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- GENERAL NOTES:**
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND LICENSES REQUIRED BY THE STATE OF SOUTH CAROLINA, OR OTHER GOVERNING AGENCIES INVOLVED UNDER THIS CONTRACT.
 - ALL EXISTING UTILITIES SHOWN IN PLAN ARE APPROXIMATE. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY CONFLICTS.
 - ANY BYPASS PUMPING, DEWATERING, AND/OR TEMPORARY FLOW DIVERSION SHALL BE PROVIDED BY THE CONTRACTOR AND COORDINATED WITH CITY STAFF AND SCDOT. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING PUMPS AT ALL TIMES WHEN IN USE.
 - WORK SHALL BE PERFORMED IN ACCORDANCE WITH SCDOT, OSHA, CITY OF SPARTANBURG, AND OTHER APPLICABLE REQUIREMENTS.
 - POTHOLE ALL EXISTING WATER LINE AND SEWER LINE CROSSINGS AND VERIFY THE EXISTING DEPTHS OF THE LINES PRIOR TO STARTING THE INSTALLATION OF THE NEW STORM SEWER LINES. CONTACT THE ENGINEER IMMEDIATELY IF CONFLICTS ARE FOUND.
 - FIELD VERIFY LOCATION AND WEIR ELEVATION OF CATCH BASIN 7 TO ENSURE THAT IT LINES UP CORRECTLY WITH THE EXISTING SWALE AND THAT ALL RUNOFF FROM THE SWALE WILL ENTER THE NEW STRUCTURE.
 - BACKFILL THE TRENCH LINE UNDER ALL EXISTING SANITARY SEWER AND WATER LINE CROSSINGS WITH #57 WASHED STONE.
 - CONSTRUCT NEW CATCH BASIN NEAR THE EXISTING DRIVEWAY STORM PIPE. PLUG THE EXISTING DRIVEWAY PIPE AND GRADE THE SWALE TO THE NEW CATCH BASIN. CONNECT EXISTING BUILDING RUNOFF DRAIN TO THE NEW CATCH BASIN. FIELD ADJUST THE WEIR ELEVATION AS REQUIRED TO ENSURE ALL SURFACE RUNOFF ENTERS THE NEW CATCH BASIN.

- SURVEY NOTES:**
- SURVEY PROVIDED BY GOOCH & ASSOCIATES, P.A. - SURVEYORS.

RECOMMENDED GENERAL SEQUENCE OF CONSTRUCTION:

NOTE: THE FOLLOWING SEQUENCE IS A GENERAL RECOMMENDATION IN ORDER TO CLARIFY THE SCOPE AND INTENT OF THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A DETAILED SCHEDULE AT THE PRE-CONSTRUCTION MEETING. MEANS AND METHODS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. EFFORTS SHALL BE TAKEN TO MINIMIZE LANE/ROAD CLOSURES FOR PIPE CULVERT INSTALLATION.

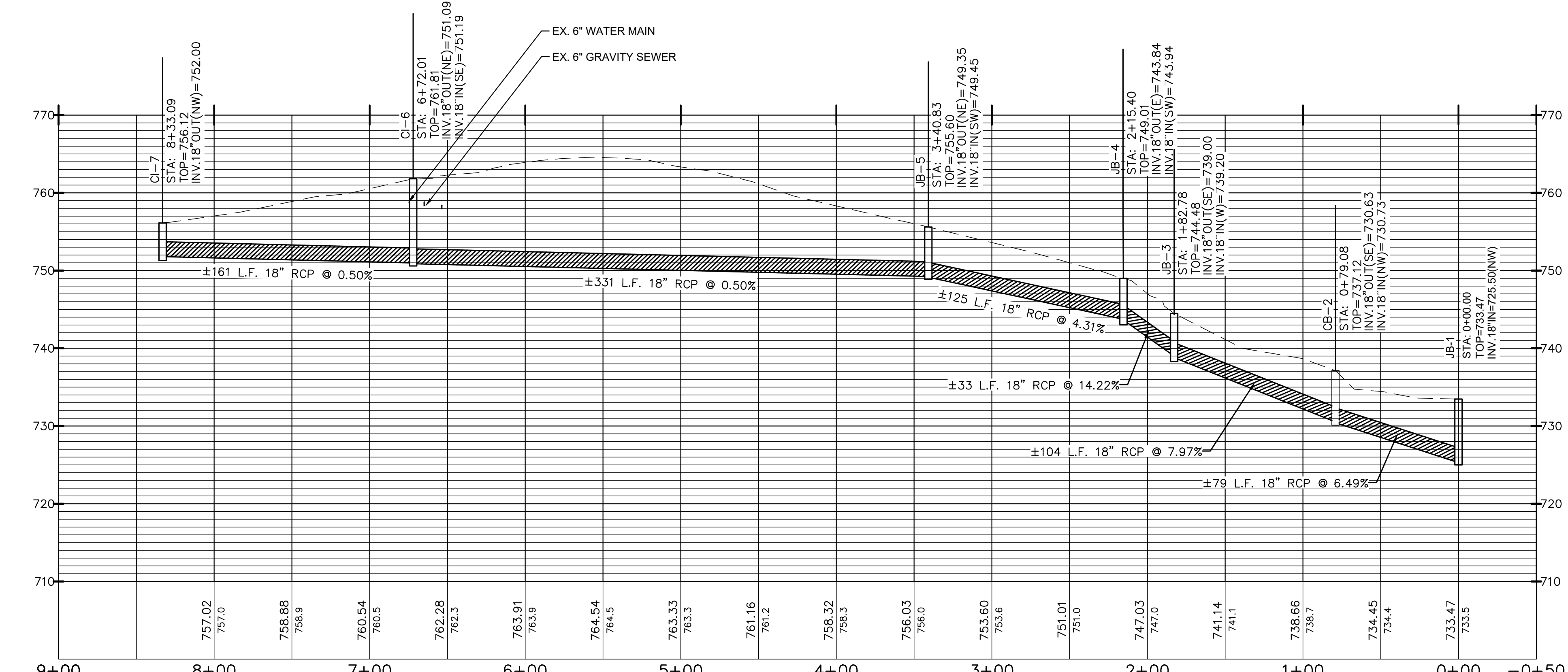
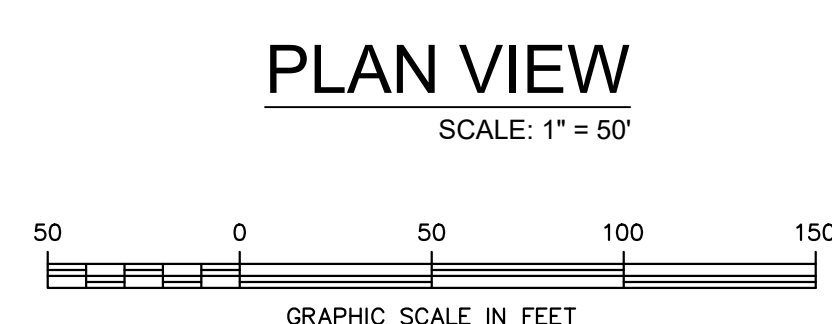
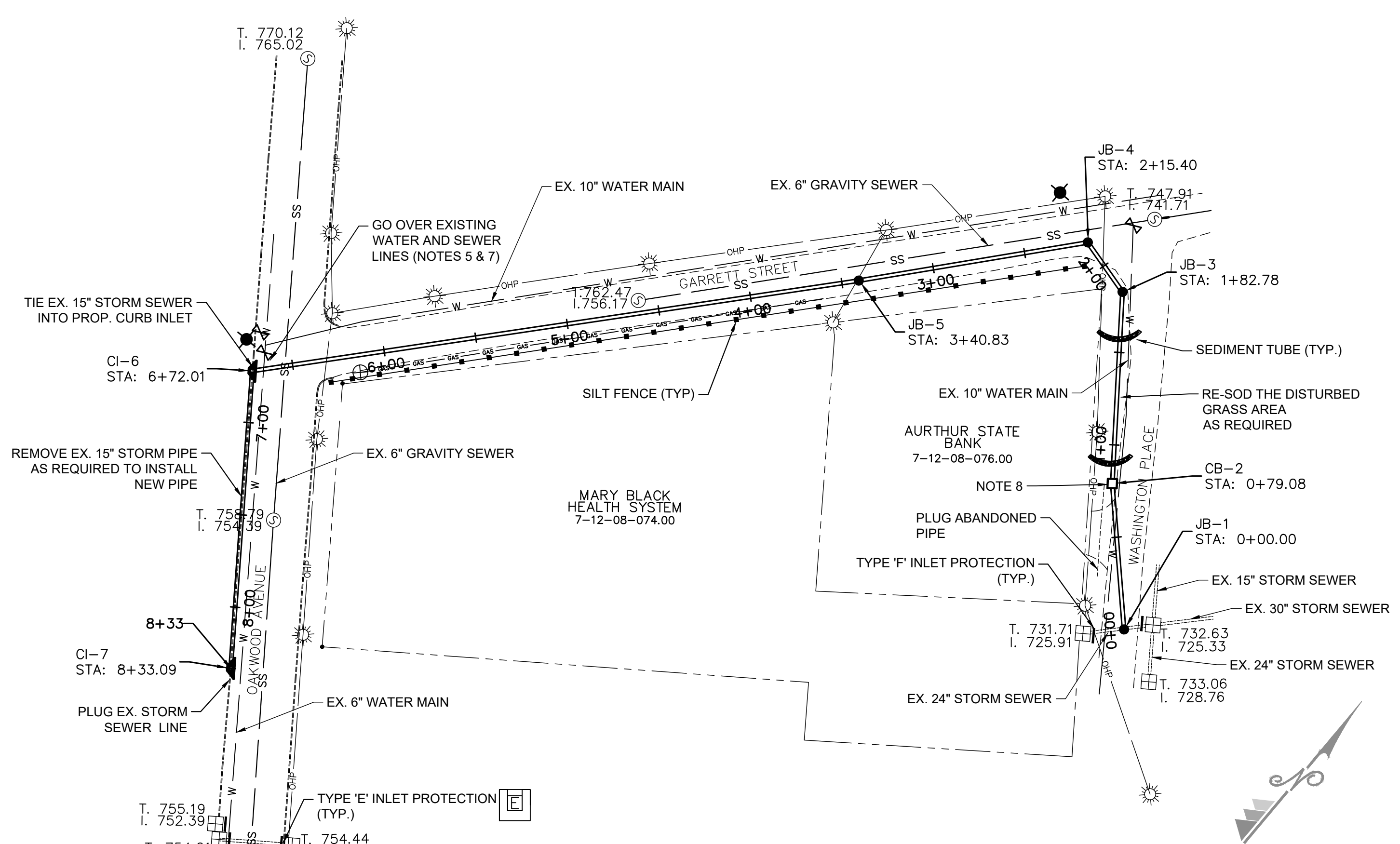
- CLEARLY MARK LIMITS OF DISTURBANCE AND RECEIVE APPROVAL FROM RESIDENT ENGINEER.
- INSTALL EROSION CONTROL MEASURES IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN.
- INSTALL ANY BYPASS PUMPING OR TEMPORARY DIVERSIONS AS REQUIRED TO DIVERT ANY FLOW WITHIN THE CHANNEL.
- REMOVE PAVEMENT, CURB & GUTTER, SIDEWALK, CATCH BASIN TOPS AND ANY OTHER SURFACES ABOVE THE EXISTING. CULTVERT.
- REMOVE EXISTING CULTVERT.

