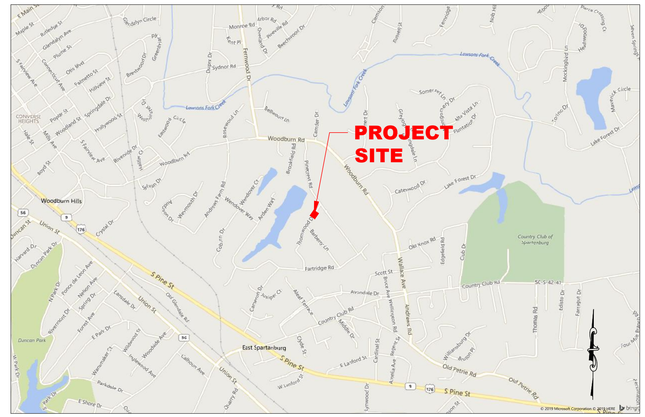
THORNWOOD DRIVE CULVERT REPLACEMENT

FOR

CITY OF SPARTANBURG

SPARTANBURG, SOUTH CAROLINA



LOCATION MAP

SCALE: 1" = 2,000 FT

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WK DICKSON
community infrastructure consultants

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NOTICE TO CONTRACTOR

1. PRIOR TO CONSTRUCTION, DIGGING, OR EXCAVATION THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES (PUBLIC OR PRIVATE) THAT MAY EXIST AND CROSS THROUGH THE AREA(S) OF CONSTRUCTION, WHETHER INDICATED ON THE PLANS OR NOT. CALL "811" A MINIMUM OF 72 HOURS PRIOR TO DIGGING OR EXCAVATING. REPAIRS TO ANY UTILITY DAMAGED RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

811 Know what's below. Call before you dig

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SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 25136
7.1.19
BRYAN E. THOMAS
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REVISION RECORD		
NO.	DATE	DESCRIPTION

BID DOCUMENTS - DO NOT USE FOR CONSTRUCTION

PROJECT NAME: THORNWOOD DRIVE CULVERT REPLACEMENT FOR THE CITY OF SPARTANBURG SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE: COVER SHEET

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

DRAWING NUMBER: 1 OF 9

WKD PROJ. NO.: 20190081.00.CA

LEGEND

EXISTING	LEGEND	PROPOSED
780	5-FOOT CONTOUR	780
779	1-FOOT CONTOUR	779
	SPOT ELEVATION	XX
18" RCP	STORM DRAINAGE PIPE	SD LINE "RCP
	STORM DRAINAGE STRUCTURE	DROP INLET, CURB INLET, JUNCTION BOX, YARD INLET, CATCH BASIN
	RIP RAP	
	FENCE	
	ROADWAY SIGN	
	TREE LINE	
SS	SANITARY SEWER GRAVITY LINE	
	SANITARY SEWER MANHOLE	
	POWER/UTILITY POLE	
	GUY WIRE	
	LIGHT POLE	
	TRANSFORMER	
G	UNDERGROUND GAS LINE	
	GAS VALVE	
OW	OVERHEAD UTILITY LINE	
UP	UNDERGROUND POWER LINE	
UT	UNDERGROUND TELEPHONE/CABLE LINE	
FO	UNDERGROUND FIBER OPTIC LINE	
	TELEPHONE MANHOLE	
	POWER MANHOLE	
IRR	IRRIGATION LINE	
W	WATER LINE	
	WATER VALVE	
	WATER METER	
	WELL	
	FIRE HYDRANT	
TB	TOP OF BANK	
BB	BOTTOM OF BANK	
	PROPERTY LINE	
	ROADWAY CENTERLINE	
	LIMITS OF DISTURBANCE	LOD
	STORM DRAINAGE REMOVAL	18" RCP
	CONCRETE CURB REMOVAL	
	PAVEMENT REMOVAL	
	ASPHALT PAVEMENT	
	CONCRETE SIDEWALK	
	EROSION CONTROL MATTING	
	COMPOST FILTER SOCK CHECK DAM	
	COMPOST FILTER SOCK	
	SEDIMENT TUBE INLET PROTECTION	
	SURFACE DRAINAGE FLOW DIRECTION	S
	SILT FENCE	SF
	DOUBLE ROW SILT FENCE	DSF
	DIVERSION BERM	DB

SCDHEC EROSION AND SEDIMENT CONTROL NOTES:

1. IF NECESSARY, SLOPES, WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.
2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW:
   A. WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.
   B. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.
3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK. IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.
4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.
5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.
7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG. 72-300 ET SEQ. AND SCR100000.
8. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
9. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.
10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.
11. A COPY OF THE SWPPP, INSPECTIONS RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.
12. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.
13. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.
14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE;
15. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.).
16. THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:
   A. WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;
   B. WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;
   C. FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; AND
   D. SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.
17. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.
18. IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.
19. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.

SEQUENCE OF CONSTRUCTION

1. CONDUCT ON-SITE PRE-CONSTRUCTION MEETING.
2. CLEARING AND GRUBBING ONLY AS NECESSARY FOR INSTALLATION OF PERIMETER CONTROLS.
3. INSTALL ALL TEMPORARY EROSION CONTROL MEASURES AND CONTINUE SWPPP INSPECTIONS UNTIL SITE IS PERMANENTLY STABILIZED. EROSION CONTROLS TO BE INSPECTED EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER EACH RAINFALL THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION.
4. COMMENCE CONSTRUCTION ACTIVITIES AS SHOWN IN THE APPROVED PLANS.
5. APPLY TOPSOIL AND INITIATE PERMANENT STABILIZATION MEASURES.
6. UPON COMPLETE STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND REMOVE SEDIMENT BUILDUP FROM THE STORMWATER CONVEYANCE SYSTEM.
7. SUBMIT TO THE ENGINEER AN AS-BUILT FIELD SURVEY BY A REGISTERED LAND SURVEYOR OF ALL STORMWATER IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, PIPES, STRUCTURE LOCATIONS, INVERTS AND RIM ELEVATIONS, CHANNEL/DITCH CROSS SECTIONS TO VERIFY DESIGN CONFORMANCE.

GENERAL NOTES:

1. REFERENCE IS MADE TO THE FOLLOWING:
   A. TOPOGRAPHIC SURVEY PREPARED FOR CITY OF SPARTANBURG BY CITY OF SPARTANBURG PUBLIC SERVICES COMPLETED IN NOVEMBER 19, 2018.
2. ALL ELEVATIONS SHOWN REFER TO NAVD88 DATUM.
3. HORIZONTAL COORDINATES REFER TO NAD 83 SOUTH CAROLINA STATE PLANE COORDINATE SYSTEM.
4. CONTRACTOR IS RESPONSIBLE FOR PREPARING AND OBTAINING APPROVAL OF ALL TRAFFIC CONTROL PLANS AND LAYOUT AS REQUIRED FOR THE DURATION OF THE PROJECT.
5. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. VERIFY ALL FIELD CONDITIONS AND THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING DEMOLITION AND CONSTRUCTION. IF CONDITIONS ARE DIFFERENT FROM THAT SHOWN ON THE PLANS, STOP WORK AND NOTIFY THE ENGINEER.
6. ALL WORK FOR THE PROJECT SHALL CONFORM TO THE PROJECT SPECIFICATIONS FOUND IN THE PROJECT MANUAL (CONTRACT DOCUMENTS AND SPECIFICATIONS).
7. PROMPTLY INFORM THE ENGINEER OF ANY ERROR OR DISCREPANCY DISCOVERED IN THESE DRAWINGS OR SPECIFICATIONS OR CONFLICT BETWEEN THE DRAWINGS OR SPECIFICATIONS.
8. CONTRACTOR IS RESPONSIBLE FOR THE LAYOUT OF THE PROPOSED SITE AND LIMITS OF WORK.
9. ANY UTILITIES OR FACILITIES DAMAGED DURING THE PROJECT BY THE CONTRACTOR'S PERSONNEL OR EQUIPMENT SHALL BE PROMPTLY REPAIRED AT THE CONTRACTOR'S EXPENSE. HAND DIGGING TO PROTECT UTILITIES FROM DAMAGE SHOULD BE ANTICIPATED.
10. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING WORK IN ACCORDANCE WITH THE LATEST REQUIREMENTS AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
11. ALL DEMOLITION DEBRIS, INCLUDING CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS AND SPECIFICATIONS, LATEST REVISION.
12. PROMPTLY INFORM THE ENGINEER OF ANY ERROR OR DISCREPANCIES DISCOVERED IN THE DRAWINGS OR SPECIFICATIONS OR CONFLICTS BETWEEN THE DRAWING AND SPECIFICATIONS IN ORDER FOR CORRECTIONS TO BE MADE.
13. ALL WORK AND MATERIALS MUST CONFORM WITH SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (SCDHEC) AND CITY OF SPARTANBURG REGULATIONS AND SPECIFICATIONS, LATEST REVISIONS AT THE BEGINNING OF CONSTRUCTION.
14. KEEP ALL ADJACENT AREAS TO THE LIMITS OF WORK CLEAN AND FREE OF DEBRIS/MATERIALS/EQUIPMENT AT ALL TIMES.

GRADING AND EROSION CONTROL NOTES:

1. EXISTING UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED PRIOR TO INSTALLATION OF ANY NEW PIPE LINES OR GRADING OPERATIONS.
2. WHEN GRADING BETWEEN CONTOURS AND BETWEEN POINTS OF SPOT ELEVATIONS, GRADE ON A UNIFORM SLOPE. PROPOSED GRADES SHOWN ARE FINAL SURFACE ELEVATIONS.
3. EACH SECTION OF STORM DRAINAGE PIPE SHALL BE LAID TO SPECIFIED GRADE AN LAID UPGRADE.
4. ALL VEGETATION TOPSOIL SHALL BE STRIPPED AND STOCKPILED PRIOR TO PLACING FILL, PROTECT STOCKPILE FROM EROSION.
5. CONTRACTOR SHALL, FOR ALL GRASSED AREAS, BE RESPONSIBLE FOR REPLACING ERODED SOIL AND GRASS SEED UNTIL AN APPROVED STAND OF GRASS IS ESTABLISHED.
6. REMOVE ALL ORGANIC AND UNSUITABLE MATERIAL (MUCK AND/OR NON-COMPACTABLE MATERIAL) FROM AREAS TO BE FILLED.
7. PROPOSED FILL SOILS SHALL BE SUITABLE MATERIAL AND FREE OF ORGANIC MATERIAL, RUBBLE, DEBRIS, AND HIGHLY PLASTIC CLAYS OR SILTS.
8. CONTRACTOR SHALL, BEFORE BEGINNING GRADING WORK ON SITE, STAKE SILT FENCE AND INSTALL ALL PERIMETER EROSION CONTROLS AS SHOWN IN THESE PLANS.
9. CONTRACTOR SHALL BE AWARE OF EXISTING UTILITY LINES DURING PIPE LINE INSTALLATION. CONTRACTOR SHALL NOTIFY UTILITY COMPANIES SUCH AS THE LOCAL ELECTRIC COMPANY, AT&T, ETC. FOR LOCATION OF OTHER UTILITIES NOT SHOWN ON PLAN. CALL PALMETTO UTILITIES PROTECTION SERVICES (SC 811) FOR UNDERGROUND UTILITY LINES LOCATION. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
10. ALL NEWLY CONSTRUCTED SLOPES WHICH ARE STEEPER THAN OR EQUAL TO 2.5 TO 1 MUST BE STABILIZED BY INSTALLATION OF EROSION CONTROL MATTING. OTHER AREAS SUCH AS CHANNEL SIDESLOPES AND SLOPES NEAR SENSITIVE WETLAND AREAS MAY ALSO REQUIRE EROSION CONTROL MATTING WHERE SHOWN ON PLANS. USE NORTH AMERICAN GREEN SC150 OR APPROVED EQUAL. EQUAL PRODUCTS MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
11. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES AS MAY BE REQUIRED TO CONTROL SOIL EROSION DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE SITE IMPROVEMENTS ARE COMPLETED.
12. ALL AREAS OUTSIDE OF THE LIMITS OF WORK WHICH ARE DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE SEEDED AT NO ADDITIONAL EXPENSE TO THE OWNER.
13. INSTALL PERMANENT VEGETATIVE COVER AND THE LONG-TERM EROSION PROTECTION MEASURES OR STRUCTURES AS SOON AS PRACTICAL IN THE DEVELOPMENT PROCESS.
14. ALL DISTURBED AREAS NOT PAVED SHALL BE GRASSED OR LANDSCAPED. USE TEMPORARY PLANT COVER, MULCHING, AND/OR STRUCTURES TO CONTROL RUNOFF AND PROTECT AREA SUBJECT TO EROSION DURING CONSTRUCTION.
15. ALL SEDIMENT AND EROSION CONTROLS ARE TO BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD. MAINTENANCE OF SEDIMENT TRAPPING DEVICES SHALL BE PERFORMED AS NECESSARY PER THESE INSPECTIONS. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY.
16. ADDITIONAL EROSION CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION TO CONTROL EROSION AND/OR OFF SITE SEDIMENTATION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STABILITY OF ALL GRADED AND/OR CLEARED AREAS UNTIL PERMANENT GROUND COVER IS ESTABLISHED. ANY AREAS DAMAGED BY EROSION SHALL BE REPAIRED TO ITS ORIGINAL CONDITION AND PROTECTED FROM FURTHER EROSION AT NO ADDITIONAL COST TO THE OWNER.
17. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETED AND THE SITE STABILIZED.
18. ALL EROSION CONTROL METHODS SHALL BE IN ACCORDANCE WITH "SCDHEC STORM WATER MANAGEMENT & SEDIMENT CONTROL BMP HANDBOOK FOR LAND DISTURBANCE ACTIVITY".
19. ALL DISTURBED AREAS, INCLUDING THE CONTRACTORS STAGING AREA, HAUL ROUTES, GRADING LIMITS, ETC., SHALL BE RESTORED TO A SMOOTH LINE AND GRADE WITH POSITIVE DRAINAGE. THE CONTRACTOR SHALL PERMANENTLY SEED ALL DISTURBED AREAS.
20. CONTRACTORS ARE REQUIRED TO HAVE RAIN GAUGES AT THE CONSTRUCTION SITE AND THE RAIN TOTALS DOCUMENTED FOR REVIEW BY SCDHEC.

14 DAY STABILIZATION CLAUSE

ALL DISTURBED AREAS WHICH ARE TO BE LEFT IDLE FOR A PERIOD OF 14 DAYS OR LONGER ARE TO RECEIVE TEMPORARY VEGETATION OR MULCH.

EROSION CONTROL MAINTENANCE SCHEDULE

ALL SEDIMENT AND EROSION CONTROLS ARE TO BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS. CONTRACTOR TO DOCUMENT WITH SCDHEC APPROVED INSPECTION REPORTS AND LOGGED IN THE PROJECT SWPPP.

BID DOCUMENTS - DO NOT USE FOR CONSTRUCTION

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BRIAN E. THOMAS
7-1-19
PROFESSIONAL SEAL

REVISION RECORD

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:
THORNWOOD DRIVE CULVERT REPLACEMENT
FOR THE
CITY OF SPARTANBURG
SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE:
GENERAL NOTES

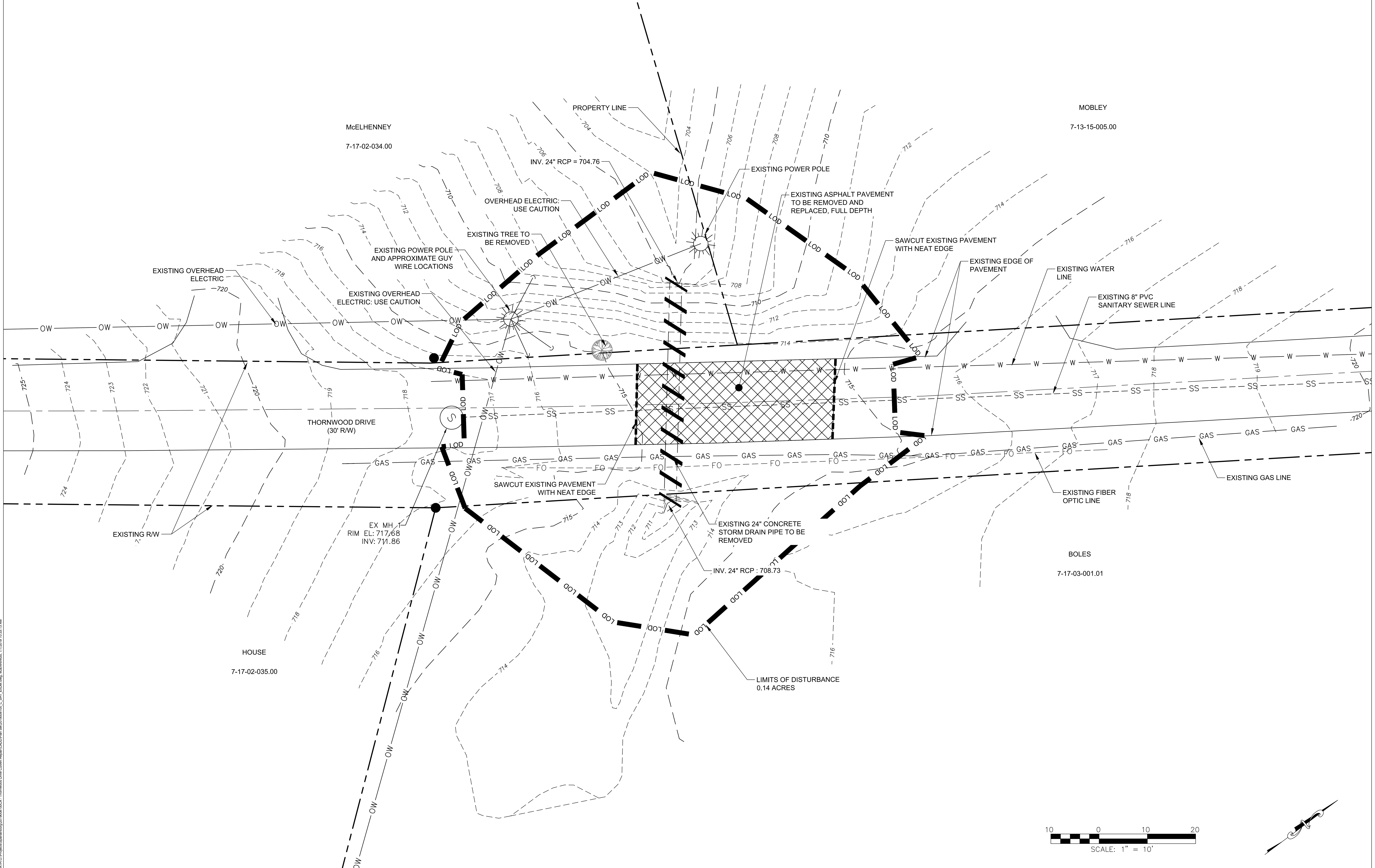
PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

DRAWING NUMBER:
2 OF 9

WKD PROJ. NO.:
20190081.00.CA

NOTES:

1. REFER TO GENERAL NOTES, SHEET 2, FOR ADDITIONAL NOTES.
2. TOTAL PROJECT LIMITS OF DISTURBANCE = 0.14 ACRES.
3. LOCATIONS AND INVERTS OF EXISTING WATER LINES AND SEWER GRAVITY LINES ARE IN APPROXIMATE LOCATIONS BASED OFF FIELD SURVEY. VERIFY ALL FIELD LOCATIONS PRIOR TO BEGINNING DEMOLITION AND CONSTRUCTION ACTIVITIES.
4. EXISTING UTILITIES TO BE PROTECTED DURING ALL DEMOLITION AND CONSTRUCTION ACTIVITIES.
5. STORMWATER FLOW SHALL BE MAINTAINED AT ALL TIMES VIA BYPASS PUMP OPERATIONS, UNTIL NEW SYSTEM IS FULLY INSTALLED.



