

GENERAL CONSTRUCTION NOTES

NOTES ON THIS PAGE APPLY TO ALL PLAN SHEETS

GENERAL CONSTRUCTION NOTES

1. THE PIPELINE WILL BE INSTALLED WITH A MINIMUM OF 36" OF COVER THROUGHOUT THE ENTIRE PROJECT. ALL HIGH PRESSURE PIPELINE AND ALL CASINGS WILL HAVE A MINIMUM OF 48" OF COVER. CERTAIN LOCATIONS, SUCH AS ROAD CROSSINGS, HAVE A GREATER SPECIFIED DEPTH.
2. ALL ROAD CROSSINGS SCHEDULED TO BE BORED SHALL BE MADE BY AUGER, MOLE, OR DIRECTIONAL BORING; NO WATER JET BORES WILL BE PERMITTED. NCDOT PAVEMENT, FOR ROADWAYS SCHEDULED TO BE BORED, WILL NOT BE CUT WITHOUT SECURING WRITTEN PERMISSION FROM THE STATE DOT. EXCEPT WHERE SPECIFICALLY MARKED ON PLANS TO BE CUT, ALL NCDOT ROADS SHALL BE BORED. CERTAIN OTHER ROADWAYS MAY BE OPEN CUT. CONTRACTOR TO MAINTAIN AN OPEN LANE FOR TRAFFIC ON CERTAIN ROADWAYS AND DRIVEWAYS WHEN OPEN TRENCHING (SEE SPECIFIC INSTRUCTIONS FOR EACH ROAD). THE PIPELINE WILL BE INSTALLED WITH A MINIMUM OF 48" COVER AT NCDOT ROADWAY CROSSINGS.
3. WHERE THE PIPELINE CROSSES DRAINAGE DITCHES, CREEKS OR LAND SUBJECTED TO FLOODING, THE PIPE SHALL BE INSTALLED AT A MINIMUM COVER OF FORTY-EIGHT (48") OR AS OTHERWISE REQUIRED BY THE ENGINEER, PLANS OR SPECIFICATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES AND/OR PENALTIES RESULTING FROM ALL NON-COMPLIANCE WITH FEDERAL, STATE AND LOCAL PERMITS AND ENCROACHMENT AGREEMENTS.
5. A NUMBER OF UTILITIES ARE SHOWN ON PLANS. THIS UTILITY INFORMATION IS PROVIDED AS A TOOL, HOWEVER THE CITY DOES NOT INSURE THIS DATA IS CORRECT. THE CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY LOCATIONS, MARKINGS, AND DAMAGE ON THE PROJECT. PLEASE CONTACT NC ONE-CALL AT 811 FOR UTILITY LOCATIONS ON THE PROJECT.
6. THE ALIGNMENT OF THE PIPELINE IS DETAILED ON THE PLAN SHEETS. IN GENERAL THE CONTRACTOR MAY VARY THIS HORIZONTAL ALIGNMENT ±1' TO AVOID OTHER UTILITIES OR DRAINAGE STRUCTURES. THE PIPELINE SHALL BE INSTALLED A MINIMUM OF 4' FROM THE TRAVEL LANE EDGE OF PAVEMENT, UNLESS OTHERWISE SPECIFIED ON THE PLANS. IF THE PRESENCE OF THE UTILITIES AND/OR DRAINAGE STRUCTURES REQUIRE THE GAS MAINS TO BE LOCATED OUTSIDE OF THE RANGES ABOVE, CONTACT THE ENGINEER FOR APPROVAL.
7. THE CONTRACTOR IS RESPONSIBLE TO INSTALL THE PIPE AND WORK WITHIN THE RIGHT-OF-WAY PROVIDED.
8. TRACER WIRE TO BE BURIED WITH THE POLYETHYLENE PIPE SHALL BE AWG 10 SINGLE CONDUCTOR SOLID COPPER WITH 600 VOLT INSULATION DESIGNED TO MEET N.E.C. REQUIREMENTS FOR BURIED SERVICE. IT SHALL BE BURIED SIX TO TWELVE (6"-12") INCHES ABOVE THE PIPELINE.

TRACER WIRE TO BE INSTALLED WITH DIRECTIONALLY BORED PIPE SHALL BE COPPER CLAD STEEL OR SINGLE STRAND HARD COPPER, AWG 8 OR LARGER DIAMETER, WITH 600 VOLT POLYETHYLENE INSULATION MEETING CODE REQUIREMENTS FOR UNDERGROUND USE, AND MINIMUM TENSILE STRENGTH OF 500 POUNDS. TRACER WIRE SHALL BE FREE OF SPLICES IN BORE PATH. COPPER CLAD STEEL WIRE WILL REQUIRE APPROPRIATE CONNECTORS DESIGNED FOR COPPER CLAD STEEL WIRE.
9. SOME AREAS WILL REQUIRE CLEARING. THE CONTRACTOR IS RESPONSIBLE FOR ALL NEEDED CLEARING, MINIMUM 10' EACH SIDE OF PIPE, AND PROPER DISPOSAL OF BRUSH AND TIMBER. ALL COMPENSATION TO THE CONTRACTOR SHALL BE INCORPORATED IN THE LUMP SUM PRICE FOR CLEARING.
10. IT IS ANTICIPATED THAT SOME CONSTRUCTION LOCATIONS WILL HAVE ROCKY CONDITIONS WHICH DO NOT MEET THE SPECIFICATIONS FOR ROCK PAYMENT, BUT DO PRESENT A HAZARD TO THE PIPELINE. WHERE THE SOIL REMOVED FROM THE TRENCH IS UNSUITABLE FOR PIPELINE BEDDING BUT THE CONTRACTOR IS NOT BEING COMPENSATED FOR ROCK REMOVAL, THE OWNER WILL PROVIDE EITHER A SUITABLE BEDDING MATERIAL OR ROCK SHIELD AND COSTS ASSOCIATED WITH TRANSPORTATION TO THE CONSTRUCTION SITE AREA. THE CONTRACTOR IS TO INCLUDE STORAGE SPACE, SHORT DISTANCE (PROJECT WIDE) TRANSPORTATION, AND INSTALLATION OF THE BEDDING MATERIAL OR ROCK SHIELD IN OTHER BID ITEMS. NO OTHER COMPENSATION WILL BE MADE FOR ROCKY CONDITIONS WHICH DO NOT MEET THE REQUIREMENTS FOR ROCK REMOVAL PAYMENT.

CLEANUP

THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN CLEANUP ON A DAILY BASIS. CLEANUP SHALL BE STARTED IMMEDIATELY IN CONJUNCTION WITH THE START OF CONSTRUCTION AND SHALL CONTINUOUSLY FOLLOW AS CLOSE AS POSSIBLE TO THE PIPE LAYING AND BACK FILLING OPERATIONS. STREETS, SIDEWALKS, ETC. WILL BE WASHED OR SWEEPED ON A DAILY BASIS. UNTIMELY CLEANUP OR PIPELINE CONSTRUCTION MAY RESULT IN THE SUSPENSION OF NEW CONSTRUCTION, IF DEEMED NECESSARY BY THE ENGINEER AND/OR OWNER.

PRESSURE TESTING

1. THE PIPELINE IS TO BE PIGGED AND TESTED SEPARATELY IN SECTIONS APPROVED BY CITY OF SHELBY STAFF. PIPE JOINS MADE AFTER TESTING ARE TO BE SOAP BUBBLE TESTED.
2. A MINIMUM OF TWO "PIG" RUNS SHALL BE REQUIRED. THE FINAL PIG RUN MUST BE CLEAN AND DRY.
3. ALL HIGH PRESSURE STEEL MAIN TESTS SHALL BE AT 225 psig MINIMUM FOR 24 HOURS OR MORE USING COMPRESSED AIR OR NITROGEN. ALL OTHER STEEL MAIN TESTS SHALL BE AT 100 psig MINIMUM FOR 24 HOURS OR MORE USING COMPRESSED AIR OR NITROGEN. ALL PE MAIN TESTS SHALL BE AT 100 psig MINIMUM FOR 24 HOURS OR MORE USING COMPRESSED AIR OR NITROGEN. SERVICE LINES WILL BE TESTED AT 100 psig MINIMUM BUT TIME MAY BE REDUCED TO 1 HOUR OR MORE, USING COMPRESSED AIR OR NITROGEN. JOINING NEW PIPE TO EXISTING WILL BE FOLLOWED BY SOAP BUBBLE TESTING.
4. ALL DIRECTIONAL BORES (SPECIFIED OR NOT) SHALL BE PRE TESTED AT 100 psig FOR 2 HOURS AFTER PIPE INSTALLATION, THEN RE-TESTED AGAIN WITH ADJOINING PIPE AFTER CONNECTION.
5. CONTRACTOR TO SUPPLY ALL LABOR, MATERIALS, AND TESTING EQUIPMENT. ALL TESTS SHALL BE RECORDED ON A SHEET AND PROVIDED TO THE CITY FOR APPROVAL.

HORIZONTAL DIRECTIONAL DRILLING NOTES

1. EACH SPECIFIED BORE HAS APPROXIMATE FOOTAGES REQUIRED TO MAKE THE BORE. THE CONTRACTOR WILL BE PAID A LUMP SUM PRICE FOR DIRECTIONAL BORING AT THESE LOCATIONS, REGARDLESS OF THE ACTUAL FOOTAGE BORED AT THESE LOCATIONS. PAYMENT IS CONTINGENT UPON COMPLETION OF CROSSING WITH THE PIPE IN CONDITION ACCEPTABLE TO THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR ROCK ENCOUNTERED DURING THE DIRECTIONAL BORE.
2. EXIT AND ENTRANCE PITS SHOULD BE SUFFICIENT SIZE TO CONTAIN THE DRILLING MUD AND SPOILS.
3. DETERGENTS ARE NOT TO BE USED TO LUBRICATE THE PIPE DURING PULLBACK.
4. DRILL HEAD SHOULD BE MONITORED AND LOCATION MAPPED DURING THE DRILLING OPERATION. AN AS BUILT PLAN AND PROFILE OF THE DIRECTIONAL BORE SHALL BE SUPPLIED TO THE ENGINEER.
5. PIPE USED IN DIRECTIONAL BORE SHALL BE WELDED IF STEEL, OR BUTT FUSED IF POLYETHYLENE. BACKREAM HOLE DIAMETERS SHOULD MATCH PIPE DIAMETERS AS FOLLOWS:

PIPE OUTSIDE DIAMETER (inches)	REAMER MAXIMUM DIAMETER (inches)	REAMER MINIMUM DIAMETER (inches)
10.75	16	12
8.625	14	10
6.625	12	8
4.5	8	6
2.375	6	4

6. TWO STRANDS OF TRACER WIRE ARE TO BE INSTALLED WITH DIRECTIONALLY BORED POLYETHYLENE PIPE. TRACER WIRE SHALL BE COPPER CLAD STEEL OR SINGLE STRAND HARD COPPER, AWG 8 OR LARGER DIAMETER, WITH 600 VOLT POLYETHYLENE INSULATION MEETING CODE REQUIREMENTS FOR UNDERGROUND USE, AND MINIMUM TENSILE STRENGTH OF 500 POUNDS. TRACER WIRE SHALL BE FREE OF SPLICES IN BORE PATH. COPPER CLAD STEEL WIRE WILL REQUIRE APPROPRIATE CONNECTORS DESIGNED FOR COPPER CLAD STEEL WIRE.
7. AN MDPE WEAK LINK SHALL BE INSTALLED BETWEEN THE SWIVEL AND THE LEADING END OF POLYETHYLENE PIPE TO PREVENT OVERSTRESSING OF THE PIPE. USE REDUCERS AS NECESSARY. MAXIMUM WEAK LINK DIAMETERS ARE AS FOLLOWS:

PIPE OUTSIDE DIAMETER (inches)	WEAK LINK MAXIMUM DIAMETER (inches)	WEAK LINK WALL (SDR)	PULL FORCE NOT TO EXCEED
8.625	6.625	11	25,109
6.625	4.5	11	14,814
4.5	3.5	11	6835
2.375	1.5	9.3	1,904

8. PIPE ROLLERS, SKATES, OR OTHER PROTECTIVE DEVICES SHALL BE USED TO PREVENT DAMAGE TO THE PIPE FROM THE EDGES OF THE PIT OR SUB-STRUCTURES DURING PULL-IN. ROLLERS SHALL BE USED UNDER PIPE TO PROTECT THE PIPE FROM GOUGES, ELIMINATE GROUND DRAG, AND REDUCE THE PULL-IN FORCE.
9. AN ADDITIONAL FIFTEEN FEET (15') OF PIPE SHALL BE PULLED THROUGH THE EXIT PIT, EXPOSED, AND EXAMINED FOR DAMAGE.
10. INSTALLATION OF THE PIPE SHOULD BE PLANNED SO BOTH THE FINAL BACKREAM AND THE PULL BACK CAN BE COMPLETED IN THE SAME DAY.
11. CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF EXCESS DRILLING FLUID. SPOILS AND DRILLING FLUID ARE NOT PERMITTED TO BE DISPOSED INTO STREAMS OR INTO STORM, SANITARY, OTHER DRAINAGE SYSTEMS. DISPOSAL SHOULD COMPLY WITH LOCAL ORDINANCES, REGULATIONS, AND ENVIRONMENTALLY SOUND PRACTICES. ANY EXCESS DRILLING WASTE MUST BE DISPOSED OF AT A PROPERLY PERMITTED SITE.
12. CONTRACTOR MUST PROVIDE A WRITTEN CONTINGENCY PLAN FOR CLEAN UP OF SURFACE SEEPAGE OF DRILLING FLUID AND SPOILS BEFORE BEGINNING ANY PORTION OF PROJECT.
13. PIPE INSTALLED BY DIRECTIONAL BORING SHALL BE ALLOWED TO RECOVER OVERNIGHT BEFORE CONNECTION TO OTHER PIPE.
14. PIPE INSTALLED BY DIRECTIONAL BORING SHOULD BE PIGGED AND PRESSURE TESTED ONCE AS A SEPARATE UNIT AFTER PIPE INSTALLATION AND AGAIN AS PART OF THE OTHER INSTALLATION.
15. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ANY SUBSURFACE UTILITIES DAMAGED DURING BORING, BACKREAMING, AND OTHER OPERATIONS.
16. IF A DRILL HOLE MUST BE ABANDONED, THE HOLE SHOULD BE FILLED WITH GROUT OR CEMENT TO PREVENT FUTURE SUBSIDENCE.
17. STEEL PIPE USED IN DIRECTIONAL BORES WILL BE COATED WITH 40 MILS OF POWERCRETE IN ADDITION TO 16-18 MILS FBE COATING. THE CONTRACTOR WILL COAT STEEL PIPE JOINTS WITH A POWERCRETE F-1 OR R-95 COATING KIT. POWERCRETE APPLICATION REQUIRES THE SUBSTRATE TEMPERATURE TO BE ABOVE 50 DEG. F AND BELOW 176 DEG. F DURING APPLICATION. PIPE IS NOT TO BE INSTALLED LESS THAN ONE AND ONE-HALF (1.5) HOURS AFTER APPLICATIONS OF POWERCRETE F-1 OR POWERCRETE R-95.
18. THE CONTRACTOR MAY UTILIZE DIRECTIONAL BORING TECHNIQUES IN AREAS OTHER THAN WHERE SPECIFIED AT HIS OPTION. THE CONTRACTOR SHALL BE PAID THE PRICE FOR INSTALLING THE PIPE PLUS ANY UNIT ITEMS AVOIDED AS A RESULT OF USING DIRECTIONAL BORING IN THE OPTIONAL AREAS (ITEMS SUCH AS SLICK BORING, ASPHALT CUTS, EC BLANKETS, ETC).

ONE-CALL NOTES

THE CONTRACTOR IS RESPONSIBLE FOR CALLING THE LOCAL "ONE-CALL" SERVICE (811) PRIOR TO CONSTRUCTION. SEVERAL UTILITIES IN THE PROJECT AREA MAY NOT BE MEMBERS OF A "ONE-CALL" SERVICE. THESE COMPANIES MUST BE GIVEN SUFFICIENT NOTICE PRIOR TO CONSTRUCTION, IN ORDER TO MARK THEIR LINES.

THIS DRAWING IS FOR
PREVIEWING THE PROJECT VIA
THE INTERNET. OBTAIN SEALED
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PURPOSES.

REVISIONS:

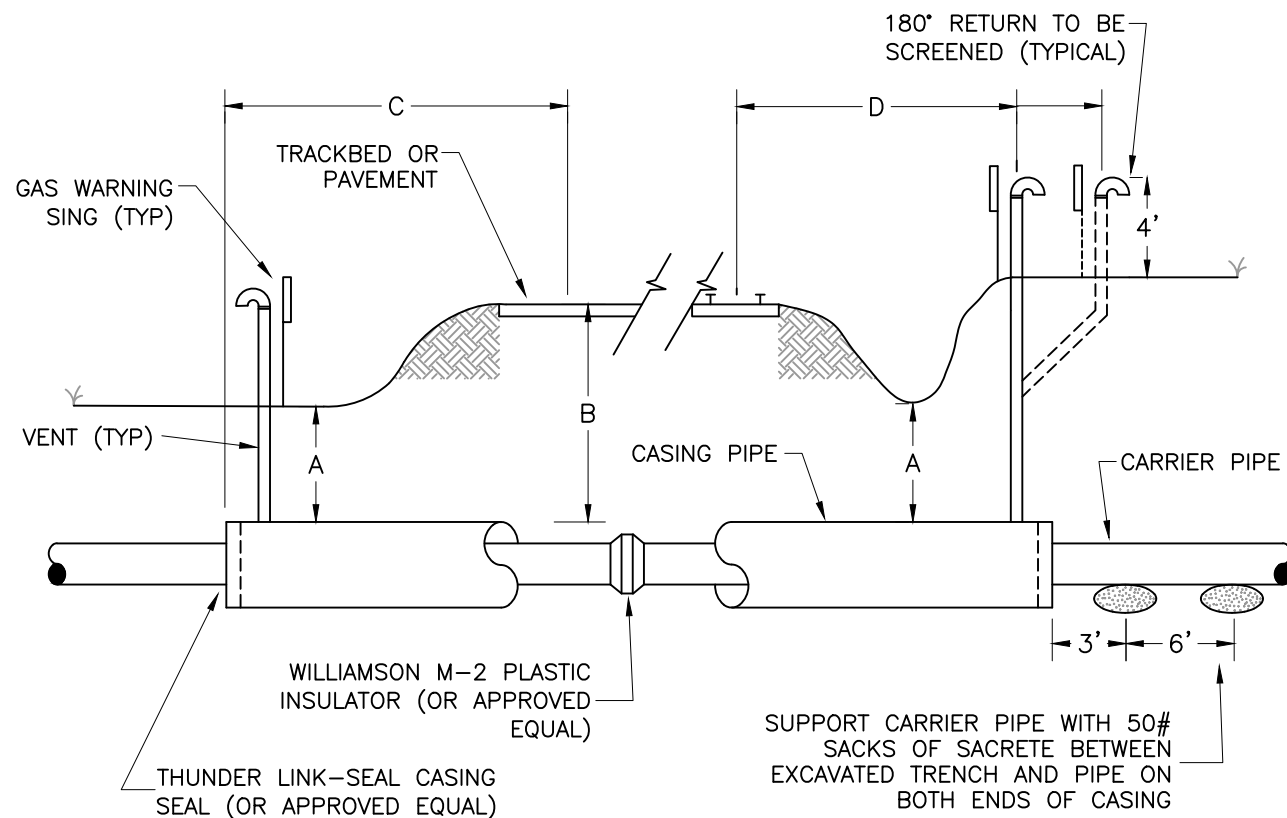
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SHELBY
HIGHWAY 74 BYPASS
SECTIONS D & E RELOCATION

NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

DRAWN	CMD	SCALE	NONE
DATE DRAWN	10/11/2018	PROJECT NO.	21722
APPROVED		SHEET	CONSTRUCTION NOTES 01



CASING FOR ALL SUCH CROSSINGS SHALL BE WELDED INTO ONE CONTINUOUS LENGTH.
 ALL VENT CONNECTIONS TO BE WELDED AND NO COUPLINGS USED.
 ALL CARRIER PIPE WELDS WITHIN RAILROAD ROW SHALL BE RADIOGRAPHED.
 INSULATORS ARE TO BE PLACED A MAXIMUM OF 5'-0" FROM EACH END OF THE CASING AND 7'-0" ON CENTER FOR THE REMAINING LENGTH OF THE CASING.
 GAS WARNING SIGNS ARE IN ADDITION TO THOSE LISTED IN THE PROPOSAL.

DIMENSIONS

FOR HIGHWAY CROSSINGS (DUAL AND SINGLE LANE ROUTES)

- "A" = 4 FEET MINIMUM
- "B" = 48" OR AS SPECIFIED ON PLANS
- "C" = AS DIRECTED BY ENGINEER
- "D" = TO RIGHT-OF-WAY LINE OR AS SPECIFIED ON PLANS

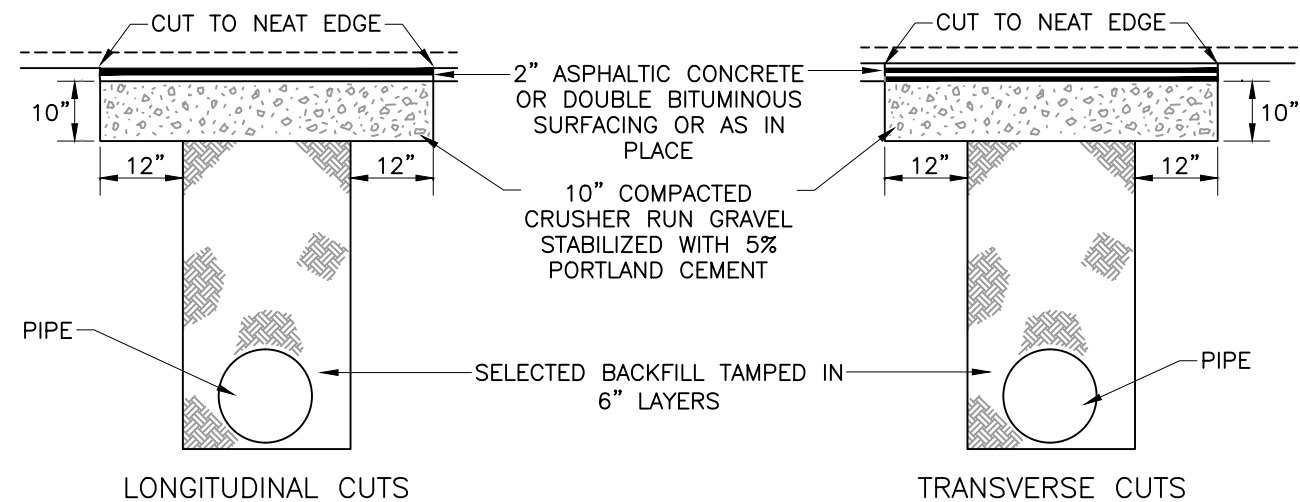
FOR RAILROAD CROSSINGS (SINGLE OR MULTIPLE TRACKS)

- "A" = 4 FEET MINIMUM
- "B" = 6 FEET MINIMUM
- "C" = 40 FEET MIN; PIPELINE MARKERS OUTSIDE RR + DOT ROW
- "D" = 40 FEET MIN; PIPELINE MARKERS OUTSIDE RR + DOT ROW

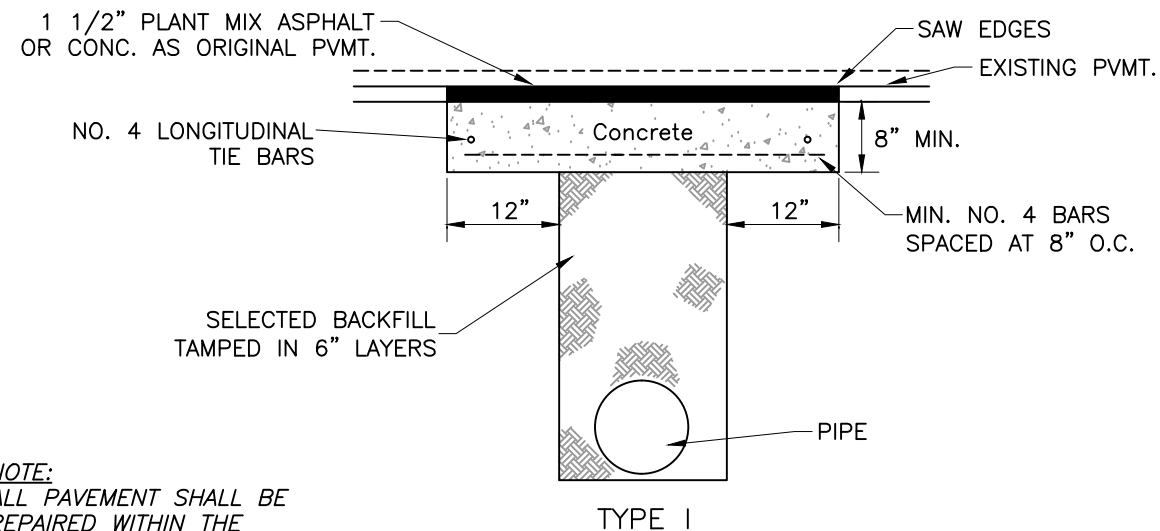
TYPICAL CASING DETAILS

DRAWING A

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STATE - SECONDARY HIGHWAYS



NOTE:
 ALL PAVEMENT SHALL BE REPAIRED WITHIN THE SAME WEEK IT IS CUT

PRIMARY HIGHWAYS ONLY

DETAILS FOR CUTTING AND REPAIRING PAVEMENT

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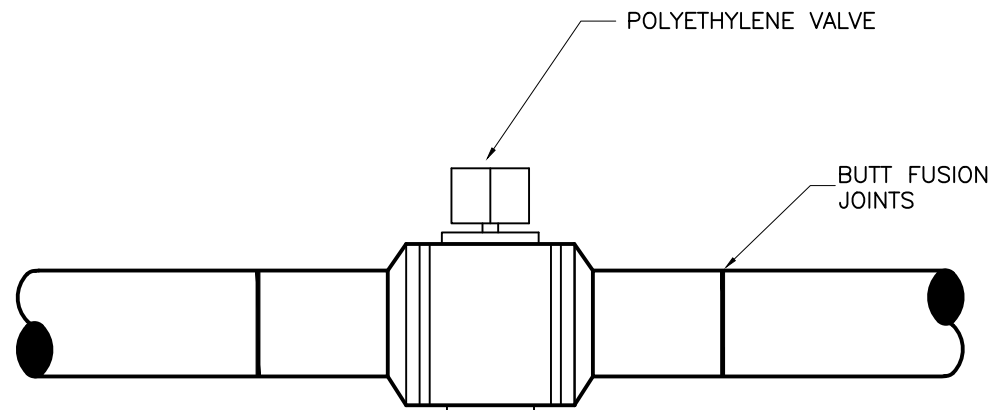
DRAWING B



SHELBY
 HIGHWAY 74 BYPASS
 SECTIONS D & E RELOCATION

NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

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DATE DRAWN	10/11/2018	PROJECT NO.	21722
APPROVED		SHEET	GAS SPECIFICATIONS 1



VALVES:

- 3/4" – POLYVALVE FULL PORT SDR11 PE BALL VALVE OR APPROVED EQUAL
- 2" – POLYVALVE FULL PORT SDR11 PE BALL VALVE OR APPROVED EQUAL

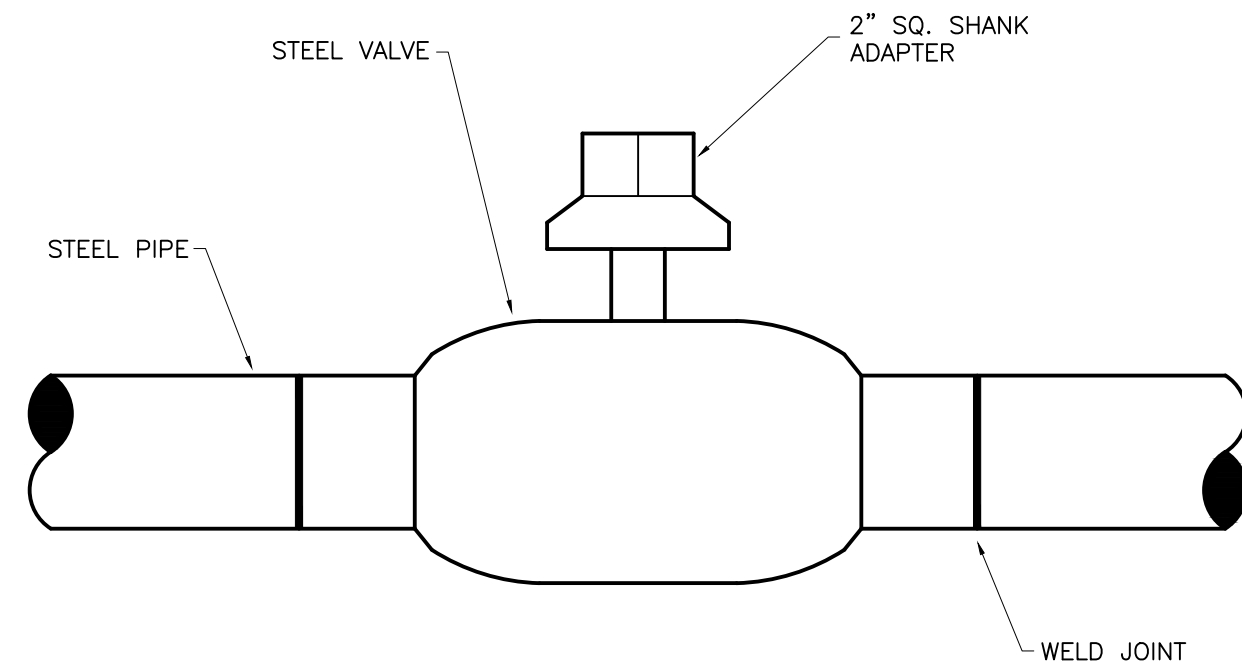
NOTES:

1. SEE DRAWING "E" FOR VALVE BOX DETAILS
2. VALVES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
3. PULL SLACK (UNCUT) TRACER WIRE UP INTO VALVE BOX & COIL MIN. OF 18" IN TOP.