- DEMOLITION NOTES:**
- INSTALL EROSION CONTROL MEASURES PRIOR TO BEGINNING DEMOLITION.
 - MAINTAIN ACCESS TO EXISTING FACILITIES AND NEIGHBORING DRIVEWAYS DURING CONSTRUCTION.
 - PROTECT ALL EXISTING FACILITIES AND UTILITIES TO REMAIN AND REPAIR/REPLACE TO NEW CONDITION IF DAMAGED.
 - VERIFY ALL UTILITIES TO BE DEMOLISHED OR ABANDONED WITH OWNER PRIOR TO REMOVAL OR DEMOLITION. RELOCATE UTILITIES AS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL PROJECT. DISPOSE OFFSITE ALL UTILITY PIPING AND STRUCTURES NOTED TO BE DEMOLISHED AN REMOVED. COORDINATE ALL WATER LINE AND SEWER LINE CROSSINGS WITH SPARTANBURG WATER PRIOR TO CONSTRUCTION.
 - REMOVE AND DISPOSE OF ALL DEMOLITION DEBRIS RESULTING FROM THE WORK REQUIRED TO COMPLETE THE PROJECT AT AN APPROVED OFFSITE FACILITY.
 - SAW CUT ASPHALT AND CONCRETE TO CLEAN LINES.

- TRAFFIC CONTROL:**
- CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH SCDOT REQUIREMENTS. CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL PLAN HAS BEEN APPROVED BY ENGINEER AND CITY OF SPARTANBURG.
 - ANY REQUIRED TEMPORARY LANE OR ROAD CLOSURES REQUIRE PRIOR AUTHORIZATION FROM SCDOT AND CITY OF SPARTANBURG. ANY PLANNED DETOURS SHALL BE INCLUDED IN THE TRAFFIC CONTROL PLAN.
 - PROVIDE CONSTRUCTION FENCING, TEMPORARY BARRICADES, PORTABLE DRUMS, OR OTHER DEVICES TO SEPARATE DEMOLITION WORK AREAS FROM EXISTING ROADWAY AND DRIVEWAYS.

- EROSION CONTROL:**
- SEE SHEET 3.0 FOR EROSION CONTROL NOTES AND DETAILS.
 - EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE OR DEMOLITION.

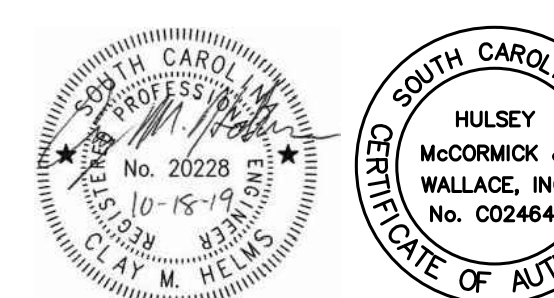
- EROSION CONTROL LEGEND**
- REINFORCED SILT FENCE:
 - SEDIMENT TUBE:
 - TYPE A - SEDIMENT TUBE INLET PROTECTION:
 - TYPE E - SURFACE COURSE CURB INLET FILTER:



PROFILE - PROPOSED STORM DRAIN
SCALE: 1"=50' H., 1"=10' V.

LEGEND

	EXISTING	PROPOSED
BENCHMARK		
BORE HOLE		
PROPERTY LINE / RIGHT OF WAY		
EASEMENT		
100-YEAR FLOOD LIMITS		
WETLANDS		
CREEK / SWALE		
FENCE		
RAILROAD TRACK		
GUARD RAIL		
CONTOUR (MINOR)		
CONTOUR (MAJOR)		
SPOT ELEVATION		
STORM SEWER PIPE		
HEADWALL		
DROP INLET/YARD INLET		
JUNCTION BOX		
END SECTION		
CATCH BASIN		
SANITARY SEWER MANHOLE		
SANITARY SEWER LINE (GRAVITY)		
SANITARY SEWER LINE(FORCEMAIN)		
SANITARY SEWER CLEANOUT		
WATER LINE		
FIRE HYDRANT		
WATER VALVE		
WATER METER		
WELL		
GAS LINE		
GAS VALVE		
GAS METER		
LIGHT POLE		
POWER/UTILITY POLE/GUY WIRE		
OVERHEAD POWER,PHONE,CABLE		
UNDERGROUND POWER		
UNDERGROUND TELEPHONE		
TRANSFORMER		
TELEPHONE BOX		
CABLE BOX		
TREE		
ASPHALT PAVEMENT		
CONCRETE PAVEMENT		
CURB AND GUTTER		
UNPAVED/GRAVEL ROAD		
SILT FENCE		
RIPRAP		



