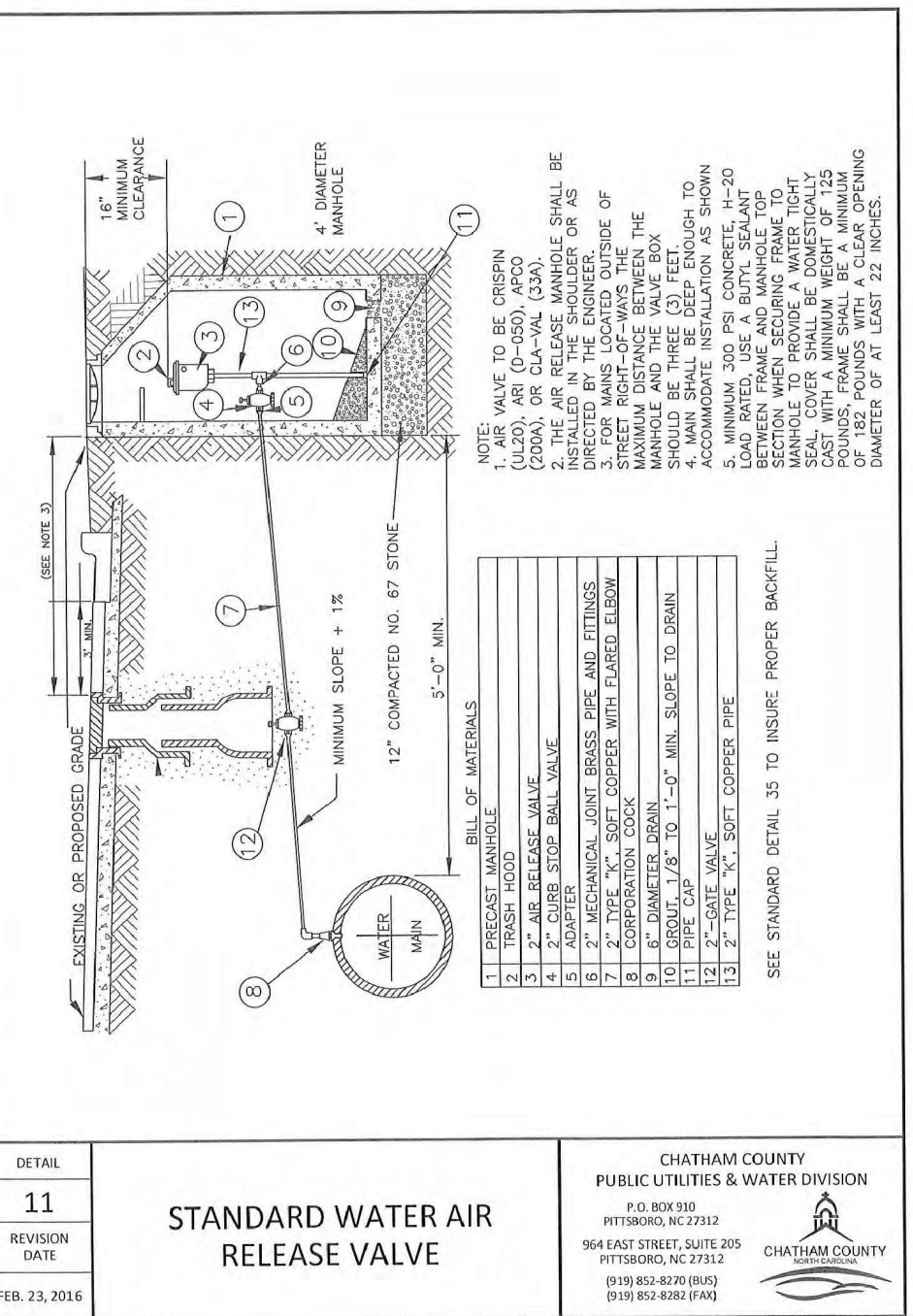
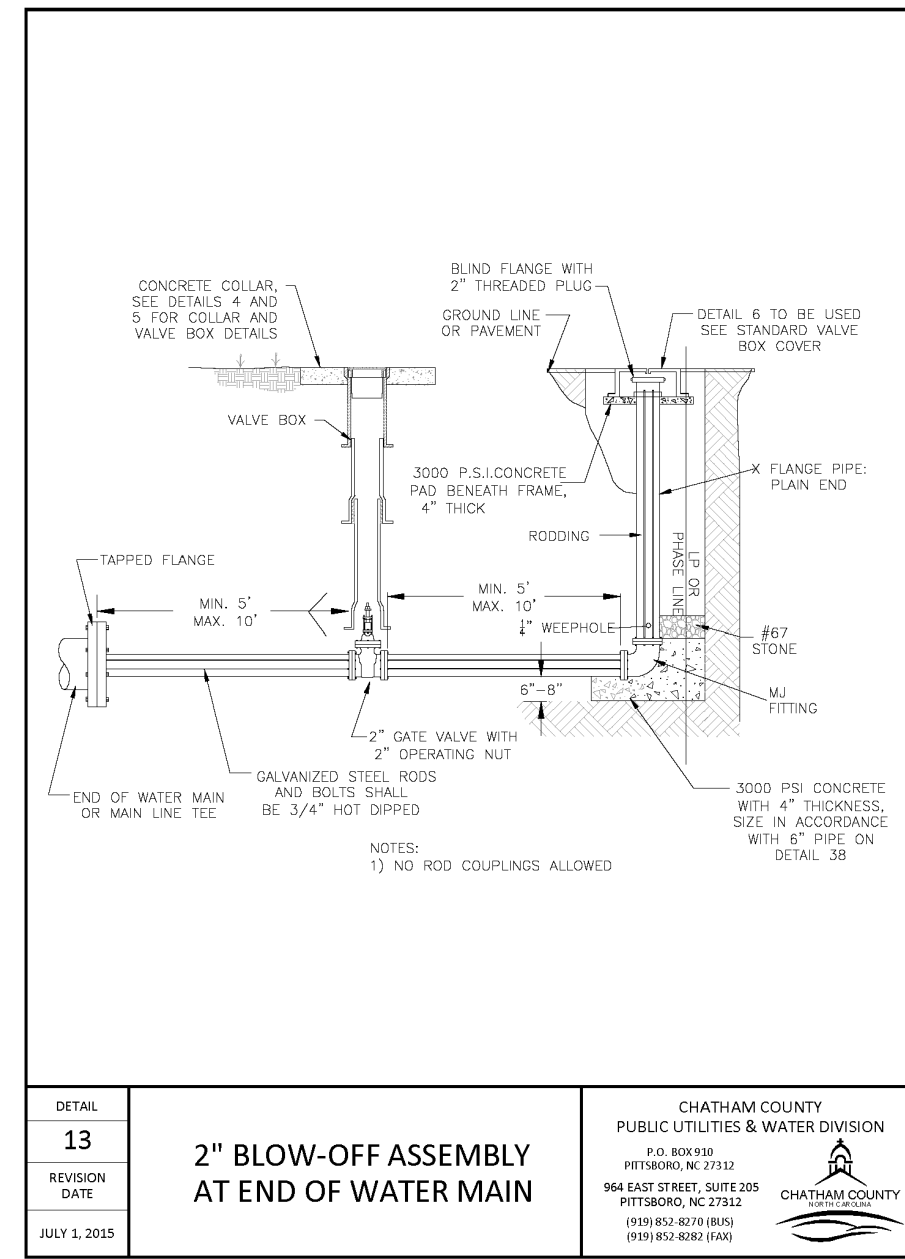
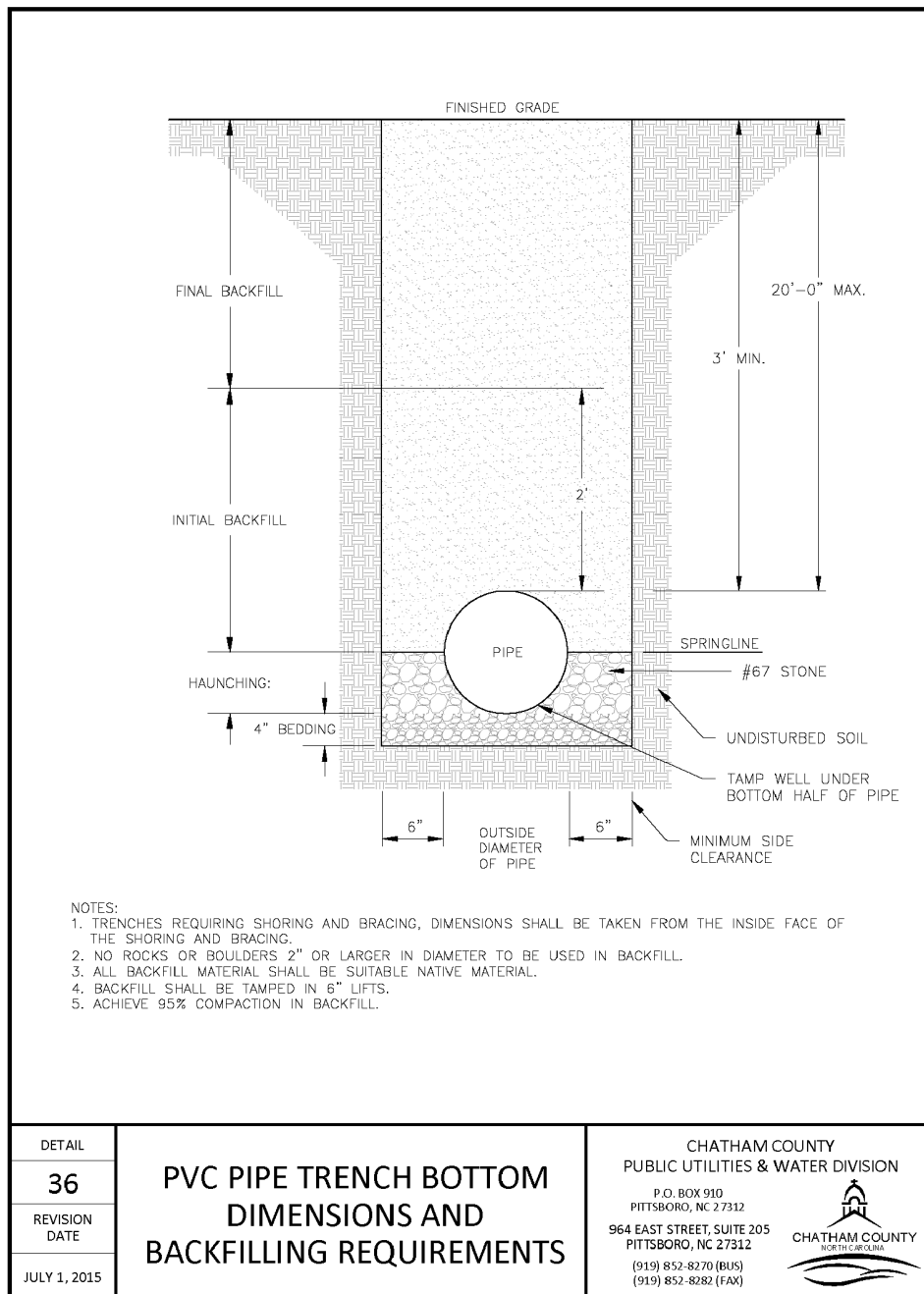
DATE: OCTOBER 23, 2018	SCALE: HORIZONTAL: 1" = 10'	MFC FILE NUMBER: D3.X
MCE PROJ. # 02735-0239	VERTICAL: N/A	DRAWING NUMBER: D3.1
DRAWN: BSS	DESIGNED: BSS	CHECKED: GCA
PROJ. MGR: CHS		
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY	REVISION: 4	

