GRAVITY SEWER DETAILS

000 – GENERAL CONSTRUCTION NOTES

010 – TYPICAL SANITARY SEWER LATERAL CONNECTION

011 – LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE

013 – AERIAL SEWER SERVICE

014 – CLEAN OUT PLUG DETAIL

015 – BACKWATER VALVE INSTALLATION

020 – SDR 35 GRAVITY SEWER LINE INSTALLATION DETAIL

021 – TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS

030 – STANDARD PRECAST MANHOLE

031 – MANHOLE INVERTS

032 – STANDARD MANHOLE FRAME AND COVER

033 – FLAT TOP MANHOLE COVER

034 – MANHOLE FRAME AND WATER TIGHT COVER

035 – DOGHOUSE MANHOLE DETAIL

036 – STANDARD OUTSIDE DROP

040 – STANDARD AERIAL CROSSING

041 – AERIAL PIPE CROSSING CONCRETE PIER DETAIL

042 – AERIAL PIPE CROSSING CONCRETE PIER ON BEDROCK

043 – AERIAL PIPE CROSSING PILE SUPPORTED PIER DETAIL

044 – AERIAL PIPE CROSSING STEEL CASING PIPE ELEVATION

045 – AERIAL PIPE CROSSING TYPICAL PIPE SELECTION AND ELEVATION

046 – AERIAL PIPE CROSSING CONCRETE SUPPORT DETAILS AND STEEL PILE SPLICE

047 – AERIAL PIPE CROSSING GENERAL NOTES

048 – AERIAL PIPE CROSSING PILE CAP DETAIL

050 – CASING PIPE DETAILS

060 - STANDARD ASPHALT PATCH DETAIL

061 – STANDARD CONCRETE PATCH DETAIL

070 – OIL AND WATER SEPERATOR

071 – STANDARD OIL AND GREASE TRAP

080 – STANDARD RIGHT OF WAY DETAIL

081 – STREAM FORD CROSSING

082 – SANITARY SEWER SEPERATION

090 – GRAVITY TESTING NOTES

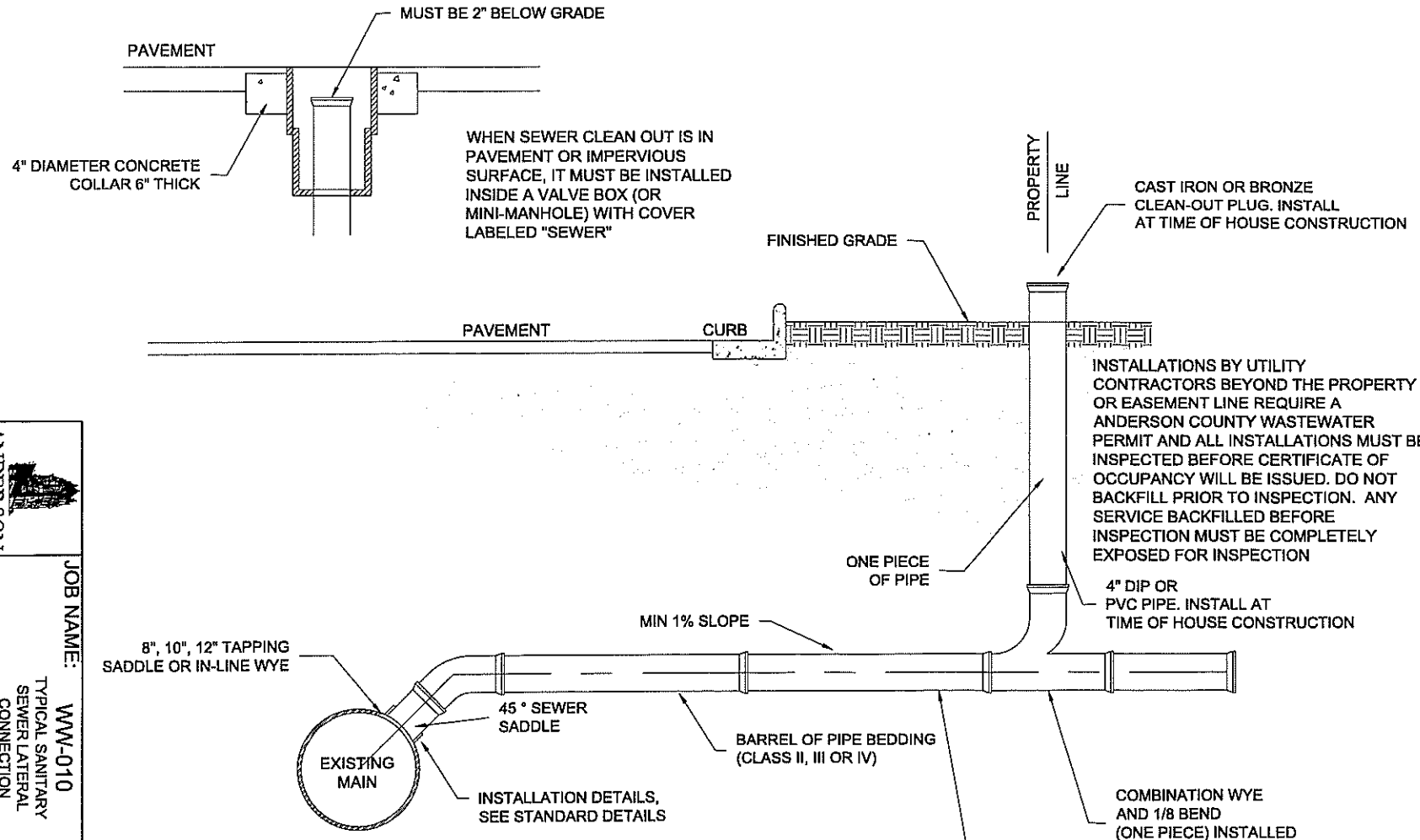
091 – GRAVITY SEWER TEST TIMES

1. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES BY CONTACTING SC 811 A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION
2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY AND CONDUCTING ALL WORK IN ACCORDANCE WITH OSHA REQUIREMENTS
3. A PRE-CONSTRUCTION MEETING MUST BE SCHEDULED, BY THE DESIGN ENGINEER, BEFORE CONSTRUCTION CAN BEGIN. THE DESIGN ENGINEER, CONTRACTOR, CONTRACTOR SUPERINTENDENT AND COUNTY PERSONNEL MUST BE PRESENT AT THE MEETING. A 48-HOUR NOTICE MUST BE PROVIDED FOR THE MEETING.
4. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD DETAILS AND SPECIFICATIONS OF ANDERSON COUNTY AND ALL OTHER APPLICABLE GOVERNING AUTHORITIES. GENERAL NOTES ARE PROVIDED; HOWEVER, THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS AND DETAILS FOR ADDITIONAL CONSIDERATIONS.
5. TRENCHES FOR SEWER LINES, UNDERNEATH COUNTY OWNED ROADS (PROPOSED AND EXISTING), SHALL BE COMPACTED IN ACCORDANCE WITH THE ANDERSON COUNTY ROADS AND BRIDGES DEPARTMENT REGULATIONS
6. ALL GRAVITY SEWER LINES MUST BE CCTV'D AND THE FOOTAGE TURNED IN WITH THE PERMIT-TO-OPERATE SUBMITTAL
7. PVC SDR 35 (WITH PROPER BEDDING) OR DIP IS ACCEPTABLE FOR SEWER MAINS. ALL DIP SEWER PIPE SHALL BE THICKNESS CLASS 50. DIP MEETING ANSI/AWWA STANDARDS WITH P401 COATING. ALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF ASTM D2321 (PVC AND DIP_ AND APPLICAPLE ANSI/AWWA C600 STANDARDS (DIP) AND IN CONFORMANCE WITH THE STANDARD DETAILS, LATEST REVISION