ISSUE SEQUENCE

NO.	DATE	DESCRIPTION
1	10-16-19	ISSUE FOR BIDS



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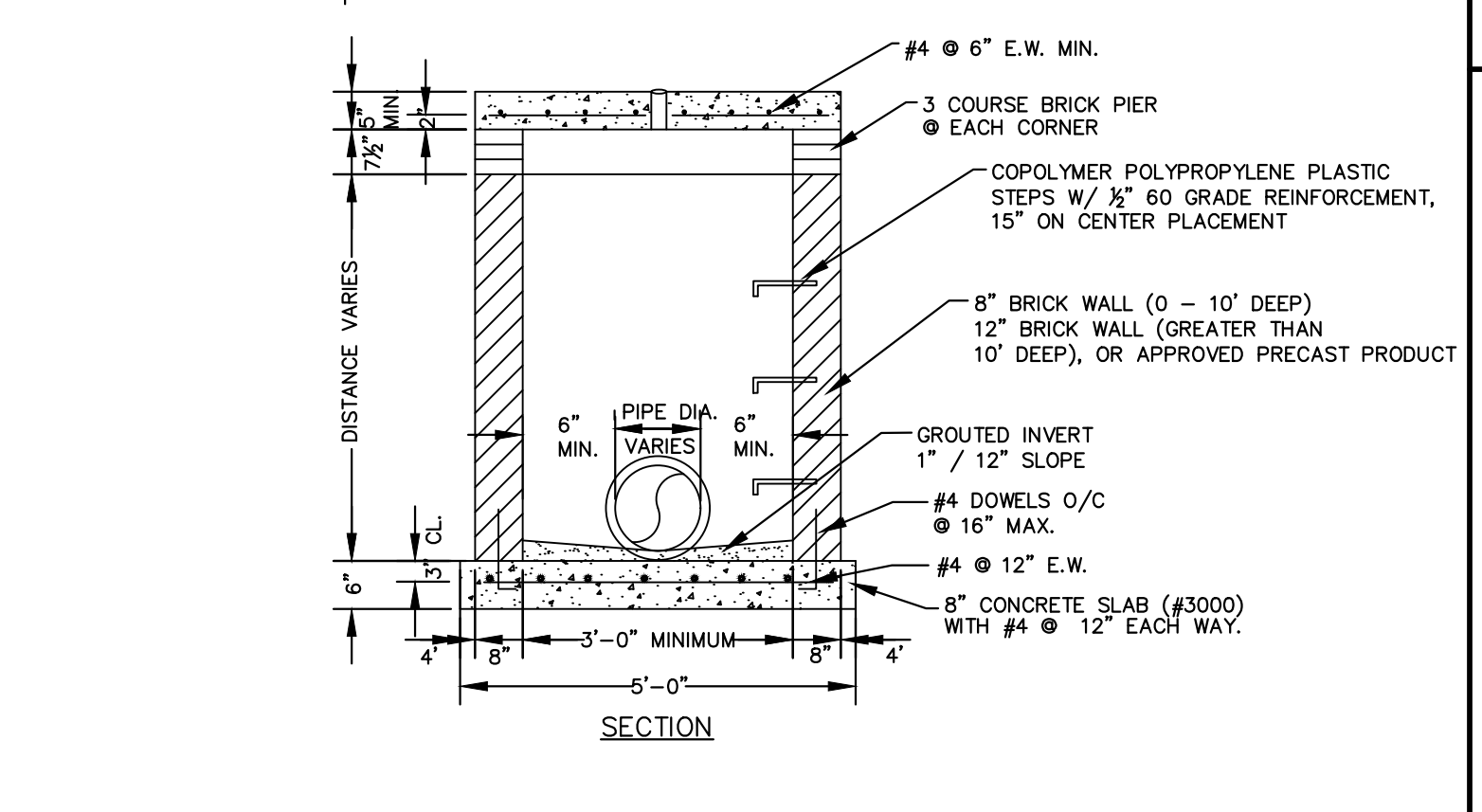
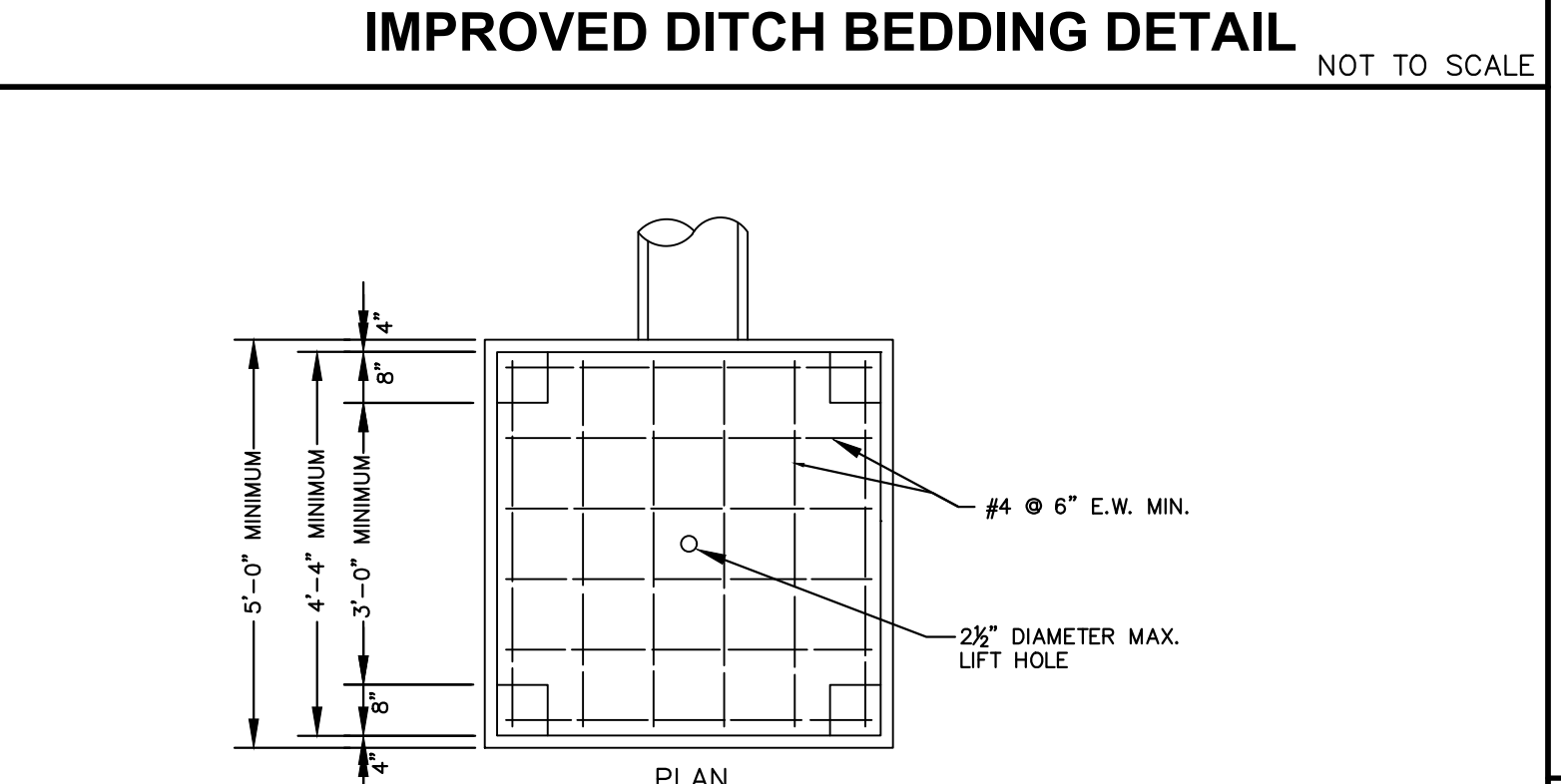
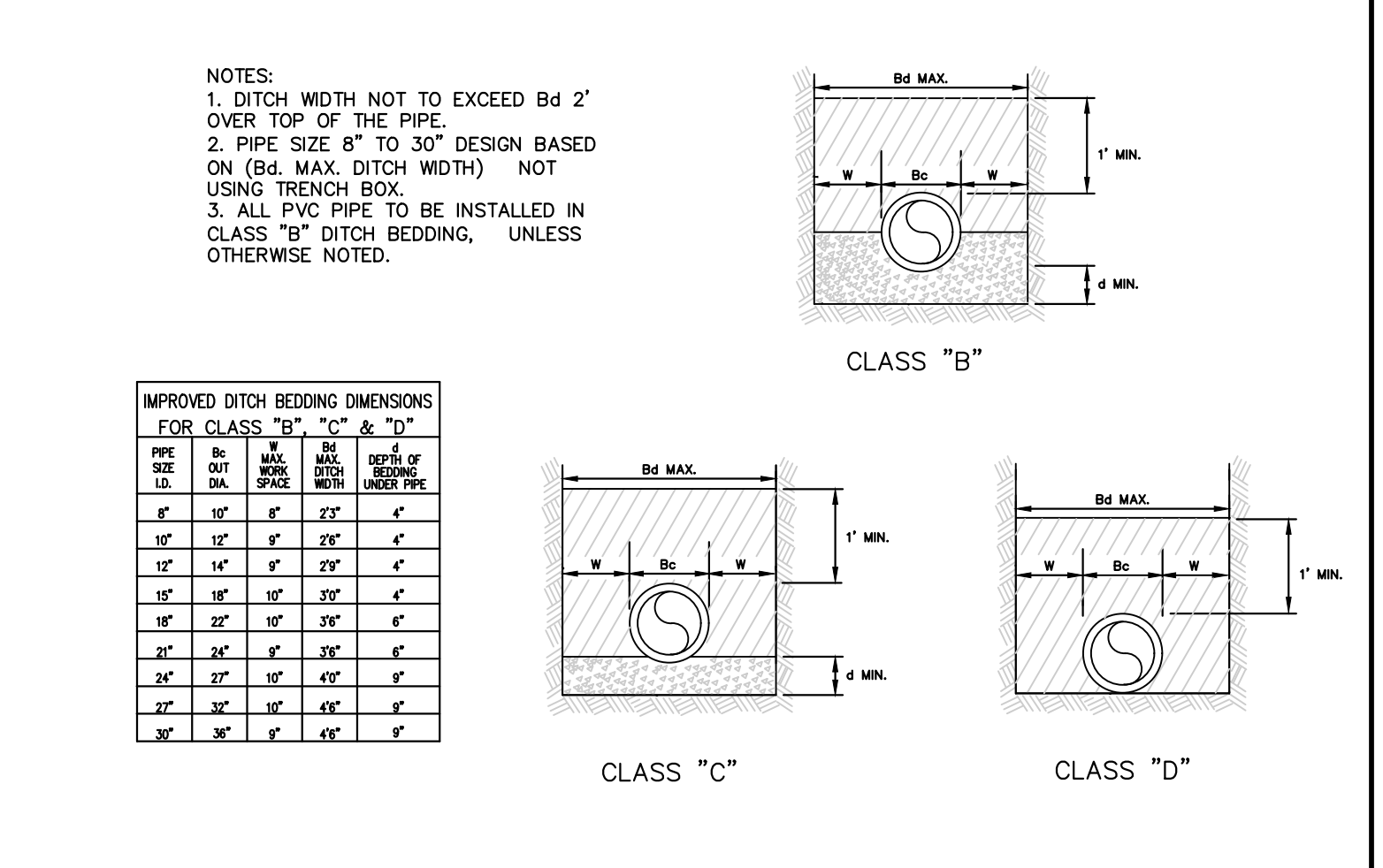
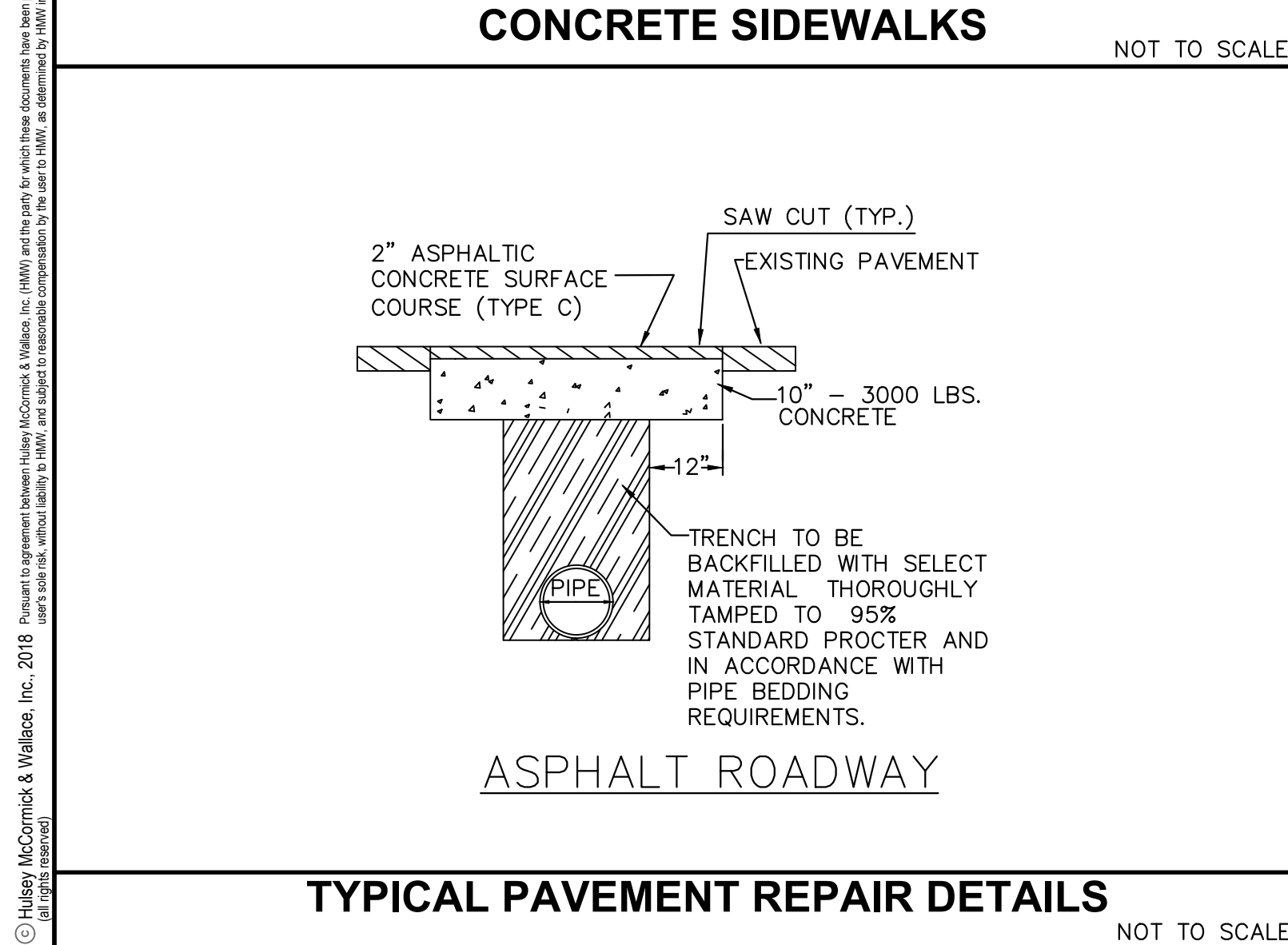
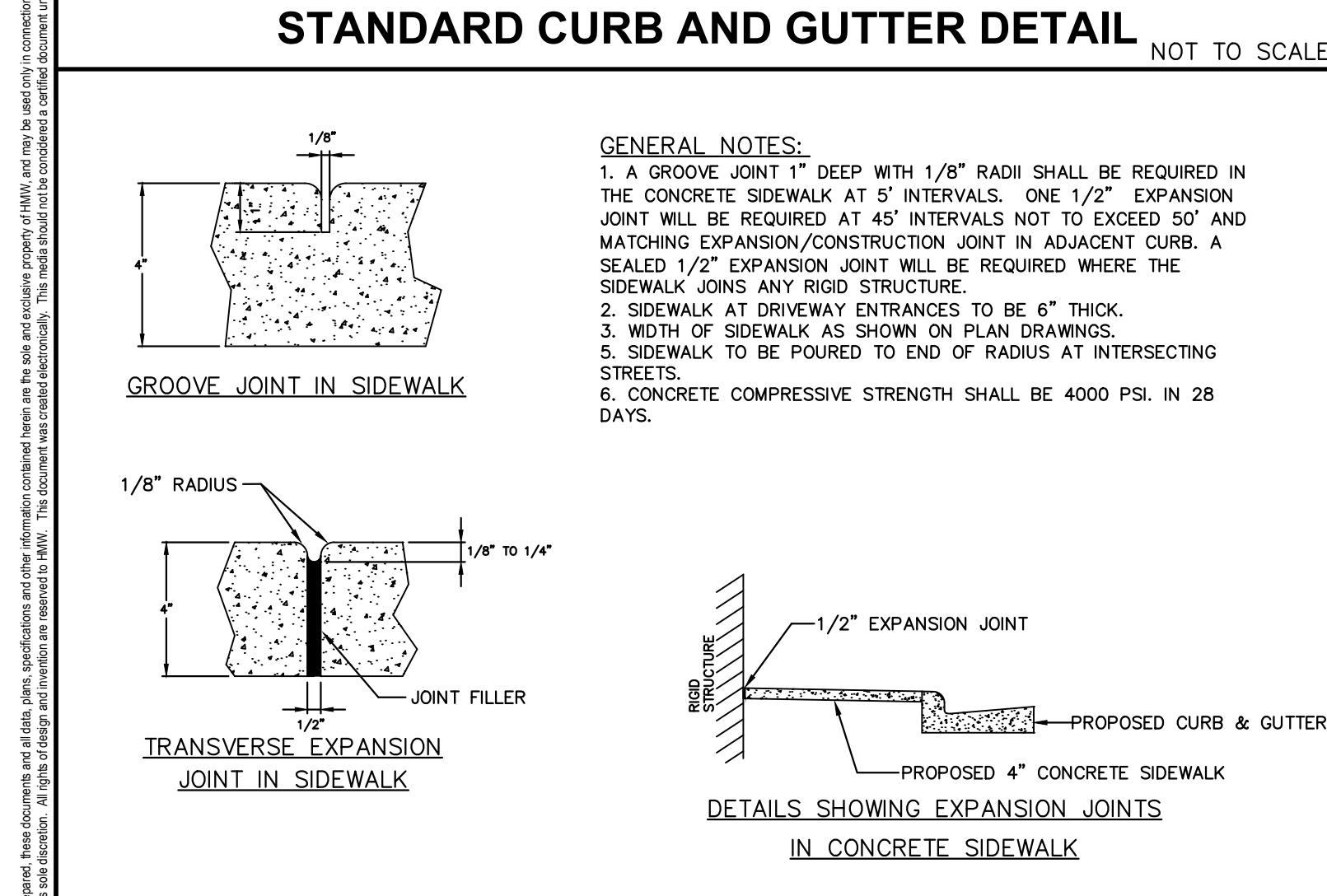
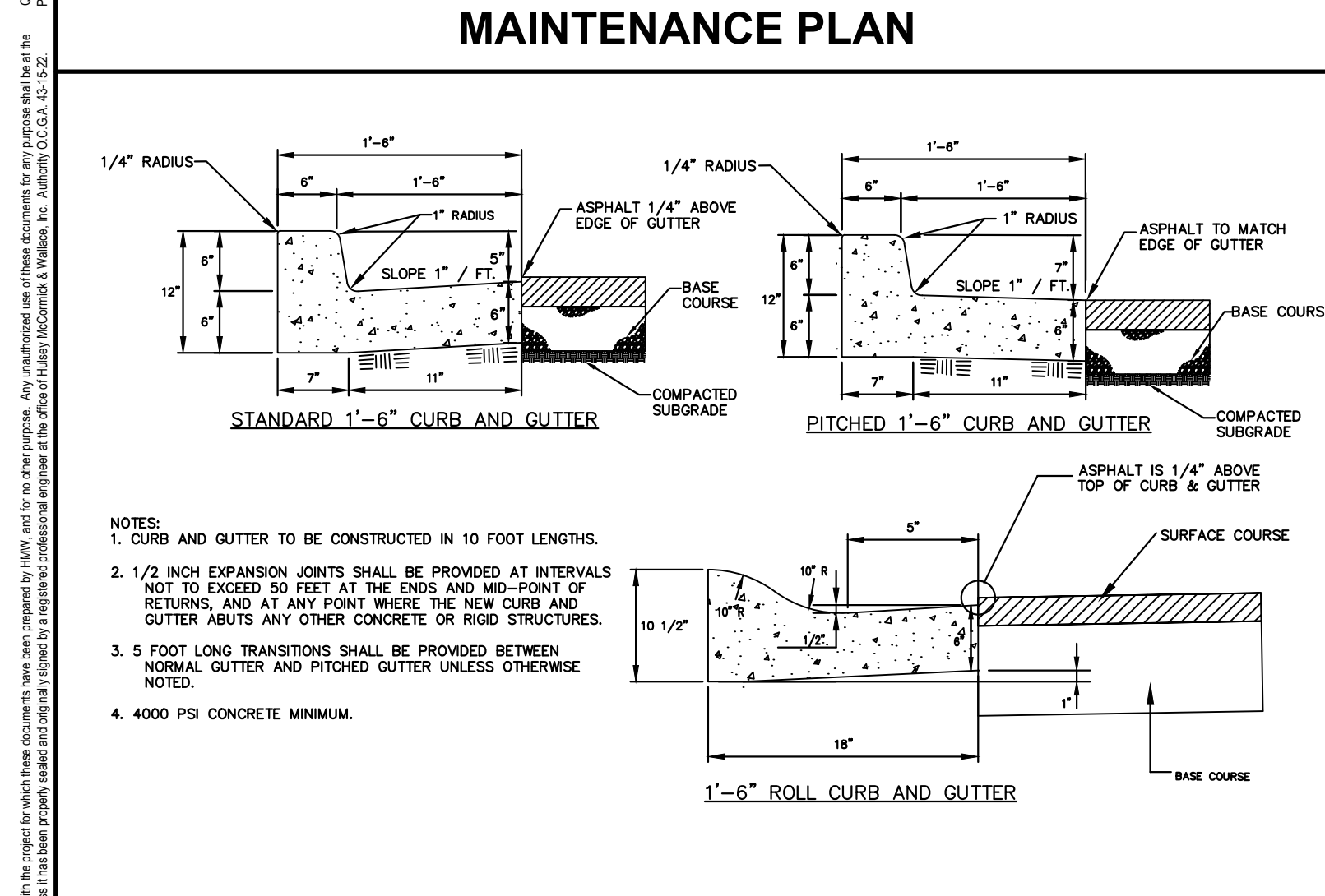
STORM DRAINAGE - PLAN & PROFILE
Oakwood Avenue
Stormwater Improvements
City of Spartanburg
Spartanburg, South Carolina