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NO.	DATE	DESCRIPTION	BY

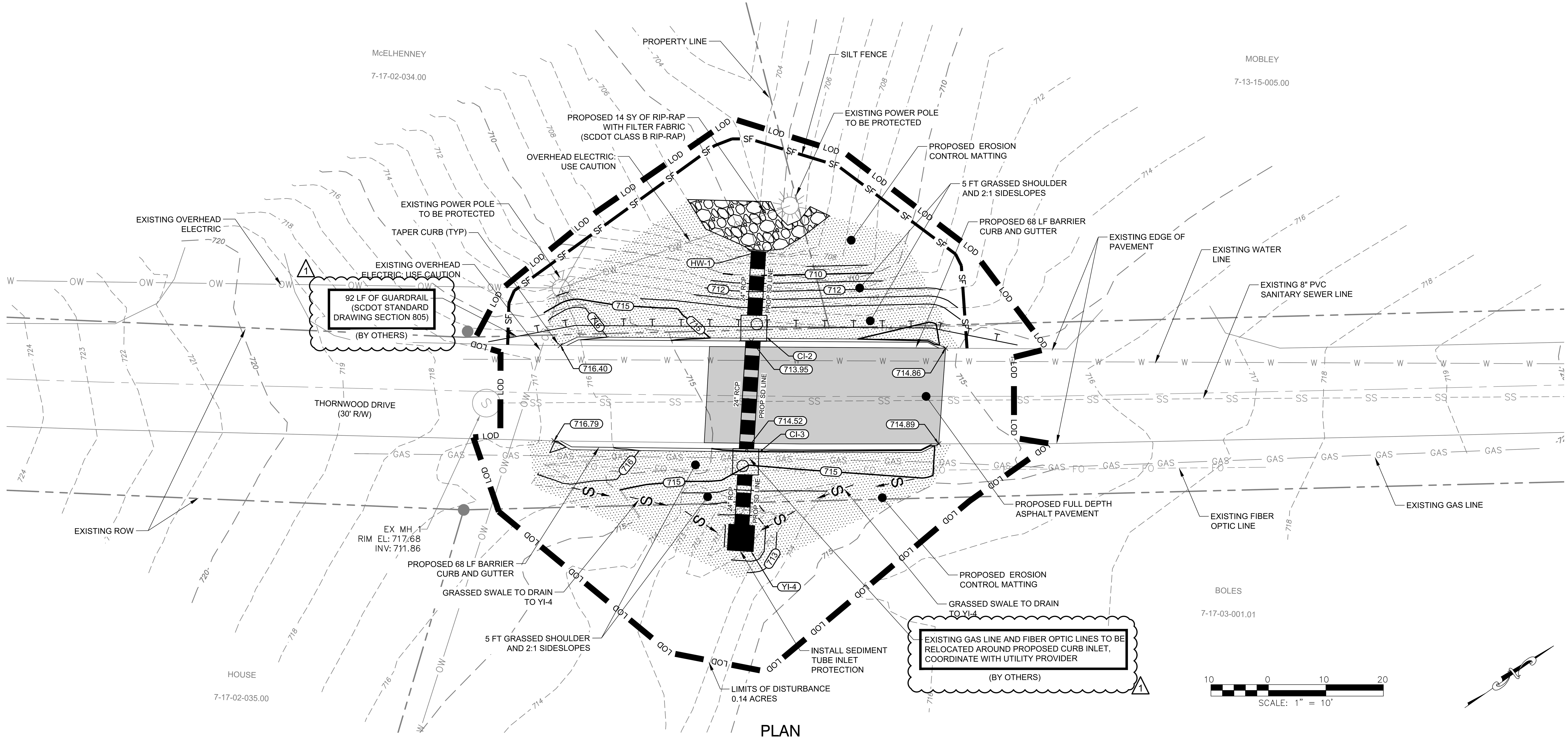
PROJECT NAME:
THORNWOOD DRIVE CULVERT REPLACEMENT
FOR THE
CITY OF SPARTANBURG
SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE:
EXISTING CONDITIONS AND DEMOLITION PLAN

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

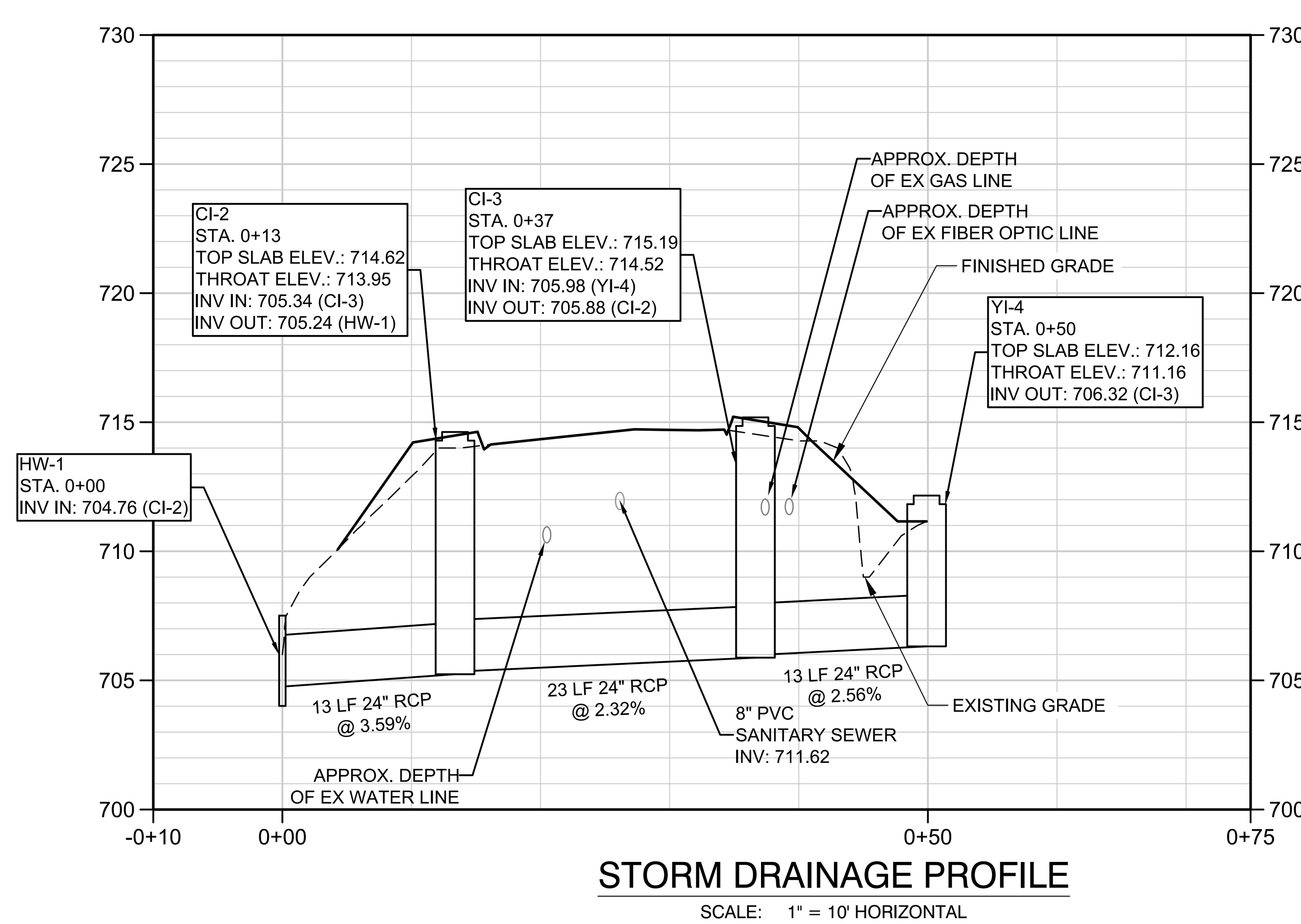
DRAWING NUMBER:

WKD PROJ. NO.:
20190081.00.CA



PLAN

SCALE: 1" = 10' HORIZONTAL



STORM DRAINAGE PROFILE

SCALE: 1" = 10' HORIZONTAL
1" = 5' VERTICAL

NOTES:

1. REFER TO GENERAL NOTES, SHEET 2, FOR ADDITIONAL NOTES.
2. TOTAL PROJECT LIMITS OF DISTURBANCE = 0.14 ACRES.
3. EXISTING UTILITIES TO BE PROTECTED DURING ALL DEMOLITION AND CONSTRUCTION ACTIVITIES.
4. CONTRACTOR TO PROVIDE THE UTILITY PROVIDER WITH A MINIMUM OF FORTY-EIGHT (48) HOURS NOTICE PRIOR TO PERFORMING ANY WORK ON THE PROJECT.
5. ENSURE BEDDING FOR NEW PIPE AND STRUCTURE REMAINS DRY AT ALL TIMES.
6. ALL MANHOLES, INLETS, AND ANY OTHER UTILITY STRUCTURE SHALL BE FIELD ADJUSTED TO MATCH FINISHED GRADE.
7. OWNER IS RESPONSIBLE FOR COORDINATION OF WORK OUTSIDE OF RIGHT OF WAY WITH ADJACENT PROPERTY OWNERS AND ACQUISITION OF EASEMENTS OUTSIDE OF RIGHT OF WAY.

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REVISION RECORD

NO.	DATE	DESCRIPTION	BY
1	09/16/2019	OWNER REVISIONS	MDJ

PROJECT NAME: THORNWOOD DRIVE CULVERT REPLACEMENT FOR THE CITY OF SPARTANBURG, SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE: GRADING, DRAINAGE AND EROSION CONTROL PLAN

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

DRAWING NUMBER: 4 OF 9

WKD PROJ. NO.: 20190081.00.CA

Temporary Seeding - Upstate

Species	lbs./ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Browntop Millet (Alone)	40				X	X	X	X	X				
Browntop Millet (Mix)	10				X	X	X	X	X				
Rye Grain (Alone)	56		X	X						X	X	X	X
Rye Grain (Mix)	10		X	X						X	X	X	X
Rye Grass (Alone)	50									X	X	X	
Rye Grass (Mix)	8									X	X	X	
For Steep Slopes/Cut Slopes													
Weeping Lovegrass (Alone)	4				X	X	X	X					
Weeping Lovegrass (Mix)	2				X	X	X	X					

Permanent Seeding - Upstate

Species	Lbs/Ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bahia Grass (Alone)	40				X	X	X	X					
Bahia Grass (Mix)	30				X	X	X	X					
Bermuda Grass (hulled) (Alone)	8-12					X	X	X	X				
Bermuda Grass (hulled) (Mix)	4-6					X	X	X	X				
Fescue, Tall (KY31) Alone	40									X	X	X	X
Fescue, Tall (KY31) mix	20									X	X	X	X
Sericea Lespedeza (Scarified) Alone or Mix (inoculate with EL Innoculant	40					X	X	X	X				
Ladino Clover (mix only) Innoculate with AB Innoculant	2									X	X	X	X
For Steep Slopes/Cut Slopes													
Weeping Lovegrass (Alone)	4					X	X	X	X				
Weeping Lovegrass (Mix)	2					X	X	X	X				
Crownvetch (Mix) (Inoculate with Type M Innoculant	8-10			X	X	X							

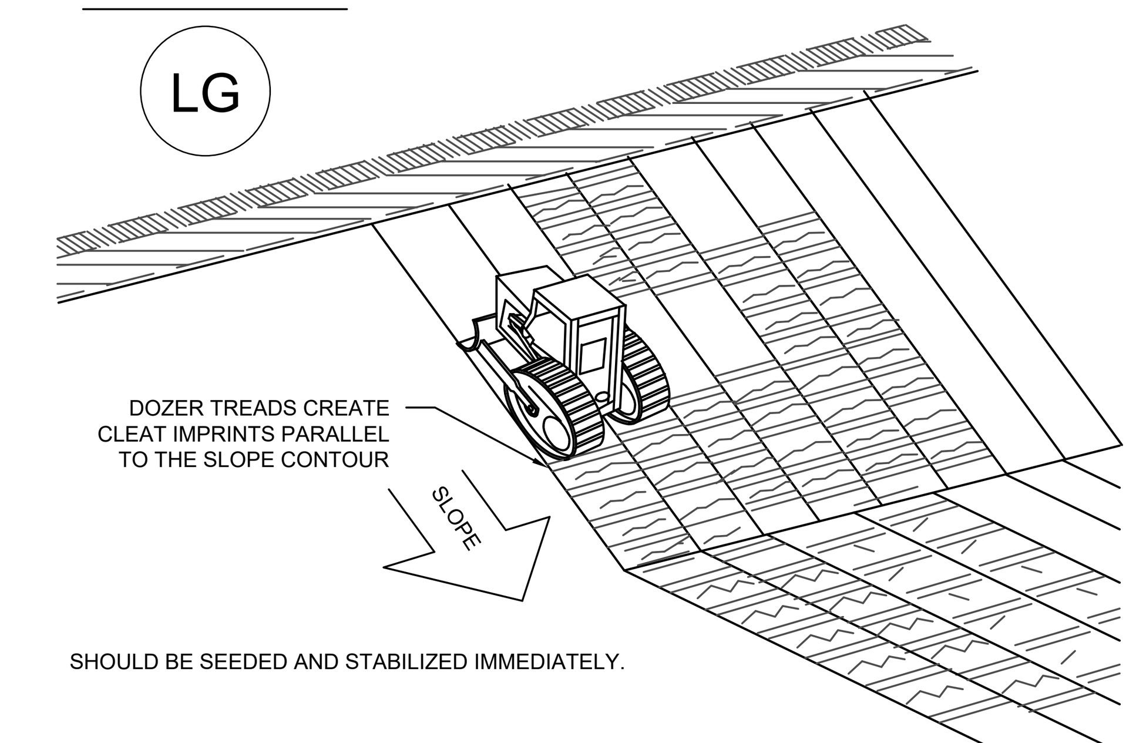
THE CONTRACTOR MAY INCLUDE QUANTITIES OF RYE GRAIN IN SCHEDULE NO. 3 TO ESTABLISH QUICK GROUND COVER FOR EROSION CONTROL PURPOSES.

1. AREAS TO BE GRASSED SHALL BE DEFINED AS ALL AREAS OF SITE WITHIN THE GRADING LIMITS AND NOT OCCUPIED BY PAVING, CRUSHED STONE SURFACING OR STRUCTURES. GRASSING SHALL INCLUDE FINAL SHAPING, LIMING, FERTILIZING AND SEEDING OR SODDING.
2. LIME SHALL BE AGRICULTURAL GRADE, GROUND LIMESTONE. GROUND LIMESTONE SHALL CONTAIN NOT LESS THAN 85% OF CALCIUM CARBONATE CONTENT EQUIVALENT AND SHALL BE SUCH A FINENESS THAT 90% WILL PASS THROUGH A NO. 20 SIEVE AND NOT LESS THAN 50% THROUGH A NO. 100 SIEVE.
3. FERTILIZER SHALL BE GRADE 10-10-10 COMPLETE FERTILIZER OF UNIFORM COMPOSITION, FREE-FLOWING AND SUITABLE FOR APPLICATION WITH EQUIPMENT, DELIVERED TO SITE IN BAGS LABELED WITH MANUFACTURER'S GUARANTEED ANALYSIS, AND SHALL CONFORM TO ALL STATE AND FEDERAL REGULATIONS.
4. SEEDS SHALL BE MIXTURE AS APPROVED BY THE ENGINEER AND SHALL MEET REQUIREMENTS OF SEED LAWS OF THE STATE AND THE U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER FEDERAL SEED ACT IN EFFECT ON DATE BIDS ARE RECEIVED. SEED SHALL BE DELIVERED IN STANDARD CONTAINERS. SEED WHICH HAS BECOME WET, MOLDY OR DAMAGED IN TRANSIT OR STORAGE WILL NOT BE ACCEPTABLE.
5. MULCH SHALL CONSIST OF SMALL GRAIN STRAW OF GOOD QUALITY, CLEAN, FREE OF NOXIOUS WEEDS, AND REASONABLY FREE OF OTHER WEEDS. SPREAD MULCH AT A RATE OF 1 TON PER ACRE ON SLOPES UP TO 8.0 % AND AT A RATE OF 1-1/2 TONS PER ACRE FROM 8.0% UP TO A SLOPE OF 3 TO 1.
6. SPREAD LIME AT A RATE OF 1,000 LBS. PER ACRE.
7. FERTILIZER SHALL BE DISTRIBUTED UNIFORMLY AT A RATE OF 1,000 LBS. PER ACRE AND SHALL BE INCORPORATED INTO SOIL TO A DEPTH OF AT LEAST 2" BY DISKING AND HARROWING.
8. SPREAD SEED AT A RATE AS NOTED ON THE DRAWINGS/SPECIFICATIONS.
9. AREAS THAT REQUIRE RE-FERTILIZATION AND\OR RE-SEEDING WILL BE DESIGNATED BY THE ENGINEER. WHEN ANY PORTION OF SURFACE BECOMES GULLED OR OTHERWISE DAMAGED FOLLOWING SEEDING, OR SEEDLINGS HAVE BEEN WINTER-KILLED OR OTHERWISE DESTROYED, AFFECTED PORTION SHALL BE REPAIRED TO RE-ESTABLISH CONDITION AND GRADE OF SOIL PRIOR TO SEEDLING AND SHALL BE RE-SEEDED AS SPECIFIED ABOVE.
10. ALL DISTURBED AREAS ARE TO BE GRASSED IMMEDIATELY AFTER CONSTRUCTION IN THE AREA. AT NO TIME WILL AN AREA BE LEFT BARE FOR MORE THAN 14 DAYS AFTER COMPLETION OF CONSTRUCTION.
11. PERMANENT GRASS SHALL BE PROVIDED FOR ALL DISTURBED AREAS. SEED SHALL BE A MINIMUM 90% PURITY AND 80% GERMINATION. AREAS TO HAVE GRASS APPLIED SHALL BE SCARIFIED CULTIVATED TO A DEPTH OF 3 INCHES, WITH ALL CLODS OR CLUMPS BROKEN UP AND FOREIGN MATERIAL AND DEBRIS REMOVED. FERTILIZER AND LIME SHALL BE THOROUGHLY WORKED INTO THE SOIL, AND THE SURFACE RAKED SMOOTH BEFORE APPLYING SEED. SEED SHALL BE APPLIED EVENLY AT THE MINIMUM RATE AND RAKED IN LIGHTLY. MULCH SHALL BE APPLIED AT THE RATE AS SPECIFIED ABOVE.
12. CONTRACTOR SHALL WATER AS NEEDED UNTIL GRASS IS ESTABLISHED.
13. ALL DISTURBED AREAS SHALL BE HYDROSEEDED.

GRASS SEEDING NOTE/SCHEDULES

PLAN SYMBOL

LG

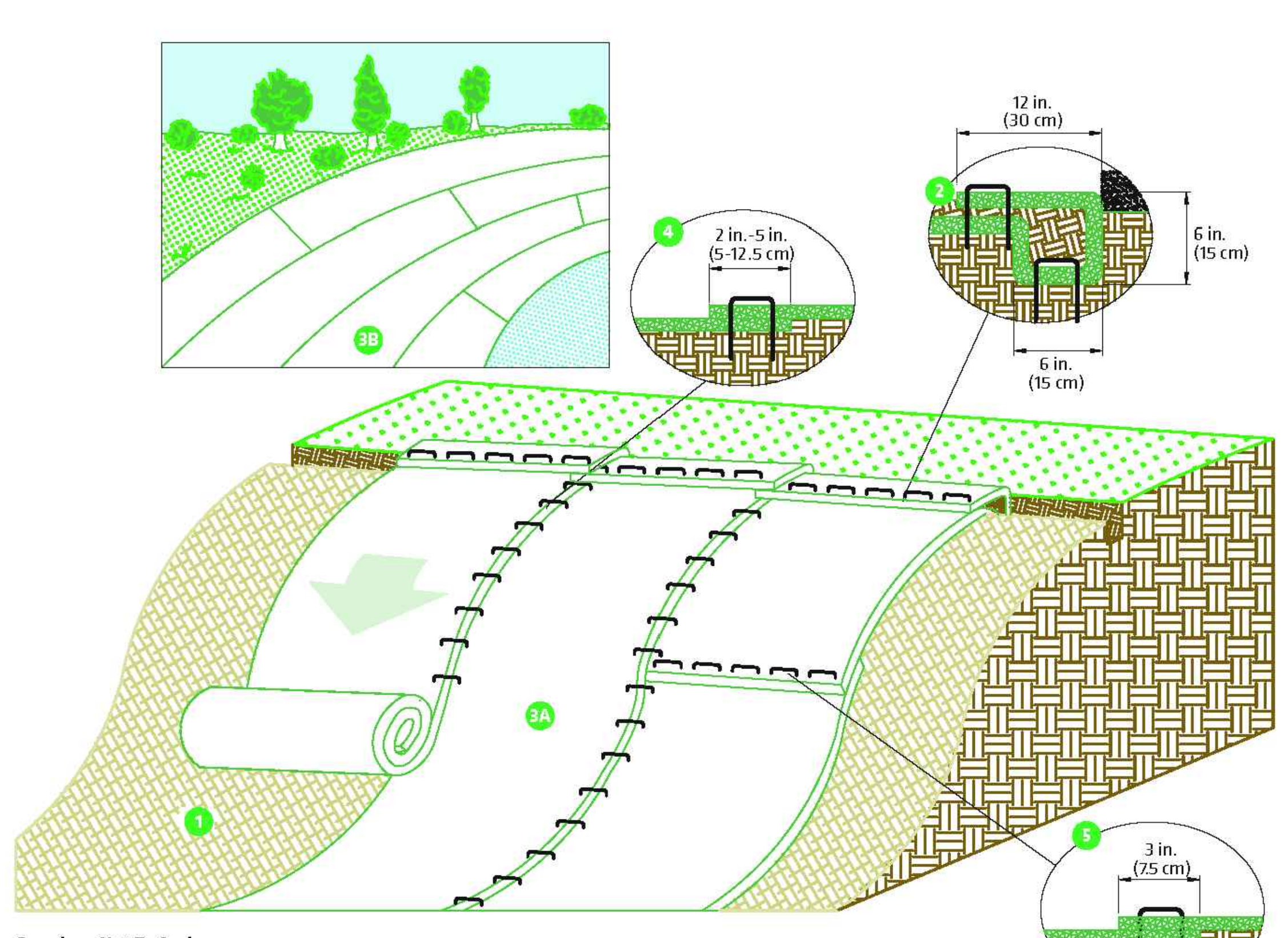


SLOPE TRACKING

NOT TO SCALE

Slope Installation

The following slope guide outlines general recommendations for installing RollMax™ System temporary and/or permanent RECPs on sloping applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the slope severity.