8. SEWERS DEEPER THAN 20 FT SHALL BE DIP
9. SEWER SHALLOWER THAN 72 INCHES SHALL BE DIP
10. MANHOLES SHALL HAVE A MINIMUM INSIDE DIAMETER OF FOUR (4) FEET AND BE PRECAST 4000 PSI REINFORCED CONCRETE CONFORMING TO ASTM C-478 WITH PREFORMED OPENINGS. THE MAHOLE SHALL BE CONSTRUCTED WITH A FLOW CHANNEL TO PROVIDE A SMOOTH CONNECTION BETWEEN THE INELT AND OUTLET INVERTS
11. NO CONNECTION SHALL BE MADE TO THE MANHOLE BETWEEN 18" AND 5' ABOVE THE INVERT OUT. THE MINIMUM DROP SHALL BE NO LESS THAN 5'
12. INFLOW DISHES ARE REQUIRED FOR ALL MANHOLES
13. NO INSIDE DROP MANHOLES ARE ALLOWED UNLESS WRITTEN PERMISSION FROM THE COUNTY IS OBTAINED
14. EACH INDIVIDUALLY OWNED PARCEL AND/OR EACH BUILDING HAVING PLUMBING FIXTURES SHALL HABVE AT LEAST ONE DIRECT AND INDIVIDUAL CONNECTION TO A WASTEWATER MAIN WITHOUT CROSSING ADJACENT PROPOERTY LINES. SERVICE CONNECTION LATERALS SHALL TERMINATED ONE FOOT BEYOND THE EDGE OF THE row OR EASEMENT WITH AN AIR/WATER TIGHT PLUG. A MINIMUM OF 5 FT SEPERATION BETWEEN SERVICE CONNECTIONS
    - NEW CONNECTIONS CONSTRUCTED AS APART OF A NEW MAIN INSTALLATION SHALL BE ACCOMPLISHED WITH A TEE-WYE FITTING AND SET AT THE 10 OR 2 O'CLOCK POSISTION (SEE DETAIL)
15. SERVICE CONNECTIONS SHALL BE A MINIMUM OF THREE FEET FROM PIPE JOINTS OR MANHOLES MEASURED FROM THE NEAREST EDGE OF THE TEE-WYE FITTING
16. THE END OF THE SERVICE LATERAL SHALL BE MARKED BY A 2 INCH MARKER PIPE, PAINTED GREEN. THE MARKER PIPE SHALL BE DRIVEN A MINIMUM OF THREE FEET AND PROTUDING APPROXIMATELY THEE FEET ABOVE FINAL GRADE.
17. BEFORE ACCEPTANCE INTO THE COUNTY SYSTEM, ALL GRAVITY SEWERS MUST BE CCTV'D AND THE FOOTAGE BE PROVIDED TO THE COUNTY ON A FLASH DRIVE
18. ALL MANHOLES THAT A FORCE MAIN TIES INTO (NEW OR EXISTING) MUST BE EPOXY COATED TO HELP WITH POTENTIAL CORROSION
19. MINIMUM DEPTH FOR A FORCE MAIN IS 48 INCHES
20. IN FORCE MAINS, A PLUG VALVE IS REQUIRED EVERY 5000 LF
21. PRESSURE TEST TO BE PERFORMED ON ALL LINES. DEFLECTION TEST TO BE PERFORMED ON ALL PVC LINES NO EARLIER THAN 30 DAYS AFTER INSTALLATION IS COMPLETE. ALL MANHOLES SHALL BE VACUUM TESTED. ALL TESTING TO BE PERFORMED IN THE PRESENCE OF A COUNTY REPRESENTATIVE AND A REPRESENTATIVE OF THE DESIGN ENGINEER. ALL TESTS SHALL BE IN ACCORDANCE WITH THE WRITTEN SPECIFICATIONS AND SCHDEC REQUIREMENTS
22. VACUUM TESTING OF MANHOLES IN IMPERVIOUS AREAS CAN NOT BE PERFORMED UNTIL THE BINDER HAS BEEN INSTALLED.
23. THE CONTRACTOR SHALL PROVIDE TO THE DESIGN ENGINEER A RECORD DRAWING OF THE SANITARY SEWER SYSTEM. THE DRAWINGS SHALL, AT A MINIMUM, INCLUDE THE SANITARY SEWER MAIN AND MANHOLE LOCATIONS, PIPE MATERIAL FOR THE MAIN AND SERVICE LATERALS. A TABLE LISTING EACH LOT (IF APPLICABLE), DISTANCE FROM DOWN STREAM MANHOLE TO SERVICE, LENGTH OF SERVICE, AND DEPTH OF SERVICE SHALL BE PROVIDED. A PERMIT TO OPERATE CAN NOT BE OBTAINED UNTIL ALL RECORD DRAWINGS ARE APPROVED.