PLASTIC VALVE DETAIL

DRAWING C

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VALVES:

HIGH PRESSURE

- 6" – KEROTEST WELDBALL VALVE CLASS 150, 285 MOP, WxW
- 4" – KEROTEST WELDBALL VALVE CLASS 150, 285 MOP, WxW
- 2" – KEROTEST WELDBALL VALVE CLASS 150, 285 MOP, WxW

NOTES:

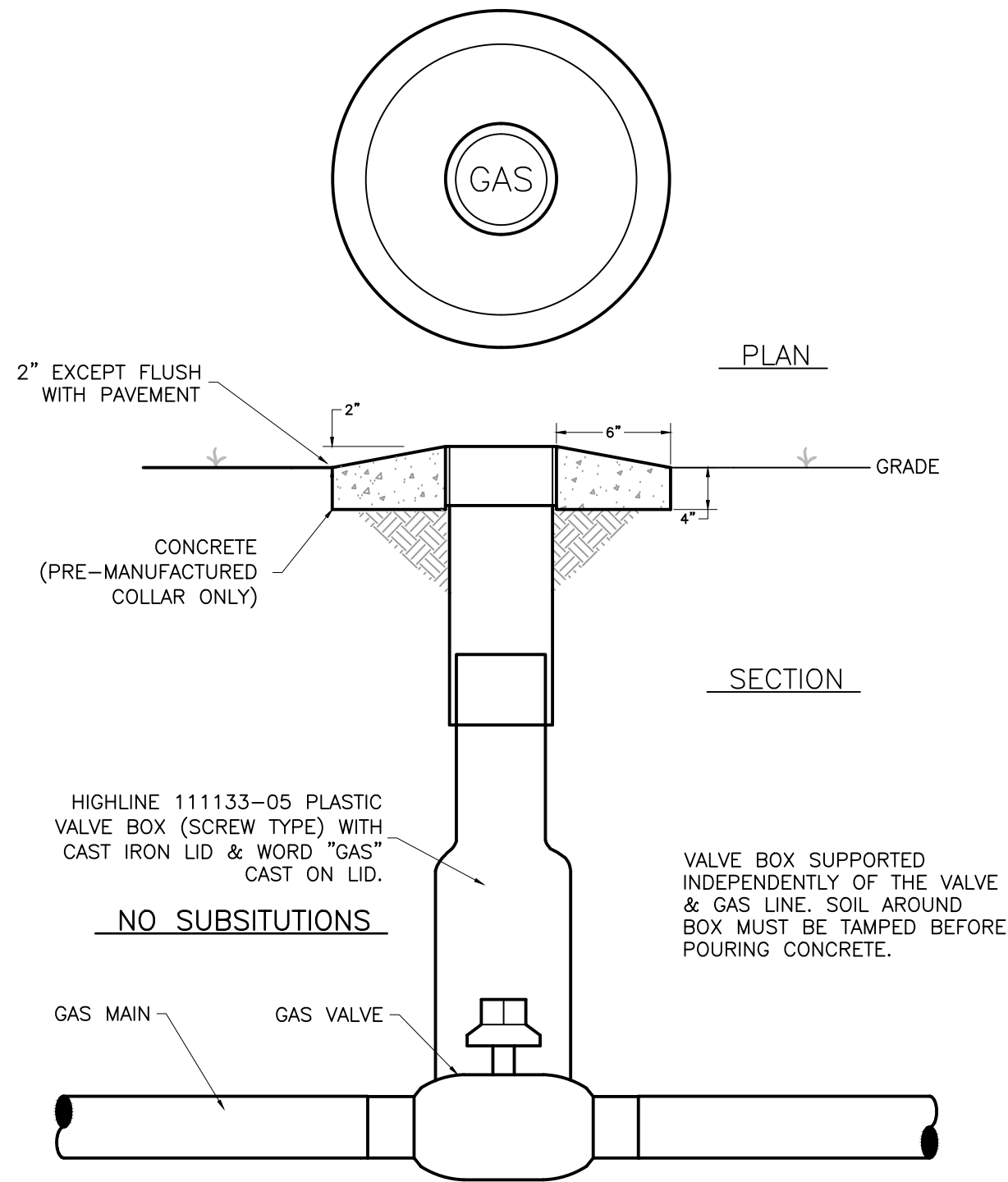
1. SEE DRAWING "E" FOR VALVE BOX DETAILS
2. ALL VALVES TO BE FULL PORT WELDBALL VALVES

UNDERGROUND STEEL VALVE DETAIL

DRAWING D

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REVISIONS:	 <small>HEATH AND ASSOCIATES, INC. 108 W. WARREN ST., SUITE 300 SHELBY, NORTH CAROLINA 28150 NC LICENSE NO. F-1035</small>	SHELBY HIGHWAY 74 BYPASS SECTIONS D & E RELOCATION	NATURAL GAS SYSTEM IMPROVEMENTS CITY OF SHELBY NATURAL GAS DEPARTMENT SHELBY, NORTH CAROLINA	DRAWN	SCALE
				CMD	NONE
				DATE DRAWN	PROJECT NO.
				10/11/2018	21722
				APPROVED	SHEET
					GAS SPECIFICATIONS 2



UNDERGROUND VALVE BOX DETAIL

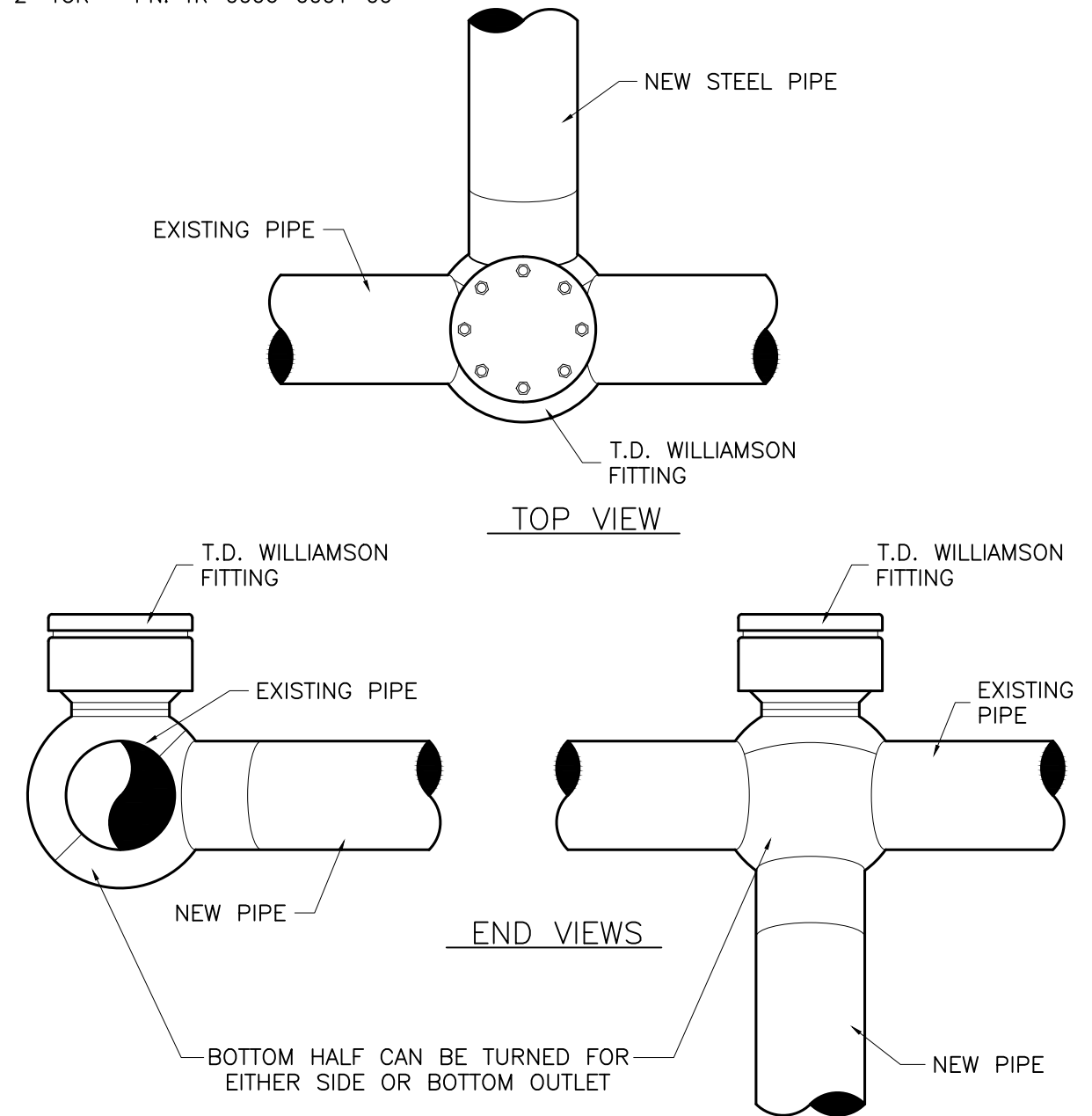
DRAWING E

T.D. WILLIAMSON FITTINGS

MUELLER FITTINGS

- 6" SHORTSTOPP Spherical 3-Way Tee - PN: 06-7224-0000-00
 - 2" TOR - PN: TR-0000-0001-00
- 4" SHORTSTOPP Spherical 3-Way Tee - PN: 26-0934-0000
 - 2" TOR - PN: TR-0002-0001-00
- 2" SHORTSTOPP Spherical 3-Way Tee - PN: 26-0932-0000
 - 2" TOR - PN: TR-0006-0001-00

- NOT SHOWN: 3/4" MUELLER AUTOPERF TEE NO H-18102
- NOT SHOWN: 2" MUELLER NO-BLO TEE NO H-17500

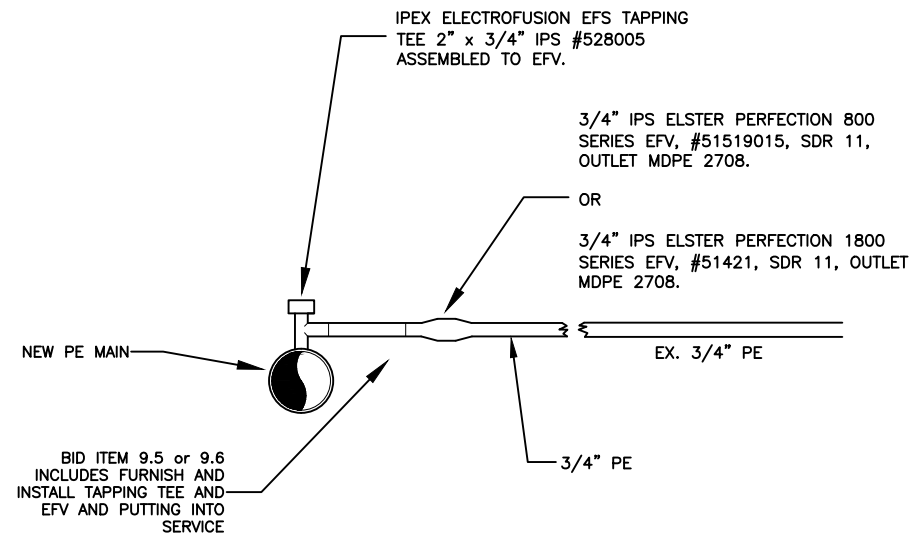


HOT TIE-IN FITTING DETAIL

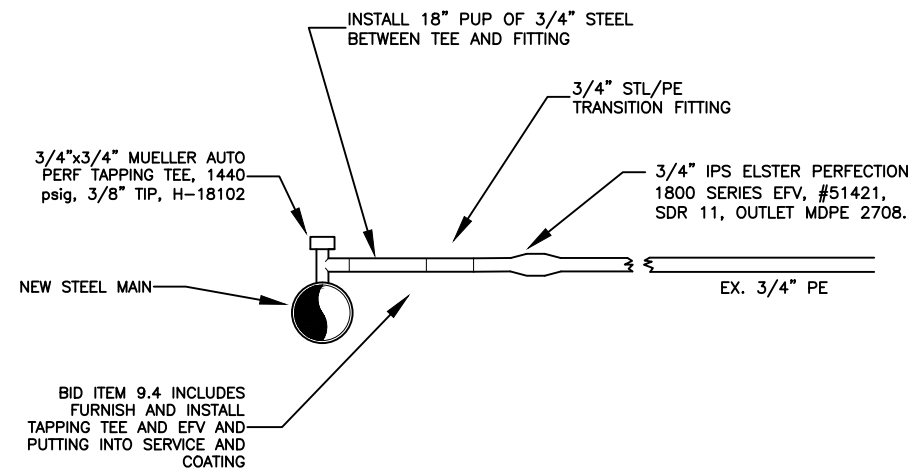
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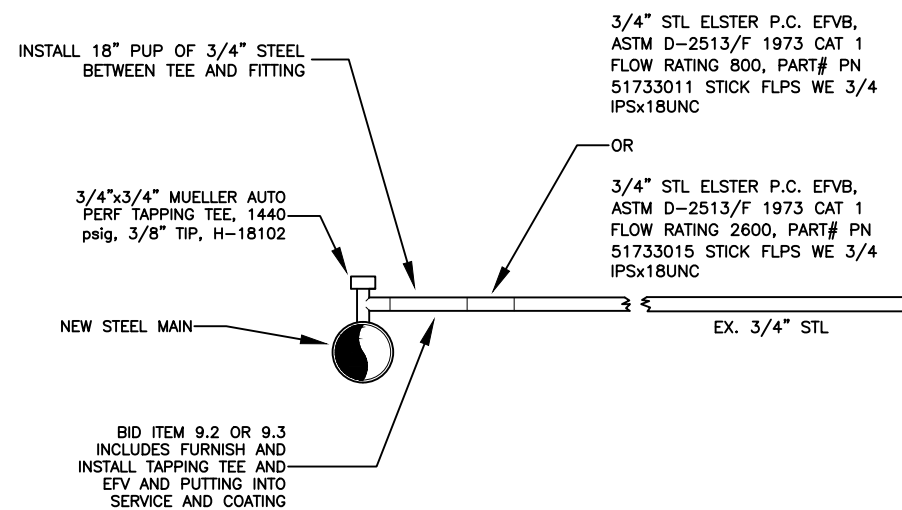
SERVICE LINE TIE-INS



PLASTIC TO PLASTIC

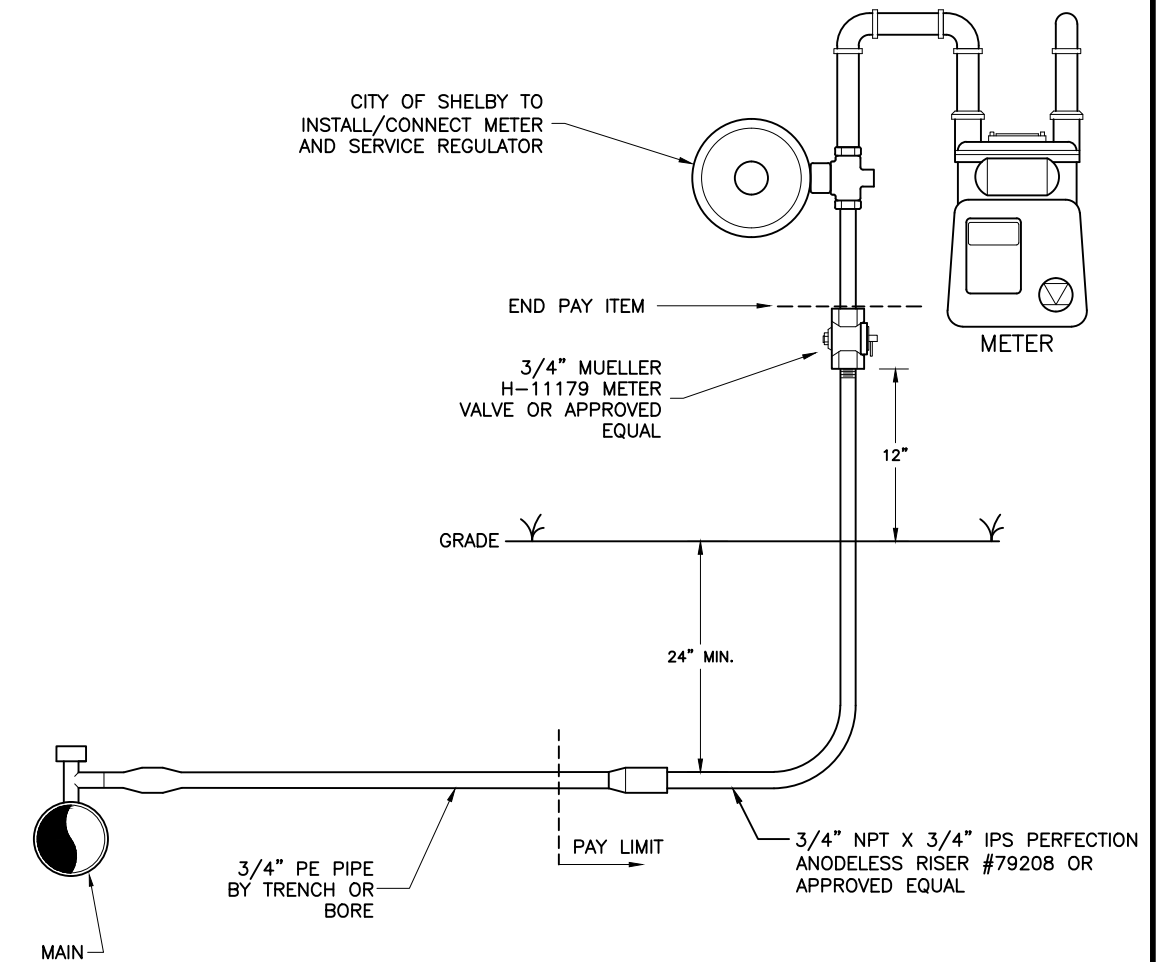


STEEL TO PLASTIC



STEEL TO STEEL

RISER ASSEMBLY



NOTES:

- NO.10 TRACER WIRE TO BE NEATLY TAPED TO RISER AT HOUSE-SET AND TIGHTLY WRAPPED AROUND PIPE 5 TURNS JUST BELOW VALVE. TRACER WIRE ON SERVICE TO BE SPLIT BOLTED TO TRACER WIRE ON MAIN. TRACER WIRE TO BE CADWELDED TO STEEL MAINS AT TIE-IN LOCATIONS.
- TAPPING TEES AND EFVS TO BE INSTALLED ON ALL NEW AND EXISTING SERVICE LINE TIE OVERS (BID ITEMS 9.2-9.6).
- INSTALLING 3/4" SERVICE LINES BY TRENCH OR BORE SHALL BE PAID PER BID ITEM 2.2.
- RISER ASSEMBLY INCLUDES RISER AND METER STOP VALVE PAID AS BID ITEM 9.7.

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DRAWING G

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SHELBY
HIGHWAY 74 BYPASS
SECTIONS D & E RELOCATION

NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

DRAWN	CMD	SCALE	NONE
DATE DRAWN	10/11/2018	PROJECT NO.	21722
APPROVED		SHEET	GAS SPECIFICATIONS 4

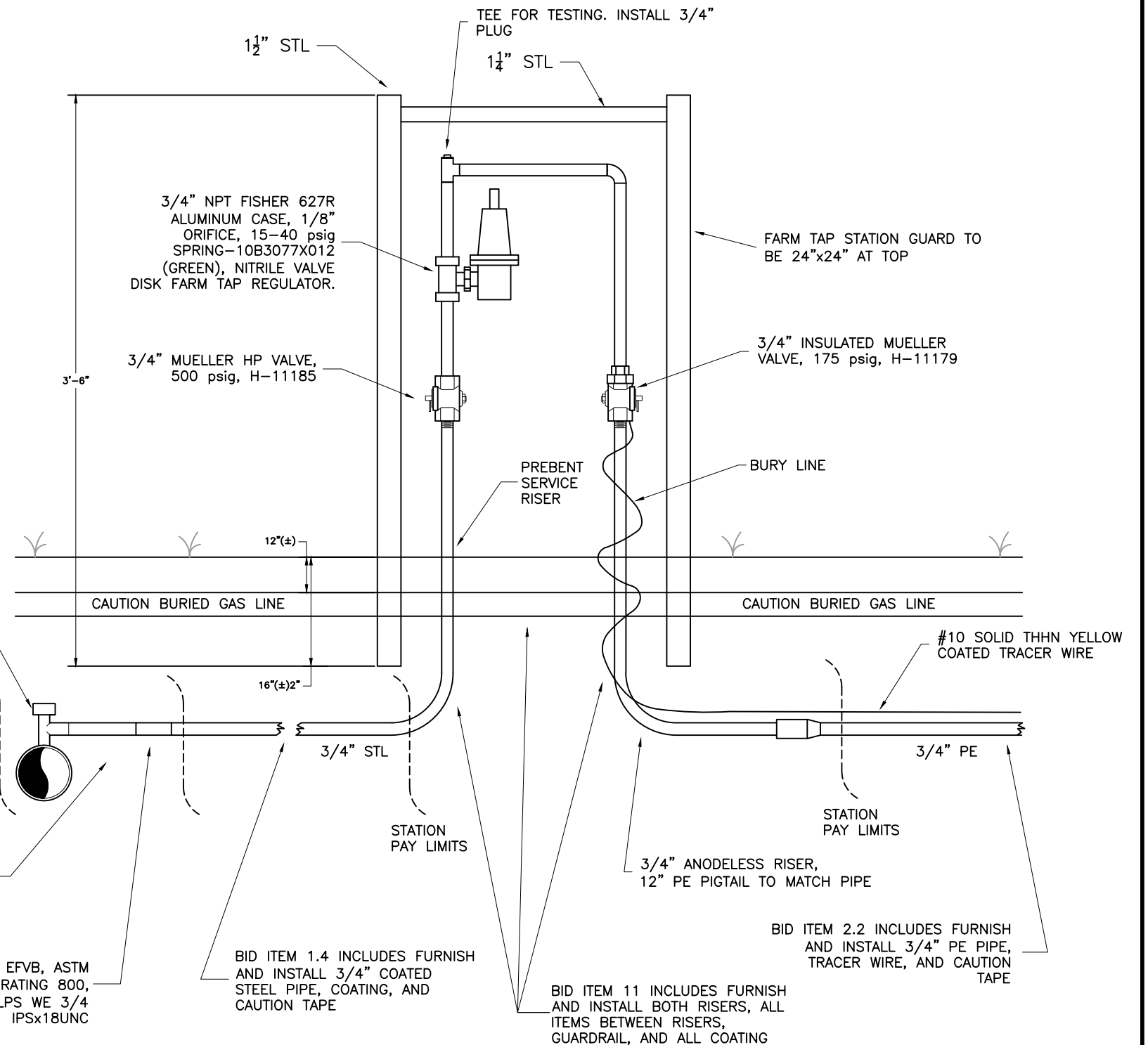
1. TRACER WIRE TO BE NEATLY TAPED TO RISER AT FARM TAP AND TIGHTLY WRAPPED AROUND PIPE 5 TURNS JUST BELOW VALVE. TRACER WIRE ON SERVICE TO BE SPLIT BOLTED TO EXISTING TRACER WIRE TO METERS.
2. ALL METER VALVES, RISERS, REGULATORS, METER, TAPPING TEE, GUARD RAIL, ETC. SHOWN ON THIS DRAWING SHALL BE FROM APPROVED MATERIALS LIST IN SPECIFICATIONS.
3. ALL ABOVE GROUND ITEMS TO BE CLEANED AND PAINTED ACCORDING TO SPECIFICATIONS. ALL BELOW GROUND ITEMS TO BE CLEANED AND COATED ACCORDING TO SPECIFICATIONS.
4. INSTALL WARNING TAPE OVER ALL UNDERGROUND PIPELINE ON PROJECT.

*SPECIFIED EFV VARIES BY LOCATION, DEPENDING ON ANTICIPATED FLOW IN THAT SERVICE LINE. FLOW RATING WILL BE EITHER 800 OR 2600 ON THIS PROJECT.

DEPENDING ON LOCATION, EITHER BID ITEM 9.2 OR 9.3 INCLUDES FURNISH AND INSTALL TAPPING TEE AND EFV AND PUTTING INTO SERVICE AND COATING

*EITHER 3/4" STL ELSTER P.C. EFVB, ASTM D-2513/F 1973 CAT 1 FLOW RATING 800, PART# PN 51733011 STICK FLPS WE 3/4 IPSx18UNC

*OR 3/4" STL ELSTER P.C. EFVB, ASTM D-2513/F 1973 CAT 1 FLOW RATING 2600, PART# PN-51733015 STICK FLPS WE 3/4 IPSx18UNC



STATION PAY LIMITS

STATION PAY LIMITS

BID ITEM 1.4 INCLUDES FURNISH AND INSTALL 3/4" COATED STEEL PIPE, COATING, AND CAUTION TAPE

BID ITEM 11 INCLUDES FURNISH AND INSTALL BOTH RISERS, ALL ITEMS BETWEEN RISERS, GUARDRAIL, AND ALL COATING

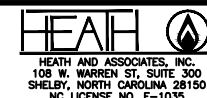
BID ITEM 2.2 INCLUDES FURNISH AND INSTALL 3/4" PE PIPE, TRACER WIRE, AND CAUTION TAPE

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DRAWING H

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SHELBY
HIGHWAY 74 BYPASS
SECTIONS D & E RELOCATION

NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

DRAWN	CMD	SCALE	NONE
DATE DRAWN	10/11/2018	PROJECT NO.	21722
APPROVED		SHEET	GAS SPECIFICATIONS 5

EROSION CONTROL NOTES

EROSION CONTROL NOTES

SPECIAL CONDITIONS (CONT.)

- CONSTRUCTION SPOIL SHALL BE PREVENTED FROM ENTERING CULVERTS BY PROPER INSTALLATION OF ENVIRONMENTAL CONTROLS AS DESCRIBED ON THE "EROSION CONTROL NOTES" PLAN SHEETS.
- WHERE TRENCH LINE IS NEAR BOTTOM OF DITCH LINE AT INLET OR OUTLET OF CULVERT (CONCENTRATED FLOW), DITCH SHALL BE LINED WITH EROSION CONTROL FABRIC AT LEAST 10' ALONG EACH FLOW CHANNEL.
- WHERE TRENCH LINE IS AT OR NEAR BOTTOM OF DITCH LINE (WITHIN 4' ELEVATION) AND DITCH LINE IS AT 2% SLOPE OR STEEPER, DITCH SHALL BE LINED WITH EROSION CONTROL FABRIC.
- CONTRACTOR IS TO HAVE SEDIMENT TRAPS, SILT FENCE, ROCK CHECK DAMS, EXCELSIOR WATTLES, CULVERT INLET PROTECTION, CATCH BASIN PROTECTION AND SEDIMENT FILTER BAGS IN PLACE AT ANY DOWN SLOPE LOCATION BEFORE BEGINNING PIPE INSTALLATION. EROSION CONTROL MEASURES MAY BE TEMPORARILY REMOVED AS NECESSARY TO FACILITATE PIPELINE INSTALLATION, AND THEN PROMPTLY REPLACED.
- ALL DISTURBED AREAS SHALL BE MULCHED AND TACKED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING PIPELINE INSTALLATION, OR PIPELINE INSTALLATION MUST CEASE UNTIL MULCH AND TACK ARE INSTALLED. ALL STRAW OR OTHER MULCH WHICH BLOWS AWAY OR WASHES AWAY BEFORE PERMANENT GROUND COVER IS ESTABLISHED MUST BE REPLACED AND TACKED DOWN WITHIN SEVEN (7) CALENDAR DAYS.
- JUTE (OR OTHER MATERIAL) NETTING IS AN ACCEPTABLE SUBSTITUTE FOR ASPHALT TACKING OF STRAW. THIS NETTING IS NOT A PAY ITEM AND IS INCLUDED IN THE COST PER LINEAR FOOT OF PIPE THE SAME AS OTHER TACK, SUCH AS ASPHALT EMULSION. IF ASPHALT EMULSION IS NOT USED, AN ACCEPTABLE SUBSTITUTE MUST BE USED IN ITS PLACE WHICH WILL NOT DEGRADE IN PERFORMANCE PRIOR TO ESTABLISHMENT OF PERMANENT GROUND COVER. SPRAYED ON POWDERED CELLULOSE MAY BE ACCEPTABLE AS TEMPORARY TACK ON OTHER MULCH, BUT WILL NOT BE ACCEPTED AS MULCH MATERIAL.
- FAILURE TO INSTALL TACK WITHIN THE TIME SPECIFIED WILL RESULT IN PROJECT SHUT DOWN. NO ADDITIONAL PIPE INSTALLATION WILL BE ALLOWED UNTIL ALL EROSION PREVENTION AND SEDIMENTATION CONTROL MEASURES ARE PROPERLY INSTALLED, INCLUDING TACK.
- WHERE SPECIFIED ON DRAWINGS, EROSION CONTROL BLANKETS SHOULD BE NORTH AMERICAN GREEN SC150 STRAW/COCONUT FIBER MATTING. NO OTHER MATTING WILL BE ACCEPTED UNLESS PRE-APPROVED BEFORE BID OPENING. BLANKET SHOULD BE INSTALLED USING STAPLE PATTERN SHOWN ON DRAWING EC-6.

SPECIAL CONDITIONS

- GENERAL INFORMATION.** EROSION AND SEDIMENT CONTROL PROCEDURES SHALL BE INCLUDED IN THIS PROJECT. THEY SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING SECTIONS. THE CONTRACTOR SHALL ENSURE THAT ALL SEDIMENTATION FEATURES ARE IN PLACE PRIOR TO CONSTRUCTION AS NECESSARY AND DESCRIBED IN SECTIONS 3, 4, 5, AND 6. CONTRACTOR SHALL REMOVE THESE FEATURES AS GROUND COVER IS ESTABLISHED WITH APPROVAL OF THE OWNER'S REPRESENTATIVE AND/OR CONTROLLING AUTHORITIES. ALL COSTS OF EROSION CONTROL MEASURES SHALL BE INCLUDED IN THE COST OF PIPE PER LINEAR FOOT EXCEPTING PAY ITEM(S) FOR STONE MATERIAL (GRAVEL, RIP RAP), EXCELSIOR WATTLES, AND THE INSTALLATION OF EROSION CONTROL BLANKET WHERE REQUIRED BY SPECIFICATION, SITE CONDITIONS (WITH APPROVAL OF OWNER), OR LOCAL AUTHORITY.

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 SEVEN (7) CALENDAR DAYS AFTER WORK HAS CEASED.

CONTRACTOR TO 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.

CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.

CONTRACTOR WILL CONSTRUCT TEMPORARY DIVERSION BERMS AND/OR DITCHES AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.

- SEED AND MULCH.** THIS WORK INCLUDES THE FINAL PREPARATION OF THE GROUND, DISTRIBUTION OF FERTILIZERS, LIME, MULCH, AND SEED OVER THE ENTIRE AREA DISTURBED BY CONSTRUCTION ACTIVITIES INCLUDING THE RESTORATION OF TRENCHES, DITCHES, AND OTHER DAMAGED AREAS. PRIOR TO COMMENCING THE SOIL DISTURBING ACTIVITIES, CONTRACTOR SHOULD HAVE SUFFICIENT EROSION CONTROL MATERIALS ON SITE TO PROTECT AT LEAST ONE DISTURBED ACRE PER MILE OF 6" OR SMALLER PIPE INSTALLATION, OR 1.5 DISTURBED ACRE PER MILE OF LARGER DIAMETER PIPE.

