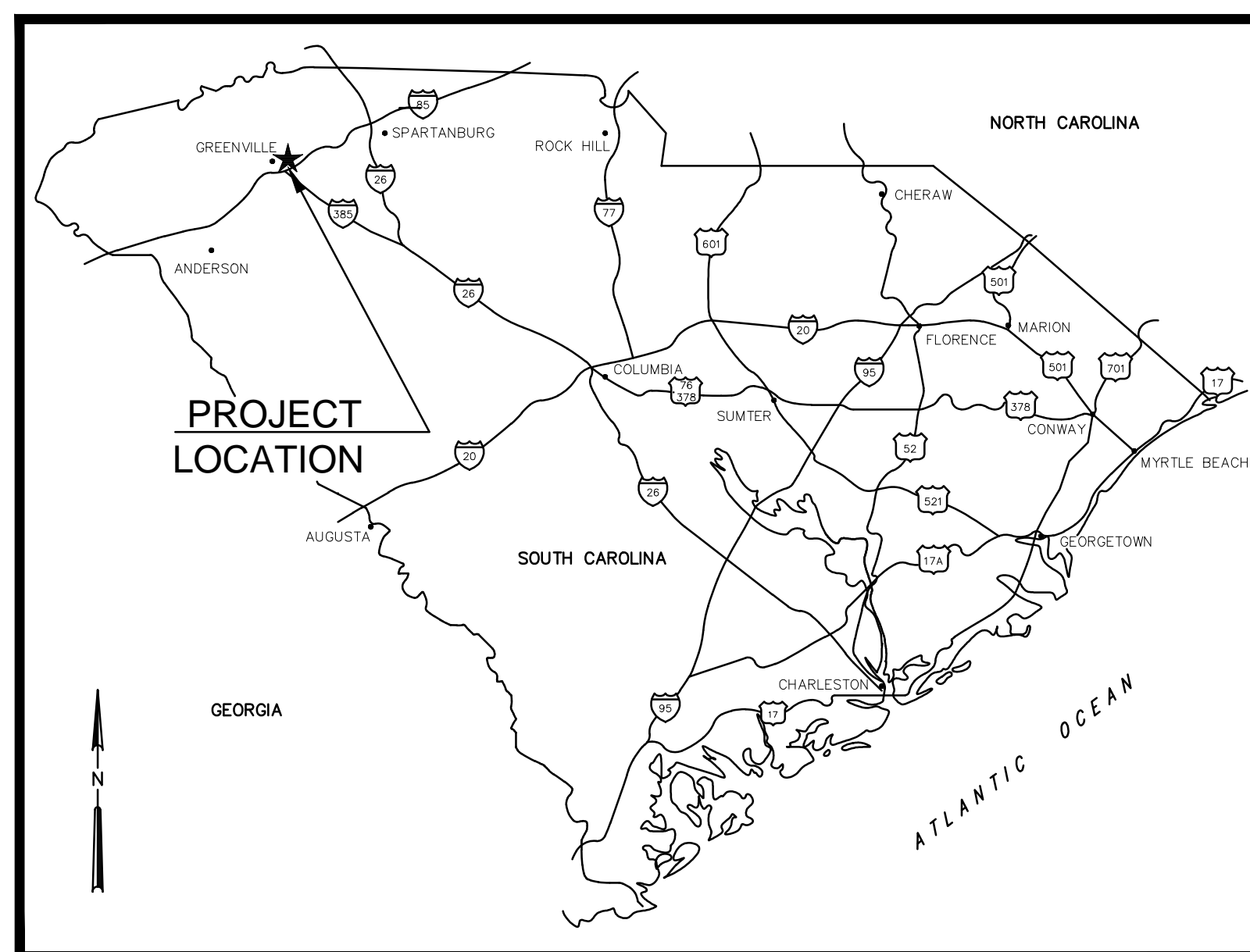


ReWa

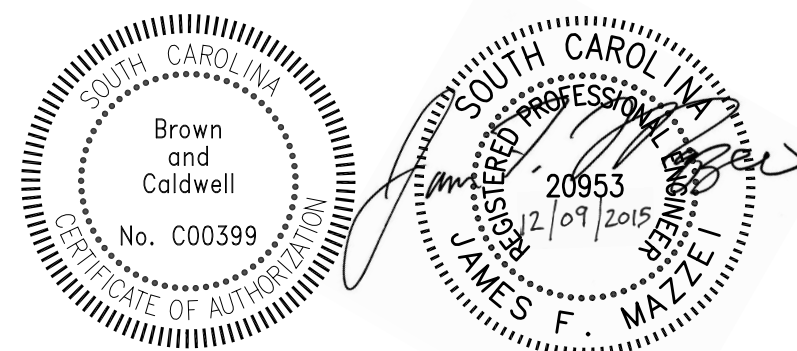
RENEWABLE WATER RESOURCES

RICHLAND CREEK TRUNK SEWER IMPROVEMENT

Project No. 144953



VICINITY MAP
NTS

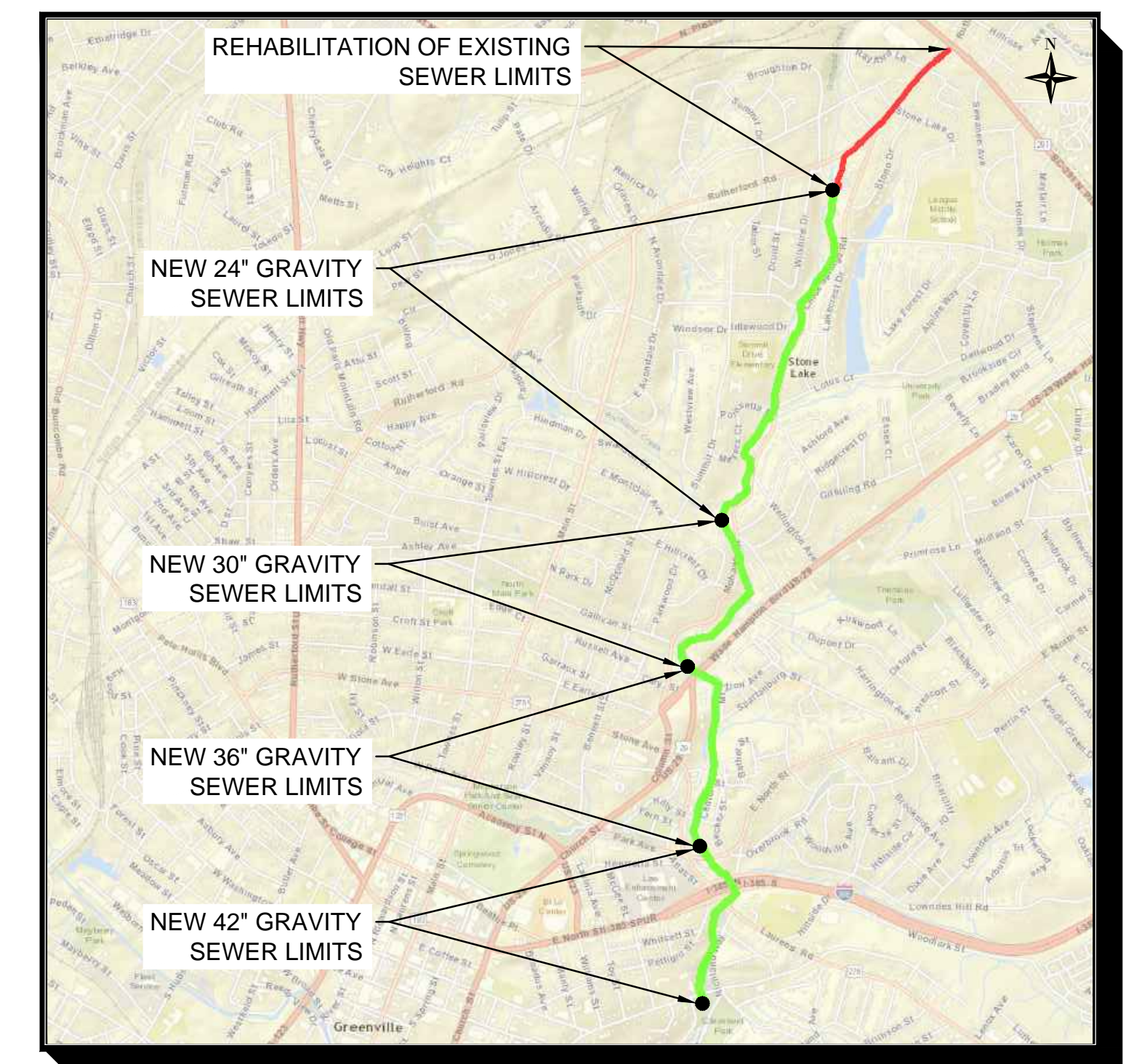


DECEMBER 2015

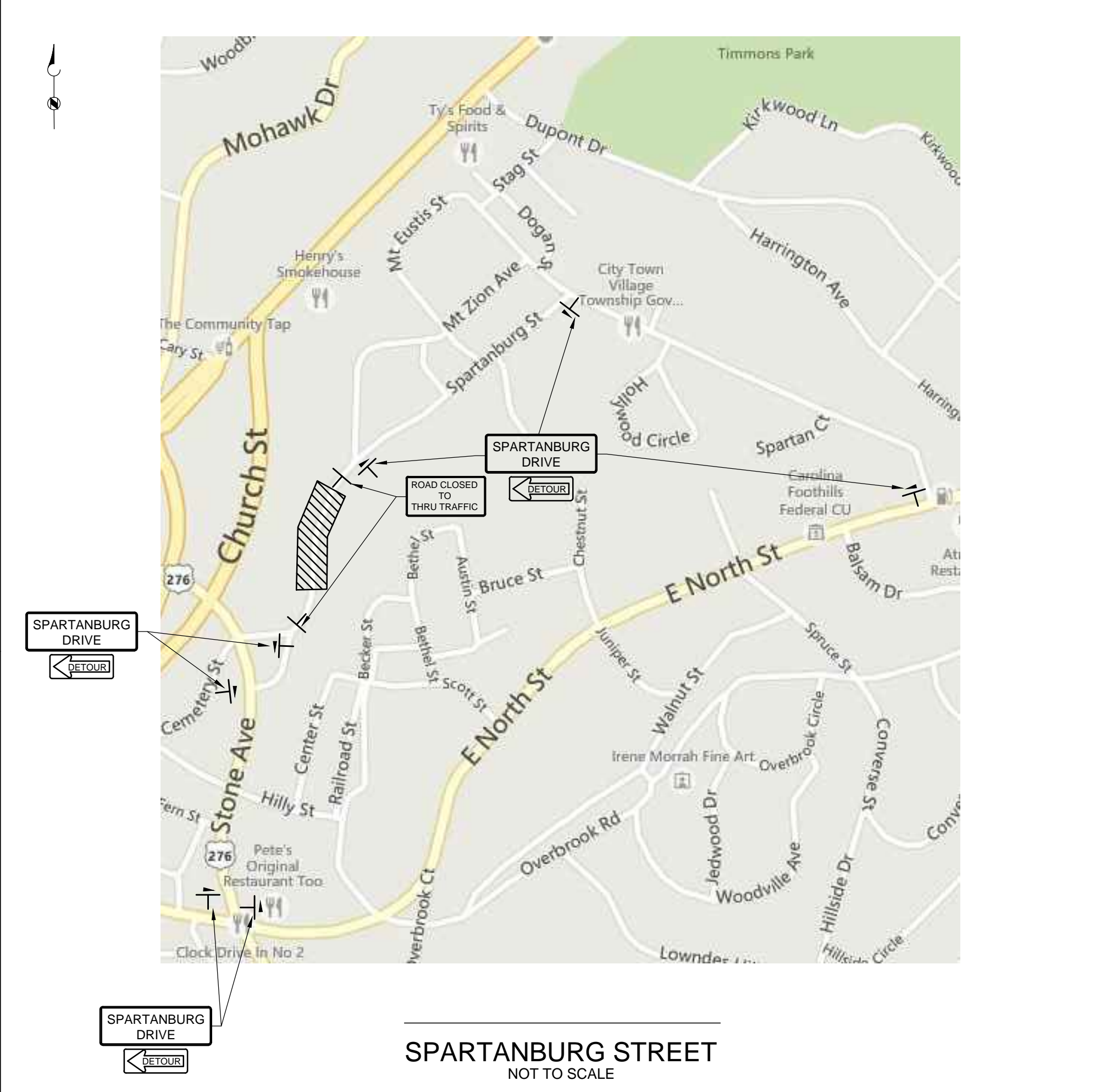
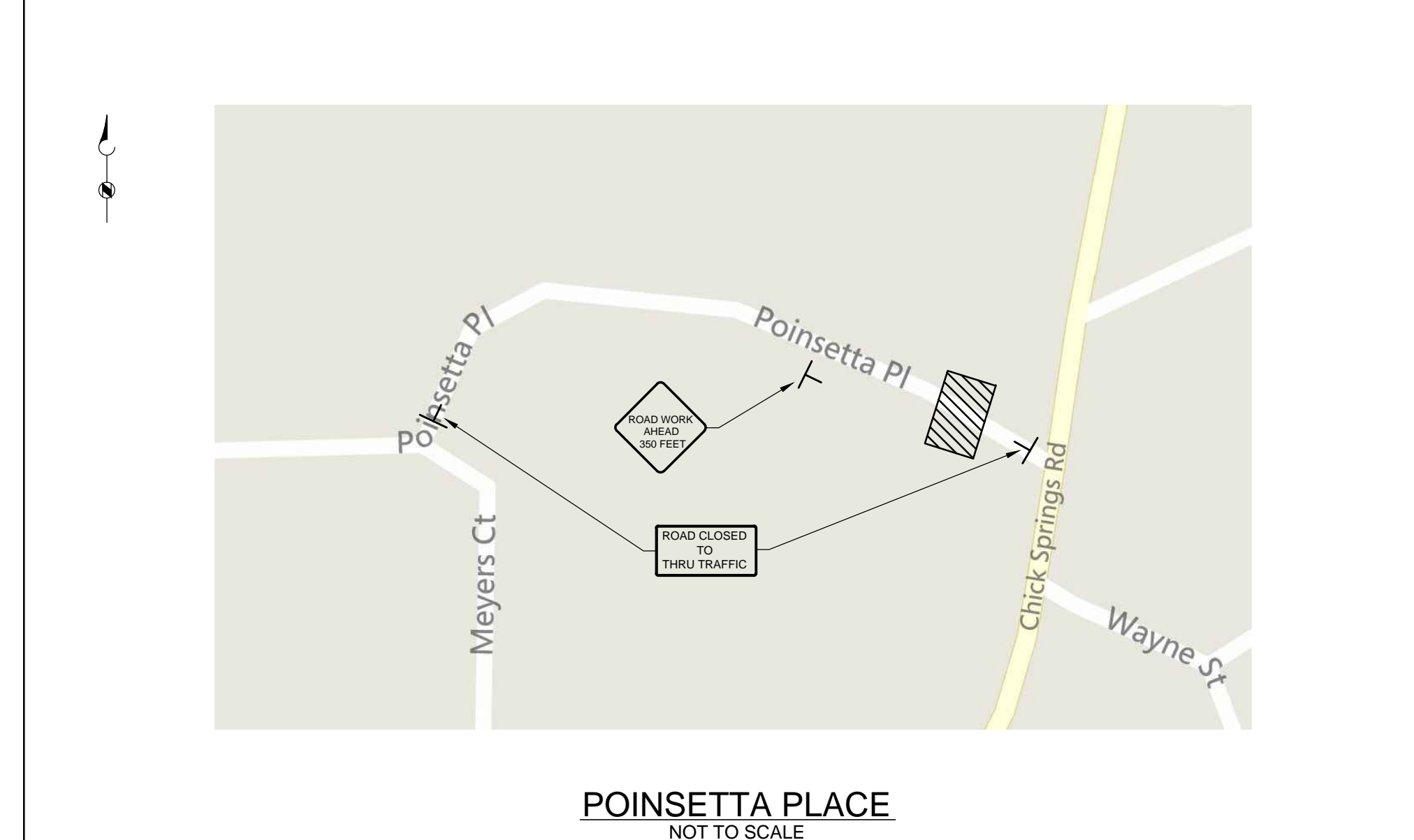
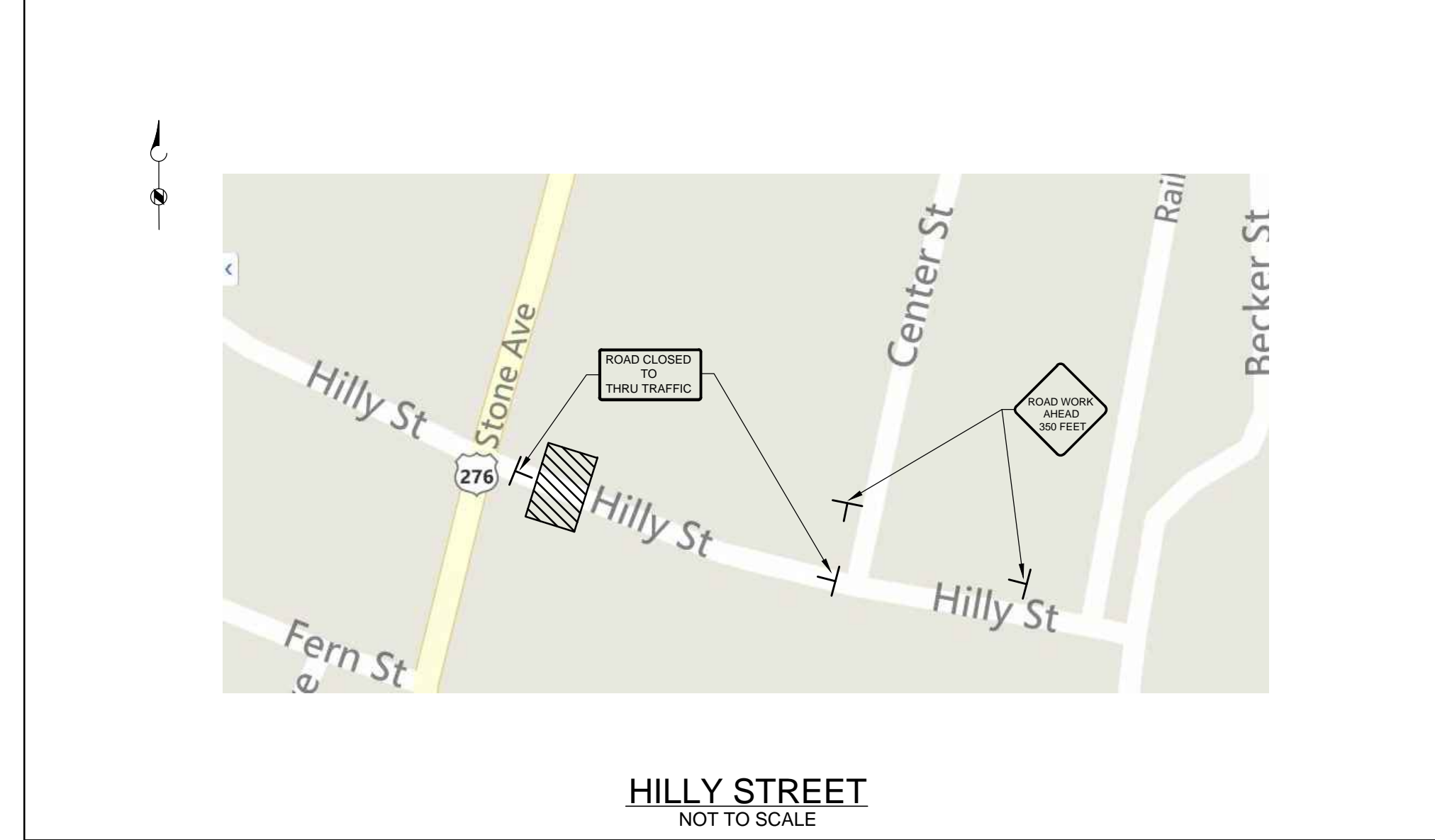
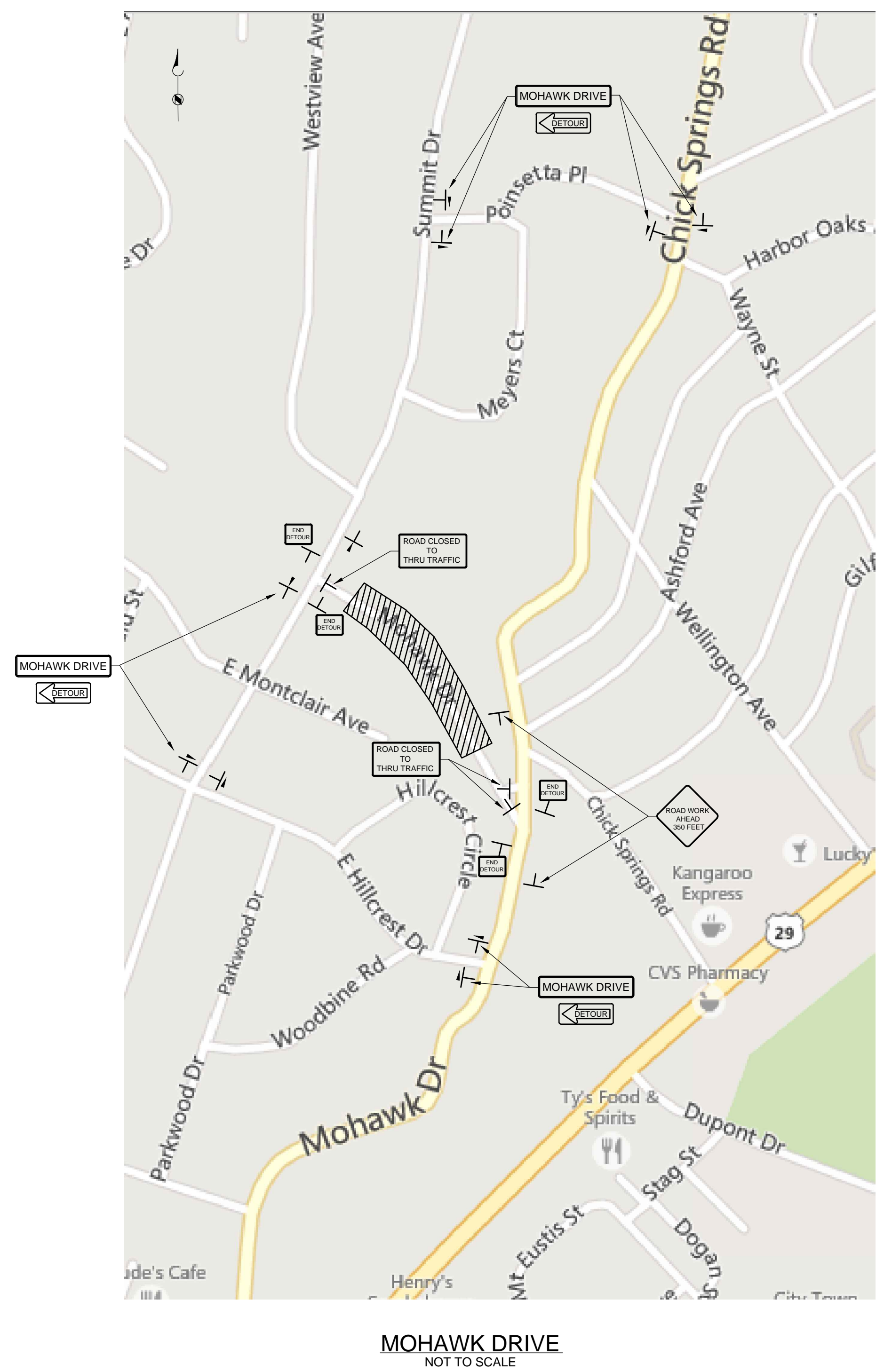
PREPARED BY:



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250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701



LOCATION MAP
NTS



- TRAFFIC MAINTENANCE NOTES:**
1. ACCESS SHALL BE MAINTAINED AT ALL TIMES TO SIDESTREETS AND DRIVEWAYS
 2. CONTRACTOR SHALL MAINTAIN ADEQUATE POSITIVE DRAINAGE AT ALL LOCATIONS AT ALL TIMES.
 3. WHEN THE CONSTRUCTION AREA HAS INTERSECTIONS, WORK WILL BE PERFORMED IN SUCH A MANNER TO PERMIT TRAFFIC TO OPERATE WITH THE LEAST AMOUNT OF INCONVENIENCE AS POSSIBLE. WHEN ENTRANCE AND SIGNING SHALL BE INSTALLED AS REQUIRED, TO ALLOW TRAFFIC TO REMAIN AS OPERATIONAL AS POSSIBLE. WHEN ENTRANCE RAMP / INTERSECTIONS ARE INOPERABLE, FLAGGERS WILL BE UTILIZED TO CONTROL AND PROHIBIT MOVEMENT INTO THE PROJECT AT THAT POINT UNTIL CONSTRUCTION HAS CLEARED THE RESTRICTION SUFFICIENT TO RETURN TO OPERATIONAL STATUS.
 4. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED TO MEET FIELD CONDITIONS BUT MUST BE WITHIN THE LIMITATIONS SET FORTH IN THE MUTCD.
 5. WHEN NOT IN USE, PORTABLE SIGNS SHALL BE REMOVED FROM THE TRAVELWAY SO THAT THE MESSAGE IS NOT VISIBLE TO THE MOTORIST. INTERIM SIGNS THAT ARE PERMANENTLY MOUNTED SHALL BE COVERED WHEN NOT APPLICABLE.
 6. THE TRAFFIC MANAGEMENT PLAN SHOWN HERE IS THE MINIMUM REQUIRED FOR EFFECTIVE TRAFFIC MANAGEMENT.



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DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES

Professional Engineer Seal for James F. Mazzei, No. 20953, State of South Carolina, expires 12/31/2015.

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



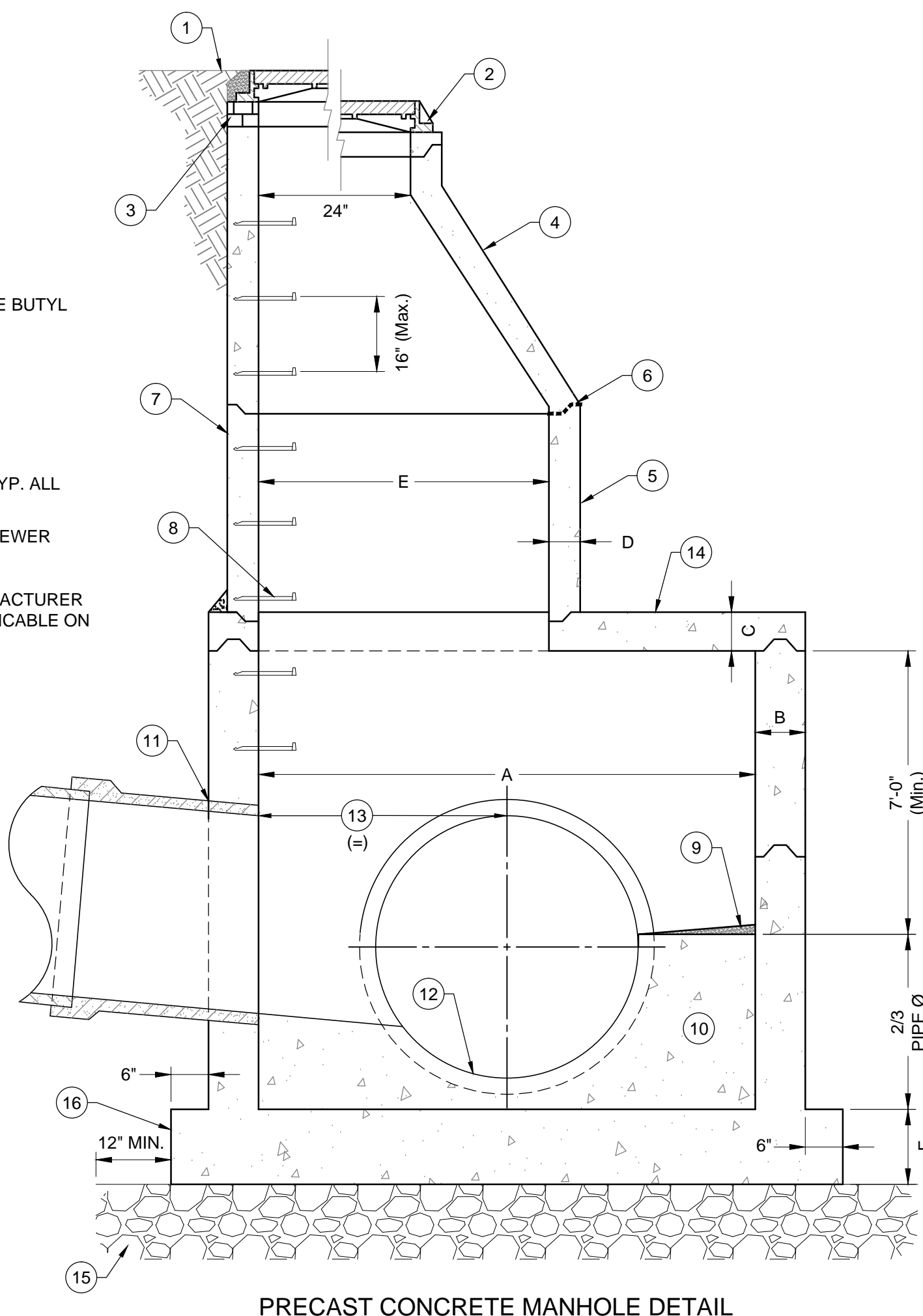
GENERAL
RICHLAND CREEK TRUNK SEWER
MAINTENANCE OF TRAFFIC PLAN

FILENAME	144495G-0002.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	000-G-002
SHEET NUMBER	3 OF 32

KEYNOTES:

- 1 TOP AT GRADE: SET FRAME IN MORTAR
- 2 TOP ABOVE GRADE: FRAME ANCHORED TO CONE
- 3 BRICK & MORTAR GRADE ADJUSTMENT
- 4 ECCENTRIC CONE SECTION
- 5 PRECAST CONCRETE RISER SECTION(S)
- 6 CONCRETE SECTIONS SEALED WITH O-RING GASKETS OR FLEXIBLE BUTYL RUBBER SEALANT
- 7 REINFORCING CONFORMING TO ASTM C478
- 8 12" STEP (TYP)
- 9 MORTAR SHELF SLOPE 1" IN 12"
- 10 FORM GROUT CHANNEL TO 2/3 PIPE DIAMETER
- 11 FLEXIBLE PIPE CONNECTOR, KOR-N-SEAL OR APPROVED EQUAL (TYP. ALL PIPES)
- 12 CONSTRUCT BOTTOM OF SEWER WITH SAME RADIUS AS OUTLET SEWER
- 13 CROWN ELEVATIONS TO MATCH UNLESS OTHERWISE SHOWN
- 14 PRECAST CONCRETE REDUCING SLAB TO BE DESIGNED BY MANUFACTURER FOR DEPTH AND TRAFFIC CONDITIONS. REDUCING SLAB NOT APPLICABLE ON 60" MANHOLE BASES.
- 15 CRUSHED STONE (8" MINIMUM)
- 16 EXTENDED BASE, PER MANUFACTURERS RECOMMENDATION

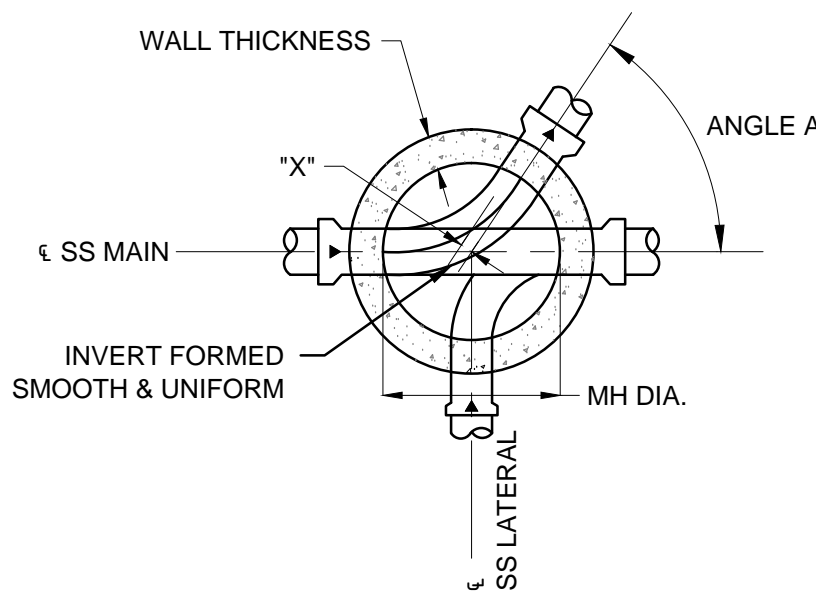
PIPE ID (IN)	ANGLE °	A (IN)	B (IN)	C (IN)	D (IN)	E (IN)	F (IN)
24	0 - 90	60	6	N/A	6	60	10
30	0 - 60	60	6	N/A	6	60	10
30	60 - 90	72	7	7	5	48	10
36	0 - 90	72	7	7	5	48	10
42	0 - 60	84	8	12	5	48	12
42	60 - 90	96	9	12	5	48	12



PRECAST CONCRETE MANHOLE DETAIL

DETAIL 1 VARIES

SCALE: NONE



STANDARD MANHOLE SCHEDULE OF GOVERNING DIMENSIONS

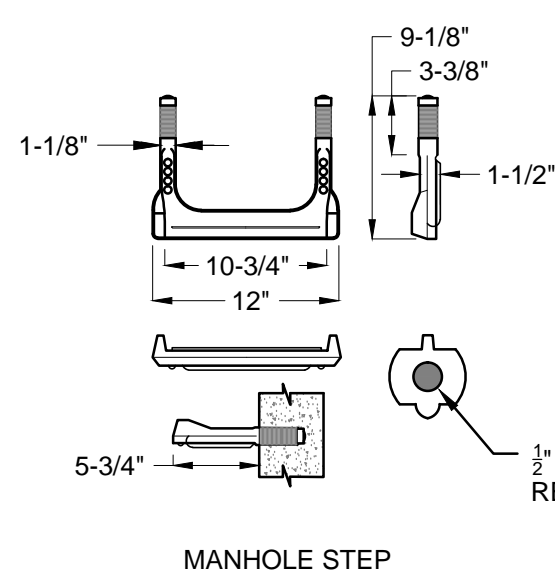
PIPE SIZE (IN)	MANHOLE DIAMETER (FT)	ANGLE A (DEG)	"X" (IN)	WALL THICKNESS (IN)
8 - 15	4	0 - 90	0	5
18 - 21	4	0 - 60	6	5
18 - 21	5	60 - 90	6	5

SEE DETAIL 1/000-C-001
MINIMUM INVERT RADIUS NOT LESS THAN 1.5 TIMES PIPE DIAMETER

STANDARD MANHOLE DIMENSIONS

DETAIL 4 VARIES

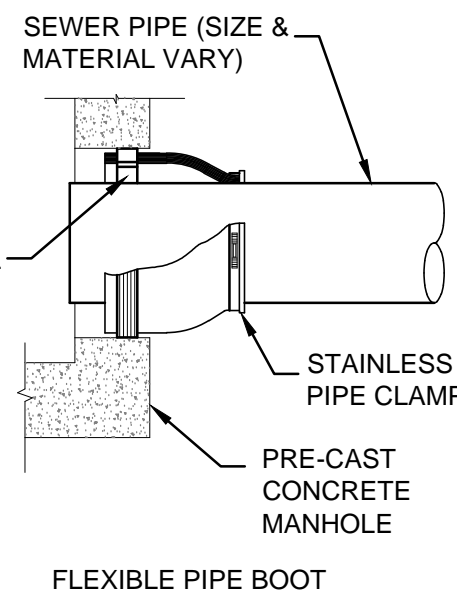
SCALE: NONE



MISC. MANHOLE DETAILS

DETAIL 5 VARIES

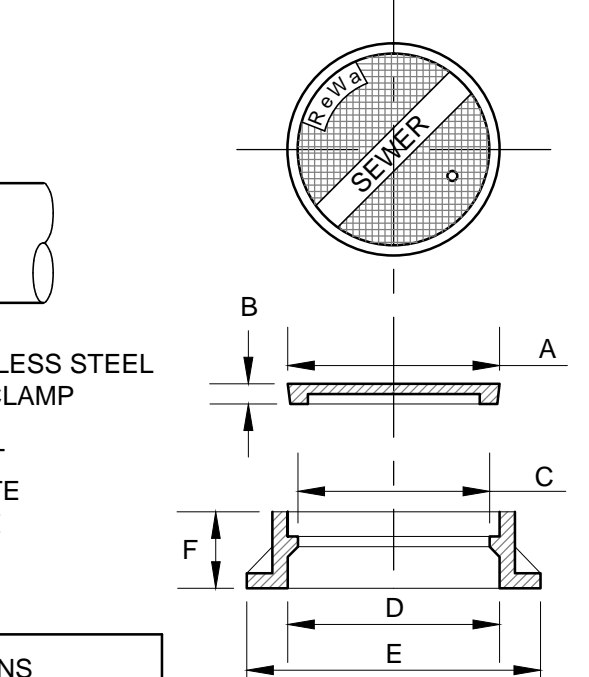
SCALE: NONE



FLEXIBLE PIPE BOOT

FRAME & COVER DIMENSIONS		
DIMENSION	STANDARD	WATERTIGHT
A	23-1/2"	25-1/2"
B	1"	1-3/8"
C	22-1/2"	22-1/2"
D	25-1/2"	22-1/2"
E	33"	32-3/8"
F	7-1/2"	6"

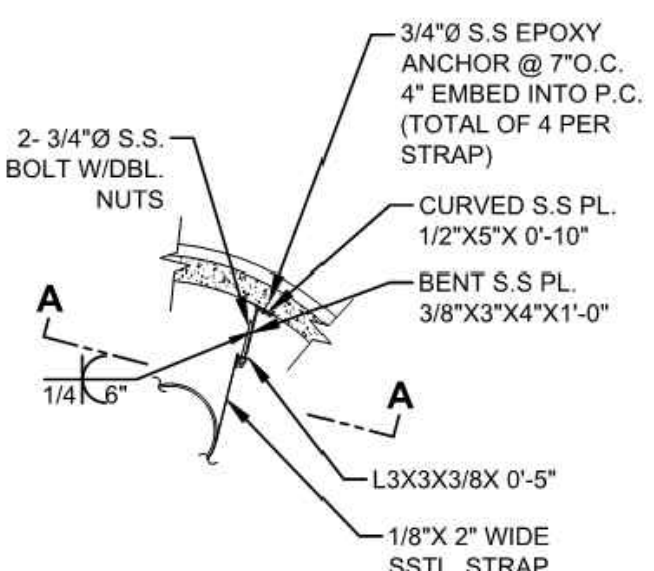
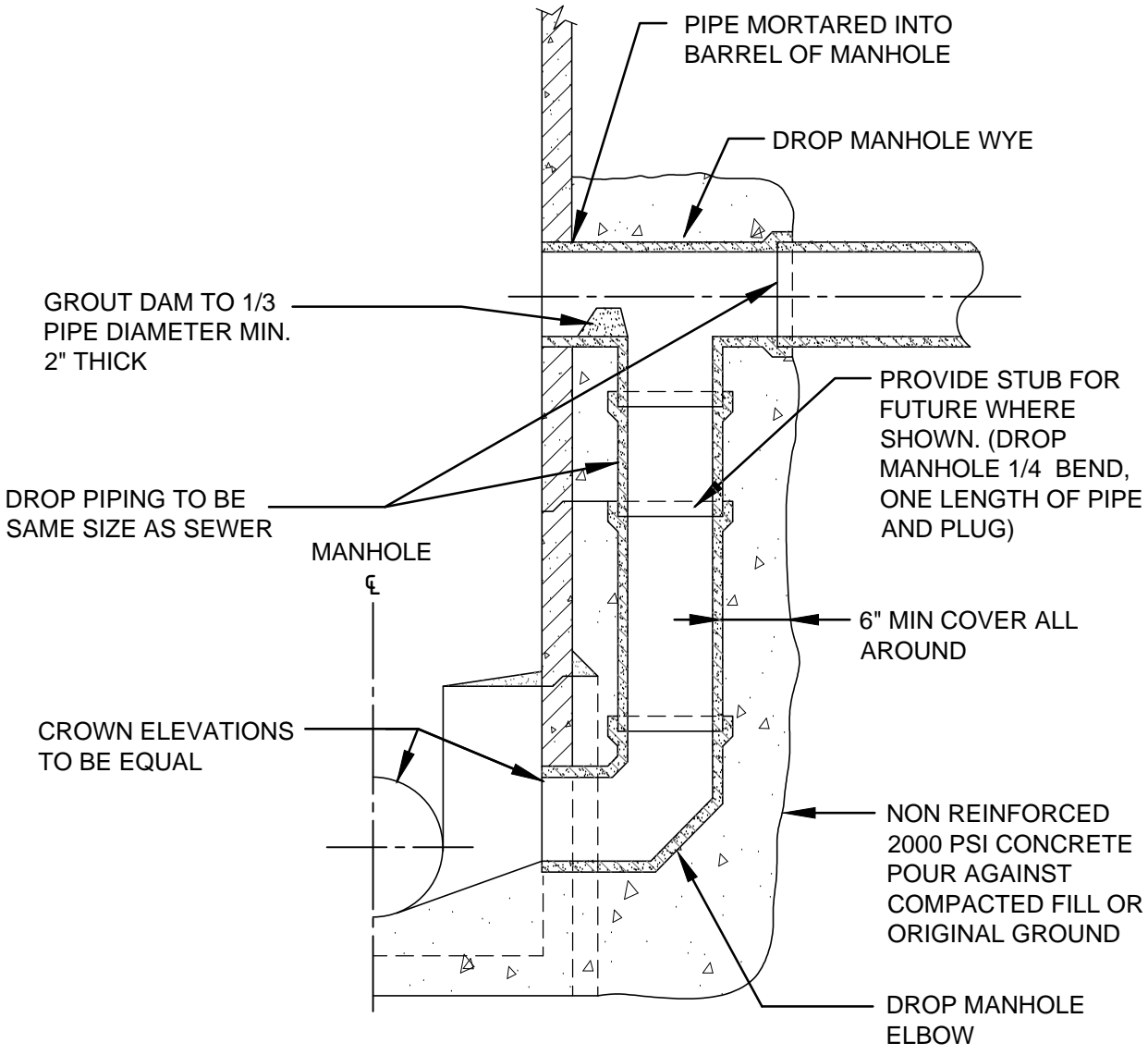
MANHOLE FRAME & COVER



DROP FOR MANHOLE

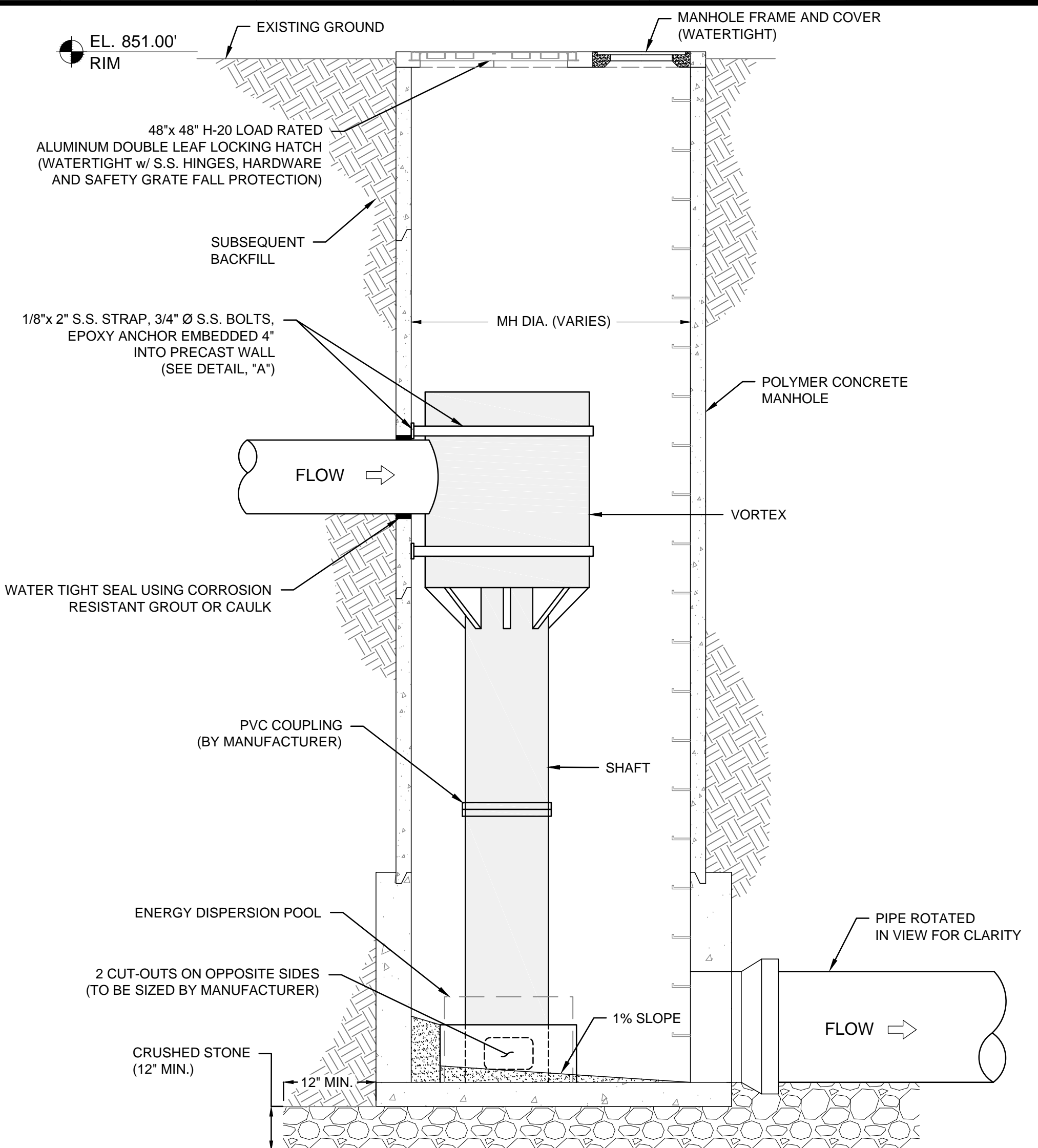
DETAIL 2 VARIES

SCALE: NONE



SECTION A-A

DETAIL "A" N.T.S.