Drawings Not To Scale

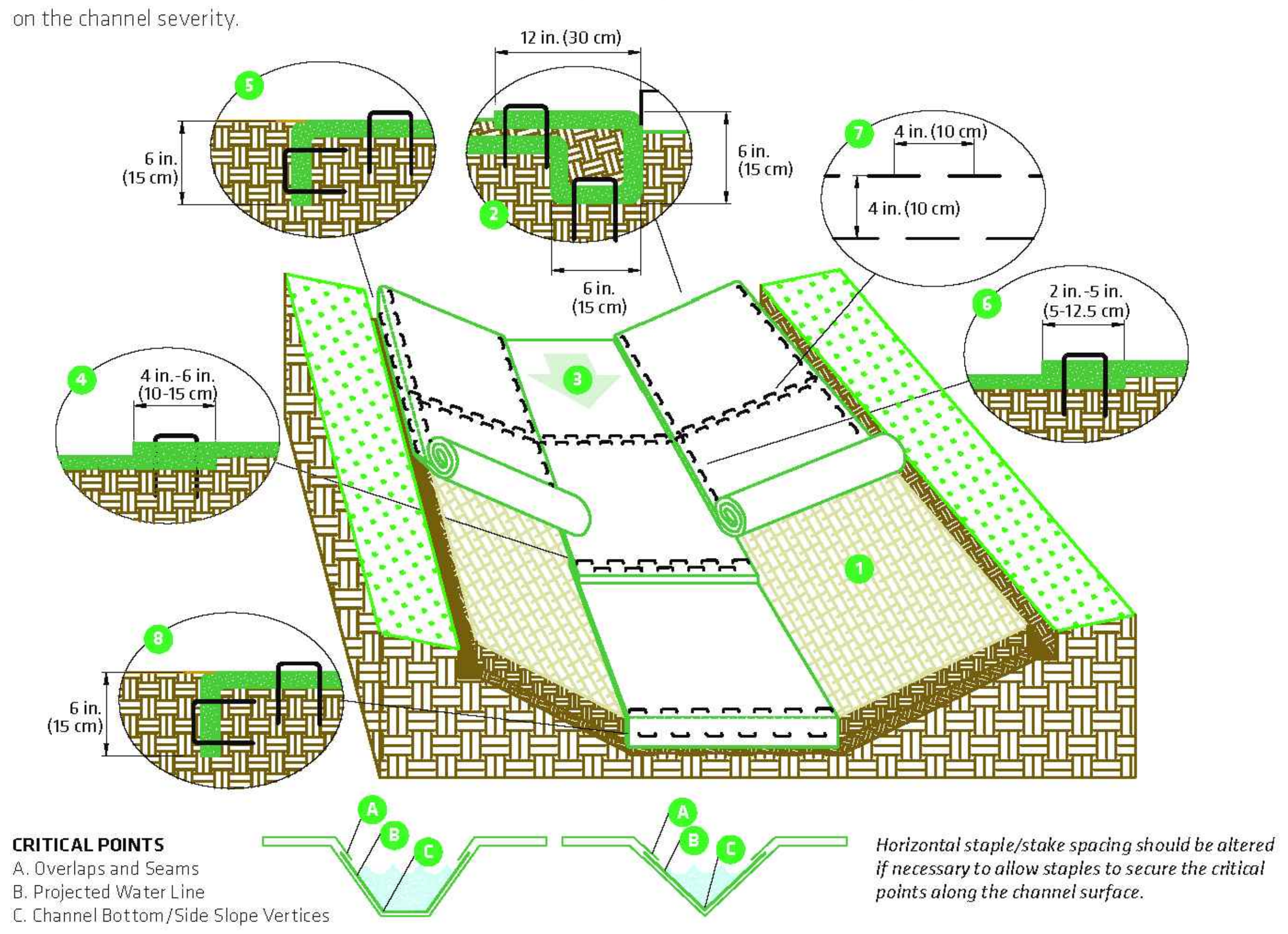
SLOPE INSTALLATION STEPS

1. Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
2. Begin at the top of the slope by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
3. Roll the RECPs (3A) down or (3B) horizontally 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.
4. The edges of parallel RECPs must be stapled with an approximately 2 in.-5 in. (5-12.5 cm) overlap depending on the RECP type.
5. Consecutive RECPs spliced down the slope must be end-over-end (shingle style) with an approximate 3 in. (7.5 cm) overlap. Staple through overlapped area, approximately 12 in. (30 cm) apart across entire RECPs width.*

***NOTE:** In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.*

Channel Installation

The following channel guide outlines general recommendations for installing RollMax System temporary and/or permanent RECPs in concentrated flow applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the channel severity.



CRITICAL POINTS
A. Overlaps and Seams
B. Projected Water Line
C. Channel Bottom/Side Slope Vertices

Horizontal staple/stake spacing should be altered if necessary to allow staples to secure the critical points along the channel surface.

Drawings Not To Scale

CHANNEL INSTALLATION STEPS

1. Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
2. Begin at the top of the channel by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. For supplemental scour protection, use RevetMax™ System ShoreMax® Mat at the channel/culvert outlet as needed. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
3. Roll center RECPs in direction of water flow in bottom of channel. 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.
4. Place consecutive RECPs end-over-end (shingle style) with a 4 in.-6 in. (10-15 cm) overlap. Use a double row of staples staggered 4 in. (10 cm) apart and 4 in. (10 cm) on center to secure RECPs.
5. Full-length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.
6. Adjacent RECPs must be overlapped approximately 2 in.-5 in. (5-12.5 cm) (depending on RECP type) and stapled.*
7. In high flow channel applications a staple check slot is recommended at 30 to 40 ft (9-12 m) intervals. Use a double row of staples staggered 4 in. (10 cm) apart and 4 in. (10 cm) on center over entire width of the channel.
8. The terminal end of the RECPs must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.

***NOTE:** In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.*

Installation Made Easy

When under the pressure of severe conditions, even the best erosion control products can't function to their full potential without proper installation and anchoring. North American Green supplies a wide variety of fastener options for nearly every application and soil type.

For use in cohesive soils, wire staples are a cost-effective means to fasten RollMax™ System Rolled Erosion Control Products (RECPs). Available in 6 in., 8 in., 10 in. and 12 in. lengths, our U-shaped staples reach various depths to ensure adequate pull-out resistance. For installation using our handy Pin Pounder installation tool, 6 in. V-top staples or 6 in. circle top pins are available.

Our biodegradable BioStakes® are available in 4 in. and 6 in. lengths and provide an environmentally friendly alternative to metal staples. For an even more durable, deeper reaching yet all-natural anchoring option, our wood EcoStakes® are available in 6 in., 12 in., 18 in. and 24 in. lengths.

For severe applications needing the ultimate, long-lasting hold, try our 12 in. and 18 in. rebar staples, our 12 in. plastic ShoreMax® stakes, or our complete line of percussion earth anchors. The earth anchors reach deep into the soil strata to offer enhanced anchoring in the worst conditions. Our variety of earth anchors are designed for durability and holding power under extreme hydraulic stresses and adverse soil conditions.

STAPLE PATTERNS

Proper staple patterns must be used to achieve optimal results in RECP installation. We recommend the following general stapling patterns as guidance for use with our RECPs as seen in (Figure 1). Site-specific staple pattern recommendations based on soil type and severity of application may be acquired through our Erosion Control Materials Design Software (ECMDS®), **www.ecmds.com**.

STAPLE PATTERN GUIDE

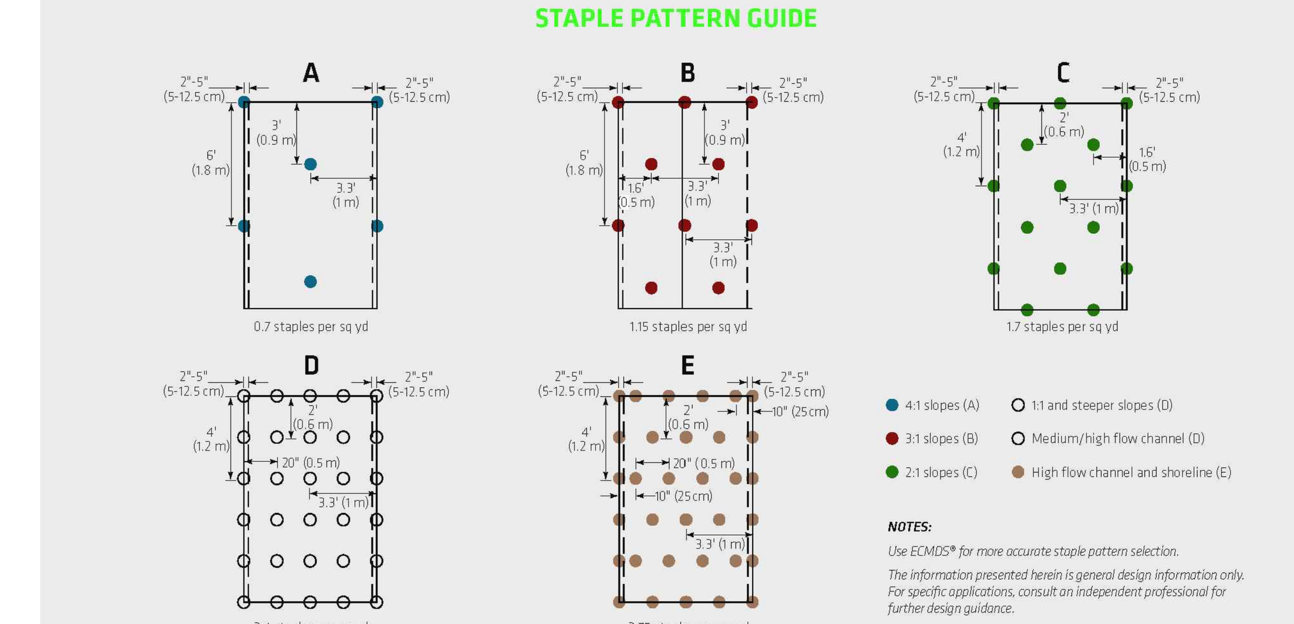


FIGURE 1

EROSION CONTROL MATTING

NOT TO SCALE

NOTES:

1. THE SLOPE AND/OR CHANNEL SHALL BE PREPARED (GRADED, TILLED, SMOOTHED, ETC.).
2. REMOVE ALL ROCKS, CLODS, VEGETATION AND OBSTRUCTIONS SO THAT MATTING WILL HAVE DIRECT CONTACT WITH THE SOIL.
3. PREPARE SEEDBED BY LOOSENING 3 TO 4 INCHES OF TOPSOIL ABOVE FINAL GRADE.
4. APPLY SEEDING TO THE SOIL PRIOR TO PLACEMENT OF MATTING.
5. CONTRACTOR SHALL USE NORTH AMERICAN GREEN ROLLMAX SC150 EROSION CONTROL BLANKETS OR APPROVED EQUAL WHERE CHANNEL PROTECTION/EROSION CONTROL MATTING IS SPECIFIED ON THE PLANS. INSTALL PRODUCT ACCORDING TO MANUFACTURERS SPECIFICATIONS, LATEST REVISION.

EROSION CONTROL MATTING - MAINTENANCE NOTES:

1. INSPECT AREAS PROTECTED BY ECBS FOR DISLOCATION OR FAILURE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH STORM THAT PRODUCES $\frac{1}{2}$-INCH OR MORE OF RAIN.
2. CONDUCT REGULAR INSPECTIONS UNTIL GRASSES ARE FIRMLY ESTABLISHED.
3. ADHERE TO THE PINNING OR STAPLING PATTERN AS SHOWN ON THE MANUFACTURER'S INSTALLATION SHEET. IF THERE IS EVIDENCE THE THE ECB IS NOT SECURELY FASTENED TO THE SOIL, REQUIRE EXTRA PINS OR STAPLES TO INHIBIT THE ECB FROM BECOMING DISLODGED.
4. IF WASHOUT OR BREAKAGE OCCURS, REPAIR ALL DAMAGED AREAS IMMEDIATELY BY RESTORING THE SOIL ON THE SLOPES OR CHANNELS TO ITS FINISHED GRADE, RE-APPLY FERTILIZER AND SEED, AND REPLACING THE APPROPRIATE ECB MATERIAL AS NEEDED.

BID DOCUMENTS - DO NOT USE FOR CONSTRUCTION

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W. K. DICKSON & COMPANY, INC.
No. C00177
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SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No. 25136
BRIAN E. THOMAS
PROFESSIONAL SEAL

REVISION RECORD

NO.	DATE	DESCRIPTION	BY

PROJECT NAME: THORNWOOD DRIVE CULVERT REPLACEMENT FOR THE CITY OF SPARTANBURG SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE: EROSION CONTROL DETAILS (1 OF 2)

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

DRAWING NUMBER:

WKD PROJ. NO.:
20190081.00.CA

SILT FENCE - POST REQUIREMENTS

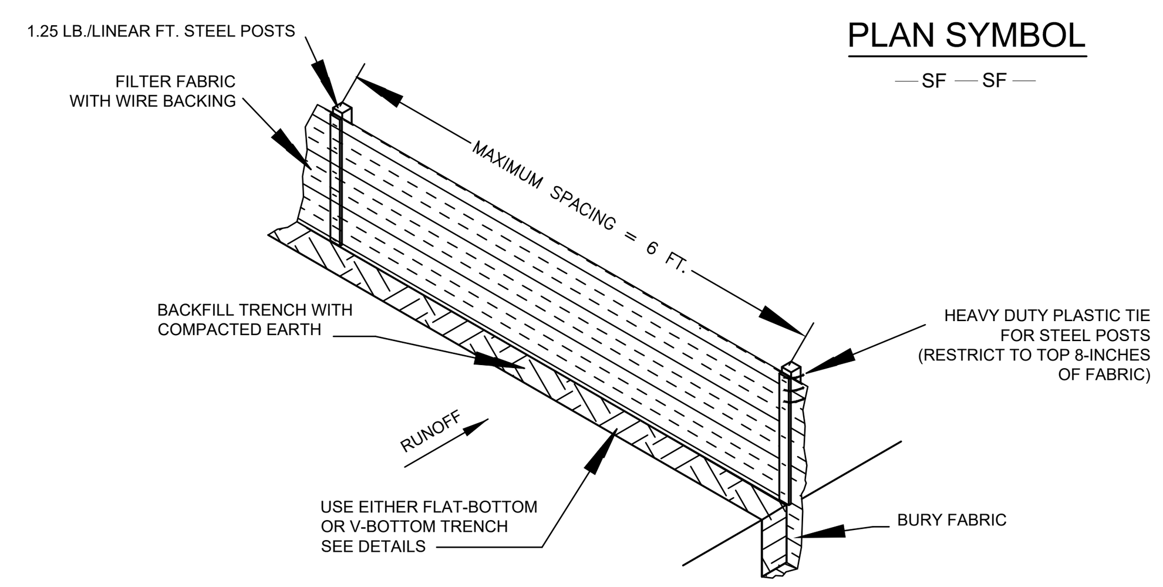
1. SILT FENCE POSTS MUST BE 48-INCH LONG STEEL POSTS THAT MEET, AT A MINIMUM, THE FOLLOWING PHYSICAL CHARACTERISTICS.
- COMPOSED OF A HIGH STRENGTH STEEL WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI.
- INCLUDE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND A NOMINAL "T" LENGTH OF 1.48-INCHES.
- WEIGH 1.25 POUNDS PER FOOT (± 8%)

2. POSTS SHALL BE EQUIPPED WITH PROJECTIONS TO AID IN FASTENING OF FILTER FABRIC.
3. STEEL POSTS MAY NEED TO HAVE A METAL SOIL STABILIZATION PLATE WELDED NEAR THE BOTTOM WHEN INSTALLED ALONG STEEP SLOPES OR INSTALLED IN LOOSE SOILS. THE PLATE SHOULD HAVE A MINIMUM CROSS SECTION OF 17-SQUARE INCHES AND BE COMPOSED OF 15 GAUGE STEEL, AT A MINIMUM. THE METAL SOIL STABILIZATION PLATE SHOULD BE COMPLETELY BURIED.
4. INSTALL POSTS TO A MINIMUM OF 24-INCHES. A MINIMUM HEIGHT OF 1- TO 2- INCHES ABOVE THE FABRIC SHALL BE MAINTAINED, AND A MAXIMUM HEIGHT OF 3 FEET SHALL BE MAINTAINED ABOVE THE GROUND.
5. POST SPACING SHALL BE AT A MAXIMUM OF 6-FEET ON CENTER.

SILT FENCE - INSPECTION & MAINTENANCE

1. THE KEY TO FUNCTIONAL SILT FENCE IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.
2. REGULAR INSPECTIONS OF SILT FENCE SHALL BE CONDUCTED ONCE EVERY CALENDAR WEEK AND, AS RECOMMENDED, WITHIN 24-HOURS AFTER EACH RAINFALL EVEN THAT PRODUCES 1/2-INCH OR MORE OF PRECIPITATION.
3. ATTENTION TO SEDIMENT ACCUMULATIONS ALONG THE SILT FENCE IS EXTREMELY IMPORTANT. ACCUMULATED SEDIMENT SHOULD BE CONTINUALLY MONITORED AND REMOVED WHEN NECESSARY.
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/3 THE HEIGHT OF THE SILT FENCE.
5. REMOVED SEDIMENT SHALL BE PLACED IN STOCKPILE STORAGE AREAS OR SPREAD THINLY ACROSS DISTURBED AREA. STABILIZE THE REMOVED SEDIMENT AFTER IT IS RELOCATED.
6. CHECK FOR AREAS WHERE STORMWATER RUNOFF HAS ERODED A CHANNEL BENEATH THE SILT FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED DUE TO RUNOFF OVERTOPPING THE SILT FENCE. INSTALL CHECKS/TIE-BACKS AND/OR REINSTALL SILT FENCE, AS NECESSARY.
7. CHECK FOR TEARS WITHIN THE SILT FENCE, AREAS WHERE SILT FENCE HAS BEGUN TO DECOMPOSE, AND FOR ANY OTHER CIRCUMSTANCE THAT MAY RENDER THE SILT FENCE INEFFECTIVE. REMOVED DAMAGED SILT FENCE AND REINSTALL NEW SILT FENCE IMMEDIATELY.
8. SILT FENCE SHOULD BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED AND ONCE IT IS REMOVED, THE RESULTING DISTURBED AREA SHALL BE PERMANENTLY STABILIZED.

SILT FENCE INSTALLATION



PLAN SYMBOL

— SF — SF —

SILT FENCE - FABRIC REQUIREMENTS

1. SILT FENCE MUST BE COMPOSED OF WOVEN GEOTEXTILE FILTER FABRIC THAT CONSISTS OF THE FOLLOWING REQUIREMENTS:
- COMPOSED OF FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS OF AT LEAST 85% BY WEIGHT OF POLYOLEFINS, POLYESTERS, OR POLYAMIDES THAT ARE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER;
- FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS PHYSICAL PROPERTIES AFTER INSTALLATION;
- FREE OF ANY DEFECTS OR FLAWS THAT SIGNIFICANTLY AFFECT ITS PHYSICAL AND/OR FILTERING PROPERTIES; AND,
- HAVE A MINIMUM WIDTH OF 36-INCHES.

2. USE ONLY FABRIC APPEARING ON SC DOT'S QUALIFIED PRODUCTS LISTING (QPL), APPROVAL SHEET #34, MEETING THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE SC DOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
3. 12-INCHES OF THE FABRIC SHOULD BE PLACED WITHIN EXCAVATED TRENCH AND TOED IN WHEN THE TRENCH IS BACKFILLED.
4. FILTER FABRIC SHALL BE PURCHASED IN CONTINUOUS ROLLS AND CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS.
5. FILTER FABRIC SHALL BE INSTALLED AT A MINIMUM OF 24-INCHES ABOVE THE GROUND.

SILT FENCE - GENERAL NOTES

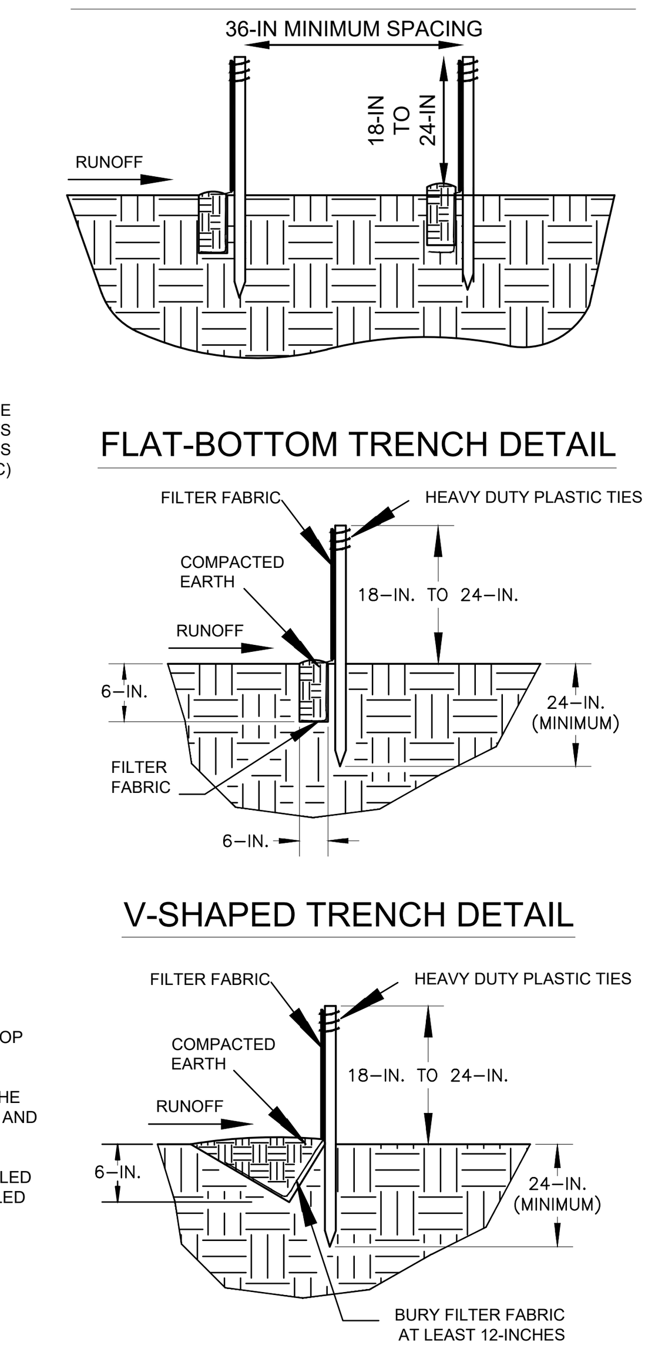
1. DO NOT PLACE SILT FENCE ACROSS CHANNELS OR IN OTHER AREAS SUBJECT TO CONCENTRATED FLOWS. SILT FENCE SHOULD NOT BE USED AS A VELOCITY CONTROL BMP. CONCENTRATED FLOWS ARE ANY FLOWS GREATER THAN 0.5 CFS.
2. MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE SILT FENCE SHALL BE 100-FEET.
3. MAXIMUM SLOPE STEEPNESS (NORMAL [PERPENDICULAR] TO THE FENCE LINE) SHALL BE 2:1.
4. SILT FENCE JOINTS, WHEN NECESSARY, SHALL BE COMPLETED BY ONE OF THE FOLLOWING OPTIONS:
- WRAP EACH FABRIC TOGETHER AT A SUPPORT POST WITH BOTH ENDS FASTENED TO THE POST, WITH A 1-FOOT MINIMUM OVERLAP;
- OVERLAP SILT FENCE BY INSTALLING 3-FEET PASSED THE SUPPORT POST TO WHICH THE NEW SILT FENCE ROLL IS ATTACHED. ATTACH OLD ROLL TO NEW ROLL WITH HEAVY-DUTY PLASTIC TIES; OR,
- OVERLAP ENTIRE WIDTH OF EACH SILT FENCE ROLL FROM ONE SUPPORT POST TO THE NEXT SUPPORT POST.