THE SEED MIXTURE AND SEED BED PREPARATION SHALL ADHERE TO THE TEMPORARY AND PERMANENT SEEDING RECOMMENDATIONS AS SHOWN ON THE TWO NC ENVIRONMENTAL QUALITY SHEETS THAT ARE INCLUDED AFTER THE SHEET "EROSION CONTROL NOTES 02".

MIX FERTILIZER WITH SOIL TO A DEPTH OF 4"-6" BY DISKING OR OTHER APPROVED METHOD.

MULCH THE ENTIRE AREA (WELL DISTRIBUTED, 80-85% COVERAGE) WITH A DRY STRAW (PREFERABLY WHEAT OR OAT) FREE OF NOXIOUS WEEDS. MULCH SHALL BE REASONABLY BRIGHT IN COLOR AND SHALL NOT BE MUSTY, MOLDY, CAKED, DECAYED, OR DUSTY. ALL MULCH MUST BE TACKED. TACK MULCH WITH EMULSIFIED ASPHALT AT THE RATE OF 0.10 GAL/SY (10 GAL/1000SF) OR APPROVED EQUAL. RYE GRAIN IS AN ACCEPTABLE SUBSTITUTE FOR TACKING OF STRAW AT 15 LB/ACRE TO BE SEEDED PRIOR TO MULCH APPLICATION FROM SEPTEMBER 1 TO NOVEMBER 1. RYE GRAIN FOR TACKING IS IN ADDITION TO RYE GRAIN INCLUDED IN THE MIX IN THE SEED MIXTURE LANGUAGE. JUTE (OR OTHER MATERIAL) NETTING IS AN ACCEPTABLE SUBSTITUTE FOR TACKING OF STRAW. NOTE THAT THIS NETTING IS NOT A PAY ITEM AND IS INCLUDED IN THE COST PER LINEAR FOOT OF PIPE THE SAME AS OTHER TACK.

- RIPRAP FOR SLOPE PROTECTION.** RIPRAP FOR SLOPE PROTECTION SHALL BE USED AT ALL STREAM CROSSINGS AND SHALL BE PLACED ON THE STREAM EMBANKMENTS WHERE SHOWN. RIPRAP FOR SLOPE PROTECTION SHALL BE CLASS 1 WEIGHING FROM 5 TO 200 POUNDS OF WHICH 30% SHALL WEIGH A MINIMUM OF 60 POUNDS AND NO MORE THAN 10% SHALL WEIGH LESS THAN 15 POUNDS EACH. RIPRAP SHALL BE HARD ANGULAR WEATHER RESISTANT STONE WITH A SPECIFIC GRAVITY OF 2.5 OR GREATER. RIPRAP SHALL BE PLACED AT A THICKNESS OF 1.5 TIMES THE MAXIMUM STONE DIAMETER AND SHALL BE EMBEDDED AT THE BASE OF THE SLOPE IN A KEYWAY. A FILTER BLANKET OF SAND AND GRAVEL 6" THICK SHALL BE PLACED BETWEEN THE RIPRAP STONES AND THE SOIL.

4. DITCH PROTECTION.

RIPRAP

RIPRAP SHALL BE USED FOR DITCH EROSION AND FLOW CONTROL ON SLOPES OF GREATER THAN 5%. THE RIPRAP SHALL BE PLACED AS SHOWN ON THE DRAWING "EC-4". THIS SHALL REMAIN UNTIL THE GRASS HAS A GOOD ROOT MAT AND THEN SHALL BE REMOVED WHEN DIRECTED BY THE ENGINEER AND SEEDED AS SPECIFIED.

ROCK CHECK DAMS

ROCK CHECK DAMS SHALL BE PLACED AS INDICATED ON THE CONSTRUCTION DRAWINGS. THESE SHALL BE IN PLACE PRIOR TO TRENCH INSTALLATION IN ANY AREA WHERE WATER WILL FLOW FROM DISTURBED AREAS VIA THE ROCK CHECK DAM LOCATION. ROCK CHECK DAMS MAY BE TEMPORARILY REMOVED AND REPLACED IMMEDIATELY THEREAFTER TO FACILITATE PIPELINE INSTALLATION. RIPRAP FOR ROCK CHECK DAMS SHALL BE 4 TO 15-INCH HARD ANGULAR WEATHER RESISTANT STONE, AND UPSTREAM FACE OF CHECK DAM SHOULD BE SIX INCHES OF #57 STONE AS A FILTER.

EXCELSIOR WATTLES

EXCELSIOR WATTLES MAY BE USED FOR DITCH EROSION AND FLOW CONTROL ON SLOPES LESS THAN 2.5% IN PLACE OF ROCK CHECK DAMS. ON SLOPES OF 2% - 2.5% EXCELSIOR WATTLES SHALL HAVE A MAXIMUM SPACING OF 75 FEET AND FOR SLOPES OF LESS THAN 2% THEY SHALL HAVE A MAXIMUM SPACING OF 100 FEET. EXCELSIOR WATTLES MAY ALSO BE USED AS INLET PROTECTION TO ROADWAY DRAINAGE CULVERTS.

THE PROJECT EROSION CONTROL MEASURES HAVE BEEN DESIGNED TO UTILIZE RIP RAP AND GRAVEL FOR CHECK DAMS AND INLET PROTECTION. THE PROPOSAL INCLUDES 100 LINEAR FEET OF EXCELSIOR WATTLES. IT IS ANTICIPATED THAT SOME OF THE CHECK DAMS AND INLET PROTECTION CAN BE BETTER ADDRESSED USING WATTLES. BECAUSE OF THE SIGNIFICANT PRICE DIFFERENCE, THE CONTRACTOR SHALL ONLY BE ALLOWED TO UTILIZE THE WATTLES UPON APPROVAL OF THE INSPECTOR ON A CASE BY CASE BASIS. INSTALLATION OF WATTLES WITHOUT PRIOR AUTHORIZATION SHALL NOT QUALIFY FOR PAYMENT.

WATTLES SHALL MEET THE FOLLOWING SPECIFICATIONS:

- 100% CURLED WOOD (EXCELSIOR) FIBERS
- MINIMUM DIAMETER 12 IN.
- MINIMUM DENSITY 2.5 LB/FT³ +/- 10%
- NET MATERIAL SYNTHETIC
- NET OPENINGS 1 IN. X 1 IN.
- NET CONFIGURATION TOTALLY ENCASED
- MINIMUM WEIGHT 20 LB. +/- 10% PER 10 FT. LENGTH

ANCHORS: STAKES SHALL BE USED AS ANCHORS.

WOODEN STAKES:

PROVIDE HARDWOOD STAKES A MINIMUM OF 2 FEET LONG WITH A 2 IN. X 2 IN. NOMINAL SQUARE CROSS SECTION. ONE END OF THE STAKE MUST BE SHARPENED OR BEVELED TO FACILITATE DRIVING DOWN INTO THE UNDERLYING SOIL.

PROVIDE STAPLES MADE OF 0.125" DIAMETER NEW STEEL WIRE FORMED INTO A "U" SHAPE NOT LESS THAN 12" IN LENGTH WITH A THROAT OF 1" IN WIDTH.

CONSTRUCTION METHODS:

WATTLES SHALL BE SECURED TO THE SOIL BY WIRE STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT AND AT THE END OF EACH SECTION OF WATTLE. A MINIMUM OF 4 STAKES SHALL BE INSTALLED ON THE DOWNSTREAM SIDE OF THE WATTLE WITH A MAXIMUM SPACING OF 2 LINEAR FEET ALONG THE WATTLE. INSTALL A MINIMUM OF 2 STAKES ON THE UPSTREAM SIDE OF THE WATTLE. STAKES SHALL BE DRIVEN INTO THE GROUND A MINIMUM OF 10 INCHES WITH NO MORE THAN 2 INCHES PROJECTING FROM THE TOP OF THE WATTLE. DRIVE STAKES AT AN ANGLE AS SHOWN ON DRAWING "EC-11".

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES. OVERLAP ADJOINING SECTIONS OF WATTLES A MINIMUM OF 6 INCHES.

INSTALLATION OF MATTING SHALL BE IN ACCORDANCE WITH DRAWINGS "EC-11" AND "EC-6" AND SHALL BE STRAW/COCONUT FIBER MATTING (NORTH AMERICAN GREEN SC150).

- SILT FENCE.** SILT FENCES SHALL BE PLACED AS INDICATED ON THE CONSTRUCTION DRAWINGS. THESE SHALL BE IN PLACE PRIOR TO TRENCH INSTALLATION IN ANY AREA WHERE WATER WILL FLOW FROM DISTURBED AREAS TO THE SILT FENCE LOCATION. SILT FENCES MAY BE TEMPORARILY REMOVED AND REPLACED IMMEDIATELY THEREAFTER TO FACILITATE PIPELINE INSTALLATION. SILT FENCE SHALL BE PLACED BETWEEN THE TOP OF THE SLOPE AND THE EDGE OF THE CREEK THROUGHOUT THE DISTURBED AREA. THE SILT FENCE SHALL EXTEND FIVE (5') FEET INTO THE UNDISTURBED AREA TO ENSURE SEDIMENTS ARE TRAPPED AS DESIRED. SILT FENCES SHALL BE PLACED SO THAT THE LOWER TWELVE (12") INCHES OF FABRIC IS PLACED BELOW THE SURFACE OF THE GROUND. POSTS SHALL BE DRIVEN TO A DEPTH OF TWENTY-FOUR (24") INCHES AND SHALL BE SPACED AT SIX (6') FOOT INTERVALS MAXIMUM. SEDIMENT FENCE FABRIC MUST HAVE A MINIMUM OF 85% FILTERING EFFICIENCY. TENSILE STRENGTH OF FABRIC AT 20% MAXIMUM ELONGATION IS TO BE 30 LB/LINEAR INCH FOR STANDARD STRENGTH FABRIC AND 50 LB/LINEAR INCH FOR HIGH STRENGTH FABRIC.

AFTER GROUND COVER HAS BEEN ESTABLISHED AND APPROVED BY THE OWNER'S REPRESENTATIVE, THE SILT FENCE SHALL BE REMOVED AND THE REMAINING DISTURBED AREAS SEEDED AS SPECIFIED.

- TEMPORARY SEDIMENT TRAPS.** INSTALL TEMPORARY SEDIMENT TRAPS IN BAR DITCHES PRIOR TO STREAM CROSSINGS WHERE THE SHOULDER OF THE ROAD HAS BEEN DISTURBED BY CONSTRUCTION ACTIVITY. THESE SEDIMENT TRAPS SHALL BE EXCAVATED TO BE A MINIMUM OF ONE (1') FOOT BELOW THE LOWEST LEVEL OF THE EXISTING DITCH. THEY SHOULD BE TWO (2') FEET WIDE AND TEN (10') FEET LONG AT THE BOTTOM OF THE TRAP WITH 2:1 SIDES. AT THE DOWNSTREAM END OF THE TRAP, A GRAVEL FILTER DAM SHALL BE PLACED TO THE TOP OF THE DITCH. THIS GRAVEL DAM SHALL BE A MINIMUM OF ONE (1') FOOT AT ITS TOP ELEVATION WHEN MEASURED ALONG THE FLOW LINE OF THE DITCH. AFTER GROUND COVER HAS BEEN ESTABLISHED AND APPROVED BY THE OWNER'S REPRESENTATIVE, THE GRAVEL SHALL BE REMOVED AND THE SEDIMENT TRAP FILLED, COMPACTED, AND SEEDED AS SPECIFIED.

- MAINTENANCE OF SEDIMENT CONTROL FACILITIES.** THE CONTRACTOR SHALL INSPECT THE FACILITIES PERIODICALLY (MINIMUM ONCE PER WEEK) AND AFTER EACH RAIN. SEDIMENT SHALL BE REMOVED FROM SEDIMENT TRAPS AND PROPERLY DISPOSED OF AFTER THE EXCAVATED AREA HAS FILLED TO ITS ORIGINAL LEVEL. SEDIMENT, MULCH AND DEBRIS SHALL BE REMOVED FROM ABOVE RIP RAP CHECK DAMS AND/OR WATTLES AND PROPERLY DISPOSED OF WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH OR 1/3 OF CAPACITY, WHICHEVER IS LESS. SILT FENCES SHALL BE RECONSTRUCTED AS NECESSARY BY RE-STAKING OR REPLACEMENT AS NEEDED.

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.

- GRASS MATTING/EROSION CONTROL BLANKETS.** GRASS MATTING OR EROSION CONTROL BLANKETS MAY BE REQUIRED TO ADEQUATELY STABILIZE THE DITCHES DISTURBED BY CONSTRUCTION OF GAS LINES IN DITCH LINES OF OVER 2% SLOPE. CONTRACTOR SHOULD PLAN TO INSTALL GRASS MATTING OR EROSION CONTROL MATTING WHEREVER THE TRENCH IS LESS THAN 4" ELEVATION HIGHER THAN THE PARALLEL BOTTOM OF EXISTING DRAINAGE DITCH LINE. SHOULD THE ABOVE PROCEDURES, INCLUDING SEED AND MULCH, NOT STABILIZE THE DISTURBED DITCH LINE, THE CONTRACTOR SHALL USE A GRASS MATTING AS DIRECTED BY THE OWNER'S REPRESENTATIVE OR CONTROLLING AUTHORITY. THIS MATTING SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND SHALL BE OF SUFFICIENT LENGTH AND WIDTH TO ELIMINATE EROSION OF THE DITCH LINE. A PRE-SEEDED MANUFACTURED NETTING MAY BE USED IF OF SUFFICIENT SHEAR STRENGTH FOR SOIL TYPE, WATER FLOW, AND SLOPE. SUBMIT PRODUCT INFORMATION TO THE OWNER'S REPRESENTATIVE FOR APPROVAL.

SOME AREAS OF THE PROJECT MAY BE STEEP ENOUGH TO REQUIRE THE EXTRA EROSION PROTECTION OFFERED BY STRAW/COCONUT FIBER MATTING (NORTH AMERICAN GREEN SC150). IN ADDITION, ANY DISTURBED AREA WITHIN 50' OF A STREAM BED SHALL BE PROTECTED BY STRAW/COCONUT FIBER MATTING (NORTH AMERICAN GREEN SC150). BLANKET SHALL BE INSTALLED USING A MINIMUM OF THREE STAPLES PER YARD WITH THE WATER FLOW AND THREE STAPLES PER YARD ACROSS THE FLOW. THE NUMBER OF SQUARE YARDS OF NORTH AMERICAN GREEN SC150 LISTED IN THE PROPOSAL ARE REQUIRED TO FULFILL THE SPECIFICATIONS ON THE DRAWINGS. THE OWNER'S REPRESENTATIVE MAY REQUIRE ADDITIONAL MATTING INSTALLATION DURING THE PROJECT. ADDITIONAL INSTALLATION WILL BE PAID AT THE UNIT PRICE IN THE CONTRACT PROPOSAL.

CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT EROSION CONTROL BLANKET AND NECESSARY STAPLES/STAKES ARE ON SITE AND READY FOR INSTALLATION PRIOR TO SOIL DISTURBING ACTIVITIES.

THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

REVISIONS: 2/8/2023 9:53:08 AM	 HEATH AND ASSOCIATES, INC. 108 W. WARREN ST., SUITE 300 SHELBY, NORTH CAROLINA 28150 NC LICENSE NO. F-1035	SHELBY HIGHWAY 74 BYPASS SECTIONS D & E RELOCATION	NATURAL GAS SYSTEM IMPROVEMENTS CITY OF SHELBY NATURAL GAS DEPARTMENT SHELBY, NORTH CAROLINA	DRAWN CMD	SCALE NONE
				DATE DRAWN 10/11/2018	PROJECT NO. 21722
				APPROVED	SHEET EROSION CONTROL NOTES 01

9. CONSTRUCTION SEQUENCE.

- I. RECEIVE E&SC PLAN APPROVAL AND CERTIFICATE OF COVERAGE (COC) FROM NC DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) BY WAY OF NCDOT. PER NPDES REQUIREMENTS, A RAIN GAUGE, SELF-INSPECTIONS RECORDS, PERMIT, CERTIFICATE OF COVERAGE, AND S&E PLAN ARE REQUIRED TO BE MAINTAINED ON SITE AND ACCESSIBLE DURING INSPECTION. IT IS RECOMMENDED THAT THESE ITEMS BE PLACED IN A PERMITS BOX AT THE BEGINNING OR ENTRANCE OF PROJECT.
- II. NOTIFY NCDOT OF PRE-CONSTRUCTION MEETING AND ENSURE THEY NOTIFY NCDEQ.
- III. HOLD PRE-CONSTRUCTION MEETING. (MAY BE OFF-SITE DUE TO LINEAR NATURE OF PROJECT).

ENSURE NCDOT CONTACTS THE DEMLR MOORESVILLE REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION. MOORSEVILLE REGIONAL OFFICE OF NC DEMLR PHONE NUMBER: 704-663-1699.
- IV. INSTALLATION OF CONSTRUCTION ENTRANCE(S) IS NOT APPLICABLE WHERE PROJECT PARALLELS AND IS ADJACENT TO ROADWAYS. CONTRACTOR IS TO SWEEP PAVED ROADWAYS DAILY WITH A POWER BROOM. WHERE WORK LEAVES EDGE OF ROADWAY AND PROCEEDS CROSS COUNTRY, A CONSTRUCTION ENTRANCE WILL BE CONSTRUCTED.
- V. THE CONTRACTOR MUST FLAG WORK LIMITS BEFORE CONSTRUCTION BEGINS. THE CONTRACTOR SHALL NOT PERFORM ANY CLEARING BEYOND THE LIMITS SHOWN ON THE PLANS AND BRUSH CLEARING ONLY AS NECESSARY FOR INSTALLATION OF PERIMETER CONTROLS AND EROSION CONTROL MEASURES. ALL WORK SHALL PERFORMED IN NCDOT RIGHT-OF-WAY OR ACQUIRED EASEMENTS.
- VI. INSTALLATION OF PERIMETER CONTROLS (E.G., SILT FENCES).
- VII. INSTALLATION OF EROSION CONTROL MEASURES, AS NECESSARY. THE MEASURES CAN INCLUDE SEDIMENT TRAPS, SILT FENCE, ROCK CHECK DAMS, EXCELSIOR WATTLES, CULVERT INLET PROTECTION, CATCH BASIN PROTECTION AND SEDIMENT FILTER BAGS. ALL DOWN SLOPE MEASURES ARE TO BE IN PLACE BEFORE EXCAVATION. MEASURES MAY BE TEMPORARILY REMOVED AS NECESSARY TO INSTALL PIPELINE, THEN PROMPTLY REPLACED. SELF-INSPECTIONS FOR EROSION AND SEDIMENTATION CONTROL MEASURES ARE TO BE PERFORMED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF EVERY RAIN EVENT OF GREATER THAN 1 INCH. ANY REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN MEASURES AS DESIGNED. ALL E&SC MEASURES SHALL BE MAINTAINED AS SPECIFIED IN THE CONSTRUCTION DETAILS ON THIS PLAN.
- VIII. ADDITIONAL BRUSH CLEARING OF THE DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY, AS NECESSARY.
- IX. BEGIN EXCAVATION OF DITCH FOR PIPE. STORE EXCAVATED MATERIAL ON THE UPSTREAM SIDE OF THE DITCH TO ALLOW TRENCH TO CAPTURE ANY SEDIMENT. INSTALL PIPE, BACKFILL, AND FINISH GROUND TO ROUGH GRADE. WHERE THE UTILITY LINE IS INSTALLED ALONG THE ROADWAY, MATERIALS EXCAVATED SHALL BE PLACED ON ONE LANE OF PAVEMENT. A LAYER OF FINES, SAND, OR SCREENINGS WILL BE PLACED ON PAVED SURFACES PRIOR TO DEPOSITING ANY EXCAVATED MATERIALS. EXCAVATED MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE ROAD TO PROMOTE POSSIBLE SEDIMENT LANDEN RUNOFF BACK INTO THE TRENCH. EROSION CONTROL WATTLES ARE TO BE USED IN CURB AND GUTTER SECTIONS. ANY DEWATERING WILL BE DONE THROUGH A SILT BAG WITH A FLOATING INTAKE THAT IS CONSTANTLY MONITORED WHEN IT IS IN USE. ANY BYPASS PUMPING WILL BE MONITORED CONSTANTLY UNTIL THE CHANNEL IS STABILIZED AND FLOW IS RESTORED TO THE CHANNEL. ALL DRAINAGEWAY CROSSINGS ARE TO BE COMPLETED WITHIN ONE DAY AND UNDER DRY CONDITIONS. ALL DISTURBED BANKS WILL BE PERMANENTLY RESTORED AND STABILIZED WITH THEIR ORIGINAL CONTOURS. IT IS ANTICIPATED THAT THE CONTRACTOR WILL BEGIN WORK AT THE FAIRVIEW ROAD RELOCATION AREA, THEN PROCEED TO THE ELIZABETH AVENUE, BORDERS ROAD AND INTERCHANGE RELOCATION AREAS IN THAT ORDER. THESE AREAS ARE SHOWN ON THE PLANS COVER SHEET. HOWEVER, THE ORDER OF INSTALLATION MAY CHANGE DUE TO UN-ANTICIPATED CIRCUMSTANCES ALONG THE PROJECT ROUTE.
- X. TRENCH FILLING AND TAMPING SHALL KEEP UP WITH TRENCH OPENING OPERATION. PROPER GROUND COVER (SEED, STRAW, MULCH, TACK, GRASS MATTING, FILTER BLANKET AND RIPRAP) SHALL BE APPLIED TO TRENCH, BORE PITS AND ADJACENT SPOIL AREA AS SOON AS POSSIBLE AFTER TRENCH OPENING OR OTHER GROUND DISTURBANCE. BARE SOILS WILL BE STABILIZED DAILY. UNLESS SHORTER TIME FRAMES ARE SPECIFIED ON CONSTRUCTION DRAWINGS, TEMPORARY OR PERMANENT GROUND COVER MUST BE IN PLACE AND FUNCTIONAL (I.E., PROPERLY TACKED MULCH, HEALTHY GROWING VEGETATION, OR EROSION CONTROL MAT PROPERLY STAPLED) WITHIN 7 CALENDAR DAYS FOLLOWING ANY GROUND DISTURBANCE. PROVISIONS FOR PERMANENT GROUND COVER MUST BE ACCOMPLISHED ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS; WITHIN 7 CALENDAR DAYS IN SENSITIVE WATERSHEDS; AND IN REMAINING AREAS WITHIN 7 CALENDAR DAYS. DISTURBED AREAS LEFT INACTIVE BETWEEN ANY PHASE OF GRADING SHALL BE TEMPORARILY SEEDED WITHIN 5 WORKING DAYS OR 7 CALENDAR DAYS, WHICHEVER IS SHORTER. THE TEMPORARY AND PERMANENT SEEDING RECOMMENDATIONS, AS SHOWN ON THE TWO NC ENVIRONMENTAL QUALITY SHEETS THAT ARE INCLUDED AFTER THE SHEET "EROSION CONTROL NOTES 02", SHALL BE UTILIZED FOR THE ENTIRE PROJECT AREA.
- XI. INSTALL ADDITIONAL EROSION CONTROL MEASURES, AS NECESSARY. THE MEASURES CAN INCLUDE SEDIMENT TRAPS, SILT FENCE, ROCK CHECK DAMS, EXCELSIOR WATTLES, CULVERT INLET PROTECTION, CATCH BASIN PROTECTION, SEDIMENT FILTER BAGS, AND EROSION CONTROL BLANKET.
- XII. INSTALL OR ACHIEVE PERMANENT/FINAL STABILIZATION.
- XIII. MAINTAIN ALL EROSION CONTROL MEASURES; IF NECESSARY, MODIFICATION OF EROSION CONTROL MEASURES WILL BE CONSIDERED TO ADDRESS ADDITIONAL EROSION ISSUES.
- XIV. REMOVAL OF TEMPORARY SEDIMENT & EROSION CONTROL MEASURES AS THE AREAS OF THE LINEAR PROJECT BECOME ESTABLISHED. ALL AREAS WILL NOT BE ESTABLISHED AT THE SAME TIME.

NOTE: MAINTENANCE OF SEDIMENT AND EROSION CONTROL MEASURES WILL CONTINUE UNTIL THE LINEAR PROJECT IS PERMANENTLY STABILIZED AND THE CONTROLS ARE REMOVED. WHEN THE PROJECT IS COMPLETE, THE CONTRACTOR SHALL NOTIFY NCDOT, WHO IN TURN MAY NEED TO CONTACT THE DEMLR AND REQUEST A CLOSE-OUT INSPECTION TO CLOSE OUT THE EROSION AND SEDIMENTATION CONTROL PLAN.

THIS DRAWING IS FOR
PREVIEWING THE PROJECT VIA
THE INTERNET. OBTAIN SEALED
DRAWINGS FOR BIDDING
PURPOSES.

REVISIONS: 2/8/2023 9:53:09 AM	 <p style="font-size: 8px;">HEATH AND ASSOCIATES, INC. 108 W. WARREN ST, SUITE 300 SHELBY, NORTH CAROLINA 28150 NC LICENSE NO. F-1035</p>	SHELBY HIGHWAY 74 BYPASS SECTIONS D & E RELOCATION	NATURAL GAS SYSTEM IMPROVEMENTS CITY OF SHELBY NATURAL GAS DEPARTMENT SHELBY, NORTH CAROLINA	DRAWN CMD	SCALE NONE
				DATE DRAWN 10/11/2018	PROJECT NO. 21722
				APPROVED	SHEET EROSION CONTROL NOTES 02

TEMPORARY SEEDING RECOMMENDATIONS
FOR LATE WINTER AND EARLY SPRING

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120
Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains)	50

Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

Seeding Dates

Mountains—Above 2500 feet: Feb. 15 - May 15
Below 2500 feet: Feb. 1 - May 1
Piedmont—Jan. 1 - May 1
Coastal Plain—Dec. 1 - Apr. 15

Maintenance

Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR SUMMER

Seeding Mixture

Species	Rate (lb/acre)
German millet	40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

Seeding Dates

Mountains—May 15 - Aug. 15
Piedmont—May 1 - Aug. 15
Coastal Plain—Apr. 15 - Aug. 15

Maintenance

Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR FALL

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120

Seeding Dates

Mountains—Aug. 15 - Dec. 15
Coastal Plain and Piedmont—Aug. 15 - Dec. 31

Maintenance

Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

SEED BED PREPARATION:

LIMING- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1-1 ½ tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.

FERTILIZER- Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application.

SURFACE ROUGHENING- If recent tillage operations have resulted in a loose surface additional roughening may not be required, except to break up large clods. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding by raking, harrowing, or other suitable methods for fine grading. The finished grade shall be a smooth even soil surface with a loosen uniformly fine texture. All ridges and depressions shall be removed and filled to provide the approved surface drainage. Planting is to be done immediately after finished grades are obtained and seedbed preparation is completed.

NON-INVASIVE PERMANENT SEEDING
RECOMMENDATIONS FOR FALL

NON-INVASIVE PERMANENT SEEDING RECOMMENDATIONS
FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE

Species	Rate
Centipede	5 lbs/acre
Indian Woodoats	1.5-2.5 lbs/acre*
Virginia Wild Rye	4-6 lbs/acre*

*Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual.

Seeding Dates

Coastal or Eastern Piedmont for Centipede- Sept. 1 - May 1
Coastal and Piedmont for Indian Woodoats and Virginia Wild Rye- Feb 15 - April 1
Mountains for Indian Woodoats and Virginia Wild Rye- March 1 - May 15

Maintenance:

Significant maintenance may be required to obtain desired cover once centipede is planted. Acceptable for sodding.

NON-INVASIVE PERMANENT SEEDING
RECOMMENDATIONS FOR SUMMER

SEEDING MIXTURE

Species	Rate
Indian Woodoats	1.5-2.5 lbs/acre*
Virginia Wild Rye	4-6 lbs/acre*

*Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual.

Seeding Dates

Mountains - July 15- Aug 15
Piedmont - Aug 15 - Oct 15

Maintenance:

Indian Woodoats and Virginia Wild Rye are both sun and shade tolerant.

SEEDING MIXTURE

Species	Rate
Hard Fescue	15 lbs/acre
Switchgrass	2.5-3.5 lbs/acre*
Indian Grass	5-7 lbs/acre*
Big Bluestem	5-7 lbs/acre*
Indian Woodoats	1.5-2.5 lbs/acre*
Virginia Wild Rye	4-6 lbs/acre*

*Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual.

Seeding Dates

Mountains - Hard Fescue- Aug 1 - June 1
Mountains- Switchgrass, Indian Grass, Big Bluestem- Dec 1 - April 15
Piedmont and Coastal- Switchgrass, Indian Grass, Big Bluestem- Dec 1 - April 1
Coastal- Indian Woodoats and Virginia Wild Rye- Sept 1 - Nov 1

Maintenance:

Hard Fescue is not recommended for slopes > 5%. Prefers shade.

SEED BED PREPARATION:

LIMING- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1 to 1 ½ tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.