SECTION A-1

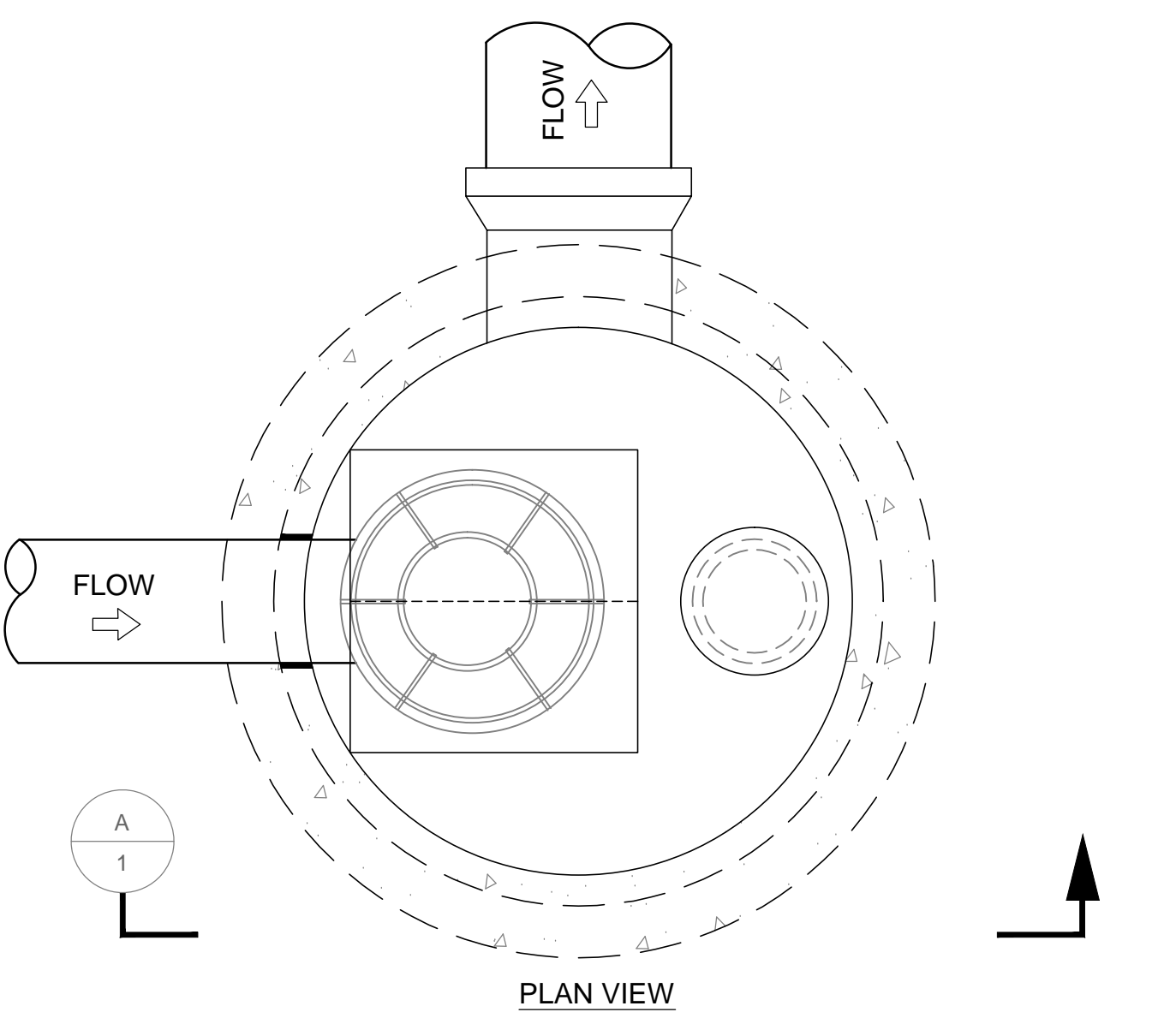
NOTES:

1. THE ACID RESISTANT POLYMER MANHOLE DESIGN SHALL MEET OR EXCEED THE LOAD AND STRENGTH REQUIREMENTS OF CURRENT ASTM SPECIFICATION C-478 AND ASTM C-857.
2. ALL GROUT AND EPOXY SHALL BE CORROSION RESISTANT AND APPROVED BY THE ENGINEER UNLESS SPECIFICALLY INDICATED ON DRAWINGS TO BE CEMENTITIOUS.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A SUFFICIENT NUMBER OF EPOXY ANCHORS TO PROVIDE ADEQUATE SUPPORT FOR THE VORTEX INLET FLANGE, TO ENSURE THE CONNECTION IS RIGID, PER THE EQUIPMENT MANUFACTURER'S RECOMMENDATION. THIS SHALL BE COORDINATED BETWEEN THE MANHOLE VORTEX INSERT MANUFACTURER AND THE POLYMER CONCRETE MANHOLE.
4. SEE PLAN AND PROFILE SHEETS FOR PIPE INVERT AND MANHOLE RIM ELEVATIONS.

PRECAST VORTEX MANHOLE DETAIL

DETAIL 3 VARIES

SCALE: NONE



PLAN VIEW

Dec 09, 2015 - 1:32pm P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495-C-001.dwg



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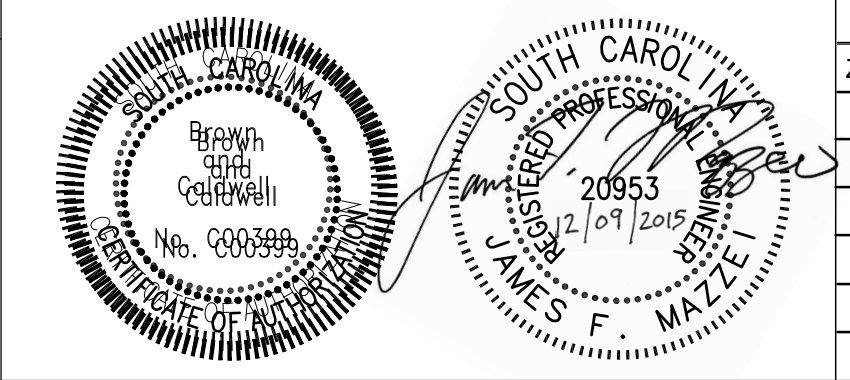
SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

NO.	REVISION	DATE

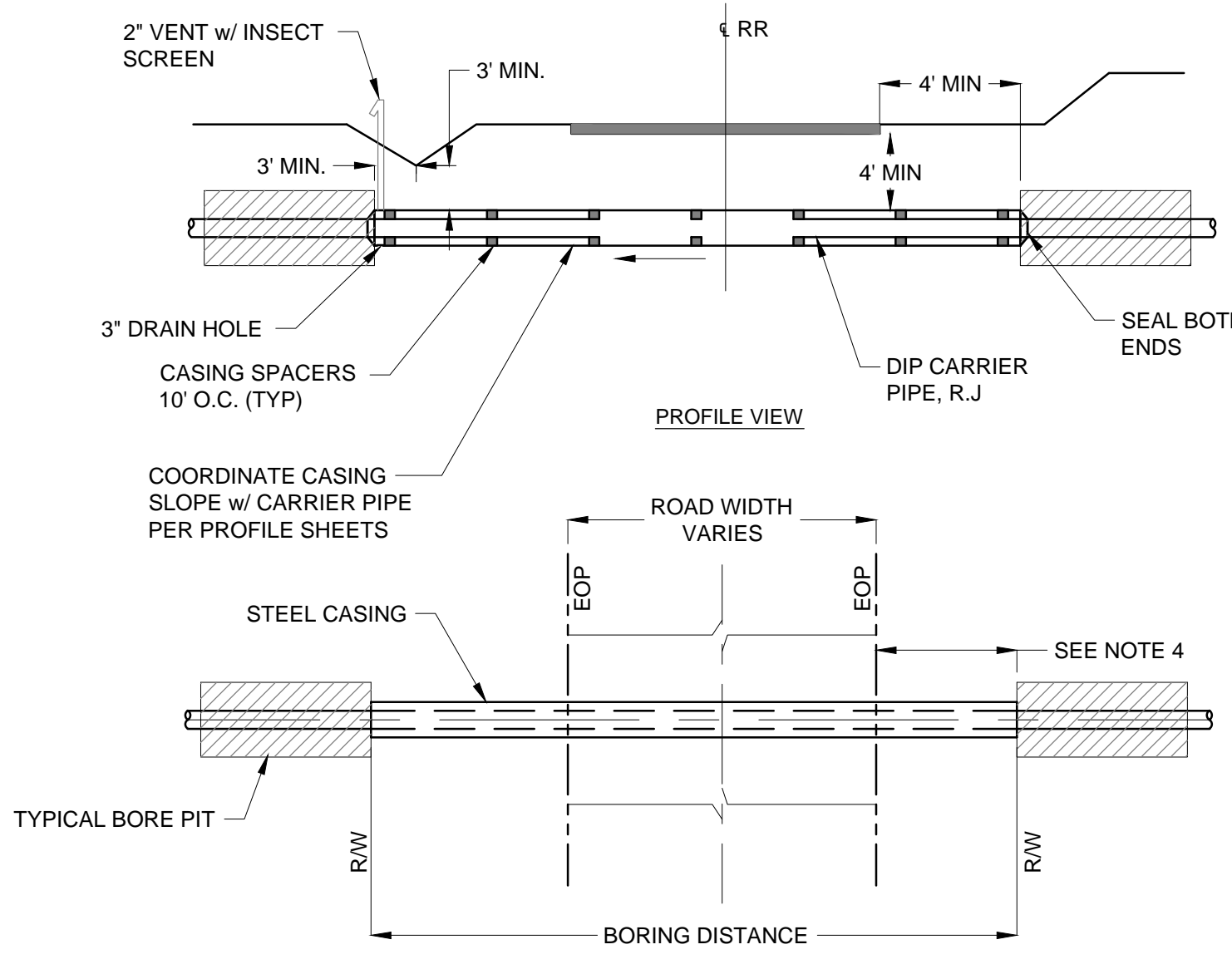


ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
RICHLAND CREEK TRUNK SEWER
SANITARY SEWER DETAILS 1

FILENAME 144495C-001.DWG
BC PROJECT NUMBER 144495
SCALE AS SHOWN
DRAWING NUMBER 000-C-001
SHEET NUMBER 4 OF 32

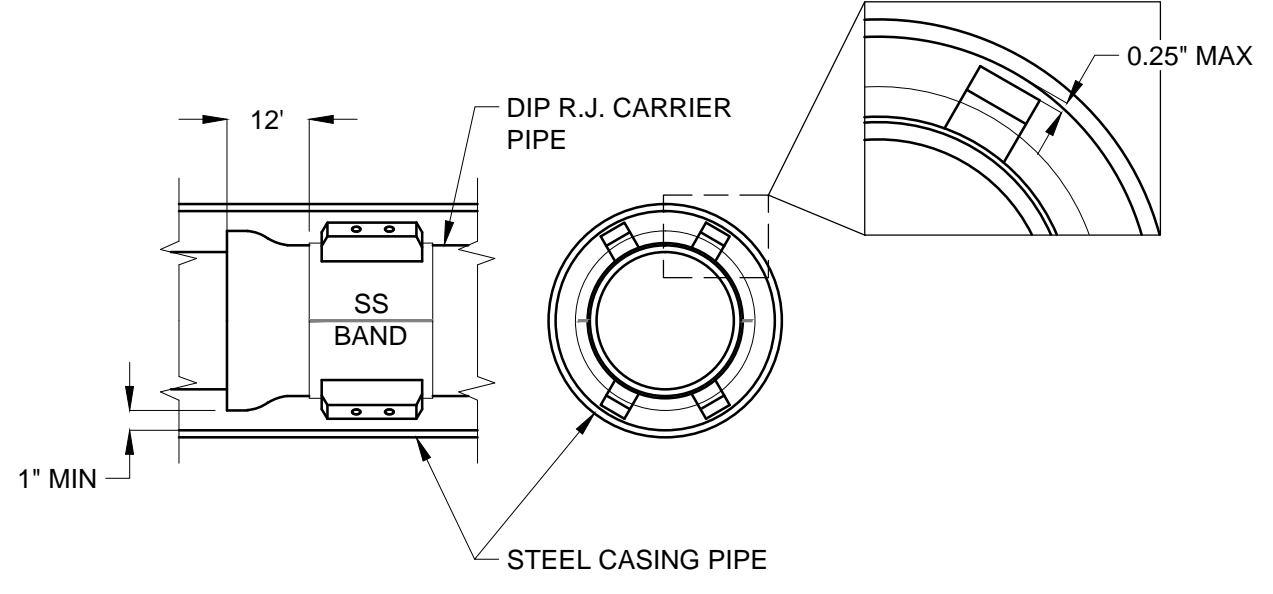


CARRIER PIPE DIAMETER (IN)	CASING PIPE DIAMETER (IN)	CASING PIPE WALL THICKNESS (IN)	
		UNDER HIGHWAYS	UNDER RAILROADS
24	36	0.563	0.688
30	42	0.657	0.657
36	48	0.688	0.688
42	54	0.781	0.781

NOTES:
 1. CASING SPACERS SHALL BE MANUFACTURED BY CASCADE WATERWORKS MANUFACTURING COMPANY
 2. DIP CARRIER PIPE SHALL BE RESTRAINED USING MFG DESIGNED RESTRAINED JOINTS (I.E. LOK-RING).
 3. STEEL CASING PIPE SHALL MEET THE REQUIREMENTS OF ASTM A53/A53M, GRADE B, 35,000 PSI MINIMUM YIELD STRENGTH WITH FULL CIRCUMFERENCE WELDED JOINTS IN ACCORDANCE WITH AWS D1.1 TO WITHSTAND EXCAVATION FORCES.

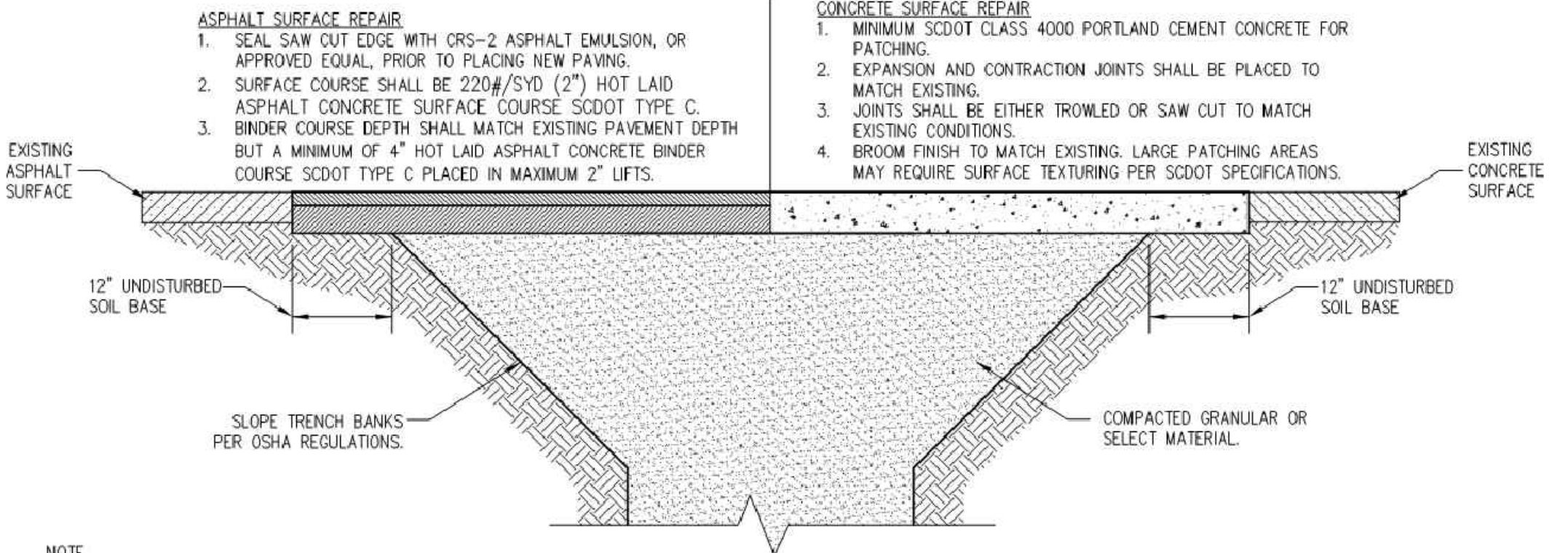
NOTES:
 1. ALL PIPING WITHIN CASING AND 5' OUTSIDE CASING TO BE DIP, RESTRAINED JOINT.
 2. CASING SPACERS TO BE INSTALLED A MINIMUM OF 12" FROM CARRIER PIPE BELL.
 3. END SEALS TO BE APC MODEL AC OR APPROVED EQUAL.
 4. THE FRONT OF THE PIPE SHALL BE PROVIDED WITH MECHANICAL ARRANGEMENTS OR DEVICES THAT WILL POSITIVELY PREVENT THE AUGER FROM LEADING THE PIPE SO THAT NO UNSUPPORTED EXCAVATION IS AHEAD OF THE PIPE.

TYPICAL BORE AND JACK



DETAIL 6 VARIES

SCALE: NONE

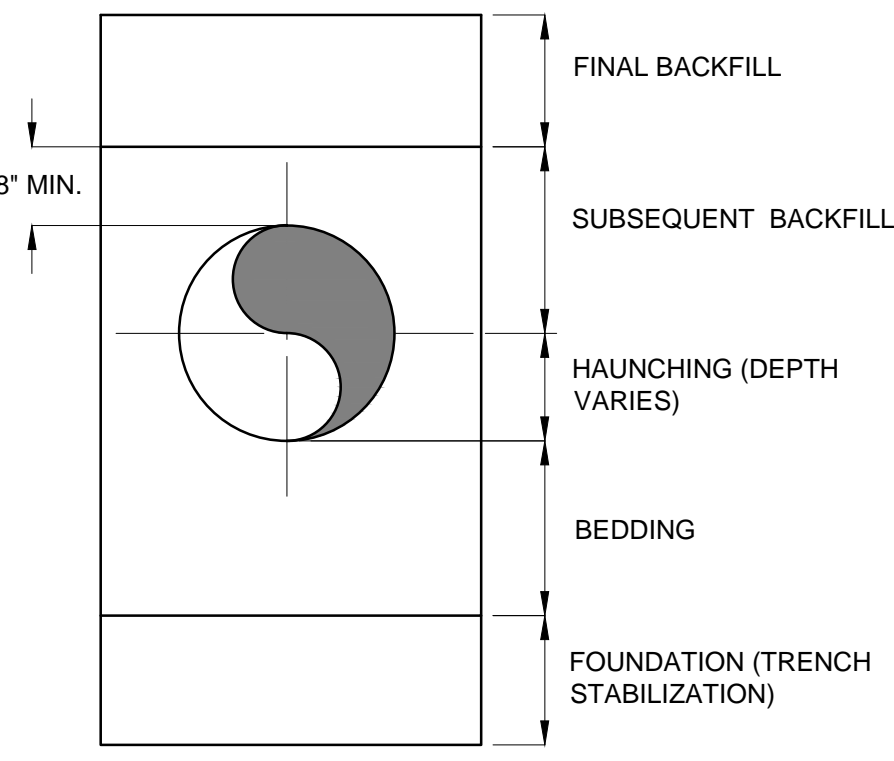


NOTE:
 1. CONTRACTOR SHALL NOTIFY CITY OF GREENVILLE CONSTRUCTION INSPECTION BUREAU A MINIMUM OF 72 HOURS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
 2. AS REQUESTED, THE CONTRACTOR SHALL SUPPLY RELIABLE TESTING DATA CONFIRMING THE MINIMUM STANDARDS ARE MET. THE CITY MAY NOT ACCEPT WORK IF THE CONTRACTOR FAILS TO PRODUCE SUFFICIENT TESTING RESULTS.
 3. TRENCHES SHALL BE PROOF-ROLLED IN THE PRESENCE OF THE CITY TO VERIFY COMPACTION PRIOR TO PLACING PAVEMENT.
 4. ALL TRENCH WORK SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF OSHA PART 1926 SUBPART P APPENDIX B OF THE CODE OF FEDERAL REGULATIONS.
 5. WITHIN THE R/W AND ALL TRAVELED SURFACES, BACKFILL MATERIAL SHALL BE CLEAN, SELECT MATERIAL PLACED IN 6" LIFTS & COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM D698. COMPACTION TESTING SHALL BE PERFORMED PER CITY OF GREENVILLE SPECIFICATIONS.
 6. SELECT BACKFILL MATERIAL IS NATIVE SOIL EXCAVATED FROM THE TRENCH FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. UNSUITABLE NATIVE SOIL SHALL NOT BE USED.
 7. UNSUITABLE SOIL SHALL BE REMOVED & BACKFILLED WITH APPROVED STONE AS DIRECTED BY THE CITY OF GREENVILLE CONSTRUCTION INSPECTION BUREAU.
 8. ALL EDGES IN PAVED AREAS SHALL BE FULL DEPTH SAW CUT. ALL CUTS SHALL BE NEAT, CLEAN & STRAIGHT.
 9. IF TOP WIDTH OF TRENCH(S) EXCEEDS 50% OF THE TOTAL ROAD WIDTH, FULL DEPTH REPLACEMENT OF THE ENTIRE ROADWAY SHALL BE REQUIRED FOR THE LENGTH OF THE TRENCH(S).
 10. IF TOP WIDTH OF TRENCH(S) EXCEEDS 50% OF THE WIDTH OF ANY TRAVEL LANE, FULL DEPTH REPLACEMENT OF THE ENTIRE IMPACTED TRAVEL LANE SHALL BE REQUIRED.
 11. IF DISTANCE BETWEEN EDGE OF PATCH & EXISTING EDGE OF PAVEMENT IS LESS THAN ONE FOOT, ROAD PATCH SHALL BE EXTENDED TO EDGE OF EXISTING PAVEMENT.
 12. ALL PATCHES SHALL BE SMOOTH AND LEVEL (+/- 1/4") WITH EXISTING SURFACE.
 13. CONCRETE SHALL BE A MINIMUM DESIGN OF SCOT (C4000). CONTRACTOR SHALL MAINTAIN STREET UNTIL CONCRETE HAS SUFFICIENT STRENGTH TO SUPPORT FINAL PAVING INSTALLATION. HIGH EARLY STRENGTH CONCRETE MAY BE USED.
 14. TRAFFIC CONTROL SHALL BE PROVIDED PER THE LATEST EDITION OF THE MUTCD. SUBMITTAL AND APPROVAL OF A TRAFFIC CONTROL PLAN BY THE CONSTRUCTION INSPECTION BUREAU IS REQUIRED FOR STREETS WITH MORE THAN 400 VEHICLES PER DAY.
 15. EXISTING PAVEMENT SECTION INCLUDES ALL PAVEMENT LAYERS FROM FINISH GRADE TO EXISTING SUBGRADE.
 16. ALL WORK SHALL COMPLY WITH CITY OF GREENVILLE AND SCOT SPECIFICATIONS.

PAVEMENT REPAIR FOR UTILITY CUTS

DETAIL 7 VARIES

SCALE: NONE

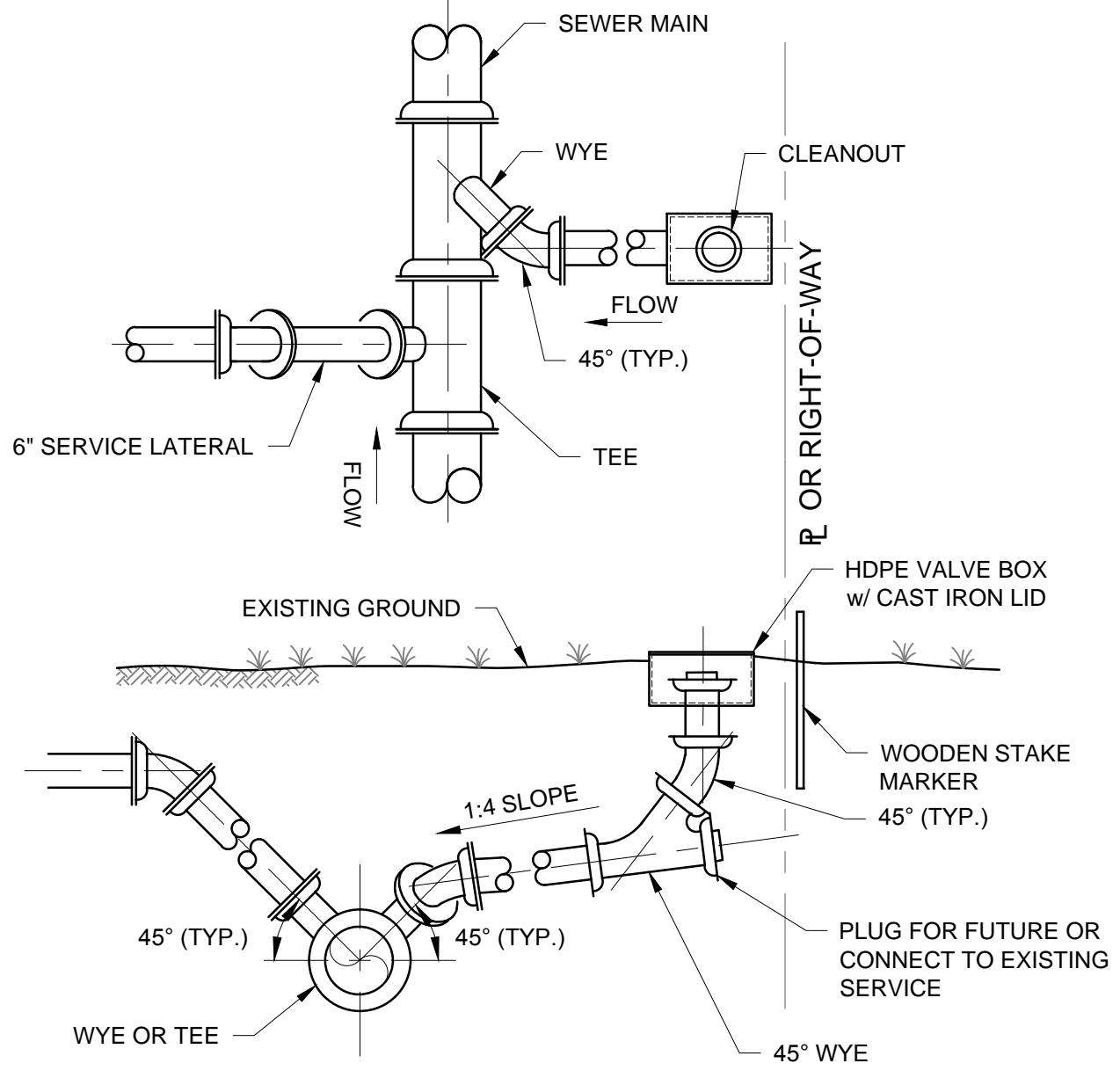


TRENCH TERMINOLOGY

NOTE: SEE SPECIFICATIONS AND PIPE BEDDING AND HAUNCHING DETAILS FOR DIMENSIONS AND MATERIALS

DETAIL 8 VARIES

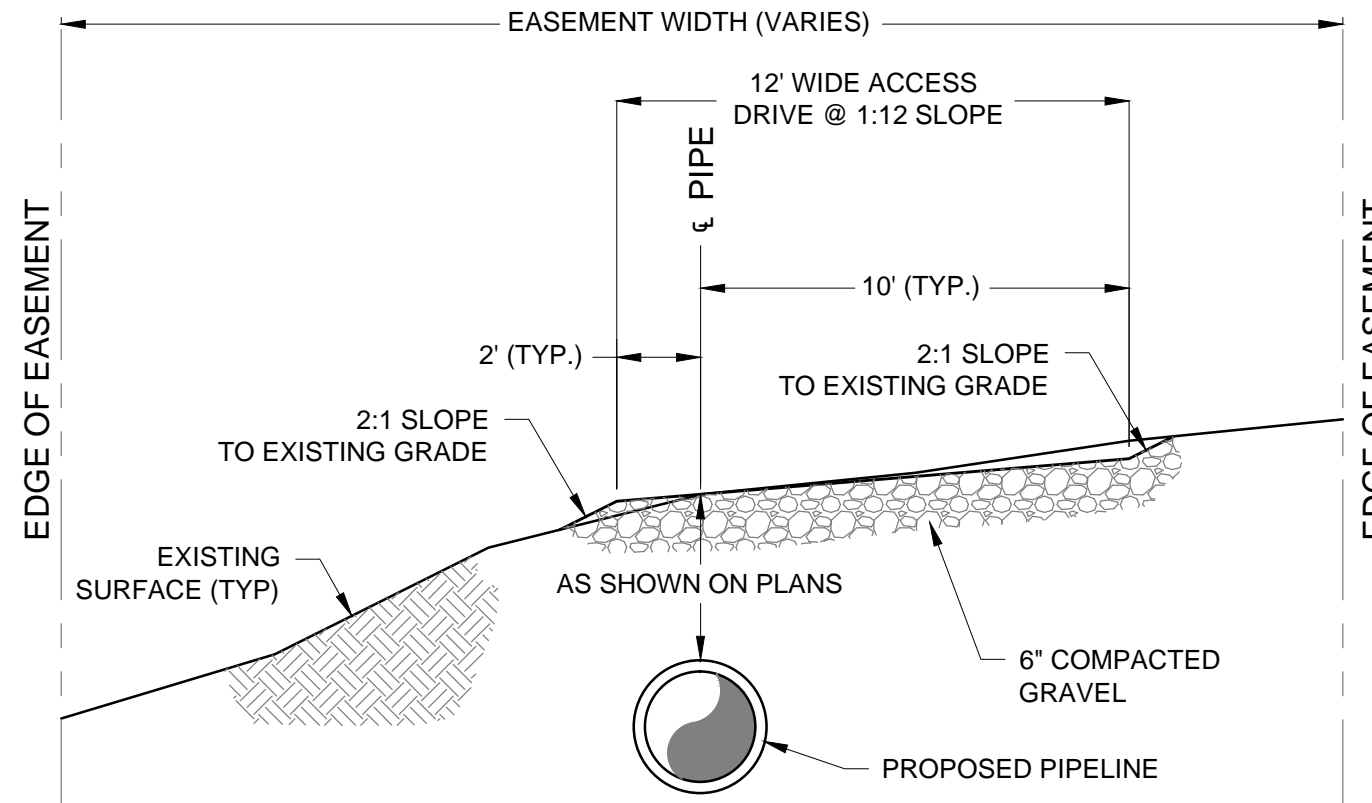
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SEWER SERVICE CONNECTION

DETAIL 9 VARIES

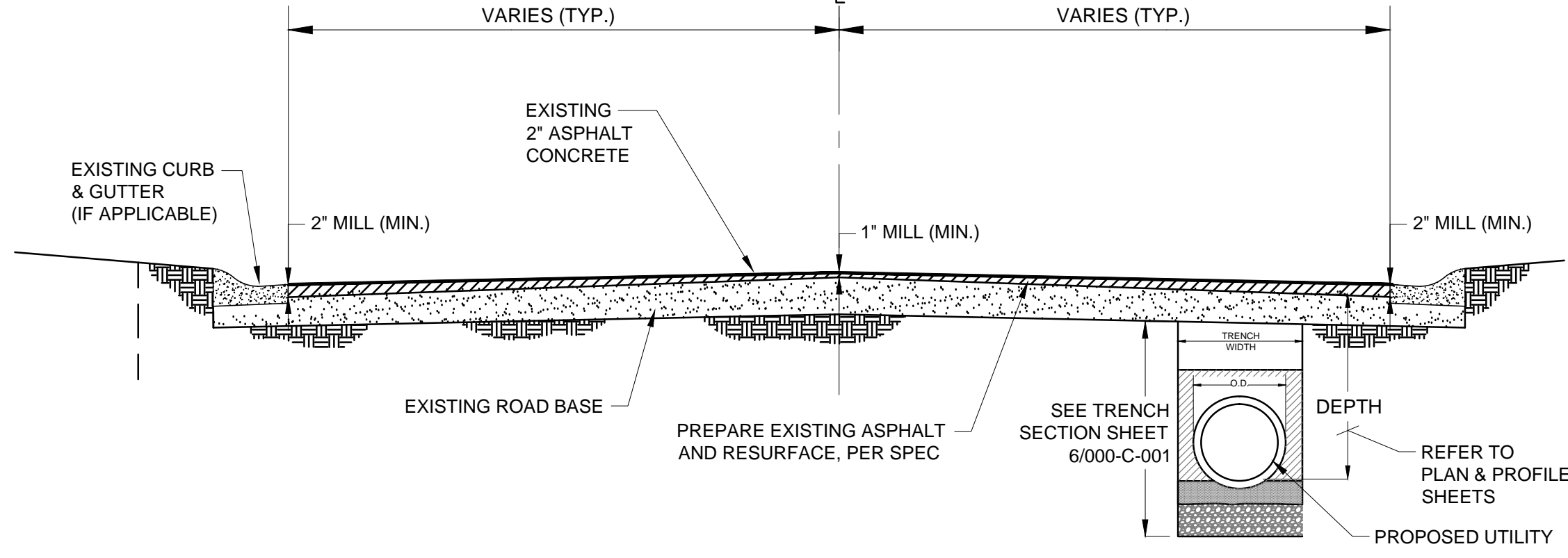
SCALE: NONE



TYPICAL BENCHING SECTION & ACCESS DRIVE

DETAIL 10 VARIES

SCALE: NONE



ROADWAY RESURFACING DETAIL

DETAIL 11 VARIES

SCALE: NONE



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SUBMITTED: _____ PROJECT MANAGER DATE: _____
 APPROVED: _____ BROWN AND CALDWELL DATE: _____

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)
 DESIGNED: J. EPTING
 DRAWN: A. JUMPER
 CHECKED: J. EPTING
 CHECKED: J. MAZZEI
 APPROVED: J. MAZZEI

EXTERNAL REFERENCES

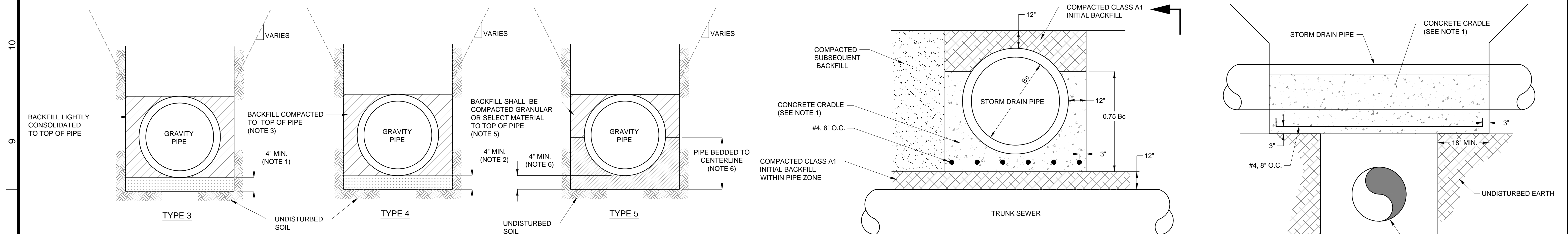


REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
 RICHLAND CREEK TRUNK SEWER
 SANITARY SEWER DETAILS 2

FILENAME: 144495C-0002.DWG
 BC PROJECT NUMBER: 144495
 SCALE: AS SHOWN
 DRAWING NUMBER: 000-C-002
 SHEET NUMBER: 5 OF 32



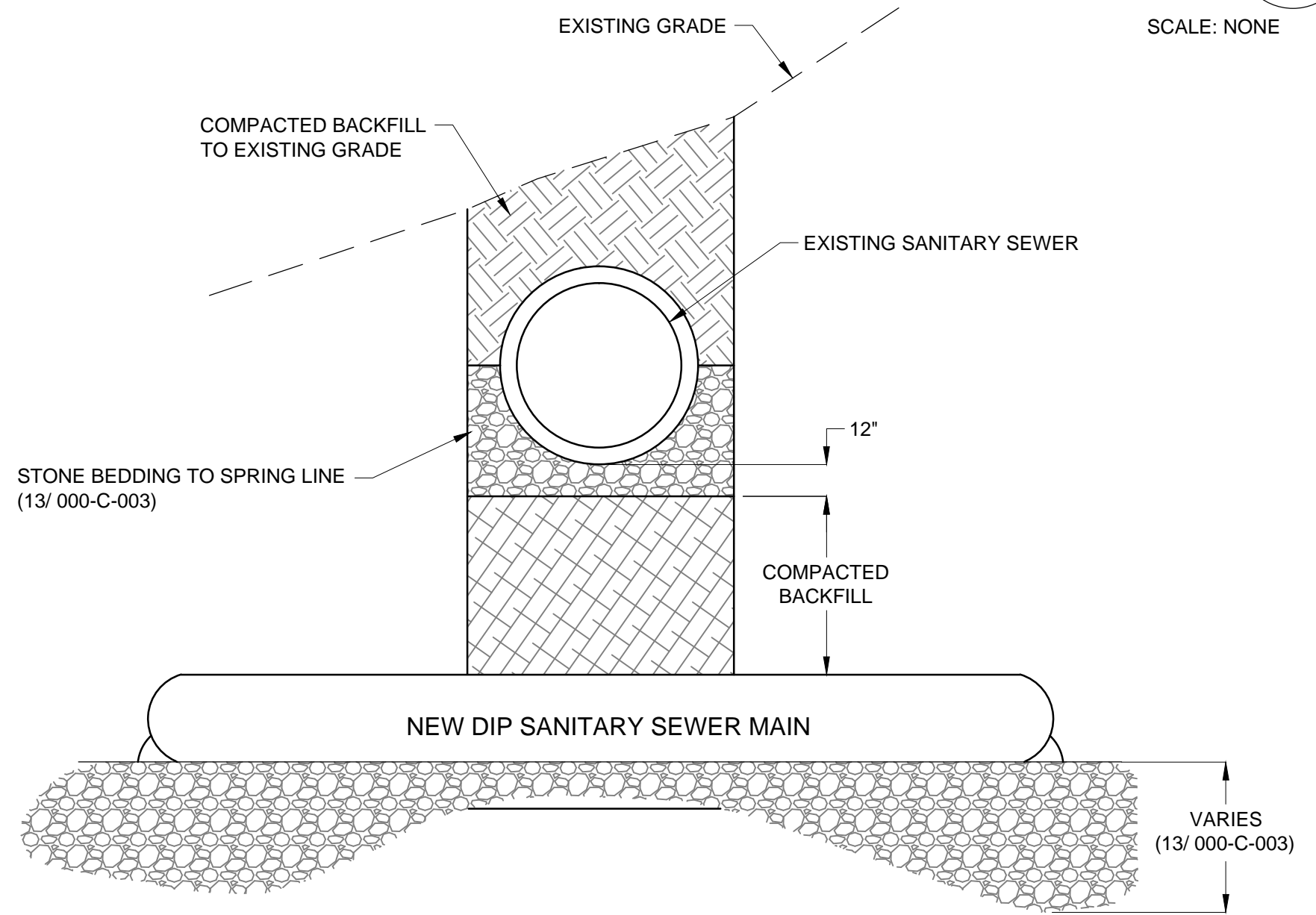
PIPE SIZE	CEMENT DIP PRESSURE CLASS	PRESSURE LAYING CONDITION (MAX. DEPTH COVER- FT.)		
		TYPE 3	TYPE 4	TYPE 5
24	200	12	17	29
30	150	9	14	22
36	150	9	14	21
42	150	9	13	20
42	150	16	20	27

PIPE SIZE	PROTECTO 401 DIP PRESSURE CLASS	GRAVITY LAYING CONDITION (MAX. DEPTH COVER- FT.)		
		TYPE 3	TYPE 4	TYPE 5
24	200	12	20	37
30	200	12	20	37
36	200	12	20	37
42	200	12	20	37
30	150	9	17	33
36	150	9	17	33
42	150	9	16	32

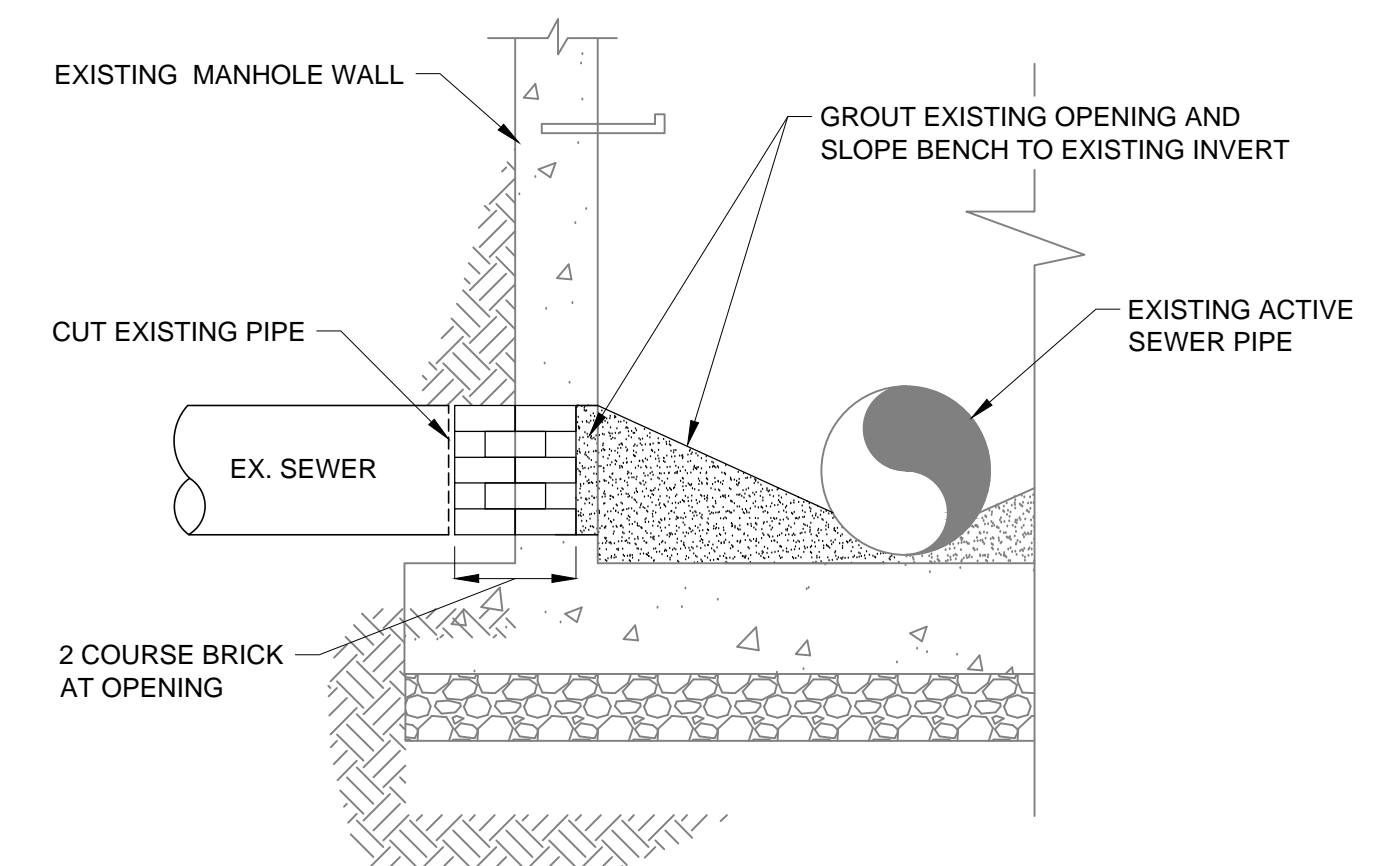
- NOTES:**
- "SELECT MATERIAL" IS DEFINED AS NATIVE SOIL EXTRACTED FROM TRENCH, FREE OF ROCKS, FOREIGN MATERIAL AND FROZEN EARTH.
 - BEDDED IN SAND, GRAVEL OR CRUSHED STONE TO DEPTH OF 1/8 PIPE DIAMETER (4" MINIMUM).
 - COMPACTED TO APPROXIMATELY 80% STANDARD PROCTOR, AASHTO T-99
 - COMPACTED GRANULAR OR "SELECT MATERIAL" (SEE NOTE 1)
 - COMPACTED TO APPROXIMATELY 90% STANDARD PROCTOR, AASHTO T-99
 - GRANULAR MATERIALS ARE DEFINED PER THE AASHTO SOIL CLASSIFICATION SYSTEM (D3282) OR THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487), WITH THE EXCEPTION THAT GRAVEL BEDDING/BACKFILL ADJACENT TO THE PIPE IS LIMITED TO 2" MAXIMUM PARTICLE SIZE PER ANSI/AWWAC600.