PROJECT NO.: SPA 004
DESIGNED: CMH
CHECKED: ..
APPROVED: ..

C1.0

MAINTENANCE PLAN

- 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.
- 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. WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE. 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.
- ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED AT LEAST EVERY SEVEN DAYS. IF SITE INSPECTIONS IDENTIFY BMPs THAT ARE DAMAGED OR ARE NOT OPERATING EFFECTIVELY, MAINTENANCE MUST BE PERFORMED AS SOON AS PRACTICAL OR AS REASONABLY POSSIBLE, AND BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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 CANT 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.
- 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.



SCHEDULE OF GOVERNING DIMENSIONS FOR KO BOXES NOT EXCEEDING 7 FT. BURIAL DEPTH

KO BOX SIZE	MAXIMUM PIPE O.D. SHORT WALL	MAXIMUM PIPE O.D. LONG WALL
KO3446	33"	45"
KO4848	47"	47"

SCHEDULE OF GOVERNING DIMENSIONS FOR PIPE OVER 7 FT. DEPTH AND ROUND STRUCTURES

KO BOX SIZE	MAXIMUM PIPE O.D. SHORT WALL	MAXIMUM PIPE O.D. LONG WALL
4'	34"	28"
6'	44"	37"
8'	56"	45"
10'	70"	54"
12'	84"	62"
15'	98"	79"

CATCH BASIN - WEIR INLET

NOT TO SCALE

MAXIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

PIPE DIAM.	CLASS I			CLASS II			CLASS III		
	COMPACTED	DUMPED	95%	90%	95%	95%	90%	95%	
4"	37	18	25	18	18	18	18	18	
6"	44	20	29	20	21	21	21	21	
8"	52	22	37	22	23	23	23	23	
10"	58	24	45	24	25	25	25	25	
12"	65	26	54	26	27	27	27	27	
15"	78	28	62	28	29	29	29	29	
18"	91	30	70	30	31	31	31	31	
24"	108	32	84	32	33	33	33	33	
30"	125	34	98	34	35	35	35	35	
36"	142	36	112	36	37	37	37	37	
42"	159	38	126	38	39	39	39	39	
48"	176	40	140	40	41	41	41	41	
54"	193	42	154	42	43	43	43	43	
60"	210	44	168	44	45	45	45	45	

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12. LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS: NO HYDROSTATIC PRESSURE, UNIT WEIGHT OF SOIL (γs) = 120 PCF

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIA.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	38"
24"	48"
30"	64"
36"	80"
42"	96"
48"	112"
54"	128"
60"	144"