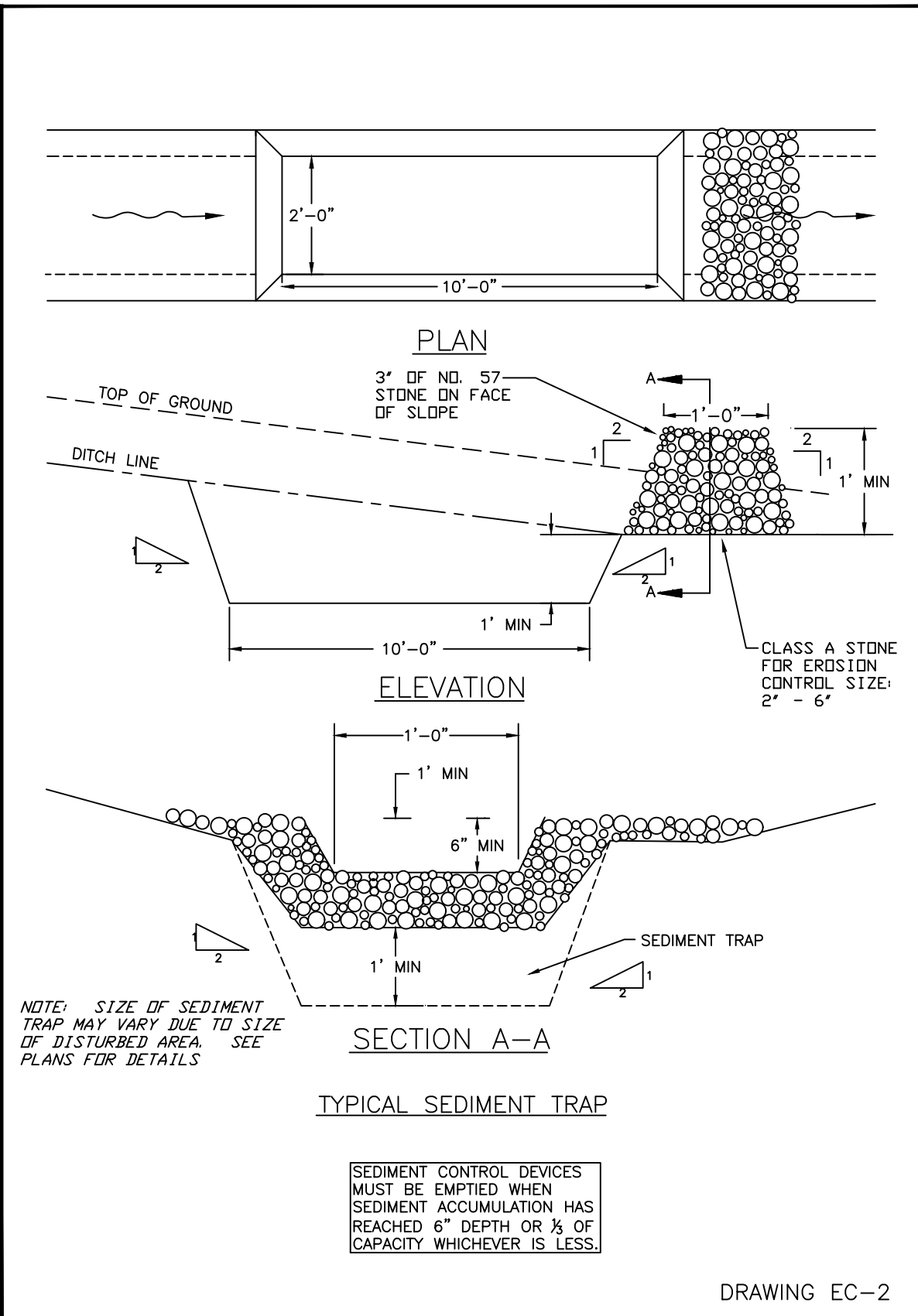
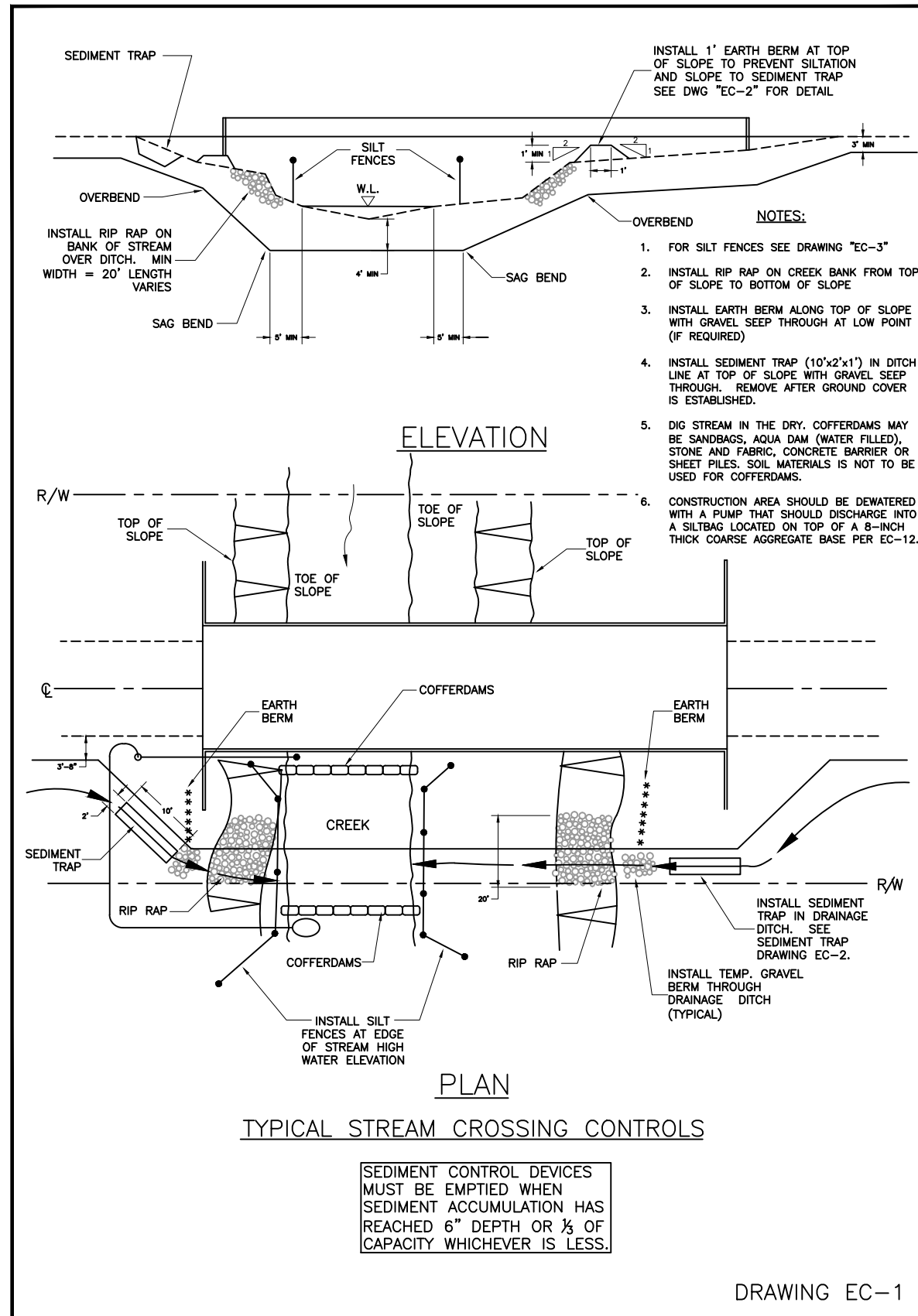
FERTILIZER- Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application.

SURFACE ROUGHENING- If recent tillage operations have resulted in a loose surface additional roughening may not be required, except to break up large clods. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding by raking, harrowing, or other suitable methods for fine grading. The finished grade shall be a smooth even soil surface with a loosen uniformly fine texture. All ridges and depressions shall be removed and filled to provide the approved surface drainage. Planting is to be done immediately after finished grades are obtained and seedbed preparation is completed.

NOTES:

1. Permanent seeding, sodding or other means of stabilization are required when all construction work is completed according to the NPDES timeframe's table.
2. A North Carolina Department of Agriculture soils test (or equal) is highly recommended to be obtained for all areas to be seeded, sprigged, sodded or planted.
3. Use a seeding mix that will produce fast growing nurse crops and includes non-invasive species that will eventually provide a permanent groundcover. Soil blankets may be used in lieu of nurse crops. Mat, tack or crimp mulch, as needed to stabilize seeded areas until root establishment. Mulch must be applied uniformly over the soil with a cover density of at least 80%.
4. Ground cover shall be maintained until permanent vegetation is established and stable against accelerated erosion.

EROSION CONTROL NOTES

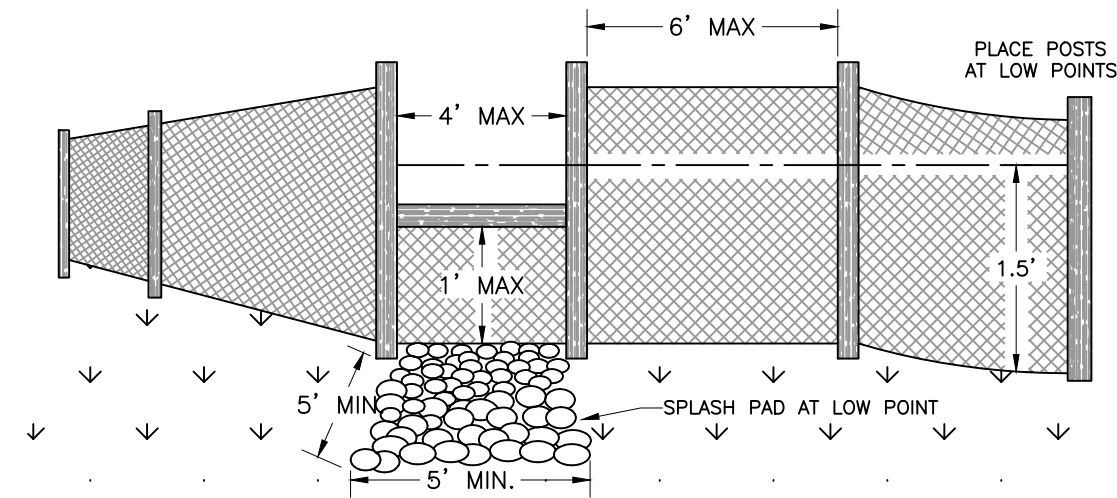
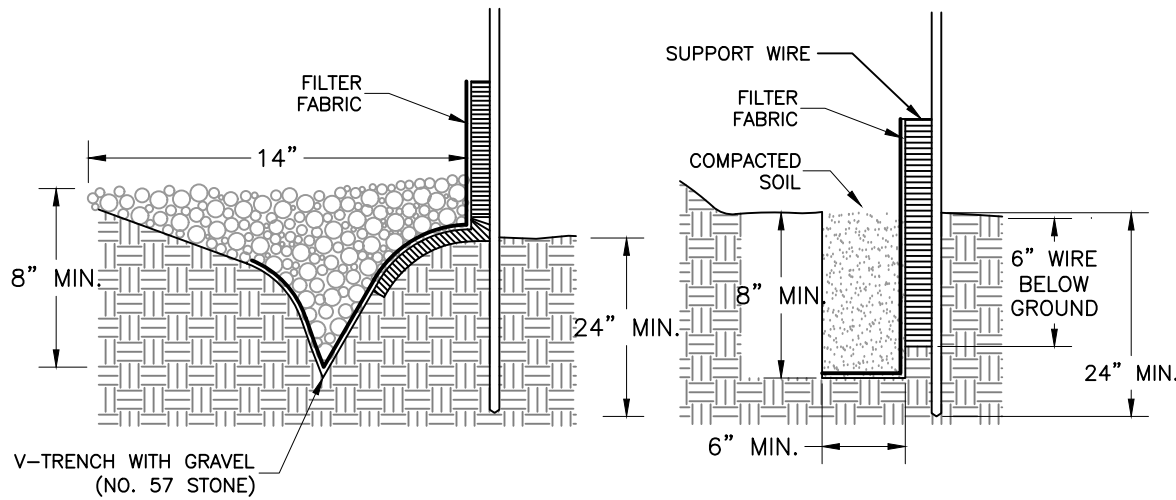


THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

EROSION CONTROL NOTES

NOTES:

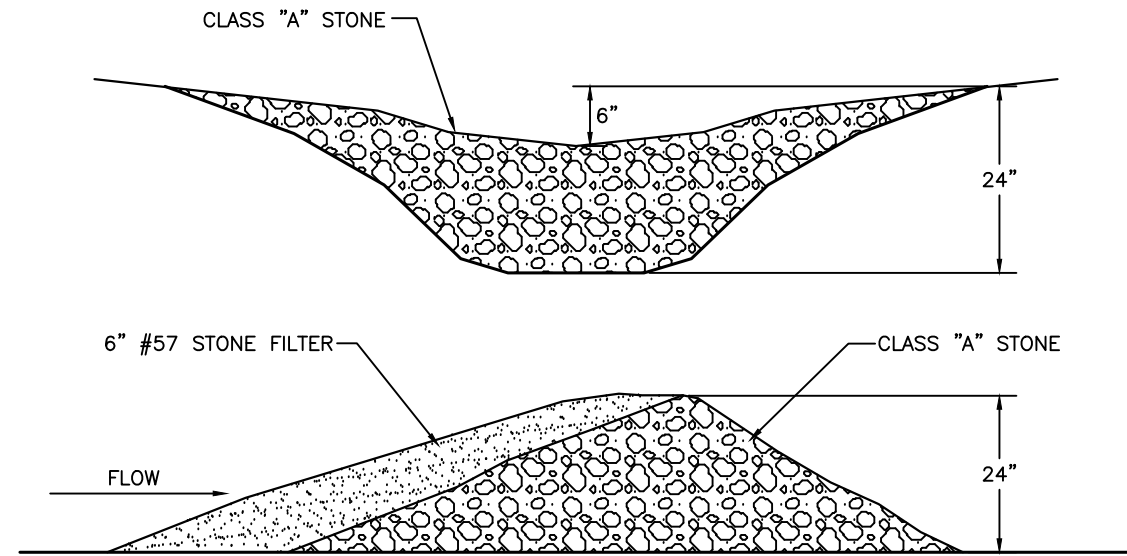
1. **DRAINAGE AREA:** LIMITED TO 1/4 ACRE PER 100' OF FENCE. AREA IS FURTHER RESTRICTED BY SLOPE STEEPNESS.
2. **LOCATION:** FENCE SHOULD BE NEARLY LEVEL AND AT LEAST 10' FROM THE TOE OF SLOPES TO PROVIDE A BROAD, SHALLOW SEDIMENT POOL.
3. **SPACING OF SUPPORT POST:** 6' MAX IF FENCE IS SUPPORTED BY WIRE, 6' MAX FOR EXTRA-STRENGTH FABRIC WITHOUT SUPPORT WIRE BACKING.
4. **TRENCH:** BOTTOM 1' OF FENCE MUST BE BURIED 8 INCHES DEEP MIN.
5. **FENCE HEIGHT:** DEPTH OF IMPOUNDED WATER SHOULD NOT EXCEED 1.5' AT ANY POINT ALONG THE FENCE.
6. **SUPPORT POSTS:** POSTS SHALL BE 4" DIAMETER PINE OR 1.33 lb/in ft STEEL. POSTS SHALL BE A MINIMUM OF 5' LONG AND INSTALLED TO A MINIMUM DEPTH OF 24 INCHES WITH NO MORE THAN 3' OF THE POST ABOVE GROUND. STEEL POSTS SHOULD HAVE PROJECTIONS FOR FASTENING FABRICS.
7. **SUPPORT WIRE:** WIRE FENCE (14 GA WITH 6" MESH) IS REQUIRED TO SUPPORT STANDARD STRENGTH FABRIC.
8. **REINFORCED, STABILIZED OUTLETS:** LOCATED TO LIMIT WATER DEPTH TO 1.5' MEASURED AT LOWEST POINT ALONG FENCELINE. OUTLET ALLOWS SAFE STORM FLOW BYPASS. CREST HEIGHT - 1' MAX WIDTH OF SPLASH PAD - 5' MIN LENGTH OF SPLASH PAD - 5' MIN
9. **FENCE FABRIC:** SYNTHETIC FILTER FABRIC CONFORMING TO SPECIFICATIONS AND CONTAINING UV INHIBITORS AND STABILIZERS TO PROVIDE A LIFE OF 6 MONTHS MIN AT TEMPERATURES FROM 0' TO 120'F. (BURLAP MAY BE USED FOR SHORT PERIODS, NOT EXCEEDING 60 DAYS). 12 INCHES OF FABRIC SHOULD BE PLACED WITHIN THE EXCAVATED TRENCH WITH 24 INCHES ABOVE THE GROUND.



TYPICAL SEDIMENT FENCES

SEDIMENT CONTROL DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH OR 1/3 OF CAPACITY WHICHEVER IS LESS

DRAWING EC-3



MAINTENANCE

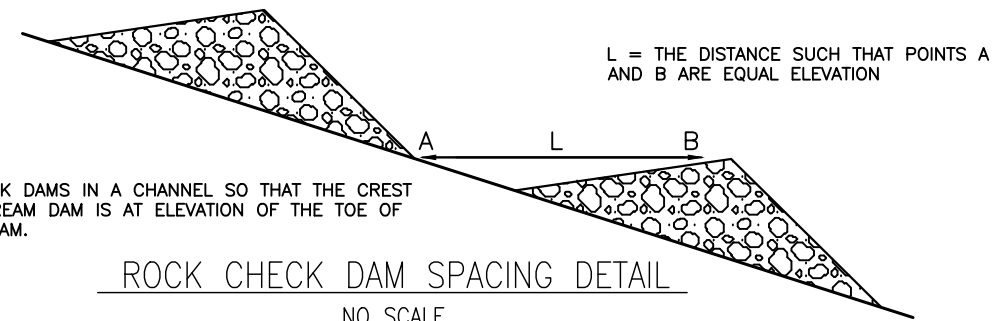
INSPECT CHECK DAMS AND CHANNELS FOR DAMAGE AFTER EACH RUNOFF EVENT

ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGES IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, INSTALL A PROTECTIVE RIP-RAP LINER IN THAT PORTION OF THE CHANNEL.

REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO THE CHANNEL VEGETATION. ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOW FROM THE CARRYING SEDIMENT OVER THE DAM. ADD STONES TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.

ROCK CHECK DAM DETAIL

NO SCALE



NOTE
SPACE CHECK DAMS IN A CHANNEL SO THAT THE CREST OF DOWNSTREAM DAM IS AT ELEVATION OF THE TOE OF UPSTREAM DAM.

ROCK CHECK DAM SPACING DETAIL

NO SCALE

ROCK CHECK DAM FOR SEDIMENT CONTROL BAR DITCHES

SEDIMENT CONTROL DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH OR 1/3 OF CAPACITY WHICHEVER IS LESS.

DRAWING EC-4

THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

REVISIONS:

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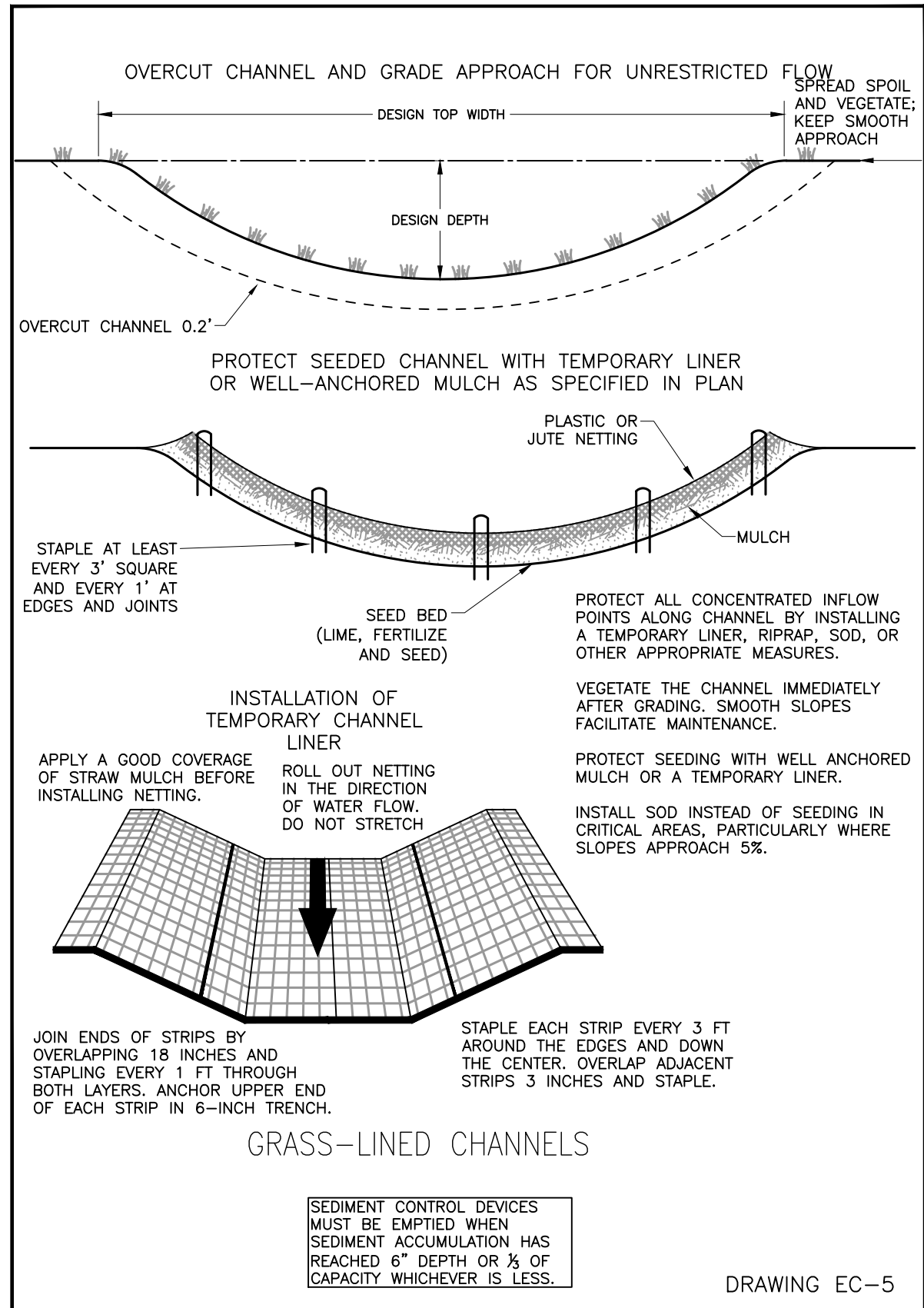


SHELBY
HIGHWAY 74 BYPASS
SECTIONS D & E RELOCATION

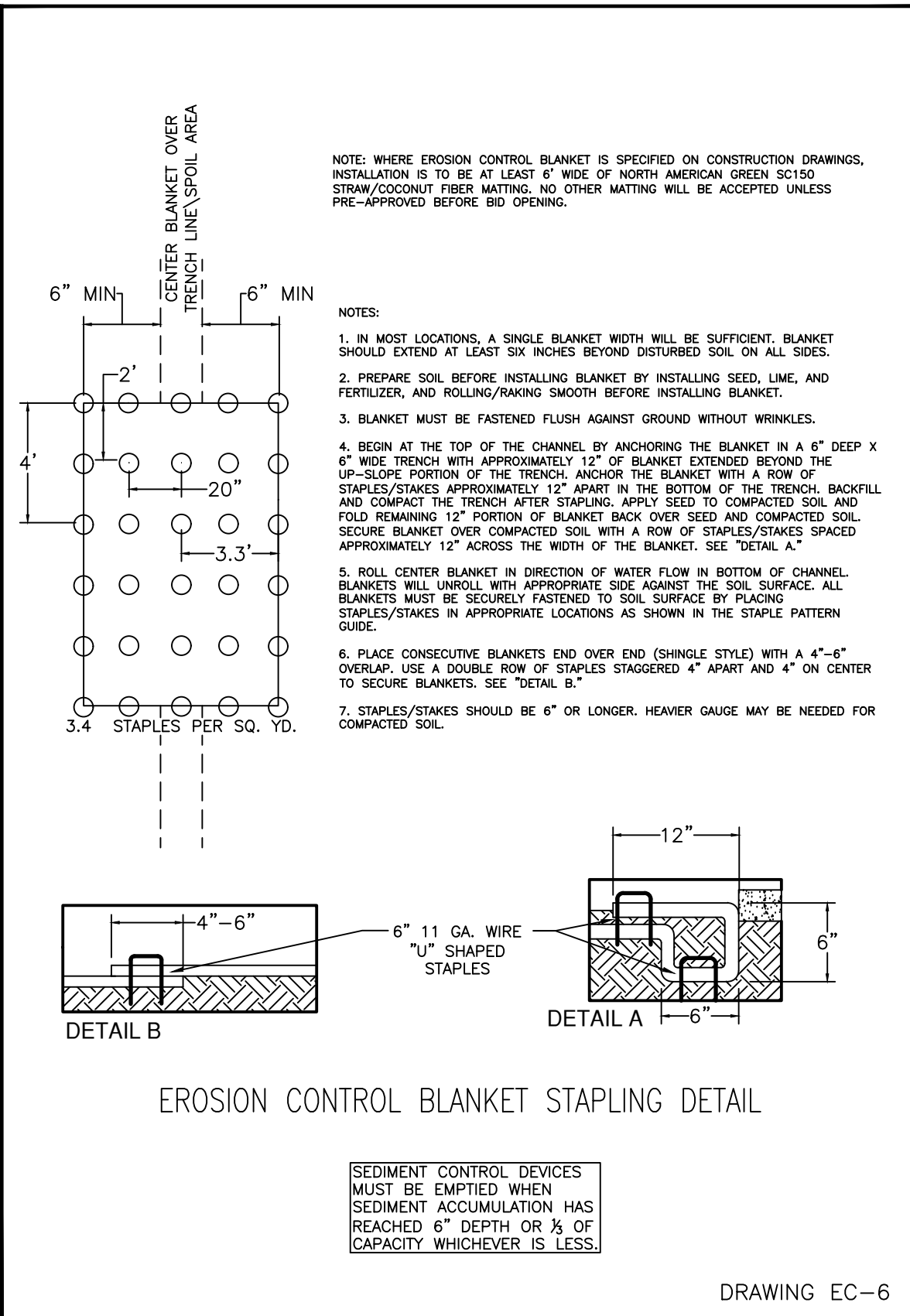
NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

DRAWN CMD	SCALE NONE
DATE DRAWN 10/11/2018	PROJECT NO. 21722
APPROVED	SHEET EROSION CONTROL NOTES 04

EROSION CONTROL NOTES



DRAWING EC-5



DRAWING EC-6

THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

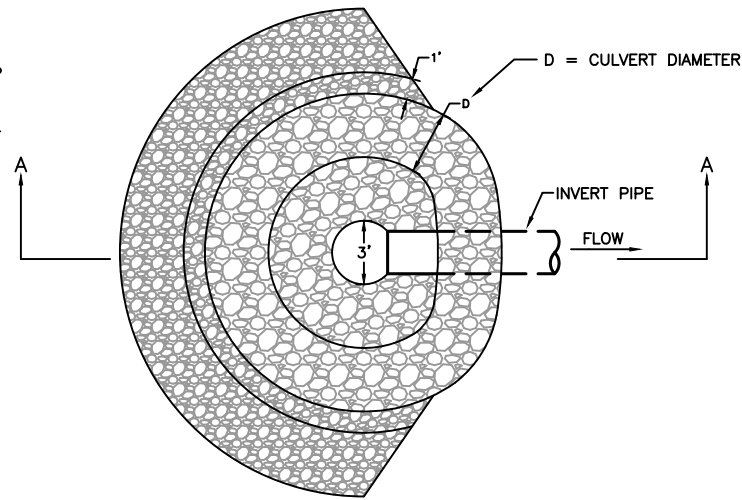
EROSION CONTROL NOTES

NOTE:

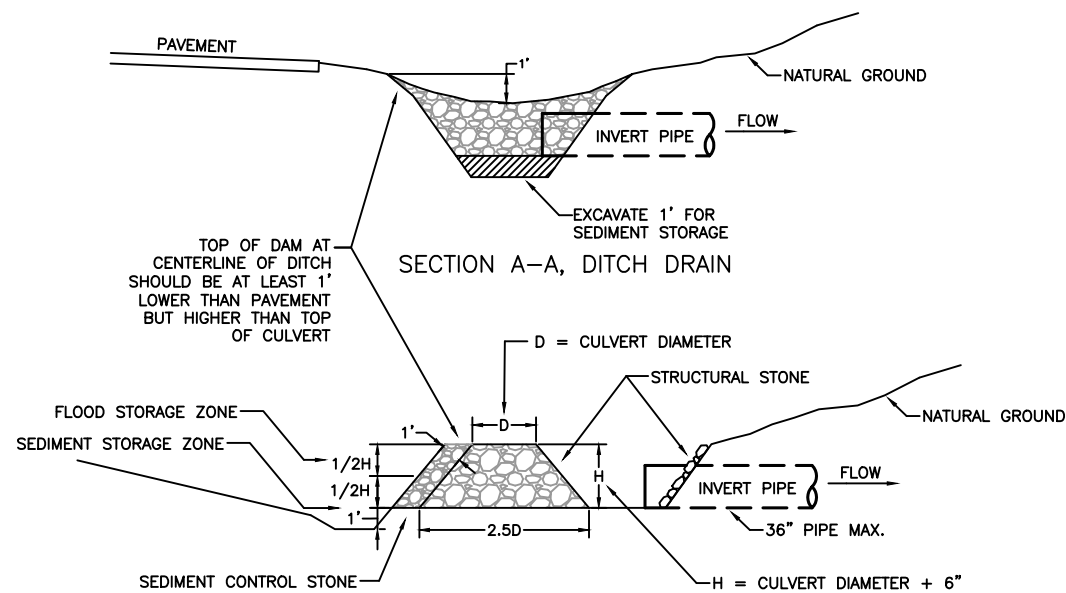
STRUCTURAL STONE SHALL BE PAID AT PRICE PER TON FOR RIP RAP.

SEDIMENT CONTROL STONE SHALL BE NO. 5 OR NO. 57 STONE AND SHALL BE PAID FOR AT THE PRICE PER TON FOR GRAVEL.

DIMENSIONS ARE MINIMUM ACCEPTABLE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.



PLAN



SECTION A-A, DITCH DRAIN

SECTION A-A, FIELD DRAIN

CULVERT INLET PROTECTION

SEDIMENT CONTROL DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH OR 1/3 OF CAPACITY WHICHEVER IS LESS.