GRAVITY PIPE BEDDING CONDITIONS

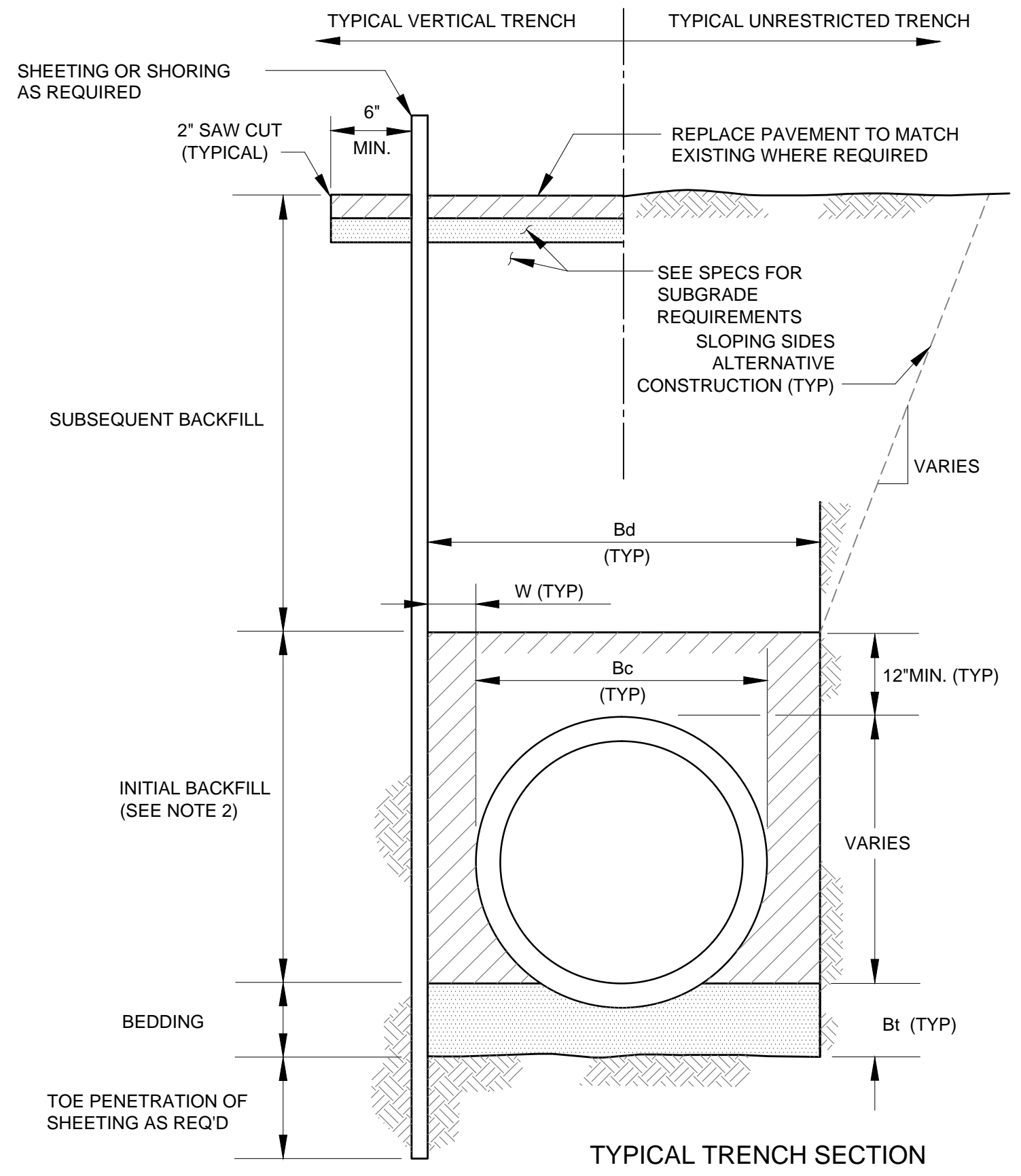
DETAIL 12
VARIES
SCALE: NONE



DETAIL 14
VARIES
SCALE: NONE



DETAIL 15
VARIES
SCALE: NONE



DETAIL 16
VARIES
SCALE: NONE

- NOTES:**
- FOR BEDDING TYPES SEE DETAIL 13/000-C-003
 - INITIAL & SUBSEQUENT BACKFILL: SEE TABLE A, SECTION 02200.

TYPICAL TRENCH LIMITATIONS:
 Bd = WIDTH FROM BOTTOM TO 12" ABOVE PIPE
 W = CLEARANCE TO WALL, EXCLUDING SHEETING, I.E. TO EARTH
 D = PIPE INSIDE DIAMETER, I.E. NOMINAL PIPE SIZE
 Bc = PIPE OUTSIDE DIAMETER
 Bt = DEPTH OF BEDDING FROM INVERT OF PIPE TO BOTTOM OF TRENCH

D, IN.	W MIN, IN.	Bd MAX, IN.	Bt MIN, IN.
0-6	6	B + 24	3
8-24	8	B + 24	6
27-60	12	B + 36	12
OVER 60	18	B + 42	12

Dec 09, 2015 - 1:32pm
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 alumper



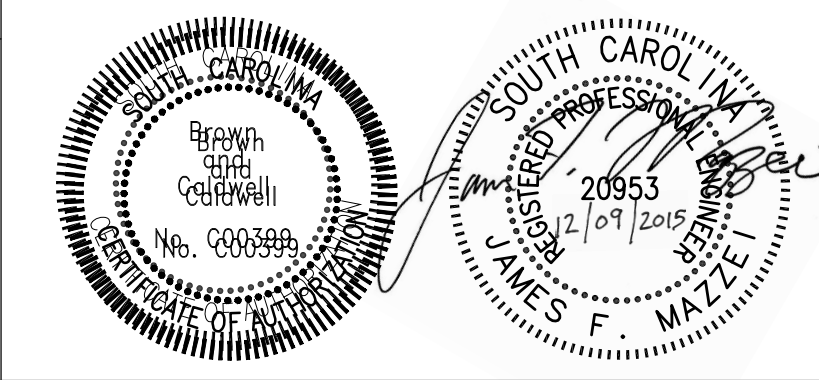
Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
 PROJECT MANAGER

APPROVED: _____ DATE: _____
 BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
 DRAWN: A. JUMPER
 CHECKED: J. EPTING
 CHECKED: J. MAZZEI
 APPROVED: J. MAZZEI

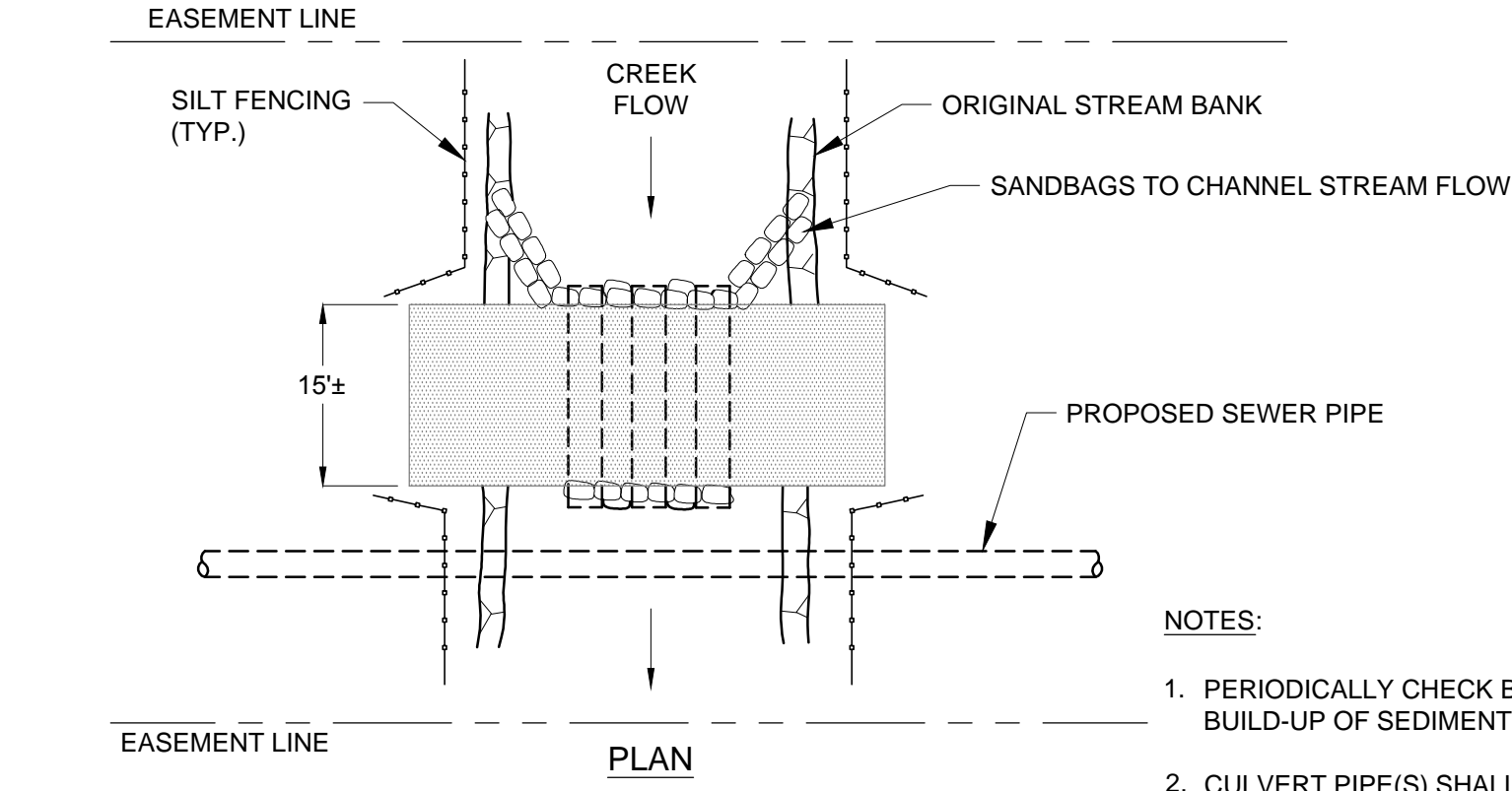


ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
RICHLAND CREEK TRUNK SEWER
SANITARY SEWER DETAILS 3

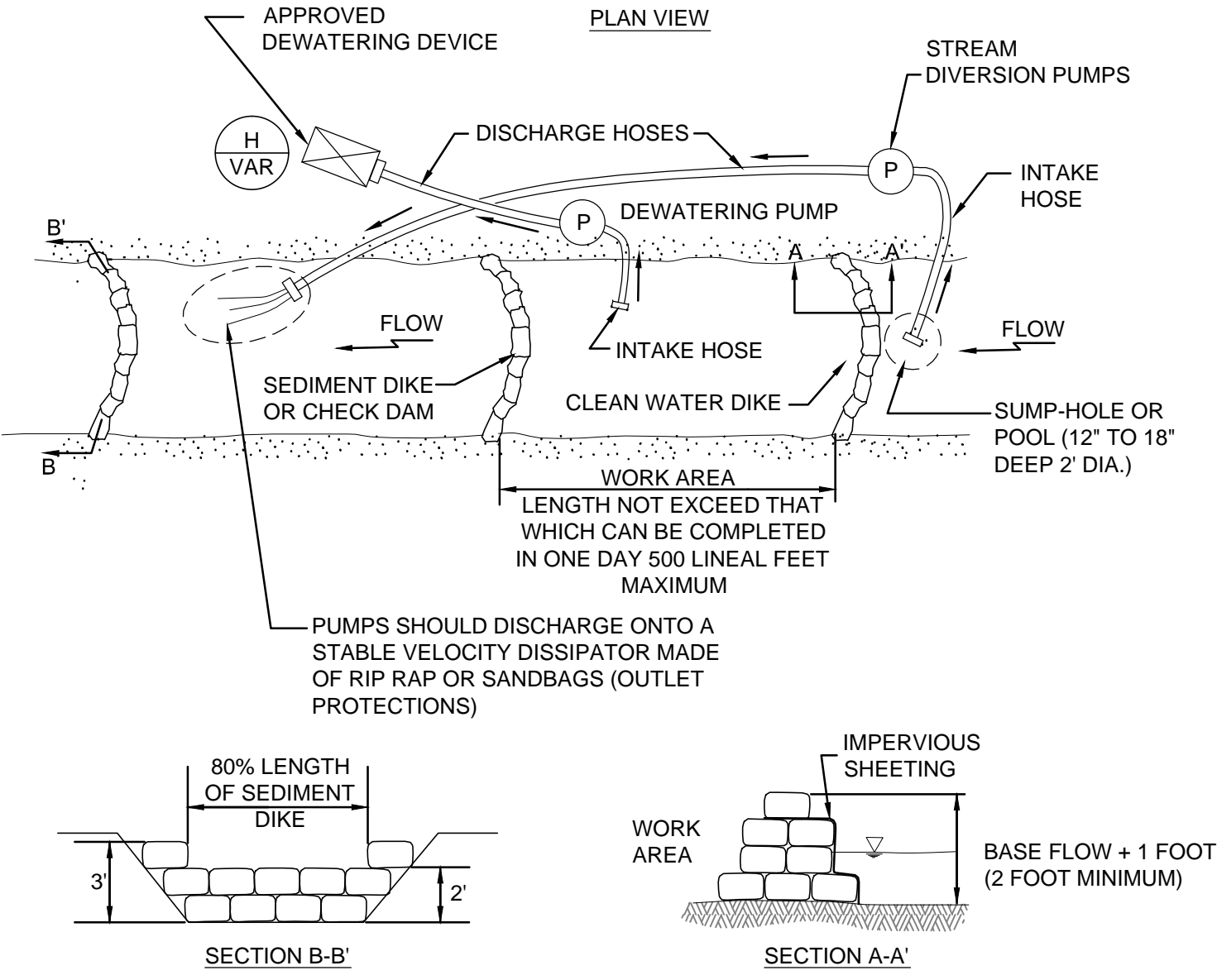
FILENAME: 144495C-0003.DWG
 BC PROJECT NUMBER: 144495
 SCALE: AS SHOWN
 DRAWING NUMBER: 000-C-003
 SHEET NUMBER: 6 OF 32



- NOTES:
1. PERIODICALLY CHECK BRIDGE INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS ON BRIDGE.
 2. CULVERT PIPE(S) SHALL BE SIZED AS SHOWN ON PLAN. USE AS WITH PIPES SPACED ONE-HALF (1/2) THEIR DIAMETER APART.
 3. MATERIALS PLACED IN STREAM CHANNEL SHALL BE SIZED ACCORDING TO PLAN AND SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THIS ITEM IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.

TEMPORARY CULVERT BRIDGE

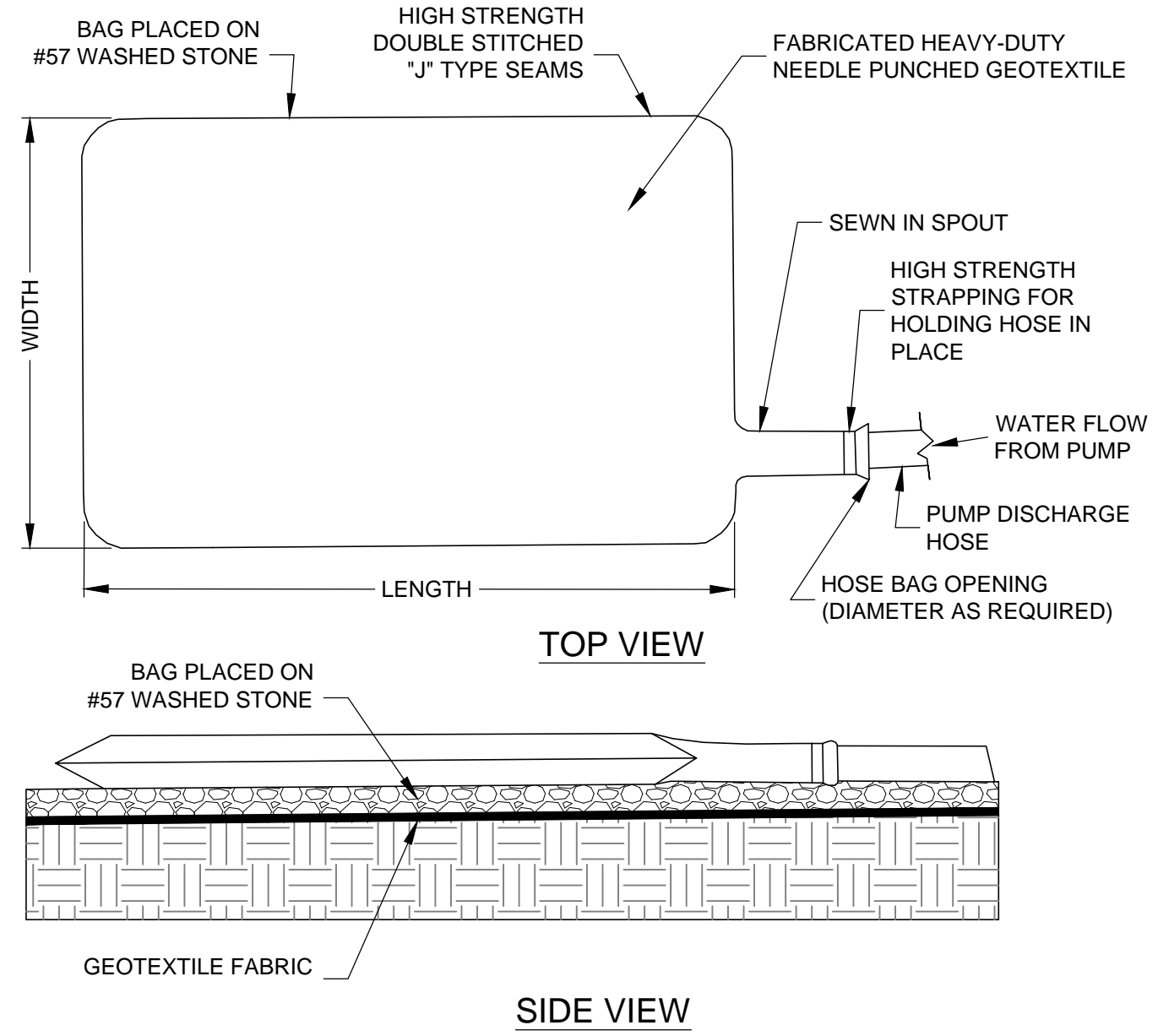
DETAIL 17 VAR
SCALE: NONE



- NOTES:
1. SET UP PUMP AND HOSE AS SHOWN, OR USE OTHER PRACTICAL ALTERNATIVES. PUMP SHOULD HAVE TWICE THE PUMPING CAPACITY OF ANTICIPATED FLOW.
 2. ALL INTAKE HOSES WILL BE SCREENED.
 3. DISMANTLE DOWNSTREAM DAM, THEN UPSTREAM DAM. KEEP PUMP RUNNING TO MAINTAIN STREAM FLOW.
 4. PUMP AROUND MAY NOT BE LEFT IN PLACE FOR MORE THAN 24 HOURS.

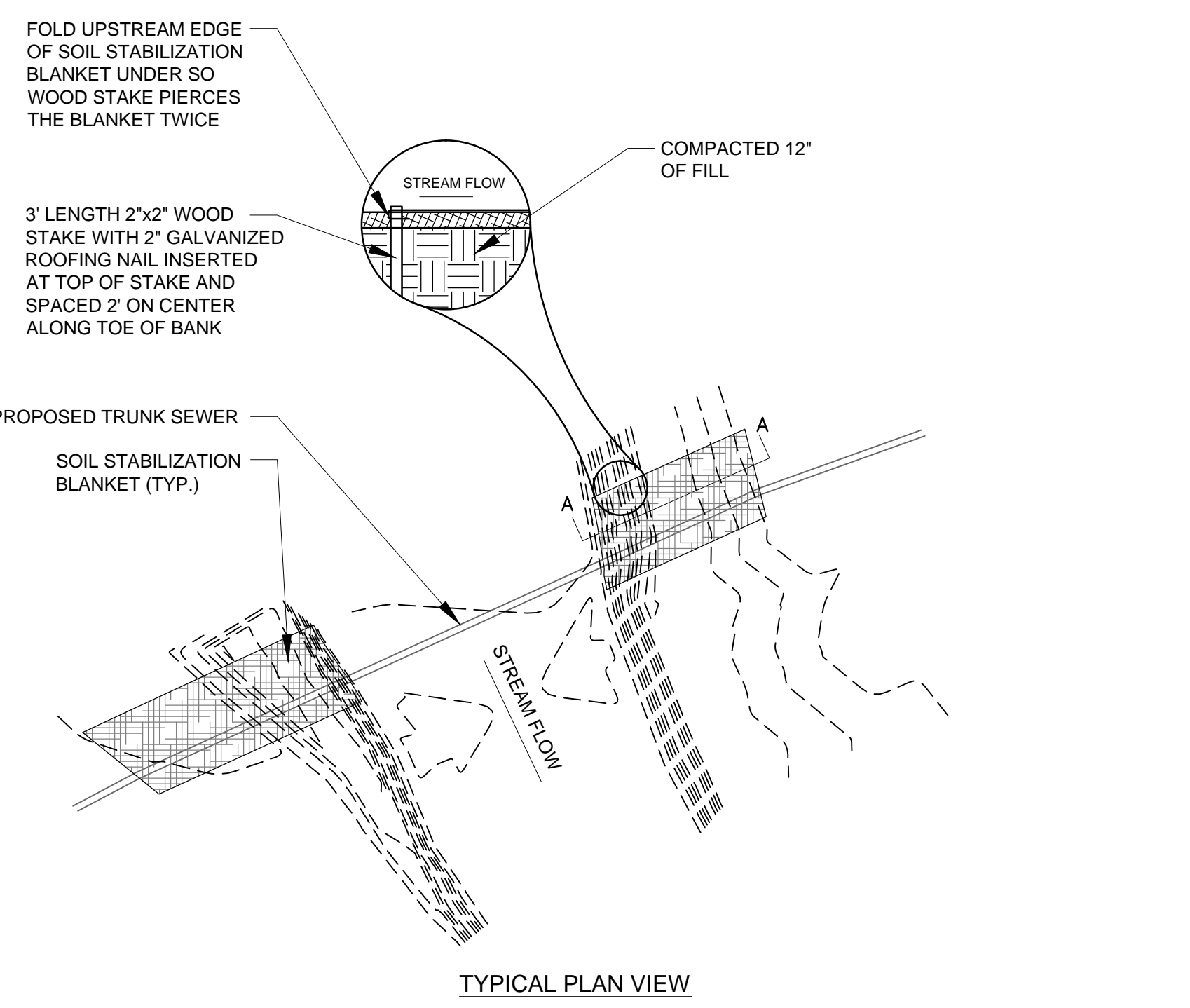
PUMP AROUND AND VELOCITY DISSIPATOR

DETAIL 18 VAR
SCALE: NONE

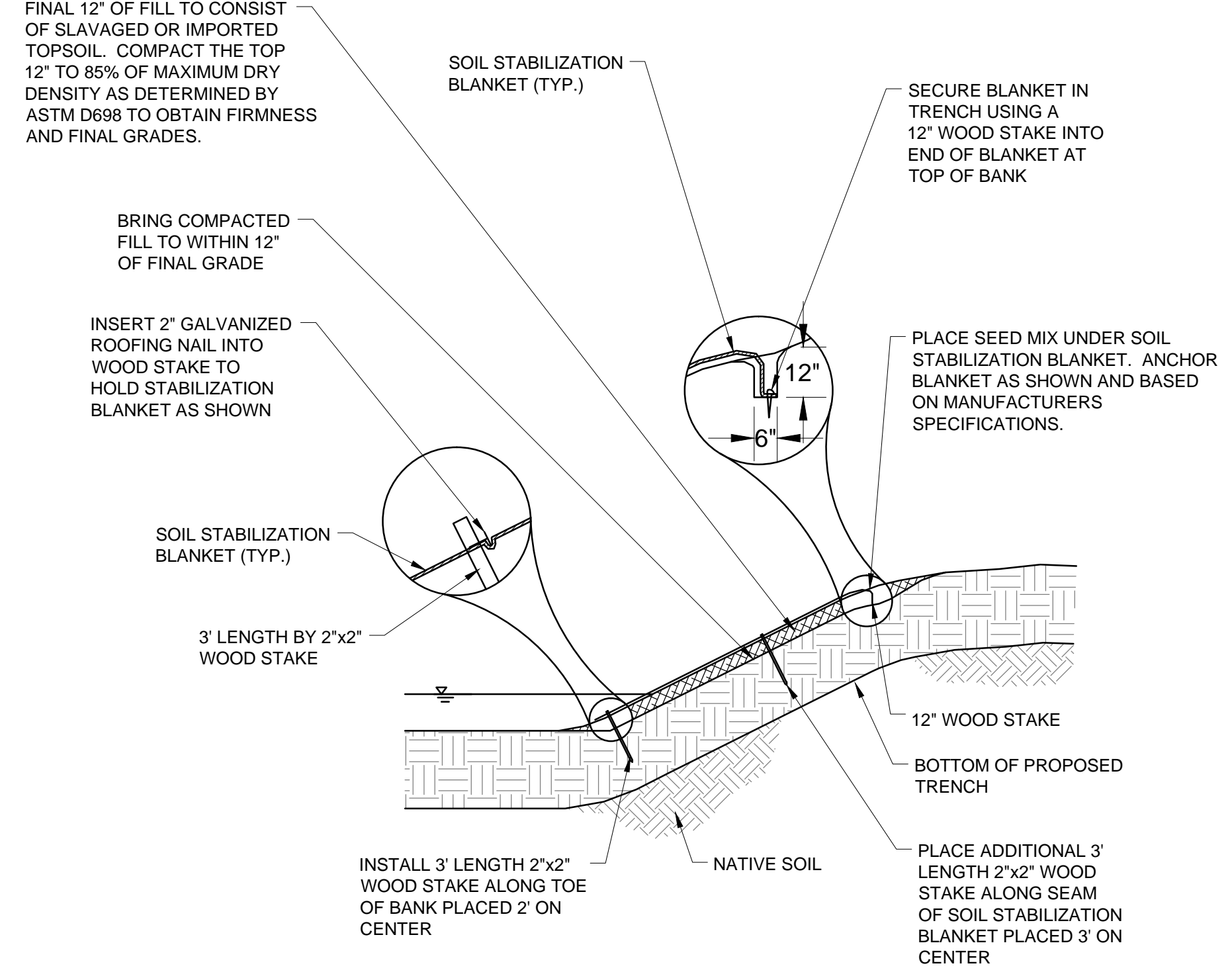


SILT BAG DEWATERING DEVICE

DETAIL 20 VAR
SCALE: NONE



TYPICAL PLAN VIEW



DETAIL OF SECTION A-A

TYPICAL STREAM CROSSING

DETAIL 21 VAR
SCALE: NONE

SCIENTIFIC NAME	COMMON NAME	SIZE	GAL.	ROOT	SPACING	ZONE	COMMENT
ACER NEGUNDO	BOX ELDER	-	-	LIVE CUTTING	-	GEOGRID LAYERING	
ALNUS SERRULATA	TAG ALDER	2-3'	3 GAL.	CONT.	4' O.C.	LOWER TO MID STREAMBANK	FULL / VIGOROUS
ARONIA MELANOCARPA	BLACK CHOKEBERRY	2-3'	3 GAL.	CONT.	4' O.C.	MID TO UPPER STREAMBANK	FULL / VIGOROUS
CORNUS AMOMUM	SILKY DOGWOOD	2-3'	3 GAL.	CONT.	4' O.C.	LOWER TO MID STREAMBANK	FULL / VIGOROUS
SALIX NIGRA	BLACK WILLOW	-	-	LIVE CUTTING	1' O.C.	EDGE OF WATER / GEOGRID LAYERING	PLANT 3 ROWS STAGGERED UP BANK
SAMBUCUS CANADENSIS	AMERICAN ELDERBERRY	2-3'	-	LIVE CUTTING	-	GEOGRID LAYERING	
VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	2-3'	3 GAL.	CONT.	4' O.C.	MID TO UPPER STREAMBANK	FULL / VIGOROUS

SCIENTIFIC NAME	COMMON NAME	QTY.	TYPE	ZONE	COMMENT
AGROSTIS PERENNANS	AUTUMN BENTGRASS	13%	SEED	MID TO UPPER STREAMBANK	SEED AT RATE OF 4 LBS./1000 S.F.
ANDROPOGON GERARDII	BIG BLUESTEM	17%	SEED	MID TO UPPER STREAMBANK	
ELYMUS CANADENSIS	CANADA WILD RYE	15%	SEED	MID TO UPPER STREAMBANK	
ELYMUS HYSTRIX	BOTTLEBRUSH GRASS	12%	SEED	MID TO UPPER STREAMBANK	
ELYMUS VILLOSUS	SILKY WILD RYE	13%	SEED	MID TO UPPER STREAMBANK	
PANICUM VIRGATUM	SWITCH GRASS	15%	SEED	MID TO UPPER STREAMBANK	
SORGHASTRUM NUTANS	INDIAN GRASS	15%	SEED	MID TO UPPER STREAMBANK	

SCIENTIFIC NAME	COMMON NAME	QTY.	ROOT	ZONE	COMMENT
AGROSTIS PERENNANS	AUTUMN BENTGRASS	10%	SEED	LOWER TO MID STREAMBANK	SEED AT RATE OF 4 LBS./1000 S.F.
ANDROPOGON GERARDII	BIG BLUESTEM	8%	SEED	LOWER TO MID STREAMBANK	
ANDROPOGON GLOMERATUS	BUSHY BLUESTEM	20%	SEED	LOWER TO MID STREAMBANK	
CAREX STRICTA	TUSSOCK SEDGE	12%	SEED	LOWER TO MID STREAMBANK	
DACTYLIS GLOMERATA	ORCHARDGRASS	10%	SEED	LOWER TO MID STREAMBANK	
ELYMUS HYSTRIX	BOTTLEBRUSH GRASS	12%	SEED	LOWER TO MID STREAMBANK	
ELYMUS RIPARIUS	RIVERBANK WILD RYE	20%	SEED	LOWER TO MID STREAMBANK	
PANICUM VIRGATUM	SWITCHGRASS	8%	SEED	LOWER TO MID STREAMBANK	

PLANT & SEEDING SCHEDULE FOR CREEK CROSSINGS

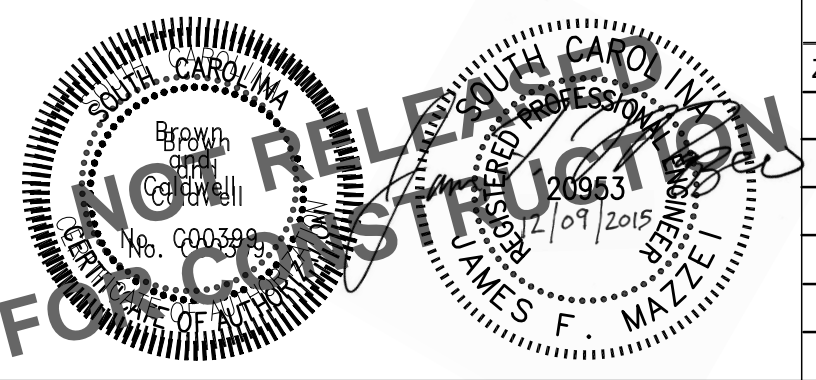
DETAIL 19 VAR
SCALE: NONE

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APPROVED:

EXTERNAL REFERENCES

ZONE	REV.	DESCRIPTION	BY	DATE	APP.



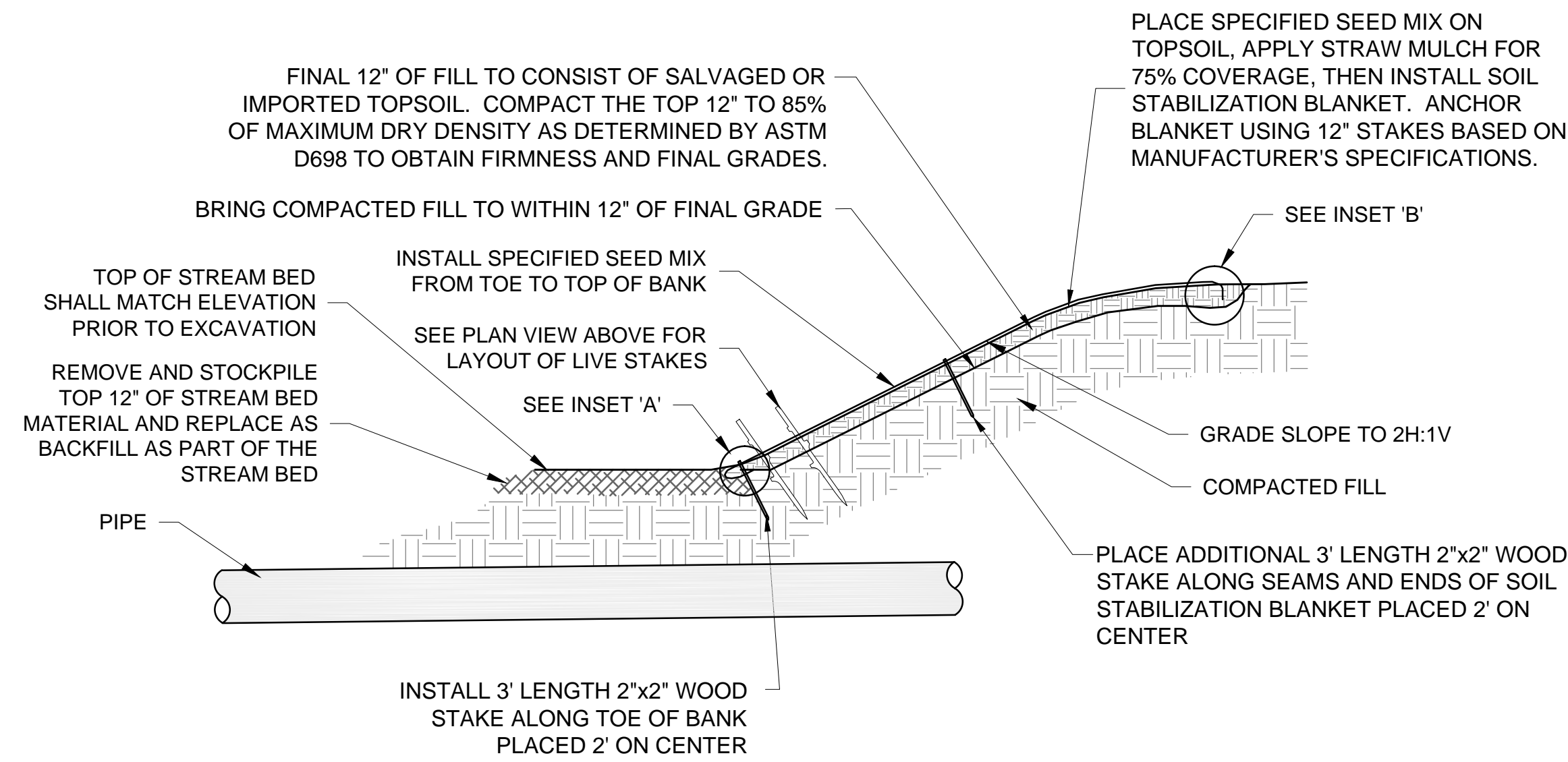
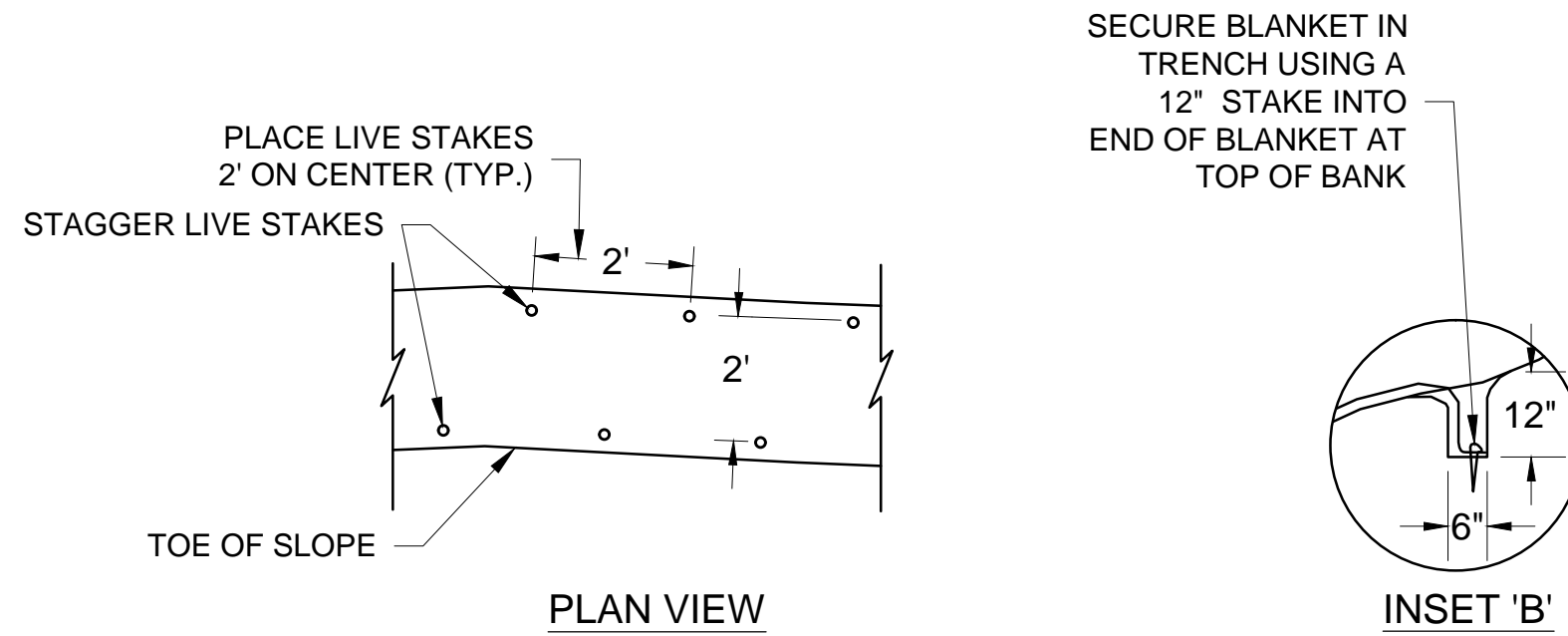
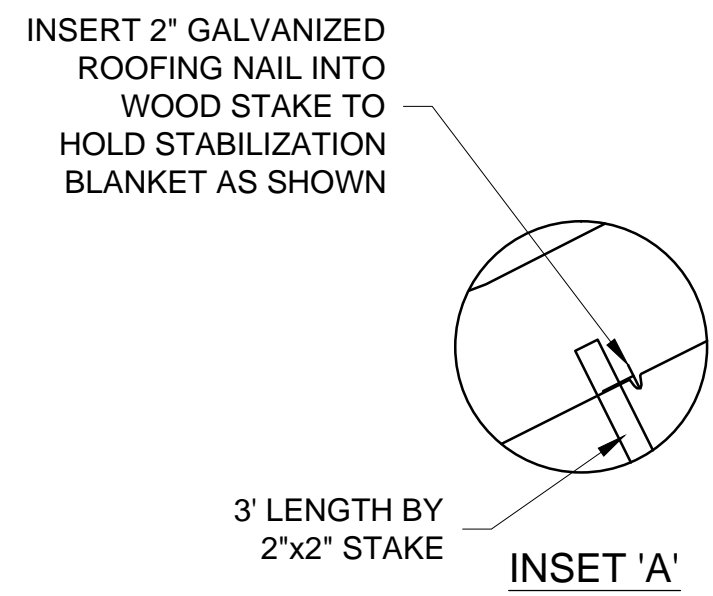
REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
RICHLAND CREEK TRUNK SEWER
STREAM CROSSING DETAILS 1

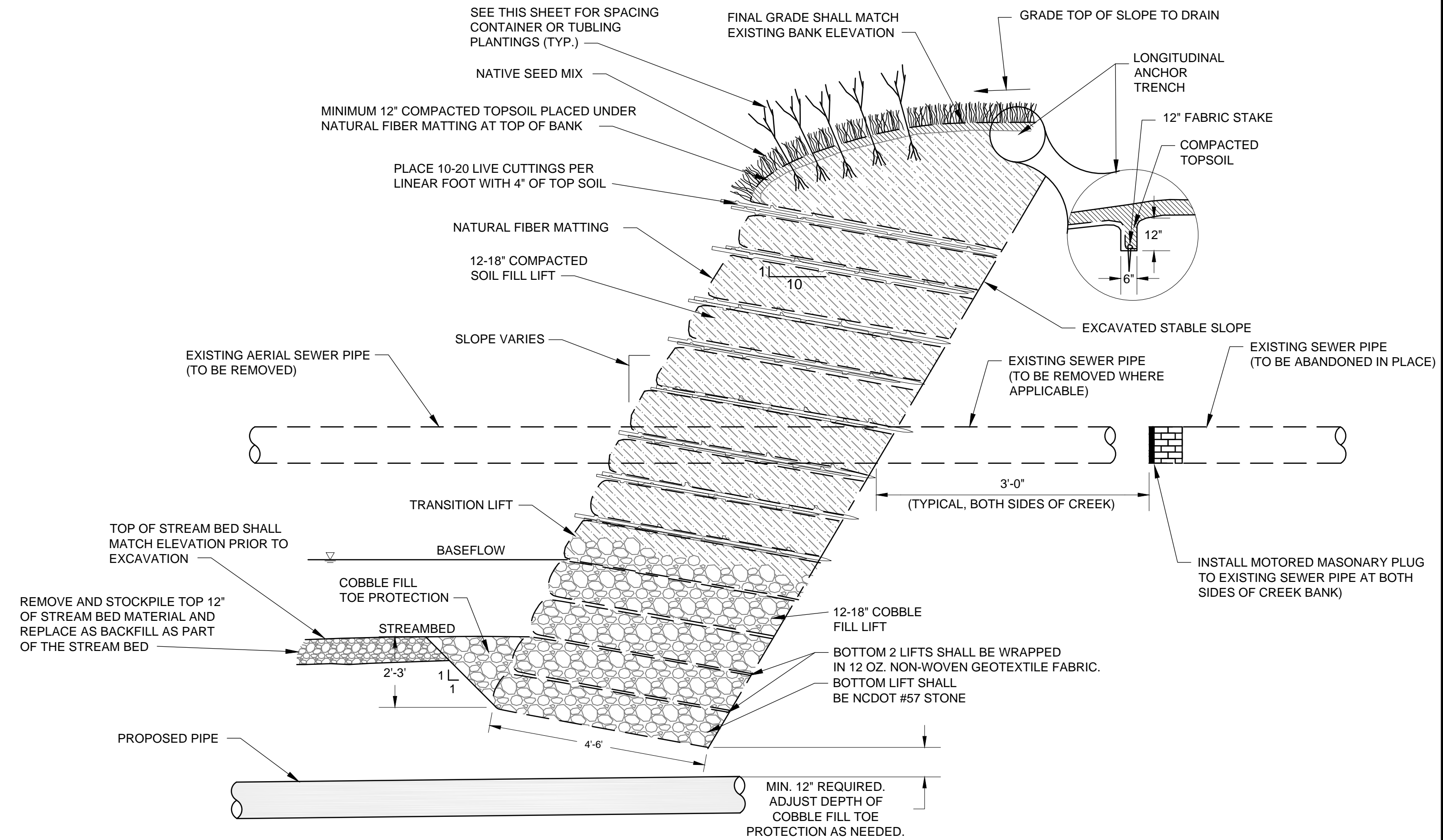
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BC PROJECT NUMBER: 144495
SCALE: AS SHOWN
DRAWING NUMBER: 000-C-004
SHEET NUMBER: 7 OF 32