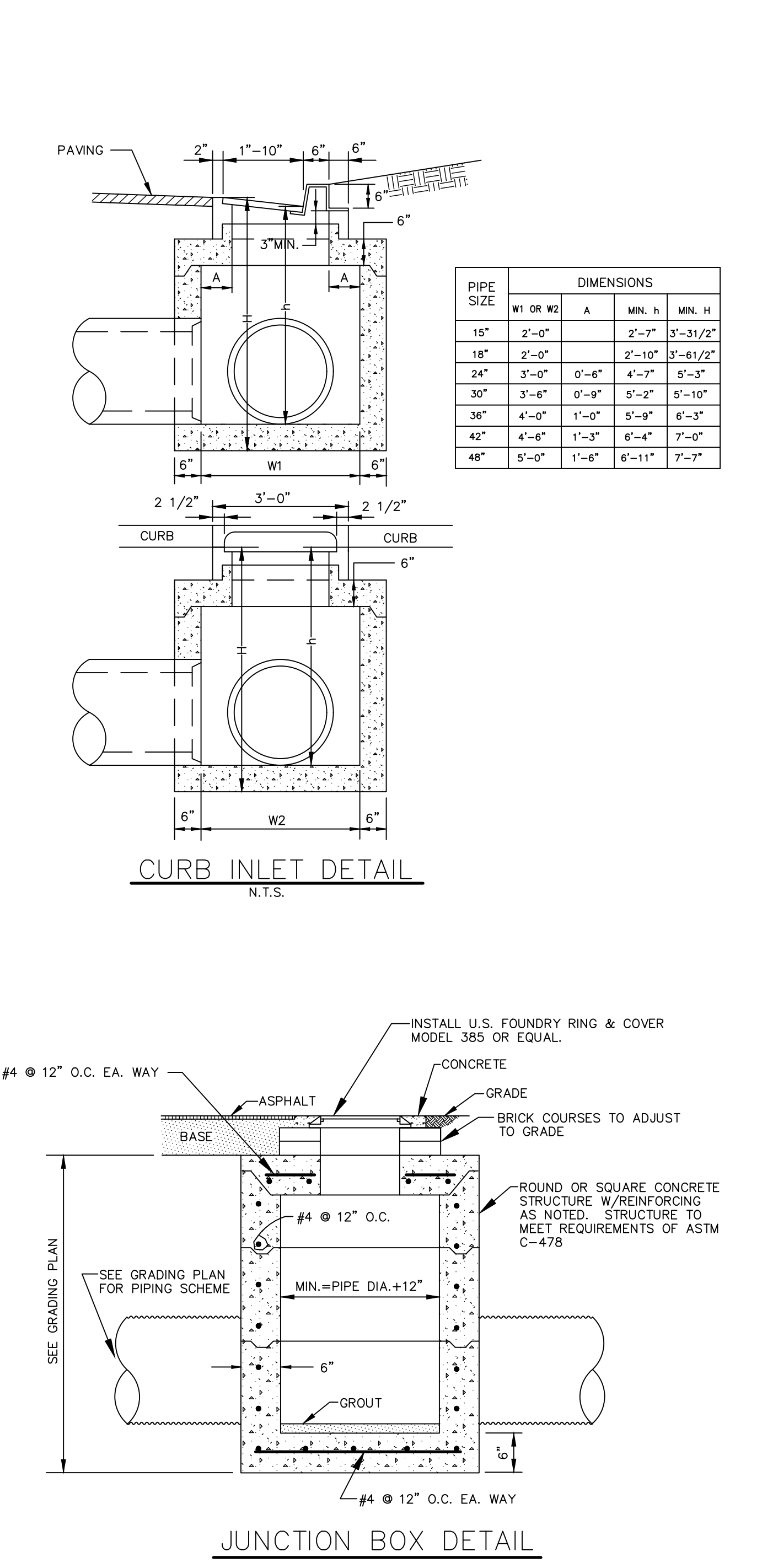
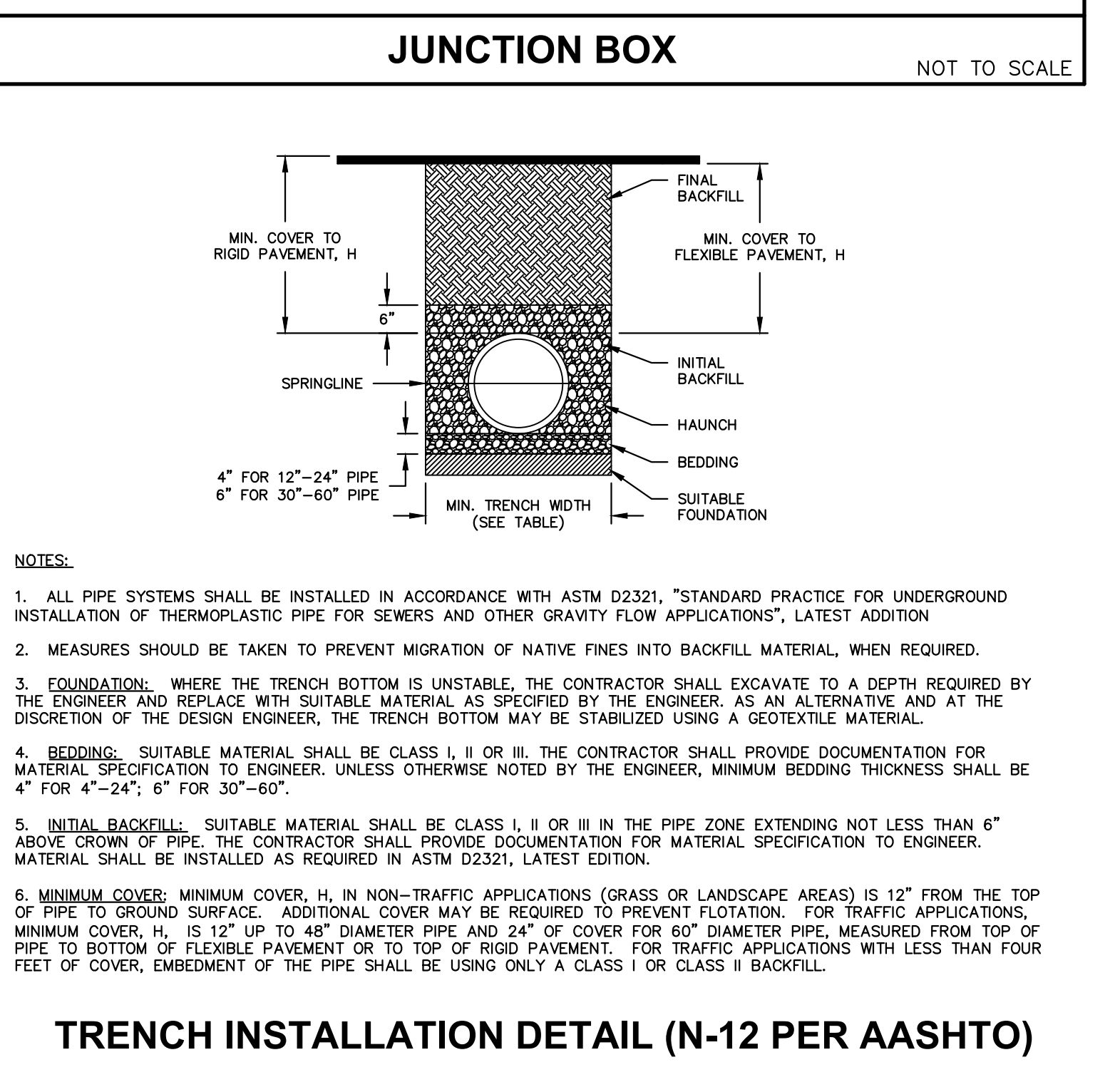
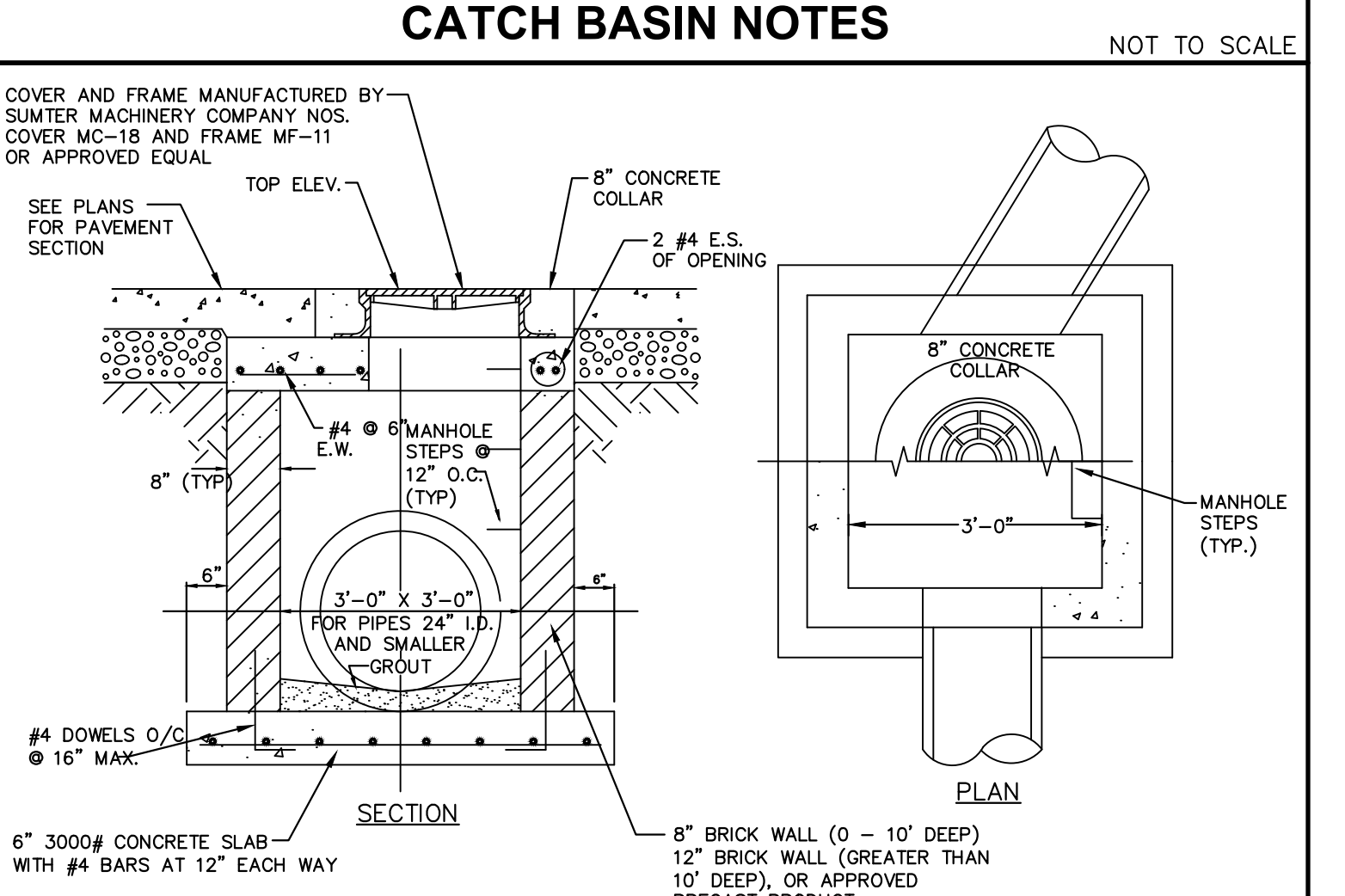
MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS**

PIPE DIAM.	H=25 SURFACE LIVE LOADING CONDITION	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER **SEE BACKFILL REQUIREMENTS IN NOTE 6.

CATCH BASIN / DROP INLET / JUNCTION BOX NOTES:

- FOR IN PLACE CONSTRUCTION OF CATCH BASINS, THE WALLS MAY BE EITHER BRICK MASONRY OR CLASS 3000 CONCRETE. CONCRETE WALLS ARE TO BE 6" THICK WITH A REINFORCING STEEL AREA OF 0.20 SQ. INCH PER FT. BRICK WALLS ARE TO BE 8" THICK. CONCRETE BRICK AND SIMILAR SOLID UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 55, GRADE S-II.
- THE BOTTOM SLAB OF THE BOX SHALL BE A MINIMUM OF 6" THICK CLASS 3000 CONCRETE WITH A REINFORCING STEEL AREA OF 0.20 SQ. INCH PER FT. WIRE MESH MAY BE USED IN LIEU OF STEEL BARS PROVIDED A MINIMUM OF 0.20 SQ. INCH PER FT. IS MET.
- MORTAR SHALL BE TYPE S OR M.
- IF DESIRED THESE ITEMS MAY BE PRECAST PRIOR TO INSTALLATION IN LIEU OF BEING CAST IN PLACE. THE USE OF PRECAST UNITS WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF OBTAINING SATISFACTORY INSTALLATIONS. SEE STANDARD DRAWING FOR PRECAST CONCRETE DRAINAGE BOXES OR STRUCTURES FOR ADDITIONAL DETAILS AND SPECIFICATIONS.
- REINFORCING STEEL SHALL BE ASTM A-706, LOW ALLOY STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT, GRADE 60. WIRE MESH SHALL CONFORM TO AASHTO M 55 AND M 221.
- IF STRUCTURE DEPTH EXCEEDS 4'-6", METAL STEPS ARE TO BE PLACED ON WALL. SEE STEP REINFORCEMENT, GRADE 60. WIRE MESH SHALL CONFORM TO AASHTO M 55 AND M 221.
- CASTING SHALL CONFORM TO AASHTO M 105, CLASS 35B AND THE LOAD TEST OF AASHTO M 306 (40,000LBS.).
- (a) STEEL GRATES AND FRAME MAY BE USED IN LIEU OF CAST IRON AS LONG AS THE LOADING AND HYDRAULIC REQUIREMENTS ARE MET, AND ARE ON THE DEPARTMENT'S LIST OF APPROVED SUPPLIERS.
(b) STEEL GRATES SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111.
(c) STEEL GRATES AND FRAMES SHALL BE DIMENSIONED TO BE INTERCHANGEABLE WITH EACH PIECE OF THE CAST IRON GRATE AND FRAME SHOWN. STEEL GRATES MUST HAVE POSITIVE MEANS TO BE RETAINED IN THE FRAME.
(d) STRENGTH REQUIREMENTS OF STEEL GRATES AND FRAMES MUST MEET AASHTO M 306.
- AFTER THE FRAME AND HOOD (IF APPLICABLE) ARE SET, THE FINAL 4" OF CLASS 3000 CONCRETE IS TO BE POURED FLUSH WITH THE OUTSIDE EDGE OF THE CATCH BASIN ON ALL SIDES. PROVIDE PROTECTION FOR BOLTS AND NUTS AT FRAME ADJUSTMENT SLOTS. BOLTS AND NUTS SHALL MEET ASTM A-307 AND WILL BE GALVANIZED ACCORDING TO AASHTO M 111.
- THE CONTRACT UNIT PRICE FOR CATCH BASINS SHALL INCLUDE THE COST OF FURNISHING ALL MATERIALS AND WORK INCIDENTAL TO THE CONSTRUCTION OF THE STRUCTURE COMPLETE IN PLACE AS SHOWN IN ACCORDANCE WITH THE SC DOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (LATEST EDITION).
- THE SOFFIT (INSIDE TOP OF PIPE) OF THE OUTLET PIPE SHOULD BE NO HIGHER THAN THE FLOW-LINE OF THE INLET PIPE, UNLESS A PRECAST STRUCTURE IS SPECIFIED.
- GRATE OPENINGS THAT EXCEED 1/2" ARE NOT SUITABLE FOR PEDESTRIAN TRAFFIC.
- AFTER THE FRAME (AND HOOD IF APPLICABLE) ARE SET, THE FINAL 4" OF CLASS 3000 CONCRETE IS TO BE POURED FLUSH WITH THE OUTSIDE EDGE OF THE CATCH BASIN ON ALL SIDES. PROVIDE PROTECTION FOR BOLTS AND NUTS AT FRAME ADJUSTMENT SLOTS. BOLTS AND NUTS SHALL MEET ASTM A-307 AND WILL BE GALVANIZED ACCORDING TO AASHTO M 111.
- GRATE OPENINGS THAT EXCEED 1/2" AND ARE NOT SUITABLE FOR PEDESTRIAN TRAFFIC.
- ALL DRAINAGE STRUCTURES SHALL MEET SCDDT SPECIFICATIONS.
- ALL STRUCTURE INVERTS SHALL BE PAVED AND SLOPED TO OUTLETS.
- ALL YARD INLETS SHALL HAVE 6" MIN. EXPOSED CONCRETE PERIMETER COLLARS.
- ALL KNOCKOUT BOXES OR OTHER PRECAST BOXES SHALL HAVE TOP 12" BRICKED TO ALLOW FOR FIELD ADJUSTMENT IF REQUIRED.
- ALL PIPE LENGTHS SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LENGTHS WITH FIELD CONDITIONS.