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-000 GENERAL CONSTRUCTION NOTES	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 4/2023	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



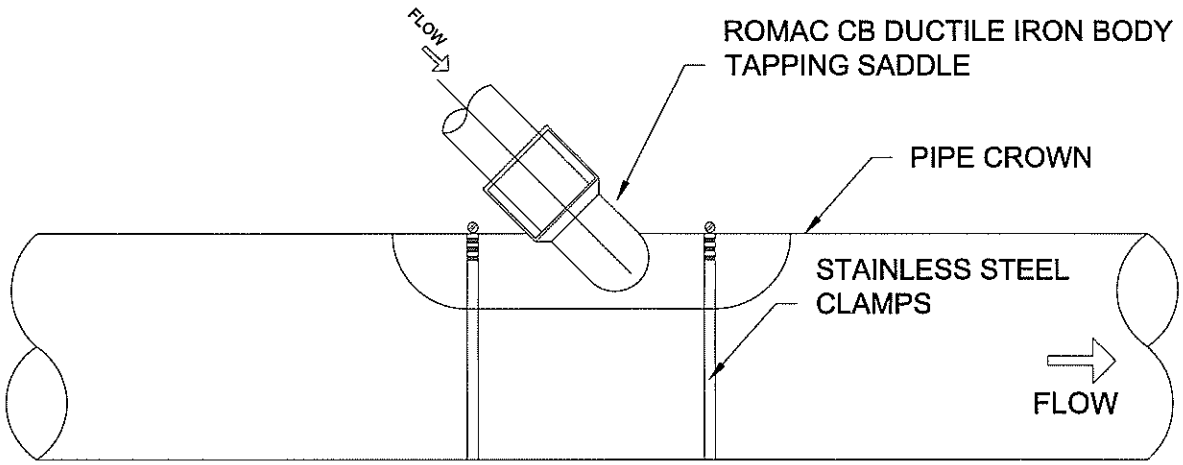
NOTE:
1. THE FULL LENDTH OF THE SERVICE DITCH SHALL BE COMPACTED IN 6" LIFTS WITH MECHANICAL TAMP.
2. ALL TAPS WILL BE MADE USING MECHANICAL TAPPING MACHINE. FOR PVC INSTALLATIONS,
3. SADDLE AND BEND MUST BE BEDDED IN #57 STONE. BEDDING AND HAUNCHING OF PIPE BARREL MUST COMPLY WITH REQUIREMENTS OF DETAILS ACCORDING TO PIPE MATERIAL.
4. 36" OF COVER MUST BE MAINTAINTED OVER SERVICE LINE
5. ALL PVC MUST BE SOLID WALLED PIPE, FOAM CORE OR CELL CORE PIPE IS NOT ALLOWED
6. FLEXIBLE FITTINGS ARE NOT ALLOWED, ALL FITTINGS MUST BE MADE OF THE SAME MATERIAL AS THE SERVICE PIPE
7. A MINIMUM OF 2 CLEANOUTS MUST BE INSTALLED IN THE SERVICE (IF THE SERVICE EXCEEDS 80 FT THEN THE SERVICES NEED TO BE INSTALLED ACCORDING THE THE NATIONAL PLUBMING CODE)
8. MINIMUM SERVICE SIZE IS 4 INCHES INDIAMETER
9. LONG SWEEP 90° FITTINGS ARE ALLOWED, STANDARD 90° ARE NOT ALLOWED

ANDERSON COUNTY
SOUTH CAROLINA

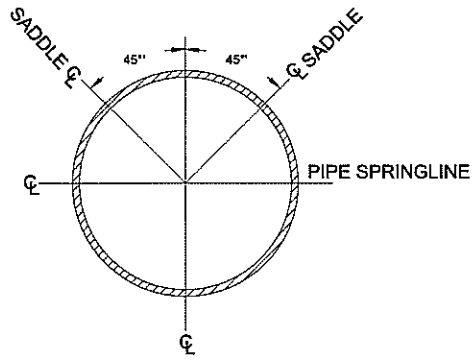
JOB NAME: WW-010
TYPICAL SANITARY SEWER LATERAL CONNECTION

REV	DESCRIPTION	BY	DATE

DRAWN BY:TAH
CHK'D BY:DS
SCALE: 1=N.T.S.
DATE: 7/2018
JOB NUMBER
SHEET



BACKFILL UNDER PVC SADDLE,
ADAPTOR, AND CAST IRON BEND WITH
#57 STONE

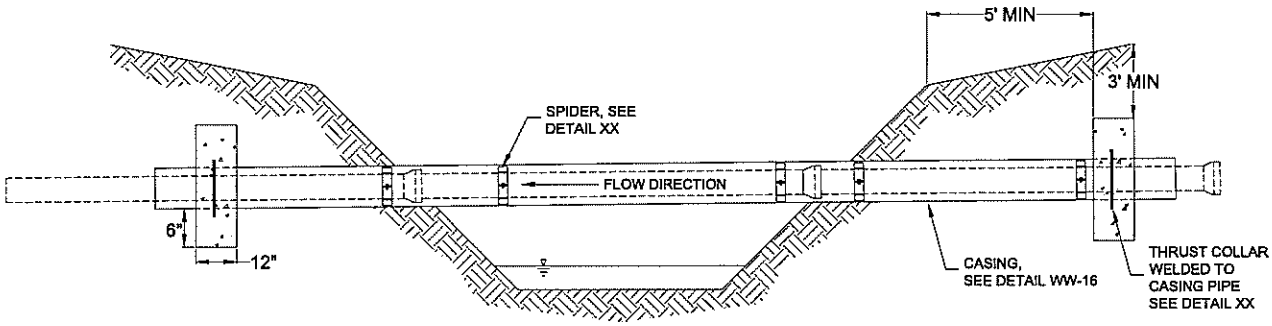


SADDLE INSTALLATION LIMITS

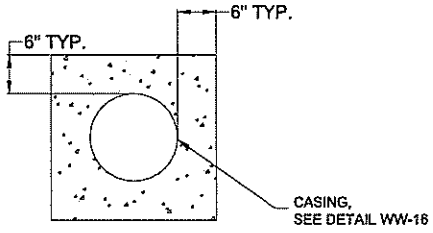
ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-011 LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 7/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



PROFILE VIEW



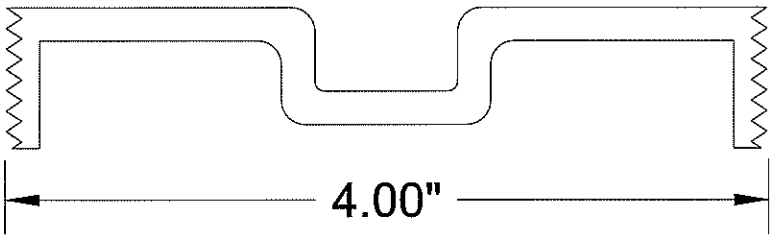
NOTES:
1. FOR CROSSINGS OF LESS THAN 10', NO CASING IS REQUIRED IS THE JOINT OF PIPE IS CENTERED ON THE CROSSING.
2. THRUST COLLAR MAY BE FIELD WELDED ON STEEL CASING PIPE. IF NO SASING IS REQUIRED THE TRUST COLLAR MUST BE FACTORY WELDED ON DIP CARRIER PIPE.