BANK STABILIZATION

DETAIL 22
VAR

SCALE: NONE



DETAIL 23
VAR

SCALE: NONE

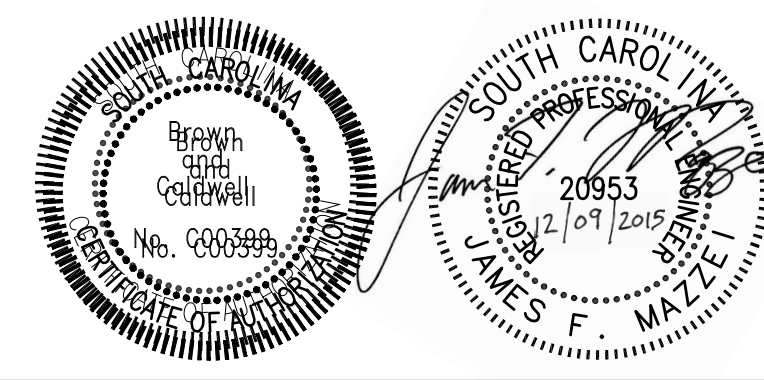
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 ajumper



LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED:
CHECKED:
APPROVED:

EXTERNAL REFERENCES

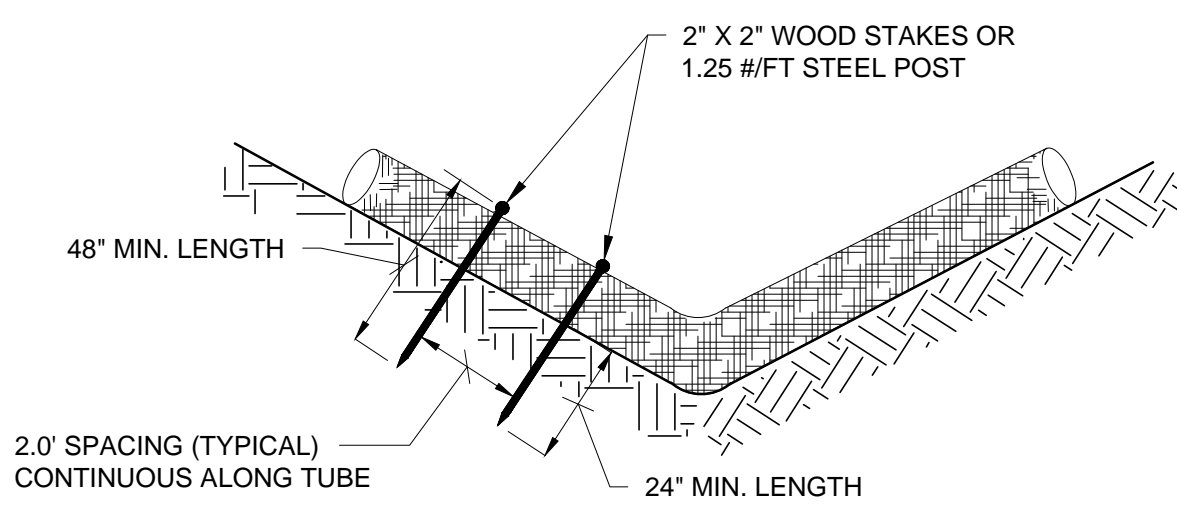


REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
RICHLAND CREEK TRUNK SEWER
STREAM CROSSING DETAILS 2

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BC PROJECT NUMBER: 144495
SCALE: AS SHOWN
DRAWING NUMBER: 000-C-005
SHEET NUMBER: 8 OF 32

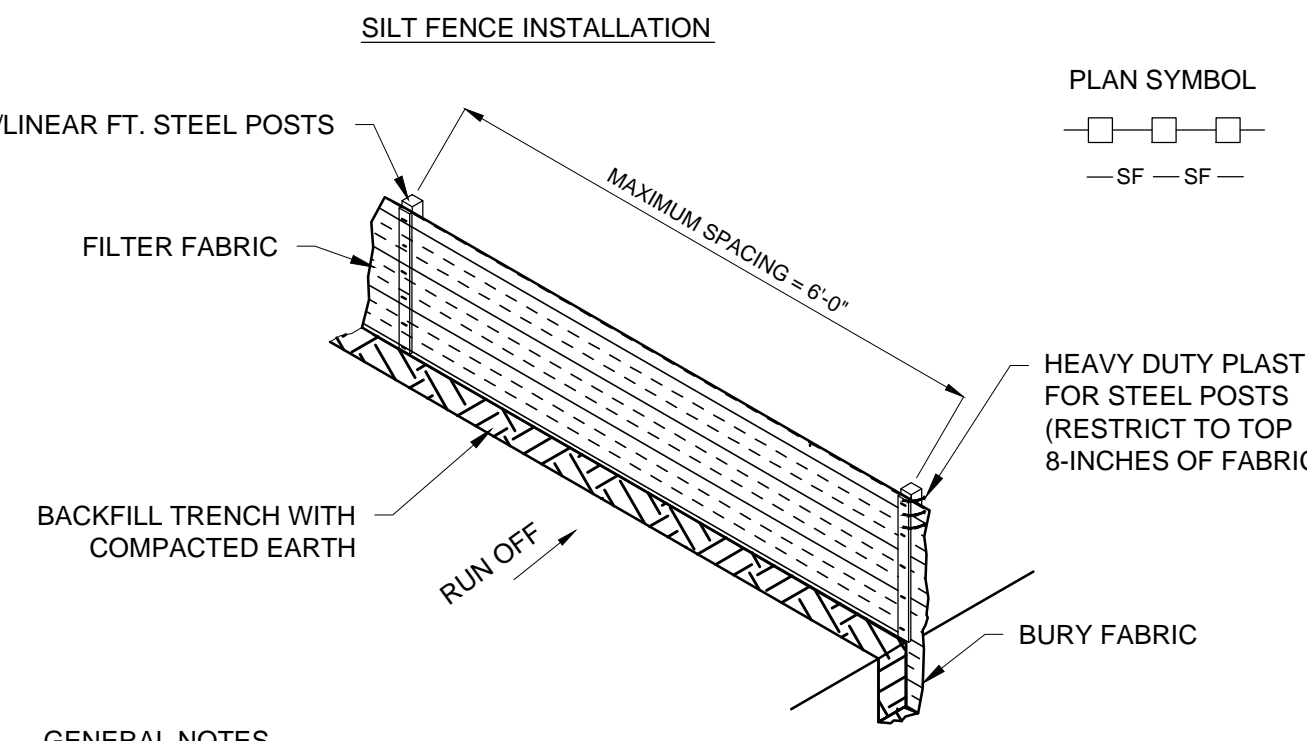
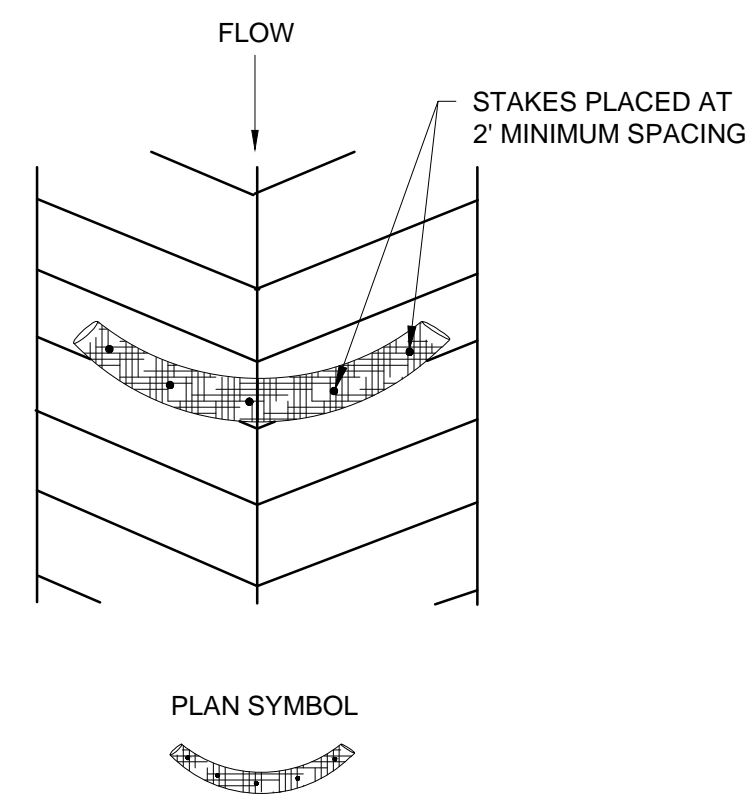


SLOPE	MAXIMUM SEDIMENT TUBE SPACING
LESS THAN 2%	150-FEET
2%	100-FEET
3%	75-FEET
4%	50-FEET
5%	40-FEET
6%	30-FEET
GREATER THAN 6%	25-FEET

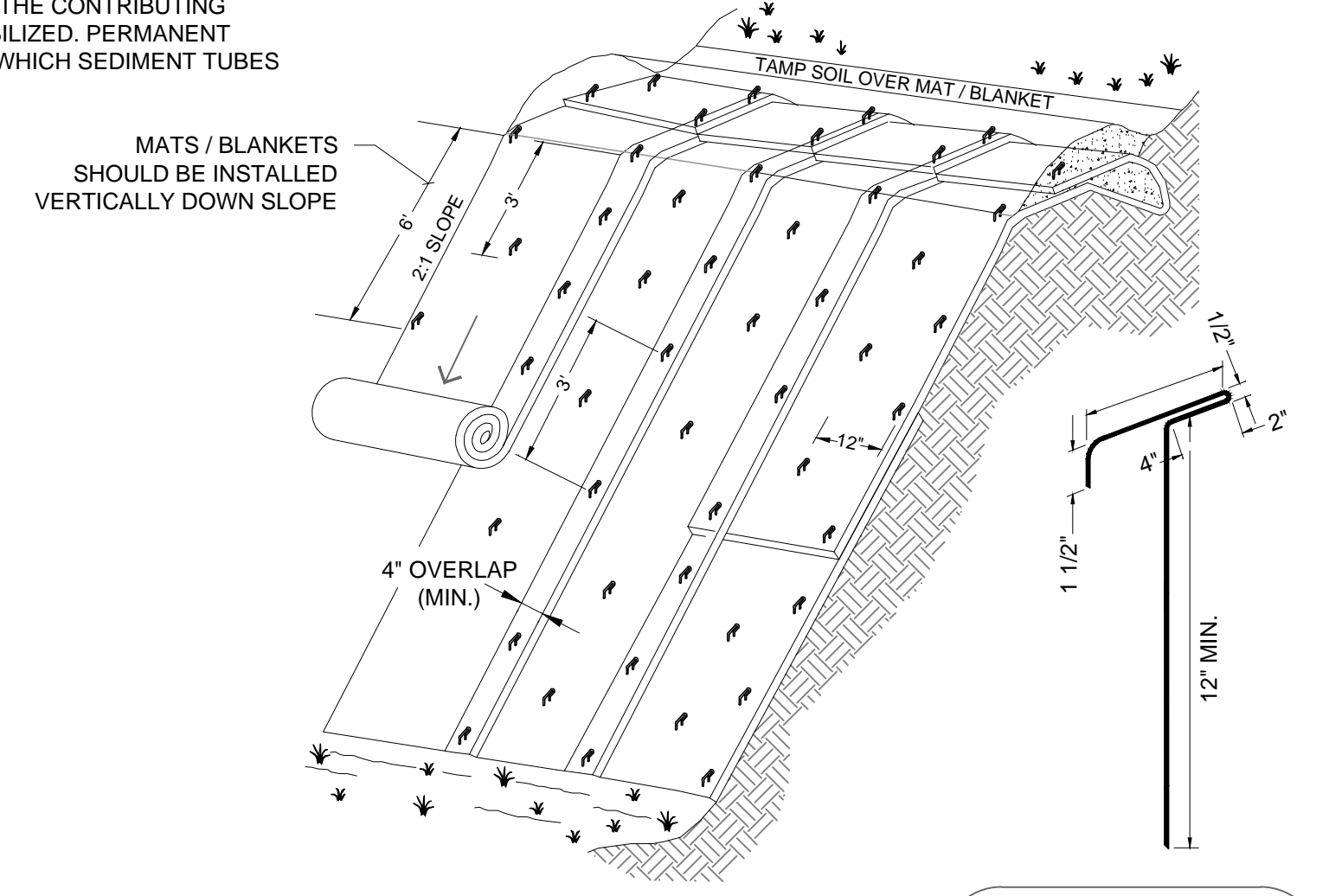
- GENERAL NOTES:**
- SEDIMENT TUBES MAY BE INSTALLED ALONG CONTOURS, IN DRAINAGE CONVEYANCE CHANNELS, AND AROUND INLETS TO HELP PREVENT OFF-SITE DISCHARGE OF SEDIMENT-LADEN STORMWATER RUNOFF.
 - SEDIMENT TUBES ARE ELONGATED TUBES OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBER, OR HARDWOOD MULCH. STRAW, PINE NEEDLE, AND LEAF MULCH-FILLED SEDIMENT TUBES ARE NOT PERMITTED.
 - THE OUTER NETTING OF THE SEDIMENT TUBE SHOULD CONSIST OF SEAMLESS, HIGH-DENSITY POLYETHYLENE PHOTODEGRADABLE MATERIALS TREATED WITH ULTRAVIOLET STABILIZERS OR A SEAMLESS, HIGH-DENSITY POLYETHYLENE NON-DEGRADABLE MATERIAL.
 - SEDIMENT TUBES, WHEN USED AS CHECKS WITHIN CHANNELS, SHOULD RANGE BETWEEN 18-INCHES AND 24-INCHES DEPENDING ON CHANNEL DIMENSIONS. DIAMETERS OUTSIDE THIS RANGE MAY BE ALLOWED WHERE NECESSARY WHEN APPROVED.
 - CURLED EXCELSIOR WOOD, OR NATURAL COCONUT PRODUCTS THAT ARE ROLLED UP TO CREATE A SEDIMENT TUBE ARE NOT ALLOWED.
 - SEDIMENT TUBES SHOULD BE STAKED USING WOODEN STAKES (2-INCH X 2-INCH) OR STEEL POSTS (STANDARD "U" OR "T" SECTIONS WITH A MINIMUM WEIGHT OF 1.25 POUNDS PER FOOT) AT A MINIMUM OF 48-INCHES IN LENGTH PLACED ON 2-FOOT CENTERS.
 - INSTALL ALL SEDIMENT TUBES TO ENSURE THAT NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE TUBE. MANUFACTURER'S RECOMMENDATIONS SHOULD ALWAYS BE CONSULTED BEFORE INSTALLATION.
 - THE ENDS OF ADJACENT SEDIMENT TUBES SHOULD BE OVERLAPPED 6-INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT.
 - SEDIMENT TUBES SHOULD NOT BE STACKED ON TOP OF ONE ANOTHER, UNLESS RECOMMENDED BY MANUFACTURER.
 - EACH SEDIMENT TUBE SHOULD BE INSTALLED IN A TRENCH WITH A DEPTH EQUAL TO 1/5 THE DIAMETER OF THE SEDIMENT TUBE.
 - SEDIMENT TUBES SHOULD CONTINUE UP THE SIDE SLOPES A MINIMUM OF 1-FOOT ABOVE THE DESIGN FLOW DEPTH OF THE CHANNEL.
 - INSTALL STAKES AT A DIAGONAL FACING INCOMING RUNOFF.

- INSPECTION & MAINTENANCE**
- THE KEY TO FUNCTIONAL SEDIMENT TUBES IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.
 - REGULAR INSPECTIONS OF SEDIMENT TUBES SHALL BE CONDUCTED ONCE EVERY CALENDAR WEEK AND, AS RECOMMENDED, WITHIN 24-HOURS AFTER EACH RAINFALL EVEN THAT PRODUCES 1/2-INCH OR MORE OF PRECIPITATION.
 - ATTENTION TO SEDIMENT ACCUMULATIONS IN FRONT OF THE SEDIMENT TUBE IS EXTREMELY IMPORTANT. ACCUMULATED SEDIMENT SHOULD BE CONTINUALLY MONITORED AND REMOVED WHEN NECESSARY.
 - REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/3 THE HEIGHT OF THE SEDIMENT TUBE.
 - REMOVED SEDIMENT SHALL BE PLACED IN STOCKPILE STORAGE AREAS OR SPREAD THINLY ACROSS DISTURBED AREA. STABILIZE THE REMOVED SEDIMENT AFTER IT IS RELOCATED.
 - LARGE DEBRIS, TRASH, AND LEAVES SHOULD BE REMOVED FROM IN FRONT OF TUBES WHEN FOUND.
 - IF EROSION CAUSES THE EDGES TO FALL TO A HEIGHT EQUAL TO OR BELOW THE HEIGHT OF THE SEDIMENT TUBE, REPAIRS SHOULD BE MADE IMMEDIATELY TO PREVENT RUNOFF FROM BYPASSING TUBE.
 - SEDIMENT TUBES SHOULD BE REMOVED AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN COMPLETELY STABILIZED. PERMANENT VEGETATION SHOULD REPLACE AREAS FROM WHICH SEDIMENT TUBES HAVE BEEN REMOVED.

SEDIMENT TUBE INSTALLATION
DETAIL A
VARIES
SCALE: NONE

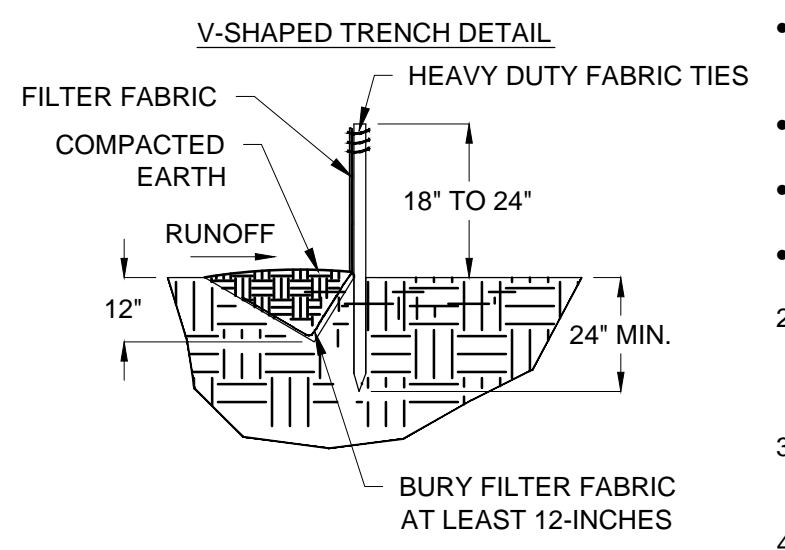
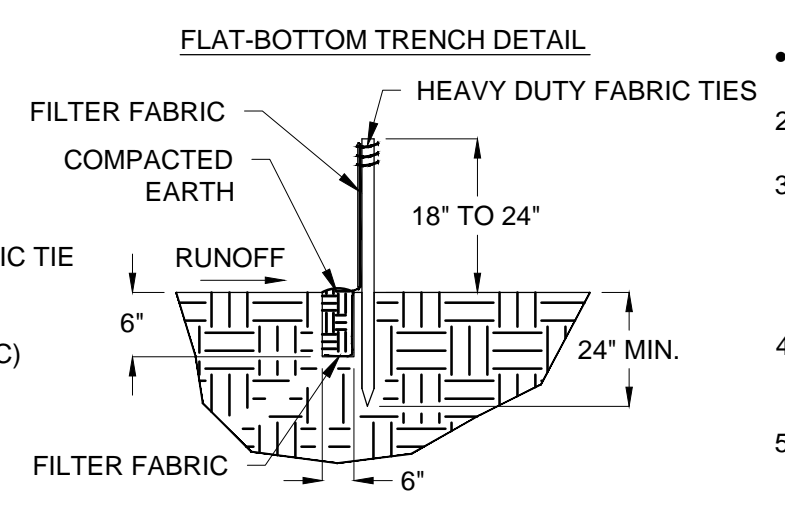


- GENERAL NOTES**
- DO NOT PLACE SILT FENCE ACROSS CHANNELS OR IN OTHER AREAS SUBJECT TO CONCENTRATED FLOWS. SILT FENCE SHOULD NOT BE USED AS A VELOCITY CONTROL BMP. CONCENTRATED FLOWS ARE ANY FLOWS GREATER THAN 0.5 CFS.
 - MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE SILT FENCE SHALL BE 100-FEET.
 - MAXIMUM SLOPE STEEPNESS (NORMAL [PERPENDICULAR] TO THE FENCE LINE) SHALL BE 2:1.
 - SILT FENCE JOINTS, WHEN NECESSARY, SHALL BE COMPLETED BY ONE OF THE FOLLOWING OPTIONS:
 - WRAP EACH FABRIC TOGETHER AT A SUPPORT POST WITH BOTH ENDS FASTENED TO THE POST, WITH A 1-FOOT MINIMUM OVERLAP;
 - OVERLAP SILT FENCE BY INSTALLING 3-FEET PASSED THE SUPPORT POST TO WHICH THE NEW SILT FENCE ROLL IS ATTACHED. ATTACH OLD ROLL TO NEW ROLL WITH HEAVY-DUTY PLASTIC TIES; OR,
 - OVERLAP ENTIRE WIDTH OF EACH SILT FENCE ROLL FROM ONE SUPPORT POST TO THE NEXT SUPPORT POST.
 - ATTACH FILTER FABRIC TO THE STEEL POSTS USING HEAVY-DUTY PLASTIC TIES THAT ARE EVENLY SPACED WITHIN THE TOP 8-INCHES OF THE FABRIC.
 - INSTALL THE SILT FENCE PERPENDICULAR TO THE DIRECTION OF THE STORMWATER FLOW AND PLACE THE SILT FENCE THE PROPER DISTANCE FROM THE TOE OF STEEP SLOPES TO PROVIDE SEDIMENT STORAGE AND ACCESS FOR MAINTENANCE AND CLEANOUT.
 - INSTALL SILT FENCE CHECKS (TIE-BACKS) EVERY 50-100 FEET, DEPENDENT ON SLOPE, ALONG SILT FENCE THAT IS INSTALLED WITH SLOPE AND WHERE CONCENTRATED FLOWS ARE EXPECTED OR ARE DOCUMENTED ALONG THE PROPOSED/INSTALLED SILT FENCE.



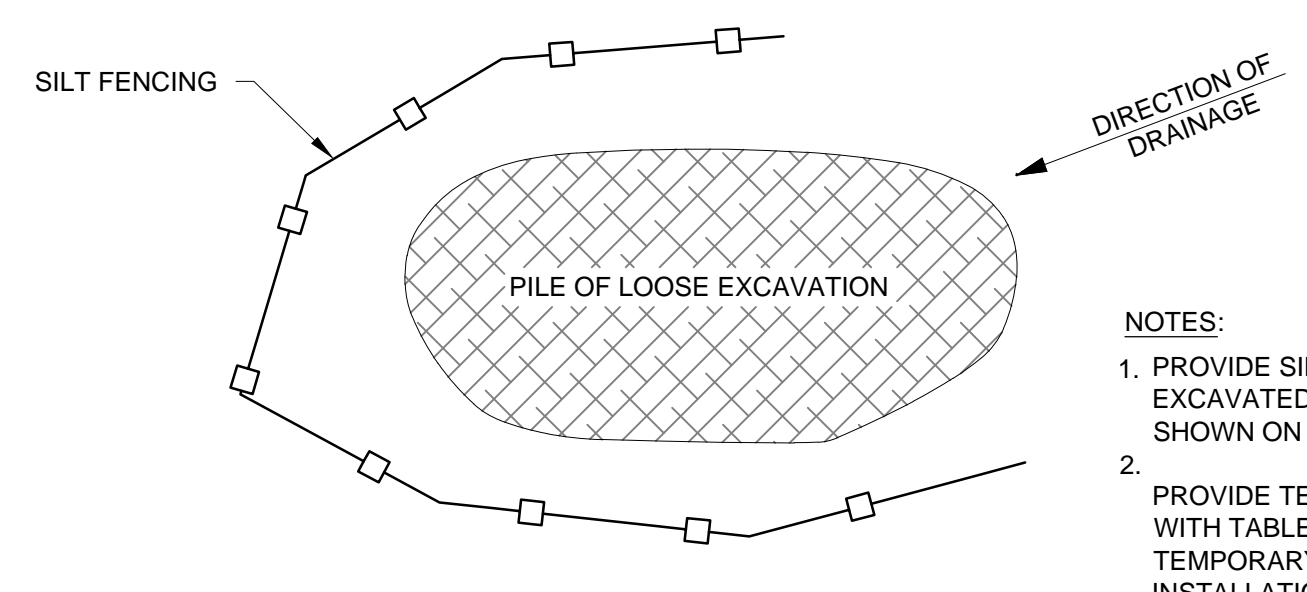
- NOTES:**
- SLOPE SURFACE SHALL BE FREE OF ROCKS CLODS, STICKS AND GRASS. MATS / BLANKETS SHALL HAVE GOOD SOIL CONTACT.
 - APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
 - LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

FABRIC LINED SLOPE
DETAIL C
VARIES
SCALE: NONE



- POST REQUIREMENTS**
- SILT FENCE POSTS MUST BE 48-INCH LONG STEEL POSTS THAT MEET, AT A MINIMUM, THE FOLLOWING PHYSICAL CHARACTERISTICS:
 - COMPOSED OF A HIGH STRENGTH STEEL WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI.
 - INCLUDE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND A NOMINAL "T" LENGTH OF 1.48-INCHES.
 - WEIGH 1.25 POUNDS PER FOOT (± 8%)
 - POSTS SHALL BE EQUIPPED WITH PROJECTIONS TO AID IN FASTENING OF FILTER FABRIC.
 - STEEL POSTS MAY NEED TO HAVE A METAL SOIL STABILIZATION PLATE WELDED NEAR THE BOTTOM WHEN INSTALLED ALONG STEEP SLOPES OR INSTALLED IN LOOSE SOILS. THE PLATE SHOULD HAVE A MINIMUM CROSS SECTION OF 17-SQUARE INCHES AND BE COMPOSED OF 15 GAUGE STEEL, AT A MINIMUM. THE METAL SOIL STABILIZATION PLATE SHOULD BE COMPLETELY BURIED.
 - INSTALL POSTS TO A MINIMUM OF 24-INCHES. A MINIMUM HEIGHT OF 1- TO 2- INCHES ABOVE THE FABRIC SHALL BE MAINTAINED, AND A MAXIMUM HEIGHT OF 3 FEET SHALL BE MAINTAINED ABOVE THE GROUND.
 - POST SPACING SHALL BE AT A MAXIMUM OF 6-FEET ON CENTER.
- FABRIC REQUIREMENTS**
- SILT FENCE MUST BE COMPOSED OF WOVEN GEOTEXTILE FILTER FABRIC THAT CONSISTS OF THE FOLLOWING REQUIREMENTS:
 - COMPOSED OF FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS OF AT LEAST 85% BY WEIGHT OF POLYOLEFINS, POLYESTERS, OR POLYAMIDES THAT ARE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER;
 - FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS PHYSICAL PROPERTIES AFTER INSTALLATION;
 - FREE OF ANY DEFECTS OR FLAWS THAT SIGNIFICANTLY AFFECT ITS PHYSICAL AND/OR FILTERING PROPERTIES; AND,
 - HAVE A MINIMUM WIDTH OF 36-INCHES.
 - USE ONLY FABRIC APPEARING ON SC DOT'S QUALIFIED PRODUCTS LISTING (QPL), APPROVAL SHEET #34, MEETING THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE SC DOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
 - 12-INCHES OF THE FABRIC SHOULD BE PLACED WITHIN EXCAVATED TRENCH AND TOED IN WHEN THE TRENCH IS BACKFILLED.
 - FILTER FABRIC SHALL BE PURCHASED IN CONTINUOUS ROLLS AND CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS.
 - FILTER FABRIC SHALL BE INSTALLED AT A MINIMUM OF 24-INCHES ABOVE THE GROUND.
- INSPECTION & MAINTENANCE**
- THE KEY TO FUNCTIONAL SILT FENCE IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.
 - REGULAR INSPECTIONS OF SILT FENCE SHALL BE CONDUCTED ONCE EVERY CALENDAR WEEK AND, AS RECOMMENDED, WITHIN 24-HOURS AFTER EACH RAINFALL EVEN THAT PRODUCES 1/2-INCH OR MORE OF PRECIPITATION.
 - ATTENTION TO SEDIMENT ACCUMULATIONS ALONG THE SILT FENCE IS EXTREMELY IMPORTANT. ACCUMULATED SEDIMENT SHOULD BE CONTINUALLY MONITORED AND REMOVED WHEN NECESSARY.
 - REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/3 THE HEIGHT OF THE SILT FENCE.
 - REMOVED SEDIMENT SHALL BE PLACED IN STOCKPILE STORAGE AREAS OR SPREAD THINLY ACROSS DISTURBED AREA. STABILIZE THE REMOVED SEDIMENT AFTER IT IS RELOCATED.
 - CHECK FOR AREAS WHERE STORMWATER RUNOFF HAS ERODED A CHANNEL BENEATH THE SILT FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED DUE TO RUNOFF OVERTOPPING THE SILT FENCE. INSTALL CHECKS/TIE-BACKS AND/OR REINSTALL SILT FENCE, AS NECESSARY.
 - CHECK FOR TEARS WITHIN THE SILT FENCE, AREAS WHERE SILT FENCE HAS BEGUN TO DECOMPOSE, AND FOR ANY OTHER CIRCUMSTANCE THAT MAY RENDER THE SILT FENCE INEFFECTIVE. REMOVED DAMAGED SILT FENCE AND REINSTALL NEW SILT FENCE IMMEDIATELY.
 - SILT FENCE SHOULD BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED AND ONCE IT IS REMOVED, THE RESULTING DISTURBED AREA SHALL BE PERMANENTLY STABILIZED.

SILT FENCE
DETAIL B
VARIES
SCALE: NONE



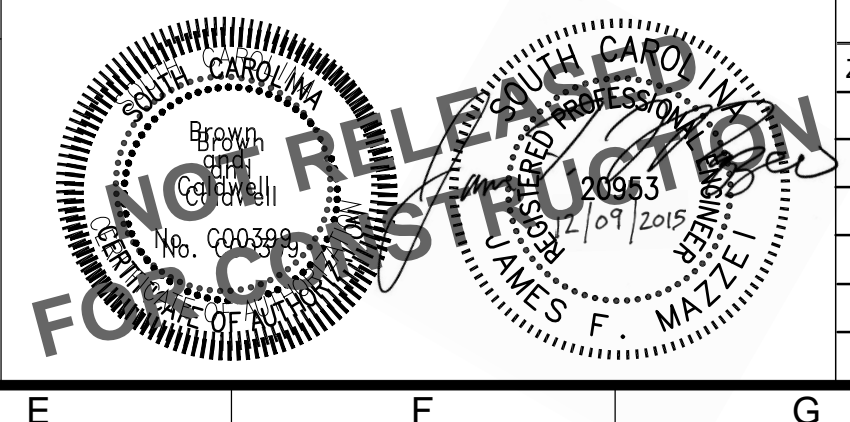
- NOTES:**
- PROVIDE SILT FENCING AROUND ALL PILE OF LOOSE EXCAVATED MATERIALS FROM UTILITY DITCHES AS SHOWN ON THIS DRAWING.
 - PROVIDE TEMPORARY GRASSING IN ACCORDANCE WITH TABLE SHOWN ON THIS SHEET. PROVIDE TEMPORARY GRASSING IMMEDIATELY AFTER INSTALLATION OF PIPING.

EROSION CONTROL FOR EXCAVATED MATERIALS
DETAIL D
VARIES
SCALE: NONE

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APPROVED:

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)	EXTERNAL REFERENCES
DESIGNED: J. EPTING	
DRAWN: A. JUMPER	
CHECKED:	
CHECKED:	
APPROVED:	

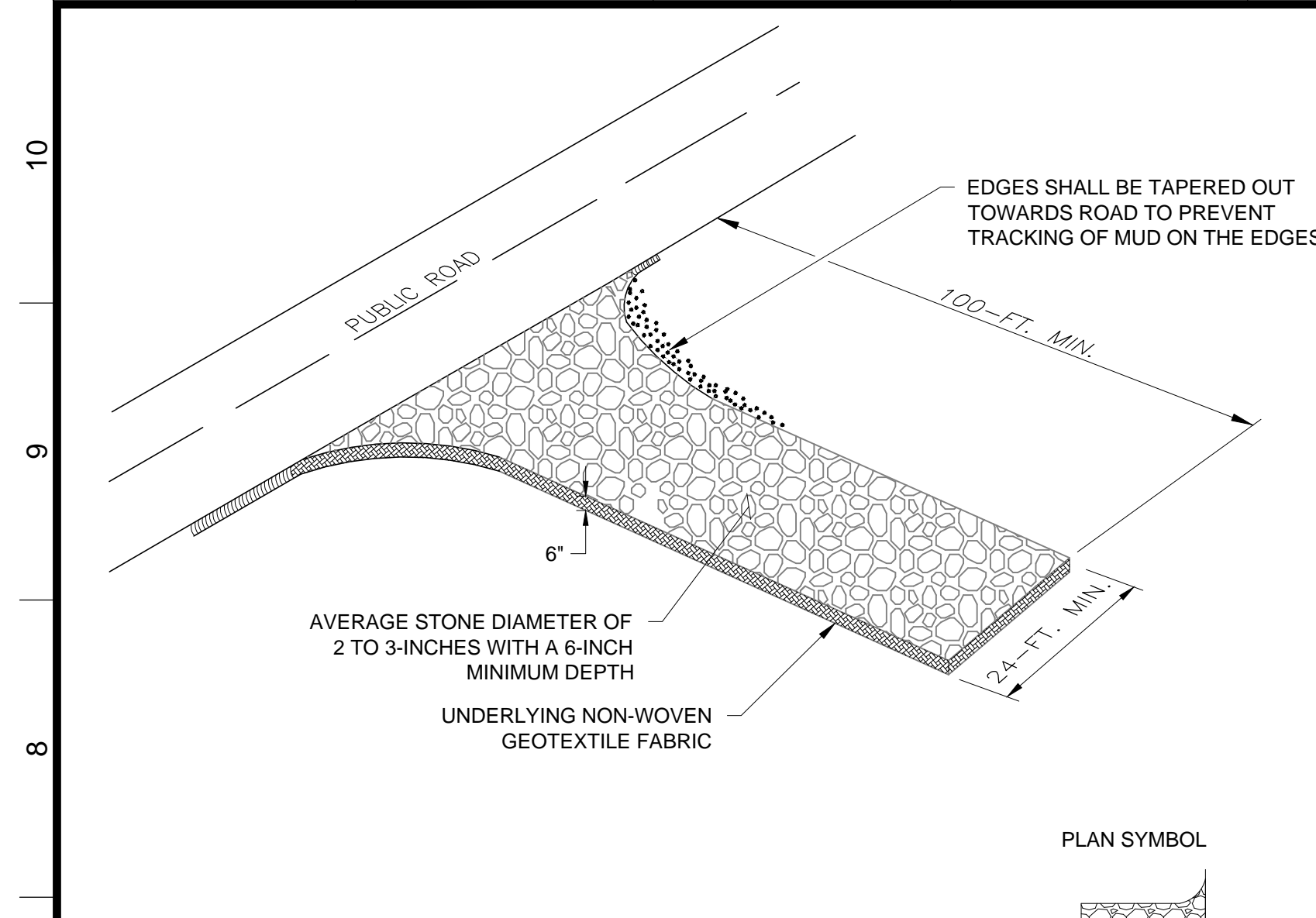


REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
RICHLAND CREEK TRUNK SEWER
EROSION & SEDIMENT CONTROL
DETAILS 1

FILENAME 144495C-0007.DWG
BC PROJECT NUMBER 144495
SCALE AS SHOWN
DRAWING NUMBER 000-C-007
SHEET NUMBER 10 OF 32



GENERAL NOTES

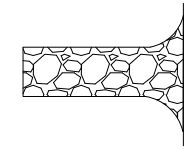
1. STABILIZED CONSTRUCTION ENTRANCES SHOULD BE USED AT ALL POINTS WHERE TRAFFIC WILL EGRESS/INGRESS A CONSTRUCTION SITE ONTO A PUBLIC ROAD OR ANY IMPERVIOUS SURFACES, SUCH AS PARKING LOTS.
2. INSTALL A NON-WOVEN GEOTEXTILE FABRIC PRIOR TO PLACING ANY STONE.
3. INSTALL A CULVERT PIPE ACROSS THE ENTRANCE WHEN NEEDED TO PROVIDE POSITIVE DRAINAGE.
4. THE ENTRANCE SHALL CONSIST OF 2-INCH TO 3-INCH D50 STONE PLACED AT A MINIMUM DEPTH OF 6-INCHES.
5. MINIMUM DIMENSIONS OF THE ENTRANCE SHALL BE 15-FEET WIDE BY 20-FEET LONG, AND MAY BE MODIFIED AS NECESSARY TO ACCOMMODATE SITE CONSTRAINTS.
6. THE EDGES OF THE ENTRANCE SHALL BE TAPERED OUT TOWARDS THE ROAD TO PREVENT TRACKING AT THE EDGE OF THE ENTRANCE.
7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN OR OTHER SEDIMENT TRAPPING STRUCTURE.
8. LIMESTONE MAY NOT BE USED FOR THE STONE PAD.

INSPECTION & MAINTENANCE

1. THE KEY TO FUNCTIONAL CONSTRUCTION ENTRANCES IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.
2. REGULAR INSPECTIONS OF CONSTRUCTION ENTRANCES SHALL BE CONDUCTED ONCE EVERY CALENDAR WEEK AND, AS RECOMMENDED, WITHIN 24-HOURS AFTER EACH RAINFALL EVEN THAT PRODUCES 1/2-INCH OR MORE OF PRECIPITATION.
3. DURING REGULAR INSPECTIONS, CHECK FOR MUD AND SEDIMENT BUILDUP AND PAD INTEGRITY. INSPECTION FREQUENCIES MAY NEED TO BE MORE FREQUENT DURING LONG PERIODS OF WET WEATHER.
4. RESHAPE THE STONE PAD AS NECESSARY FOR DRAINAGE AND RUNOFF CONTROL.
5. WASH OR REPLACE STONES AS NEEDED AND AS DIRECTED BY SITE INSPECTOR. THE STONE IN THE ENTRANCE SHOULD BE WASHED OR REPLACED WHENEVER THE ENTRANCE FAILS TO REDUCE THE AMOUNT OF MUD BEING CARRIED OFF-SITE BY VEHICLES. FREQUENT WASHING WILL EXTEND THE USEFUL LIFE OF STONE PAD.
6. IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO ADJACENT IMPERVIOUS SURFACES BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED WHEN THE WATER CAN BE DISCHARGED TO A SEDIMENT TRAP OR BASIN.
7. DURING MAINTENANCE ACTIVITIES, ANY BROKEN PAVEMENT SHOULD BE REPAIRED IMMEDIATELY.
8. CONSTRUCTION ENTRANCES SHOULD BE REMOVED AFTER THE SITE HAS REACHED FINAL STABILIZATION. PERMANENT VEGETATION SHOULD REPLACE AREAS FROM WHICH CONSTRUCTION ENTRANCES HAVE BEEN REMOVED, UNLESS AREA WILL BE CONVERTED TO AN IMPERVIOUS SURFACE TO SERVE POST-CONSTRUCTION.

SPECIFICATION	SIZE
ROCK PAD THICKNESS	6 INCHES
ROCK PAD WIDTH	24 FEET
ROCK PAD LENGTH	100 FEET
ROCK PAD STONE SIZE	D = 2-3 INCHES

PLAN SYMBOL

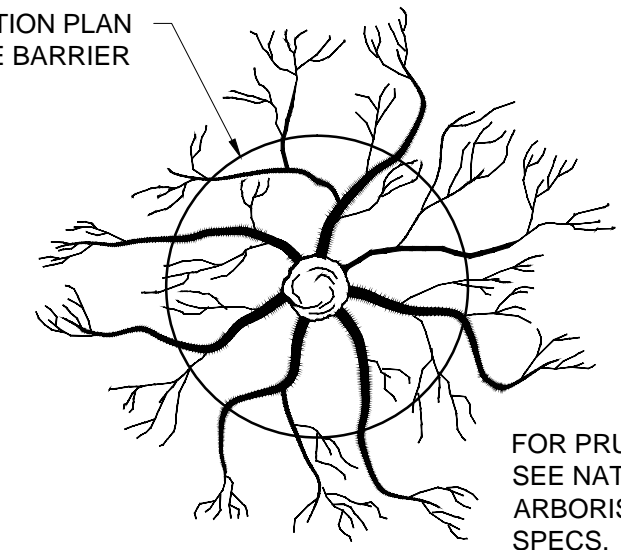


CONSTRUCTION ENTRANCE

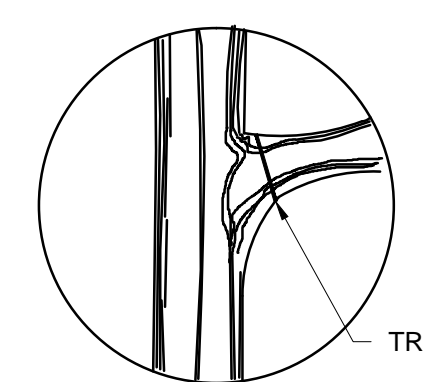
DETAIL E
VARIES

SCALE: NONE

SEE APPROVED TREE PRESERVATION PLAN FOR REQUIRED RADIUS OF TREE BARRIER

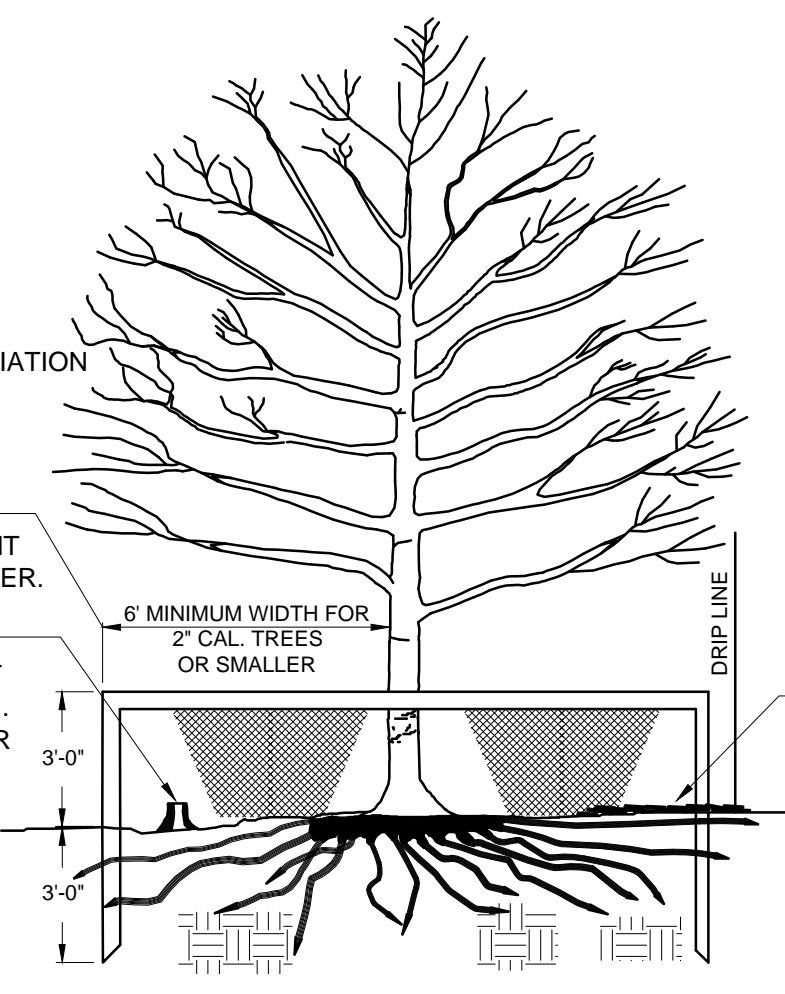


PLAN VIEW OF ROOT ZONE



ONE FOOT FOR EACH INCH OF TRUNK DIAMETER OR 1/2 HEIGHT OF TREE WHICHEVER IS GREATER.

DEAD TREES AND SCRUB OR UNDER GROWTH SHALL BE CUT FLUSH WITH ADJACENT GRADE. NO GRUBBING ALLOWED UNDER DRIP LINE.