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:

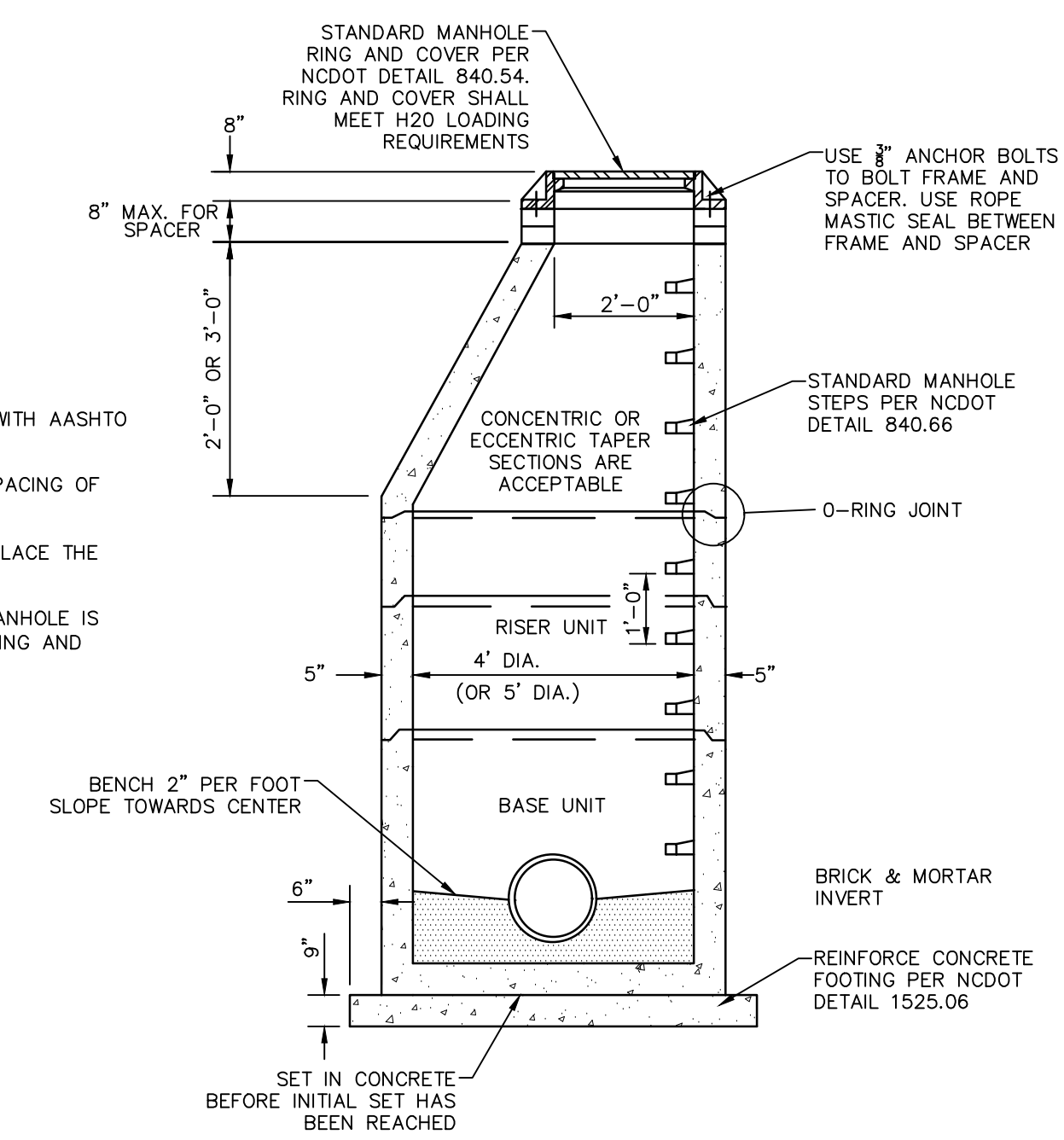
1. TRACER WIRE IS TO BE STANDARD NO. 12 GAUGE COATED COPPER WIRE.
2. LOCATION WIRE CONNECTIONS ARE TO BE A WATER TIGHT CONNECTION USING TWISTER DB PLUS WATERPROOF WIRE CONNECTORS OR AN APPROVED EQUAL.