5. ATTACH FILTER FABRIC TO THE STEEL POSTS USING HEAVY-DUTY PLASTIC TIES THAT ARE EVENLY SPACED WITHIN THE TOP 8-INCHES OF THE FABRIC.
6. INSTALL THE SILT FENCE PERPENDICULAR TO THE DIRECTION OF THE STORMWATER FLOW AND PLACE THE SILT FENCE THE PROPER DISTANCE FROM THE TOE OF STEEP SLOPES TO PROVIDE SEDIMENT STORAGE AND ACCESS FOR MAINTENANCE AND CLEANOUT.
7. INSTALL SILT FENCE CHECKS (TIE-BACKS) EVERY 50-100 FEET, DEPENDENT ON SLOPE, ALONG SILT FENCE THAT IS INSTALLED WITH SLOPE AND WHERE CONCENTRATED FLOWS ARE EXPECTED OR ARE DOCUMENTED ALONG THE PROPOSED/INSTALLED SILT FENCE.

DOUBLE ROW SILT FENCE DETAIL

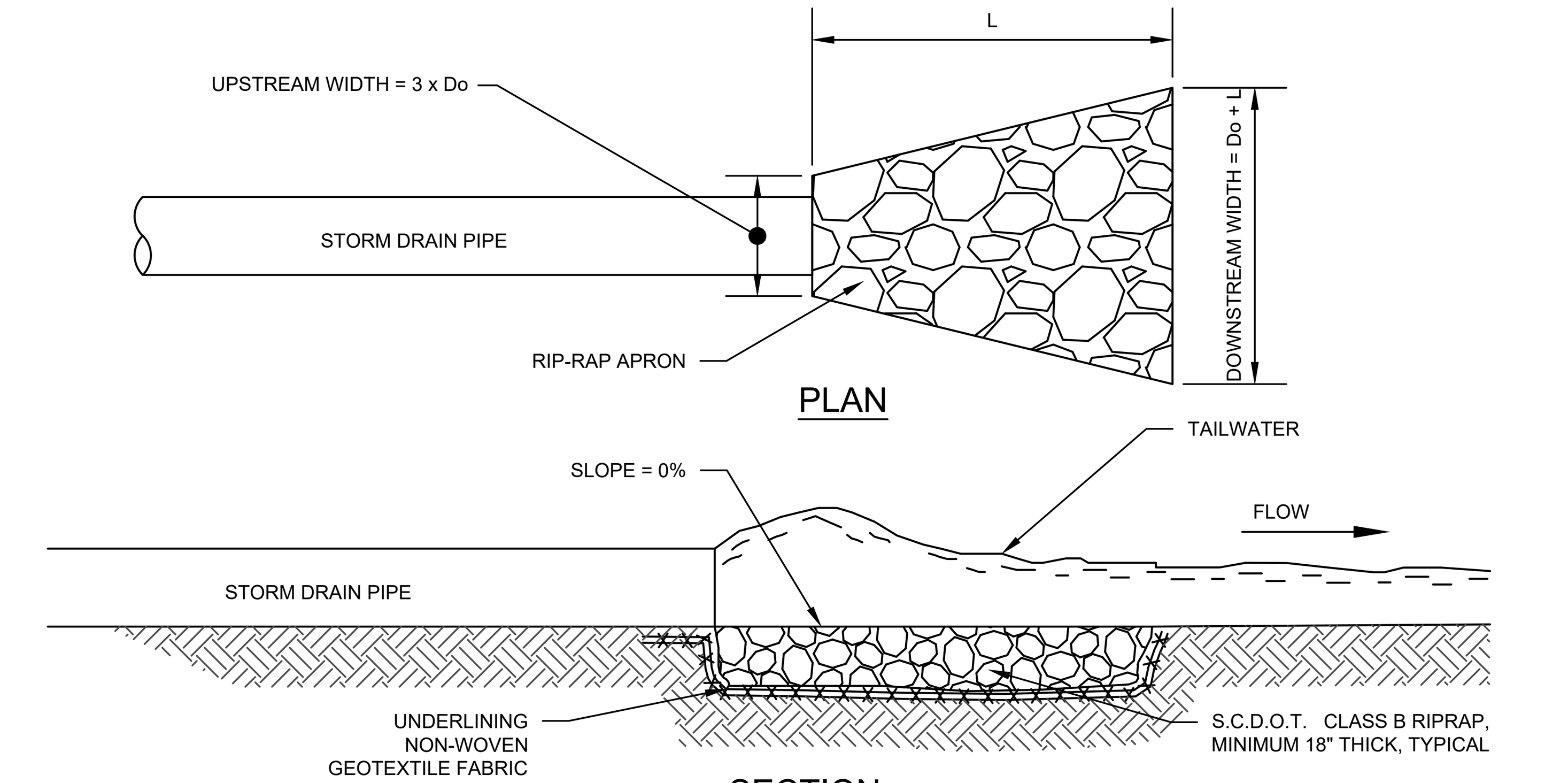
FLAT-BOTTOM TRENCH DETAIL

V-SHAPED TRENCH DETAIL



SILT FENCE

NOT TO SCALE



NOTES

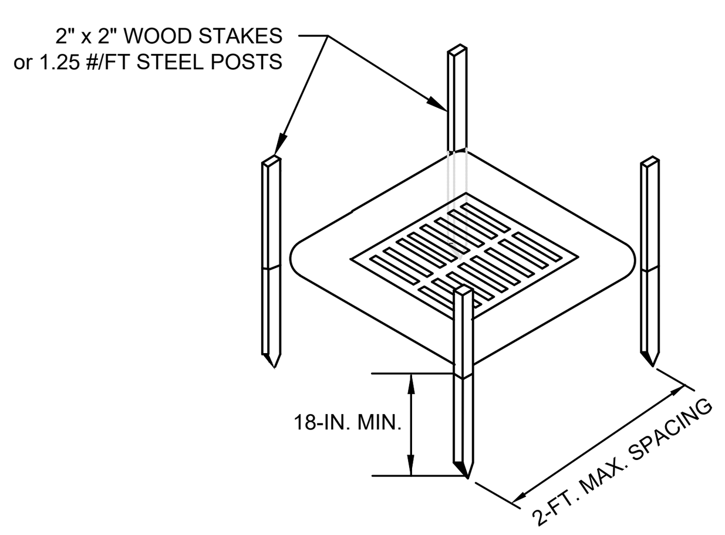
1. ENSURE THAT THE SUBGRADE FOR THE FILTER AND RIPRAP FOLLOWS THE REQUIRED LINES AND GRADES SHOWN IN THE PLAN. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL. LOW AREAS IN THE SUBGRADE ON UNDISTURBED SOIL MAY ALSO BE FILLED BY INCREASING THE RIPRAP THICKNESS.
2. THE RIPRAP AND GRAVEL FILTER MUST CONFORM TO THE SPECIFIED GRADING LIMITS SHOWN ON THE PLANS.
3. FILTER CLOTH, WHEN USED, MUST MEET DESIGN REQUIREMENTS AND BE PROPERLY PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING THE RIPRAP AND PLACING ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA. ALL CONNECTING JOINTS SHOULD OVERLAP A MINIMUM OF 1 FT. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE FILTER CLOTH.
4. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT TAKE CARE TO AVOID DAMAGING THE FILTER.
5. THE MINIMUM THICKNESS OF THE RIPRAP SHOULD BE 1.5 TIMES THE MAXIMUM STONE DIAMETER.
6. RIPRAP MAY BE FIELD STONE OR ROUGH QUARRY STONE. IT SHOULD BE HARD, ANGULAR, HIGHLY WEATHER-RESISTANT AND WELL GRADED.
7. CONSTRUCT THE APRON GRADE AS SHOWN ON PLAN WITH NO OVER FALL AT THE END. MAKE THE TOP OF THE RIPRAP AT THE DOWNSTREAM END LEVEL WITH THE RECEIVING AREA OR SLIGHTLY BELOW IT.
8. ENSURE THAT THE APRON IS PROPERLY ALIGNED WITH THE RECEIVING STREAM AND PREFERABLY STRAIGHT THROUGHOUT ITS LENGTH.
9. IMMEDIATELY AFTER CONSTRUCTION, STABILIZE ALL DISTURBED AREAS WITH VEGETATION.

MAINTENANCE

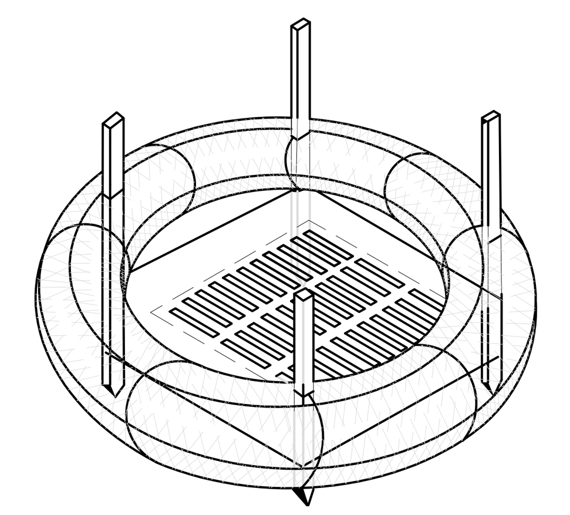
RIPRAP OUTLET STRUCTURES SHALL BE INSPECTED ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

RIP-RAP OUTLET PROTECTION

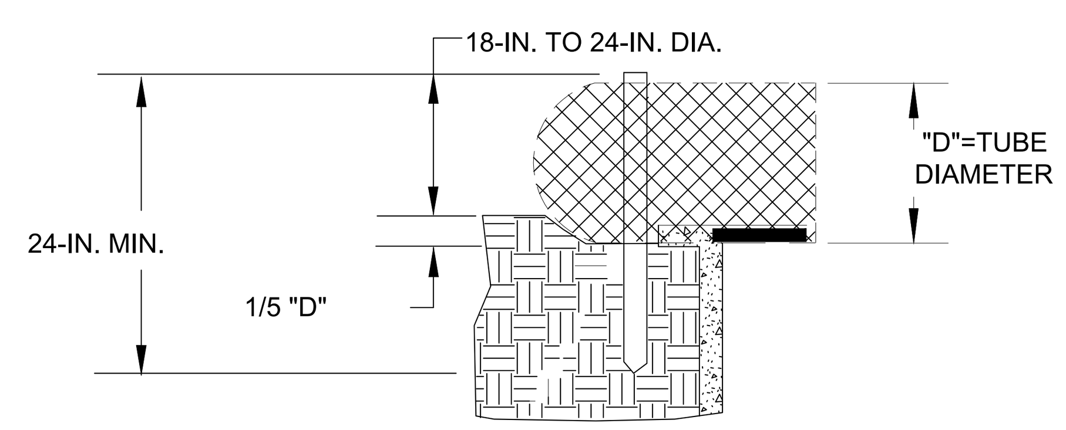
NOT TO SCALE



POST INSTALLATION DETAIL



SEDIMENT TUBE INSTALLATION DETAIL



SEDIMENT TUBE BURIAL DETAIL

TYPE A - SEDIMENT TUBE INLET PROTECTION

GENERAL NOTES

1. Sediment tubes are elongated tubes of compacted geotextiles, curled excelsior wood, natural coconut fiber, or hardwood mulch. Straw, pine needle, and leaf mulch-filled sediment tubes are not permitted.
2. The outer netting of the sediment tube should consist of seamless, high-density polyethylene photodegradable materials treated with ultraviolet stabilizers or a seamless, high-density polyethylene non-degradable material.
3. Sediment tube diameters shall range from 18-inches to 24-inches. Sediment tubes with smaller diameters are prohibited when used as inlet protection.
4. Curled excelsior wood, or natural coconut products that are rolled up to create a sediment tube are not allowed.
5. Sediment tubes should be staked using wooden oak stakes (2-inch X 2-inch) or steel posts (standard "U" or "T" sections with a minimum weight of 1.25 pounds per foot) at a minimum of 48-inches in length placed on 2-foot centers.
6. Install all sediment tubes to ensure that no gaps exist between the soil and the bottom of the tube. Manufacturer's recommendations should always be consulted before installation.
7. The ends of adjacent sediment tubes should be overlapped 6-inches to prevent flow and sediment from passing through the field joint.
8. Sediment tubes should not be stacked on top of one another.
9. Each sediment tube should be installed in a trench with a depth equal to 1/5 the diameter of the sediment tube.
10. Install stakes at a diagonal facing incoming runoff.

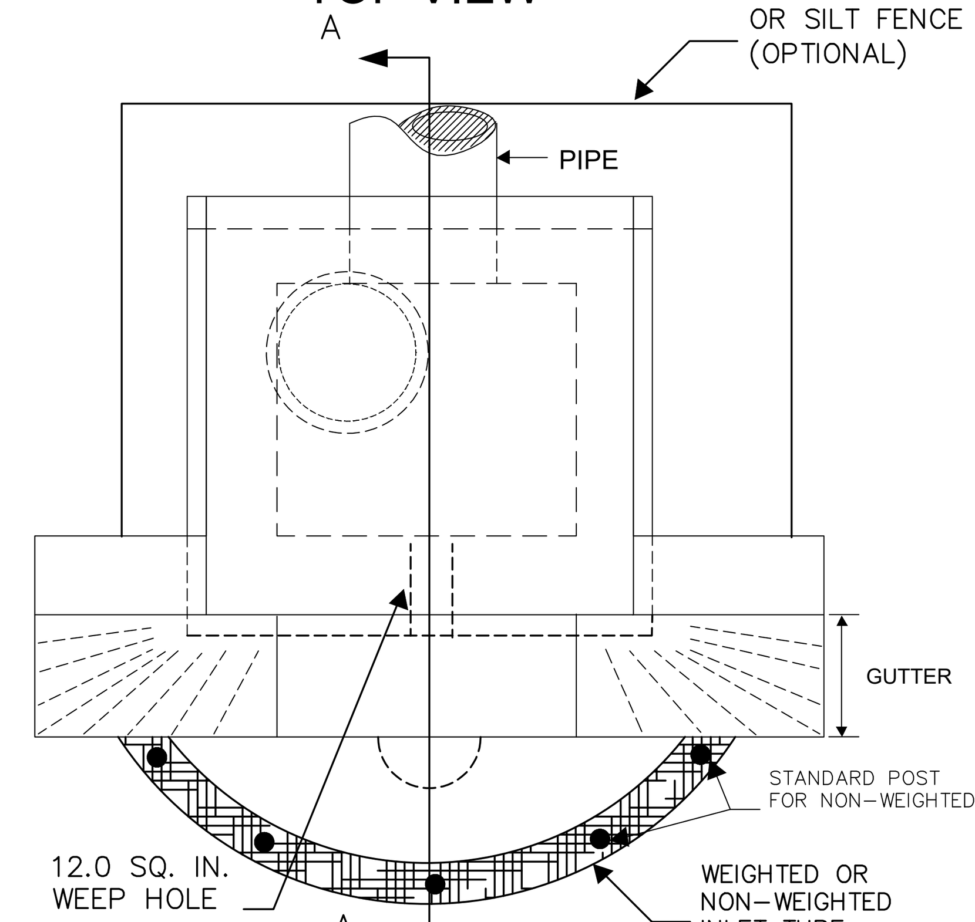
INSPECTION & MAINTENANCE

1. The key to functional inlet protection is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of sediment tube inlet protection shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall even that produces 1/2-inch or more of precipitation.
3. Attention to sediment accumulations in front of the sediment tube is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the sediment tube. When a sump is installed in front of the inlet protection, sediment shall be removed when if fills approximately 1/3 the depth of the sump.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Large debris, trash, and leaves should be removed from in front of tubes when found.
7. Inlet protection structures should be removed after the disturbed areas are permanently stabilized. Remove all construction material and sediment, and dispose of them properly. Grade the disturbed area to the elevation of the drop inlet structure crest. Stabilize all bare areas immediately.

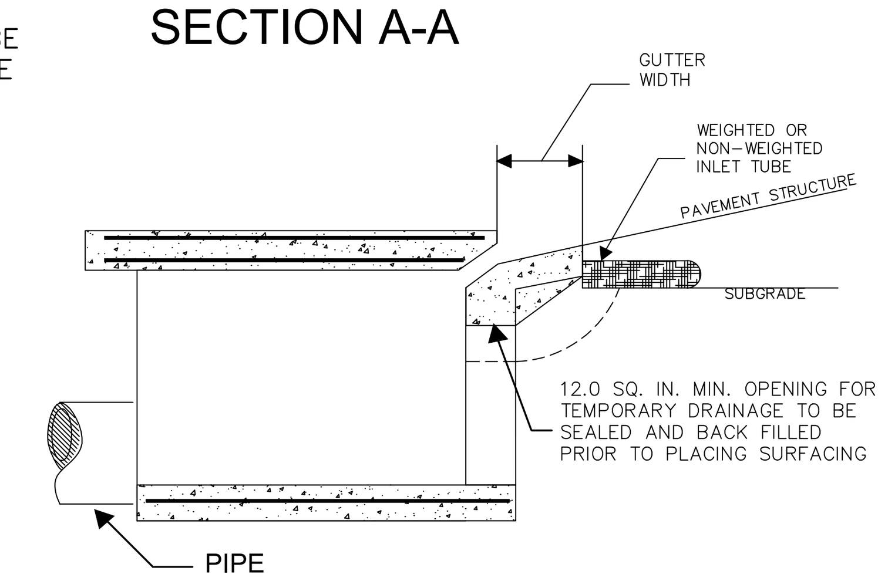
SEDIMENT TUBE INLET PROTECTION (DROP INLET OR YARD INLET)

NOT TO SCALE

TOP VIEW



SECTION A-A



TYPE F - INLET TUBES INLET PROTECTION

GENERAL NOTES

1. Inlets tubes should be composed of compacted geotextiles, curled excelsior wood, natural coconut fibers, a hardwood mulch, or a mix of these materials enclosed by a flexible netting material.
2. Inlets tubes should utilize an outer netting that consists of seamless, high-density polyethylene photodegradable materials treated with ultraviolet stabilizers or a seamless, high-density polyethylene non-degradable material. Curled wood excelsior fiber, or natural coconut fiber rolled erosion control products rolled up to create an inlet tube device are not allowed.
3. Do not use straw, straw fiber, straw bales, pine needles, or leaf mulch as fill material within inlet tubes.
4. Weighted inlet tubes must be capable of staying in place without external stabilization measures and may have a weighted inner core or other weighted mechanism to keep them in place.
5. Install weighted tubes lying flat on the ground, with no gaps between the underlying surface and the inlet tube. Do not stack inlet tubes. Do not completely block inlet with tube.
6. Non-weighted inlet tubes require staking or other stabilization methods to keep them safely in place.
7. Overflow or overtopping of inlet tubes must be allowed to flow into inlet unobstructed.
8. To avoid possible flooding, two or three concrete cinder blocks may be placed between the tube and the inlet.