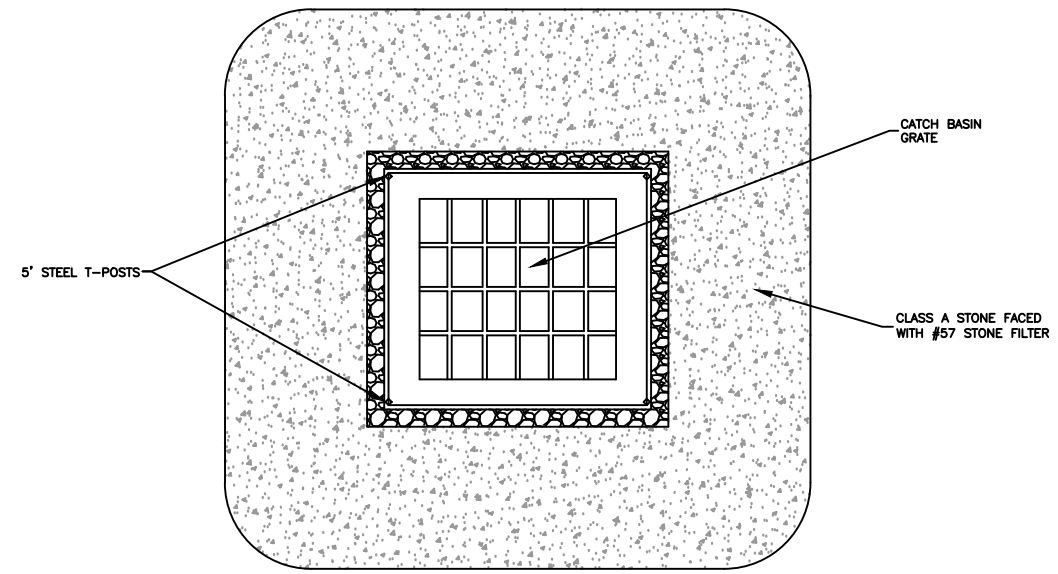
DRAWING EC-7

MAINTENANCE:

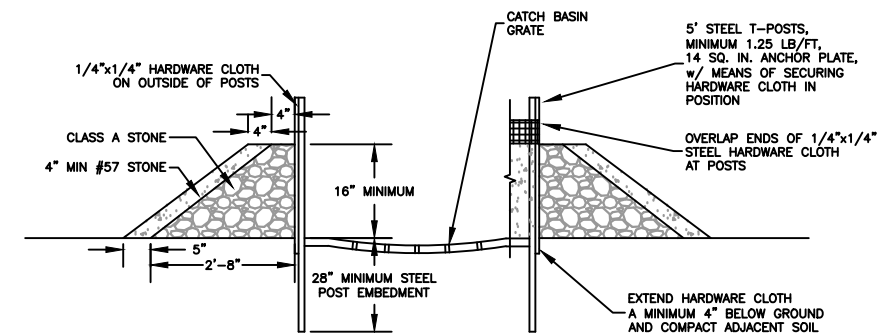
INSPECT ROCK INLET SEDIMENT TRAP FOR DAMAGE WEEKLY AND AFTER EACH RUNOFF EVENT.

ANTICIPATE SUBMERGENCE AND DEPOSITION OUTSIDE THE STONE FILTER AND EROSION FROM LATERAL FLOW IN FRONT OF STONE. CORRECT ALL DAMAGES IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS, INSTALL PROTECTIVE LINER IN ERODED CHANNEL.

REMOVE SEDIMENT ACCUMULATED AROUND THE TRAP AS NEEDED TO PREVENT DAMAGE TO VEGETATION AND WHEN IT EXCEEDS 3" DEPTH. ALLOW DRAINAGE THROUGH THE SEDIMENT TRAP, AND PREVENT LARGE FLOW FROM CARRYING SEDIMENT OVER THE STONE. ADD STONE AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.



PLAN VIEW



ELEVATION CROSS SECTION VIEW

CATCH BASIN PROTECTION

SEDIMENT CONTROL DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 3" DEPTH OR 1/3 OF CAPACITY WHICHEVER IS LESS.

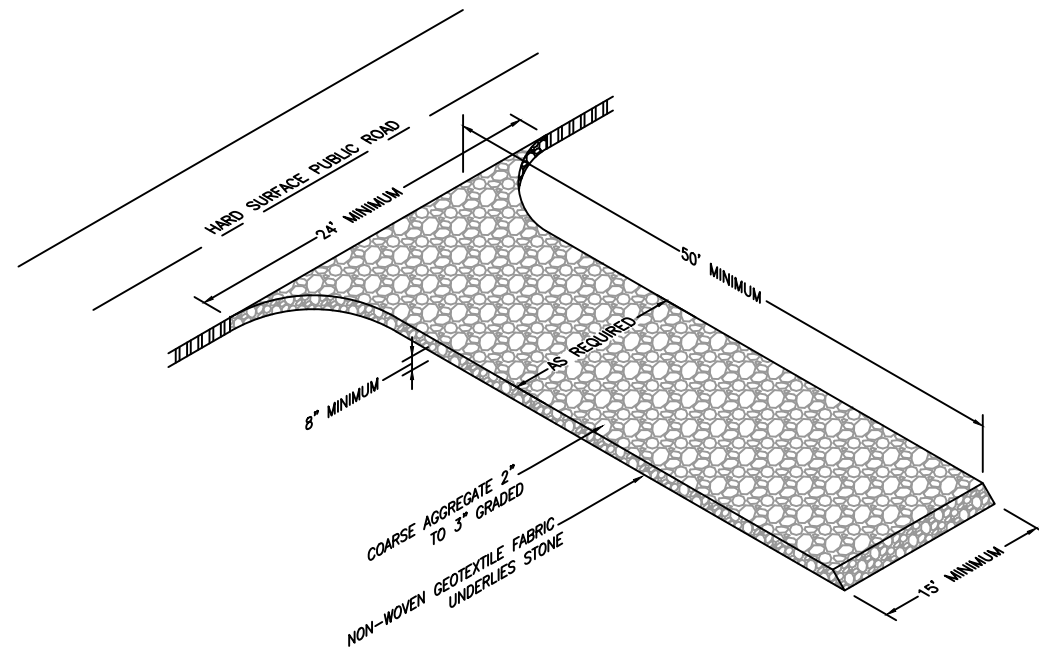
DRAWING EC-8

THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

EROSION CONTROL NOTES

NOTES:

1. STABILIZED CONSTRUCTION ENTRANCES SHOULD BE USED AT ALL POINTS WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD.
2. REMOVE ALL VEGETATION AND ANY OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA.
3. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM STONES TO A SEDIMENT TRAP OR BASIN.
4. INSPECT CONSTRUCTION ENTRANCES EVERY SEVEN (7) CALENDAR DAYS. CHECK FOR MUD AND SEDIMENT BUILDUP, AS WELL AS PAD INTEGRITY. MAINTENANCE IS REQUIRED MORE FREQUENTLY IN WET WEATHER CONDITIONS. RESHAPE THE STONE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.
5. WASH OR REPLACE STONES AS NEEDED AND AS DIRECTED BY THE ENGINEER. THE STONE IN THE ENTRANCE SHOULD BE WASHED OR REPLACED WHENEVER THE ENTRANCE FAILS TO REDUCE MUD BEING CARRIED OFF SITE BY VEHICLES. FREQUENT WASHING WILL EXTEND THE USEFUL LIFE OF THE STONE.
6. IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED WHEN THE WATER CAN BE DISCHARGED TO A SEDIMENT TRAP OR BASIN.



ACCESS ROADS
 CONSTRUCTION ENTRANCE – ENTRY TO THE CONSTRUCTION AREA FROM PUBLIC PAVED ROADS MUST BE STABILIZED TO MINIMIZE EROSION, RETAIN A NEAT APPEARANCE, AND CLEAN EQUIPMENT TIRES BEFORE ENTERING PUBLIC ROAD

GRAVEL CONSTRUCTION ENTRANCE

SEDIMENT CONTROL DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH OR 1/3 OF CAPACITY WHICHEVER IS LESS.

DRAWING EC-9

WEIGHTED INLET TUBES
 WEIGHTED INLET TUBES ARE SEDIMENT TUBES 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

MATERIALS

PROPERTY	TEST METHOD	VALUE
Diameter	Field Measured	6.0 inch to 12.0 inch.
Mass per Unit Length	Field Measured	6 inch = 6lbs/ft minimum. 12 inch = 12lbs/ft minimum.
Fiber Length	Field Measured	80% of the fiber materials at least 4 inches in length.
Length per Tube	Field Measured	6 foot minimum.
Netting Unit Weight	Certified	0.35 oz/ft minimum.

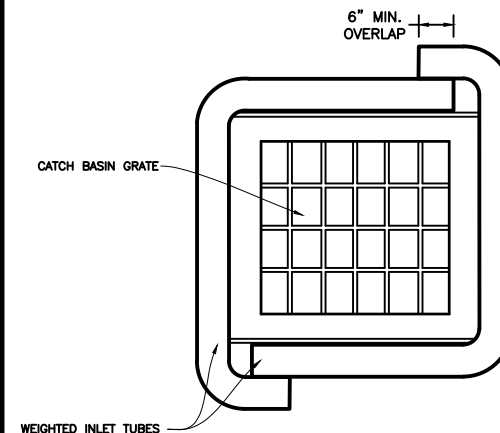
WEIGHTED INLET TUBES WILL BE SUPPLIED BY THE CONTRACTOR

INSTALLATION

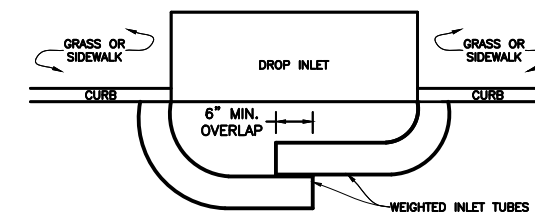
1. INSTALL WEIGHTED INLET TUBES BY LAYING THEM FLAT ON THE GROUND WITH NO GAPS BETWEEN UNDERLYING SURFACES AND THE BOTTOM OF THE INLET TUBE.
2. LAP THE ENDS OF ADJACENT INLET TUBES A MINIMUM OF 6" TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT.
3. NEVER STACK SEDIMENT TUBES ON TOP OF ONE ANOTHER.

INSPECTION AND MAINTENANCE

1. INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH STORM THAT PRODUCES 1/2-INCHES OR MORE OF RAIN. HANDLE ANY DAMAGE OR NEEDED REPAIRS IMMEDIATELY.
2. INSPECT AFTER INSTALLATION FOR GAPS THAT MAY PERMIT SEDIMENT TO ENTER THE STORM DRAINAGE SYSTEM.
3. REMOVE SEDIMENT WHEN IT REACHES APPROXIMATELY 1/3 THE HEIGHT OF THE INLET FILTER.
4. REMOVE, MOVE, AND/OR REPLACE AS REQUIRED TO ADAPT TO CHANGING CONSTRUCTION SITE CONDITIONS.
5. REMOVE INLET TUBES FROM THE SITE WHEN THE FUNCTIONAL LONGEVITY IS EXCEEDED AS DETERMINED BY THE ENGINEER, INSPECTOR OR MANUFACTURER'S REPRESENTATIVE.
6. DISPOSE OF INLET TUBES NO LONGER IN USE AT AN APPROPRIATE RECYCLING OR SOLID WASTE FACILITY.
7. REMOVE ALL CONSTRUCTION MATERIAL AND SEDIMENT AND DISPOSE OF THEM PROPERLY.



PLAN VIEW
CATCH BASIN APPLICATION



PLAN VIEW
DROP INLET APPLICATION

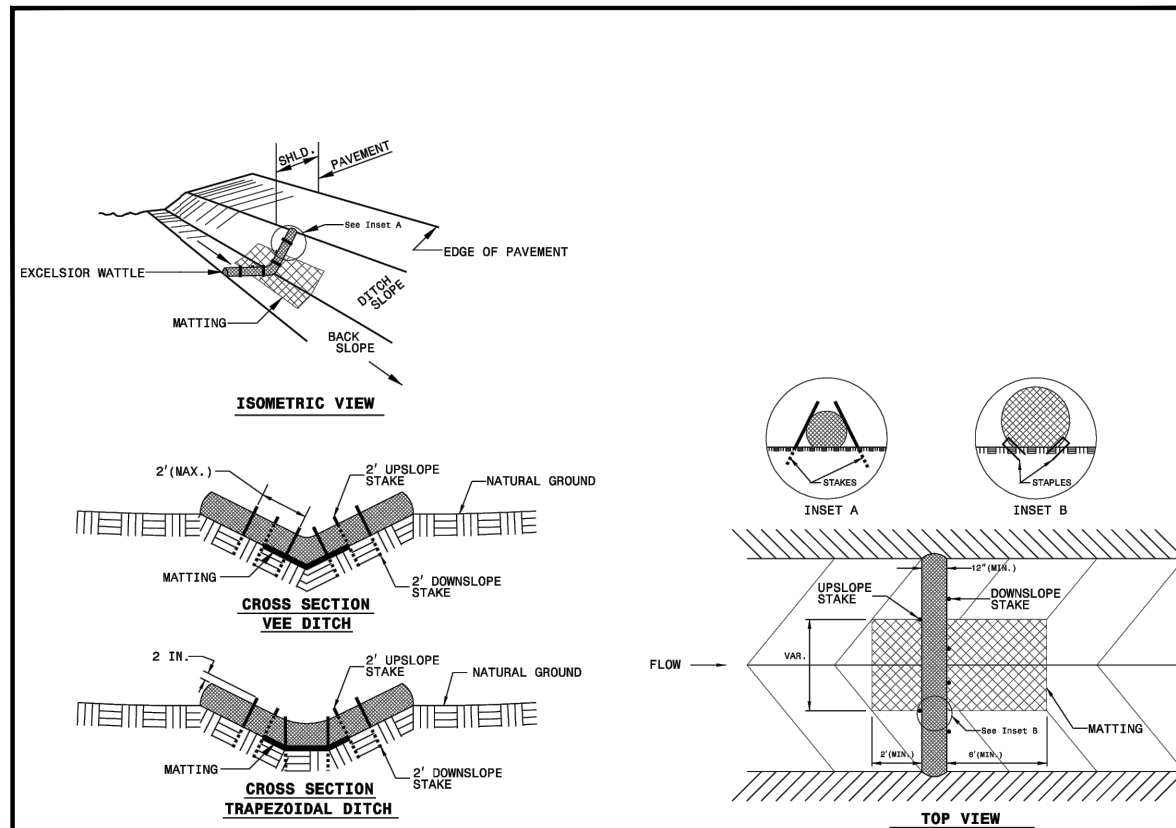
DROP INLET / CATCH BASIN PROTECTION IN PAVED AREAS

SEDIMENT CONTROL DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 3" DEPTH OR 1/3 OF CAPACITY WHICHEVER IS LESS.

DRAWING EC-10

THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

EROSION CONTROL NOTES



NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

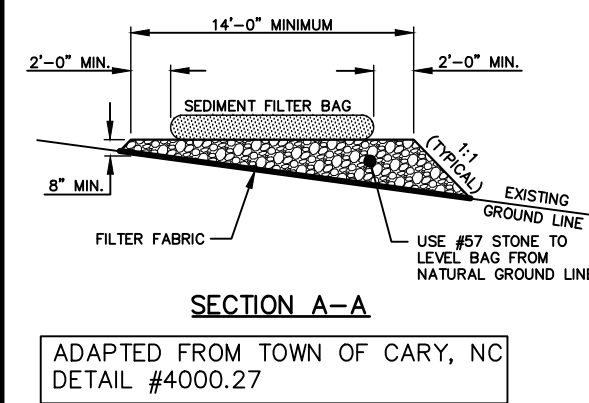
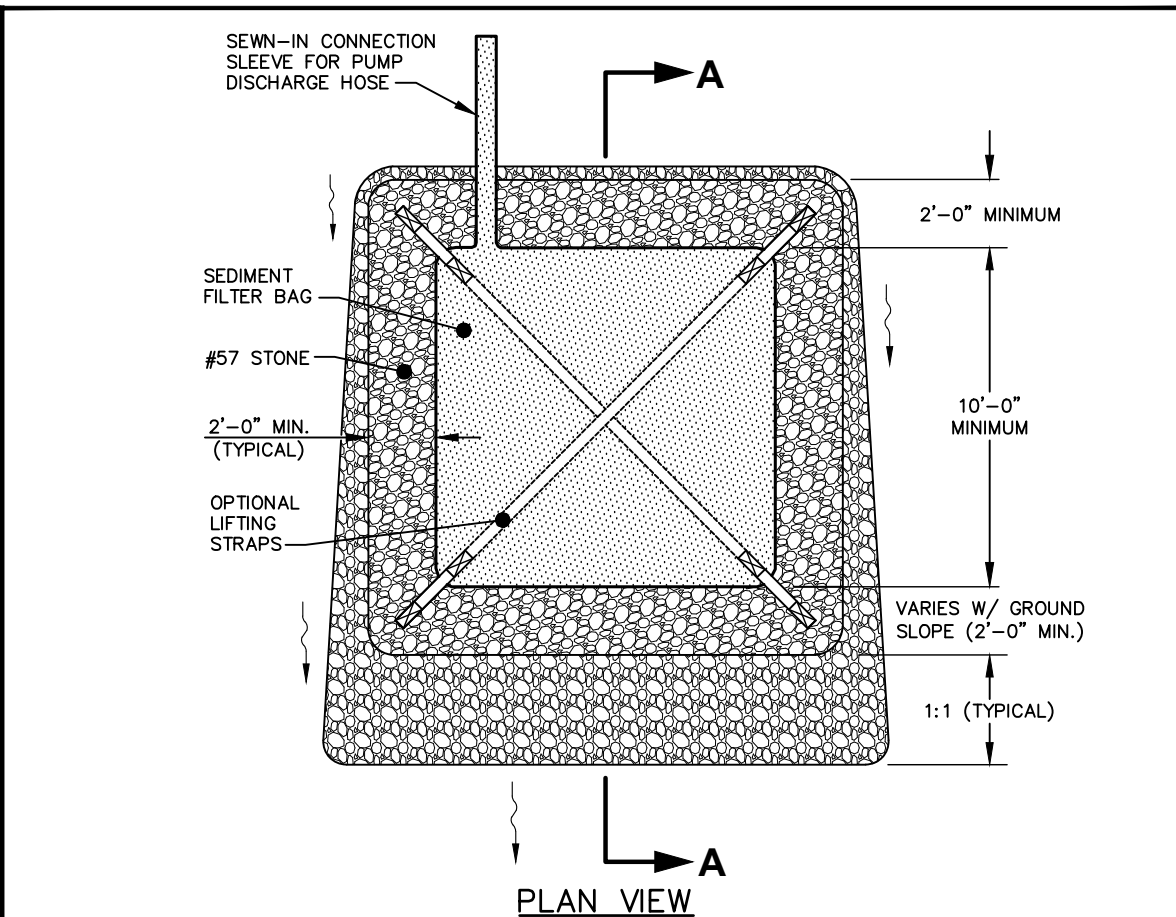
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING PER DWG EC-6.

EXCELSIOR WATTLE

SEDIMENT CONTROL DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH OR 1/3 OF CAPACITY WHICHEVER IS LESS.

DRAWING EC-11



- SEDIMENT FILTER BAG GENERAL NOTES:**
1. CONTRACTOR SHALL EXERCISE CAUTION NOT TO BURST OR DAMAGE THE SEDIMENT FILTER BAG WHEN PUMPING. THE SILT BAG WILL BE CONSTANTLY MONITORED DURING OPERATION.
 2. THE LENGTH AND WIDTH OF THE TEMPORARY SEDIMENT BAG SHOWN ON THIS DRAWING MAY VARY PER VENDOR SPECIFICATIONS. THE MINIMUM "FOOTPRINT" OF THE BAG SHALL BE 10 x 15 FEET.
 3. SEDIMENT FILTER BAGS SHALL BE EQUIPPED WITH A SEWN-IN SLEEVE OF SUFFICIENT SIZE TO ACCEPT A MINIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE DISCHARGE HOSE SHOULD BE EXTENDED INTO THIS SLEEVE A MINIMUM OF 6 INCHES AND BE TIGHTLY SECURED WITH A HOSE CLAMP OR OTHER SUITABLE MEANS TO PREVENT LEAKAGE. HOSE CONNECTION THROUGH A SLIT IN THE BAG WILL NOT BE ACCEPTABLE.
 4. THE PUMP DISCHARGE HOSE CONNECTION SLEEVE SHALL BE SECURELY TIED OFF DURING DISPOSAL OF THE SEDIMENT FILTER BAG IN ORDER TO PREVENT LEAKAGE OF COLLECTED SEDIMENTS.
 5. SEDIMENT FILTER BAG SHALL BE MAINTAINED AND REPLACED WHEN ONE HALF FULL OF SEDIMENT OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

ADAPTED FROM TOWN OF CARY, NC
DETAIL #4000.27

SEDIMENT FILTER BAG WITH GRAVEL PAD

DRAWING EC-12

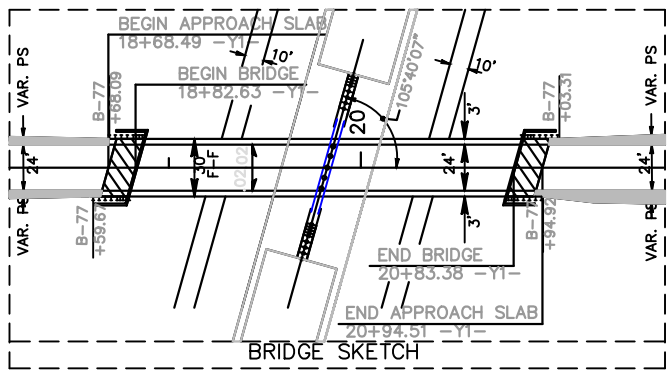
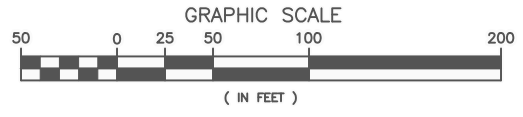
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LEGEND
 GREEN - RETIRE IN PLACE
 ORANGE - EXISTING TO REMAIN
 RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:
 HEATH AND ASSOCIATES, INC.
 108 W. WARREN STREET
 SHELBY, NC 28150
 LICENSE F-1035
 PHONE: 704-487-8516
 heathandassociates@heathweb.com

NATURAL GAS CONSTRUCTION
 PLANS ONLY

**THIS DRAWING IS FOR
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PROJECT REFERENCE NO. R-2707D	SHEET NO. 6
R/W SHEET NO.	

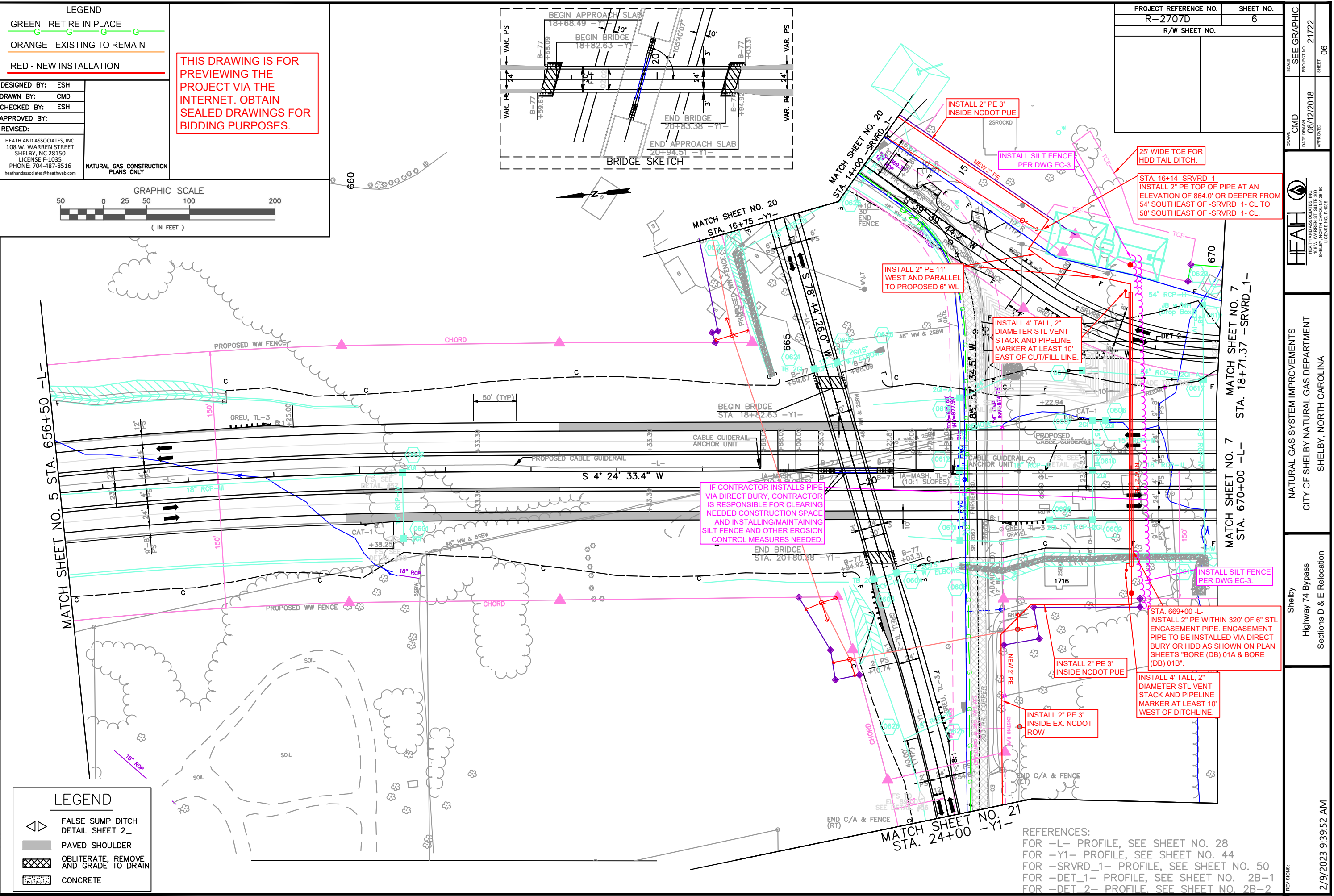
DATE DRAWN 06/12/2018	PROJECT NO. 21722
DRAWN BY CMD	SHEET 06

HEATH AND ASSOCIATES, INC.
 108 W. WARREN ST. SUITE 300
 SHELBY, NORTH CAROLINA 28150
 LICENSE NO. F-1035

NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

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IF CONTRACTOR INSTALLS PIPE VIA DIRECT BURY, CONTRACTOR IS RESPONSIBLE FOR CLEARING NEEDED CONSTRUCTION SPACE AND INSTALLING/MAINTAINING SILT FENCE AND OTHER EROSION CONTROL MEASURES NEEDED.

INSTALL 2" PE 3' INSIDE NCDOT PUE

INSTALL SILT FENCE PER DWG EC-3.

25' WIDE TCE FOR HDD TAIL DITCH.

STA. 16+14 -SRVRD_1-
 INSTALL 2" PE TOP OF PIPE AT AN ELEVATION OF 864.0' OR DEEPER FROM 54' SOUTHEAST OF -SRVRD_1-CL TO 58' SOUTHEAST OF -SRVRD_1-CL.

INSTALL 2" PE 11' WEST AND PARALLEL TO PROPOSED 6" WL

INSTALL 4" TALL, 2" DIAMETER STL VENT STACK AND PIPELINE MARKER AT LEAST 10' EAST OF CUT/FILL LINE.

INSTALL SILT FENCE PER DWG EC-3.

STA. 669+00 -L-
 INSTALL 2" PE WITHIN 320' OF 6" STL ENCASUREMENT PIPE. ENCASUREMENT PIPE TO BE INSTALLED VIA DIRECT BURY OR HDD AS SHOWN ON PLAN SHEETS "BORE (DB) 01A & BORE (DB) 01B".

INSTALL 4" TALL, 2" DIAMETER STL VENT STACK AND PIPELINE MARKER AT LEAST 10' WEST OF DITCHLINE.