STORM DRAINAGE - DETAILS

Oakwood Avenue
Stormwater Improvements
City of Spartanburg
Spartanburg, South Carolina

811
Know what's below.
Call before you dig.

PROJECT NO.: SPA 004
DESIGNED: CMH
CHECKED: ...
APPROVED: ...

C2.0

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SPARTANBURG SOUTH CAROLINA
No. 20228
10-15-19
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
W. H. HOOPER, III

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
HULSEY MCCORMICK & WALLACE, INC.
No. C02484

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NO.	DATE	DESCRIPTION
1	10-16-19	ISSUE FOR BIDS

City of SPARTANBURG
south carolina

Hulsey McCormick & Wallace
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STORM DRAINAGE - DETAILS

Oakwood Avenue
Stormwater Improvements
City of Spartanburg
Spartanburg, South Carolina

811
Know what's below.
Call before you dig.

PROJECT NO.: SPA 004
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GRASSING NOTES:

- USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION.
- SEED CONFORM TO ALL STATE LAWS AND TO ALL REQUIREMENTS AND REGULATIONS OF THE SOUTH CAROLINA DEPARTMENT OF AGRICULTURE. DELIVER TO SITE EACH VARIETY OF SEED INDIVIDUALLY PACKAGED AND TAGGED TO SHOW NAME, NET WEIGHT, ORIGIN AND LOT NUMBER.
- FERTILIZERS CONFORM TO STATE FERTILIZER LAW.
- AT TIME OF DELIVERY, FURNISH THE ENGINEER INVOICES OF ALL MATERIALS RECEIVED IN ORDER THAT APPLICATION RATES MAY BE DETERMINED. IMMEDIATELY REMOVE FROM THE SITE MATERIALS THAT DO NOT COMPLY WITH THE SPECIFIED REQUIREMENTS, AND PROMPTLY REPLACE WITH MATERIALS MEETING THE SPECIFIED REQUIREMENTS.
- PROVIDE A MIXED FERTILIZER WITH A DESIGNATION SUCH AS 10-10-10, WHERE THE FIRST NUMBER REPRESENTS THE MINIMUM PERCENT OF NITROGEN REQUIRED, THE SECOND NUMBER REPRESENTS THE MINIMUM PERCENT OF AVAILABLE PHOSPHORIC ACID REQUIRED, AND THE THIRD NUMBER REPRESENTS THE MINIMUM PERCENT OF WATER SOLUBLE POTASH REQUIRED IN THE FERTILIZER. FOR CENTIPEDE GRASS, USE ONLY 15-0-15 OR 16-4-8 FERTILIZER. FERTILIZER SHALL BE DELIVERED TO THE SITE IN BAGS LABELED WITH THE MANUFACTURER'S GUARANTEED ANALYSIS.
- PROVIDE GRASS SEED WHICH IS: FREE FROM NOXIOUS WEED SEEDS, AND RECLEANED. GRADE A RECENT CROP SEED, TREATED WITH APPROPRIATE FUNGICIDE AT TIME OF MIXING. DELIVERED TO THE SITE IN SEALED CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS.
- LIME: PROVIDE AGRICULTURAL GRADE, STANDARD GRADE LIMESTONE CONFORMING TO CURRENT RULES, REGULATIONS AND STANDARDS OF THE FERTILIZER BOARD OF CONTROL ISSUED AT CLEMSON UNIVERSITY. BAG TAGS OR DELIVERY SLIP FOR BULK LOADS SHALL INDICATE BRAND OR TRADE NAME, CALCIUM CARBONATE EQUIVALENT, AND OTHER PERTINENT DATA TO IDENTIFY THE LIME.
- WOOD CELLULOSE FIBER: PROVIDE WOOD CHIP PARTICLES MANUFACTURED PARTICULARLY FOR DISCHARGING UNIFORMLY ON THE GROUND SURFACE WHEN DISPENSED BY A HYDRAULIC WATER SPRAYER. MATERIAL TO BE HEAT PROCESSED SO AS TO CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS. IT SHALL BE DYED (NON-TOXIC) AN APPROPRIATE COLOR TO FACILITATE METERS.
- STRAW MULCH: PROVIDE STRAW OR HAY MATERIAL. STRAW TO BE STALKS OF WHEAT, RYE, BARLEY OR OATS. HAY TO BE TIMOTHY, PEARME, ALFALFA OR COASTAL BERBERIA. MATERIAL TO BE REASONABLY DRY AND REASONABLY FREE FROM MATURE SEED BEARING STALKS, ROOTS OR BULBULETS OR JOHNSON GRASS, NUTGRASS, WILD ONION, SANDBURG, WILD GARLIC, WILD MUSTARD, CROTLARIA PIGEON, WITCHAMIND, AND CUCKLEBERRY AND OTHER NOXIOUS WEEDS.
- EXCELISOR FIBER MULCH: TO CONSIST OF 4" TO 6", AVERAGE LENGTH, WOOD FIBERS CUT FROM SOUND, GREEN TIMBER, MAKE OUT IN SUCH A MANNER AS TO PROVIDE MAXIMUM STRENGTH OF FIBER, BUT AT A SLIGHT ANGLE TO NATURAL GRAIN OF THE WOOD.
- EROSION CONTROL BLANKET: PROVIDE ON AREAS AS SHOWN ON THE PLANS. PROVIDE EROSION CONTROL BLANKET 2150, FROM NORTH AMERICAN GREEN, OR APPROVED EQUAL.
- SEED AREAS IMMEDIATELY UPON COMPLETION OF GRADING OR CONSTRUCTION AND CLEAN-UP OPERATIONS. SLOPES GREATER THAN FOUR HORIZONTAL TO ONE VERTICAL OR NEARER TO STREAM BANKS.
- SEEDING SCHEDULES: UNLESS OTHERWISE PROVIDED, SELECT THE TYPE OF SEEDING FROM THE TABLES BELOW FOR THE UPPER STATE AND THE LOWER STATE REGIONS AS APPLICABLE TO THE PROJECT. THE TOTAL SEED RATE IN POUNDS PER ACRE IS SHOWN FOR ALL THE VARIETIES OF SEED OPPOSITE THE SCHEDULE NUMBER IN THE SEEDING SCHEDULES INCLUDED HEREIN. THE UPPER STATE REGION CONSISTS OF ALL COUNTIES WEST OF THE COUNTIES OF AIKEN, LEXINGTON, RICHLAND, Kershaw, AND CHESTERFIELD. THE LOWER STATE REGION CONSISTS OF THE ABOVE-CITED COUNTIES AND ALL COUNTIES EAST.

NO.	SEED	SEEDING RATE (LBS/ACRE)	DATE
1	COMMON BERBERIA (HULLED) 3	23	MARCH 15 TO AUGUST 14
	SERICEA LESPEDEZA (UNSCARIFIED) 2	50	
	KENTUCKY 31 FESCUE WEEDING LOVEGRASS 2	10	
2	KENTUCKY 31 FESCUE SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED) 3	50	AUGUST 15 TO MARCH 14
	COMMON BERBERIA (UNHULLED) 3	30	
	WEEDING LOVEGRASS 2	10	

NO.	SEED	SEEDING RATE (LBS/ACRE)	DATE
3	COMMON BERBERIA (HULLED) 3	30	MARCH 1 TO AUGUST 14
	WEEDING LOVEGRASS 2	10	
	SERICEA LESPEDEZA (UNSCARIFIED) 2	10	
4	COMMON BERBERIA (UNHULLED) 3	40	AUGUST 15 TO FEBRUARY 28
	WEEDING LOVEGRASS 2	10	
	SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED) 2	10	

NO.	SEED	SEEDING RATE (LBS/ACRE)	DATE
5	COMMON BERBERIA (HULLED) 3	40	AUGUST 15 TO FEBRUARY 28
	WEEDING LOVEGRASS 2	10	
	SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED) 2	10	
6	COMMON BERBERIA (UNHULLED) 3	40	MARCH 1 TO APRIL 15
	WEEDING LOVEGRASS 2	10	
	SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED) 2	10	

GRASSING NOTES:

- INCLUDES RURAL AREAS ADJACENT TO WELL-DEVELOPED LAWNS.
- DO NOT USE GIANT BERBERIA SEED INCLUDING NK-37.
- DO NOT USE GIANT BERBERIA SEED INCLUDING NK-37.
- PROVIDE AN INOCULANT FOR TREATING RESEEDING CRIMSON CLOVER SEED OF A PURE CULTURE OF NITROGEN-FIXING BACTERIA SELECTED FOR A MAXIMUM VITALITY AND ABILITY TO TRANSFORM NITROGEN FROM THE AIR INTO SOLUBLE NITRATES AND DEPOSIT THEM INTO THE SOIL. ENSURE THAT INOCULANTS CONSIST OF PUREBRED CULTURES AND ARE NOT MORE THAN ONE YEAR OLD. DO NOT PLANT CLOVER IN RURAL AREAS ADJACENT TO WELL-DEVELOPED LAWNS.
- PENSACOLA BAHIA IS ALLOWED ONLY AS SHOWN IN SEEDING SCHEDULES 3 AND 4 AT THE RATE OF 50 POUNDS PER ACRE ONLY WHEN SEEDING PIT AREAS THAT ARE GOVERNED BY THE SOUTH CAROLINA MINING ACT. OTHERWISE, DO NOT INCLUDE BAHIA SEED IN THE MIX.
- APPLY ONE-HALF OF LIME RATES AND ONE-HALF OF MAINTENANCE FERTILIZER RATES. FERTILIZER CENTERS AT THE APPLICATION RATE OF 20 POUNDS PER ACRE OF 16-4-8 OR 15-0-15.
- FERTILIZERS IN MAY AND REPEAT IN AUGUST.
- THE USE OF ITALIAN RYE GRASS IS PROHIBITED.

NO.	SEED	SEEDING RATE (LBS/ACRE)	DATE
1	BROWN TOP MILLET	50	APRIL 1 TO AUGUST 15
2	RYE GRASS ANNUAL RYE GRASS	55	AUGUST 16 TO MARCH 31

1 THE USE OF ITALIAN RYE GRASS IS PROHIBITED.

GROUND PREPARATION:

- BRING ALL AREAS TO PROPER LINE, GRADE AND CROSS SECTION INDICATED ON THE PLANS.
- REPAIR EROSION DAMAGE PRIOR TO COMMENCING SEEDING OPERATIONS.
- LOOSEN SEEDBED TO MINIMUM DEPTH OF 3".
- REMOVE ALL ROOTS, CLODS, STONES LARGER THAN 1" IN ANY DIMENSION, AND OTHER DEBRIS.
- PROVIDE AND PREPARE TOPSOIL.
- CONDUCT SOIL TEST TO DETERMINE PH FACTOR. IF PH IS NOT IN THE RANGE OF 6.0 TO 6.5, ADJUST.