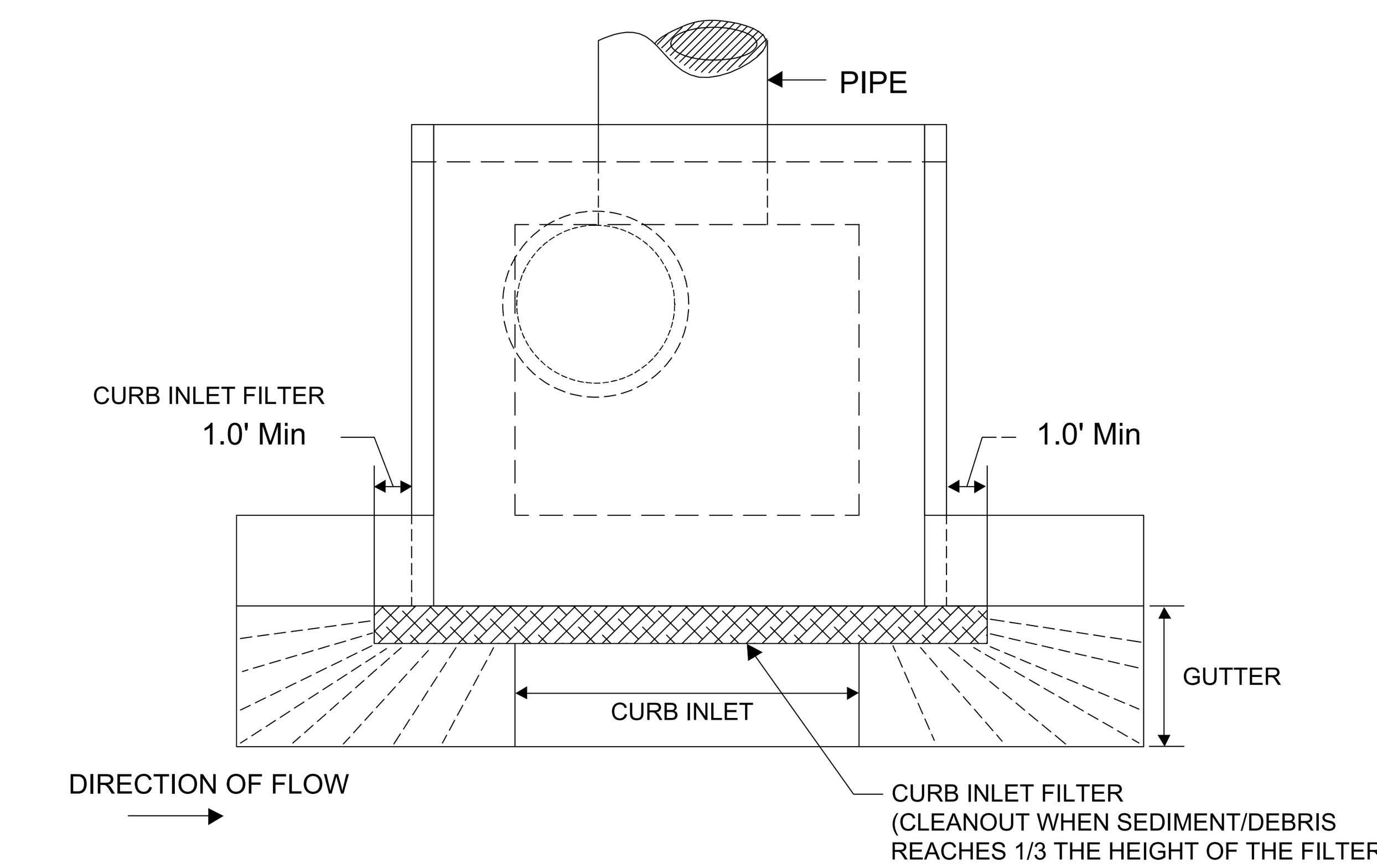
INSPECTION AND MAINTENANCE

1. The key to functional inlet protection is weekly inspection, routine maintenance, and regular sediment removal.
2. Regular inspections of all inlet protection shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall event that produces 1/2-inch or more of precipitation.
3. Attention to sediment accumulations in front of the inlet protection is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the blocks. If a sump is used, sediment should be removed when it fills approximately 1/3 the depth of the hole.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Large debris, trash, and leaves should be removed from in front of tubes when found.
7. Replace inlet tube when damaged or as recommended by manufacturer's specifications.
8. Inlet protection structures should be removed after the disturbed areas are permanently stabilized. Remove all construction material and sediment, and dispose of them properly. Grade the disturbed area to the elevation of the drop inlet structure crest. Stabilize all bare areas immediately.

SEDIMENT TUBE INLET PROTECTION (CURB INLET SUBGRADE)

NOT TO SCALE

TOP VIEW



TYPE E - SURFACE COURSE CURB INLET PROTECTION

GENERAL NOTES

1. Only use surface curb inlet filters that have a minimum height or diameter of 9-inches and have a minimum length that is 2-feet longer than the length of the curb opening.
2. Surface course inlets filters that are designed to completely block the inlet opening are prohibited. Acceptable inlet filters should allow for overflows to enter the catch basin.
3. Surface course inlet filters should be constructed with a synthetic material that will allow stormwater to freely flow through while trapping sediment and debris.
4. Straw, straw fiber, straw bales, pine needles and leaf mulch are not permissible filter materials.
5. Each filter should have aggregate compartments for stone, sand, and other weighted materials or mechanisms to hold the unit in place. Fill aggregate compartments to a level (at least 1/2 full) to hold the filter in place and create a seal between the filter and the road surface.
6. Use only Type E inlet filters appearing on SC DOT's Qualified Products Listing (QPL), Approval Sheet #58, or filters meeting the most current edition of the SC DOT Standard Specifications for Highway Construction.

INSPECTION AND MAINTENANCE

1. The key to functional inlet protection is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of all inlet protection shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall event that produces 1/2-inch or more of precipitation.
3. Attention to sediment accumulations in front of the inlet protection is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when silt and/or debris has reached 1/3 the height of the filter.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Inlet protection structures should be removed after the disturbed areas are permanently stabilized. Remove all construction material and sediment, and dispose of them properly. Grade the disturbed area to the elevation of the drop inlet structure crest. Stabilize all bare areas immediately.

SEDIMENT TUBE INLET PROTECTION (CURB INLET SURFACE COURSE)

NOT TO SCALE

BID DOCUMENTS - DO NOT USE FOR CONSTRUCTION

WK DICKSON
community infrastructure consultants
1320 MAIN STREET
SUITE 400
COLUMBIA, SC 29201
(t)803-786-4261
(f)803-786-4263
WWW.WKDICKSON.COM

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
W. K. DICKSON & COMPANY, INC.
No. C00177
C.O.A.

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No. 25136
BRIAN E. THOMAS
7-1-19
PROFESSIONAL SEAL

REVISION RECORD

NO.	DATE	DESCRIPTION	BY

PROJECT NAME: THORNWOOD DRIVE CULVERT REPLACEMENT FOR THE CITY OF SPARTANBURG SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE: EROSION CONTROL DETAILS (2 OF 2)

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

DRAWING NUMBER:

6 OF 9

WKD PROJ. NO.:

20190081.00.CA

REFERENCES

NATIONAL DOCUMENTS

SCDOT DOCUMENTS
SCDOT SUPPLEMENTAL TECHNICAL SPECIFICATION SC-M-714
ENGINEERING DIRECTIVE MEMORANDUM 24
INSTRUCTIONAL BULLETIN 2010-01

RELATED DRAWINGS & KEYWORDS
714-105-00
714-110-00
714-505-00
714-810-00

PRECONSTRUCTION SUPPORT ENGINEER

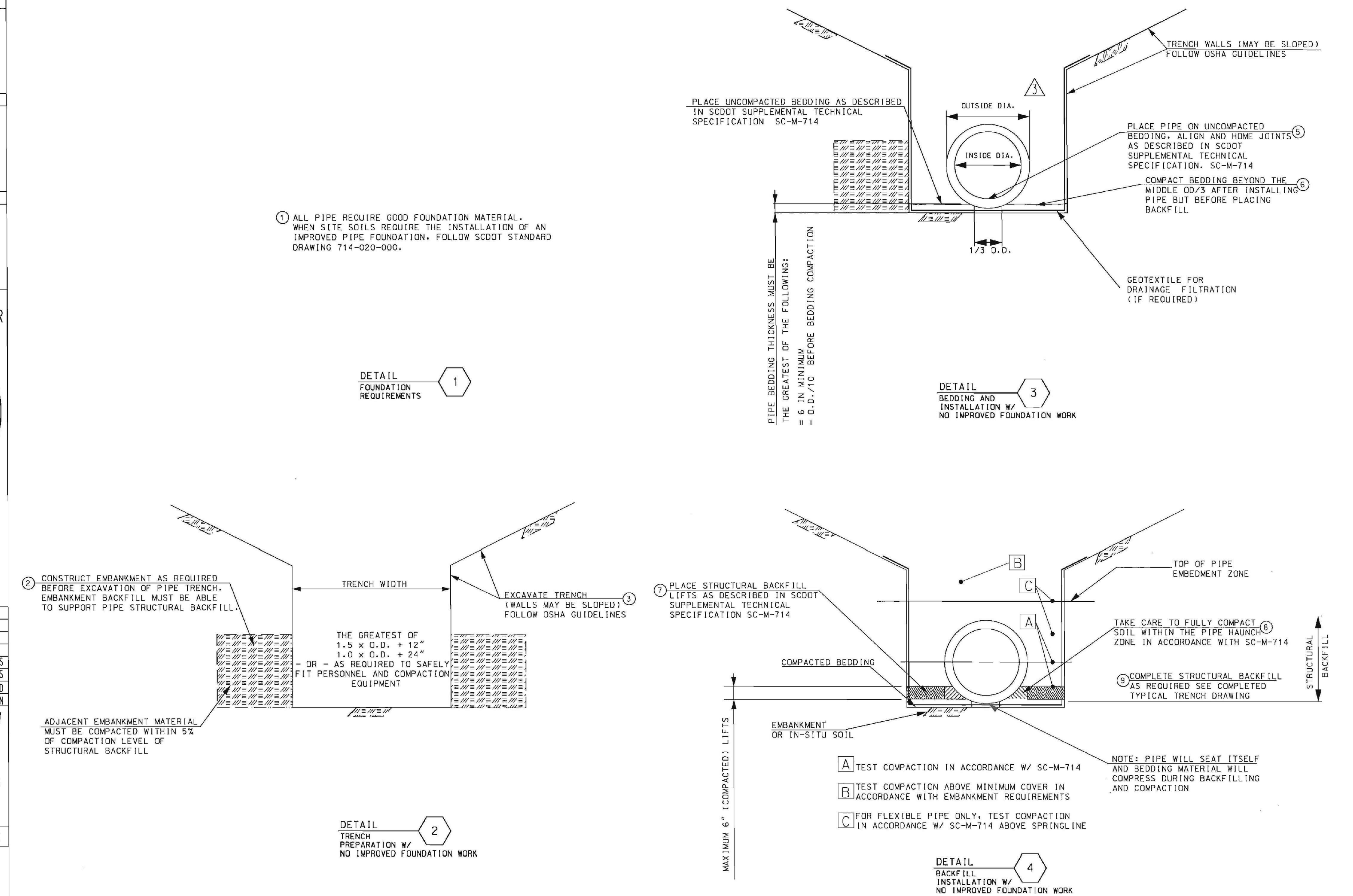
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 8858 EDWIN SYLVESTER EARGLE, III

SIGNATURE
APRIL 30, 2010
DATE

#	DATE	CHK	DESCRIPTION
3	1/2010	JBH	DET3 00
2	1/2009	HJC	DET4 COMPACTION NOTES
1	7/2008	HJC	GENERAL REVISIONS
0	3/2008	DSO	NEW STANDARD

SCDOT
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN STANDARDS OFFICE
955 PARK STREET
ROOM 405
COLUMBIA, SC 29201

STANDARD DRAWING
PIPE CULVERTS (PIPE TRENCH TYPICAL PREPARATION)
714-005-00
EFFECTIVE LETTING DATE JANUARY 2011 THIS DRAWING IS NOT TO SCALE



REFERENCES

NATIONAL DOCUMENTS

SCDOT DOCUMENTS
SC-M-714
EDM 24
INSTRUCTIONAL BULLETIN 2010-1
QUALIFIED PRODUCT LISTS 14, 69

RELATED DRAWINGS & KEYWORDS
714-205-00
714-110-00
714-205-00

THIS DRAWING IS ONLY VALID FOR CONSTRUCTION WHEN SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA. CHECK WWW.SCDOT.ORG FOR LATEST UPDATE.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 21242 JAMES W. KENDALL

SIGNATURE
10/22/2015
DATE

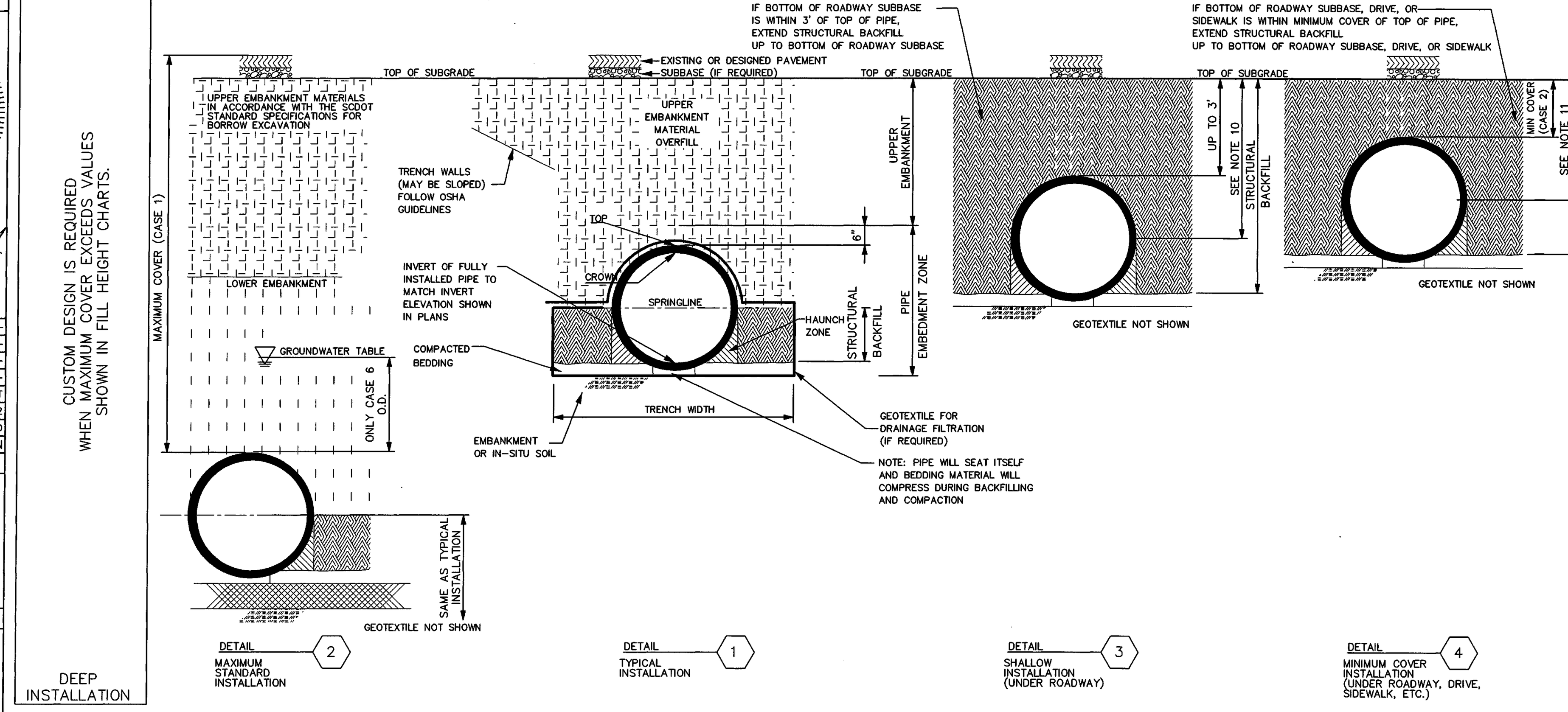
#	DATE	CHK	DESCRIPTION
2	1/2016	DSO	DET3,4 UNDER PVMT
1	7/2009	DSO	NOTE 2
0	3/2008	DSO	NEW STANDARD

SCDOT
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN STANDARDS OFFICE
955 PARK STREET
ROOM 405
COLUMBIA, SC 29201

STANDARD DRAWING
PIPE CULVERTS RIGID PIPE COMPLETED TRENCH (STANDARD FOUNDATION)
714-105-00
EFFECTIVE LETTING DATE JAN. 2016 THIS DRAWING IS NOT TO SCALE

NOTES:

1. USE MATERIALS AND METHODS OF CONSTRUCTION FOR PERMANENT PIPE IN CONFORMANCE WITH SCDOT SUPPLEMENTAL SPECIFICATION SC-M-714.
2. SEE SHEET 714-205-XX FOR RCP FILL HEIGHT TABLES.
3. WHEN CONNECTING DISSIMILAR PIPE, USE DRAINAGE STRUCTURE OR DESIGN INTERFACE. DO NOT MIX PIPE TYPE, CLASS, OR DETAILS WITHIN A SINGLE RUN OF PIPE BETWEEN DRAINAGE STRUCTURES. SEE QUALIFIED PRODUCT LIST 14 FOR PRECAST REINFORCED CONCRETE DRAINAGE STRUCTURES.
4. USE AT LEAST THE MINIMUM CLASS OR GAGE REQUIRED TO CARRY THE FILL HEIGHT AS SPECIFIED IN THE STANDARD DRAWING FILL HEIGHT TABLES. WHEN PIPE CLASS IS SPECIFIED IN THE PLANS, CONFIRM THAT THE SPECIFIED CLASS CAN CARRY THE INSTALLED MAXIMUM COVER BEFORE BACKFILLING THE PIPE. IF INSTALLED GRADES VARY FROM THOSE SHOWN IN THE PLANS, CONFIRM THAT PIPE CLASS IS SUFFICIENT TO CARRY THE INSTALLED FILL HEIGHTS. DO NOT REDUCE THE PIPE CLASS BELOW THE CLASS SHOWN IN THE PLANS UNLESS DIRECTED BY THE ENGINEER.
5. USE RIPRAP, BEVELED ENDS, REINFORCED CONCRETE SLAB, WINGWALLS, OR END TREATMENT AS DESCRIBED IN THE PLANS, SCDOT SUPPLEMENTAL SPECIFICATION SC-M-714, OR SCDOT STANDARD DRAWINGS.
6. PIPE EMBEDMENT ZONE BACKFILL MUST MEET OR EXCEED THE MINIMUM MATERIAL AND COMPACTION REQUIREMENTS OF THE ROADWAY EMBANKMENT FOR THE SPECIFIED BURIAL DEPTH WITHOUT DAMAGING THE PIPE.
7. FOR SHALLOW INSTALLATIONS (PAVEMENT ON MINIMUM COVER), INSTALL PIPE EMBEDMENT ZONE MATERIAL TO PREVENT SETTLEMENT AROUND THE PIPE. IF REQUIRED, USE STRUCTURAL BACKFILL MATERIAL OR CLSM TO PREVENT THIS SETTLEMENT.
8. USE THIS INSTALLATION ONLY IN LOCATIONS ABOVE GROUNDWATER TABLE. USE THIS INSTALLATION IN LOCATIONS WHERE PIPE SYSTEM IS NOT SUBJECTED TO PRESSURE HEAD.
9. FOR DETAILS 1 & 2, INSTALL STRUCTURAL BACKFILL AS SHOWN, AND USE BORROW EXCAVATION REQUIREMENTS FOR SOIL ABOVE PIPE EMBEDMENT ZONE.
10. FOR DETAIL 3, EXTEND STRUCTURAL BACKFILL AS SHOWN FROM SPRINGLINE OF PIPE TO BOTTOM OF SUBBASE WHEN UNDER ROADWAY PAVEMENT (INCLUDING PAVED SHOULDERS). USE DETAIL 2 INSTALLATION WHEN NOT UNDER ROADWAY PAVEMENT.
11. FOR DETAIL 4, EXTEND STRUCTURAL BACKFILL AS SHOWN FROM SPRINGLINE OF PIPE TO BOTTOM OF SUBBASE WHEN UNDER ANY PAVEMENT OR SIDEWALK.



STANDARD TRENCH TERMINOLOGY
(COMPLETED RIGID PIPE INSTALLATION)

REFERENCES

NATIONAL DOCUMENTS
AASHTO M32, M55, M170, M198, M221, M225, M295, M302, M315, T96, T104, ASTM A706

SCDOT DOCUMENTS
SCDOT SUPPLEMENTAL TECHNICAL SPECIFICATION SC-M-714
ENGINEERING DIRECTIVE MEMO 24
INSTRUCTIONAL BULLETIN 2010-01
QUALIFIED PRODUCT LIST 60, 69
SCDOT TO ACPA (MARCH 14, 2012 LETTER)

RELATED DRAWINGS & KEYWORDS
714-005-00
714-105-00
714-110-00
714-120-00
714-205-02
714-990-MO

THIS DRAWING IS ONLY VALID FOR CONSTRUCTION WHEN SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA. CHECK WWW.SCDOT.ORG FOR LATEST UPDATE.