INSTALL 2" PE 3' INSIDE NCDOT PUE

INSTALL 2" PE 3' INSIDE EX. NCDOT ROW

REFERENCES:
 FOR -L- PROFILE, SEE SHEET NO. 28
 FOR -Y1- PROFILE, SEE SHEET NO. 44
 FOR -SRVRD_1- PROFILE, SEE SHEET NO. 50
 FOR -DET_1- PROFILE, SEE SHEET NO. 2B-1
 FOR -DET_2- PROFILE, SEE SHEET NO. 2B-2

LEGEND
 FALSE SUMP DITCH
 DETAIL SHEET 2_
 PAVED SHOULDER
 OBLITERATE, REMOVE AND GRADE TO DRAIN
 CONCRETE

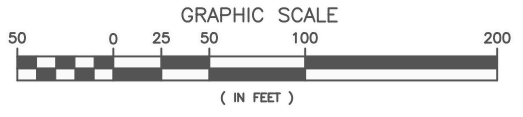
LEGEND
 GREEN - RETIRE IN PLACE
 ORANGE - EXISTING TO REMAIN
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DESIGNED BY: ESH
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 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

HEATH AND ASSOCIATES, INC.
 108 W. WARREN STREET
 SHELBY, NC 28150
 LICENSE F-1035
 PHONE: 704-487-8516
 heathandassociates@heathweb.com

NATURAL GAS CONSTRUCTION
 PLANS ONLY

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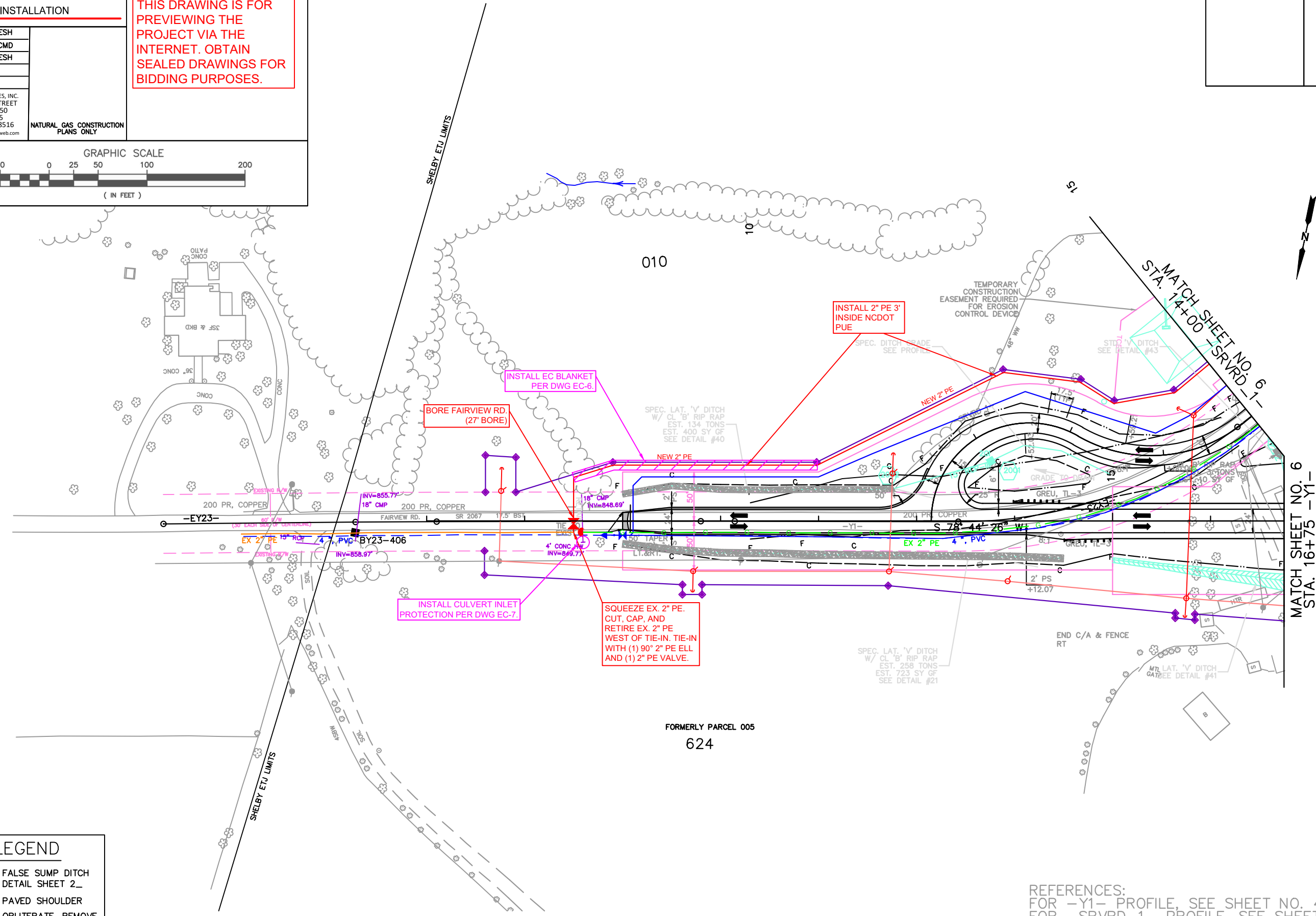
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R/W SHEET NO.	
DATE DRAWN 06/12/2018	PROJECT NO. 21722
DRAWN BY CMD	SHEET 20
APPROVED	



NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

REVISIONS:
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LEGEND
 FALSE SUMP DITCH
 DETAIL SHEET 2_
 PAVED SHOULDER
 OBLITERATE, REMOVE
 AND GRADE TO DRAIN
 CONCRETE

REFERENCES:
 FOR -Y1- PROFILE, SEE SHEET NO. 44
 FOR -SRVRD_1- PROFILE, SEE SHEET NO. 50
 FOR -DET_1- PROFILE, SEE SHEET NO. 2B-1

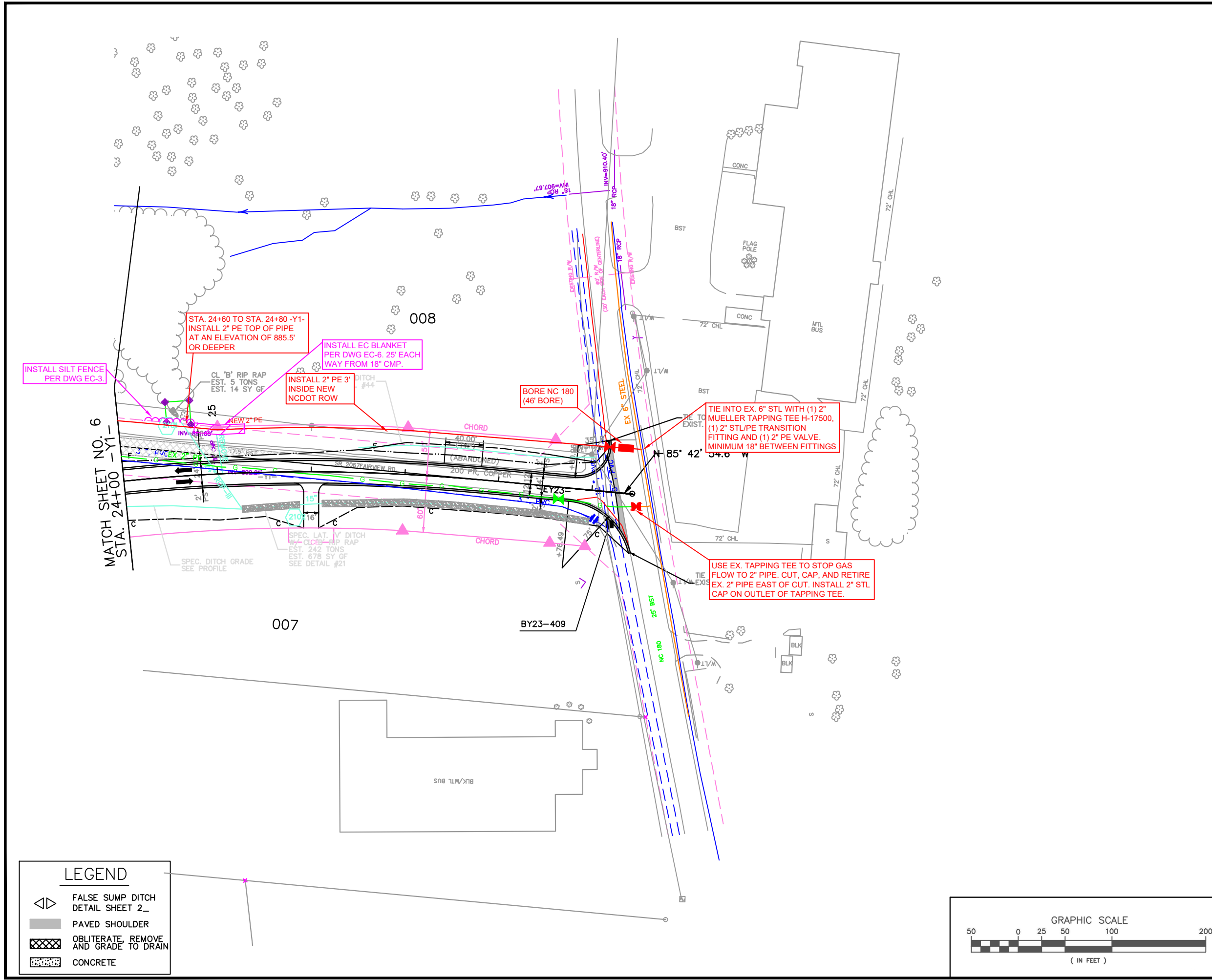
PROJECT REFERENCE NO.	R-2707D	SHEET NO.	21
R/W SHEET NO.			
DATE DRAWN	06/12/2018	PROJECT NO.	21722
DRAWN BY	CMD	APPROVED	
SEE GRAPHIC		SHEET 21	



NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

Shelby
Highway 74 Bypass
Sections D & E Relocation

REVISIONS:
2/9/2023 9:40:00 AM

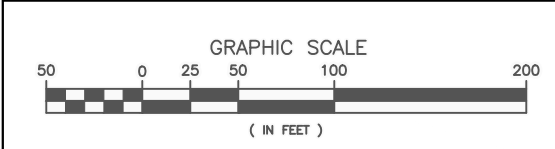


LEGEND

—●—●—●—	GREEN - RETIRE IN PLACE
—●—●—●—	ORANGE - EXISTING TO REMAIN
—●—●—●—	RED - NEW INSTALLATION

DESIGNED BY:	ESH
DRAWN BY:	CMD
CHECKED BY:	ESH
APPROVED BY:	
REVISED:	
HEATH AND ASSOCIATES, INC. 108 W. WARREN STREET SHELBY, NC 28150 LICENSE F-1035 PHONE: 704-487-8516 heathandassociates@heathweb.com	
NATURAL GAS CONSTRUCTION PLANS ONLY	

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BIDDING PURPOSES.



LEGEND

	FALSE SUMP DITCH DETAIL SHEET 2_
	PAVED SHOULDER
	OBLITERATE, REMOVE AND GRADE TO DRAIN
	CONCRETE

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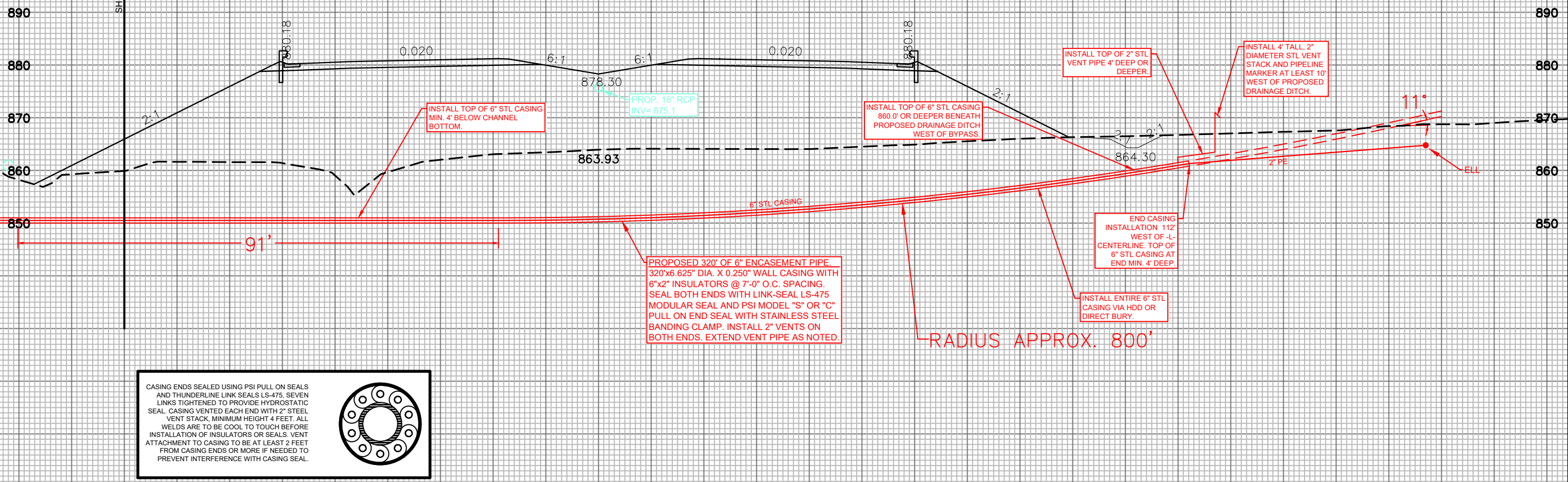
FAIRVIEW ROAD RELOCATION AREA CROSSING

INSTALL 6" CASING VIA HDD OR DIRECT BURY. INSTALLATION ILLUSTRATED IS HDD OPTION. IF INSTALLED VIA DIRECT BURY, MINIMUM DEPTH IS 4' COVER TO TOP OF 6" CASING.

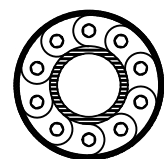
EAST ←

→ WEST

SHEET MATCHLINE 01B



CASING ENDS SEALED USING PSI PULL ON SEALS AND THUNDERLINE LINK SEALS LS-475, SEVEN LINKS TIGHTENED TO PROVIDE HYDROSTATIC SEAL. CASING VENTED EACH END WITH 2" STEEL VENT STACK, MINIMUM HEIGHT 4 FEET. ALL WELDS ARE TO BE COOL TO TOUCH BEFORE INSTALLATION OF INSULATORS OR SEALS. VENT ATTACHMENT TO CASING TO BE AT LEAST 2 FEET FROM CASING ENDS OR MORE IF NEEDED TO PREVENT INTERFERENCE WITH CASING SEAL.



669+00.00

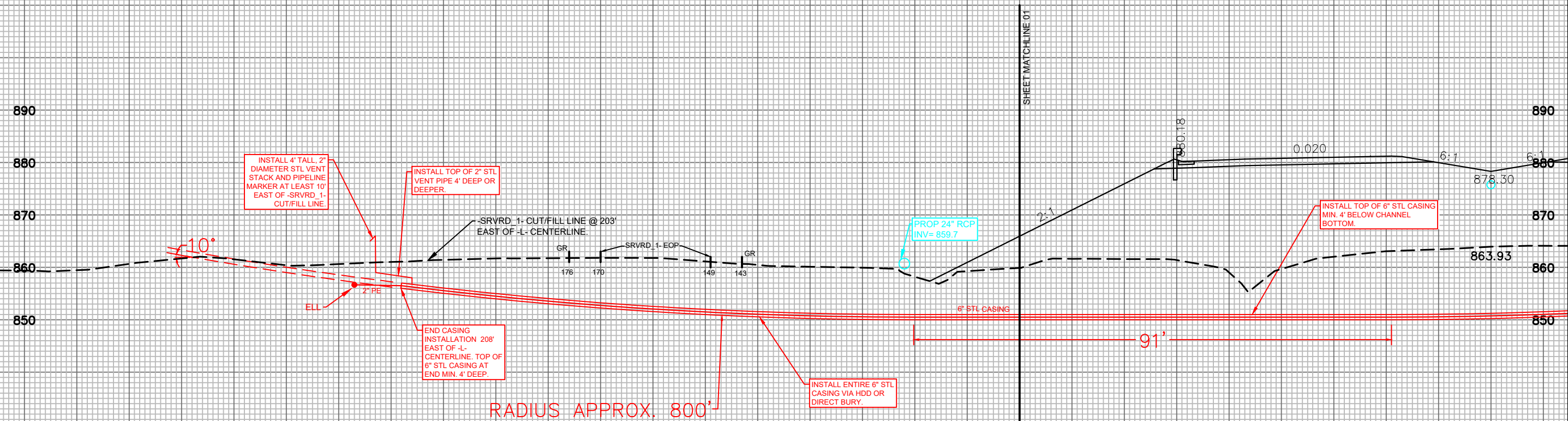
THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

FAIRVIEW ROAD RELOCATION AREA CROSSING

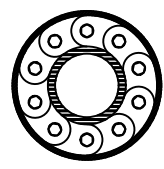
INSTALL 6" CASING VIA HDD OR DIRECT BURY. INSTALLATION ILLUSTRATED IS HDD OPTION. IF INSTALLED VIA DIRECT BURY, MINIMUM DEPTH IS 4' COVER TO TOP OF 6" CASING.

EAST ←

→ WEST



CASING ENDS SEALED USING PSI PULL ON SEALS AND THUNDERLINE LINK SEALS LS-475. SEVEN LINKS TIGHTENED TO PROVIDE HYDROSTATIC SEAL. CASING VENTED EACH END WITH 2" STEEL VENT STACK, MINIMUM HEIGHT 4 FEET. ALL WELDS ARE TO BE COOL TO TOUCH BEFORE INSTALLATION OF INSULATORS OR SEALS. VENT ATTACHMENT TO CASING TO BE AT LEAST 2 FEET FROM CASING ENDS OR MORE IF NEEDED TO PREVENT INTERFERENCE WITH CASING SEAL.



669+00.00

SEE GRAPHIC
 PROJECT NO. 21722
 SHEET BORE (DB) 01B

CMD
 DATE DRAWN 09/19/2018
 APPROVED

HEAH
 HEAVEN ASSOCIATES, INC.
 100 W. WARREN ST. SUITE 300
 SHELBY, NORTH CAROLINA 28150
 LICENSE NO. F-1038

NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

REVISIONS:
 2/9/2023 9:40:02 AM

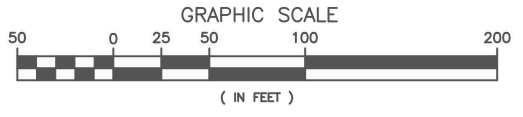
LEGEND	
	GREEN - RETIRE IN PLACE
	ORANGE - EXISTING TO REMAIN
	RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

HEATH AND ASSOCIATES, INC.
 108 W. WARREN STREET
 SHELBY, NC 28150
 LICENSE F-1035
 PHONE: 704-487-8516
 heathandassociates@heathweb.com

NATURAL GAS CONSTRUCTION
 PLANS ONLY

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PROJECT REFERENCE NO. R-2707D	SHEET NO. 8
R/W SHEET NO.	

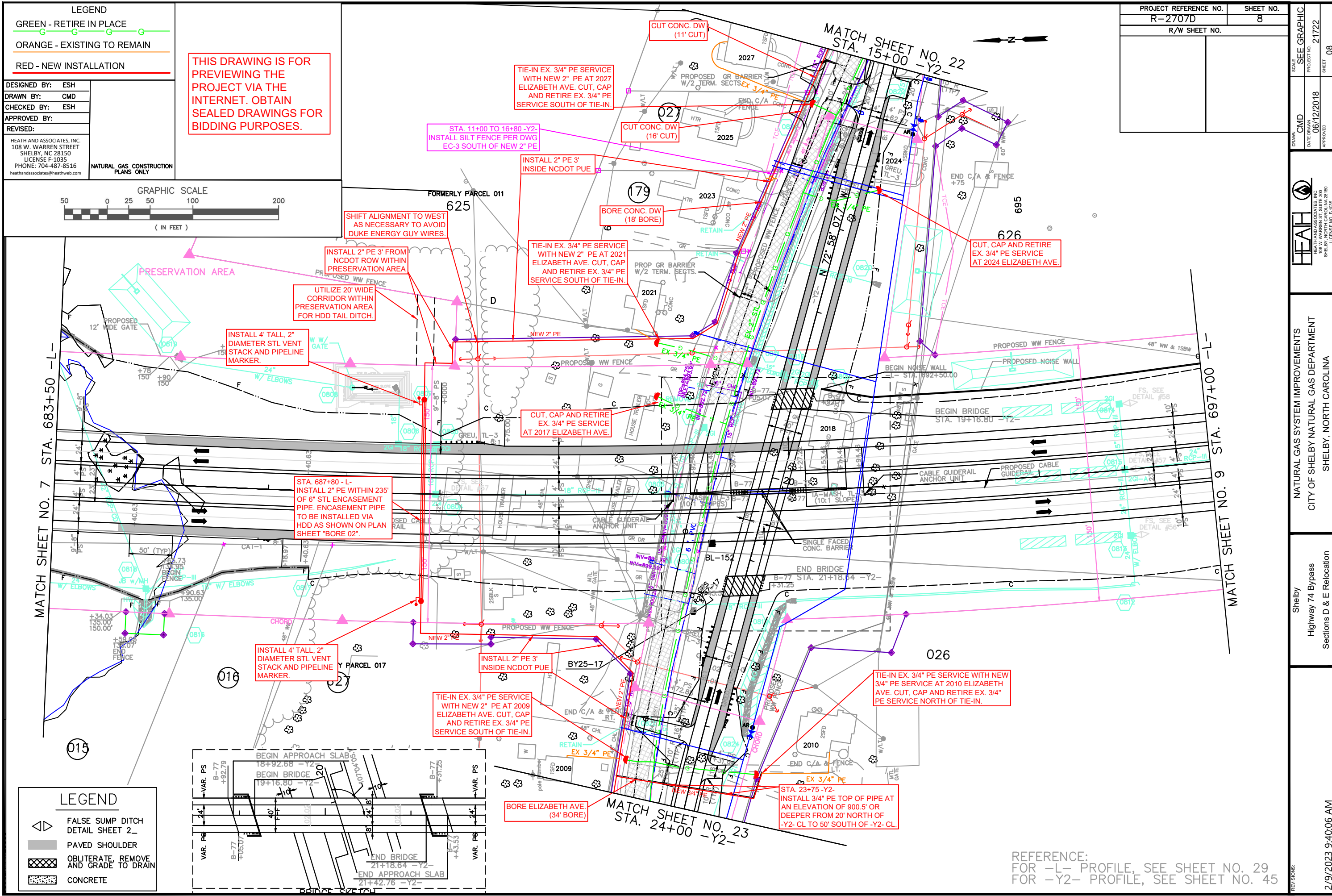
DATE DRAWN 06/12/2018	PROJECT NO. 21722
DRAWN BY CMD	SHEET NO. 08



NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

2/9/2023 9:40:06 AM



REFERENCE:
 FOR -L- PROFILE, SEE SHEET NO. 29
 FOR -Y2- PROFILE, SEE SHEET NO. 45

LEGEND
 GREEN - RETIRE IN PLACE
 ORANGE - EXISTING TO REMAIN
 RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

HEATH AND ASSOCIATES, INC.
 108 W. WARREN STREET
 SHELBY, NC 28150
 LICENSE F-1035
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PROJECT REFERENCE NO.
 R-2707D

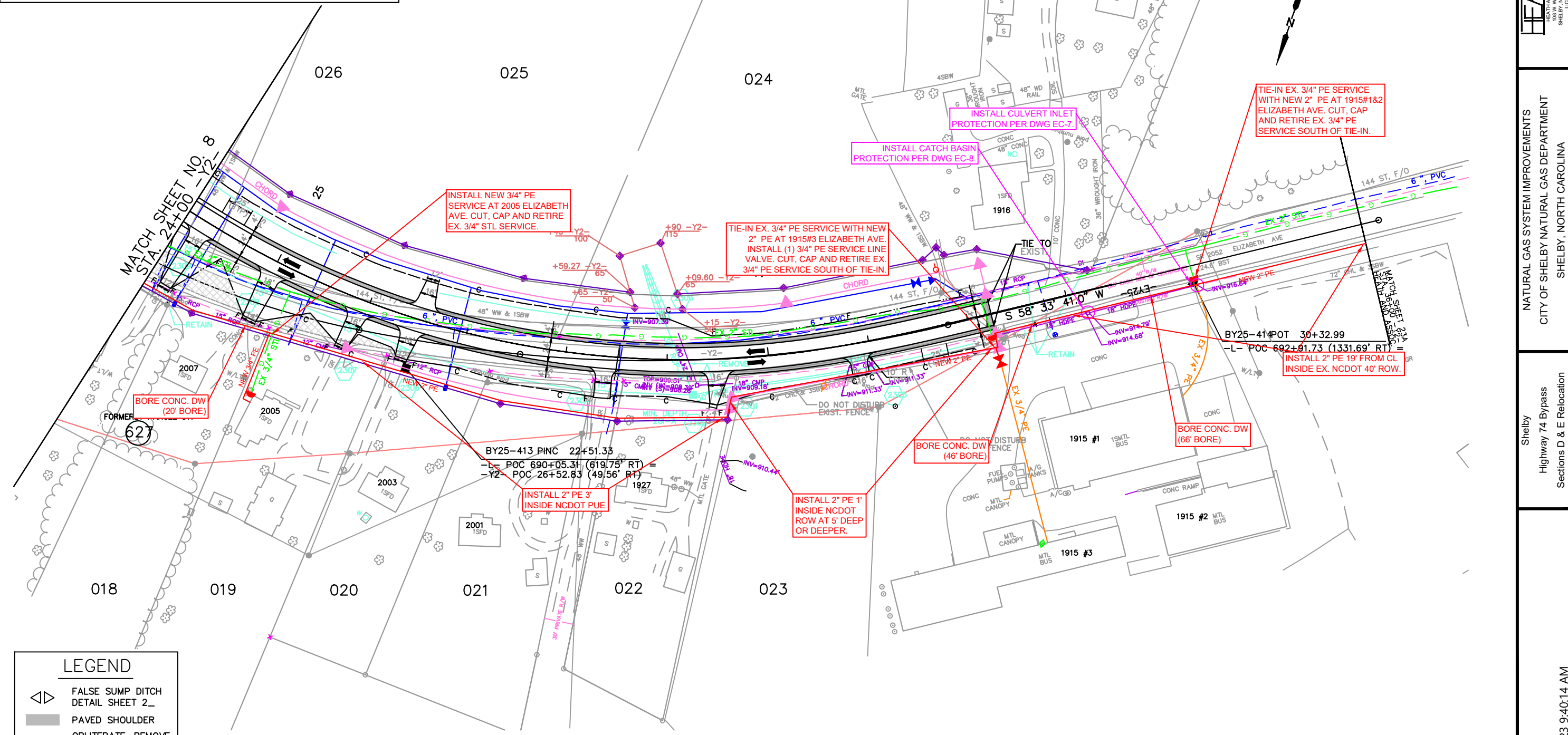
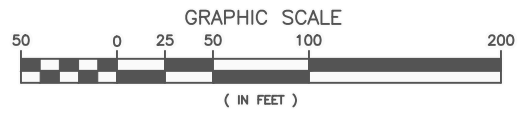
SHEET NO.
 23

R/W SHEET NO.

DATE DRAWN
 06/12/2018

PROJECT NO.
 21722

APPROVED
 SHEET
 23



LEGEND
 FALSE SUMP DITCH
 DETAIL SHEET 2_
 PAVED SHOULDER
 OBLITERATE, REMOVE
 AND GRADE TO DRAIN
 CONCRETE

REFERENCE:
 FOR -Y2- PROFILE, SEE SHEET NO. 45

NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

2/9/2023 9:40:14 AM

LEGEND

GREEN - RETIRE IN PLACE

ORANGE - EXISTING TO REMAIN

RED - NEW INSTALLATION

DESIGNED BY: ESH

DRAWN BY: CMD

CHECKED BY: ESH

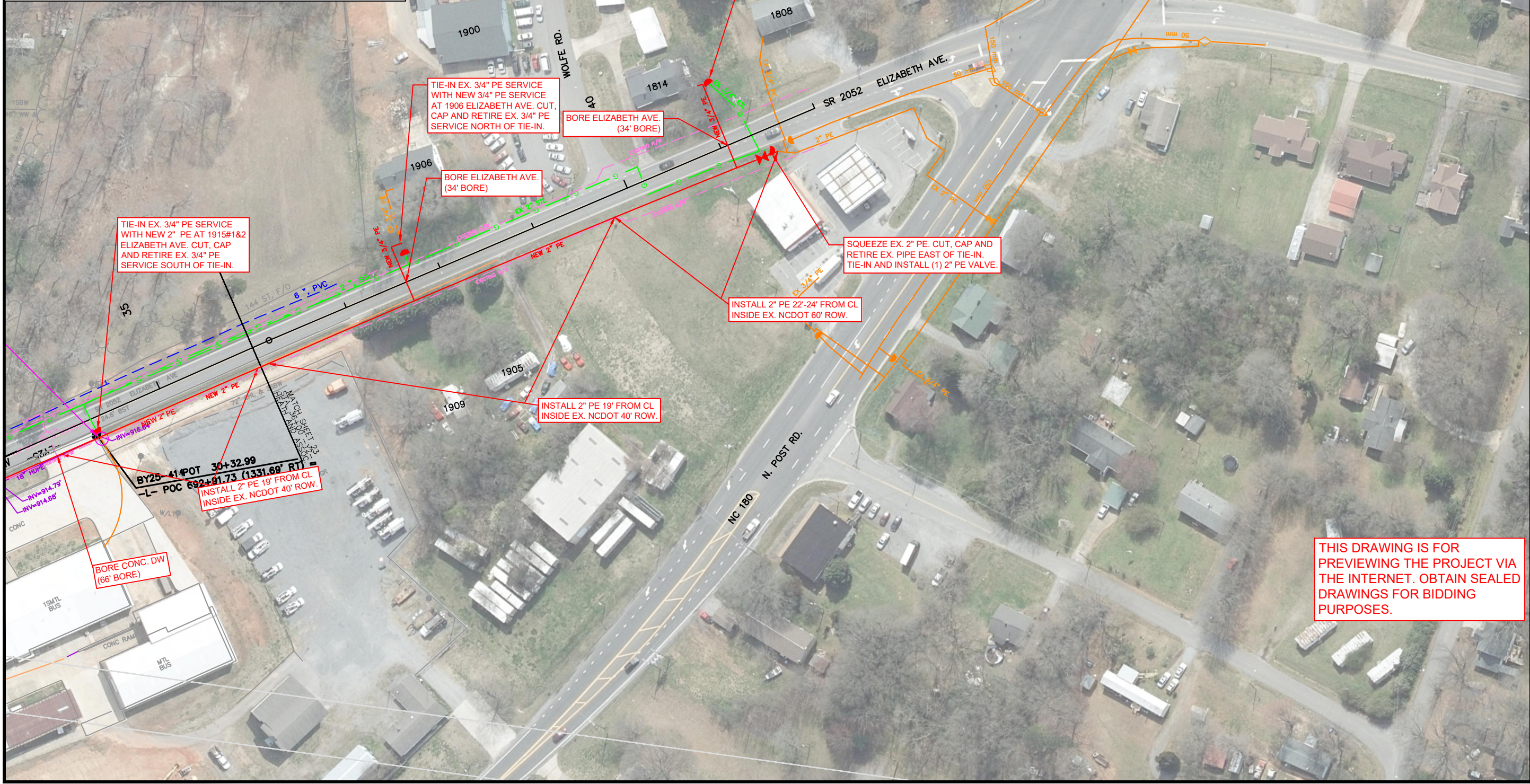
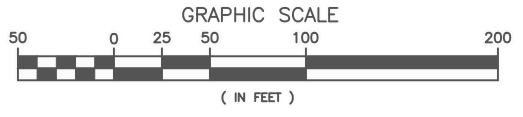
APPROVED BY:

REVISED:

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SHELBY, NC 28150
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PURPOSES.**

SCALE: SEE GRAPHIC
PROJECT NO: 21722
SHEET: 23A

DRAWN: CMD
DATE DRAWN: 06/12/2018
APPROVED:



NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

Shelby
Highway 74 Bypass
Sections D & E Relocation

REVISIONS:
2/9/2023 9:40:18 AM

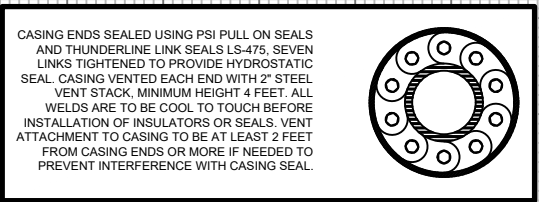
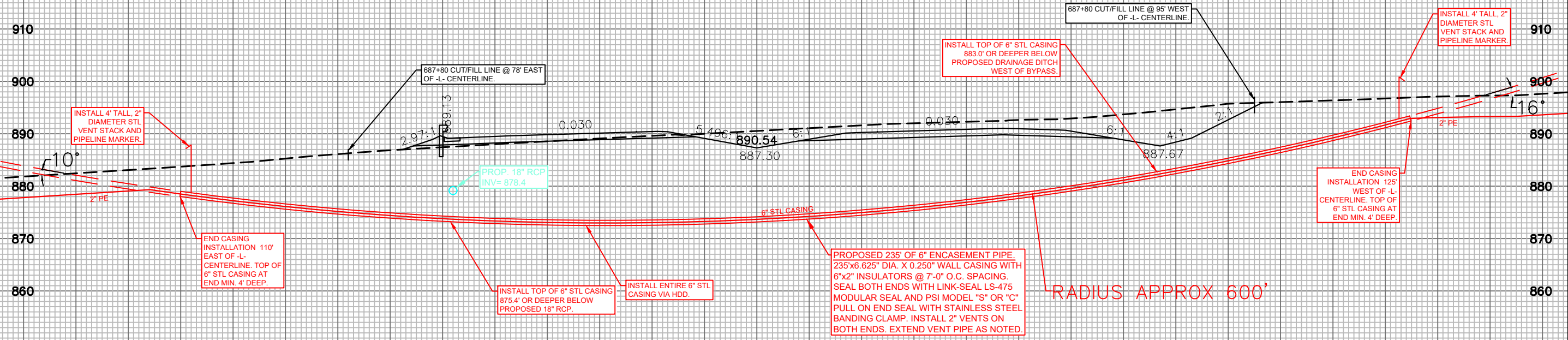
THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

ELIZABETH AVE RELOCATION AREA CROSSING

SEE GRAPHIC
 21722
 BORE 02
 CMD
 09/19/2018
 HEAH
 100 W. WARREN ST. SUITE 300
 SHELBY, NORTH CAROLINA 28150
 LICENSE NO. F-1038

EAST ←

→ WEST



CASING ENDS SEALED USING PSI PULL ON SEALS AND THUNDERLINE LINK SEALS LS-475. SEVEN LINKS TIGHTENED TO PROVIDE HYDROSTATIC SEAL. CASING VENTED EACH END WITH 2\"/>

* PIPELINE TO BE INSTALLED AT STA. 687+80. STA. 688+00 WAS USED TO DEPICT INSTALLATION. THE DEPTH REQUIREMENTS AND LOCATION OF PIPELINE AND CASING DEPICTED WERE DETERMINED USING STA. 687+80.