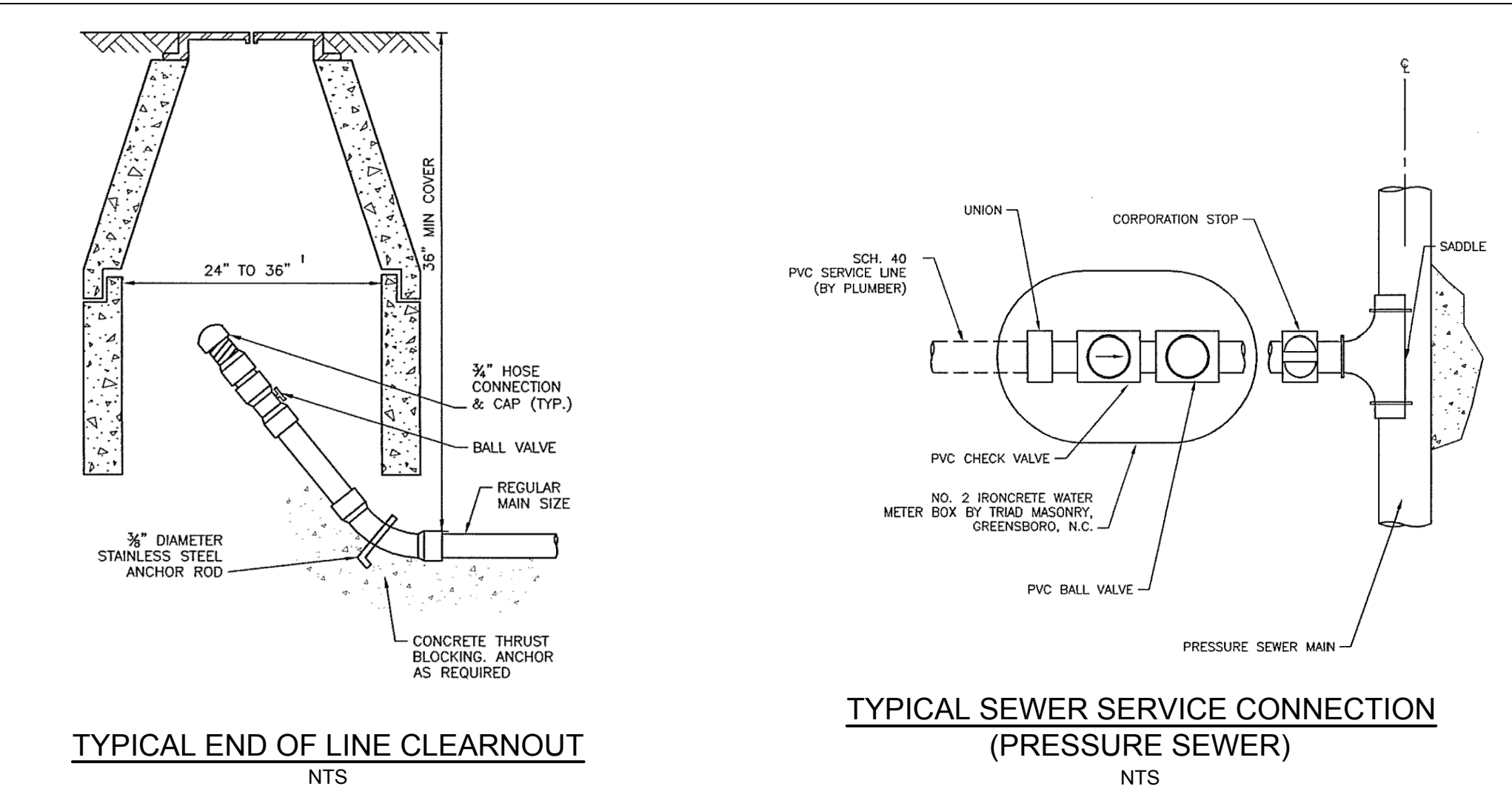
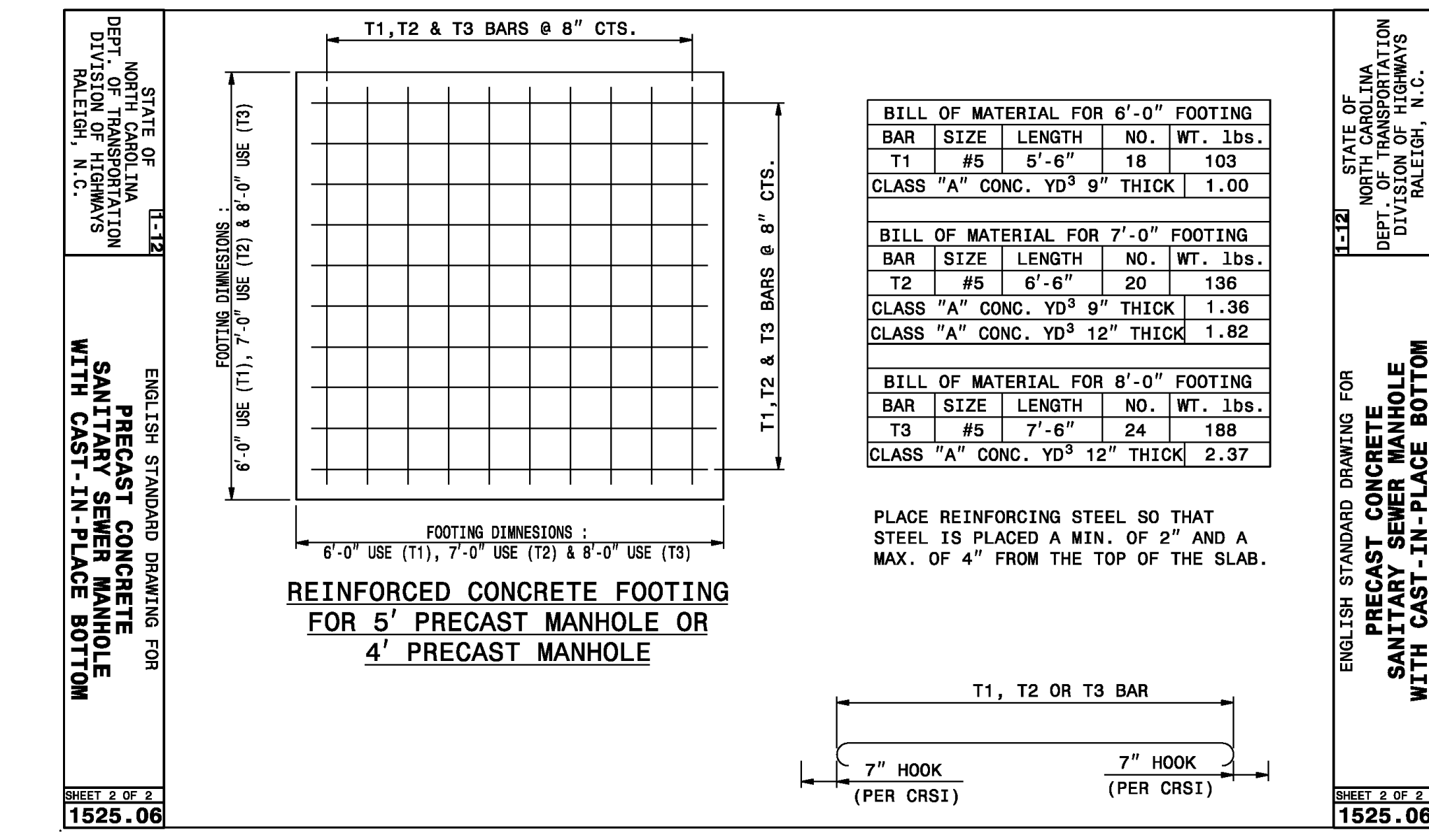
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MANHOLE AND CLEANOUT ARRANGEMENTS AT TYPICAL CHANGES OF DIRECTION IN PRESSURE SEWER LINES
NTS