TREE PROTECTION

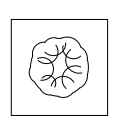
DETAIL F
VARIES

SCALE: NONE

NOTES:

1. REMOVE ALL BARRIERS UPON COMPLETION OF PROJECT.
2. SEDIMENT & EROSION CONTROL PLANS SHALL SHOW THE LOCATIONS OF ALL TREE PROTECTION FENCES

TREE PRESERVATION AND PROTECTION SYMBOL



Dec 09, 2015 - 1:34pm P:\Clients\ReWa\144953 - Richland Creek Sewer - CAD\2_Sheets\Civil\14495C-0008.dwg ajumper



SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: _____
CHECKED: _____
APPROVED: _____

EXTERNAL REFERENCES



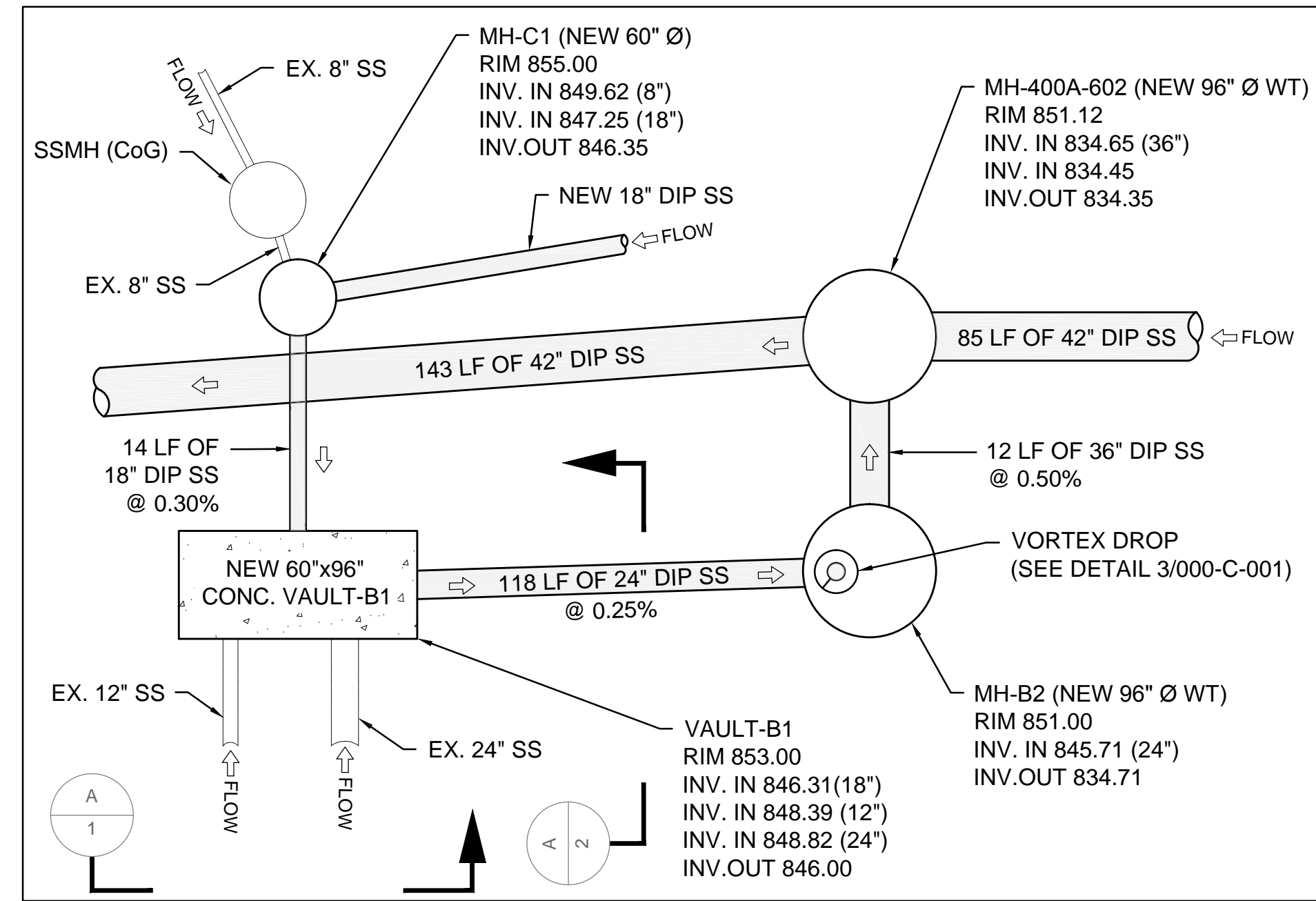
REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

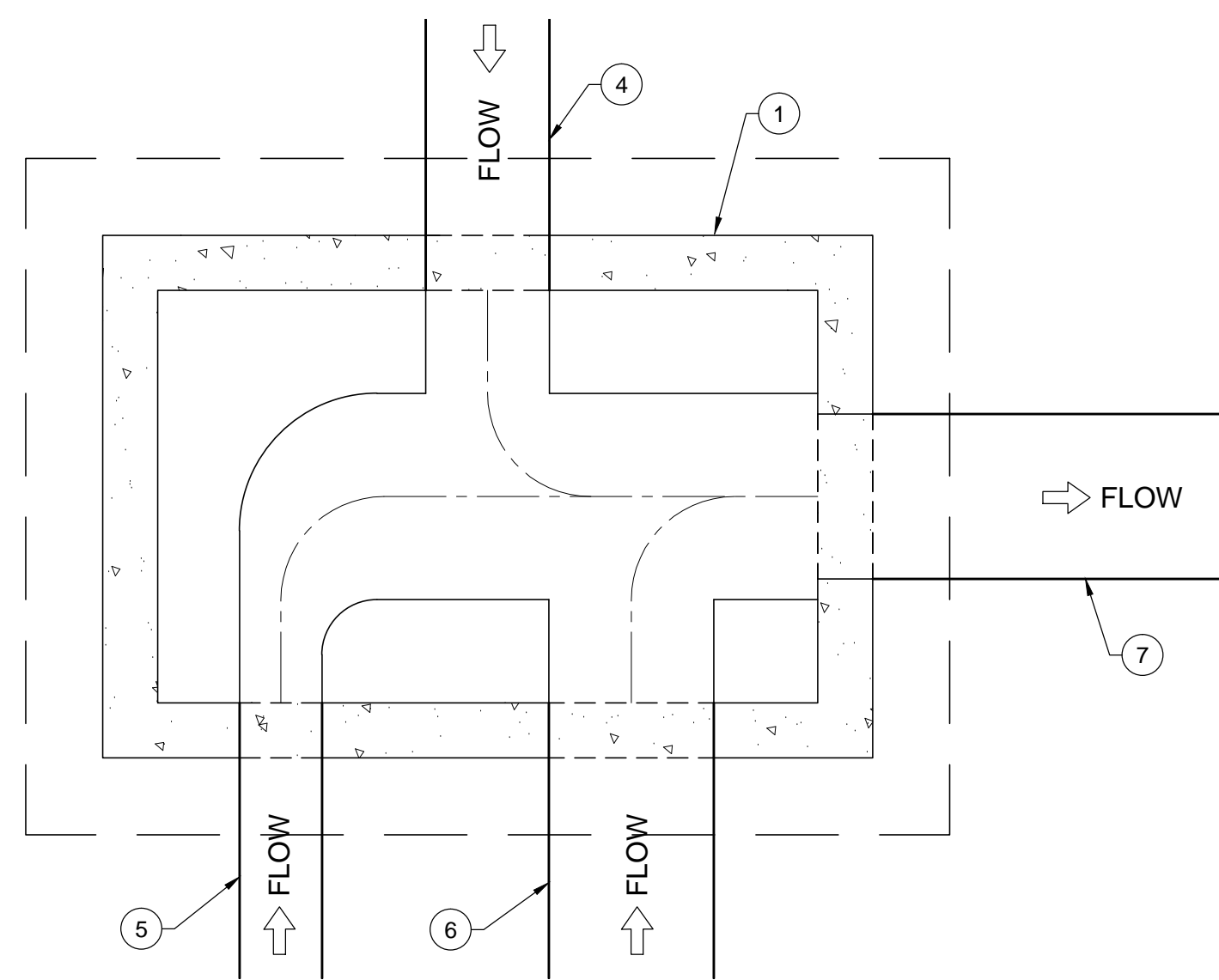


CIVIL
RICHLAND CREEK TRUNK SEWER
EROSION & SEDIMENT CONTROL
DETAILS 2

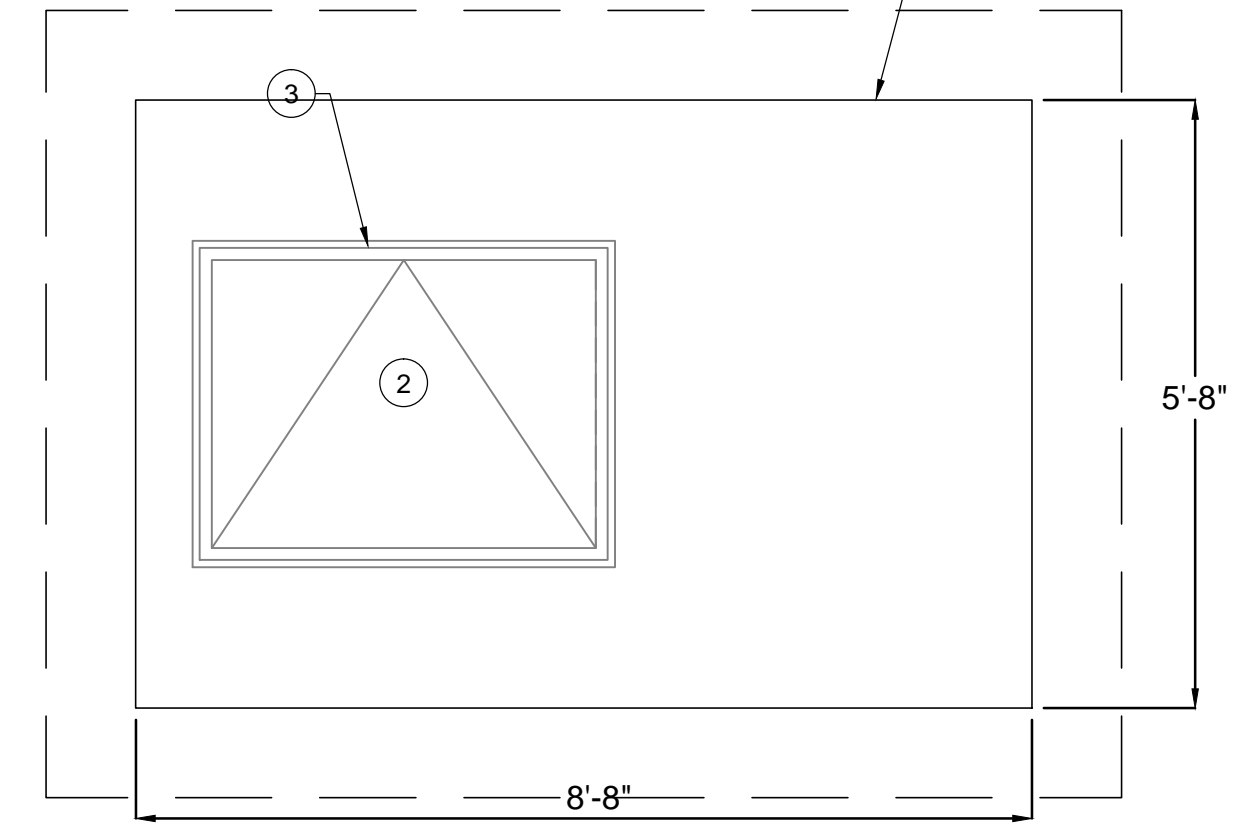
FILENAME	144495C-0008.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	000-C-008
SHEET NUMBER	11
OF	32



BLOWUP VIEW 1
PLAN
SCALE: NONE



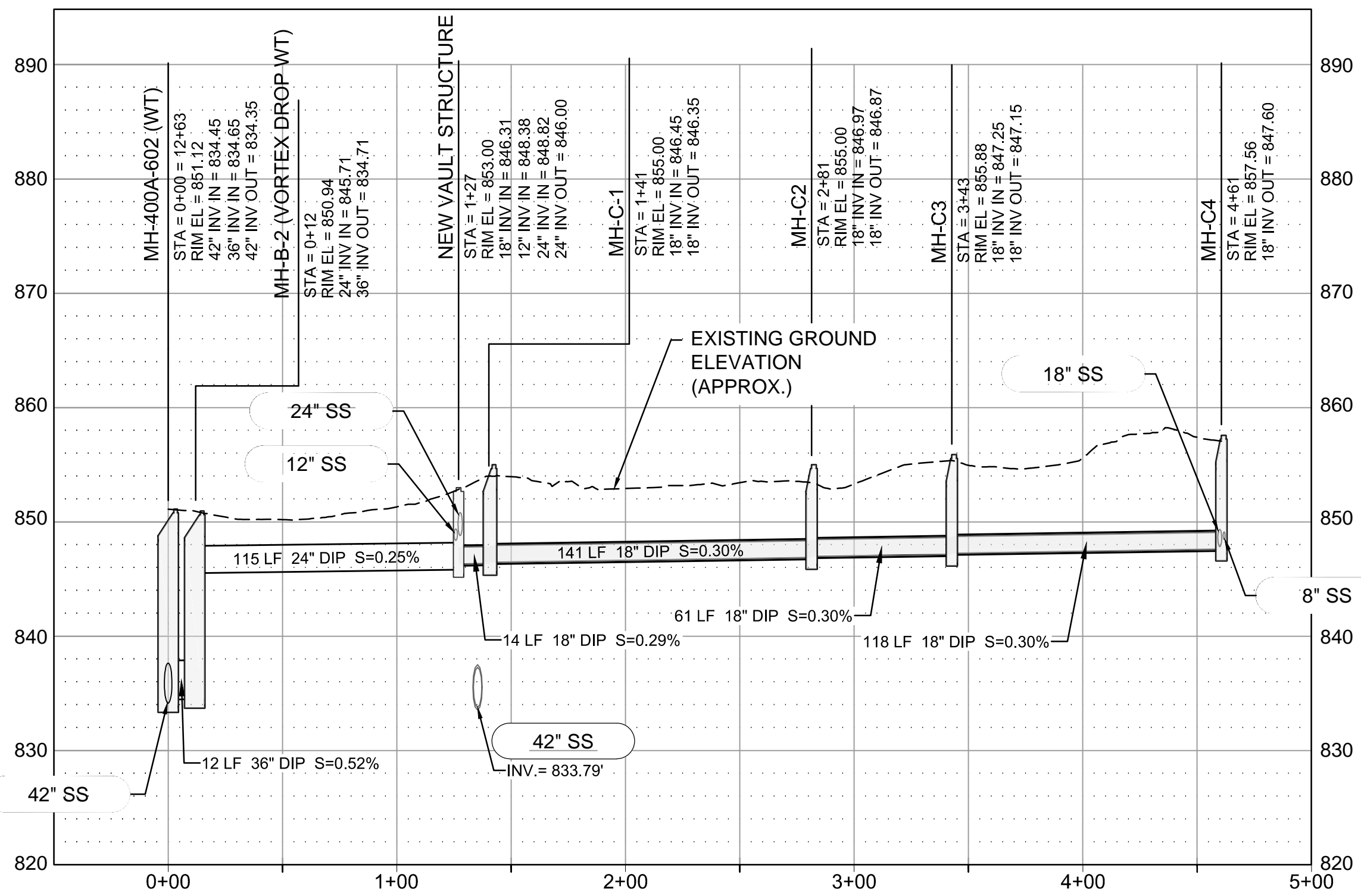
CONCRETE VAULT B1
BOTTOM PLAN
SCALE: 1/2" = 1'-0"



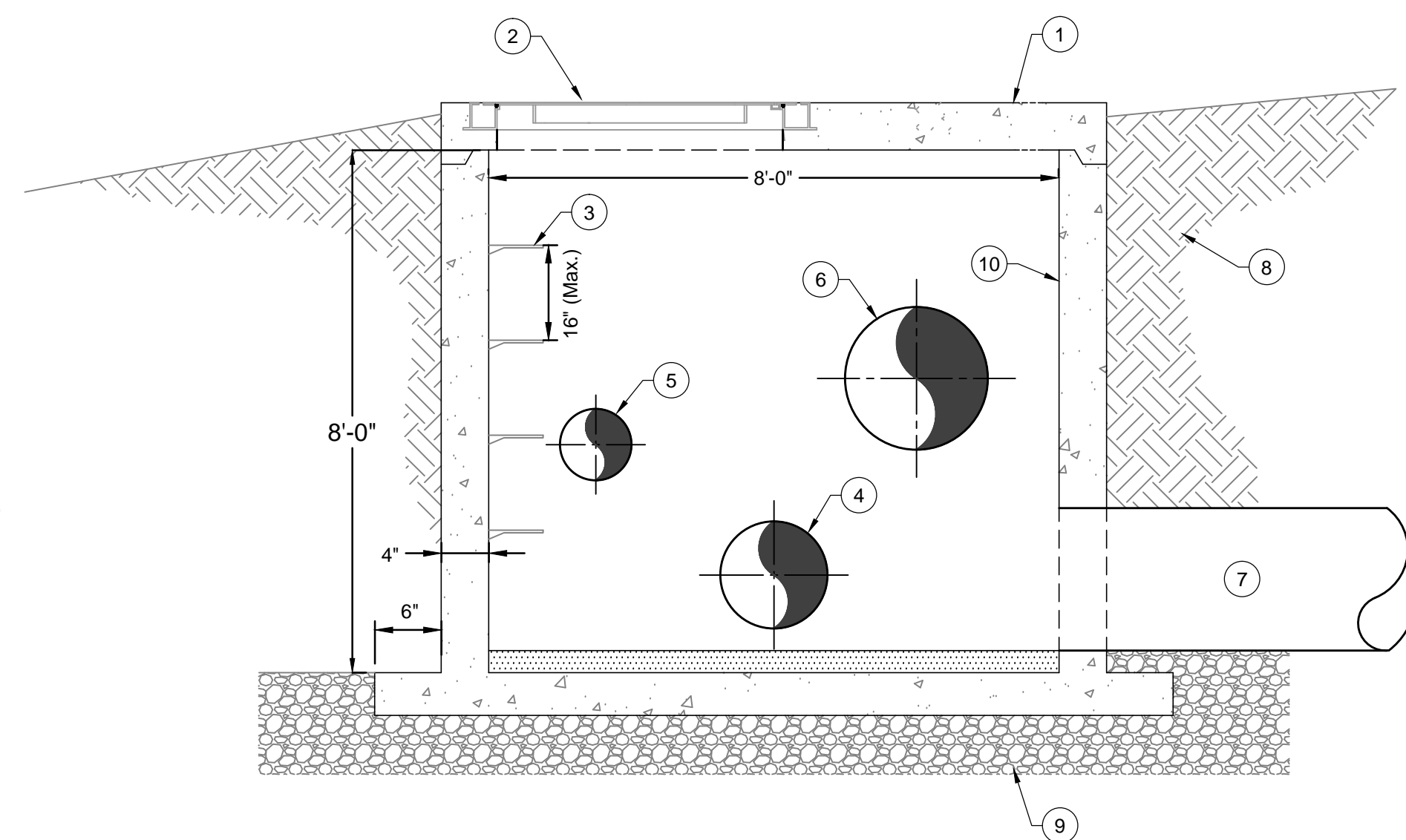
CONCRETE VAULT B1
TOP PLAN
SCALE: 1/2" = 1'-0"

KEYNOTES:

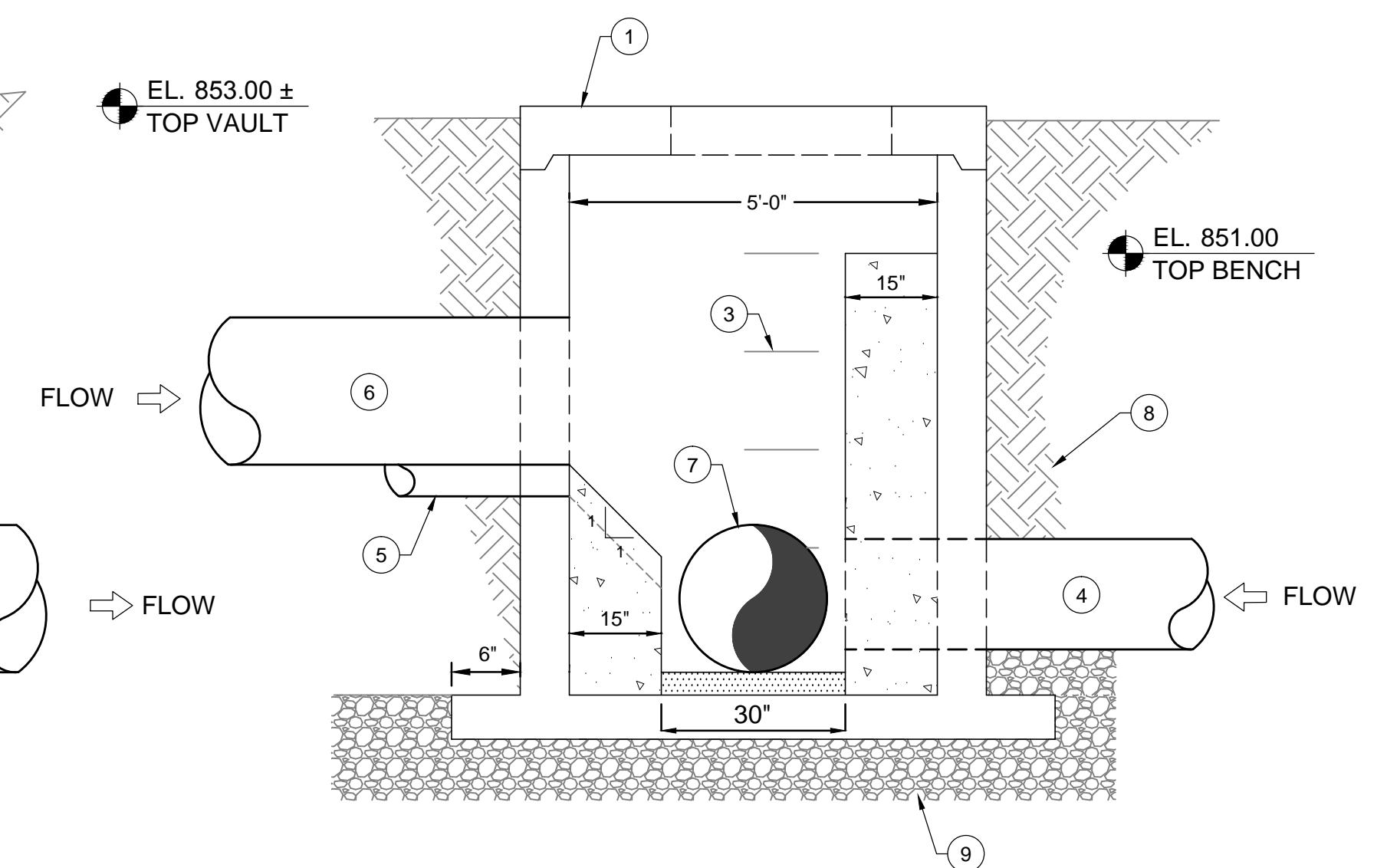
- ① 96"x 60" POLYMER CONCRETE VAULT
- ② 48"x 36" ALUMINUM SINGLE LEAF LOCKING HATCH (WT) w/ S.S. HINGES AND HARDWARE
- ③ 12" STEP (TYP.)
- ④ NEW 18" DIP SANITARY SEWER
- ⑤ NEW 12" DIP SANITARY SEWER
- ⑥ NEW 24" DIP SANITARY SEWER
- ⑦ NEW 24" DIP SANITARY SEWER
- ⑧ COMPACTED BACKFILL MATERIAL
- ⑨ CRUSHED STONE



PROFILE
HORIZ: 1" = 50' - VERT: 1" = 10'



CONCRETE VAULT B1
SECTION A-1
SCALE: 1/2" = 1'-0"



CONCRETE VAULT B1
SECTION A-2
SCALE: 1/2" = 1'-0"

Dec 09, 2015 - 1:37pm P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-0010.dwg



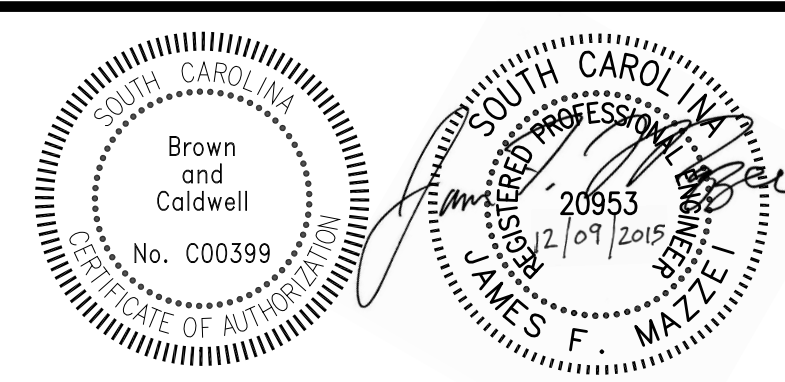
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

NO.	DATE	DESCRIPTION

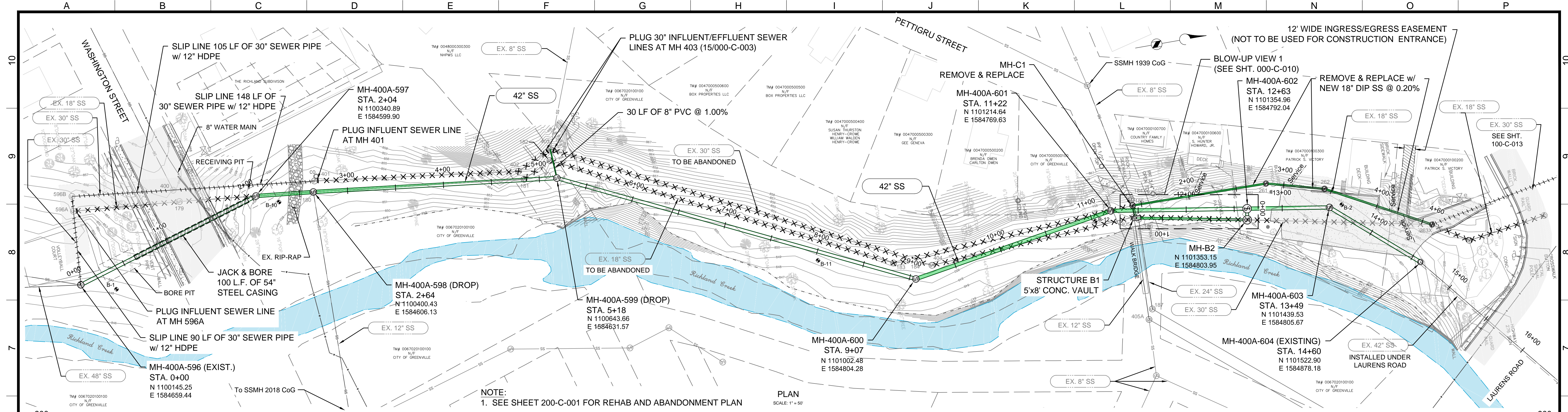


ZONE	REV.	DESCRIPTION	BY	DATE	APP.



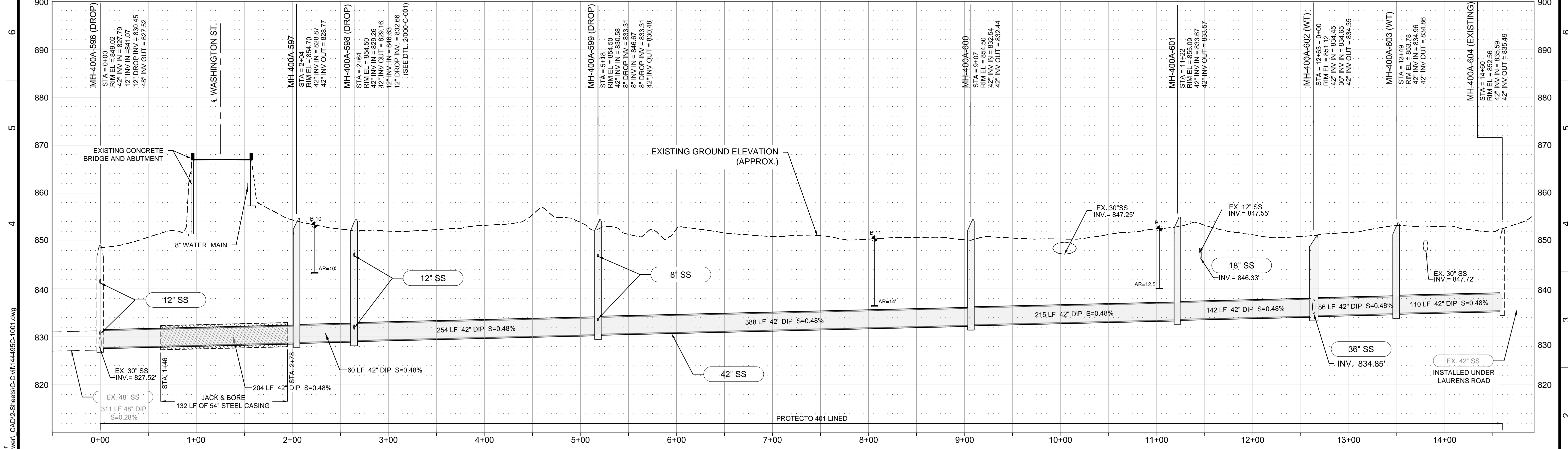
GENERAL
RICHLAND CREEK TRUNK SEWER
BLOW-UP CONNECTION VIEWS

FILENAME
144495C-0010.DWG
BC PROJECT NUMBER
144495
SCALE
AS SHOWN
DRAWING NUMBER
000-C-010
SHEET NUMBER
13 OF 32



NOTE:
1. SEE SHEET 200-C-001 FOR REHAB AND ABANDONMENT PLAN

PLAN
SCALE: 1" = 50'



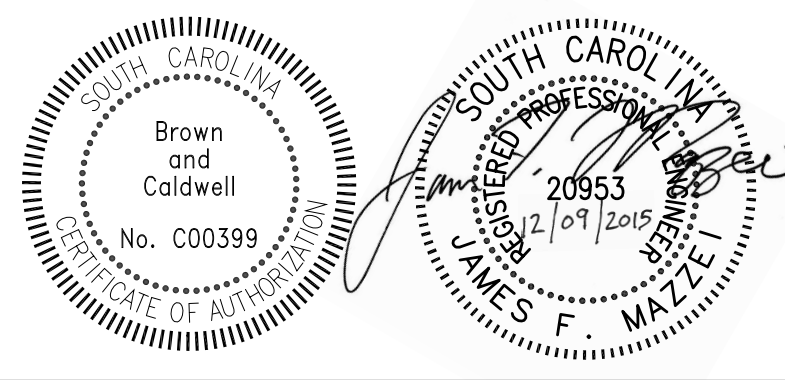
PROFILE
HORZ: 1" = 50' VERT: 1" = 10'

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-879-9701

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES



ZONE	REV.	DESCRIPTION	BY	DATE	APP.

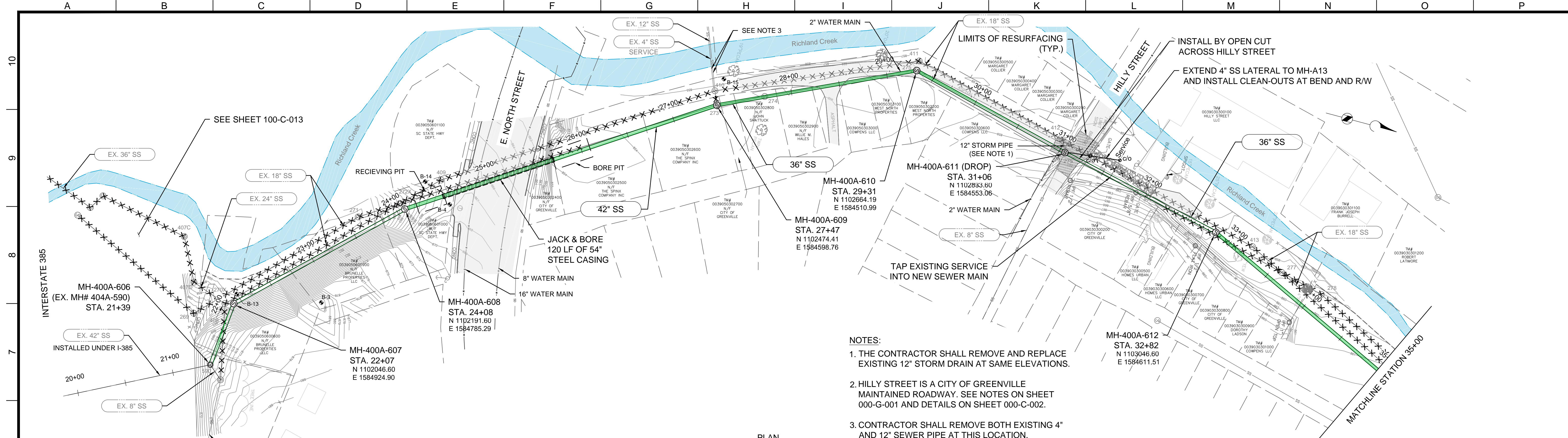


CIVIL
RICHLAND CREEK TRUNK SEWER

PLAN & PROFILE
STA. 0+00 TO STA. 14+60

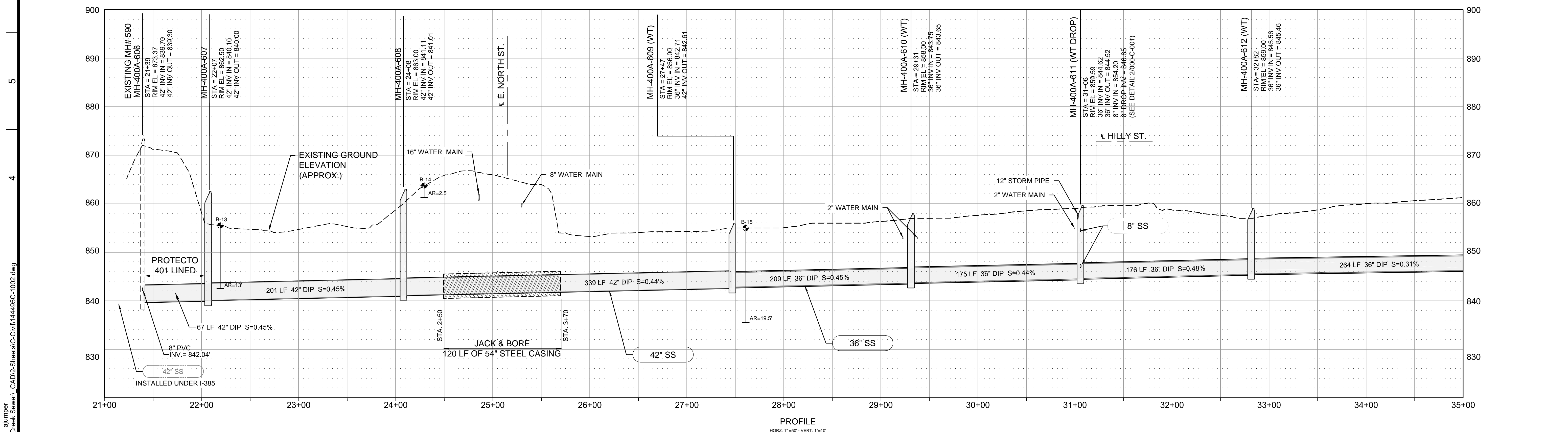
FILENAME	144495C-1001.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-001
SHEET NUMBER	14
OF	32

Dec 09, 2015 - 1:48pm P:\Clients\ReWa\144495 - Richland Creek Sewer\CAD\2-Sheets\Civil\144495C-1001.dwg



PLAN
SCALE: 1" = 50'

NOTES:
 1. THE CONTRACTOR SHALL REMOVE AND REPLACE EXISTING 12" STORM DRAIN AT SAME ELEVATIONS.
 2. HILLY STREET IS A CITY OF GREENVILLE MAINTAINED ROADWAY. SEE NOTES ON SHEET 000-G-001 AND DETAILS ON SHEET 000-C-002.
 3. CONTRACTOR SHALL REMOVE BOTH EXISTING 4" AND 12" SEWER PIPE AT THIS LOCATION.

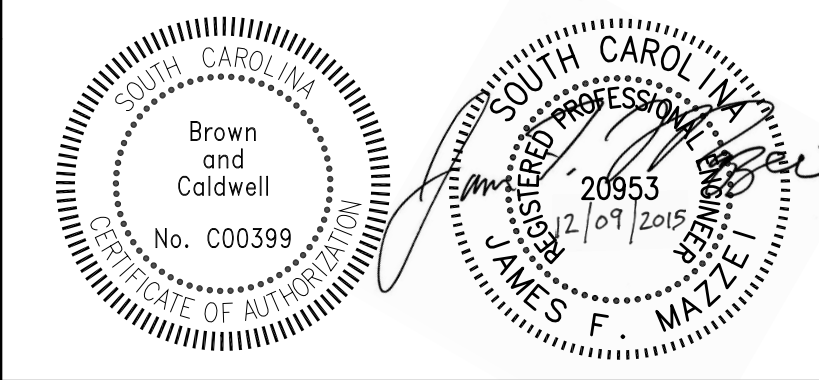


PROFILE
HORIZ: 1" = 50' VERT: 1" = 10'

Brown and Caldwell
 Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
 DRAWN: A. JUMPER
 CHECKED: J. EPTING
 CHECKED: J. MAZZEI
 APPROVED: J. MAZZEI

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)	EXTERNAL REFERENCES



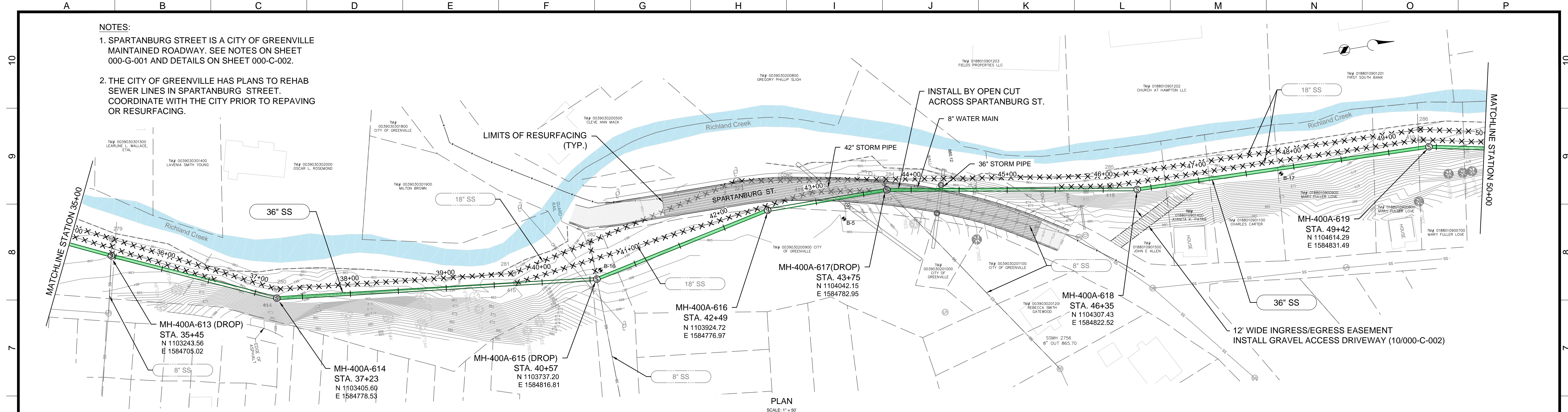
REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
RICHLAND CREEK TRUNK SEWER
 PLAN & PROFILE
 STA. 21+40 TO STA. 35+00

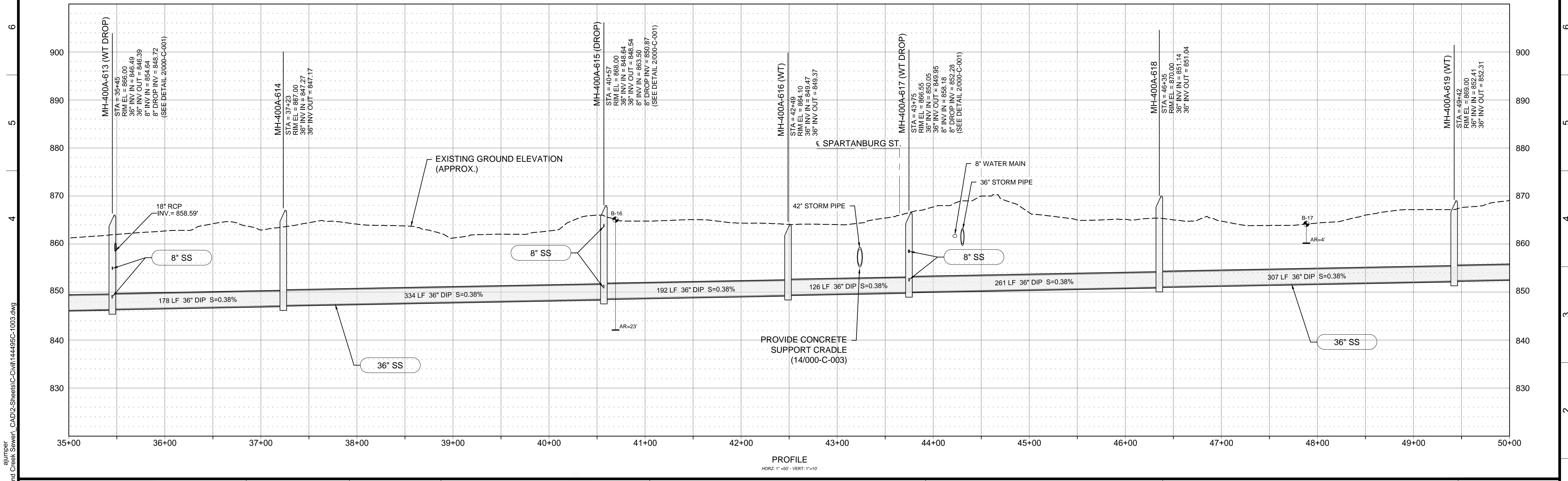
FILENAME	144495C-1002.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-002
SHEET NUMBER	15 OF 32

alumper
 Dec 09, 2015 - 1:53pm
 P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-1002.dwg



NOTES:
 1. SPARTANBURG STREET IS A CITY OF GREENVILLE MAINTAINED ROADWAY. SEE NOTES ON SHEET 000-G-001 AND DETAILS ON SHEET 000-C-002.
 2. THE CITY OF GREENVILLE HAS PLANS TO REHAB SEWER LINES IN SPARTANBURG STREET. COORDINATE WITH THE CITY PRIOR TO REPAVING OR RESURFACING.