688+00.00*

NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA
 Shelby
 Highway 74 Bypass
 Sections D & E Relocation

REVISIONS:
 2/9/2023 9:40:22 AM

LEGEND

GREEN - RETIRE IN PLACE
 ORANGE - EXISTING TO REMAIN
 RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

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 LICENSE F-1035
 PHONE: 704-487-8516
 heathandassociates@heathweb.com

NATURAL GAS CONSTRUCTION PLANS ONLY

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GRAPHIC SCALE

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 (IN FEET)

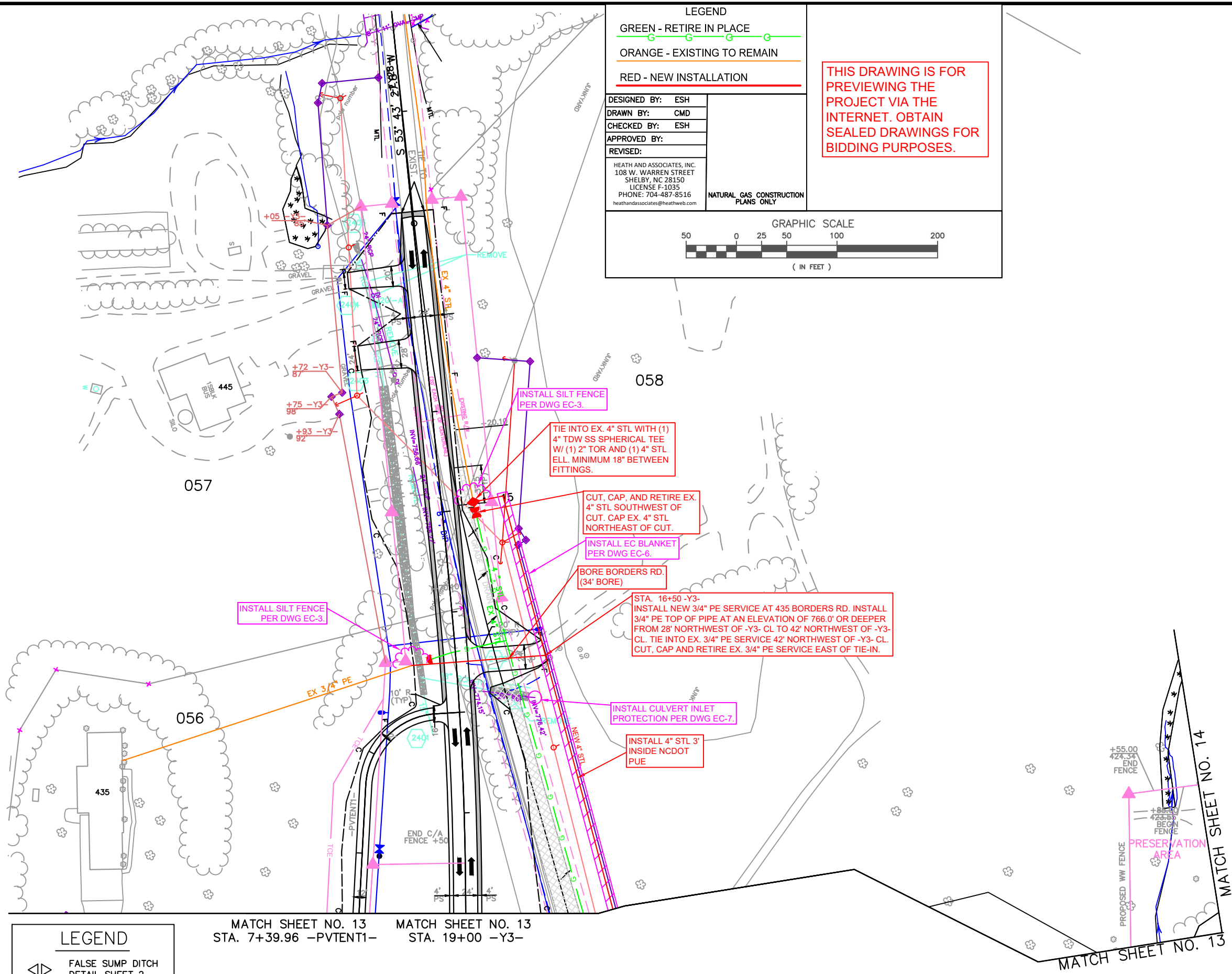
PROJECT REFERENCE NO. R-2707D	SHEET NO. 24
R/W SHEET NO.	
DATE DRAWN 06/12/2018	PROJECT NO. 21722
DRAWN BY CMD	SHEET 24
APPROVED	



NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

REVISIONS:
 2/9/2023 9:40:29 AM



LEGEND

◁▷ FALSE SUMP DITCH
 DETAIL SHEET 2_

▬ PAVED SHOULDER

▨ OBLITERATE, REMOVE
 AND GRADE TO DRAIN

▩ CONCRETE

MATCH SHEET NO. 13 MATCH SHEET NO. 13
 STA. 7+39.96 -PVTENT1- STA. 19+00 -Y3-

REFERENCE:
 FOR -Y3- PROFILE, SEE SHEET NO. 46
 FOR -PVTENT1- PROFILE, SEE SHEET NO. 55

PROJECT REFERENCE NO.	R-2707D	SHEET NO.	25
R/W SHEET NO.			
DATE DRAWN	06/12/2018	PROJECT NO.	21722
DRAWN BY	CMD	APPROVED	
SEE GRAPHIC		25	

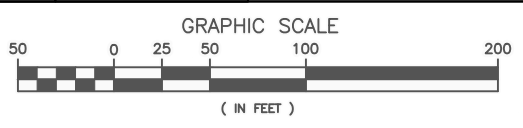
LEGEND
 GREEN - RETIRE IN PLACE
 ORANGE - EXISTING TO REMAIN
 RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

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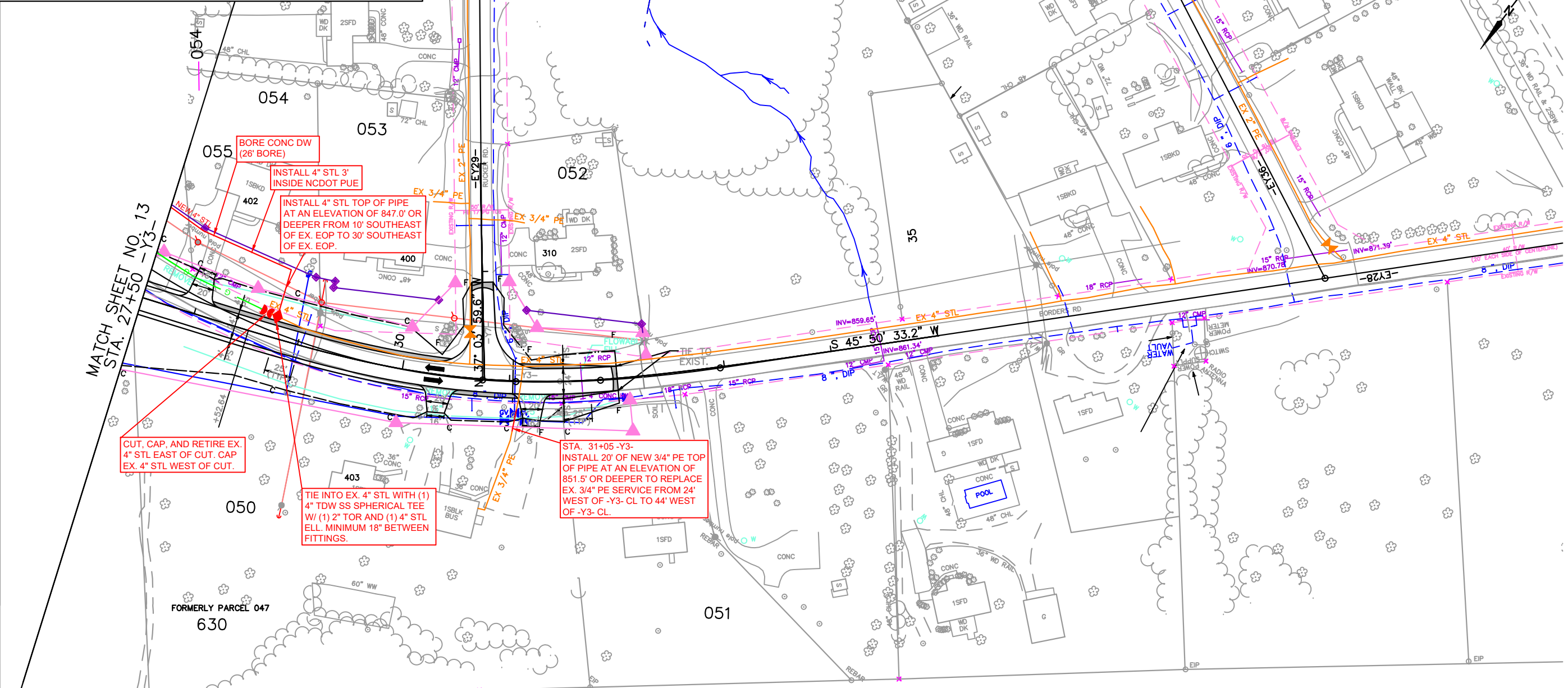


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 108 W. WARREN ST. SUITE 300
 SHELBY, NORTH CAROLINA 28150
 LICENSE NO. F-1035

NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

2/9/2023 9:40:33 AM



LEGEND

- FALSE SUMP DITCH DETAIL SHEET 2_
- PAVED SHOULDER
- OBLITERATE, REMOVE AND GRADE TO DRAIN
- CONCRETE

REFERENCE:
 FOR -Y3- PROFILE, SEE SHEET NO. 46
 FOR -Y7- PROFILE, SEE SHEET NO. 49

LEGEND	
	GREEN - RETIRE IN PLACE
	ORANGE - EXISTING TO REMAIN
	RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

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 heathandassociates@heathweb.com

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PROJECT REFERENCE NO. R-2707D	SHEET NO. 17
R/W SHEET NO.	

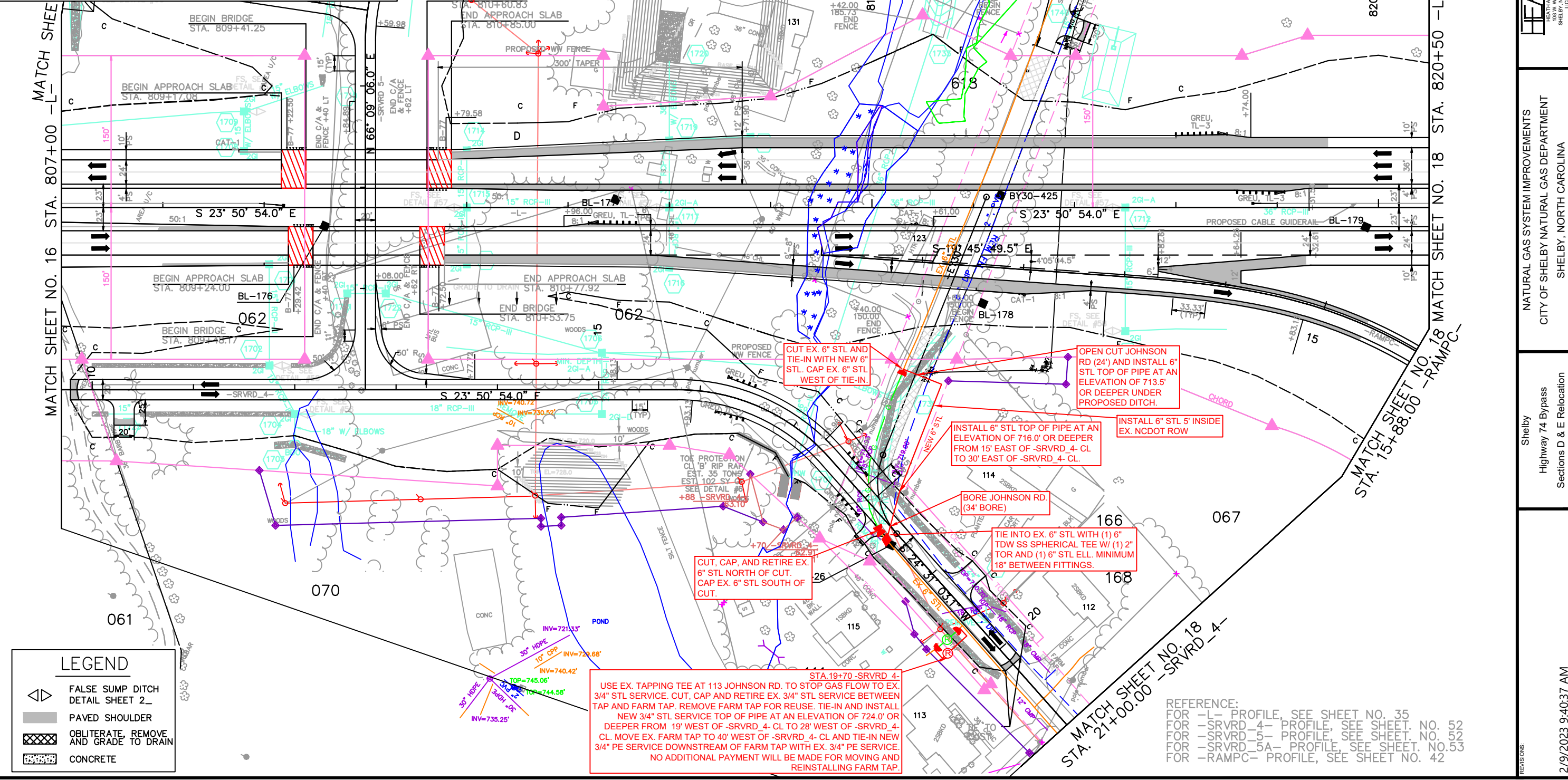
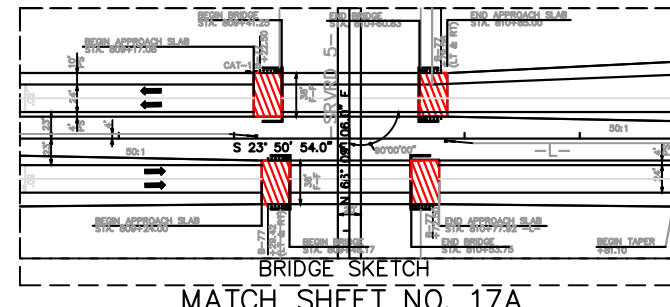
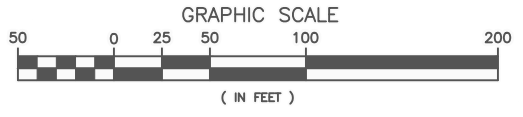
DATE DRAWN 06/12/2018	PROJECT NO. 21722
DRAWN BY CMD	SHEET 17
APPROVED	



NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

2/9/2023 9:40:37 AM



LEGEND	
	FALSE SUMP DITCH DETAIL SHEET 2_
	PAVED SHOULDER
	OBLITERATE, REMOVE AND GRADE TO DRAIN
	CONCRETE

USE EX. TAPPING TEE AT 113 JOHNSON RD. TO STOP GAS FLOW TO EX. 3/4" STL SERVICE. CUT, CAP AND RETIRE EX. 3/4" STL SERVICE BETWEEN TAP AND FARM TAP. REMOVE FARM TAP FOR REUSE. TIE-IN AND INSTALL NEW 3/4" STL SERVICE TOP OF PIPE AT AN ELEVATION OF 724.0' OR DEEPER FROM 19' WEST OF -SRVRD_4- CL TO 28' WEST OF -SRVRD_4- CL. MOVE EX. FARM TAP TO 40' WEST OF -SRVRD_4- CL AND TIE-IN NEW 3/4" PE SERVICE DOWNSTREAM OF FARM TAP WITH EX. 3/4" PE SERVICE. NO ADDITIONAL PAYMENT WILL BE MADE FOR MOVING AND REINSTALLING FARM TAP.

CUT EX. 6" STL AND TIE-IN WITH NEW 6" STL. CAP EX. 6" STL WEST OF TIE-IN.

OPEN CUT JOHNSON RD (24') AND INSTALL 6" STL TOP OF PIPE AT AN ELEVATION OF 713.5' OR DEEPER UNDER PROPOSED DITCH.

INSTALL 6" STL TOP OF PIPE AT AN ELEVATION OF 716.0' OR DEEPER FROM 15' EAST OF -SRVRD_4- CL TO 30' EAST OF -SRVRD_4- CL.

INSTALL 6" STL 5' INSIDE EX. NCDOT ROW

BORE JOHNSON RD. (34' BORE)

TIE INTO EX. 6" STL WITH (1) 6" TDW SS SPHERICAL TEE W/ (1) 2" TOR AND (1) 6" STL ELL. MINIMUM 18" BETWEEN FITTINGS.

CUT, CAP, AND RETIRE EX. 6" STL NORTH OF CUT. CAP EX. 6" STL SOUTH OF CUT.

REFERENCE:
 FOR -L- PROFILE, SEE SHEET NO. 35
 FOR -SRVRD_4- PROFILE, SEE SHEET. NO. 52
 FOR -SRVRD_5- PROFILE, SEE SHEET. NO. 52
 FOR -SRVRD_5A- PROFILE, SEE SHEET. NO. 53
 FOR -RAMPC- PROFILE, SEE SHEET NO. 42

LEGEND	
	GREEN - RETIRE IN PLACE
	ORANGE - EXISTING TO REMAIN
	RED - NEW INSTALLATION

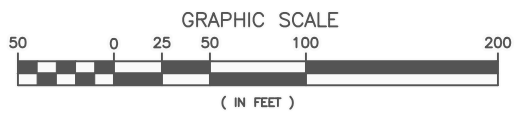
DESIGNED BY:	ESH
DRAWN BY:	CMD
CHECKED BY:	ESH
APPROVED BY:	
REVISED:	

HEATH AND ASSOCIATES, INC. 108 W. WARREN STREET SHELBY, NC 28150 LICENSE F-1035 PHONE: 704-487-8516 heathandassociates@heathweb.com	NATURAL GAS CONSTRUCTION PLANS ONLY
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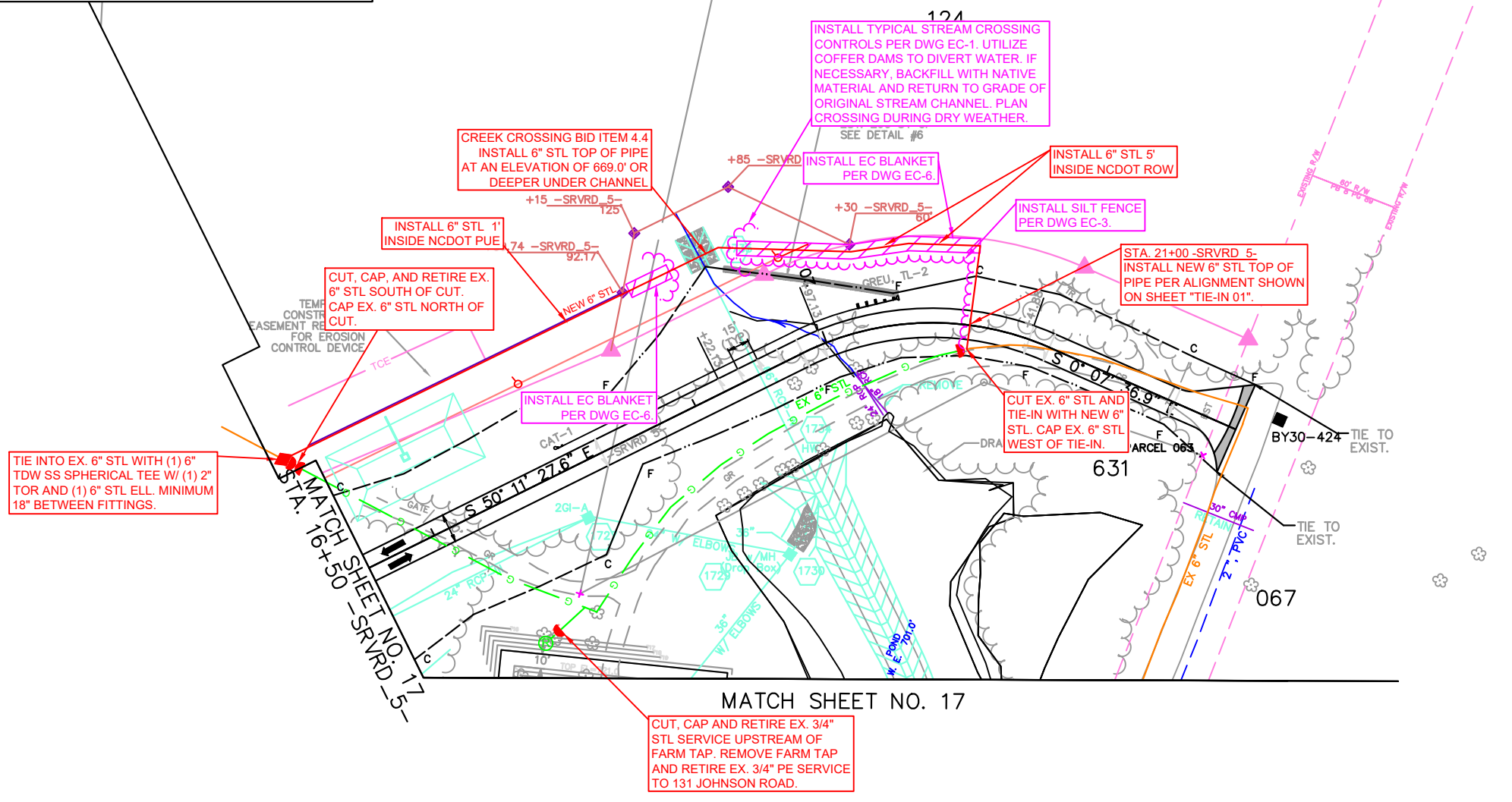
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PROJECT REFERENCE NO. R-2707D	SHEET NO. 17A
R/W SHEET NO.	

SOFT COPY	SEE GRAPHIC
DRAWN	CMD
DATE DRAWN	06/12/2018
PROJECT NO.	21722
SHEET	17A



FORMERLY PARCEL 063
631



LEGEND	
	FALSE SUMP DITCH DETAIL SHEET 2_
	PAVED SHOULDER
	OBLITERATE, REMOVE AND GRADE TO DRAIN
	CONCRETE

REFERENCE:
FOR -SRVRD_5- PROFILE, SEE SHEET NO. 53



NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

Shelby
Highway 74 Bypass
Sections D & E Relocation

REVISIONS:
2/9/2023 9:40:41 AM

MATCH SHEET NO. 17
STA. 21+00.00 -SRVRD_4-

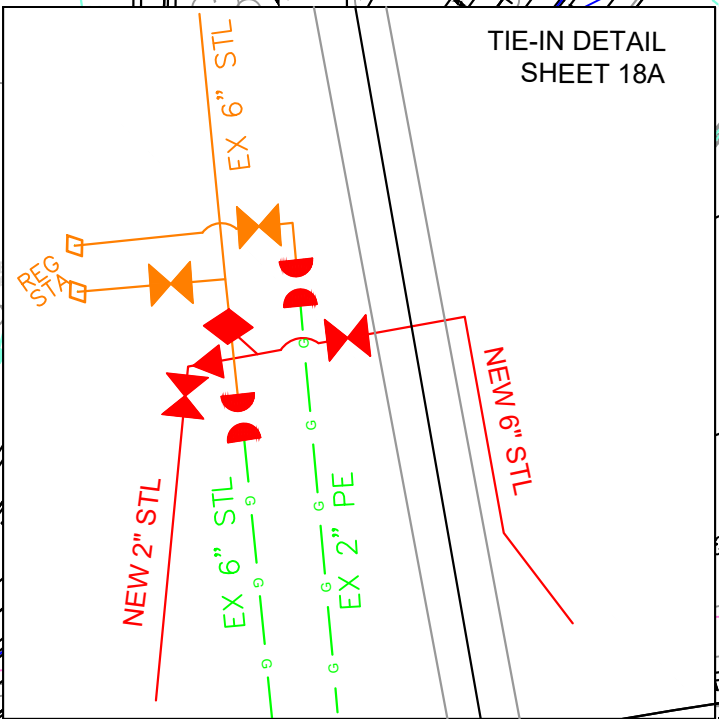
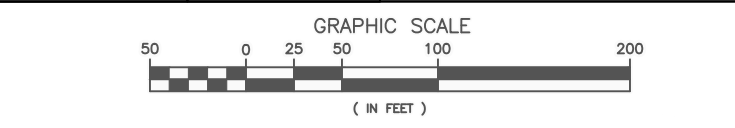
LEGEND
 GREEN - RETIRE IN PLACE
 ORANGE - EXISTING TO REMAIN
 RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

HEATH AND ASSOCIATES, INC.
 108 W. WARREN STREET
 SHELBY, NC 28150
 LICENSE F-1035
 PHONE: 704-487-8516
 heathandassociates@heathweb.com

NATURAL GAS CONSTRUCTION
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TIE INTO EX. 6" STL WITH (1) 6" TDW SS SPHERICAL TEE W/ (1) 2" TOR, (1) 6" STL TEE, (1) 6"x2" REDUCER AND (1) 2" STL VALVE. MINIMUM 18" BETWEEN FITTINGS. SEE TIE-IN DETAIL SHEET 18A.

REMOVE
 INSTALL 2" STL 3" INSIDE NCDOT PUE

INSTALL (1) 6" STL VALVE

BORE JOHNSON RD. (28" BORE)

CUT, CAP, AND RETIRE EX. 2" PE SOUTH OF CUT. CAP EX. 2" PE NORTH OF CUT.

CUT, CAP, AND RETIRE EX. 6" STL SOUTH OF CUT. CAP EX. 6" STL NORTH OF CUT.

INSTALL 6" STL 5' INSIDE EX. NCDOT ROW.

INSTALL 6" STL 5' INSIDE NCDOT PUE.

INSTALL 4" TALL, 2" DIAMETER STL VENT STACK AND PIPELINE MARKER AT LEAST 10' NORTH OF CUT/FILL LINE.

STA. 46+50 -RAMP_A-
 INSTALL 6" STL WITHIN 168" OF 10" STL ENCASEMENT PIPE. ENCASEMENT PIPE TO BE INSTALLED BY JACK AND BORE AS SHOWN ON PLAN SHEET "BORE 03"

INSTALL 4" TALL, 2" DIAMETER STL VENT STACK AND PIPELINE MARKER AT LEAST 10' SOUTH OF CUT/FILL LINE.

INSTALL CATCH BASIN PROTECTION PER DWG EC-8.

INSTALL 6" STL UNDER 15" HDPE PIPE.

INSTALL 6" STL 5' INSIDE EX. NCDOT ROW

INSTALL 6" STL 5' INSIDE EX. NCDOT ROW

INSTALL 6" STL UNDER 18" PLASTIC PIPE

INSTALL 6" STL 9" INSIDE EX. NCDOT ROW 6' DEEP OR DEEPER FROM STA. 33+00 -Y5- EAST FOR 120'

LEGEND

- FALSE SUMP DITCH DETAIL SHEET 2
- PAVED SHOULDER
- OBLITERATE, REMOVE AND GRADE TO DRAIN
- CONCRETE

LEGEND

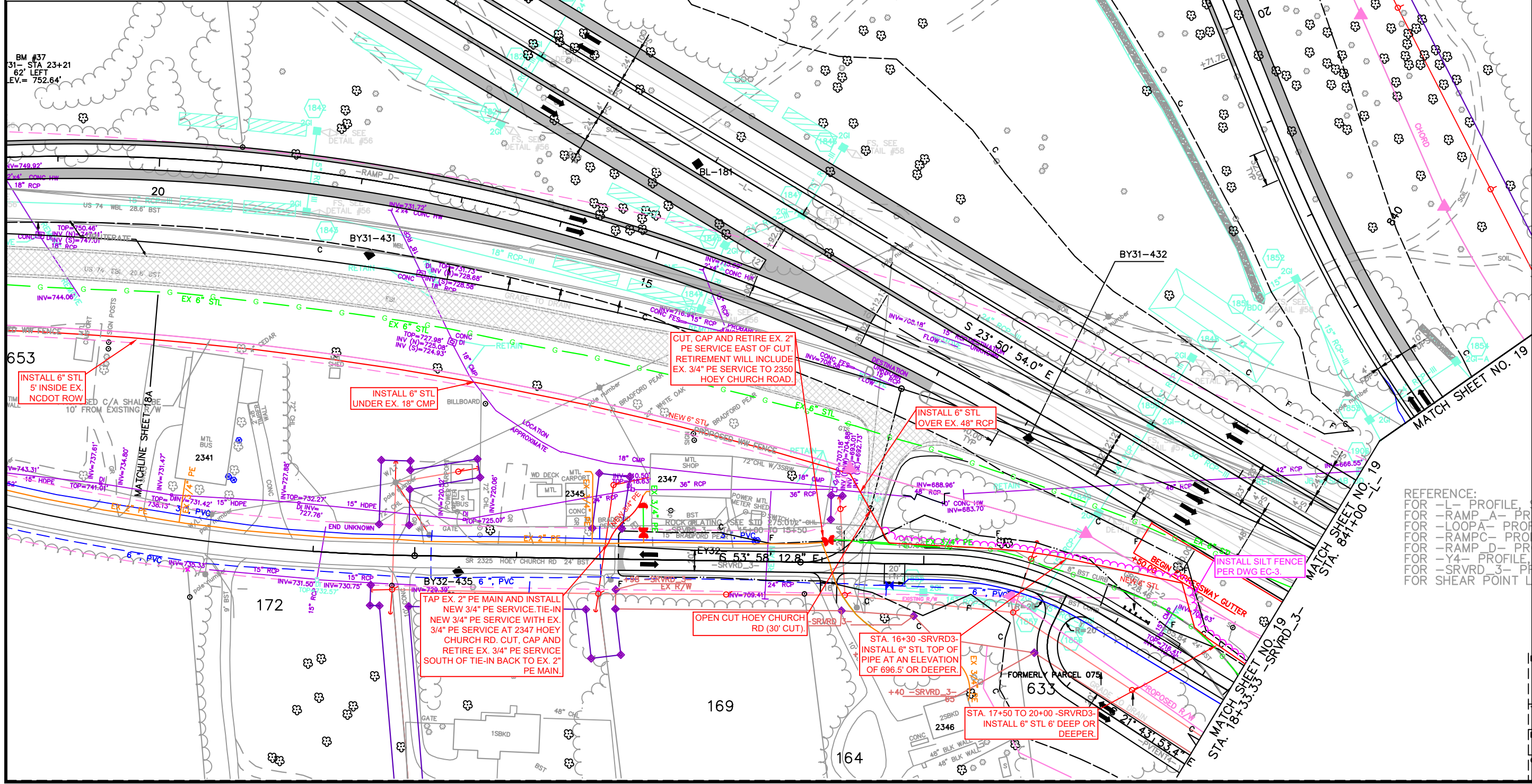
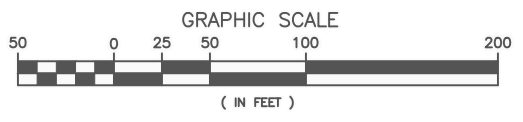
- GREEN - RETIRE IN PLACE
- ORANGE - EXISTING TO REMAIN
- RED - NEW INSTALLATION

DESIGNED BY: ESH
DRAWN BY: CMD
CHECKED BY: ESH
APPROVED BY:
REVISED:

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 108 W. WARREN STREET
 SHELBY, NC 28150
 LICENSE F-1035
 PHONE: 704-487-8516
 heathandassociates@heathweb.com

NATURAL GAS CONSTRUCTION PLANS ONLY

THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.