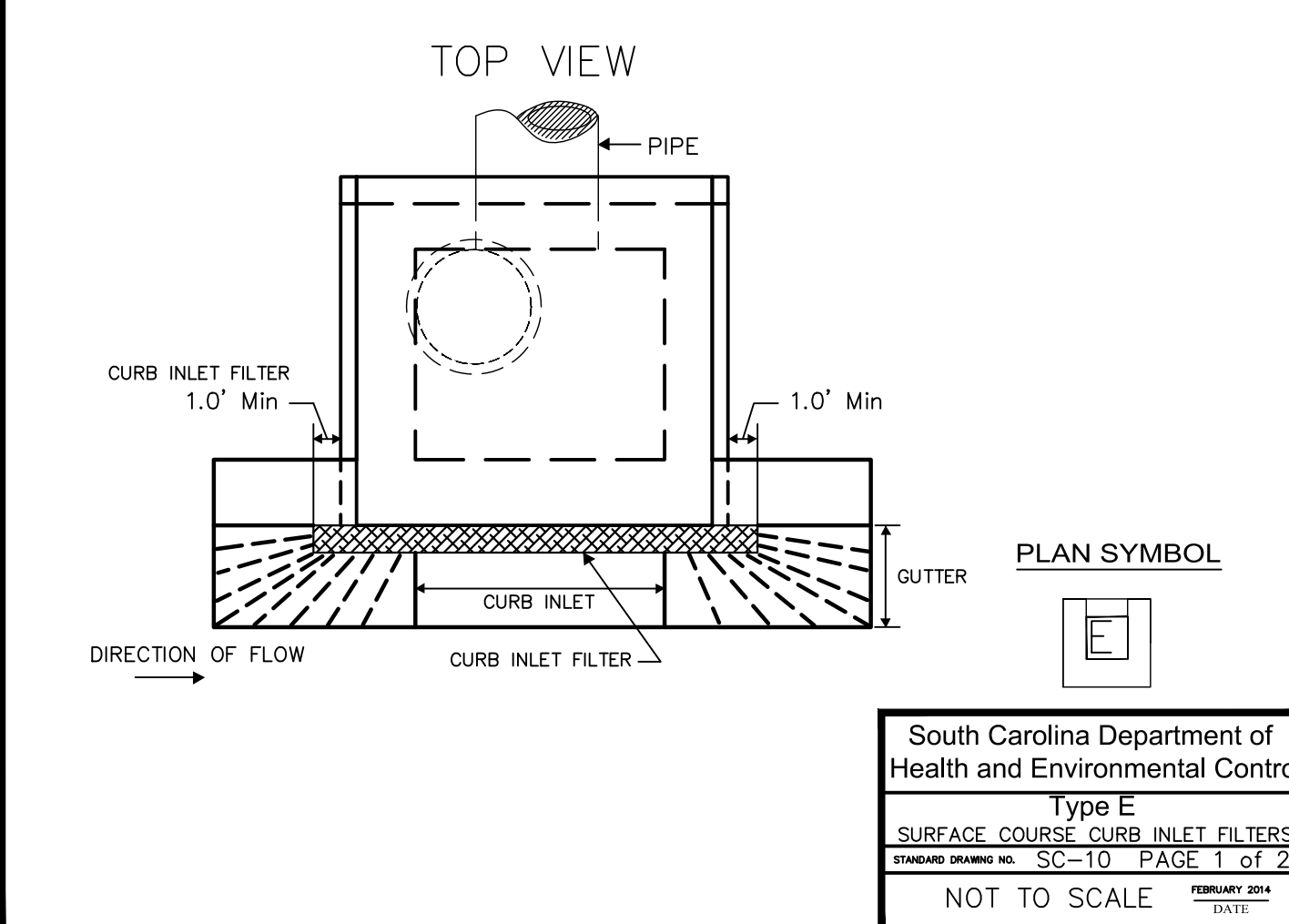
APPLICATION OF FERTILIZER:

- SPREAD UNIFORMLY OVER AREAS TO BE SEED. AT: RATE OF 1000 LBS. PER ACRE.
- FERTILIZE CENTERS AT THE APPLICATION RATE OF 20 POUNDS PER ACRE OF 16-4-8 OR 15-0-15.
- USE APPROVED MECHANICAL SPREADERS.
- MIX WITH SOIL TO DEPTH OF APPROXIMATELY 3".

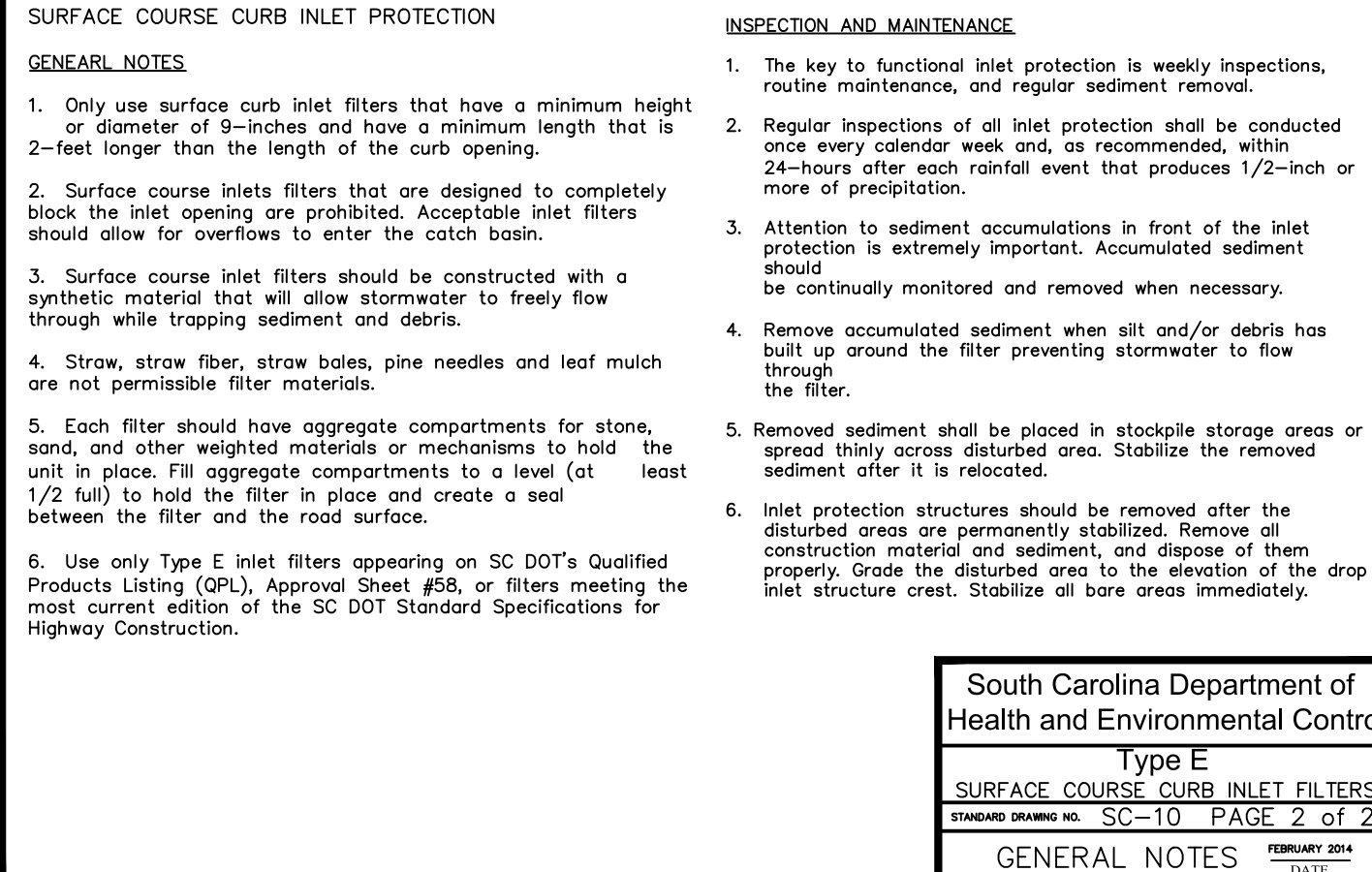
SEEDING METHODS:

- PERFORM SEEDING DURING THE PERIODS AND AT THE RATES SPECIFIED IN THE SEEDING SCHEDULES.
- DO NOT CONDUCT SEEDING WORK WHEN GROUND IS FROZEN OR EXCESSIVELY WET.
- PRODUCE SATISFACTORY STAND-UP GRASSES REGARDLESS OF PERIOD OF THE YEAR THE WORK IS PERFORMED.
- SEEDING SLOPES LESS THAN FOUR HORIZONTAL TO ONE VERTICAL.
- SHALL CONFORM TO METHODS EA, WF OR WCF AS SPECIFIED.

GRASSING NOTES



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South Carolina Department of Health and Environmental Control
 Type A
 SEDIMENT TUBE INLET PROTECTION
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 NOT TO SCALE



SEDIMENT TUBE SPACING

SLOPE	MAX. SEDIMENT TUBE SPACING
LESS THAN 2%	150- FEET
2%	100- FEET
3%	75- FEET
4%	50- FEET
5%	40- FEET
6%	30- FEET
GREATER THAN 6%	25- FEET

South Carolina Department of Health and Environmental Control
 Type E
 SURFACE COURSE CURB INLET FILTERS
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 NOT TO SCALE

SEDIMENT TUBES - GENERAL NOTES

- Sediment tubes may be installed along contours, in drainage conveyance channels, and around inlets to help prevent off-site discharge of sediment-laden stormwater runoff.
- 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.
- 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.
- Sediment tubes, when used as checks within channels, should range between 18-inches and 24-inches depending on channel dimensions. Diameters outside this range may be allowed where necessary when approved.
- Curled excelsior wood, or natural coconut products that are front of to create a sediment tube are not allowed.
- Sediment tubes should be staked using wooden stakes (2-inch x 2-inch) or steel posts (standard "J" 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.
- 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.
- The ends of adjacent sediment tubes should be overlapped 6-inches to prevent flow and sediment from passing through the field joint.
- Sediment tubes should not be stacked on top of one another, unless recommended by manufacturer.
- Each sediment tube should be installed in a trench with a depth equal to 1/5 the diameter of the sediment tube.
- Sediment tubes should continue up the side slopes a minimum of 1-foot above the design flow depth of the channel.
- Install stakes at a diagonal facing incoming runoff.