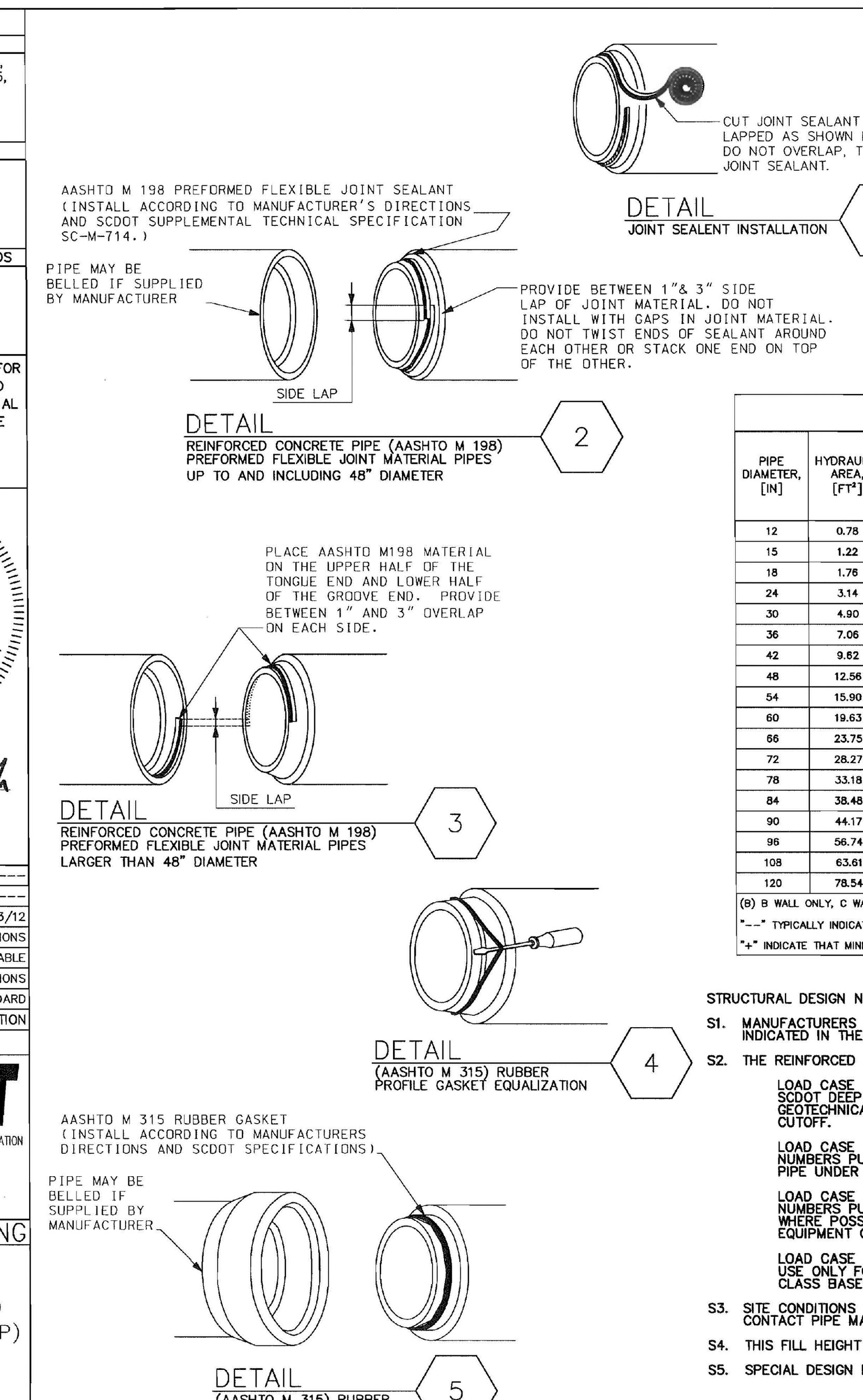
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 21242 JAMES W. KENDALL

SIGNATURE
9-26-12
DATE

#	DATE	CHK	DESCRIPTION
4	8/2012	DSO	SCDOT LETTER 3/12
3	3/2010	JBH	GENERAL REVISIONS
2	3/2009	HJC	COMPLETE TABLE
1	7/2008	HJC	GENERAL REVISIONS
0	3/2008	DSO	NEW STANDARD

SCDOT
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN STANDARDS OFFICE
955 PARK STREET
ROOM 405
COLUMBIA, SC 29201

STANDARD DRAWING
PIPE CULVERTS SMOOTH WALL (RIGID REINFORCED CONCRETE PIPE (RCP) DETAILS & FILL HEIGHT)
714-205-01
EFFECTIVE LETTING DATE JANUARY, 2013



NOTES:

1. SEE SHEET 714-005-00, 714-020-00, 714-105-00, & 714-120-00 FOR GENERAL NOTES, AND TRENCH INSTALLATION REQUIREMENTS.
2. USE ONLY PIPE CLASSES LISTED IN TABLES 714-205A & 714-205B.
3. USE B WALL PIPE FOR SIZES AND CLASSES INDICATED IN TABLES 714-205A & 714-205B. C WALL PIPE MAY BE SUBSTITUTED FOR B WALL PIPE ONLY FOR SIZES AND CLASSES INDICATED IN TABLES 714-205A & 714-205B.
4. USE PIPE AND JOINT MATERIAL FROM A MANUFACTURER COMBINATION SHOWN ON QUALIFIED PRODUCT LIST 69.
5. WHEN DEFORMED BILLET STEEL REBAR IS USED FOR CUSTOM PIPE, OBTAIN REBAR FROM A MANUFACTURER LISTED ON SCDOT QUALIFIED PRODUCT LIST 60. FOLLOW INSTRUCTIONAL BULLETIN 2010-01 AND ENGINEER OF RECORD RECOMMENDATIONS TO DETERMINE LOADING FOR CUSTOM PIPE.
6. SEE 714-990-MO FOR RESIDENTIAL DRIVEWAY INSTALLATION FOR MAINTENANCE APPLICATIONS.

PAY ITEMS;
7143xxx (__)"SMOOTH WALL PIPE..................L.F.
xxxxxxx (__)"PIPE ADDITIONAL FOUNDATION WORK....L.F.
7141xxx (__)"RC PIPE CUL.-CLASS(____)...........L.F.
7141xxx (__)"RC PIPE-CL(_) AASHTO M315JNT.......L.F.

(__) = (DIAMETER)
(____) = (CLASS ROMAN #)
(_) = (CLASS #)

TABLE 714-205A: REINFORCED CONCRETE PIPE FILL HEIGHT TABLE

PIPE DIAMETER, [IN]	HYDRAULIC AREA, [FT²]	MANNING'S ROUGHNESS COEFFICIENT, [n]	ESTIMATED MINIMUM TRENCH WIDTH, [IN]	CASE 1: MAXIMUM COVER HIGHWAY VEHICLE LOADING, [FT]			CASE 2: MINIMUM COVER HIGHWAY VEHICLE LOADING, [FT]			CASE 3: MINIMUM COVER FOR CONSTRUCTION VEHICLE [FT] (AASHTO 27.5.4.4)			CASE 4: UNIVERSAL DRIVEWAY MINIMUM COVER [FT] NOT FOR USE IN ROADWAY			CASE 6: MAXIMUM COVER WITH INVERT AT 2 X O.D. BELOW GROUNDWATER, [FT]		
				CLASS III	CLASS IV	CLASS V	CLASS III	CLASS IV	CLASS V	CLASS III	CLASS IV	CLASS V	CLASS III	CLASS IV	CLASS V	CLASS III	CLASS IV	CLASS V
12	0.78	SEE MFG	42	16	25	30	1.75	1.00+	1.00+	3	3	3	1.75	1.00	0.50	--	20	30
15	1.22	SEE MFG	45	16	25	30	1.50	1.00+	1.00+	3	3	3	1.50	1.00	0	13	21	30
18	1.76	0.012	49	16	25	30	1.50	1.00+	1.00+	3	3	3	1.50	0.75	0	13	21	30
24	3.14	0.012	60	16	25	30	1.00	1.00+	1.00+	3	3	3	1.00	0	0	13	21	30
30	4.90	0.012	70	16	25	30	1.00	1.00+	1.00+	3	3	3	1.00	0	0	13	21	30
36	7.06	0.012	81	16 (B)	25 (B)	30	1.00+ (B)	1.00+ (B)	1.00+	3 (B)	3 (B)	3	0 (B)	0 (B)	0	--	12 (B)	25
42	9.62	0.012	91	16 (B)	25 (B)	30	1.00+ (B)	1.00+ (B)	1.00+	3 (B)	3 (B)	3	0 (B)	0 (B)	0	--	14 (B)	27
48	12.56	0.012	102	16	25	30	1.00+	1.00+	1.00+	3	3	3	0	0	0	--	16	26
54	15.90	0.012	112	16	25	30	1.00+	1.00+	1.00+	3	3	3	0	0	0	10	17	26
60	19.63	0.012	123	15	25	30	1.00+	1.00+	1.00+	3	3	3	0	0	0	10	16	25
66	23.75	0.012	133	15	25	30	1.00+	1.00+	1.00+	3	3	3	0	0	0	12	15	25
72	28.27	0.012	144	15	24	30	1.00+	1.00+	1.00+	3	3	3	0	0	0	12	18	23
78	33.18	0.012	154	15	24	--	1.00+	1.00+	--	3	3	--	0	0	--	12	17	--
84	38.48	0.012	165	15	24	--	1.00+	1.00+	--	3	3	--	0	0	--	12	17	--
90	44.17	0.012	175	15	--	--	1.00+	--	--	3	--	--	0	--	--	13	--	--
96	56.74	0.012	186	14	--	--	1.00+	--	--	3	--	--	0	--	--	13	--	--
108	63.61	0.012	207	14	--	--	1.00+	--	--	3	--	--	0	--	--	13	--	--
120	78.54	0.012	228	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(B) B WALL ONLY, C WALL IS NOT ALLOWED FOR THIS DIAMETER AND CLASS.
"--" TYPICALLY INDICATE THAT PIPE SIZE IS NOT AVAILABLE OR IS NOT RECOMMENDED FOR THIS CONDITION.
"+" INDICATE THAT MINIMUM COVER MAY BE REDUCED TO 0.75' FOR SPECIFIED CLASS WHEN PIPE IS INSTALLED UNDER RIGID PAVEMENT.

STRUCTURAL DESIGN NOTES:

S1. MANUFACTURERS MAY SUBSTITUTE HIGHER CLASS PIPE THAN SPECIFIED IN THE PLANS, HOWEVER, INSTALLATION DEPTH SHALL NOT EXCEED THAT SHOWN FOR THE PIPE INDICATED IN THE PLANS UNLESS APPROVED BY THE ENGINEER OF RECORD. NO ADDITIONAL PAYMENT WILL BE MADE FOR HIGHER CLASS SUBSTITUTION.

S2. THE REINFORCED CONCRETE PIPE FILL HEIGHT TABLE IS BASED ON THE FOLLOWING CRITERIA:

LOAD CASE 1 – TYPICAL STANDARD INSTALLATION:
SCDOT DEEP INSTALLATION = 30'. FOR ALL INSTALLATIONS BEYOND 30', EMBANKMENT SETTLEMENT MAY CONTROL DESIGN. CONSULT WITH PIPE MANUFACTURERS AND GEOTECHNICAL ENGINEERS BEFORE USING DEEPER THAN 30'. NUMBERS PUBLISHED ARE BASED ON AASHTO LRFD INDIRECT DESIGN OR SCDOT DEEP INSTALLATION CUTOFF.

LOAD CASE 2 – TYPICAL MINIMUM COVER INSTALLATION:
NUMBERS PUBLISHED ARE BASED ON AASHTO LRFD INDIRECT DESIGN CALCULATIONS OR AASHTO LRFD TABLE 12.6.6.3–1 FOR CLASS SPECIFIED OF REINFORCED CONCRETE PIPE UNDER FLEXIBLE PAVEMENT.

LOAD CASE 3 – TYPICAL MINIMUM COVER FOR CONSTRUCTION VEHICLE EQUIP,ENT LOADING:
NUMBERS PUBLISHED ARE BASED ON AASHTO LRFD SECTION 27.5.4.4 FOR REINFORCED CONCRETE PIPE. AVOID DRIVING CONSTRUCTION VEHICLES OVER INSTALLED PIPE WHERE POSSIBLE. EXTEND CONSTRUCTION FILL HEIGHT BEYOND SIDES OF PIPE BY THE LARGER OF 3 FEET OR ONE PIPE DIAMETER. PERIODICALLY CHANGE LOCATION OF EQUIPMENT CROSSING OVER PIPE IN ORDER TO MINIMIZE CHANCE OF LATERAL DISPLACEMENT.

LOAD CASE 4 – UNIVERSAL DRIVEWAY MINIMUM COVER:
USE ONLY FOR DRIVEWAY APPLICATIONS. NUMBERS PUBLISHED ARE BASED ON CAPACITY OF PIPE USING AASHTO LRFD INDIRECT DESIGN AT 0' COVER. CHOOSE PIPE CLASS BASED ON LOADING OF VEHICLES USING DRIVEWAY.

S3. SITE CONDITIONS OTHER THAN TYPICAL INSTALLATION MAY ALSO REQUIRE SPECIAL DESIGNED PIPE. FOR THESE CONDITIONS, OTHER PIPE TYPES MAY BE MORE APPROPRIATE. CONTACT PIPE MANUFACTURER BEFORE SPECIFYING THIS PIPE TYPE FOR CUSTOM INSTALLATIONS.

S4. THIS FILL HEIGHT TABLE IS FOR USE IN ROADWAY APPLICATIONS ONLY AND SHOULD NOT BE USED FOR ANY OTHER TRANSPORTATION FACILITY.

S5. SPECIAL DESIGN MAY BE REQUIRED FOR INSTALLATIONS OUTSIDE OF SCDOT RIGHT OF WAY – SEE RIGHT OF WAY/UTILITY/MUNICIPAL AGREEMENT FOR THESE INSTALLATIONS.

BID DOCUMENTS - DO NOT USE FOR CONSTRUCTION

WK DICKSON
community infrastructure consultants
1320 MAIN STREET
SUITE 400
COLUMBIA, SC 29201
(t)803-786-4261
(f)803-786-4263
WWW.WKDICKSON.COM

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION W. K. DICKSON & COMPANY, INC. No. C00177
C.O.A.

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 25136 BRIAN E. THOMAS 7-1-19
PROFESSIONAL SEAL

REVISION RECORD

NO.	DATE	DESCRIPTION	BY

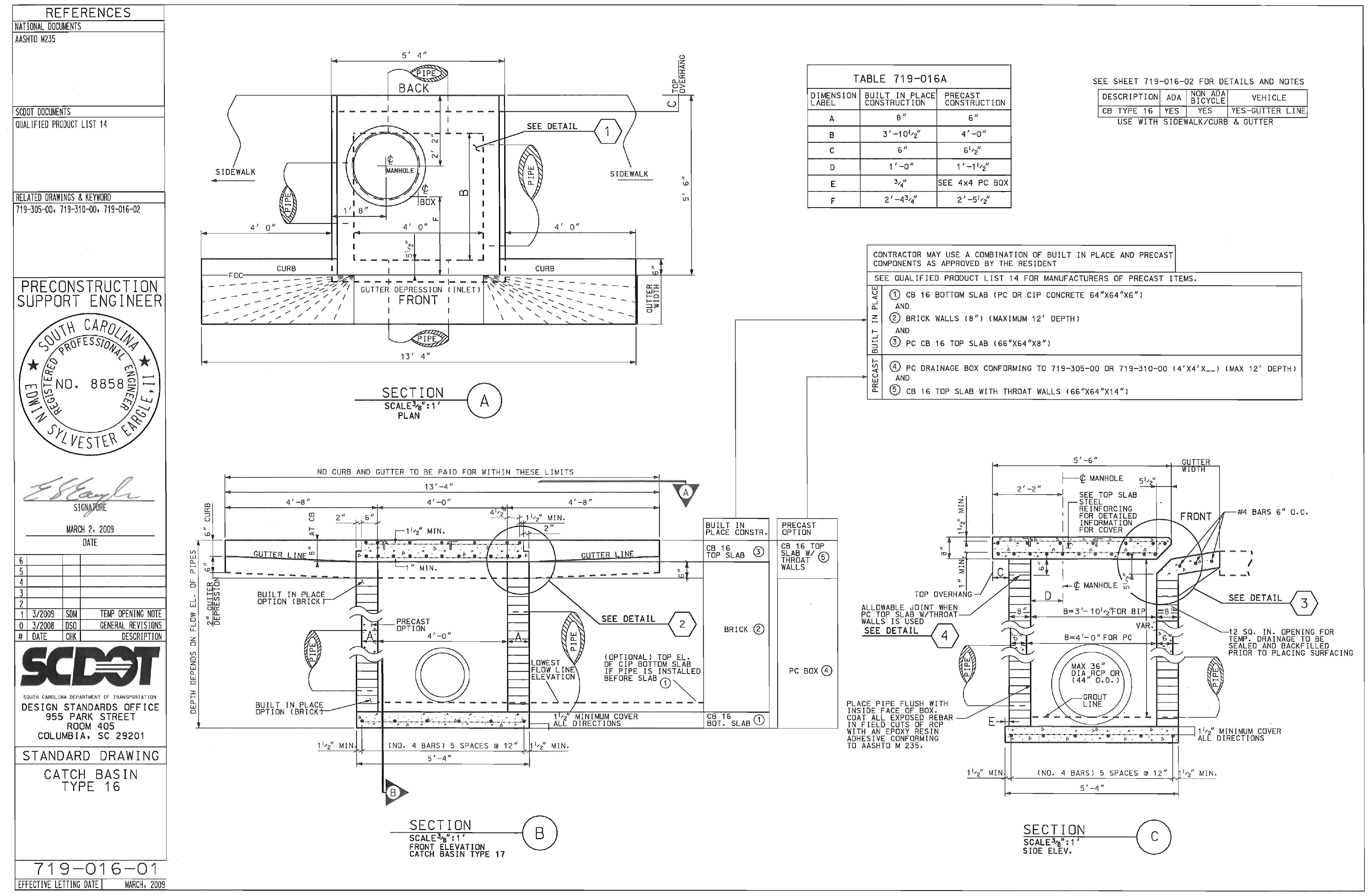
PROJECT NAME: THORNWOOD DRIVE CULVERT REPLACEMENT FOR THE CITY OF SPARTANBURG SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE: DRAINAGE DETAILS (1 OF 2)

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

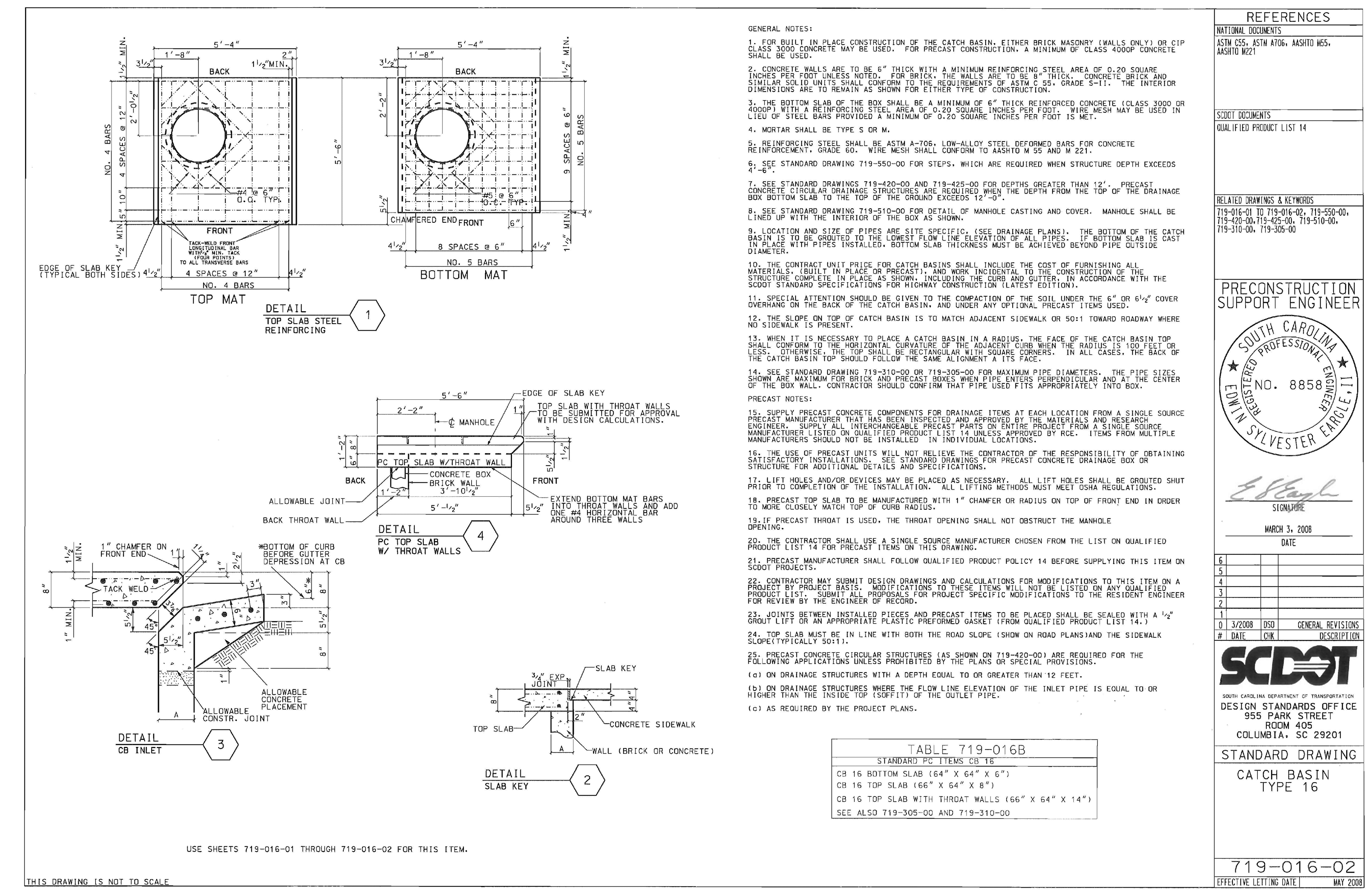
DRAWING NUMBER:
7 OF 9

WKD PROJ. NO.:
20190081.00.CA



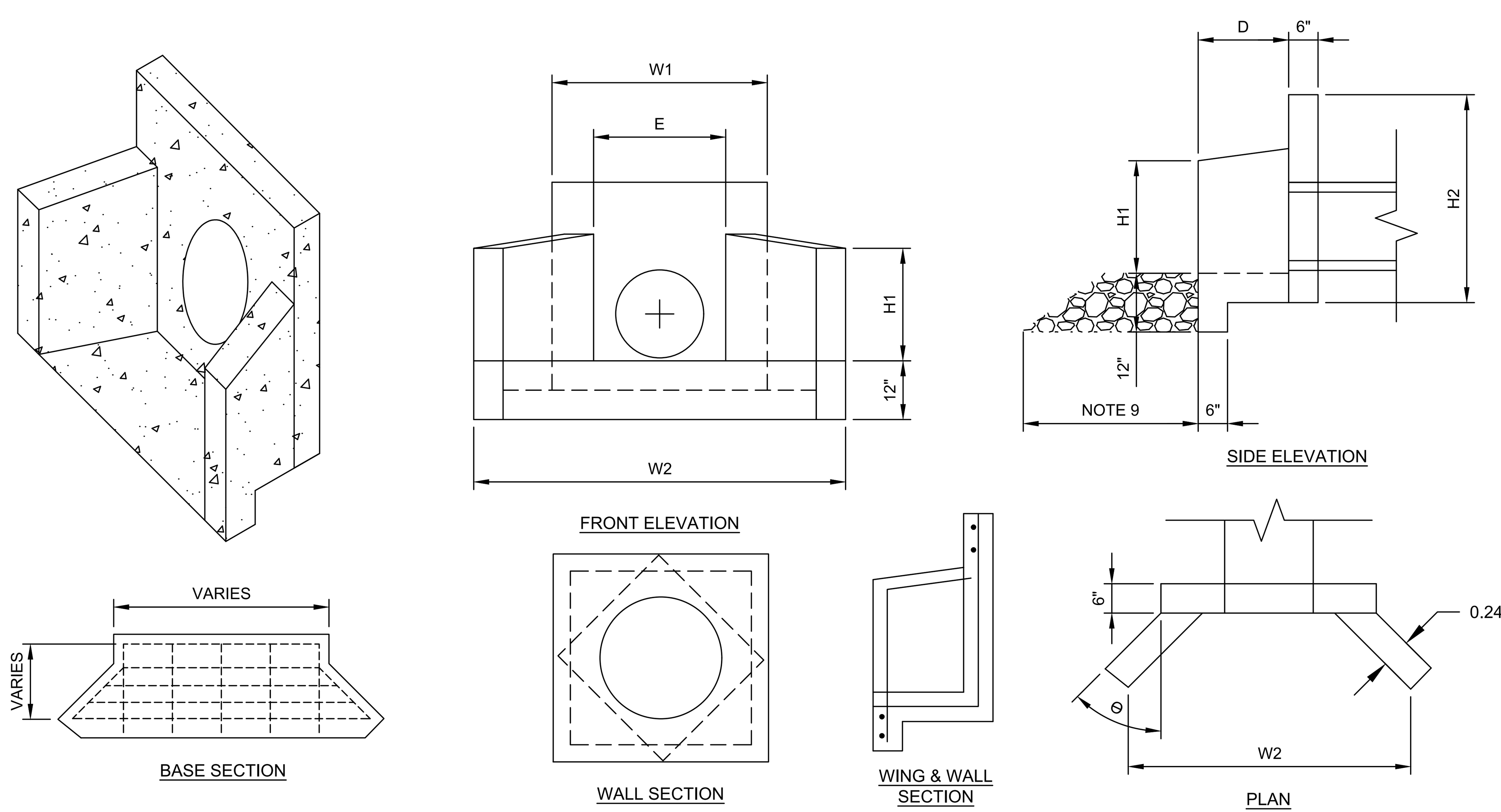
CURB INLET (CI)