CONCRETE COLLAR

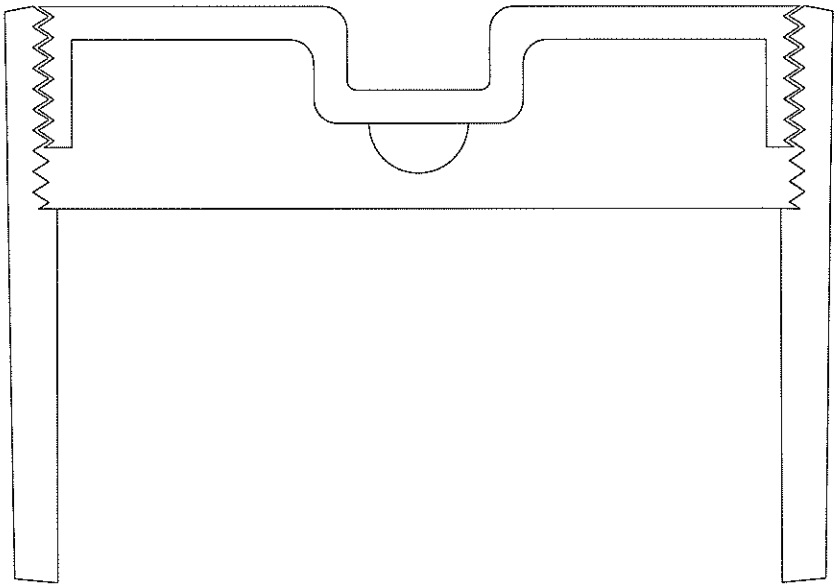
ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-013 AERIAL SEWER SERVICE	SCALE: 1=N.T.S.	
	DATE: 12/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



STANDARD 4" BRONZE CLEANOUT PLUG



CLEANOUT FERRULE WITH PLUG

STYLES ACCEPTED:

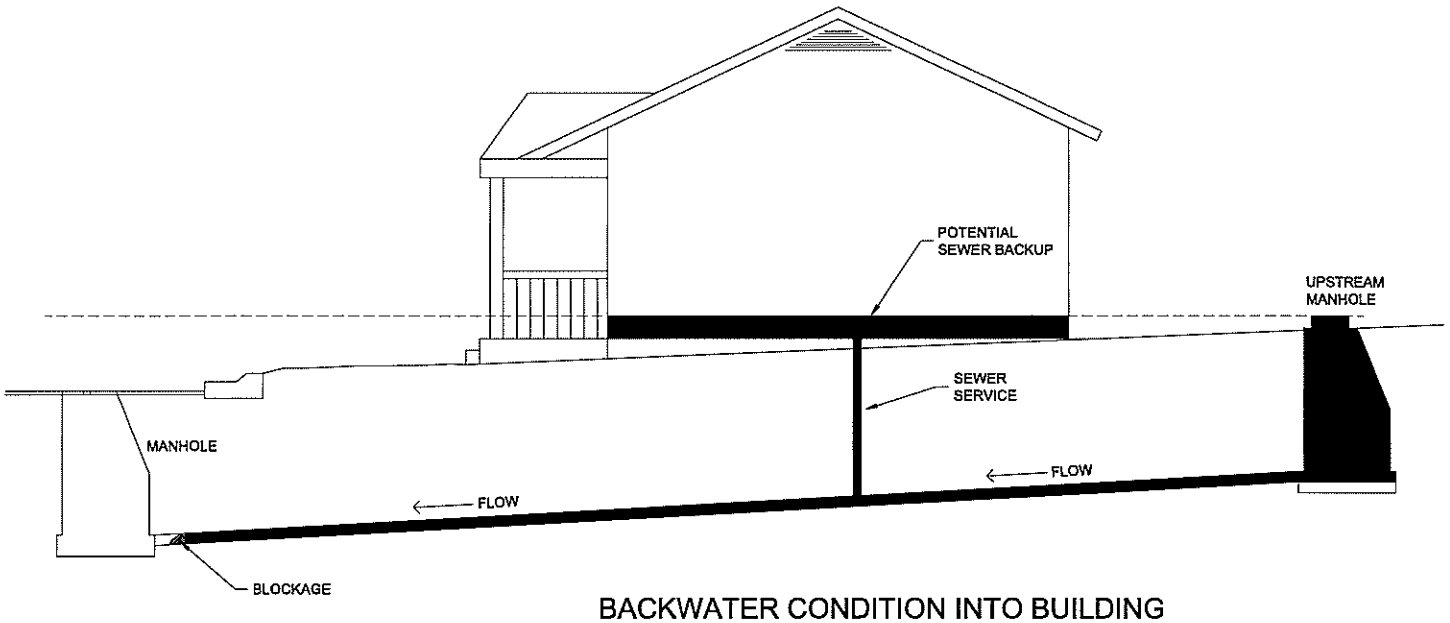
INVERTED NUT ONLY

ANDERSON COUNTY
SOUTH CAROLINA

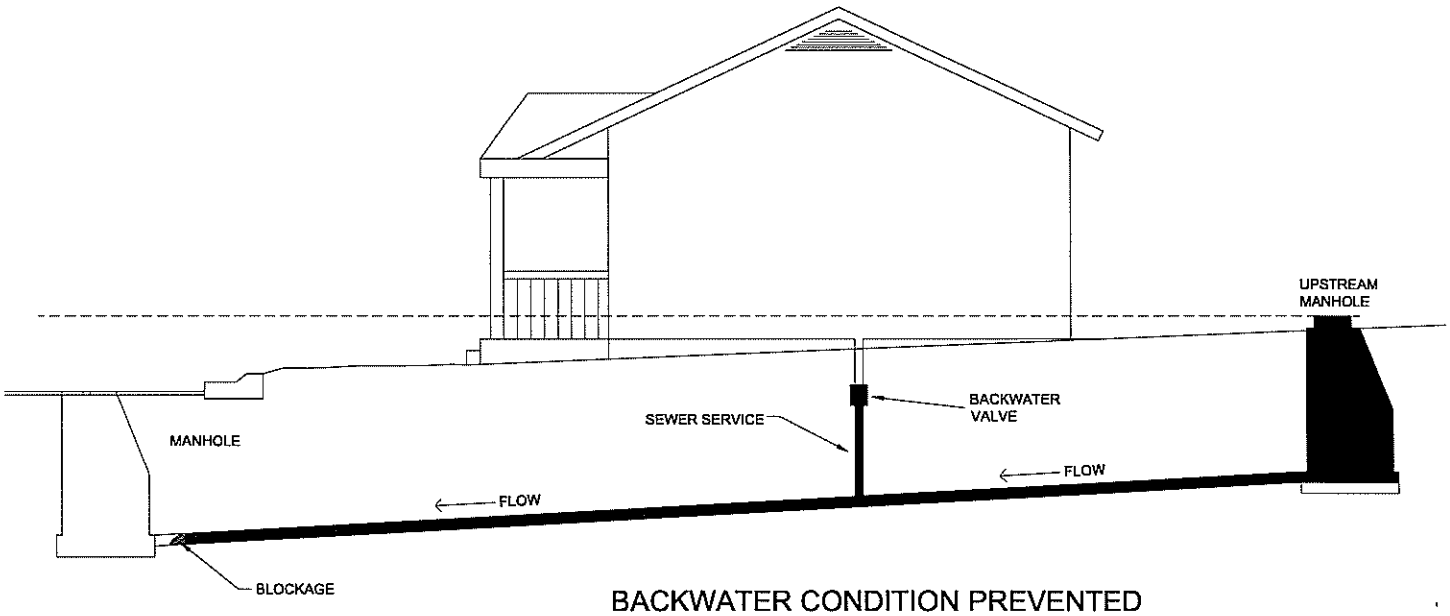
JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-014	SCALE: 1=N.T.S.	
CLEAN OUT PLUG DETAIL	DATE: 7/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE

BUILDING WITH NEXT UPSTREAM MANHOLE HIGHER THAN
THE LOWEST DRAIN AND BLOCKAGE IN SEWER MAIN



BACKWATER CONDITION INTO BUILDING
WITHOUT BACKWATER VALVE

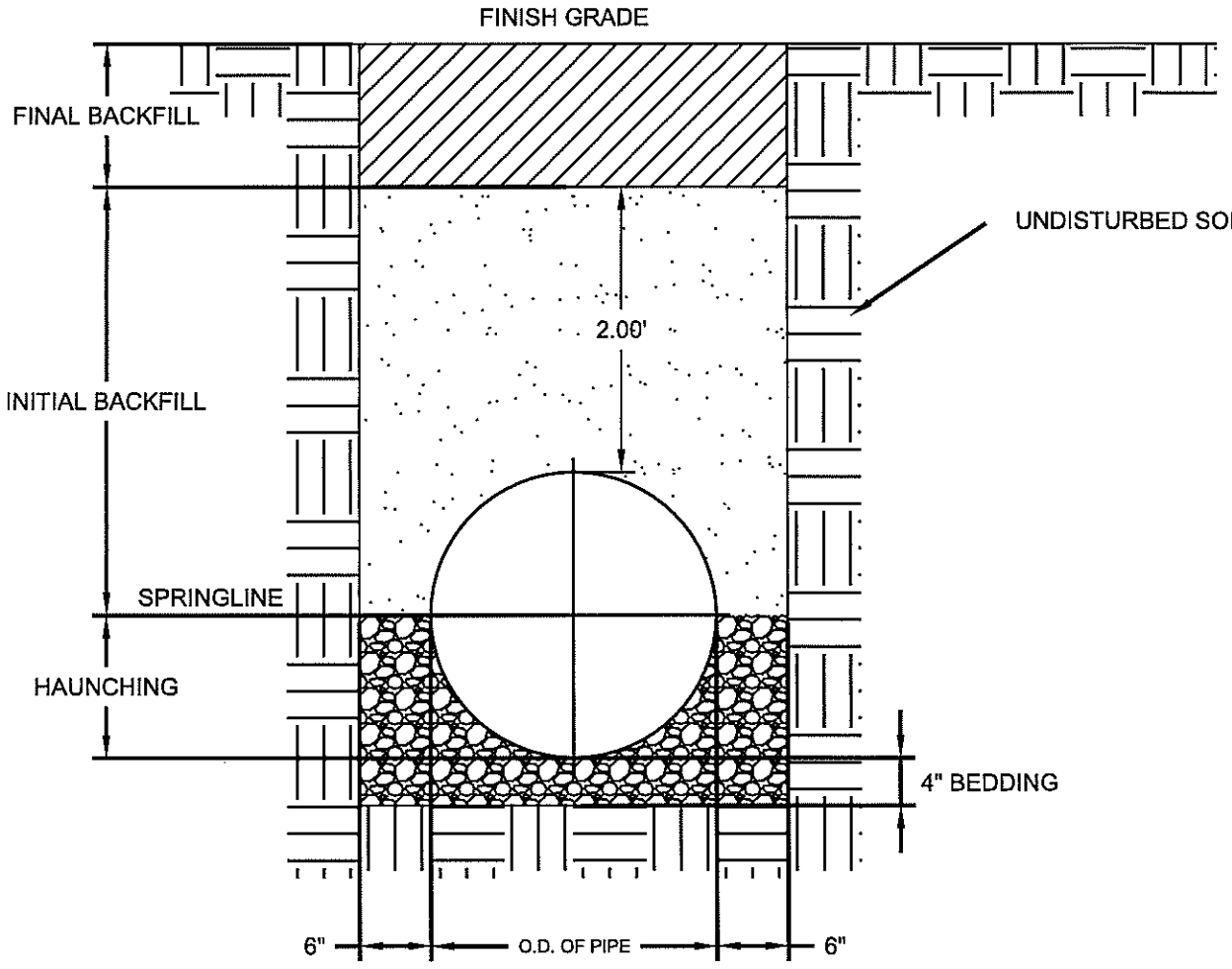


BACKWATER CONDITION PREVENTED
BY BACKWATER VALVE

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-015 BACKWATER VALVE INSTALLATION	SCALE: 1=N.T.S.	
	DATE: 12/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