- 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.

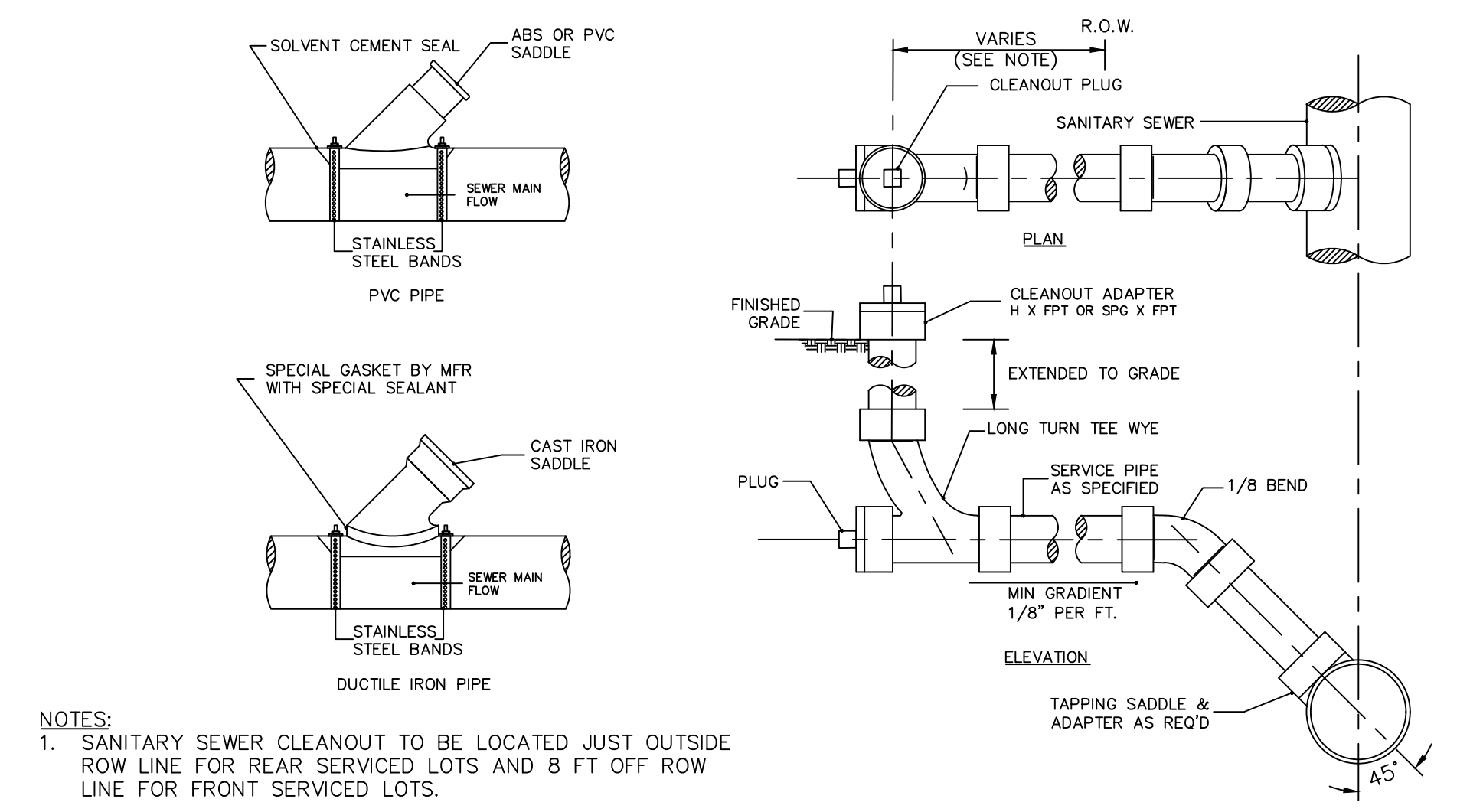


STANDARD SANITARY SEWER PRECAST CONCRETE MANHOLE
NTS

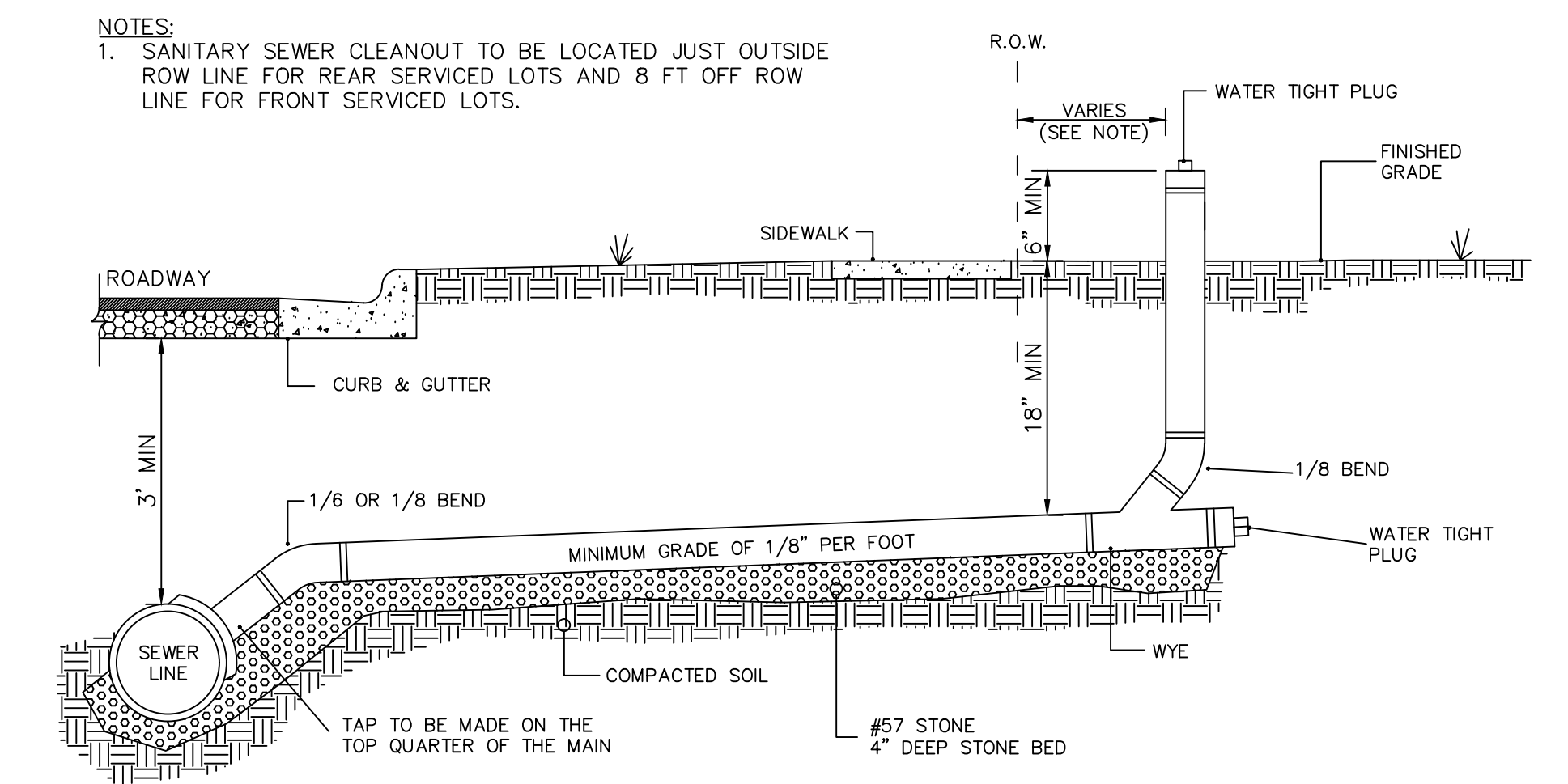


TYPICAL END OF LINE CLEANOUT
NTS

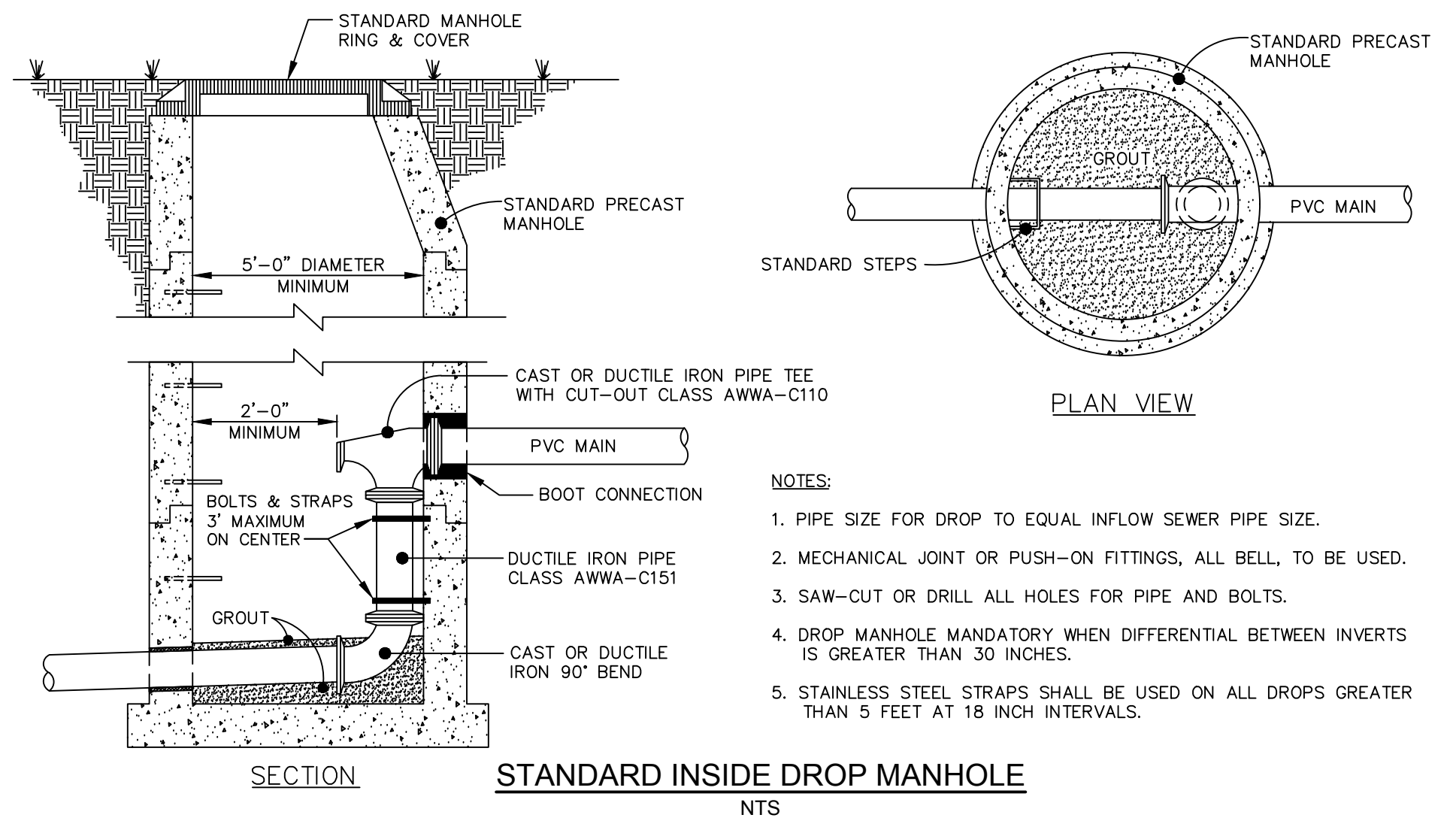
TYPICAL SEWER SERVICE CONNECTION (PRESSURE SEWER)
NTS



SANITARY SEWER SERVICE CONNECTIONS
NTS



STANDARD SANITARY SEWER TAP AND SERVICE
NTS



STANDARD INSIDE DROP MANHOLE
NTS

Professional Engineer Seal for **DAVID CLAYTON**, License No. 1772019, State of North Carolina. The seal is circular with the text 'NORTH CAROLINA PROFESSIONAL ENGINEER' and 'DAVID CLAYTON'.

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DATE: OCTOBER 23, 2018
MCE PROJ. # 02735-0239
DRAWN: BSS
DESIGNED: BSS
CHECKED: GCA
PROJ. MGR: CHS

SCALE: HORIZONTAL: 1" = 100'
VERTICAL: N/A

MFC FILE NUMBER: D3.X
DRAWING NUMBER: D3.2

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 4