NOT TO SCALE



CURB INLET (CI)

NOT TO SCALE

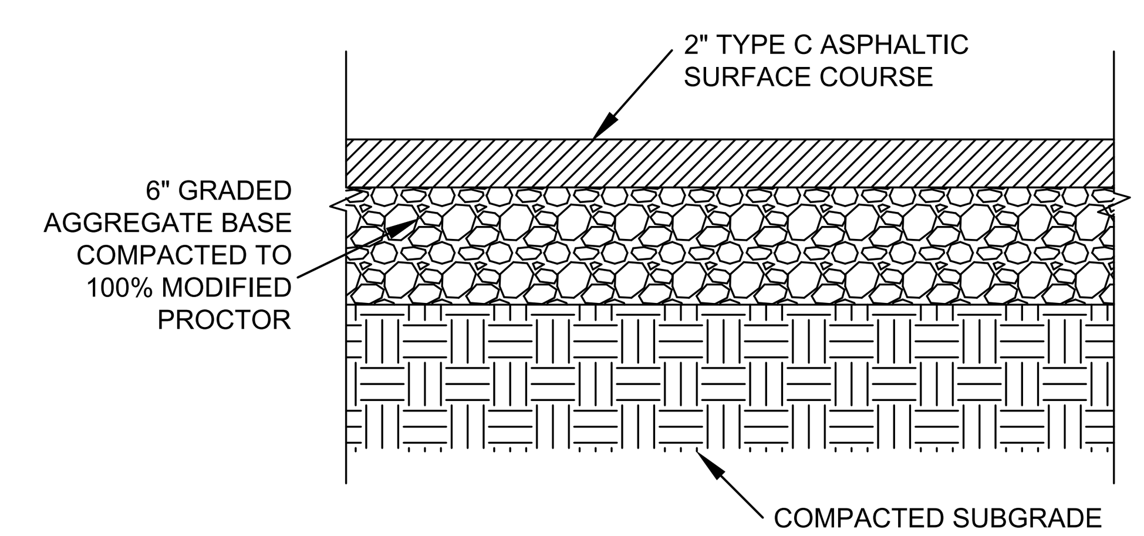


HEADWALL DIMENSIONS FOR CONCRETE PIPE											
PIPE SIZE ID	REINF.	W1	W2	H1	H2	H3	D	E	WT	θ	S.F. BASE AREA
12", 15"	#4	3'-2"	5'-5"	1'-3"	3'-1"	12"	1'-3"	1'-9"	1,600	40°	8.3
18"	#4	3'-8"	6'-1"	1'-9"	3'-8"	12"	1'-6"	2'-3"	2,100	45°	9.9
21", 24"	#5	4'-3"	7'-2"	2'-0"	4'-3"	12"	1'-10"	2'-9'	2,850	45°	13.5
27", 30"	#5	4'-8"	8'-4"	2'-4"	4'-9'	12"	2'-2"	3'-3"	3,700	45°	17.7
36"	#6	5'-8"	10'-10"	3'-3"	5'-9"	12"	2'-11"	4'-4"	5,600	45°	28
42", 48"	#6	6'-7"	12'-6"	3'-8"	6'-8"	14"	3'-4"	5'-3"	7,500	45°	35
54", 60"	#6	8'-9"	13'-4"	4'-5"	8'-6"	14"	3'-4"	7'-6"	10,000	50°	41
66", 72"	#6	8'-9"	13'-4"	4'-5"	8'-6"	26"	3'-4"	7'-6"	10,000	50°	41

NOTES:
1. ALL CONCRETE TO BE 4000 PSI MINIMUM.
2. REINFORCEMENT STEEL SHALL MEET ASTM 615 GRADE 60 WITH 2" MINIMUM CLEARANCE.
3. CHAMFER ALL EXPOSED EDGES 3/4".
4. PRECAST HEADWALL UNIT SHALL BE CAREFULLY POSITIONED ON THE PREPARED FOUNDATION AND PIPE INSERTED INTO HEADWALL OR HEADWALL SLID OVER PIPE AND CHECKED FOR ALIGNMENT.
5. PIPE SHALL BE GROUTED IN HEADWALL WITH CEMENTITIOUS MATERIAL BY CONTRACTOR, BONDING AGENT MAY BE USED IF REQUIRED.
6. CARE SHALL BE TAKEN DURING HANDLING, BACKFILLING AND COMPACTION TO PREVENT DAMAGE AND MAINTAIN ALIGNMENT. MINOR DAMAGE TO THE UNIT MAY BE REPAIRED BY CONTRACTOR WHEN PERMITTED BY ENGINEER.
7. ALL DIMENSIONS ARE NOMINAL.
8. REINFORCEMENT VARIES WITH SIZE OF UNIT.
9. PROVIDE 6x PIPE DIAMETER (MIN) OF RIP-RAP LINED DITCH.

PRECAST CONCRETE HEADWALL (HW)

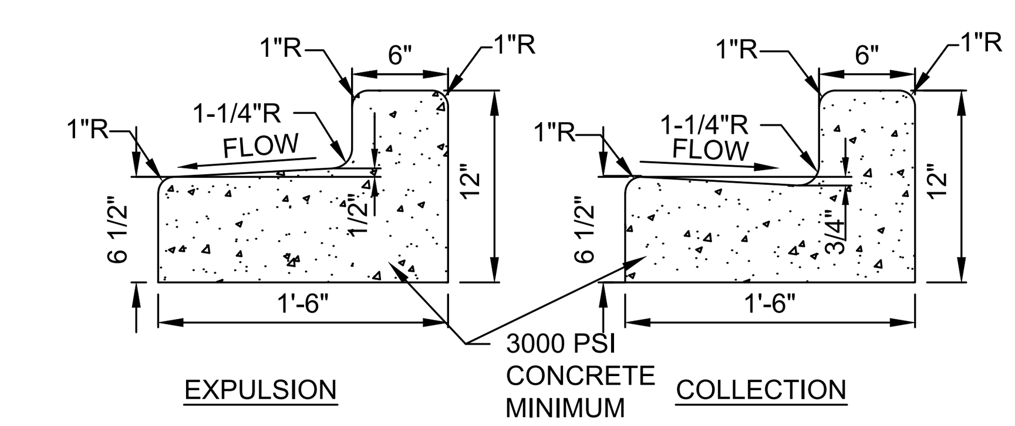
NOT TO SCALE



NOTES:
1. ASPHALT THICKNESS NOTED SHALL BE THE FINAL COMPACTED MATERIAL THICKNESS.

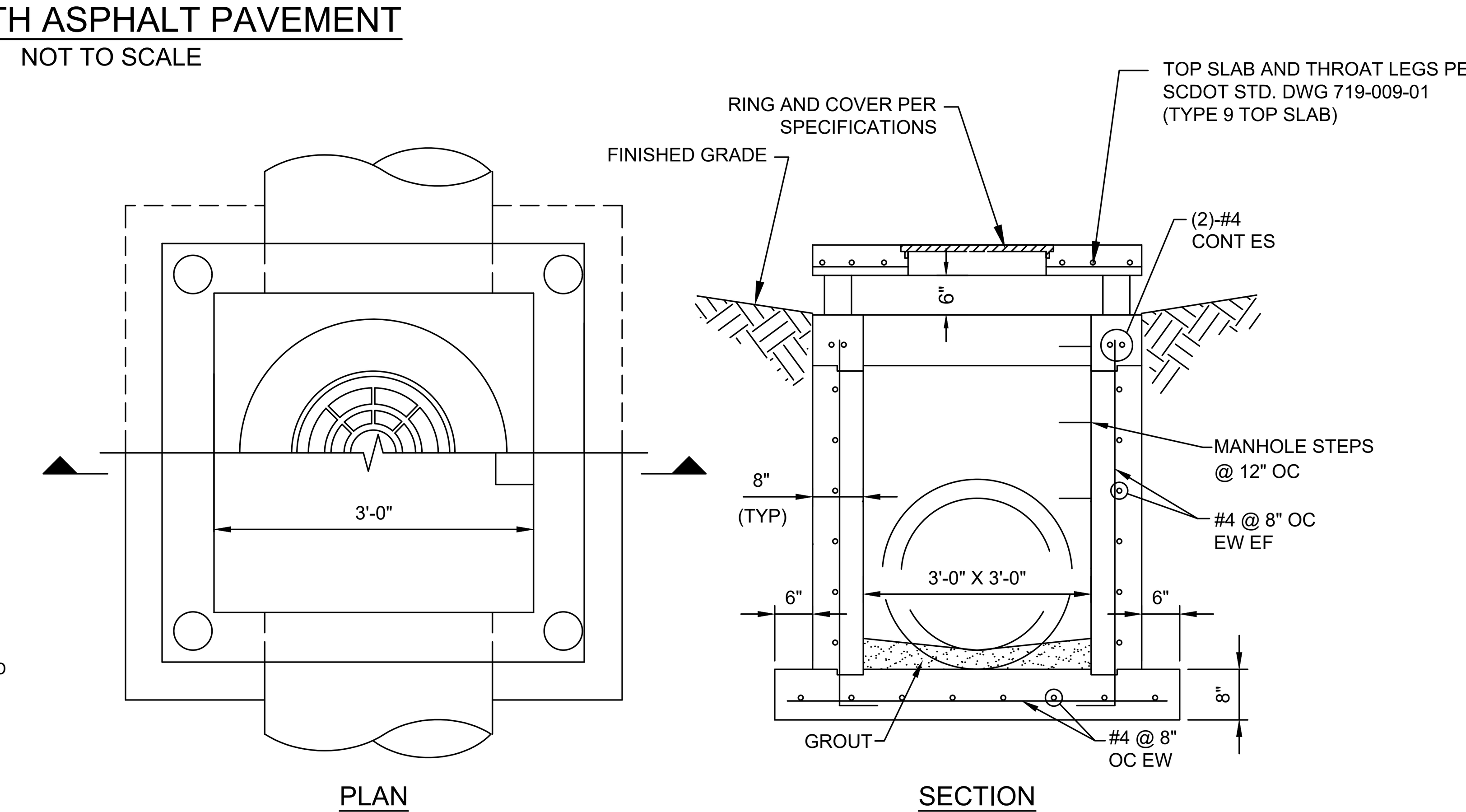
FULL DEPTH ASPHALT PAVEMENT

NOT TO SCALE



BARRIER CURB AND GUTTER

NOT TO SCALE



YARD INLET (YI)

NOT TO SCALE

NOTES:
1. FOR PIPES OVER 24" I.D. MAKE LENGTH & WIDTH OF DI = O.D. OF PIPE + 6" EACH SIDE.
2. REFERENCE SCDOT STD. DWG 719-009-01 (TYPE 9 MH) FOR TOP SLAB (COVER) AND THROAT LEGS.

BID DOCUMENTS - DO NOT USE FOR CONSTRUCTION

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PROFESSIONAL SEAL

REVISION RECORD

NO.	DATE	DESCRIPTION	BY

PROJECT NAME: THORNWOOD DRIVE CULVERT REPLACEMENT FOR THE CITY OF SPARTANBURG SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE: DRAINAGE DETAILS (2 OF 2)

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

DRAWING NUMBER:

8 OF 9

WKD PROJ. NO.:

20190081.00.CA

MGS3 GUARDRAIL (STANDARD DRAWING 805-210-00)

REFERENCES

NATIONAL DOCUMENTS
MwRSF REPORT(S): TRP-03-171-06, TRP-03-172-06, TRP-03-320-16
SCDOT DOCUMENTS: --- (MASH TL3)
RELATED DRAWINGS & KEYWORDS: 805-215-00, F805-090-00, DESIGN DEFLECTION = 7'-0"

THIS DRAWING IS ONLY VALID FOR CONSTRUCTION WHEN SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA. CHECK WWW.SCDOT.ORG FOR LATEST UPDATE.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 19782 GEORGE ROBERT BEDENBAUGH, JR.

SIGNATURE / DATE

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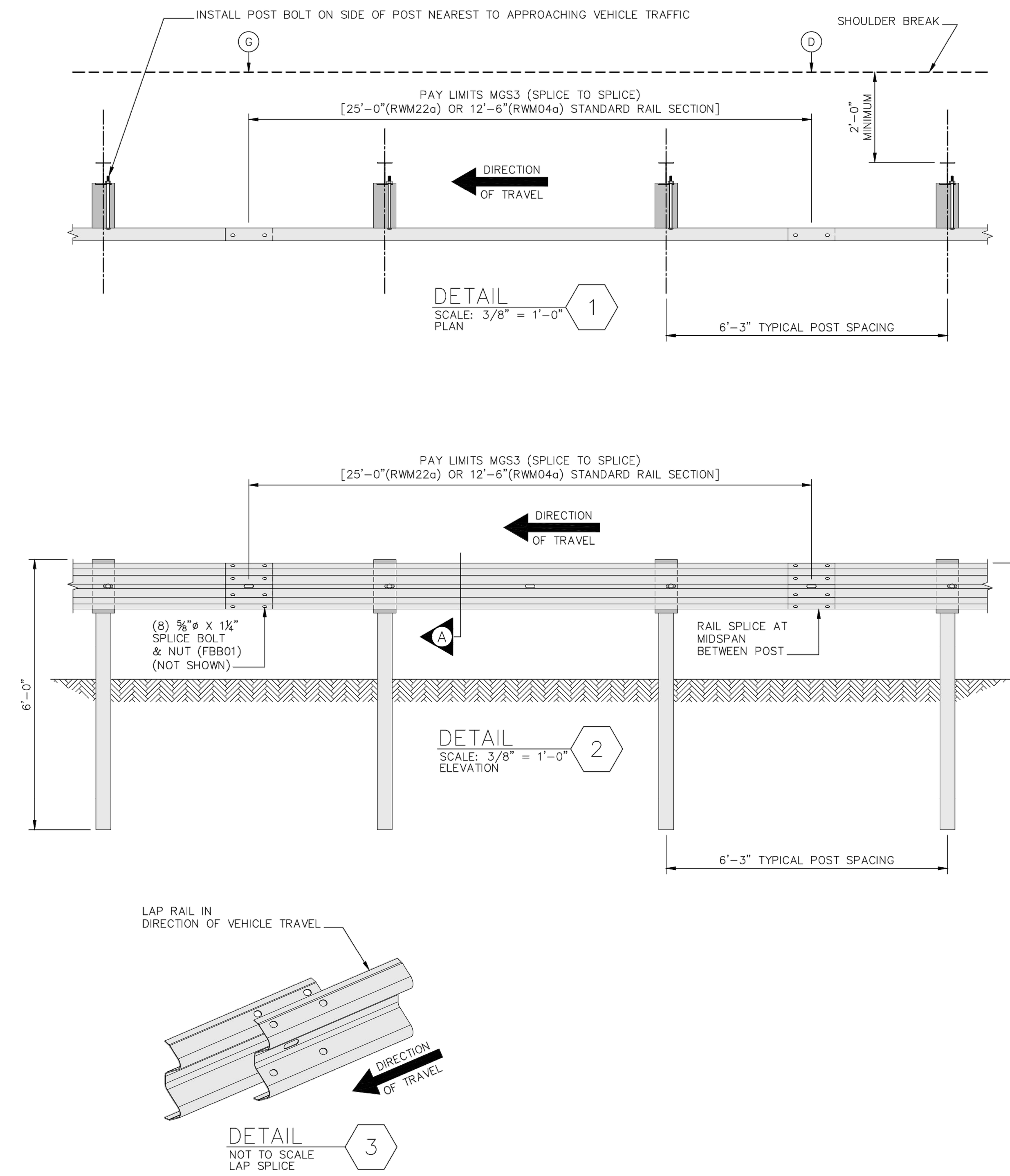
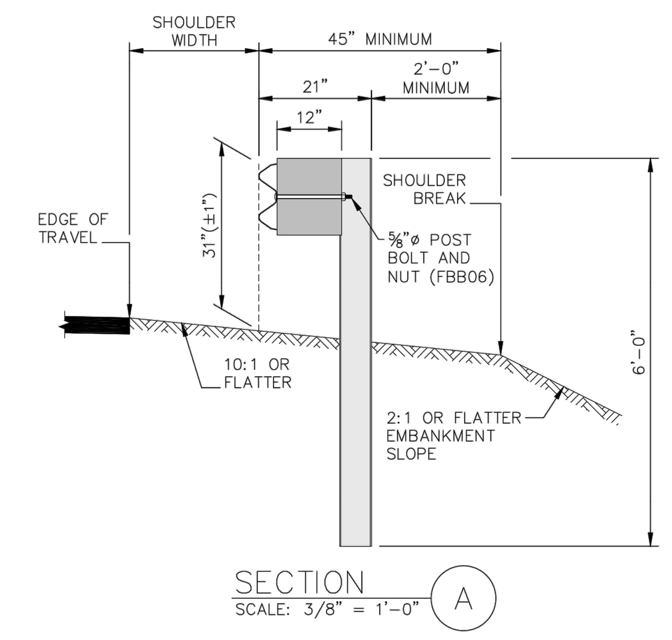
0	1/18	DSO	MASH

SCDOT — SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS OFFICE, 955 PARK STREET, ROOM 405, COLUMBIA, SC 29201

STANDARD DRAWING: MGS3 GUARDRAIL — 805-210-00 — EFFECTIVE LETTING DATE JULY, 2018





1. SEE 805-001-XX FOR GENERAL NOTES. WORK ALL APPROPRIATE RAIL/BARRIER SHEETS TOGETHER.
2. SEE QUALIFIED PRODUCT LIST 49 FOR MANUFACTURERS QUALIFIED TO FABRICATE GENERIC COMPONENTS FOR MGS3 GUARDRAIL (12 GAGE RAIL, STEEL POSTS, AND COMPOSITE OFFSET BLOCKS).
3. LOCATE MGS3 GUARDRAIL WITHIN SHOULDER CROSS SLOPES 10:1 OR FLATTER. LOCATE STANDARD GUARDRAIL SHOULDER BREAK 2'-0" FEET BEHIND BACK OF POST WITH AN EMBANKMENT SLOPE OF 2:1 OR FLATTER. FOR DESIGN OF THE LONGITUDINAL MGS3 BARRIER, PROVIDE 45" TO GUARDRAIL SHOULDER BREAK MEASURED FROM FACE OF RAIL.
4. SEE QUALIFIED PRODUCT LIST 49 FOR A LIST OF MANUFACTURERS FOR MGS3 LONGITUDINAL GUARDRAIL (12 & 10 GAGE RAIL, STEEL POSTS, AND COMPOSITE OFFSET BLOCKS).
5. UNLESS INDICATED OTHERWISE PLACE ALL MGS3 GUARDRAIL SPLICES AT MIDSPAN BETWEEN GUARDRAIL POSTS FOR 6'-3" POST SPACING. LAP ALL GUARDRAIL SPLICES IN THE SAME DIRECTION AS VEHICLE TRAVEL AS SHOWN IN DETAIL 3. USE ONLY COMPOSITE TYPE OFFSET BLOCKS AND W6X8.5 STEEL POST FOR ALL MGS3 GUARDRAIL INSTALLATIONS UNLESS INDICATED OTHERWISE.
6. MEASURE RAIL HEIGHT FROM THE GROUND SURFACE BENEATH THE FACE OF RAIL TO THE TOP OF MGS3 RAIL COMPONENT. INSTALL MGS3 RAIL HEIGHT AT 31" (+/- 1") FROM THE GROUND SURFACE. WHEN NECESSARY TO CONNECT TO STRONG POST W-BEAM INSTALLATIONS, ADJUST RAIL HEIGHT NEAR THE TRANSITION SO THE MGS3 RAIL IS AT 30" HEIGHT AT THE TRANSITION POST. ANY VARIATION FROM THE HEIGHT TOLERANCE IS CAUSE FOR REJECTION.