PLAN
SCALE: 1" = 50'



PROFILE
HORIZ: 1" = 50' - VERT: 1" = 10'

Brown and Caldwell
 Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
 PROJECT MANAGER

APPROVED: _____ DATE: _____
 BROWN AND CALDWELL

DESIGNED:	J. EPTING
DRAWN:	A. JUMPER
CHECKED:	J. EPTING
CHECKED:	J. MAZZEI
APPROVED:	J. MAZZEI

EXTERNAL REFERENCES

Professional Engineer Seal:
 SOUTH CAROLINA
 Brown and Caldwell
 No. C00399
 20953
 2/09/2015
 JAMES F. MAZZEI

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

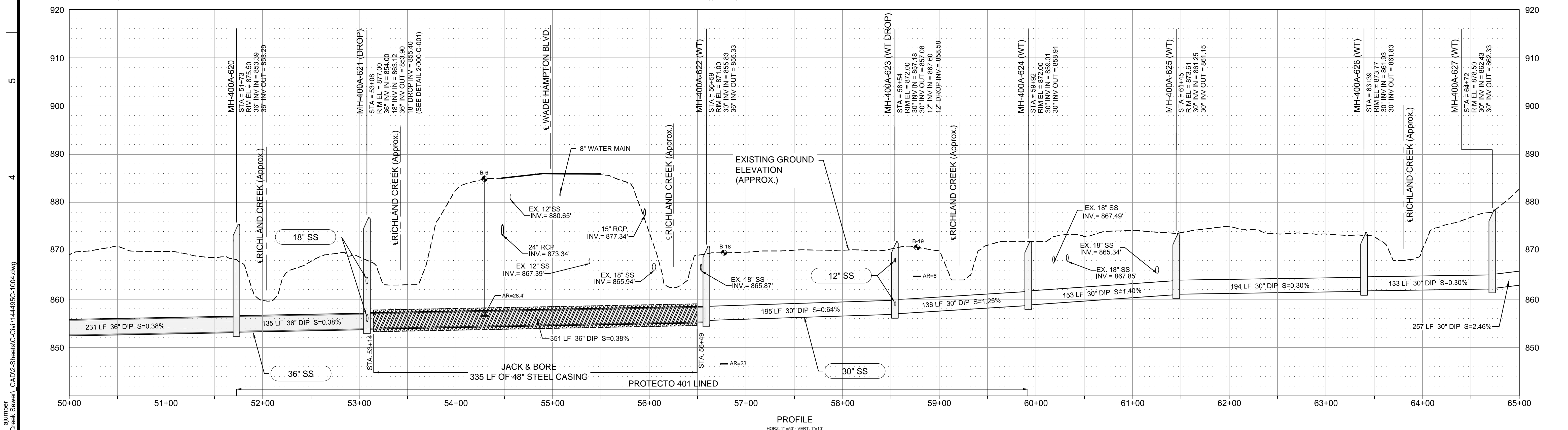
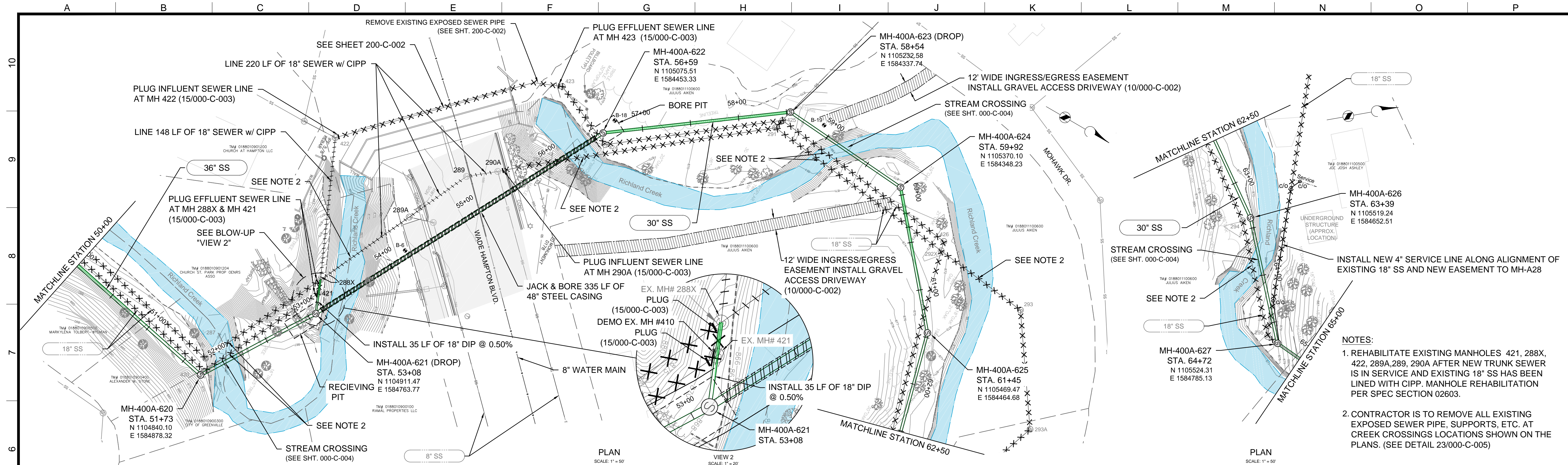


CIVIL
 RICHLAND CREEK TRUNK SEWER

PLAN & PROFILE
 STA. 35+00 TO STA. 50+00

FILENAME	144495C-1003.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-003
SHEET NUMBER	16 OF 32

alumper
 Dec 09, 2015 - 1:55pm
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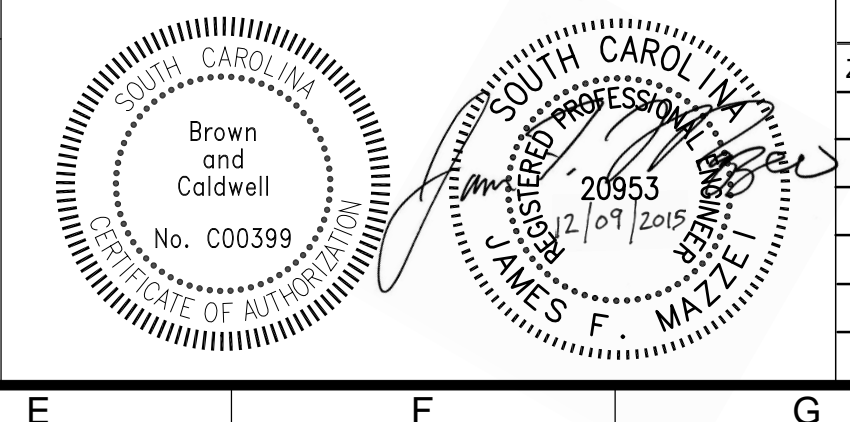
- NOTES:**
- REHABILITATE EXISTING MANHOLES 421, 288X, 422, 289A, 289, 290A AFTER NEW TRUNK SEWER IS IN SERVICE AND EXISTING 18" SS HAS BEEN LINED WITH CIPP. MANHOLE REHABILITATION PER SPEC SECTION 02603.
 - CONTRACTOR IS TO REMOVE ALL EXISTING EXPOSED SEWER PIPE, SUPPORTS, ETC. AT CREEK CROSSINGS LOCATIONS SHOWN ON THE PLANS. (SEE DETAIL 23/000-C-005)

Brown and Caldwell
 Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
 DRAWN: A. JUMPER
 CHECKED: J. EPTING
 CHECKED: J. MAZZEI
 APPROVED: J. MAZZEI

PROJECT MANAGER
 DATE:
 DATE:

EXTERNAL REFERENCES



REVISIONS

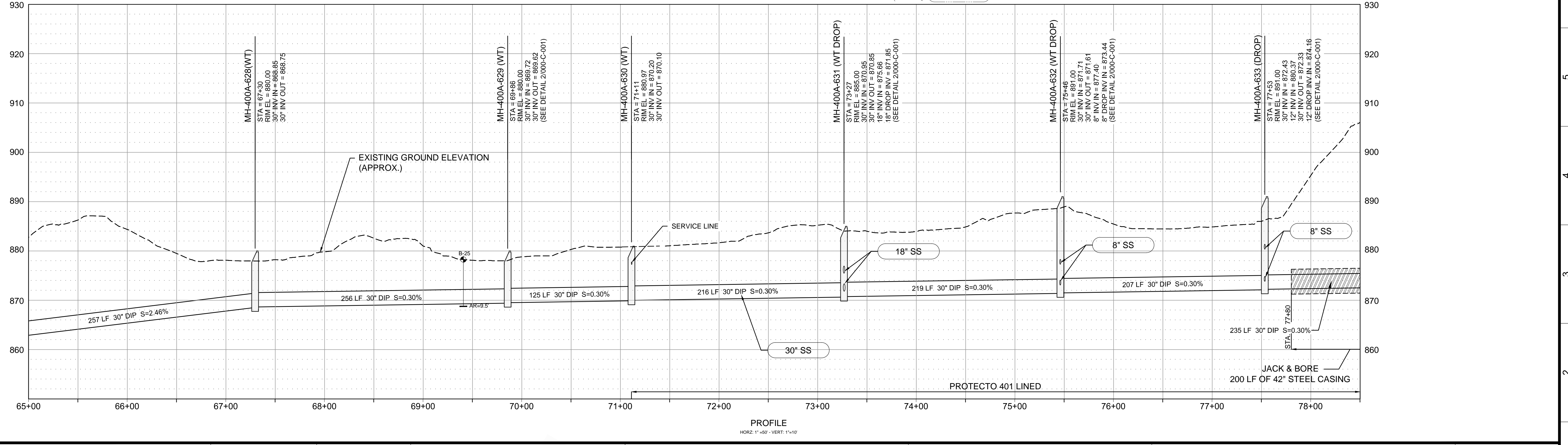
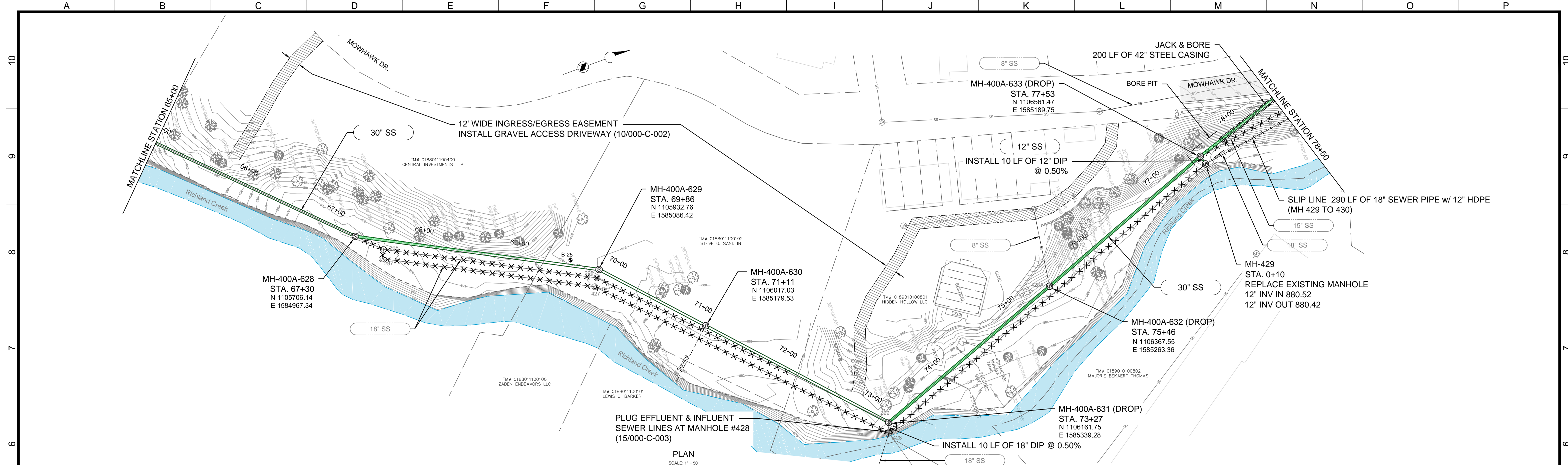
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

ReWa
 renewable water resources

CIVIL
RICHLAND CREEK TRUNK SEWER

PLAN & PROFILE
 STA. 50+00 TO STA. 65+00

FILENAME 144495C-1004.DWG
BC PROJECT NUMBER 144495
SCALE AS SHOWN
DRAWING NUMBER 100-C-004
SHEET NUMBER 17
OF 32



Brown and Caldwell
 Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
 PROJECT MANAGER

APPROVED: _____ DATE: _____
 BROWN AND CALDWELL

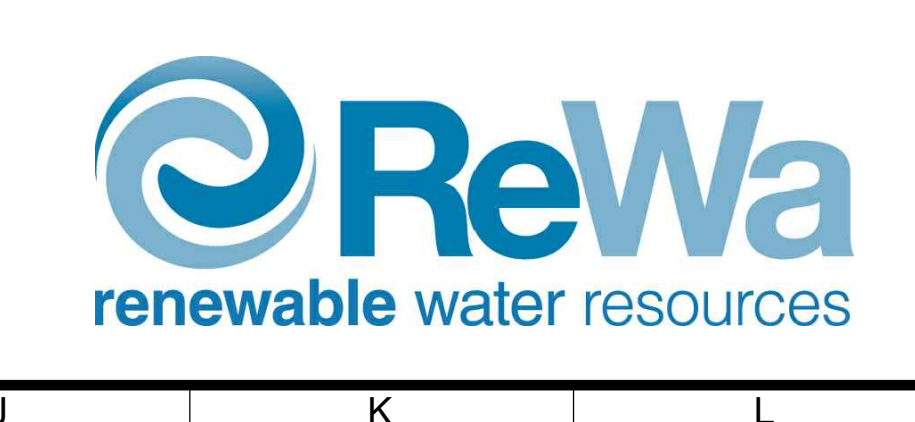
LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
 DRAWN: A. JUMPER
 CHECKED: J. EPTING
 CHECKED: J. MAZZEI
 APPROVED: J. MAZZEI

EXTERNAL REFERENCES

Professional Engineer Seal:
 SOUTH CAROLINA
 James F. Mazzei
 No. 000399
 20953
 2/09/2015

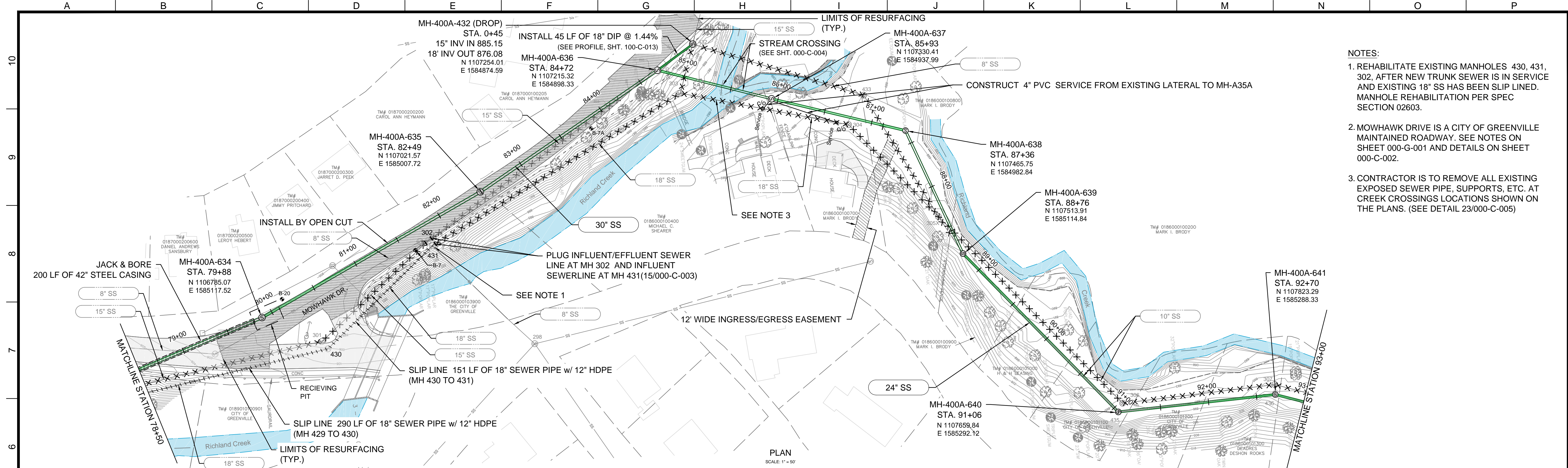
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



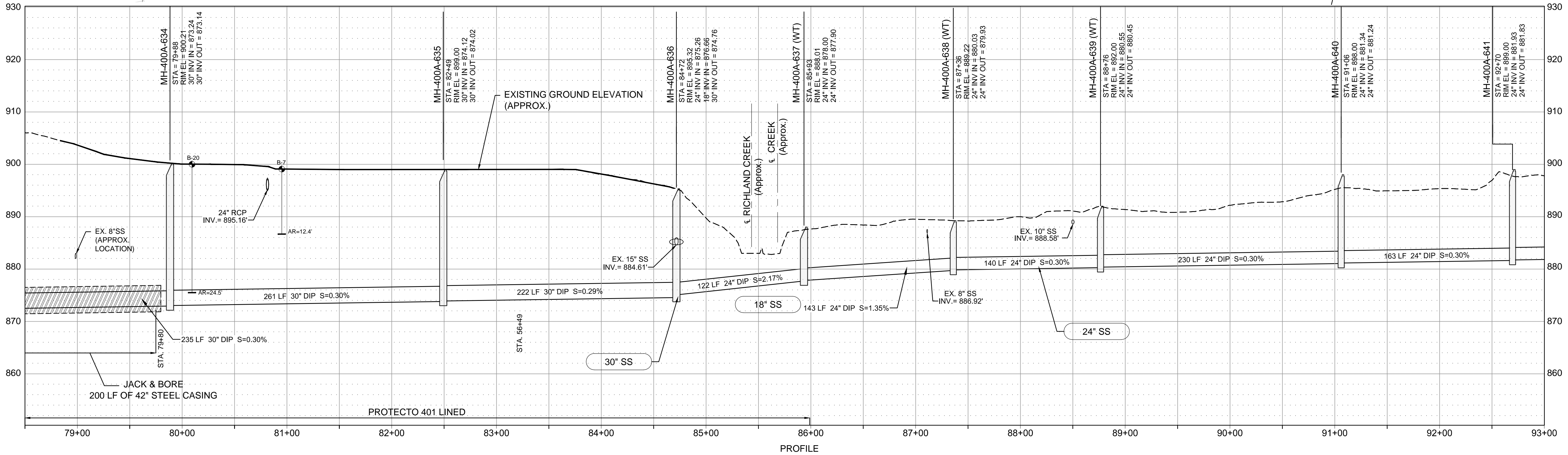
CIVIL
RICHLAND CREEK TRUNK SEWER
 PLAN & PROFILE
 STA. 65+00 TO STA. 78+50

FILENAME 144495C-1005.DWG
BC PROJECT NUMBER 144495
SCALE AS SHOWN
DRAWING NUMBER 100-C-005
SHEET NUMBER 18 OF 32

alumper
 Dec 09, 2015 - 2:00pm
 P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-1005.dwg



- NOTES:
- REHABILITATE EXISTING MANHOLES 430, 431, 302, AFTER NEW TRUNK SEWER IS IN SERVICE AND EXISTING 18" SS HAS BEEN SLIP LINED. MANHOLE REHABILITATION PER SPEC SECTION 02603.
 - MOWHAWK DRIVE IS A CITY OF GREENVILLE MAINTAINED ROADWAY. SEE NOTES ON SHEET 000-G-001 AND DETAILS ON SHEET 000-C-002.
 - CONTRACTOR IS TO REMOVE ALL EXISTING EXPOSED SEWER PIPE, SUPPORTS, ETC. AT CREEK CROSSINGS LOCATIONS SHOWN ON THE PLANS. (SEE DETAIL 23/000-C-005)



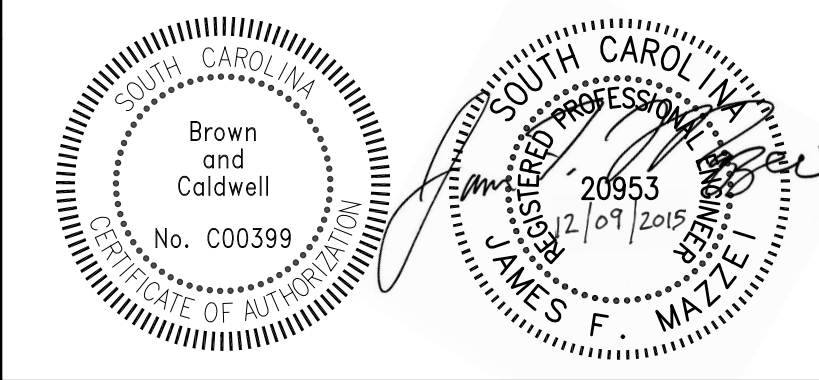
alumper
 Dec 09, 2015 - 2:02pm
 P:\Clients\ReWa\14495C - Richland Creek Sewer\ CAD\2-Sheets\Civil\14495C-1006.dwg

Brown and Caldwell
 Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
 DRAWN: A. JUMPER
 CHECKED: J. EPTING
 CHECKED: J. MAZZEI
 APPROVED: J. MAZZEI

EXTERNAL REFERENCES



REVISIONS

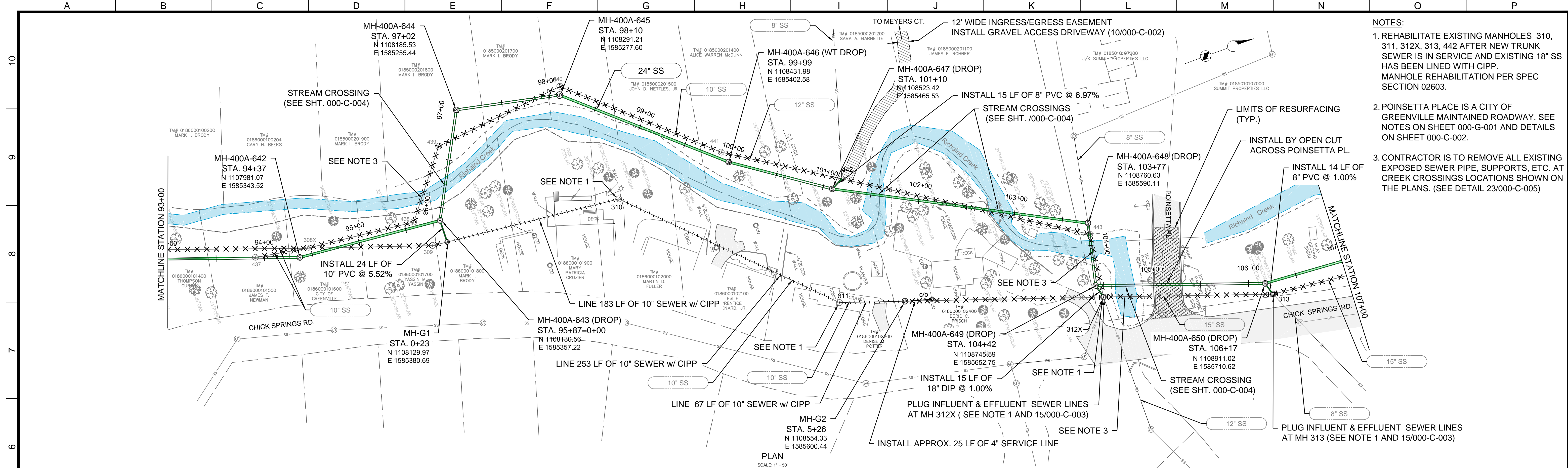
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



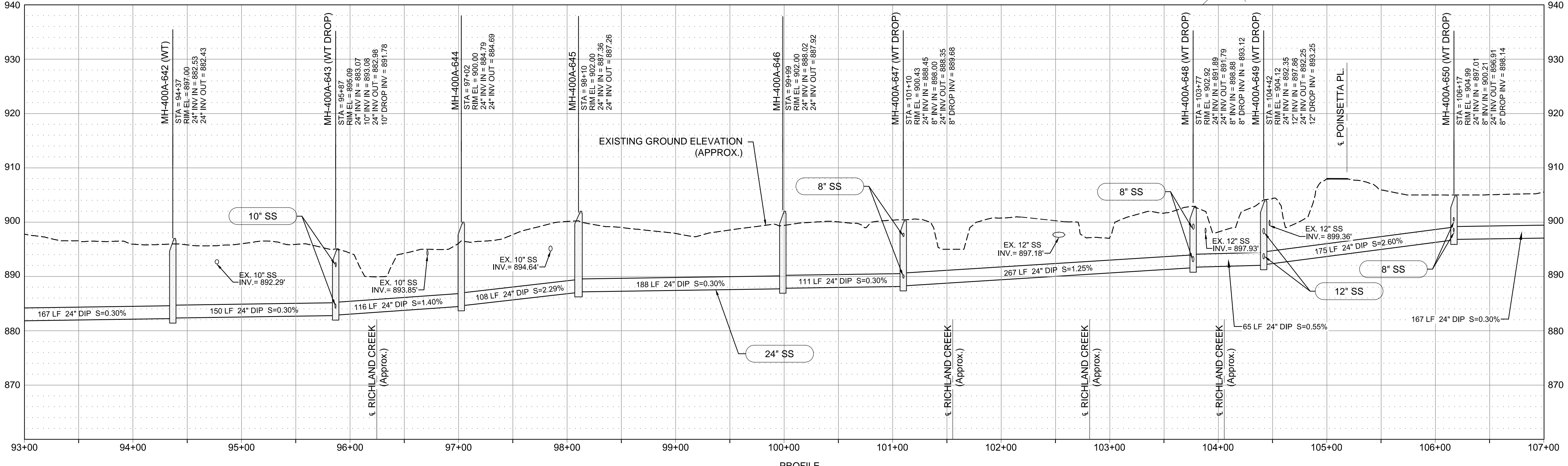
CIVIL
 RICHLAND CREEK TRUNK SEWER

PLAN & PROFILE
 STA. 78+50 TO STA. 93+00

FILENAME	144495C-1006.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-006
SHEET NUMBER	19
OF	32



- NOTES:
- REHABILITATE EXISTING MANHOLES 310, 311, 312X, 313, 442 AFTER NEW TRUNK SEWER IS IN SERVICE AND EXISTING 18\"/>
 - POINSETTA PLACE IS A CITY OF GREENVILLE MAINTAINED ROADWAY. SEE NOTES ON SHEET 000-G-001 AND DETAILS ON SHEET 000-C-002.
 - CONTRACTOR IS TO REMOVE ALL EXISTING EXPOSED SEWER PIPE, SUPPORTS, ETC. AT CREEK CROSSINGS LOCATIONS SHOWN ON THE PLANS. (SEE DETAIL 23/000-C-005)



aljumper
 Dec 09, 2015 - 2:04pm
 P:\Clients\ReWa\14495C - Richland Creek Sewer\ CAD\2-Sheets\Civil\14495C-1007.dwg

Brown and Caldwell
 Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
 PROJECT MANAGER

APPROVED: _____ DATE: _____
 BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2\"/>	EXTERNAL REFERENCES
DESIGNED: J. EPTING	
DRAWN: A. JUMPER	
CHECKED: J. EPTING	
CHECKED: J. MAZZEI	
APPROVED: J. MAZZEI	

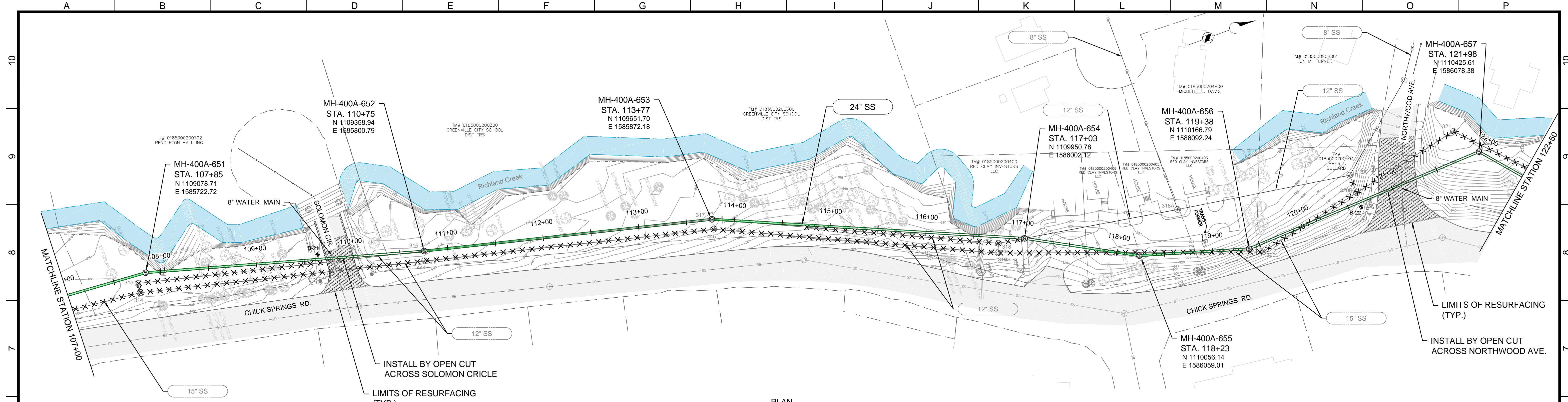
South Carolina Professional Seal
 Brown and Caldwell
 No. C00399
 20953
 2/09/2015
 JAMES F. MAZZEI
 LICENSED PROFESSIONAL ENGINEER

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

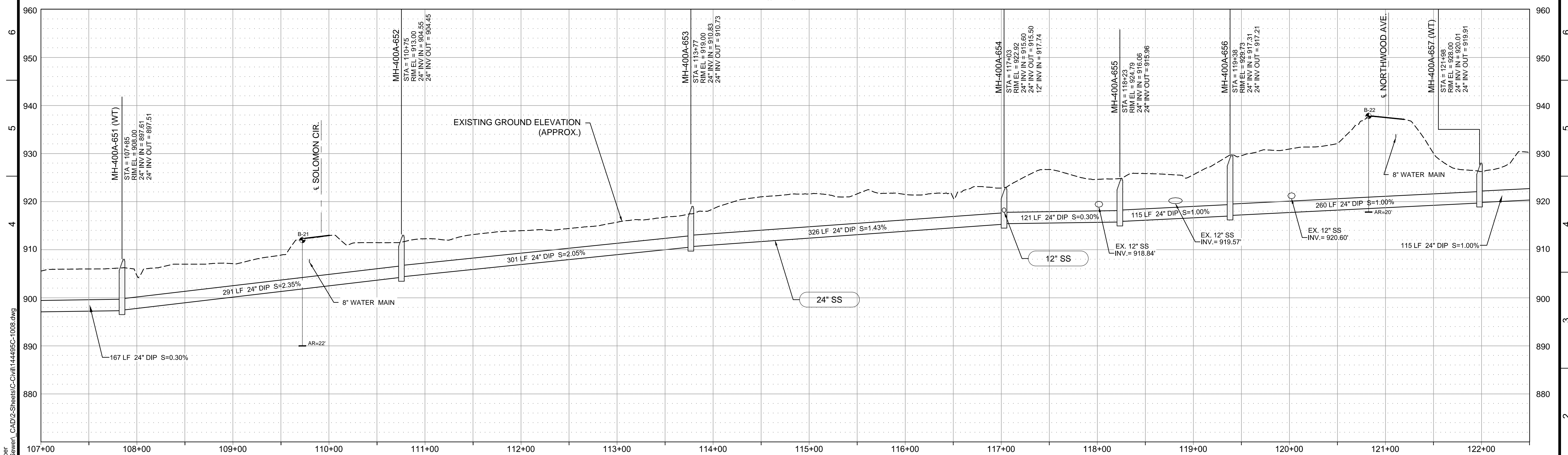
ReWa
 renewable water resources

CIVIL
RICHLAND CREEK TRUNK SEWER
 PLAN & PROFILE
 STA. 93+00 TO STA. 107+00

FILENAME	144495C-1007.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-007
SHEET NUMBER	20 OF 32



PLAN
SCALE: 1" = 50'



PROFILE
HORZ. 1" = 50' - VERT. 1" = 10'

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

PROJECT MANAGER: _____ DATE: _____
APPROVED: BROWN AND CALDWELL DATE: _____

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES

Professional Engineer Seal for James F. Mazzei, No. C00399, State of South Carolina, Commission Expires 2/09/2015.

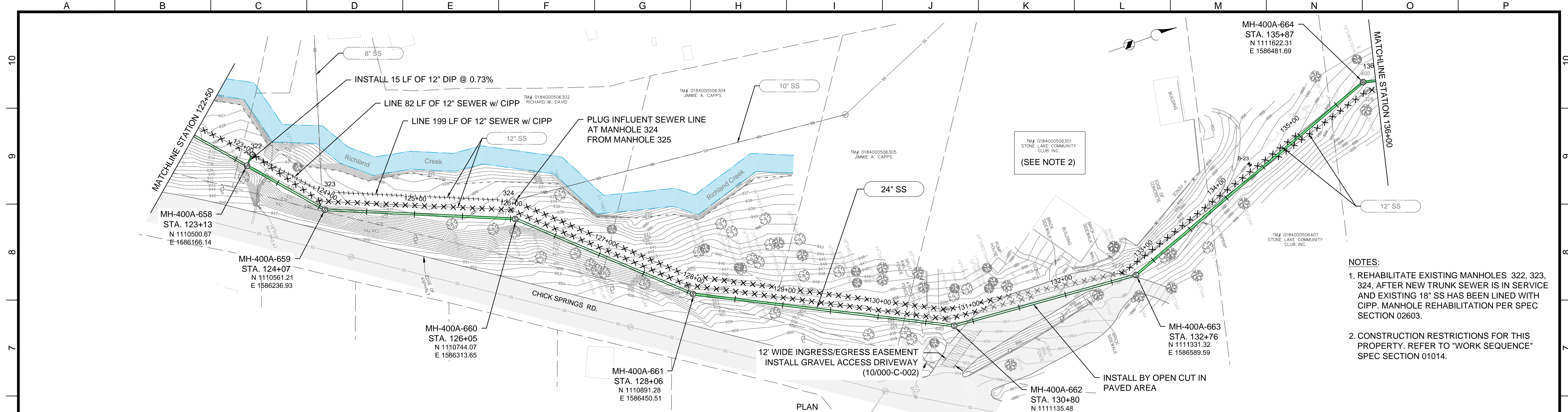
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



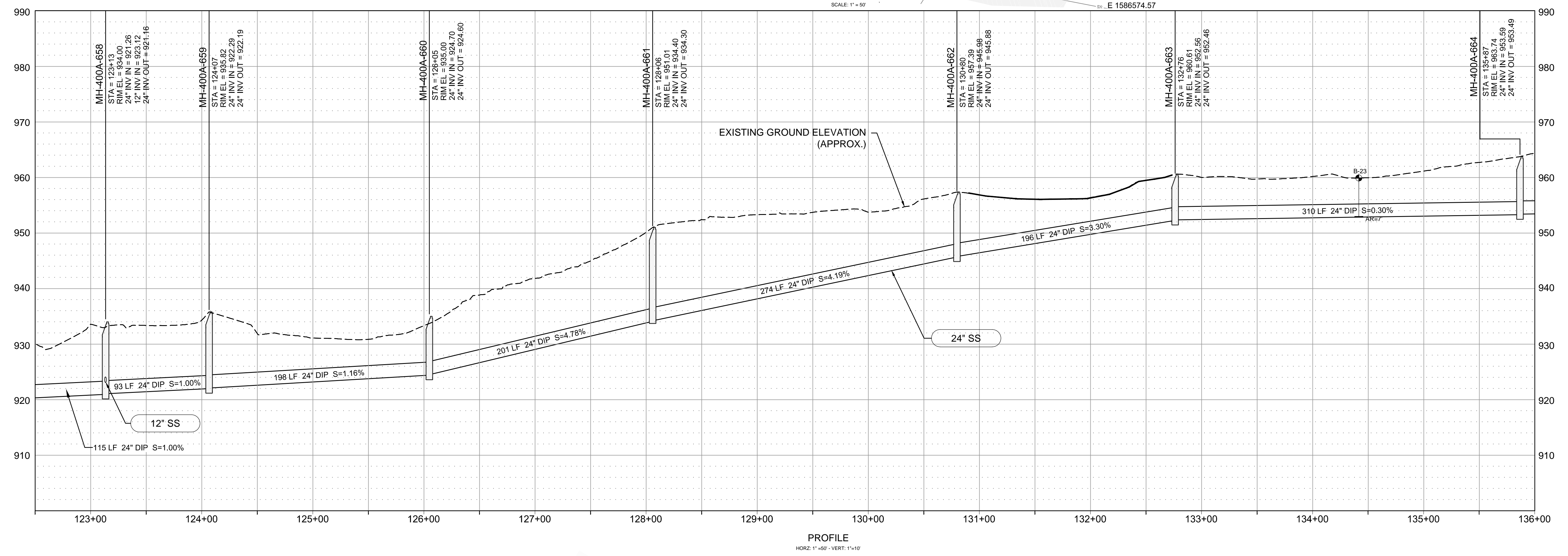
CIVIL
RICHLAND CREEK TRUNK SEWER
PLAN & PROFILE
STA. 107+00 TO STA. 122+50

FILENAME	144495C-1008.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-008
SHEET NUMBER	21 OF 32

alumper Dec 09, 2015 - 2:07 pm P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-1008.dwg



- NOTES:
- REHABILITATE EXISTING MANHOLES 322, 323, 324, AFTER NEW TRUNK SEWER IS IN SERVICE AND EXISTING 18" SS HAS BEEN LINED WITH CIPP. MANHOLE REHABILITATION PER SPEC SECTION 02603.
 - CONSTRUCTION RESTRICTIONS FOR THIS PROPERTY. REFER TO "WORK SEQUENCE" SPEC SECTION 01014.

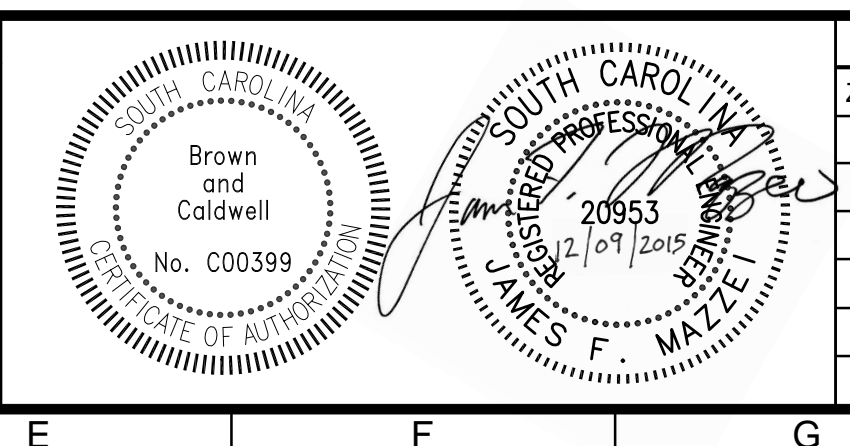


Brown and Caldwell
 Environmental Engineering and Consulting
 250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
 PROJECT MANAGER

APPROVED: _____ DATE: _____
 BROWN AND CALDWELL

DESIGNED:	J. EPTING
DRAWN:	A. JUMPER
CHECKED:	J. EPTING
CHECKED:	J. MAZZEI
APPROVED:	J. MAZZEI



ZONE	REV.	DESCRIPTION	BY	DATE	APP.

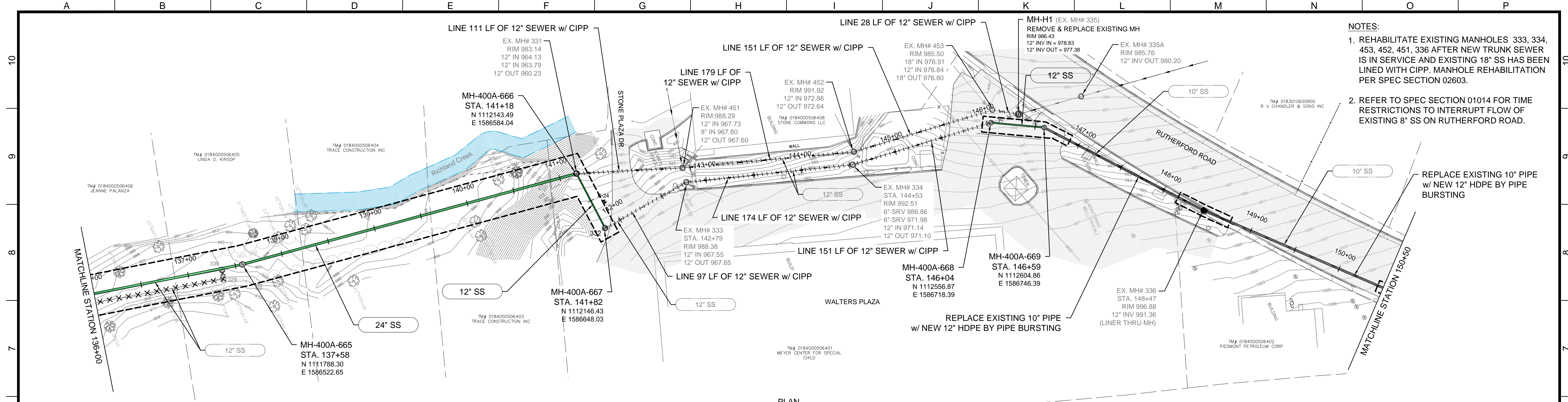


CIVIL
RICHLAND CREEK TRUNK SEWER

PLAN & PROFILE
 STA. 122+00 TO STA. 136+00

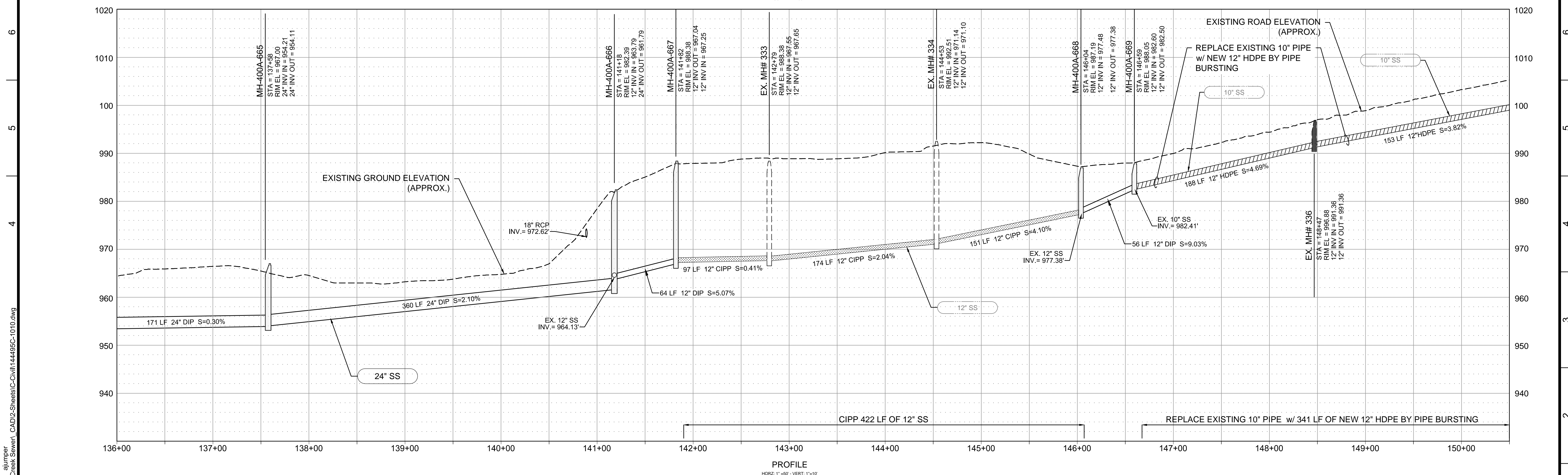
FILENAME	144495C-1009.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-009
SHEET NUMBER	22
OF	32

alumper
 Dec 09, 2015 - 1:50pm
 P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-1009.dwg



- NOTES:**
- REHABILITATE EXISTING MANHOLES 333, 334, 453, 452, 451, 336 AFTER NEW TRUNK SEWER IS IN SERVICE AND EXISTING 18" SS HAS BEEN LINED WITH CIPP. MANHOLE REHABILITATION PER SPEC SECTION 02603.
 - REFER TO SPEC SECTION 01014 FOR TIME RESTRICTIONS TO INTERRUPT FLOW OF EXISTING 8" SS ON RUTHERFORD ROAD.