SEDIMENT TUBES - INSPECTION & MAINTENANCE

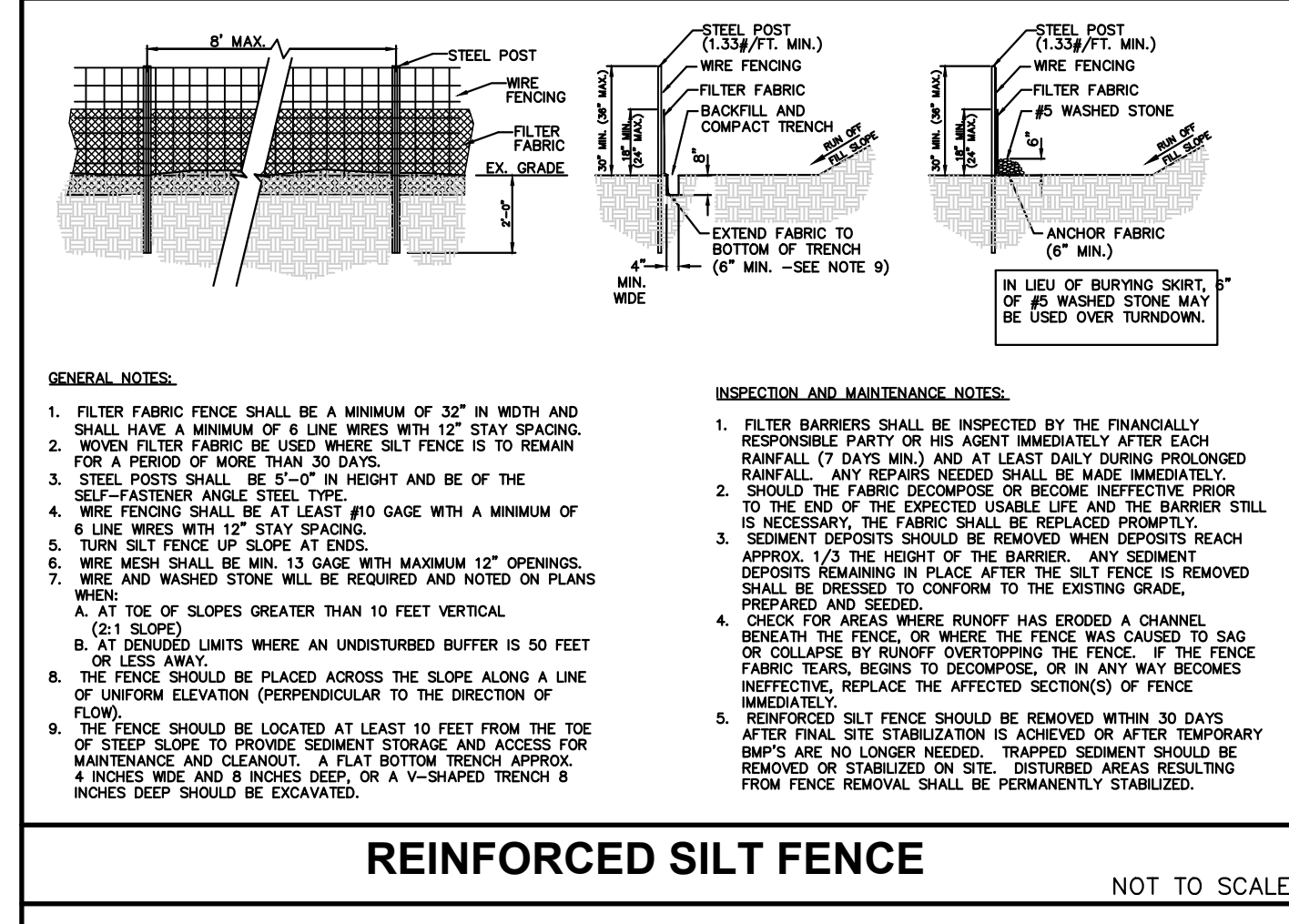
- The key to functional sediment tubes is weekly inspections, routine maintenance, and regular sediment removal.
- Regular inspections of sediment tubes shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall event that produces 1/2-inch or more of precipitation.
- Attention to sediment accumulations in front of the sediment tube is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
- Remove accumulated sediment when it reaches 1/3 the height of the sediment tube.
- Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
- Large debris, trash, and leaves should be removed from in front of tubes when found.
- If erosion causes the edges to fall to a height equal to or below the height of the sediment tube, repairs should be made immediately to prevent runoff from bypassing tube.
- Sediment tubes should be removed after the contributing drainage area has been completely stabilized. Permanent vegetation should replace areas from which sediment tubes have been removed.

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 Type E
 SURFACE COURSE CURB INLET FILTERS
 STANDARD DRAWING NO. SC-10 PAGE 2 of 2
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INSPECTION & MAINTENANCE

- The key to functional inlet protection is weekly inspections, routine maintenance, and regular sediment removal.
- Regular inspections of sediment tube 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.
- Attention to sediment accumulations in front of the sediment tube is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
- 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 it fills approximately 1/3 the depth of the sump.
- Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
- Large debris, trash, and leaves should be removed from in front of tubes when found.
- Inlet protection structures should be removed after the disturbed area is 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.
- The ends of adjacent sediment tubes should be overlapped 6-inches to prevent flow and sediment from passing through the field joint.
- Sediment tubes should not be stacked on top of one another.
- Each sediment tube should be installed in a trench with a depth equal to 1/5 the diameter of the sediment tube.
- Install stakes at a diagonal facing incoming runoff.

South Carolina Department of Health and Environmental Control
 Type A
 SEDIMENT TUBE INLET PROTECTION
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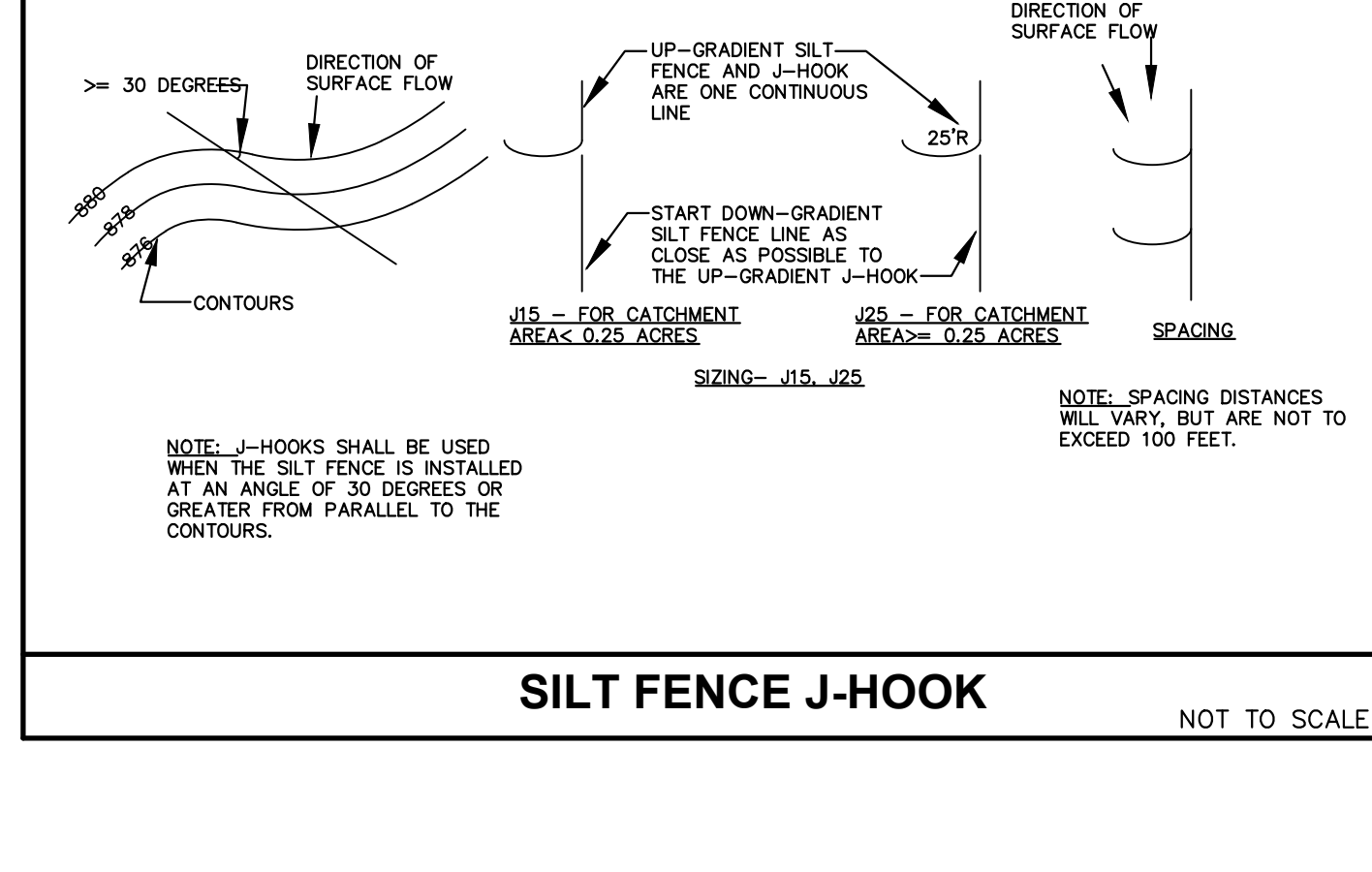
GENERAL NOTES:

- FILTER FABRIC FENCE SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
- WOODEN FILTER FABRIC BE USED WHERE SILT FENCE IS TO REMAIN FOR A PERIOD OF MORE THAN 30 DAYS.
- STEEL POSTS SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-TASTENER ANGLE STEEL TYPE.
- STEEL POSTS SHALL BE AT LEAST #10 GAGE WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
- TURN SILT FENCE UP SLOPE AT INDS.
- WIRE MESH SHALL BE MIN. 1/2" GAGE WITH MAXIMUM 12" OPENINGS.
- WIRE AND WASHED STONE WILL BE REQUIRED AND NOTED ON PLANS WHEN:
 - AT TOE OF SLOPES GREATER THAN 10:1 VERTICAL.
 - AT TOE OF SLOPES GREATER THAN 1:1 VERTICAL.
 - AT TOE OF SLOPES GREATER THAN 1:1 VERTICAL.
 - AT TOE OF SLOPES GREATER THAN 1:1 VERTICAL.
- IN LIEU OF BURIED SHOULDER OF WASHED STONE MAY BE USED OVER TURNOVER.

INSPECTION AND MAINTENANCE NOTES:

- FILTER BARRIERS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL (7 DAYS MIN) AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY AFTER EACH RAINFALL.
- SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXTENDED SERVICE LIFE, AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED IMMEDIATELY.
- SEDIMENT REMAINING IN PLACE AFTER THE SILT FENCE IS REACHED APPROX. 1/3 THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS REACHED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEED.
- CHECK FOR AREAS WHERE RUNOFF HAS ERODED A CHANNEL. BENEATH THE FENCE OR WHERE THE FENCE WAS CAUGHT TO SAG OR COLLAPSE BY RUNOFF OVERTOPPING THE FENCE. IF THE FENCE FABRIC TEARS, BEGINS TO DISINTEGRATE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED SECTION(S) OF FENCE IMMEDIATELY.
- REINFORCED SILT FENCE SHOULD BE REMOVED WITHIN 30 DAYS AFTER THE STABILIZATION IS ACHIEVED OR AFTER TEMPORARY BMP'S ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHOULD BE REMOVED AND STABILIZED ON SITE. DISTURBED AREAS RESULTING FROM FENCE REMOVAL SHALL BE PERMANENTLY STABILIZED.

REINFORCED SILT FENCE



SILT FENCE J-HOOK

NOTE: J-HOOKS SHALL BE USED WHEN THE SILT FENCE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS.

NO.	DATE	DESCRIPTION
1	10-16-19	ISSUE FOR BIDS



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EROSION CONTROL AND SEDIMENTATION - DETAILS

Oakwood Avenue
 Stormwater Improvements
 City of Spartanburg
 Spartanburg, South Carolina

PROJECT NO.:	SPA 004
DESIGNED:	CMH
CHECKED:	...
APPROVED:	...

C3.0