BM #37
 31 - STA 23+21
 62' LEFT
 EV. = 752.64'

653

INSTALL 6" STL
 5' INSIDE EX.
 NCDOT ROW

INSTALL 6" STL
 UNDER EX. 18" CMP

CUT, CAP AND RETIRE EX. 2"
 PE SERVICE EAST OF CUT.
 RETIREMENT WILL INCLUDE
 EX. 3/4" PE SERVICE TO 2350
 HOEY CHURCH ROAD.

INSTALL 6" STL
 OVER EX. 48" RCP

TAP EX. 2" PE MAIN AND INSTALL
 NEW 3/4" PE SERVICE. TIE-IN
 NEW 3/4" PE SERVICE WITH EX.
 3/4" PE SERVICE AT 2347 HOEY
 CHURCH RD. CUT, CAP AND
 RETIRE EX. 3/4" PE SERVICE
 SOUTH OF TIE-IN BACK TO EX. 2"
 PE MAIN.

OPEN CUT HOEY CHURCH
 RD (30' CUT).

STA. 16+30 -SRVRD3-
 INSTALL 6" STL TOP OF
 PIPE AT AN ELEVATION
 OF 696.5' OR DEEPER.

STA. 17+50 TO 20+00 -SRVRD3-
 INSTALL 6" STL 6' DEEP OR
 DEEPER.

INSTALL SILT FENCE
 PER DWG EC.3

REFERENCE:
 FOR -L- PROFILE,
 FOR -RAMP_A- PR
 FOR -LOOPA- PR
 FOR -RAMP_C- PR
 FOR -RAMP_D- PR
 FOR -Y4- PROFILE,
 FOR -SRVRD_3- P
 FOR SHEAR POINT L

HEATH AND ASSOCIATES, INC.
 108 W. WARREN ST. SUITE 300
 SHELBY, NORTH CAROLINA 28150
 LICENSE NO. F-1035

NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

SO. 21722
 DATE DRAWN 06/12/2018
 PROJECT NO. 21722
 SHEET 18B

2/9/2023 9:40:49 AM

LEGEND

GREEN - RETIRE IN PLACE

ORANGE - EXISTING TO REMAIN

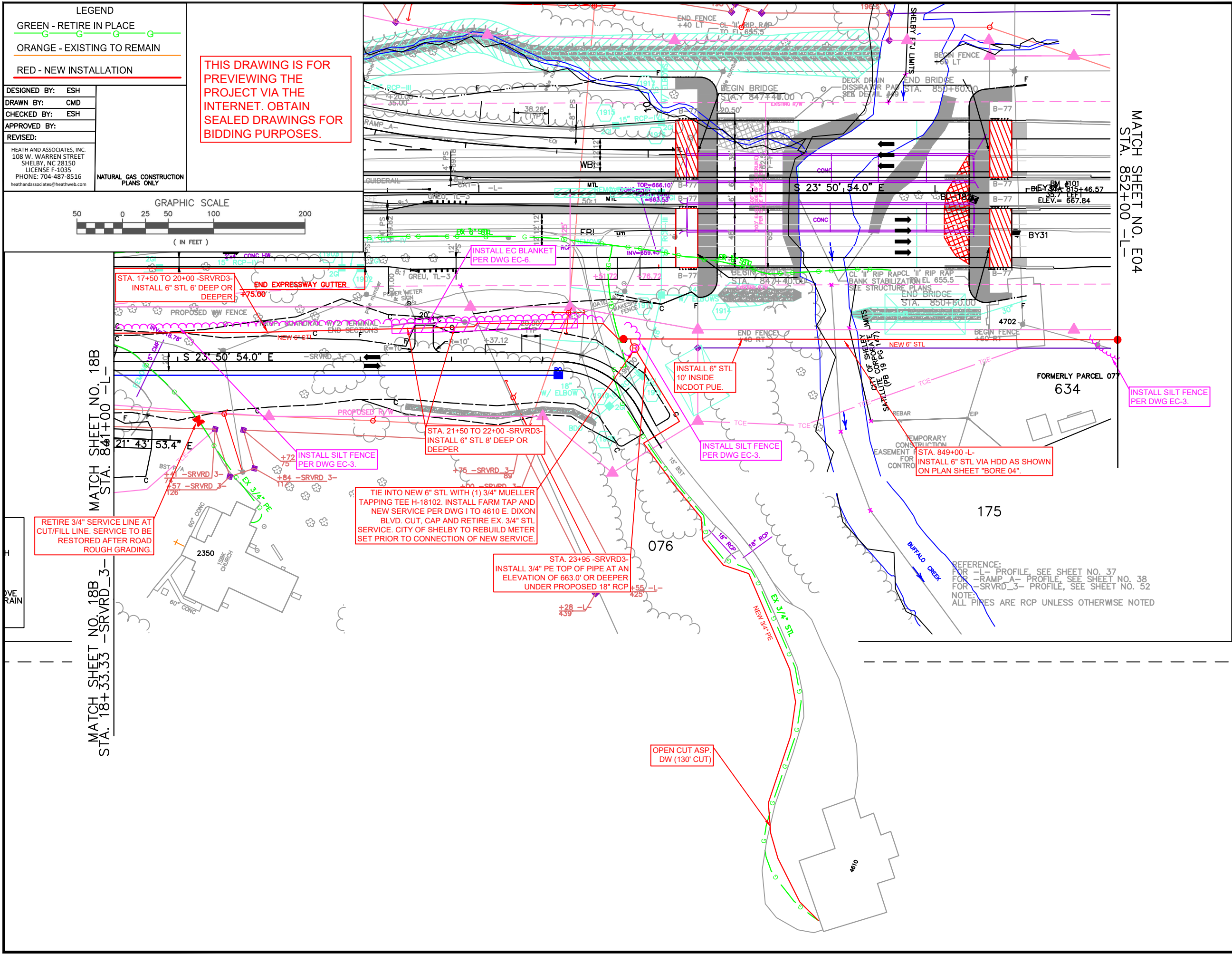
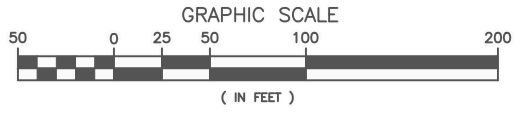
RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

HEATH AND ASSOCIATES, INC.
 108 W. WARREN STREET
 SHELBY, NC 28150
 LICENSE F-1035
 PHONE: 704-487-8516
 heathandassociates@heathweb.com

NATURAL GAS CONSTRUCTION
 PLANS ONLY

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MATCH SHEET NO. E04
 STA. 852+00 -L-



REFERENCE:
 FOR -L- PROFILE, SEE SHEET NO. 37
 FOR -RAMP_A- PROFILE, SEE SHEET NO. 38
 FOR -SRVRD_3- PROFILE, SEE SHEET NO. 52
 NOTE:
 ALL PIPES ARE RCP UNLESS OTHERWISE NOTED

REVISIONS:	DATE DRAWN: 06/12/2018	PROJECT NO: 21722	SHEET: 19
DRAWN: CMD	APPROVED:	SEE GRAPHIC	
NATURAL GAS SYSTEM IMPROVEMENTS CITY OF SHELBY NATURAL GAS DEPARTMENT SHELBY, NORTH CAROLINA			
Shelby Highway 74 Bypass Sections D & E Relocation			
2/9/2023 9:40:54 AM			

LEGEND
 GREEN - RETIRE IN PLACE
 ORANGE - EXISTING TO REMAIN
 RED - NEW INSTALLATION

DESIGNED BY: ESH
 DRAWN BY: CMD
 CHECKED BY: ESH
 APPROVED BY:
 REVISED:

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 PLANS ONLY

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PROJECT REFERENCE NO. R-2707D SHEET NO. 26
 R/W SHEET NO.

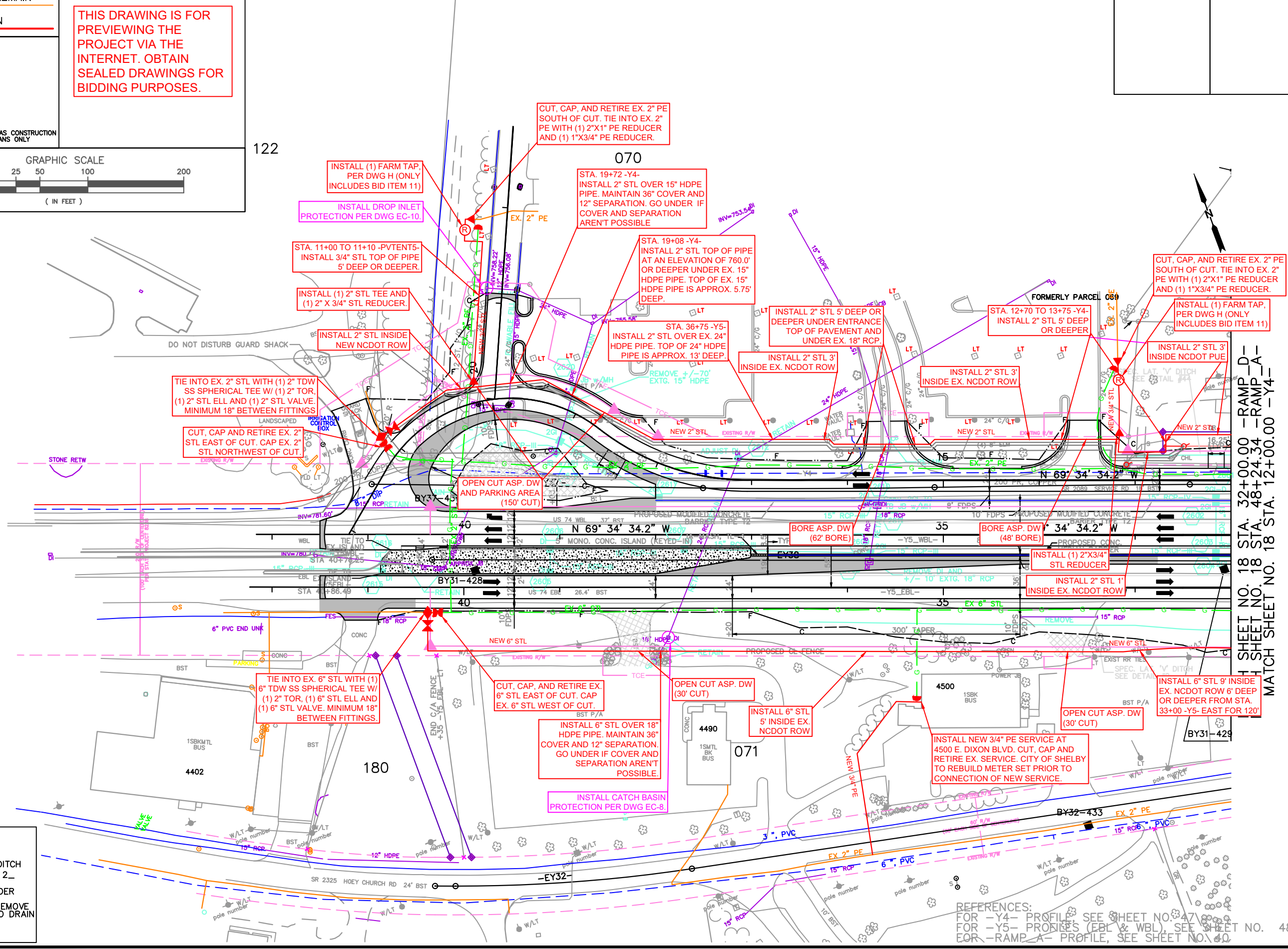
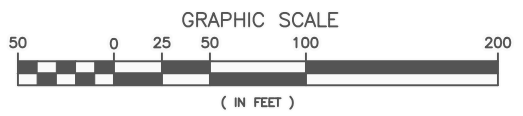
SEE GRAPHIC
 PROJECT NO. 21722
 SHEET 26
 CMD
 DATE DRAWN 06/12/2018
 APPROVED

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NATURAL GAS SYSTEM IMPROVEMENTS
 CITY OF SHELBY NATURAL GAS DEPARTMENT
 SHELBY, NORTH CAROLINA

Shelby
 Highway 74 Bypass
 Sections D & E Relocation

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LEGEND
 FALSE SUMP DITCH
 DETAIL SHEET 2_
 PAVED SHOULDER
 OBLITERATE, REMOVE
 AND GRADE TO DRAIN
 CONCRETE

REFERENCES:
 FOR -Y4- PROFILE, SEE SHEET NO. 47
 FOR -Y5- PROFILES (EBL & WBL), SEE SHEET NO. 48
 FOR -RAMP_A- PROFILE, SEE SHEET NO. 40

SHEET NO. 18 STA. 32+00.00 -RAMP_D-
 SHEET NO. 18 STA. 48+24.34 -RAMP_A-
 MATCH SHEET NO. 18 STA. 12+00.00 -Y4-

PROJECT REFERENCE NO. R-2707E	SHEET NO. 4
R/W SHEET NO.	

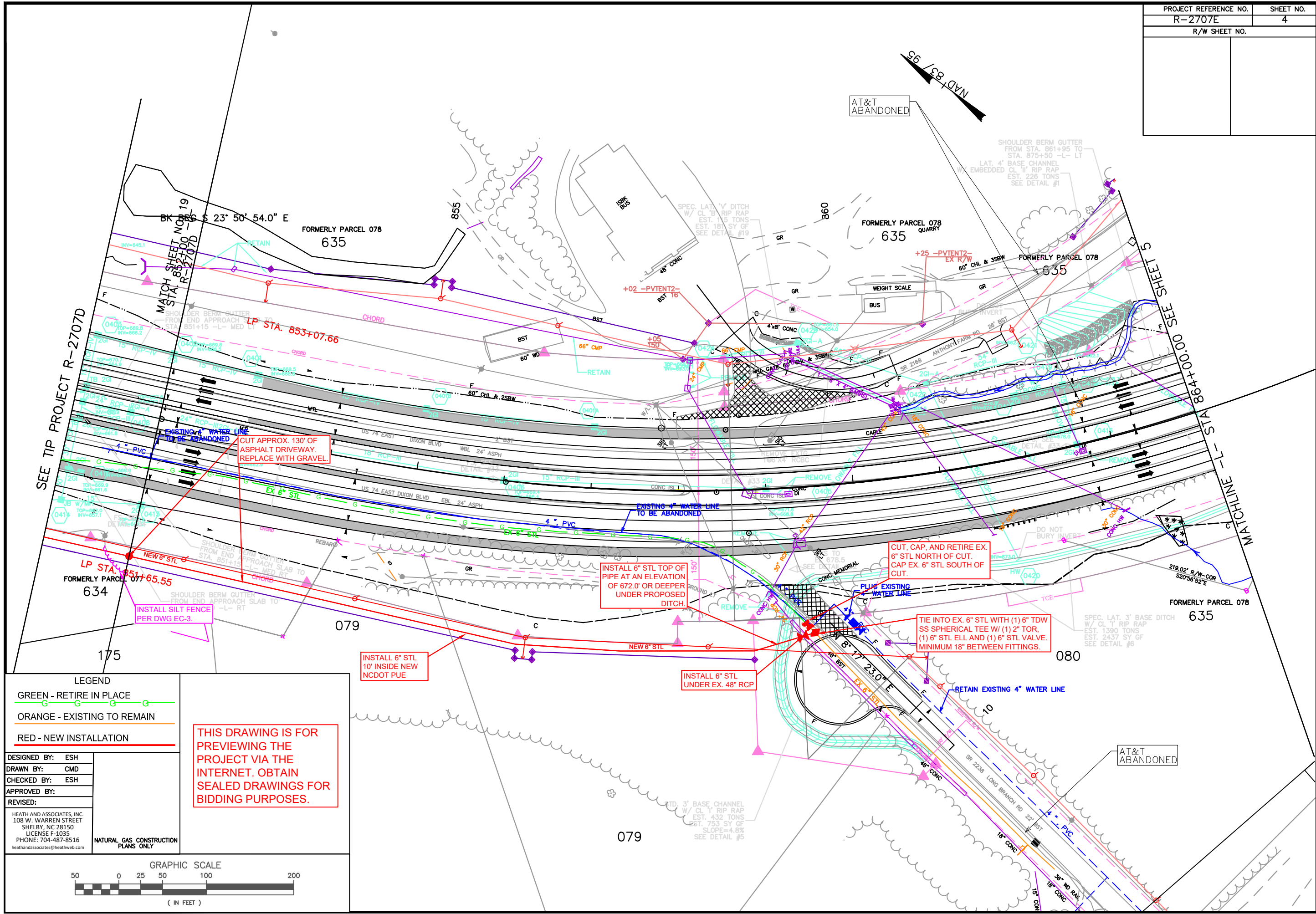
DATE DRAWN 06/12/2018	PROJECT NO. 21722
DRAWN BY CMD	SHEET NO. E04



NATURAL GAS SYSTEM IMPROVEMENTS
CITY OF SHELBY NATURAL GAS DEPARTMENT
SHELBY, NORTH CAROLINA

Shelby
Highway 74 Bypass
Sections D & E Relocation

2/9/2023 9:41:02 AM



LEGEND

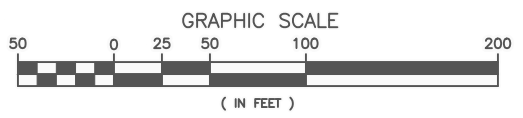
GREEN - RETIRE IN PLACE
ORANGE - EXISTING TO REMAIN
RED - NEW INSTALLATION

DESIGNED BY: ESH
DRAWN BY: CMD
CHECKED BY: ESH
APPROVED BY:
REVISED:

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NATURAL GAS CONSTRUCTION PLANS ONLY

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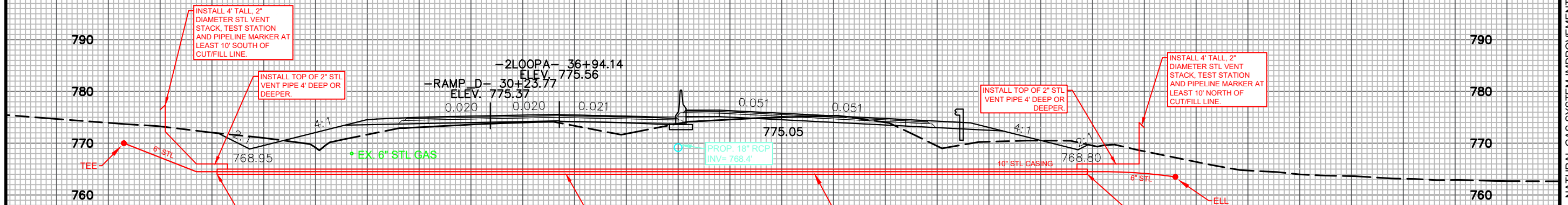


THIS DRAWING IS FOR PREVIEWING THE PROJECT VIA THE INTERNET. OBTAIN SEALED DRAWINGS FOR BIDDING PURPOSES.

INTERCHANGE RELOCATION AREA JACK BORE

SOUTH
 ←

NORTH
 →



INSTALL 4' TALL, 2" DIAMETER STL VENT STACK, TEST STATION AND PIPELINE MARKER AT LEAST 10' SOUTH OF CUT/FILL LINE.

INSTALL TOP OF 2" STL VENT PIPE 4' DEEP OR DEEPER.

END CASING INSTALLATION 109' SOUTH OF -RAMP_A- CENTERLINE.

INSTALL ENTIRE CASING BY JACK AND BORE WITH TOP OF CASING PIPE AT AN ELEVATION OF 765.0' OR DEEPER.

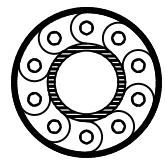
PROPOSED 168' OF 10" ENCASEMENT PIPE, 168"x10.75" DIA. X 0.250" WALL CASING WITH 10"x6" INSULATORS @ 7'-0" O.C. SPACING. SEAL BOTH ENDS WITH LINK-SEAL LS-475 MODULAR SEAL AND PSI MODEL "S" OR "C" PULL ON END SEAL WITH STAINLESS STEEL BANDING CLAMP. INSTALL 2" VENTS ON BOTH ENDS. EXTEND VENT PIPE AS NOTED.

INSTALL TOP OF 2" STL VENT PIPE 4' DEEP OR DEEPER.

INSTALL 4' TALL, 2" DIAMETER STL VENT STACK, TEST STATION AND PIPELINE MARKER AT LEAST 10' NORTH OF CUT/FILL LINE.

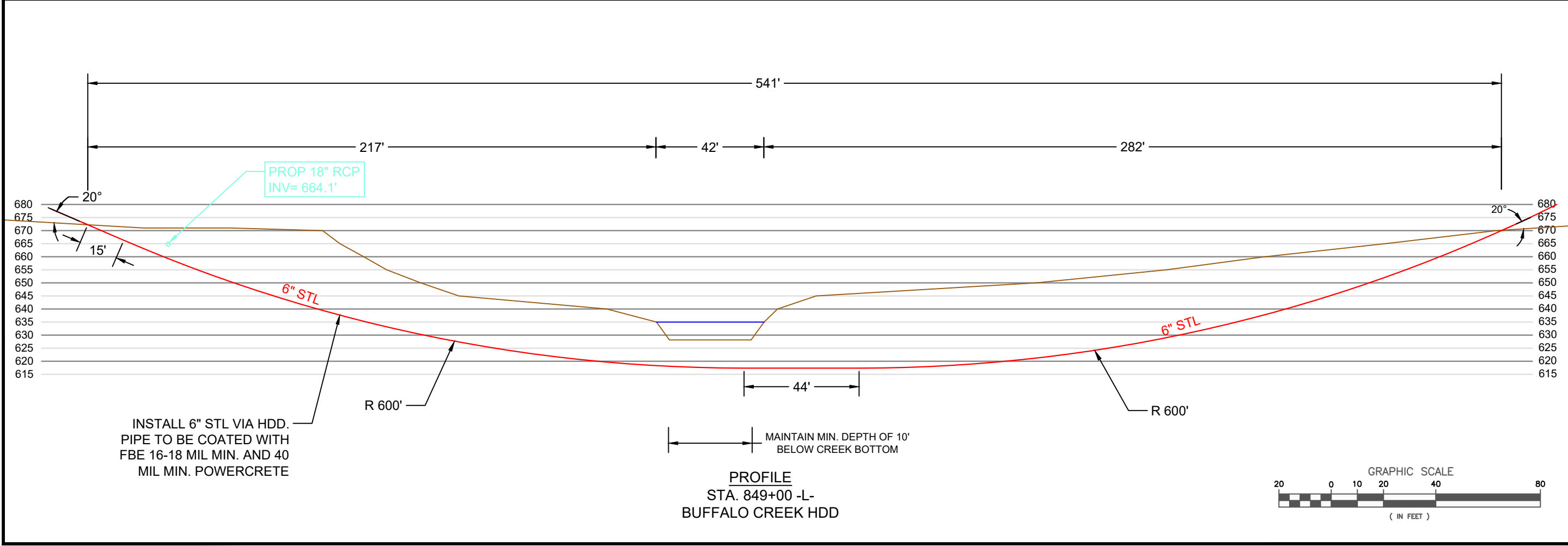
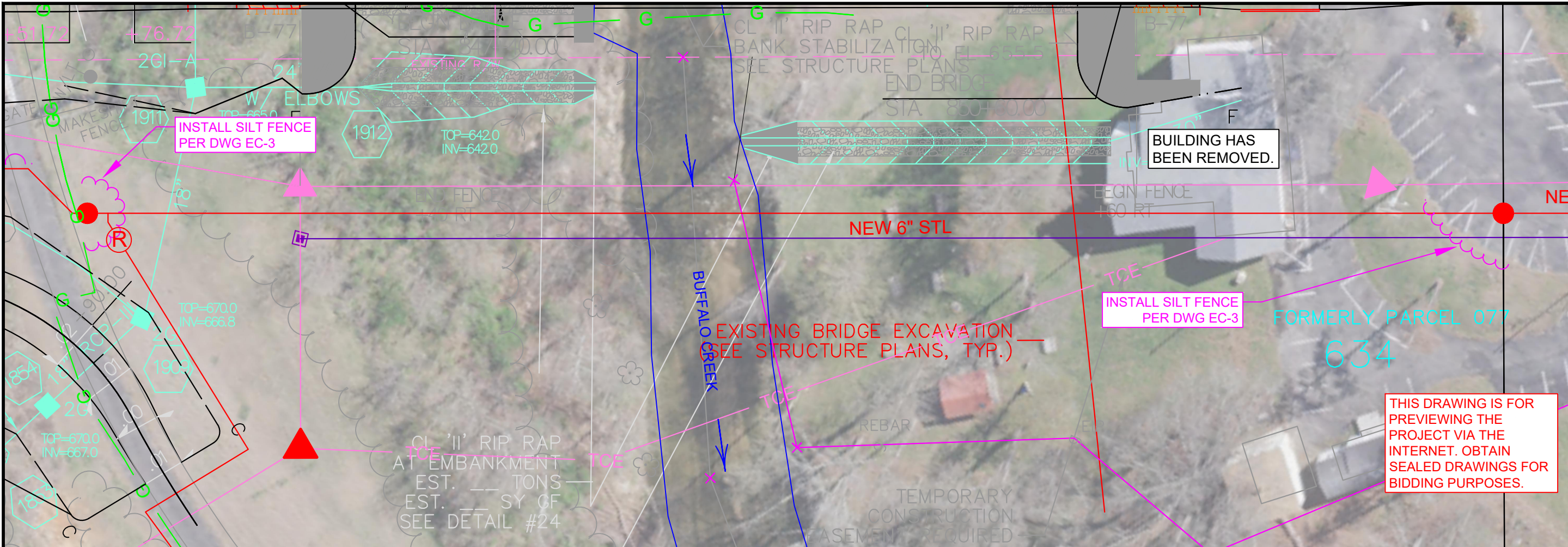
END CASING INSTALLATION 59' NORTH OF -RAMP_A- CENTERLINE.

CASING ENDS SEALED USING PSI PULL ON SEALS AND THUNDERLINE LINK SEALS LS-475, SEVEN LINKS TIGHTENED TO PROVIDE HYDROSTATIC SEAL. CASING VENTED EACH END WITH 2" STEEL VENT STACK, MINIMUM HEIGHT 4 FEET. ALL WELDS ARE TO BE COOL TO TOUCH BEFORE INSTALLATION OF INSULATORS OR SEALS. VENT ATTACHMENT TO CASING TO BE AT LEAST 2 FEET FROM CASING ENDS OR MORE IF NEEDED TO PREVENT INTERFERENCE WITH CASING SEAL.



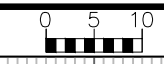
46+50.00

-RAMP_A-



SCALE SEE GRAPHIC	PROJECT NO.	21722
	SHEET	BORE 04
DATE DRAWN	09/21/2018	
APPROVED		
HEATH AND ASSOCIATES, INC. SHELBY, NORTH CAROLINA 28169 LICENSE NO. F-1035		
NATURAL GAS SYSTEM IMPROVEMENTS		
CITY OF SHELBY NATURAL GAS DEPARTMENT		
SHELBY, NORTH CAROLINA		
Shelby Highway 74 Bypass Sections D & E Relocation		
REVISIONS:		

2/9/2023 9:41:08 AM



PROJ. REFERENCE NO. R-2707D SHEET NO. X-488

SEE GRAPHIC PROJECT NO. 21722 SHEET TIE-IN 01

DRAWN BY CMD DATE DRAWN 09/19/2018 APPROVED



NATURAL GAS SYSTEM IMPROVEMENTS CITY OF SHELBY NATURAL GAS DEPARTMENT SHELBY, NORTH CAROLINA

Shelby Highway 74 Bypass Sections D & E Relocation

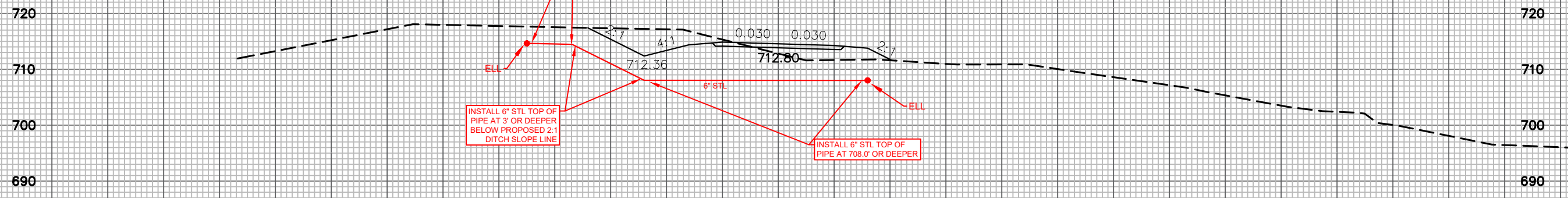
REVISIONS: 2/9/2023 9:41:11 AM

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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TIE-IN 01



21+00.00

-SRVRD_5-