PLAN
SCALE: 1" = 50'



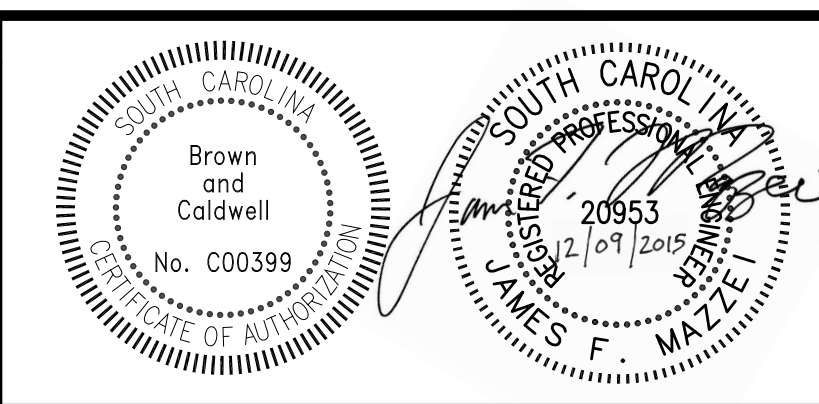
PROFILE
HORZ: 1" = 50' - VERT: 1" = 10'

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



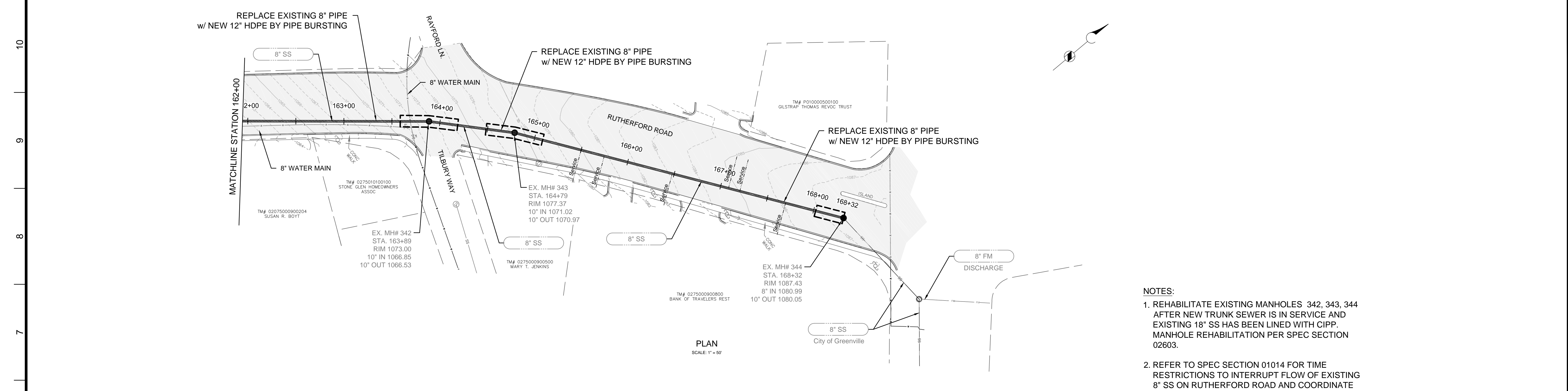
CIVIL
RICHLAND CREEK TRUNK SEWER

PLAN & PROFILE
STA. 136+00 TO STA. 150+50

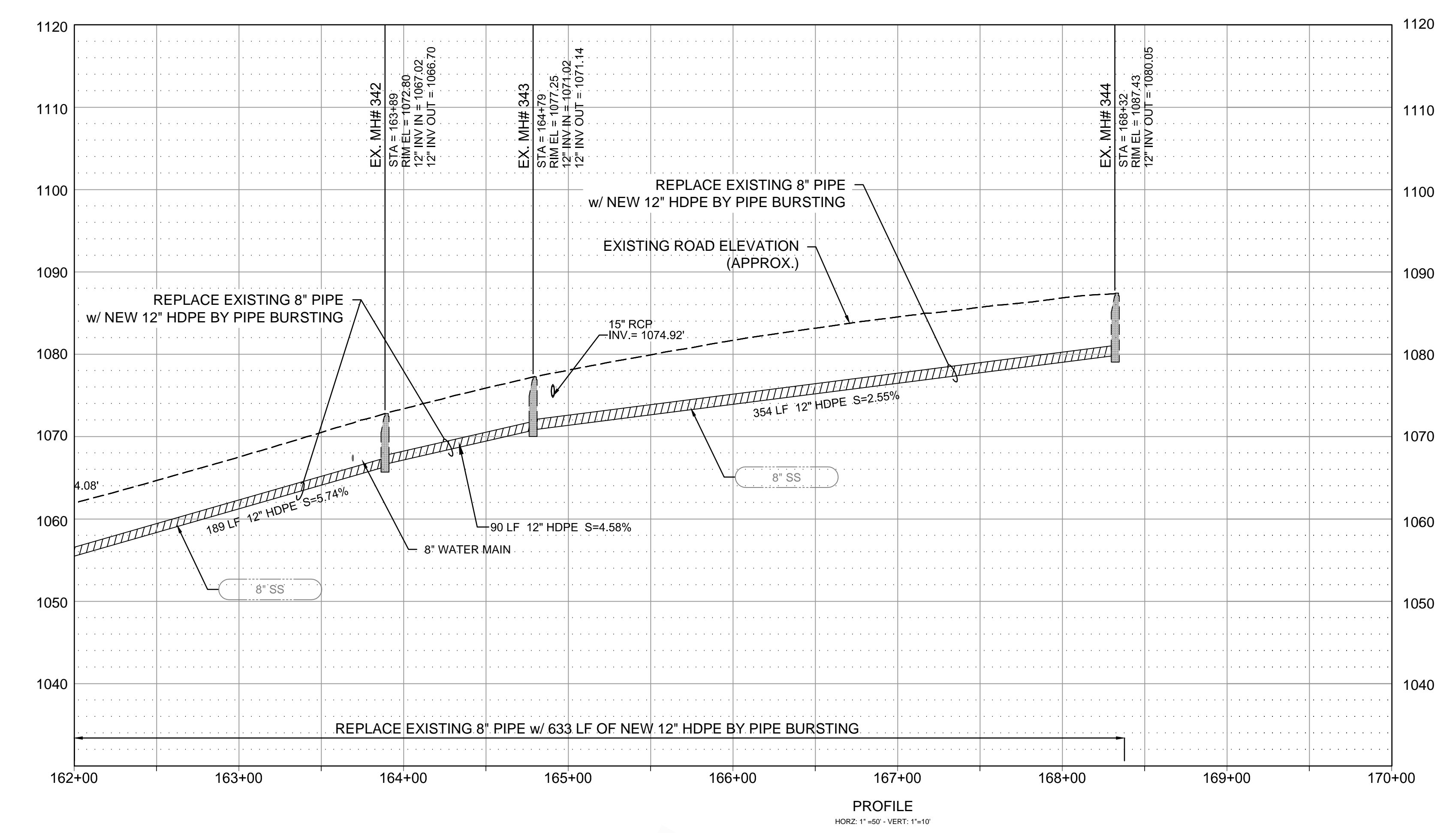
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BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-010
SHEET NUMBER	23
OF	32

aljumper
 Dec 09, 2015 - 1:48pm
 P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-1010.dwg

A B C D E F G H I J K L M N O P



- NOTES:**
- REHABILITATE EXISTING MANHOLES 342, 343, 344 AFTER NEW TRUNK SEWER IS IN SERVICE AND EXISTING 18" SS HAS BEEN LINED WITH CIPP. MANHOLE REHABILITATION PER SPEC SECTION 02603.
 - REFER TO SPEC SECTION 01014 FOR TIME RESTRICTIONS TO INTERRUPT FLOW OF EXISTING 8" SS ON RUTHERFORD ROAD AND COORDINATE WITH ReWa FOR COLUMBIA FARMS CONTRACT.



Dec 09, 2015 - 2:19pm
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 aljumper



Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____

PROJECT MANAGER

APPROVED: _____ DATE: _____

BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING

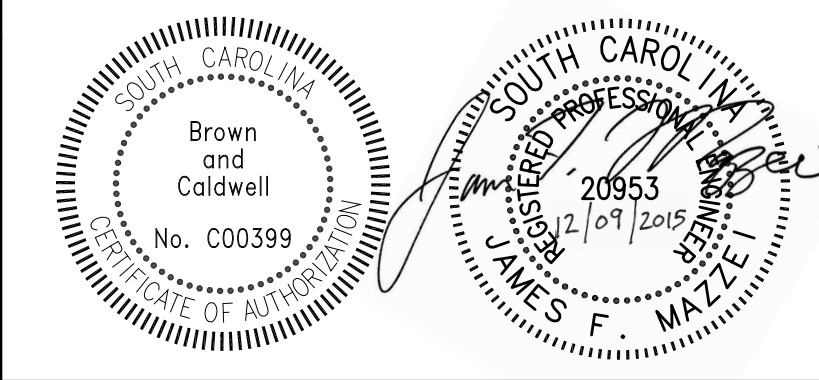
DRAWN: A. JUMPER

CHECKED: J. EPTING

CHECKED: J. MAZZEI

APPROVED: J. MAZZEI

EXTERNAL REFERENCES



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

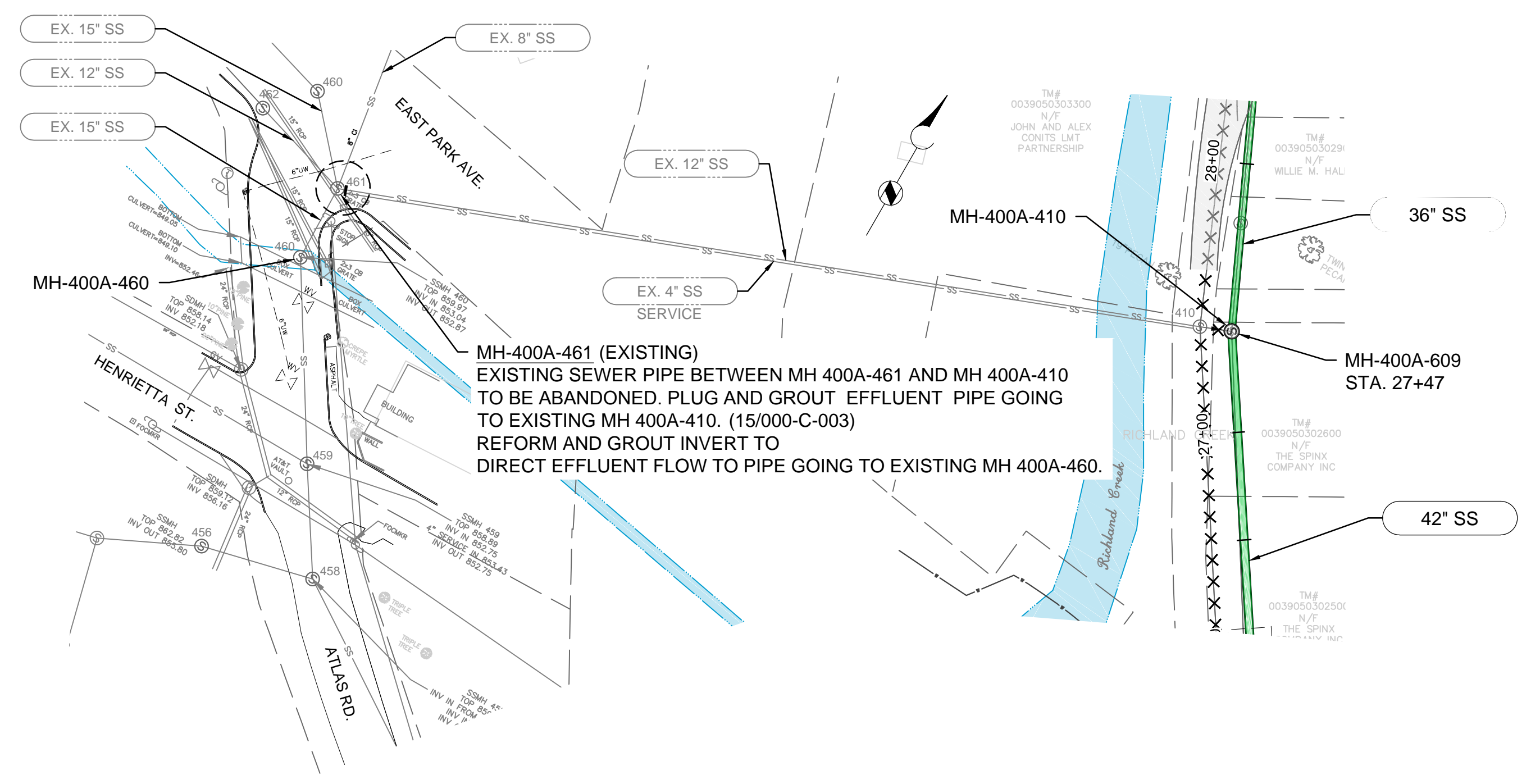
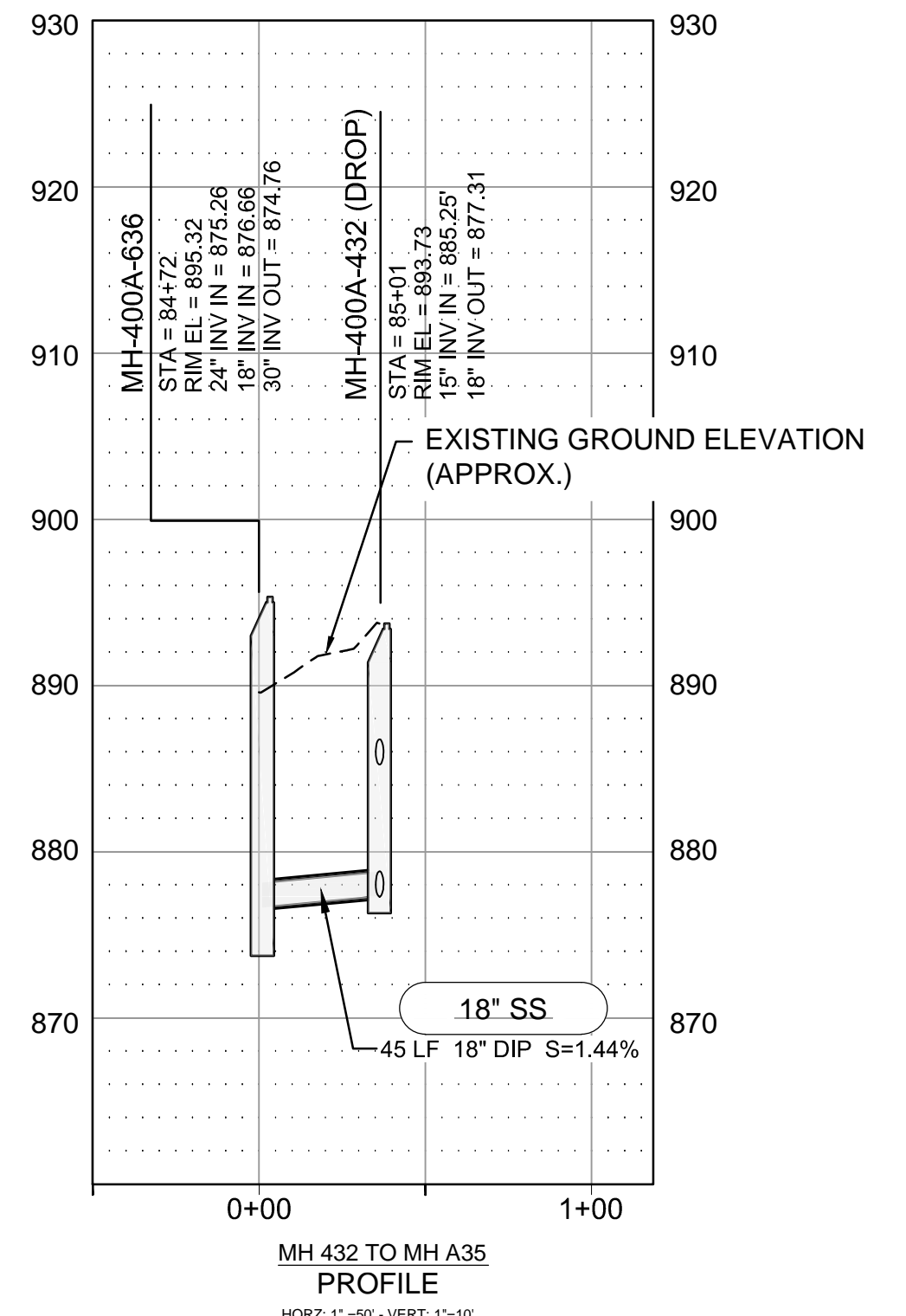
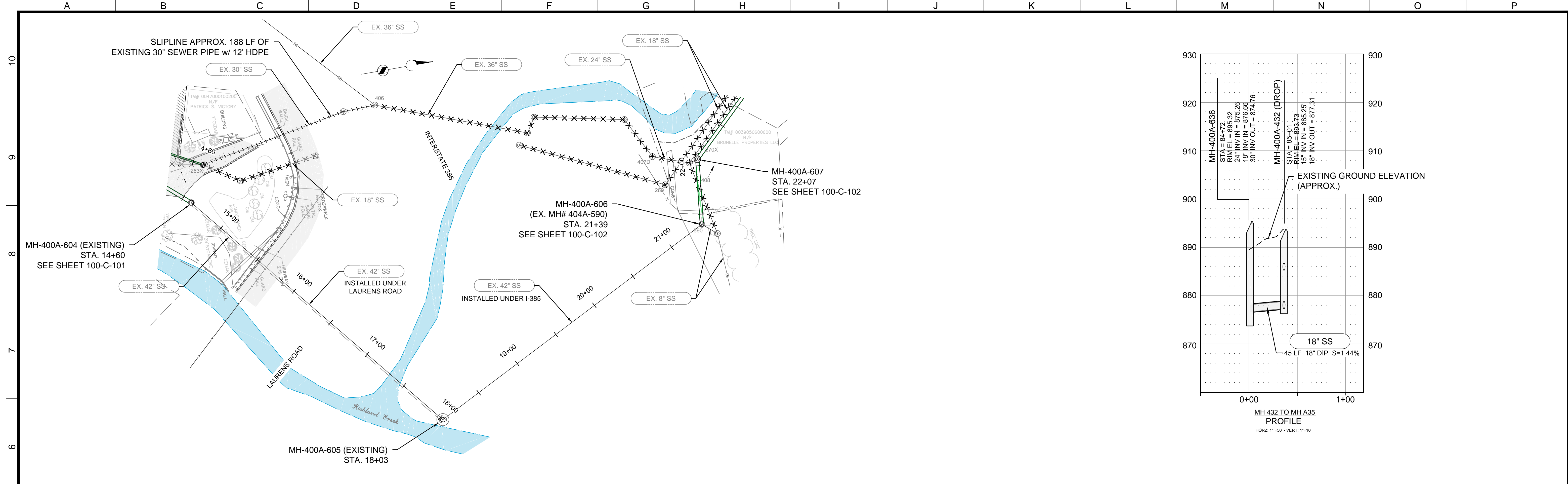


CIVIL
RICHLAND CREEK TRUNK SEWER

PLAN & PROFILE
STA. 162+00 TO END OF CONSTRUCTION

FILENAME	144495C-1012.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	100-C-012
SHEET NUMBER	25
OF	32

A B C D E F G H I J K L M N O P



EAST PART AVENUE SEWER REHABILITATION
PLAN
SCALE: 1" = 50'

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES

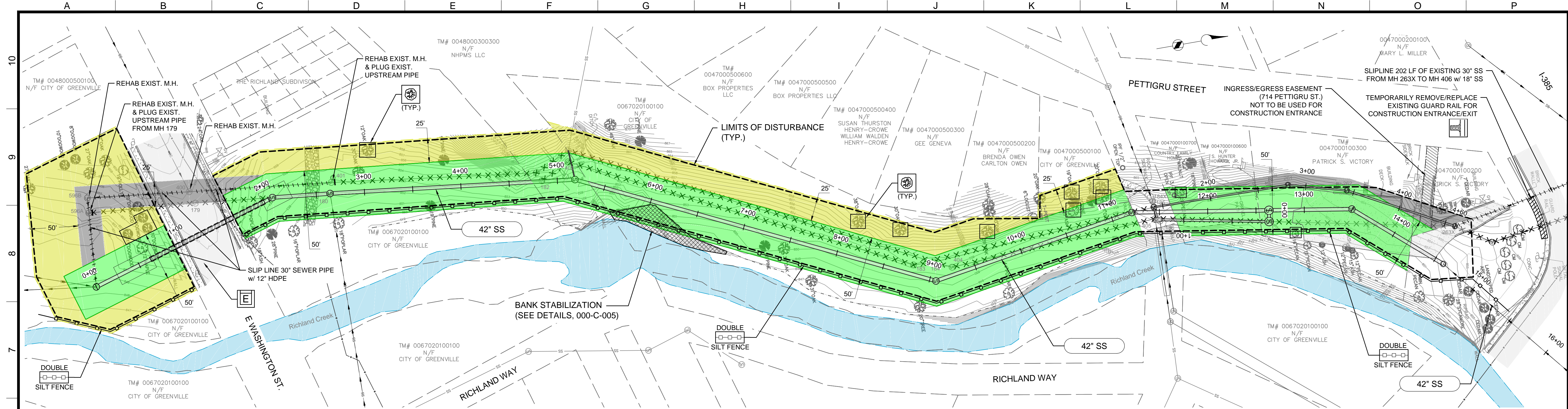
Professional Engineer Seal for James F. Mazzei, No. 20953, State of South Carolina, expires 12/09/2015.

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

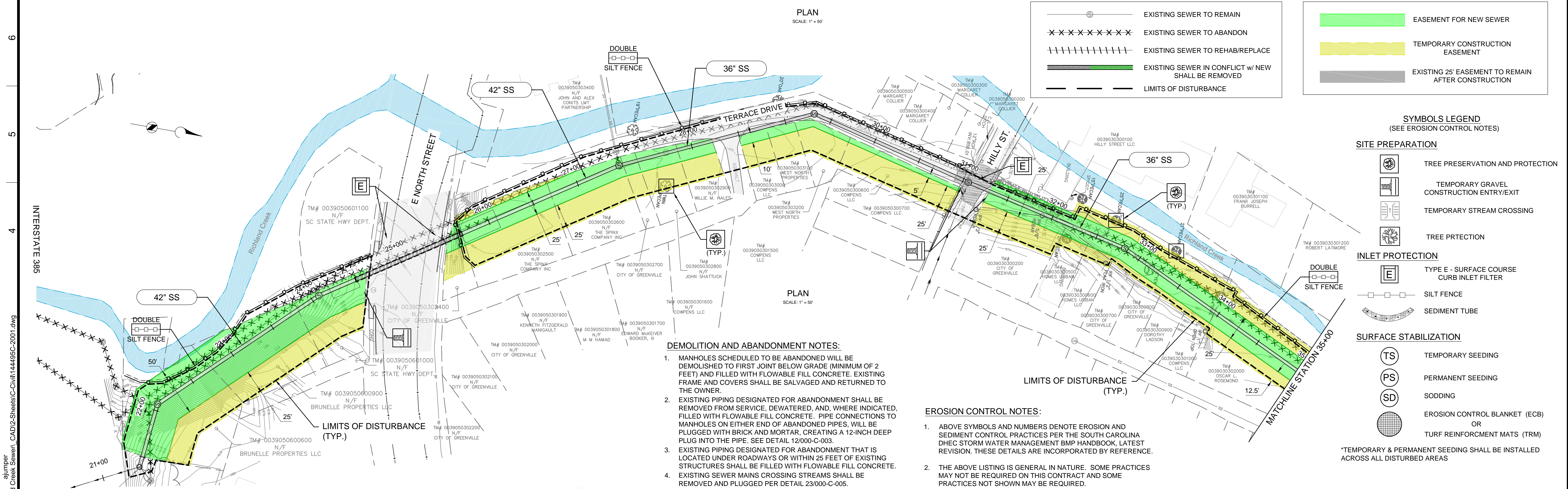


CIVIL
144495C-1013.DWG
144495
AS SHOWN
DRAWING NUMBER
100-C-013
SHEET NUMBER
26 OF 32

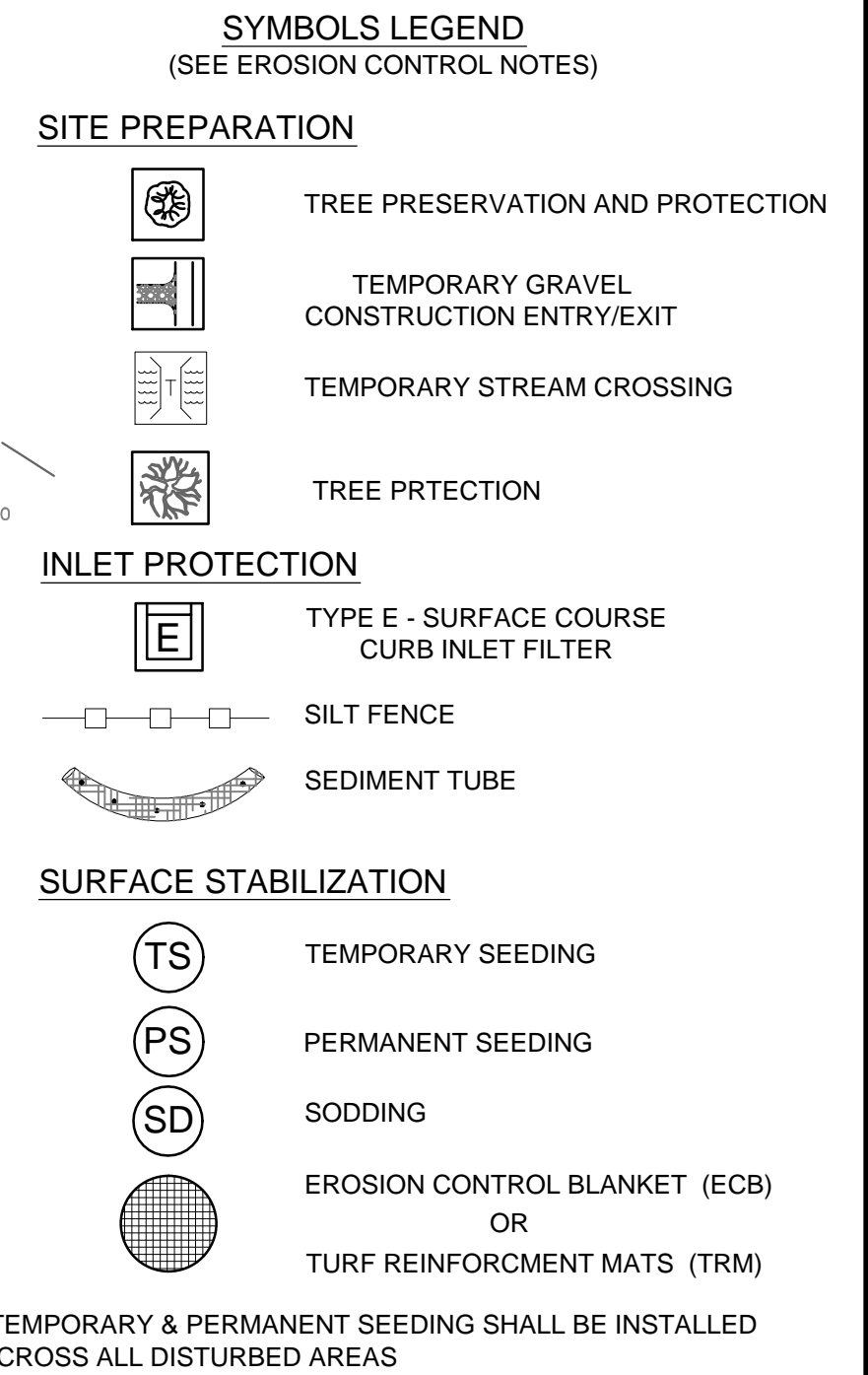
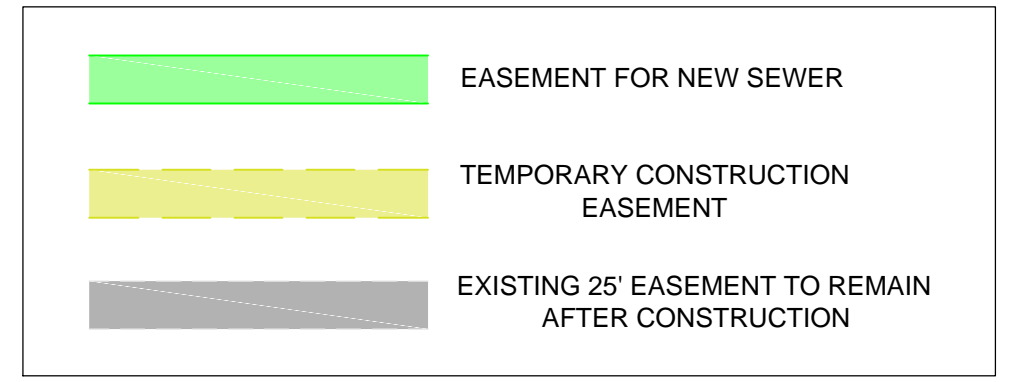
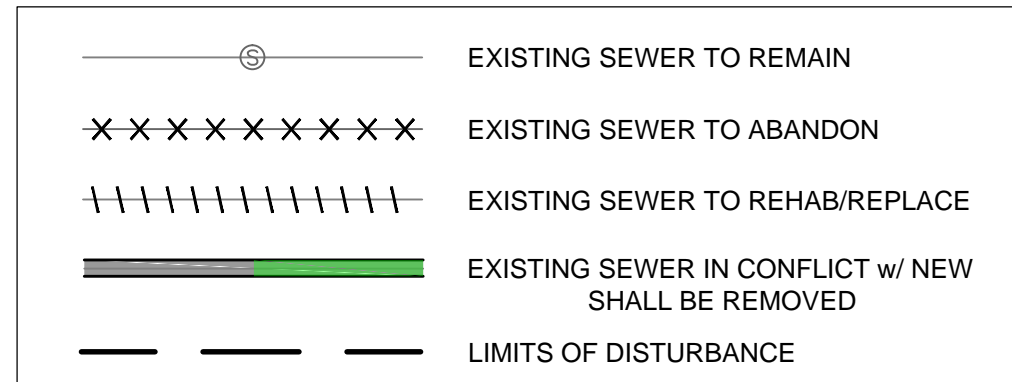
Dec 09, 2015 - 2:17pm P:\Clients\ReWa\144495 - Richland Creek Sewer - CAD\2-Sheets\Civil\144495C-1013.dwg



PLAN
SCALE: 1" = 50'



PLAN
SCALE: 1" = 50'



DEMOLITION AND ABANDONMENT NOTES:

- MANHOLES SCHEDULED TO BE ABANDONED WILL BE DEMOLISHED TO FIRST JOINT BELOW GRADE (MINIMUM OF 2 FEET) AND FILLED WITH FLOWABLE FILL CONCRETE. EXISTING FRAME AND COVERS SHALL BE SALVAGED AND RETURNED TO THE OWNER.
- EXISTING PIPING DESIGNATED FOR ABANDONMENT SHALL BE REMOVED FROM SERVICE, DEWATERED, AND, WHERE INDICATED, FILLED WITH FLOWABLE FILL CONCRETE. PIPE CONNECTIONS TO MANHOLES ON EITHER END OF ABANDONED PIPES, WILL BE PLUGGED WITH BRICK AND MORTAR, CREATING A 12-INCH DEEP PLUG INTO THE PIPE. SEE DETAIL 12/000-C-003.
- EXISTING PIPING DESIGNATED FOR ABANDONMENT THAT IS LOCATED UNDER ROADWAYS OR WITHIN 25 FEET OF EXISTING STRUCTURES SHALL BE FILLED WITH FLOWABLE FILL CONCRETE.
- EXISTING SEWER MAINS CROSSING STREAMS SHALL BE REMOVED AND PLUGGED PER DETAIL 23/000-C-005.

EROSION CONTROL NOTES:

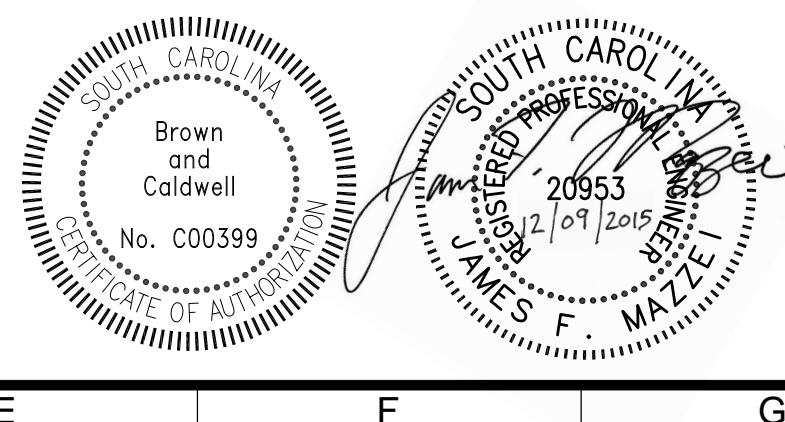
- ABOVE SYMBOLS AND NUMBERS DENOTE EROSION AND SEDIMENT CONTROL PRACTICES PER THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK, LATEST REVISION. THESE DETAILS ARE INCORPORATED BY REFERENCE.
- THE ABOVE LISTING IS GENERAL IN NATURE. SOME PRACTICES MAY NOT BE REQUIRED ON THIS CONTRACT AND SOME PRACTICES NOT SHOWN MAY BE REQUIRED.

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES



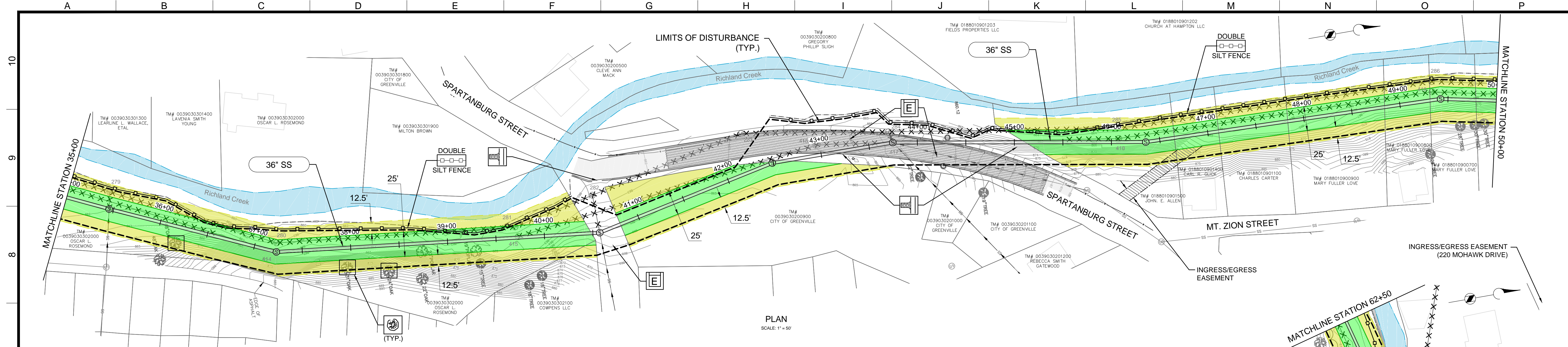
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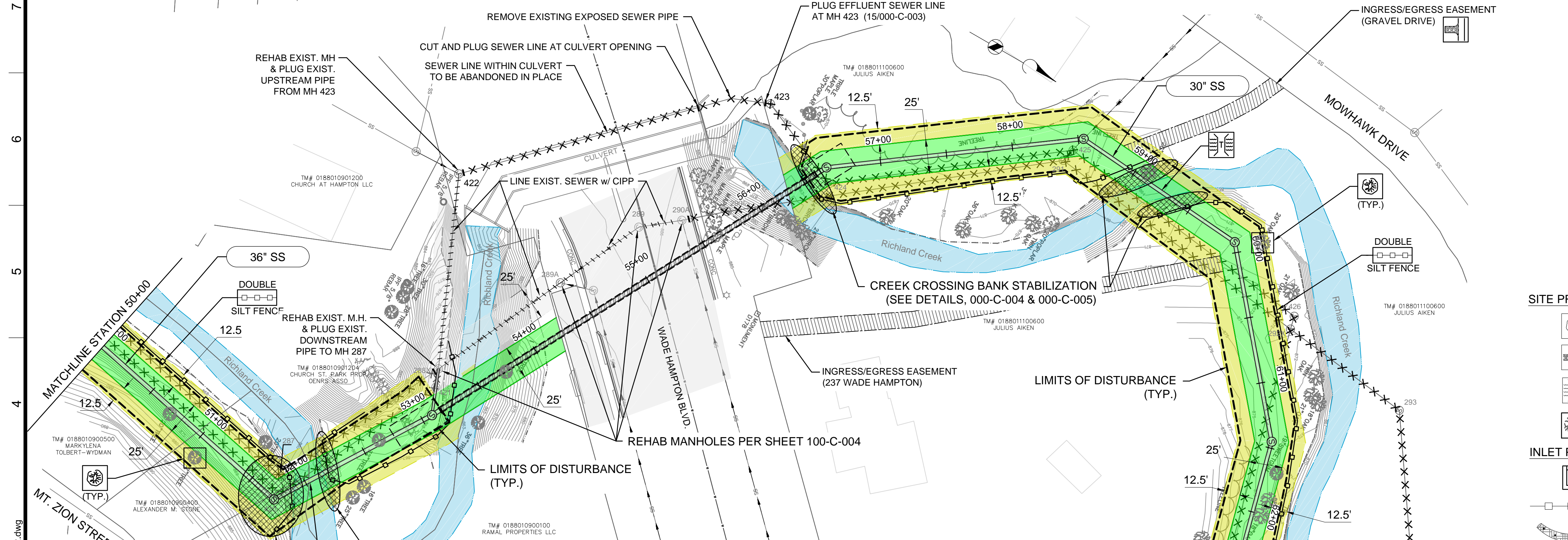
AUXILIARY
**RICHLAND CREEK TRUNK SEWER
EASEMENTS
SEDIMENT & EROSION CONTROL PLAN
REHAB & ABANDONMENT PLAN**

FILENAME	144495C-2001.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	200-C-001
SHEET NUMBER	27
OF	32

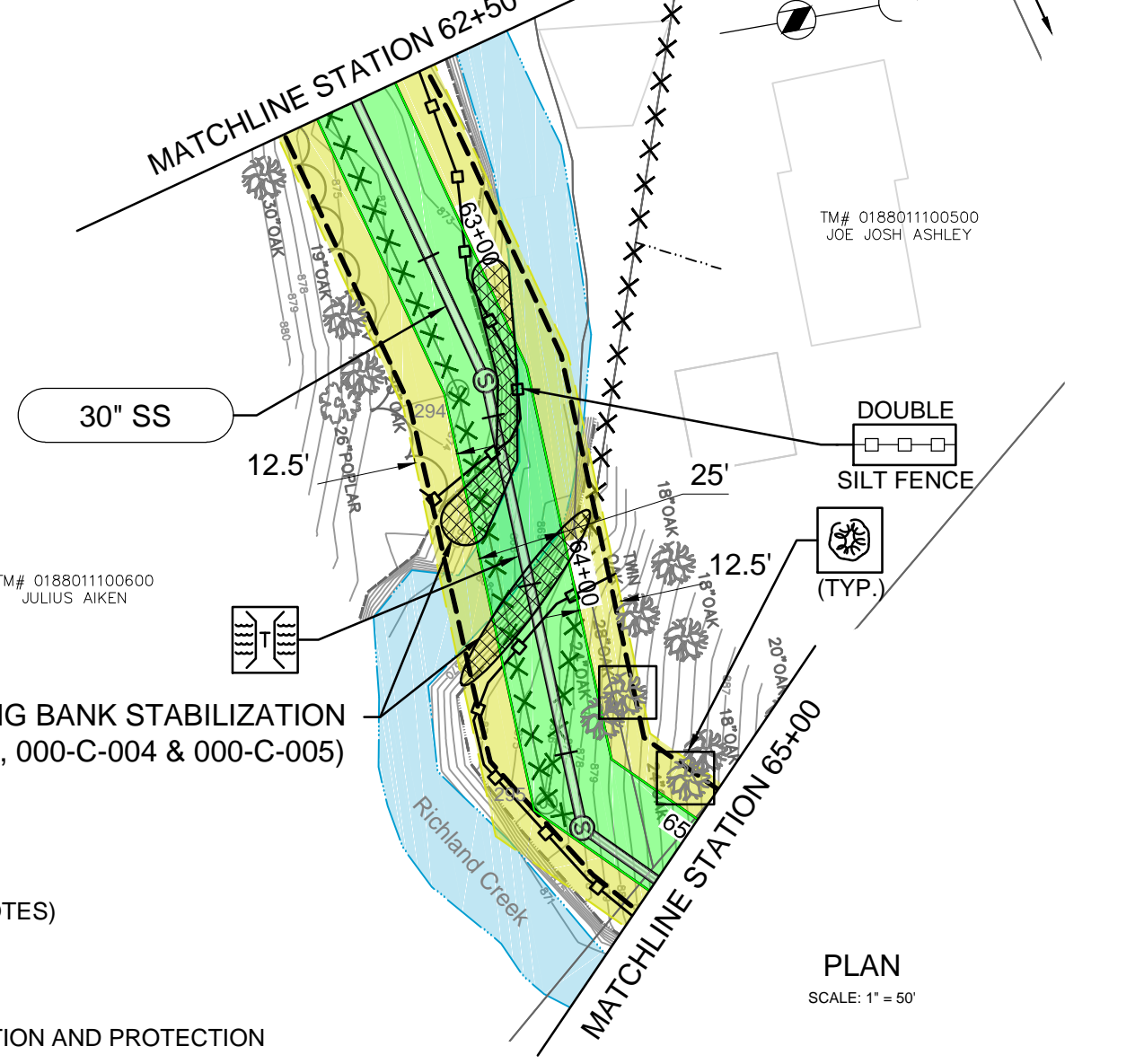
alumper
 Dec 09, 2015 - 1:58pm
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PLAN
SCALE: 1" = 50'



PLAN
SCALE: 1" = 50'



PLAN
SCALE: 1" = 50'

SYMBOLS LEGEND
(SEE EROSION CONTROL NOTES)

SITE PREPARATION

- (Tree symbol) TREE PRESERVATION AND PROTECTION
- (Gravel symbol) TEMPORARY GRAVEL CONSTRUCTION ENTRY/EXIT
- (Stream symbol) TEMPORARY STREAM CROSSING
- (Tree with X symbol) TREE PROTECTION

INLET PROTECTION

- (E symbol) TYPE E - SURFACE COURSE CURB INLET FILTER
- (Silt fence symbol) SILT FENCE
- (Sediment tube symbol) SEDIMENT TUBE

SURFACE STABILIZATION

- (TS symbol) TEMPORARY SEEDING
- (PS symbol) PERMANENT SEEDING
- (SD symbol) SODDING
- (ECB symbol) EROSION CONTROL BLANKET (ECB) OR
- (TRM symbol) TURF REINFORCEMENT MATS (TRM)

*TEMPORARY & PERMANENT SEEDING SHALL BE INSTALLED ACROSS ALL DISTURBED AREAS

ERASEMENT FOR NEW SEWER (Green shaded area)

TEMPORARY CONSTRUCTION EASEMENT (Yellow shaded area)

EXISTING 25' EASEMENT TO REMAIN AFTER CONSTRUCTION (Grey shaded area)

EXISTING SEWER TO REMAIN (Solid line with circle)

EXISTING SEWER TO ABANDON (Dashed line with X's)

EXISTING SEWER TO REHAB/REPLACE (Dashed line with vertical bars)

EXISTING SEWER IN CONFLICT W/ NEW SHALL BE REMOVED (Dashed line with diagonal bars)

LIMITS OF DISTURBANCE (Dashed line)

- DEMOLITION AND ABANDONMENT NOTES:**
1. MANHOLES SCHEDULED TO BE ABANDONED WILL BE DEMOLISHED TO FIRST JOINT BELOW GRADE (MINIMUM OF 2 FEET) AND FILLED WITH FLOWABLE FILL CONCRETE. EXISTING FRAME AND COVERS SHALL BE SALVAGED AND RETURNED TO THE OWNER.
 2. EXISTING PIPING DESIGNATED FOR ABANDONMENT SHALL BE REMOVED FROM SERVICE. DEWATERED, AND, WHERE INDICATED, FILLED WITH FLOWABLE FILL CONCRETE. PIPE CONNECTIONS TO MANHOLES ON EITHER END OF ABANDONED PIPES, WILL BE PLUGGED WITH BRICK AND MORTAR, CREATING A 12-INCH DEEP PLUG INTO THE PIPE. SEE DETAIL 12/000-C-003.
 3. EXISTING PIPING DESIGNATED FOR ABANDONMENT THAT IS LOCATED UNDER ROADWAYS OR WITHIN 25 FEET OF EXISTING STRUCTURES SHALL BE FILLED WITH FLOWABLE FILL CONCRETE.
 4. EXISTING SEWER MAINS CROSSING STREAMS SHALL BE REMOVED AND PLUGGED PER DETAIL 23/000-C-005.
- EROSION CONTROL NOTES:**
1. ABOVE SYMBOLS AND NUMBERS DENOTE EROSION AND SEDIMENT CONTROL PRACTICES PER THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK, LATEST REVISION. THESE DETAILS ARE INCORPORATED BY REFERENCE.
 2. THE ABOVE LISTING IS GENERAL IN NATURE. SOME PRACTICES MAY NOT BE REQUIRED ON THIS CONTRACT AND SOME PRACTICES NOT SHOWN MAY BE REQUIRED.

alumper
 Dec 09, 2015 - 2:00pm
 P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\144495-C-2002.dwg

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

SUBMITTED: _____ DATE: _____
 PROJECT MANAGER

APPROVED: _____ DATE: _____
 BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
 DRAWN: A. JUMPER
 CHECKED: J. EPTING
 CHECKED: J. MAZZEI
 APPROVED: J. MAZZEI