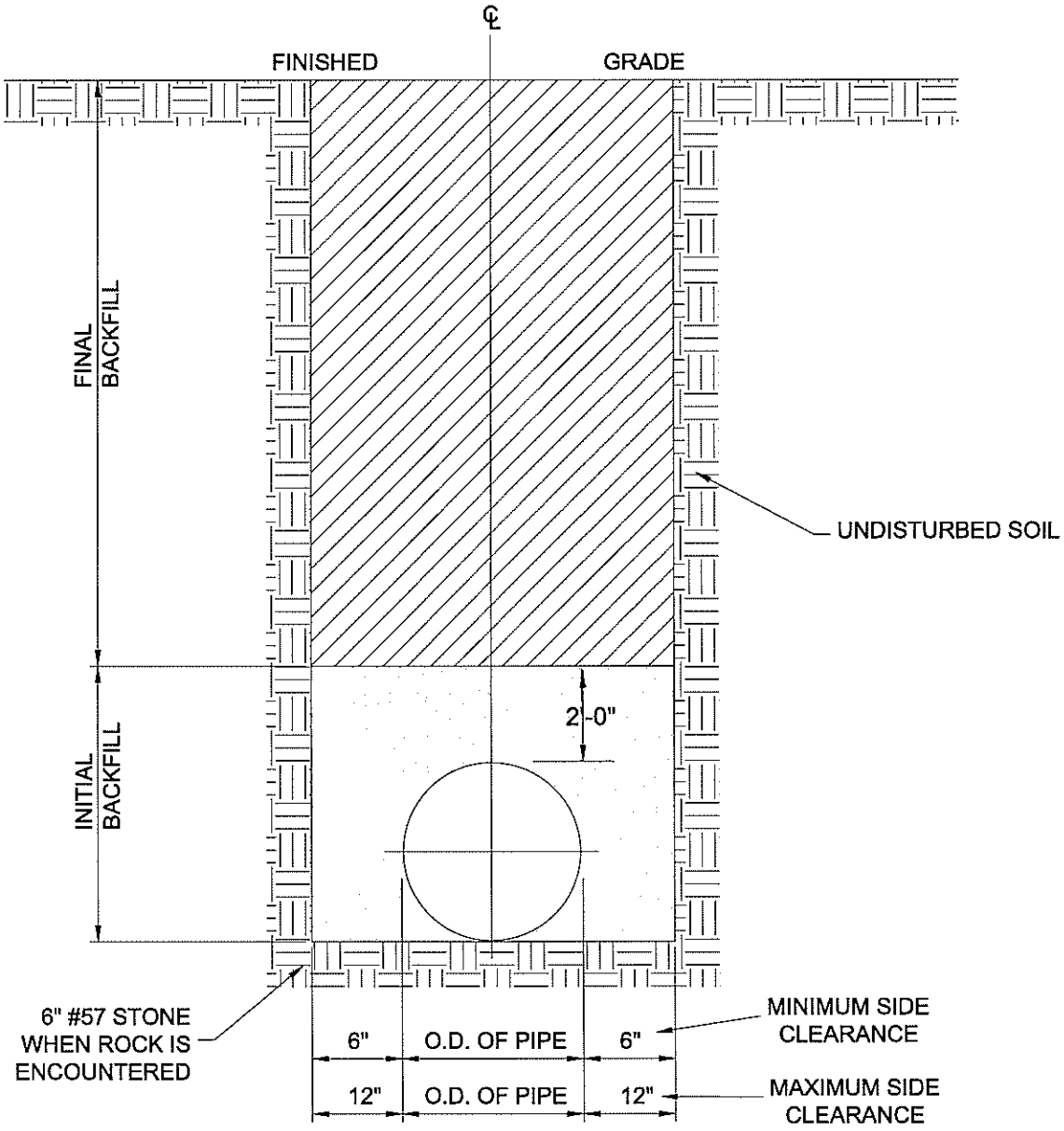
TYPICAL INSTALLATION SDR 35 GRAVITY PIPE

1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKENFROM THE INSIDE FACE OF THE SHORING AND BRACING
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS AND 12" LIFTS IN NON TRAFFIC AREAS

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-020 SDR 35 GRAVITY SEWER LINE INSTALLATION DETAIL		DRAWN BY:TAH	CHK'D BY:DS
		SCALE: 1=N.T.S.	
		DATE: 7/2018	
		JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



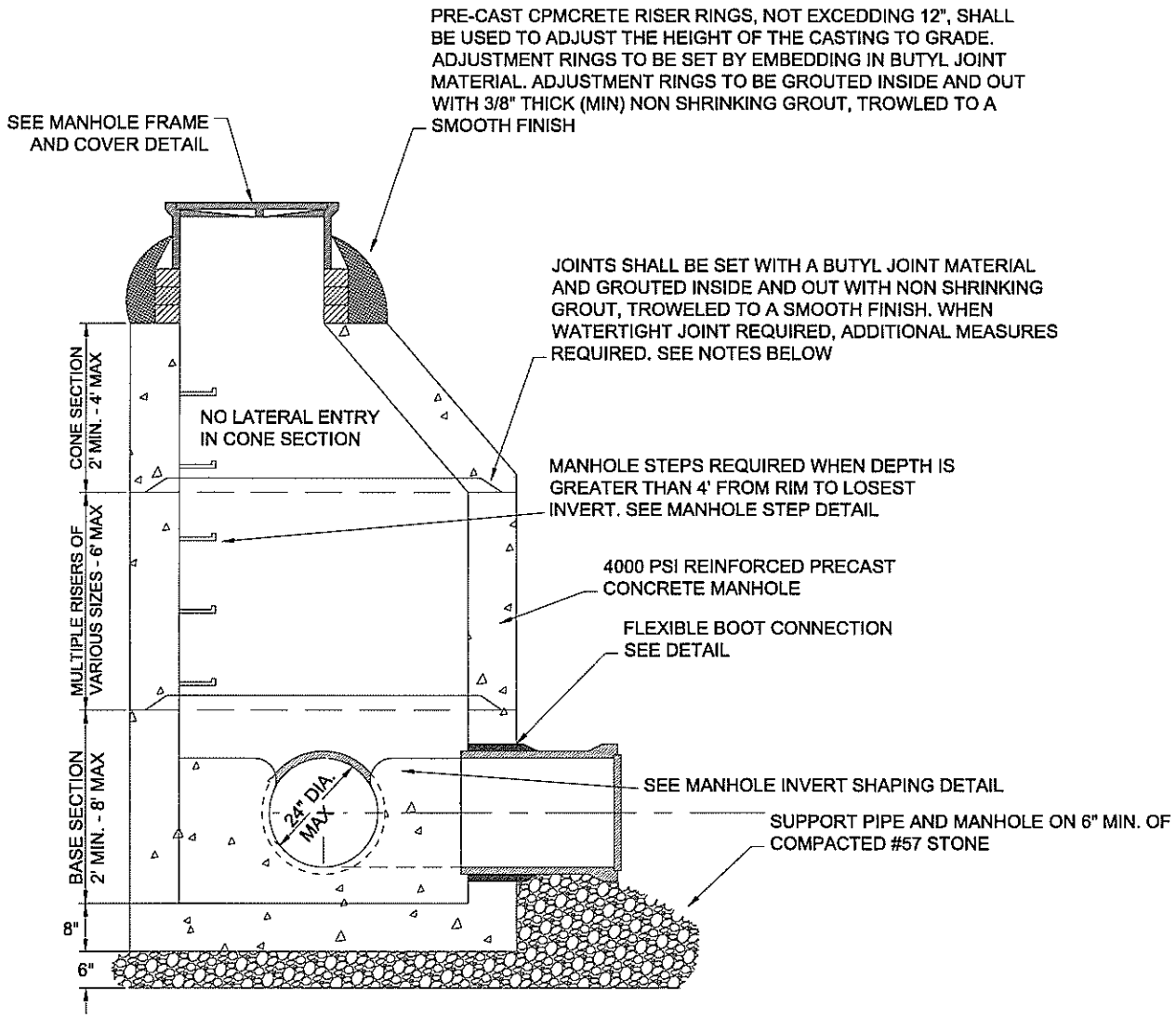
NOTE:

1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS
5. ACHIEVE 80% COMPACTION IN NON-TRAFFICE AREAS AND 95% COMPACTION IN TRAFFIC AREAS
6. IF IN EASEMENT 4" TOPSOIL AND 12" CLEAN SELECT FILL MAY BE REQUIRED
7. NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-021 TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR DUCTIL IRON PIPE	DRAWN BY:TAH	CHK'D BY:DS	
	SCALE: 1=N.T.S.		
	DATE: 7/2018		
	JOB NUMBER	SHEET	

REV	DESCRIPTION	BY	DATE



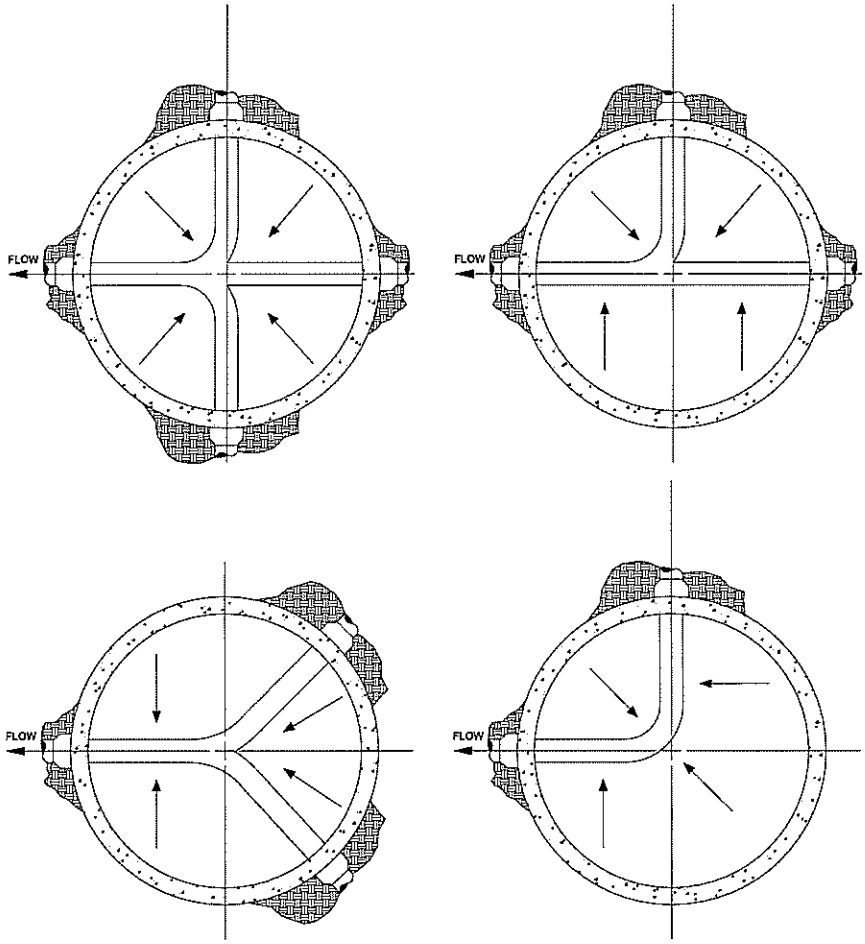
NOTE

1. PRECAST CONCRETE MANHOLES SHALL BE IN CONFORMACE WITH ANDERSON COUNTY SPECIFICATIONS AND WITH ASTM C-478
2. ECCENTRIC CONE SECTION SHALL BE USED, UNLESS MANHOLE TOP IS MORE THAN 2' ABOVE GROUND ELEVATION THEN CONCENTRIC FLAT TOP MANHOLES TO BE USED WITH ACCESS LADDERS IN MANHOLE
3. DOG HOUSE MANHOLES ARE NOT ALLOWED UNLESS SPECIFICALLY PERMITTED BY ANDERSON COUNTY
4. WHEN MANHOLE DEPTH IS GREAT THAN 12' FROM RIM TO LOWEST INVER, 60" DIA. SHALL BE REQUIRED.
5. MANHOLE WALL SHALL BE 5" THICK MINIMUM FOR 48" INSIDE DIAMETER MANHOLES AND 6" MINIMUM FOR 60" DIAMETER MANHOLES. COMPOSITE MANHOLES SHALL HAVE WALLS WITH 2" THICKNESS MINIMUM
6. PROVIDE A MAXIMUM OF TWO LIFT HOLES PER SECTION. PLUG HOLES WITH RUBBER PLUG AND GROUT INSIDE AND OUT WITH NONSHRINKING GROUT FOR A WATER TIGHT SEAL
7. MAXIMUM OF THREE INLET TRIBUTARIES PERMITTED PER MANHOLE (THIS INCLUDES SEWER SERVICES) WITH OUT PRIOR APPROVAL OF COUNTY ENGINEER
8. MINIMUM 0.2' DROP IN ELEVATION FROM THE LOWEST TRIBUTARY INLET TO THE INVER OF THE OUTLET UNLESS PRIOR APPROVAL OF COUNTY ENGINEER IS OBTAINED
9. CONNECTION TO A PRECAST MANHOLE MUST BE CORED AND REQUIRE A FLEXIBLE BOOT CONNECTION, KOR-N-SEAL OR APPROVED EQUAL. CORRING NOT PERMITTED WITHIN 6" OF BARREL SECTION JOINT. CONNECTION TO EXISTING MANHOLES SUBJECT TO ADDITIONAL REQUIREMENTS. SEE COUNTY SPECIFICATIONS, FLEXIBLE BOOT DETAIL AND MANHOLE INVERT SHAPING DETAIL FOR MORE INFORMATION
10. RE-CORING OR OVER CORING IS NOT PERMITTED ON NEW MANHOLES THAT WERE FABRICATED OR INSTALLED INCORRECTLY
11. NON SHRINKING GROUT SHALL BE IN CONFORMANCE WITH ASTM C11017, ASTM C827, CRD C621 SUCH AS 1107 ADVANTAGE GROUT BY DAYTON SUPERIOR OR APPROVED EQUAL
12. BUTYL JOINT MATERIAL SHALL COMPLY WITH ASTM C990
13. IN CORROSIVE CONDITIONS AS DIRECTED BY COUNTY ENGINEER, (E.G. RECIEVING FORCE MAIN DISCHARGE) COMPOSITE MANHOLES AS MANUFACTURE BY US COMPOSITE PIPE OR ARMOROCK WILL BE REQUIRED
14. WHEN A WATERTIGHT MANHOLE IS REQUIRE AS DIRECTED BY THE COUNTY ENGINEER, JOINTS SHALL BE SEALED WITH O-RING GASKETS IN CONFORMANCE WITH ASTM C443 AND NON SHRINKING GROUT. ADDITIONAL THE MANHOLE SHALL RECEIVE WATERPROOFING BY ON OF THE FOLLOWING METHODS: (A.) EXTERIOR OF MANHOLE SHALL RECEIVE A 40 MIL COATING OF BITUMINOUS COAL TAR EPOXY CONFORMING TO AWWA C120 PER COUNTY SPECIFICATIONS. (B.) MANHOLES SHALL BE PRECAST WITH WATERPROOFING ADMIXTURE IPANEX BY IPA SYSTEMS IN ACCORDANCE WITH THE MANUFACTURERS DOSAGE AND MIXING INSTRUCTIONS
15. ALL MANHOLES MUST BE EQUIPPED WITH "INFLOW DISHES" TO PREVENT RAIN WATER FROM ENTERING SEWER SYSTEM