PAY ITEMS:
[8052100] MGS3 GUARDRAIL..LF

TYPE MB TRAILING END BLUNT TENSION ANCHOR (STANDARD DRAWING 805-170-00)

REFERENCES

NATIONAL DOCUMENTS
FHWA ELIGIBILITY LETTER(S): B256; MwRSF REPORT(S): TRP-03-279-13
SCDOT DOCUMENTS: (MASH TL3)
RELATED DRAWINGS & KEYWORDS: F805-090-00, DESIGN DEFLECTION = GATING

THIS DRAWING IS ONLY VALID FOR CONSTRUCTION WHEN SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA. CHECK WWW.SCDOT.ORG FOR LATEST UPDATE.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 19782 GEORGE ROBERT BEDENBAUGH, JR.

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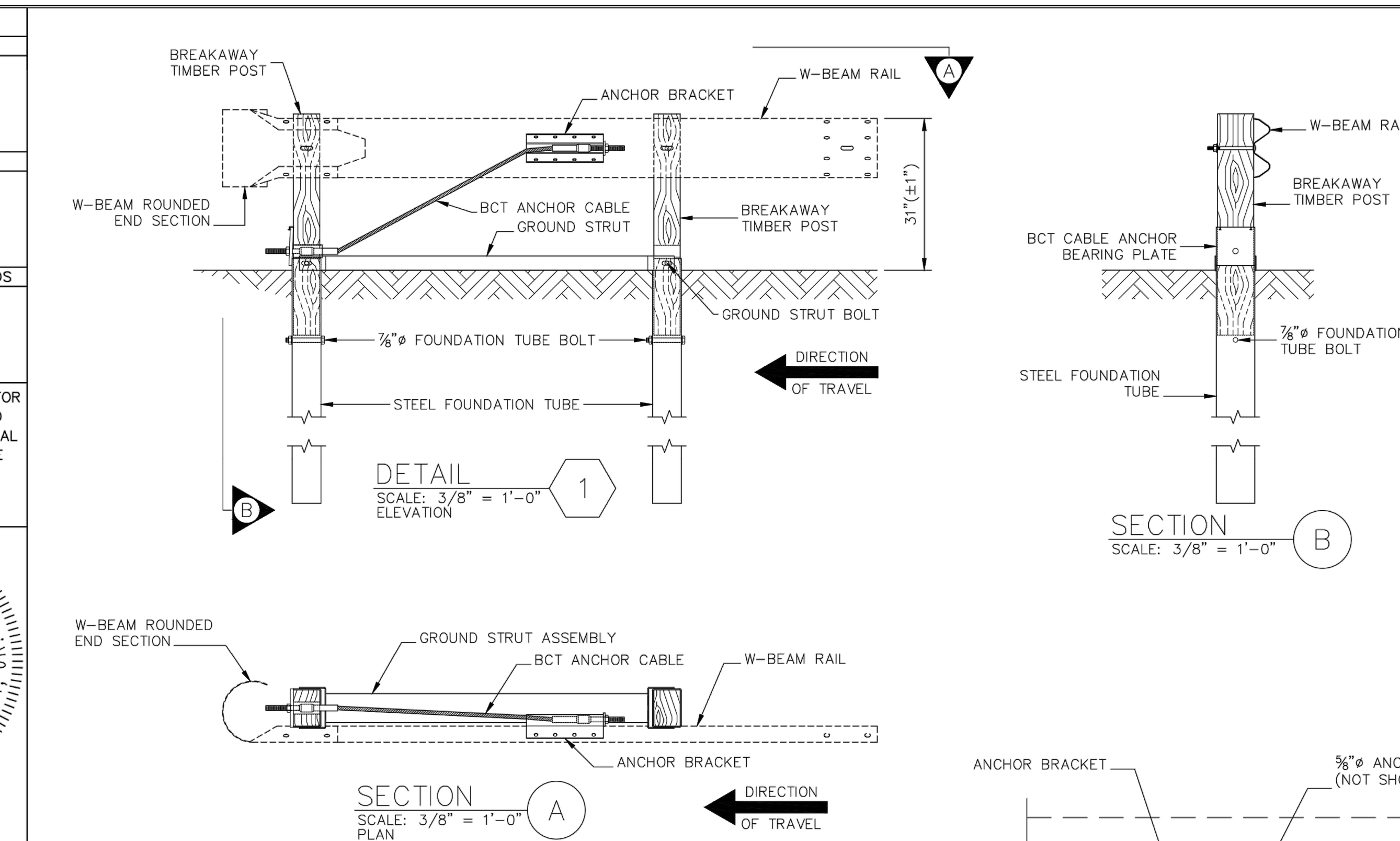
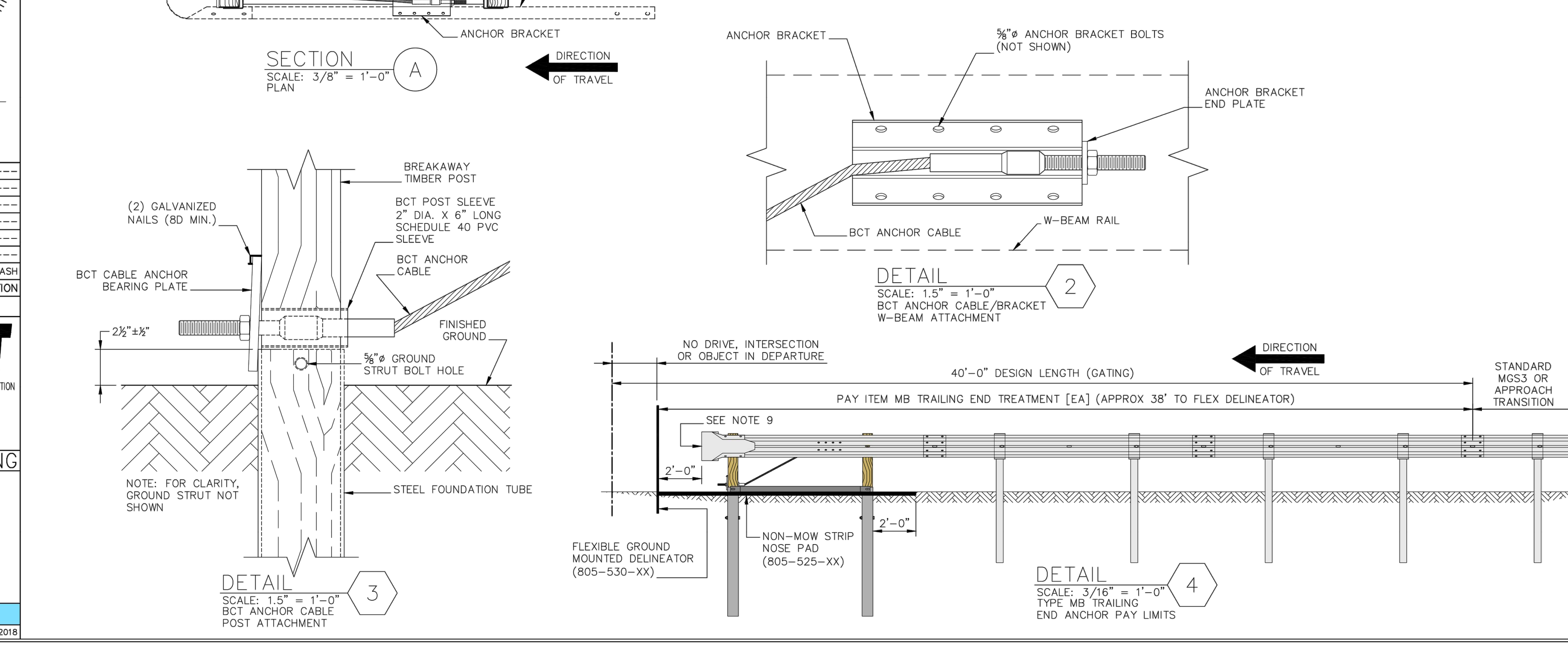
SCDOT — SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS OFFICE, 955 PARK STREET, ROOM 405, COLUMBIA, SC 29201

STANDARD DRAWING: TYPE MB TRAILING END BLUNT TENSION ANCHOR — 805-170-00 — EFFECTIVE LETTING DATE JULY, 2018





1. SEE 805-001-XX FOR GENERAL NOTES. WORK ALL APPROPRIATE GUARDRAIL/BARRIER SHEETS TOGETHER.
2. THE TYPE MB TRAILING END TREATMENT IS A FULLY GATING DEVICE (FROM THE END TREATMENT SPLICE - APPROXIMATELY 35' FROM THE LAST POST) THAT HOLDS TENSION ON STANDARD (TL3) MGS3 GUARDRAIL. THIS DEVICE DOES NOT CONTRIBUTE TO THE LENGTH OF NEED, BUT MUST BE INCLUDED IF ANOTHER TENSIONING DEVICE IS NOT ATTACHED AT THE END OF THE MGS3 GUARDRAIL.
3. TRAILING END TREATMENT MB CONSISTS OF 2 BREAKAWAY TIMBER POSTS AND 4 STANDARD STEEL POSTS CONSISTENT WITH THE ATTACHED DEVICE (TYPICALLY MGS3 OR MGS3CS) WITH THE CORRESPONDING SHOULDER GRADING SCHEME OF THE ATTACHED DEVICE.
4. INSTALL AT LEAST A 45" WIDE NON-MOW STRIP UNDER GROUND STRUT EXTENDING 2' BEYOND BREAKAWAY POSTS AND W-BEAM ROUNDED END SECTION (WHICHEVER IS FURTHER.) INCLUDE THIS NON-MOW STRIP IN THE END TREATMENT PAY ITEM UNLESS NON-MOW STRIPS ARE USED AND MEASURED ELSEWHERE IN THE GUARDRAIL RUN.
5. SET TOP OF STEEL FOUNDATION TUBE AT LEAST 2" BUT NOT MORE THAN 3" ABOVE FINISHED GRADE.
6. USE 5/8" DIAMETER ASTM A307 HEX HEAD BOLT WITH ASTM A563 NUT FOR ANCHOR BRACKET AND GROUND STRUT. INSTALL TWO ASTM F844 5/8" DIAMETER FLAT WASHERS - ONE WASHER UNDER BOLT HEAD AND ONE UNDER NUT FOR ANCHOR BRACKET AND GROUND STRUT.
7. USE 7/8" DIAMETER ASTM A307 HEX HEAD BOLT WITH ONE ASTM A563 NUT THROUGH STEEL FOUNDATION TUBE. INSTALL TWO ASTM F844 7/8" DIAMETER FLAT WASHERS - ONE UNDER BOLT HEAD AND ONE UNDER NUT FOR EACH FOUNDATION TUBE BOLT.
8. USE 3/4" DIAMETER BCT ANCHOR CABLE - 6X19 IWRC IPS GALVANIZED WIRE ROPE (MINIMUM BREAKING STRENGTH 43,000 LBS) WITH SWAGED FITTINGS AND THREADED STUDS ON EACH END. USE FITTINGS MACHINED FROM ASTM A576 GRADE 1035 HOT-ROLLED CARBON STEEL GALVANIZED ACCORDING TO ASTM A123. USE ASTM 1" DIAMETER A325 OR SAE GRADE 5 TREADED STUD. INSTALL WIRE ROPE TAUT - TIGHTEN NUT TO SNUG TIGHT.
9. APPLY REFLECTIVE SHEETING DELINEATOR IN A PATTERN CONSISTENT WITH STANDARD DRAWING 651-120-00 TO W-BEAM ROUNDED END SECTION.
10. INSTALL A YELLOW FLEXIBLE GROUND MOUNTED DELINEATOR (805-530-00, QPL 50) AT THE BACK CENTER EDGE OF THE NON-MOW STRIP (APPROXIMATELY 2' IN BEYOND W-BEAM ROUNDED END SECTION.) POSITION THE REFLECTOR AWAY FROM THE GUARDRAIL INSTALLATION (FACING TRAFFIC ON THE OPPOSITE SIDE OF THE ROAD.)
11. MEASURE AND PAY FOR EACH MB TRAILING END TREATMENT INCLUDING ALL INSTALLED PARTS FROM THE END TREATMENT SPLICE (35' FROM LAST BREAKAWAY POST) TO ALL PARTS INSTALLED WITHIN THE TAIL/BUFFER AREA INCLUDING THE ROUND END DELINEATOR (651-120-00), FLEXIBLE DELINEATOR (805-530-00), AND NON-MOW STRIP PAD (805-525-XX).

PAY ITEMS:
[8051710] MB TRAILING END TREATMENT...EA

GUARDRAIL BY OTHERS

SITE GRADING REQUIREMENTS FOR LEADING END TREATMENT TYPE MT2 (STANDARD DRAWING 805-115-50)

REFERENCES

NATIONAL DOCUMENTS

SCDOT DOCUMENTS: QPL49
RELATED DRAWINGS & KEYWORDS: 805-000-30, 805-115-10, 805-115-51

THIS DRAWING IS ONLY VALID FOR CONSTRUCTION WHEN SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA. CHECK WWW.SCDOT.ORG FOR LATEST UPDATE.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 19782 GEORGE ROBERT BEDENBAUGH, JR.

SIGNATURE / DATE

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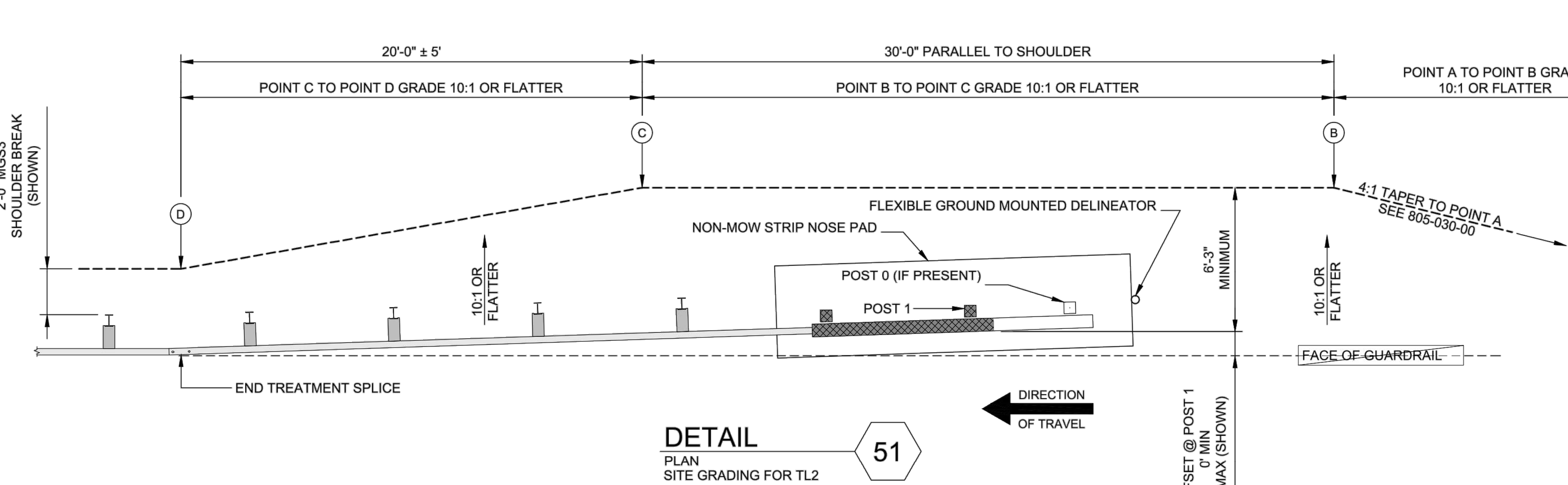
1	6/18	DSO	SHOULDER SLOPE
0	1/18	DSO	MASH

SCDOT — SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS OFFICE, 955 PARK STREET, ROOM 405, COLUMBIA, SC 29201

STANDARD DRAWING: SITE GRADING REQUIREMENTS FOR LEADING END TREATMENT TYPE MT2 — 805-115-50 — EFFECTIVE LETTING DATE JANUARY 2019

1. SEE 805-001-XX FOR GENERAL NOTES. WORK ALL APPROPRIATE GUARDRAIL/BARRIER SHEETS TOGETHER.
2. USE MT2 LEADING END TREATMENTS ONLY IN LOCATIONS WHERE SITE EVALUATION (805-001-XX SECTION 5) INDICATES THAT TEST LEVEL 2 DEVICES ARE APPROPRIATE.
3. DO NOT VALUE ENGINEER THIS ITEM ON SITES WHERE PLAN QUANTITIES INDICATE USE OF TL3 DEVICE. WHERE SITE CONDITIONS PREVENT THE PROPER INSTALLATION OF A TL3 DEVICE, THE RESIDENT, CONTRACTOR, AND ENGINEER OF RECORD SHOULD DISCUSS ALTERNATIVES BEFORE SELECTING A TL2 DEVICE AS THE ONLY OPTION.
4. INSTALL MT2 LEADING END TREATMENTS CONSISTENT WITH MT3 (805-115-10 NOTES) USING DEVICE LENGTH, OFFSET DISTANCE, AND END TREATMENT GRADING SHOWN FOR MT2.

PAY ITEMS:
[8051155] MT2 LEADING END TREATMENT TL2.....................................EA



TYPE MT2 LEADING END TREATMENT (TL2) (STANDARD DRAWING 805-115-51)

REFERENCES

NATIONAL DOCUMENTS

SCDOT DOCUMENTS: QPL49 (MASH TL2)
RELATED DRAWINGS & KEYWORDS: 805-115-10, 805-115-50, DESIGN DEFLECTION = GATING

THIS DRAWING IS ONLY VALID FOR CONSTRUCTION WHEN SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA. CHECK WWW.SCDOT.ORG FOR LATEST UPDATE.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 19782 GEORGE ROBERT BEDENBAUGH, JR.

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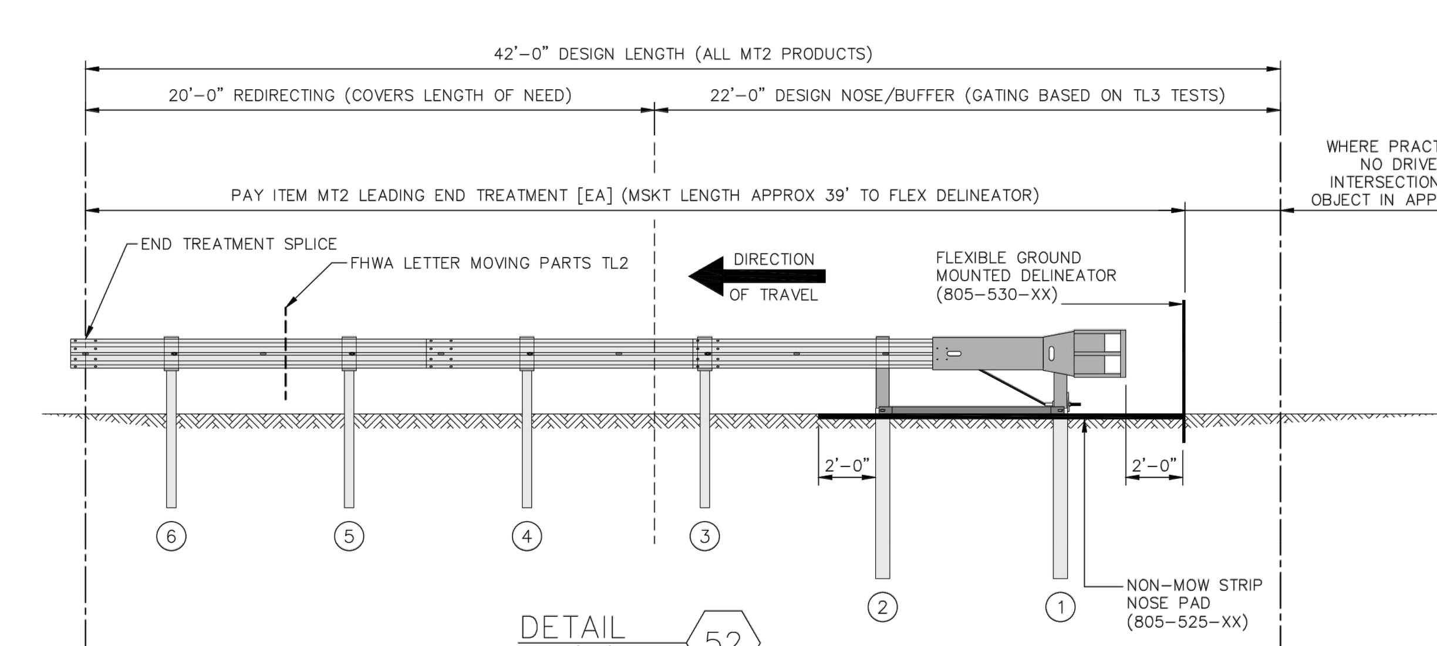
SCDOT — SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS OFFICE, 955 PARK STREET, ROOM 405, COLUMBIA, SC 29201

STANDARD DRAWING: TYPE MT2 LEADING END TREATMENT (TL2) — 805-115-51 — EFFECTIVE LETTING DATE JULY, 2018



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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — W. K. DICKSON & COMPANY, INC. No. C00177 — C.O.A.

PROFESSIONAL SEAL — SOUTH CAROLINA PROFESSIONAL ENGINEER No. 25136 BRYAN E. THOMAS — 9-16-19

REVISION RECORD

NO.	DATE	DESCRIPTION	BY
1	09/16/2019	OWNER REVISIONS	MDJ

PROJECT NAME: THORNWOOD DRIVE CULVERT REPLACEMENT FOR THE CITY OF SPARTANBURG, SPARTANBURG, SOUTH CAROLINA

DRAWING TITLE: GUARDRAIL DETAILS

BID DOCUMENTS - DO NOT USE FOR CONSTRUCTION

PROJ. MGR.:	BET
DESIGN BY:	KLM
DRAWN BY:	BRM
PROJ. DATE:	JULY 2019

DRAWING NUMBER: 9 OF 9

WKD PROJ. NO.: 20190081.00.CA