EXTERNAL REFERENCES

SOUTH CAROLINA PROFESSIONAL ENGINEERING

Brown and Caldwell
No. C00399

20953
2/09/2015
JAMES F. MAZZEI

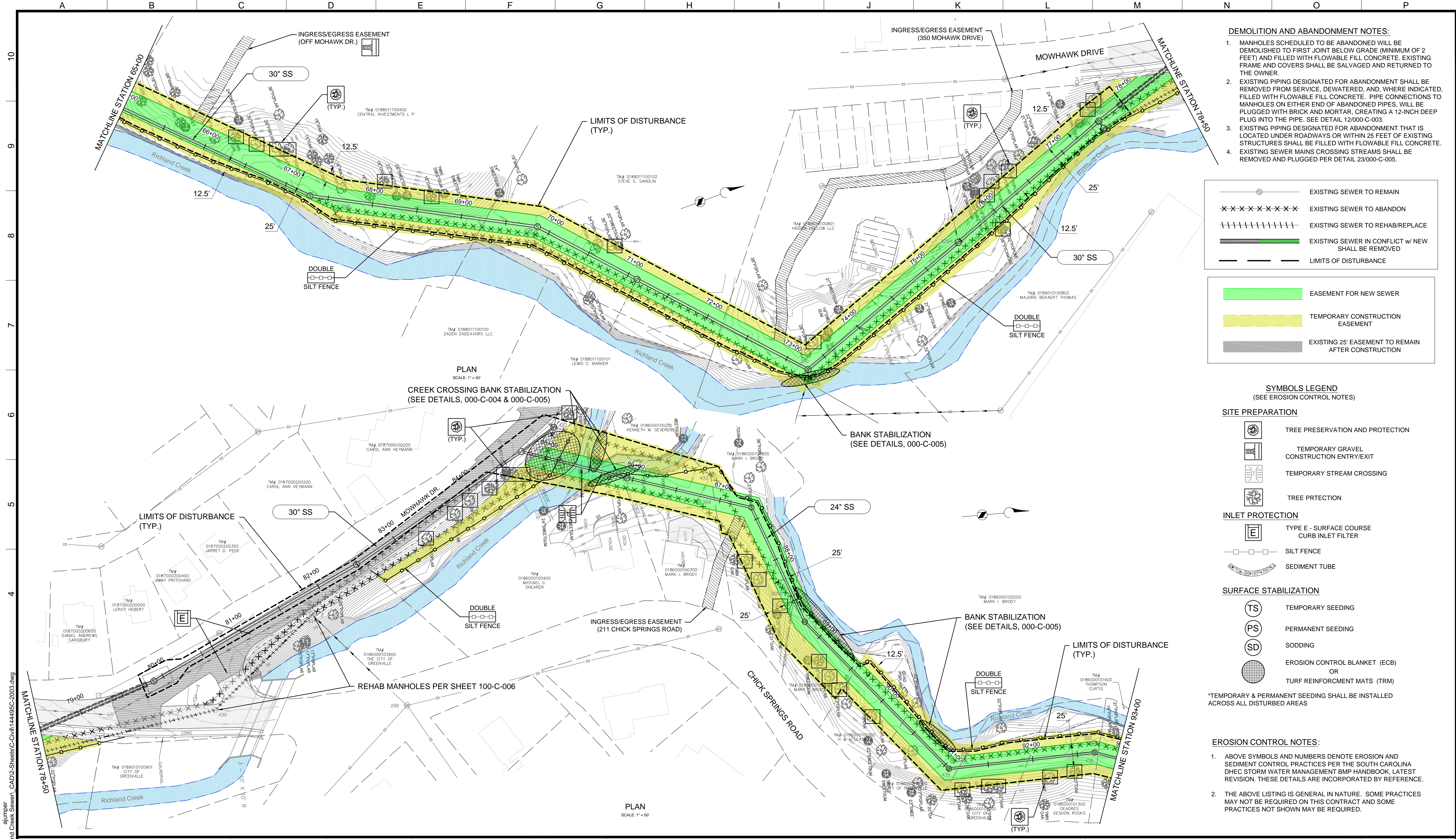
REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

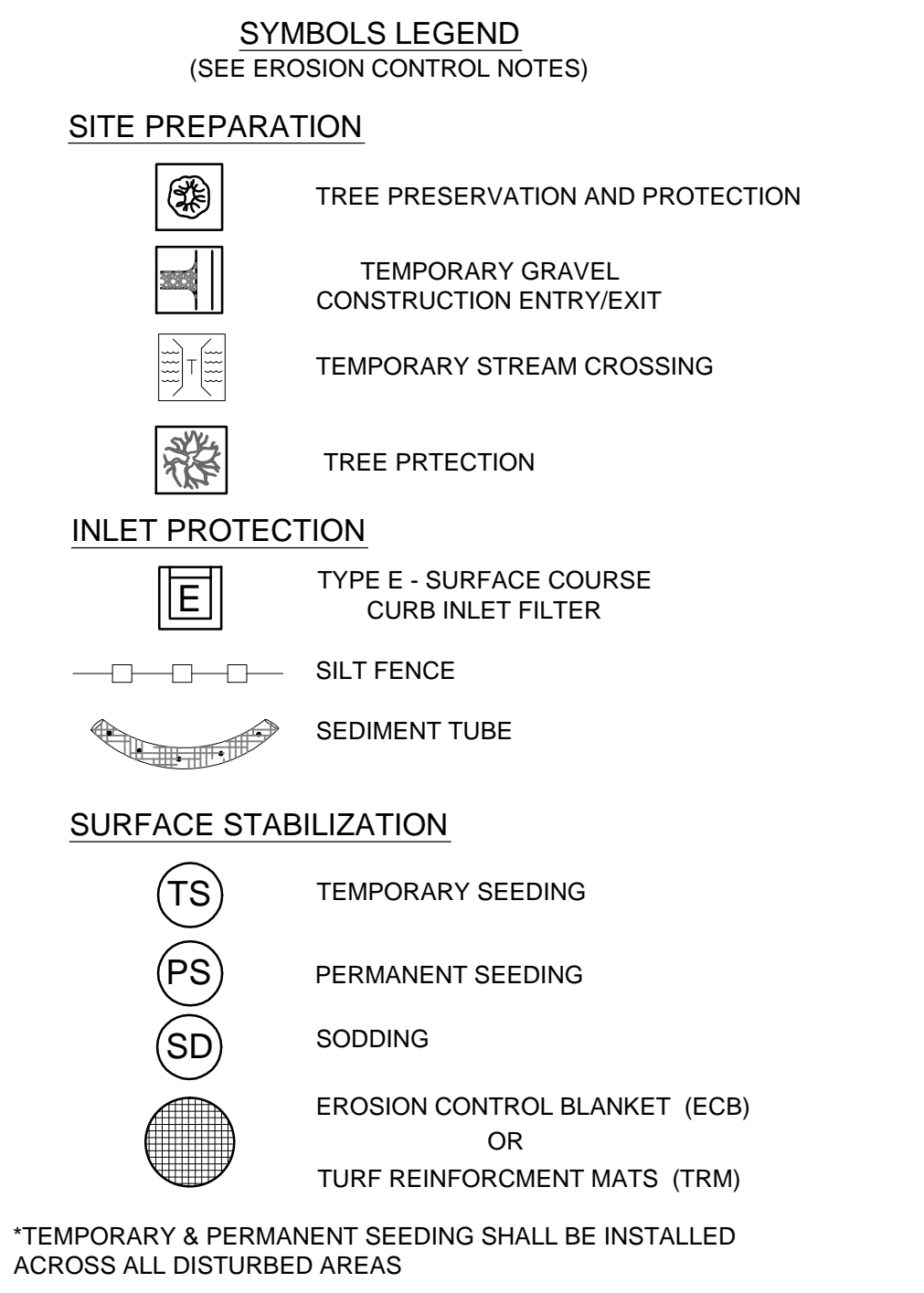
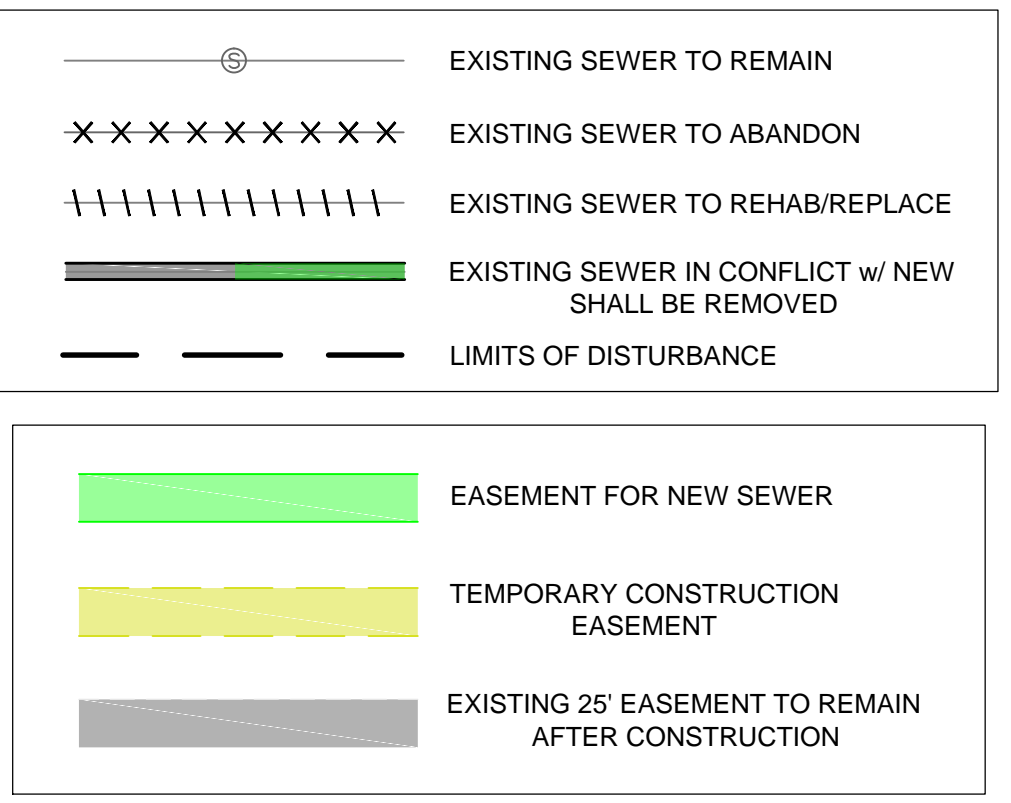


CIVIL
**RICHLAND CREEK TRUNK SEWER
 EASEMENTS
 SEDIMENT AND EROSION CONTROL PLAN
 REHAB & ABANDONMENT PLAN**

FILENAME: 144495C-2002.DWG
 BC PROJECT NUMBER: 144495
 SCALE: AS SHOWN
 DRAWING NUMBER: 200-C-002
 SHEET NUMBER: 28 OF 32



- DEMOLITION AND ABANDONMENT NOTES:**
- MANHOLES SCHEDULED TO BE ABANDONED WILL BE DEMOLISHED TO FIRST JOINT BELOW GRADE (MINIMUM OF 2 FEET) AND FILLED WITH FLOWABLE FILL CONCRETE. EXISTING FRAME AND COVERS SHALL BE SALVAGED AND RETURNED TO THE OWNER.
 - EXISTING PIPING DESIGNATED FOR ABANDONMENT SHALL BE REMOVED FROM SERVICE, DEWATERED, AND, WHERE INDICATED, FILLED WITH FLOWABLE FILL CONCRETE. PIPE CONNECTIONS TO MANHOLES ON EITHER END OF ABANDONED PIPES, WILL BE PLUGGED WITH BRICK AND MORTAR, CREATING A 12-INCH DEEP PLUG INTO THE PIPE. SEE DETAIL 12/000-C-003.
 - EXISTING PIPING DESIGNATED FOR ABANDONMENT THAT IS LOCATED UNDER ROADWAYS OR WITHIN 25 FEET OF EXISTING STRUCTURES SHALL BE FILLED WITH FLOWABLE FILL CONCRETE.
 - EXISTING SEWER MAINS CROSSING STREAMS SHALL BE REMOVED AND PLUGGED PER DETAIL 23/000-C-005.



- EROSION CONTROL NOTES:**
- ABOVE SYMBOLS AND NUMBERS DENOTE EROSION AND SEDIMENT CONTROL PRACTICES PER THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK, LATEST REVISION. THESE DETAILS ARE INCORPORATED BY REFERENCE.
 - THE ABOVE LISTING IS GENERAL IN NATURE. SOME PRACTICES MAY NOT BE REQUIRED ON THIS CONTRACT AND SOME PRACTICES NOT SHOWN MAY BE REQUIRED.

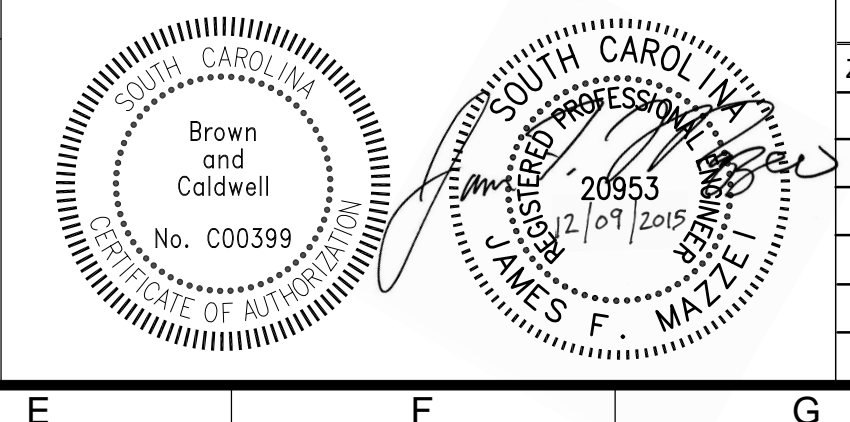
Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

DATE: _____
DATE: _____

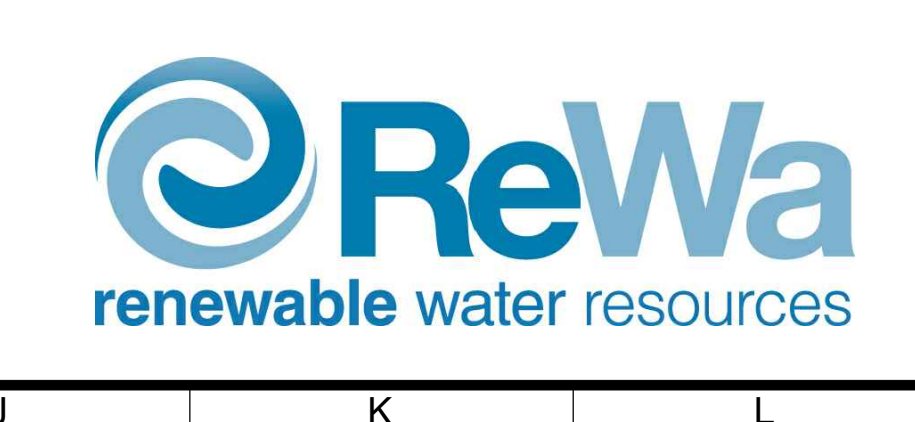
LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES



REVISIONS

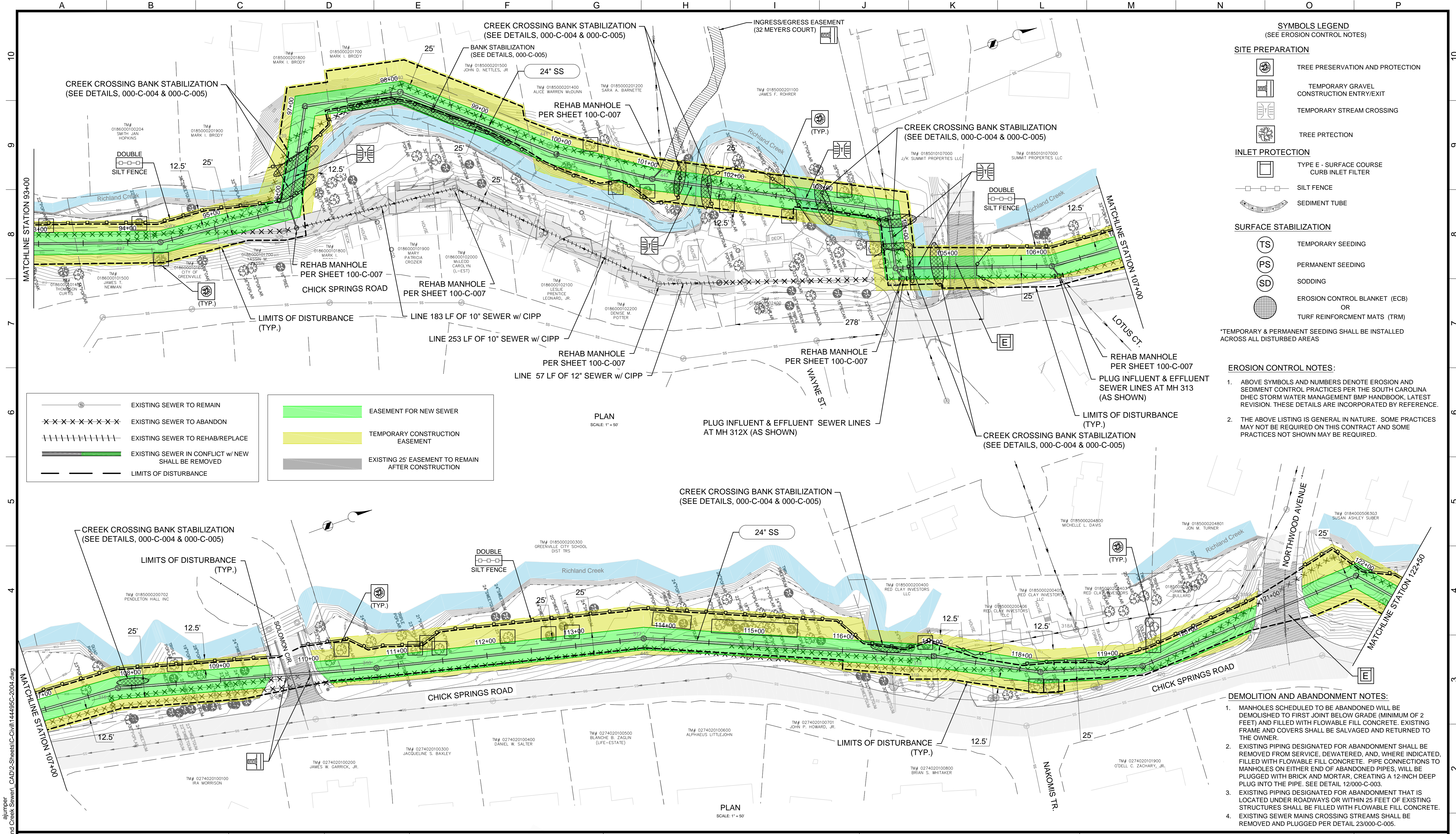
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CIVIL
**RICHLAND CREEK TRUNK SEWER
EASEMENTS
SEDIMENT AND EROSION CONTROL PLAN
REHAB & ABANDONMENT PLAN**

FILENAME	144495C-2003.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	200-C-003
SHEET NUMBER	29 OF 32

Dec 09, 2015 - 2:01pm
P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-2003.dwg
alumper



- SYMBOLS LEGEND**
(SEE EROSION CONTROL NOTES)
- SITE PREPARATION**
- Tree Preservation and Protection
 - Temporary Gravel Construction Entry/Exit
 - Temporary Stream Crossing
 - Tree Protection
- INLET PROTECTION**
- Type E - Surface Course Curb Inlet Filter
 - Silt Fence
 - Sediment Tube
- SURFACE STABILIZATION**
- Temporary Seeding (TS)
 - Permanent Seeding (PS)
 - Sodding (SD)
 - Erosion Control Blanket (ECB) OR Turf Reinforcement Mats (TRM)
- *TEMPORARY & PERMANENT SEEDING SHALL BE INSTALLED ACROSS ALL DISTURBED AREAS

- EROSION CONTROL NOTES:**
- ABOVE SYMBOLS AND NUMBERS DENOTE EROSION AND SEDIMENT CONTROL PRACTICES PER THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK, LATEST REVISION. THESE DETAILS ARE INCORPORATED BY REFERENCE.
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 - EXISTING PIPING DESIGNATED FOR ABANDONMENT THAT IS LOCATED UNDER ROADWAYS OR WITHIN 25 FEET OF EXISTING STRUCTURES SHALL BE FILLED WITH FLOWABLE FILL CONCRETE.
 - EXISTING SEWER MAINS CROSSING STREAMS SHALL BE REMOVED AND PLUGGED PER DETAIL 23/000-C-005.

- EXISTING SEWER TO REMAIN
- EXISTING SEWER TO ABANDON
- EXISTING SEWER TO REHAB/REPLACE
- EXISTING SEWER IN CONFLICT W/ NEW SHALL BE REMOVED
- LIMITS OF DISTURBANCE
- EASEMENT FOR NEW SEWER
- TEMPORARY CONSTRUCTION EASEMENT
- EXISTING 25' EASEMENT TO REMAIN AFTER CONSTRUCTION

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

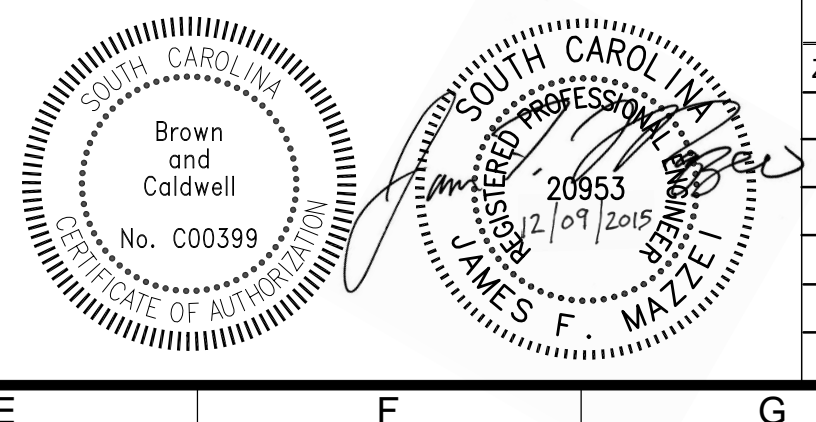
SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

EXTERNAL REFERENCES



REVISIONS

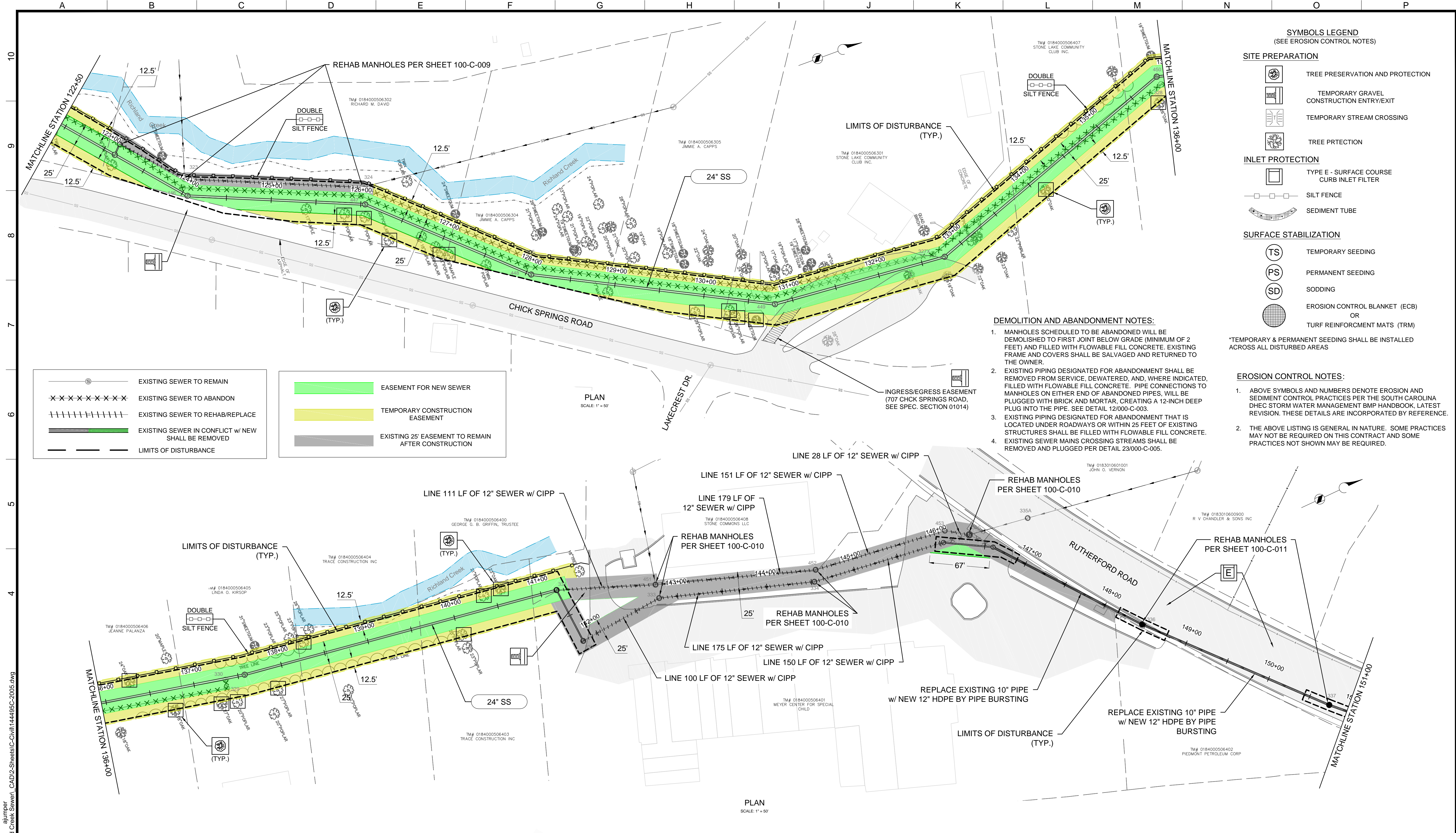
ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
**RICHLAND CREEK TRUNK SEWER
EASEMENTS
SEDIMENT AND EROSION CONTROL PLAN
REHAB & ABANDONMENT PLAN**

FILENAME	144495C-2004.DWG
BC PROJECT NUMBER	144495
SCALE	AS SHOWN
DRAWING NUMBER	200-C-004
SHEET NUMBER	30 OF 32

Dec 09, 2015 - 2:03pm
P:\Clients\ReWa\144495 - Richland Creek Sewer\ CAD\2-Sheets\Civil\144495C-2004.dwg
ajumper



- SYMBOLS LEGEND**
(SEE EROSION CONTROL NOTES)
- SITE PREPARATION**
- Tree Preservation and Protection
 - Temporary Gravel Construction Entry/Exit
 - Temporary Stream Crossing
 - Tree Protection
- INLET PROTECTION**
- Type E - Surface Course Curb Inlet Filter
 - Silt Fence
 - Sediment Tube
- SURFACE STABILIZATION**
- Temporary Seeding (TS)
 - Permanent Seeding (PS)
 - Sodding (SD)
 - Erosion Control Blanket (ECB) OR Turf Reinforcement Mats (TRM)
- DEMOLITION AND ABANDONMENT NOTES:**
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 - EXISTING PIPING DESIGNATED FOR ABANDONMENT THAT IS LOCATED UNDER ROADWAYS OR WITHIN 25 FEET OF EXISTING STRUCTURES SHALL BE FILLED WITH FLOWABLE FILL CONCRETE.
 - EXISTING SEWER MAINS CROSSING STREAMS SHALL BE REMOVED AND PLUGGED PER DETAIL 23/000-C-005.
- EROSION CONTROL NOTES:**
- ABOVE SYMBOLS AND NUMBERS DENOTE EROSION AND SEDIMENT CONTROL PRACTICES PER THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK, LATEST REVISION. THESE DETAILS ARE INCORPORATED BY REFERENCE.
 - THE ABOVE LISTING IS GENERAL IN NATURE. SOME PRACTICES MAY NOT BE REQUIRED ON THIS CONTRACT AND SOME PRACTICES NOT SHOWN MAY BE REQUIRED.

- EXISTING SEWER TO REMAIN
- EXISTING SEWER TO ABANDON
- EXISTING SEWER TO REHAB/REPLACE
- EXISTING SEWER IN CONFLICT W/ NEW SHALL BE REMOVED
- LIMITS OF DISTURBANCE
- EASEMENT FOR NEW SEWER
- TEMPORARY CONSTRUCTION EASEMENT
- EXISTING 25' EASEMENT TO REMAIN AFTER CONSTRUCTION

- DEMOLITION AND ABANDONMENT NOTES:**
- MANHOLES SCHEDULED TO BE ABANDONED WILL BE DEMOLISHED TO FIRST JOINT BELOW GRADE (MINIMUM OF 2 FEET) AND FILLED WITH FLOWABLE FILL CONCRETE. EXISTING FRAME AND COVERS SHALL BE SALVAGED AND RETURNED TO THE OWNER.
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 - EXISTING SEWER MAINS CROSSING STREAMS SHALL BE REMOVED AND PLUGGED PER DETAIL 23/000-C-005.

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES

South Carolina Professional Seal
Brown and Caldwell
No. C00399
20953
JAMES F. MAZZEI
Professional Engineer
2/09/2015

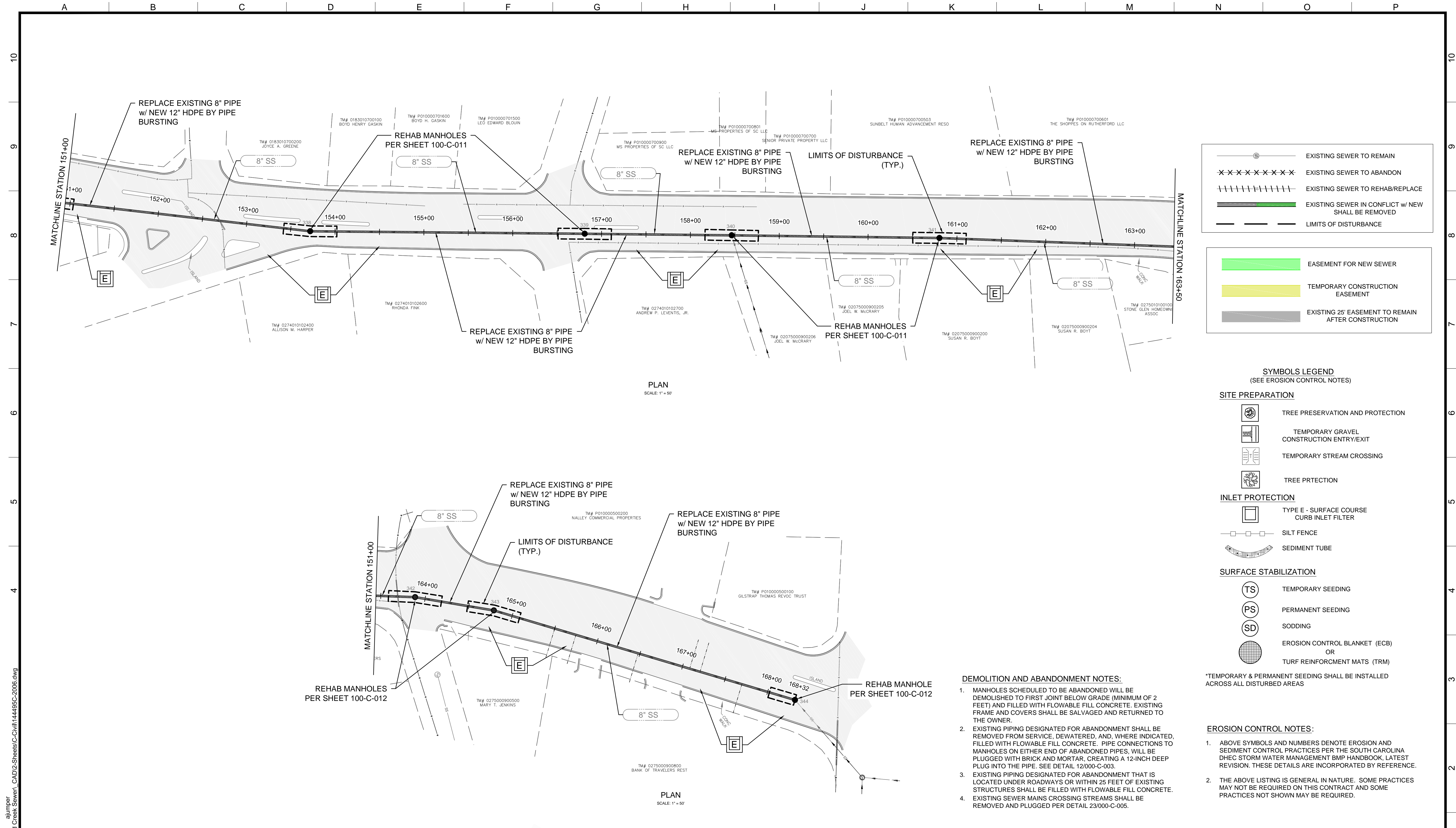
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ReWa
renewable water resources

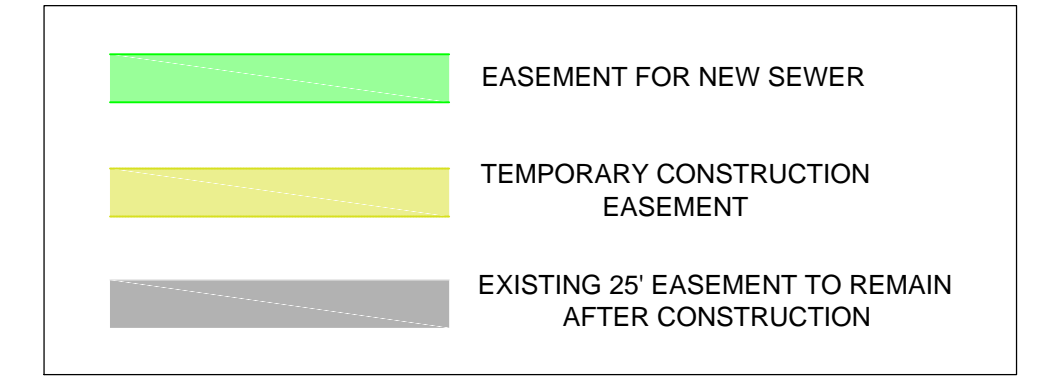
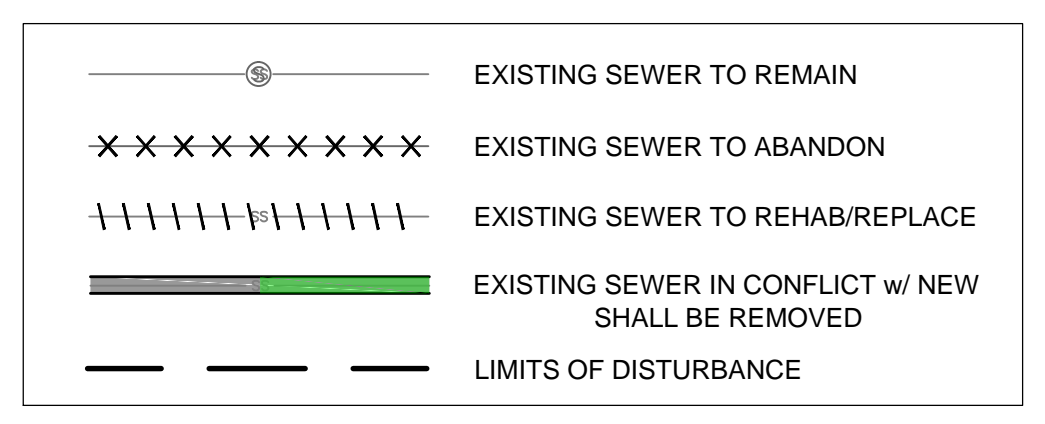
CIVIL
RICHLAND CREEK TRUNK SEWER EASEMENTS
SEDIMENT AND EROSION CONTROL PAN
REHAB & ABANDONMENT PLAN

FILENAME: 144495C-2005.DWG
BC PROJECT NUMBER: 144495
SCALE: AS SHOWN
DRAWING NUMBER: 200-C-005
SHEET NUMBER: 31 OF 32

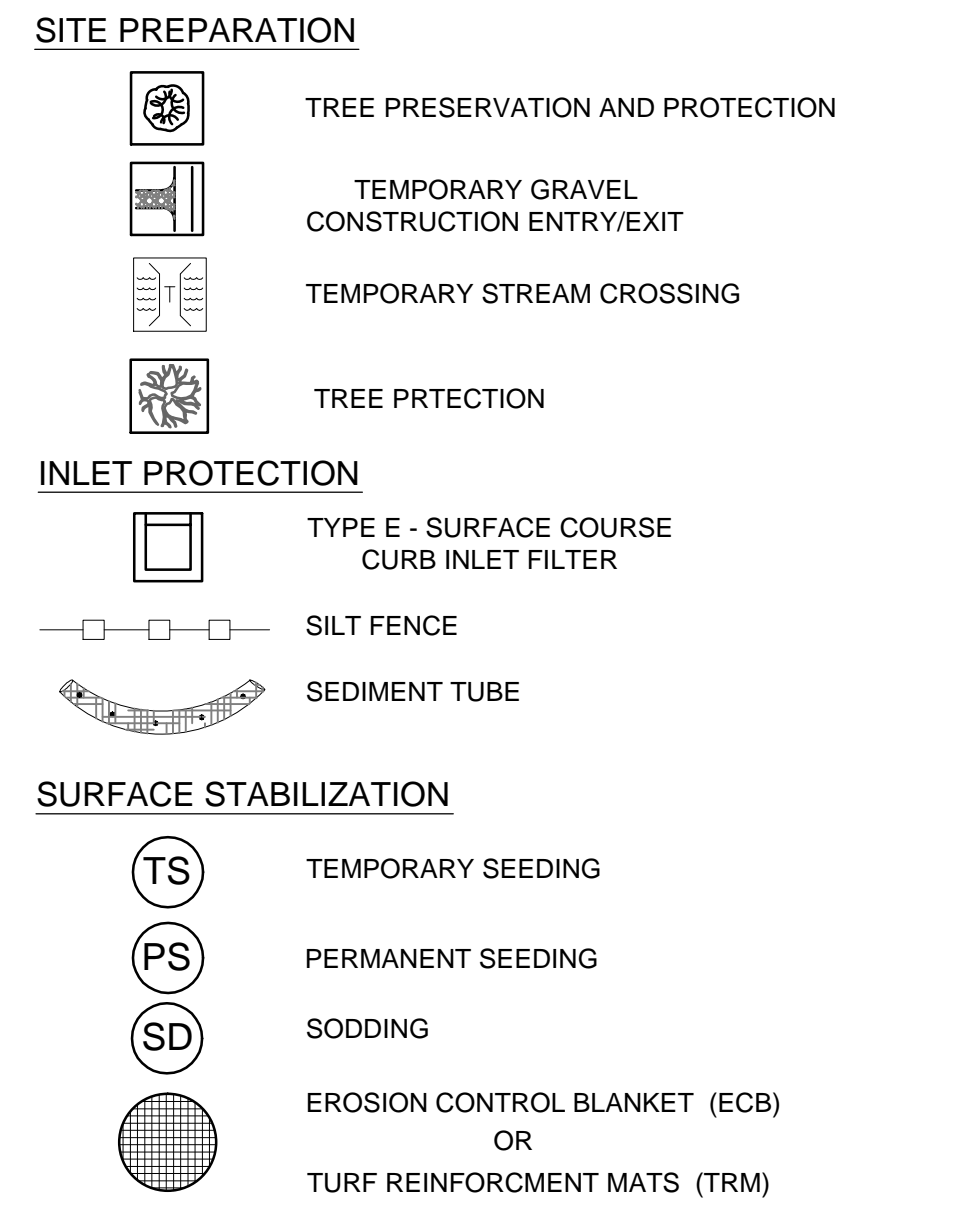
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ajumper



PLAN
SCALE: 1" = 50'



SYMBOLS LEGEND
(SEE EROSION CONTROL NOTES)

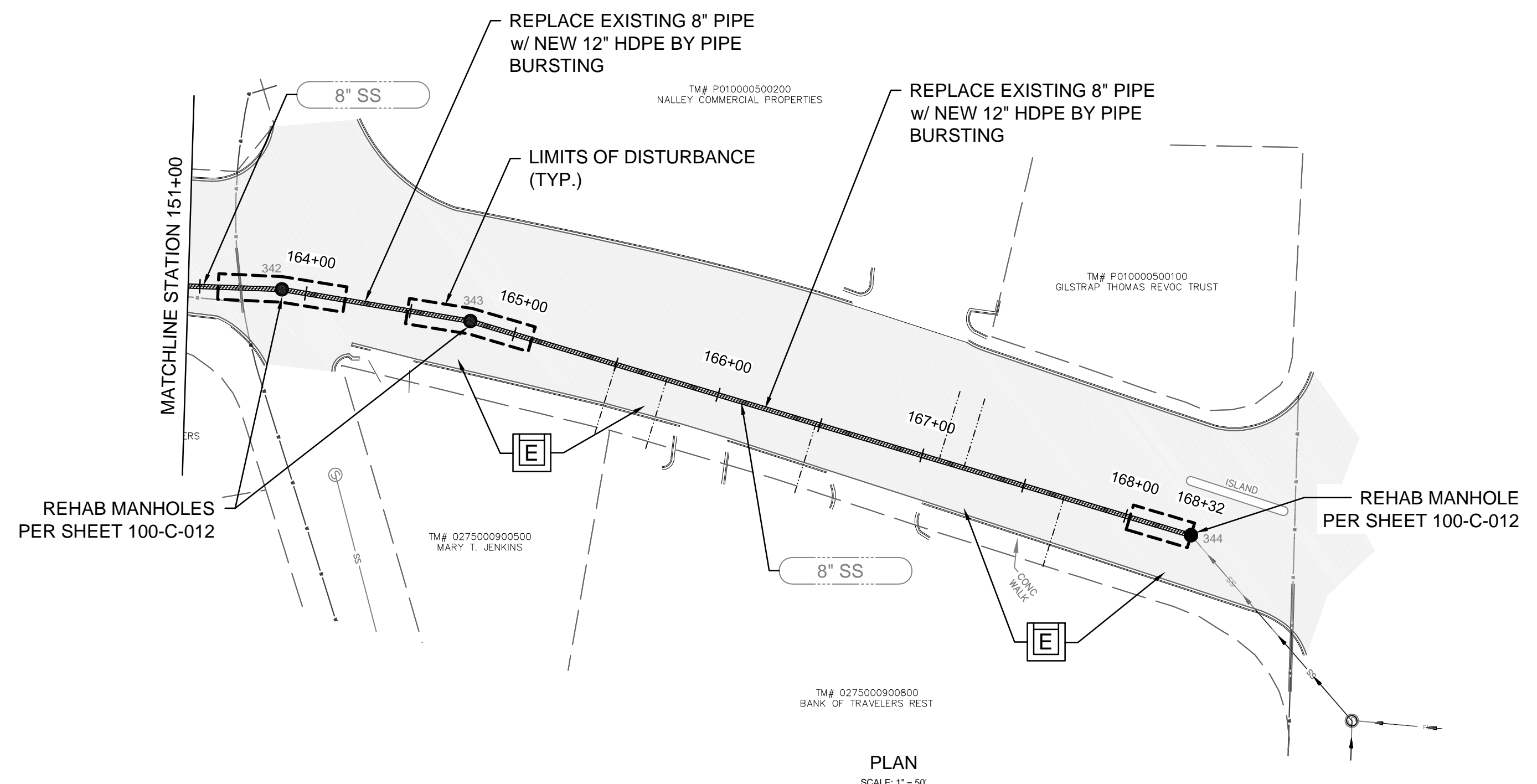


DEMOLITION AND ABANDONMENT NOTES:

1. MANHOLES SCHEDULED TO BE ABANDONED WILL BE DEMOLISHED TO FIRST JOINT BELOW GRADE (MINIMUM OF 2 FEET) AND FILLED WITH FLOWABLE FILL CONCRETE. EXISTING FRAME AND COVERS SHALL BE SALVAGED AND RETURNED TO THE OWNER.
2. EXISTING PIPING DESIGNATED FOR ABANDONMENT SHALL BE REMOVED FROM SERVICE, DEWATERED, AND, WHERE INDICATED, FILLED WITH FLOWABLE FILL CONCRETE. PIPE CONNECTIONS TO MANHOLES ON EITHER END OF ABANDONED PIPES, WILL BE PLUGGED WITH BRICK AND MORTAR, CREATING A 12-INCH DEEP PLUG INTO THE PIPE. SEE DETAIL 12/000-C-003.
3. EXISTING PIPING DESIGNATED FOR ABANDONMENT THAT IS LOCATED UNDER ROADWAYS OR WITHIN 25 FEET OF EXISTING STRUCTURES SHALL BE FILLED WITH FLOWABLE FILL CONCRETE.
4. EXISTING SEWER MAINS CROSSING STREAMS SHALL BE REMOVED AND PLUGGED PER DETAIL 23/000-C-005.

EROSION CONTROL NOTES:

1. ABOVE SYMBOLS AND NUMBERS DENOTE EROSION AND SEDIMENT CONTROL PRACTICES PER THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK, LATEST REVISION. THESE DETAILS ARE INCORPORATED BY REFERENCE.
2. THE ABOVE LISTING IS GENERAL IN NATURE. SOME PRACTICES MAY NOT BE REQUIRED ON THIS CONTRACT AND SOME PRACTICES NOT SHOWN MAY BE REQUIRED.



PLAN
SCALE: 1" = 50'

Brown and Caldwell
Environmental Engineering and Consulting
250 Berryhill Road, Suite 104, Columbia, SC 29210 803-873-9701

DESIGNED: J. EPTING
DRAWN: A. JUMPER
CHECKED: J. EPTING
CHECKED: J. MAZZEI
APPROVED: J. MAZZEI

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

EXTERNAL REFERENCES

Professional Engineer Seal for James F. Mazzei, State of South Carolina, No. 000399, expires 2/09/2015.

ZONE	REV.	DESCRIPTION	BY	DATE	APP.



CIVIL
**RICHLAND CREEK TRUNK SEWER
EASEMENTS
SEDIMENT AND EROSION CONTROL PAN
REHAB & ABANDONMENT PLAN**

FILENAME: 144495C-2006.DWG
BC PROJECT NUMBER: 144495
SCALE: AS SHOWN
DRAWING NUMBER: 200-C-006
SHEET NUMBER: 32 OF 32

Dec 09, 2015 - 2:06pm P:\Clients\ReWa\144495 - Richland Creek Sewer\CAD\2-Sheets\Civil\144495C-2006.dwg ajumper