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-030 STANDARD PRECAST MANHOLE	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 7/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



NOTES:

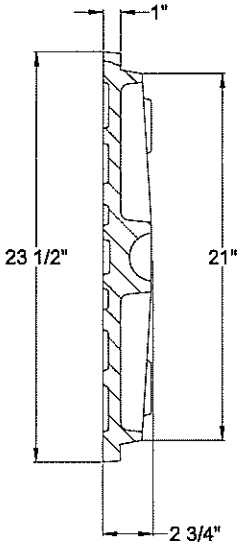
1. THE FLOW CHANNEL STRAIGHT THOUGH A MANHOLE SHALL CONFORM AS CLOSELY AS POSSIBLE IN SHAPE TO THAT OF THE CONNECTING SEWERS AND BE A SMOOTH CONNECTION BETWEEN THE INLET TRIBUTARY AND THE OUTLET PIPE.
2. FLOW CHANNELS BETWEEN AN INLET TRIBUTARY PIPE AND THE OUTLET PIPE MAY BE FIELD CONSTRUCTED OR PRECAST
3. THE INVERT OF THE PIPE SHALL BE EQUAL TO THE INVERT OF THE FLOW CHANNEL AT THE CONNECTION
4. THE CHANNEL WALLS SHALL BE FORMED OR SHAPED TO THE FULL HEIGHT OF THE CROWN OF THE OUTLET SEWER IN SUCH A MANNER TO NOT OBSTRUCT MAINTENANCE, INSPECTION OR FLOW IN THE SEWERS AND TO PREVENT SOLIDS DEPOSITION.
5. CURVED FLOW CHANNELS MAY REQUIRE INCREASED CHANNEL SLOPE TO MAINTAIN ACCEPTABLE FLOW VELOCITY
6. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN THE INVERT OF THE TRIBUTARY INLET AND THE MANHOLE INVERT SHALL BE 18 INCHES. ELEVATION DIFFERENCES GREATER THAN THE 18 INCHES REQUIRE A DROP MANHOLE
7. NO TRIBUTARY INLET, INCLUDING SERVICE CONNECTIONS, NOR DROP MANHOLE PIPES SHALL DISCHARGE ONTO THE SURFACE OF THE BENCH
8. BENCH AND CHANNELS TO BE FORMED USING CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI
9. CONCRETE SHALL BE TROWELED TO A SMOOTH FINISH

ANDERSON COUNTY
SOUTH CAROLINA

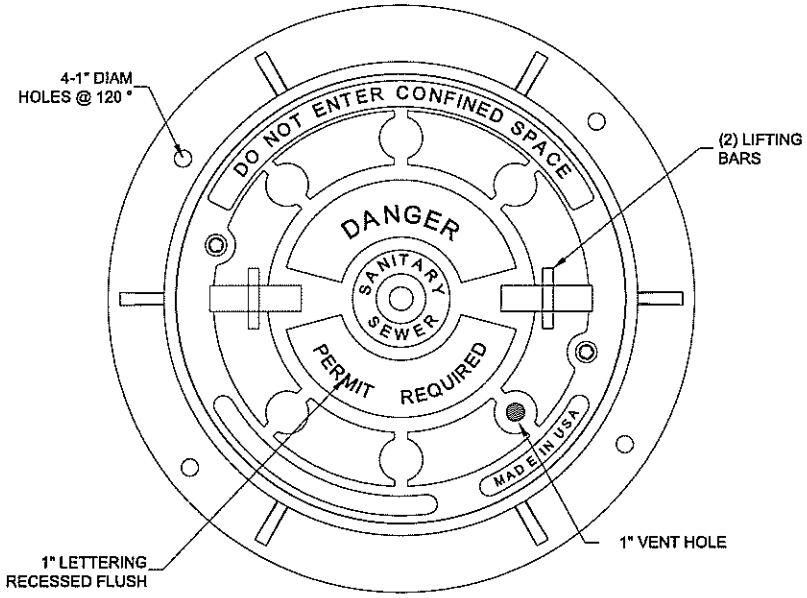
JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-031 MANHOLE INVERT	SCALE: 1=N.T.S.	
	DATE: 12/2018	
	JOB NUMBER	SHEET

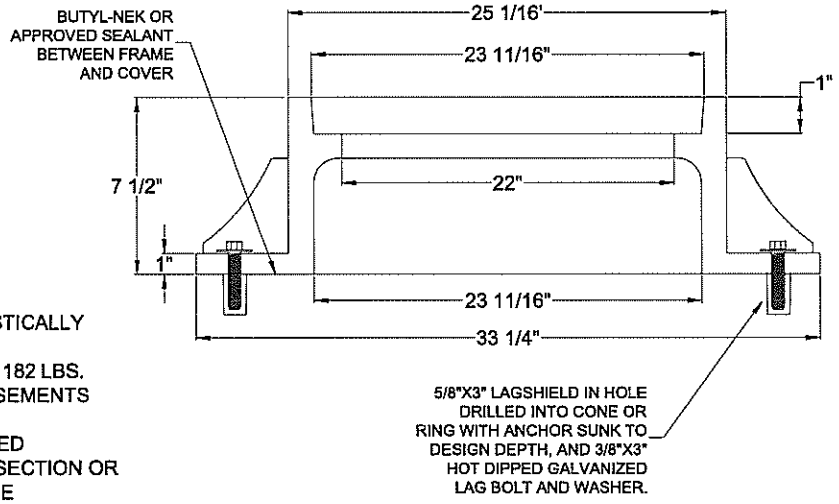
REV	DESCRIPTION	BY	DATE

COVER 120 LBS. MINIMUM

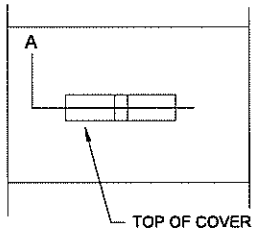


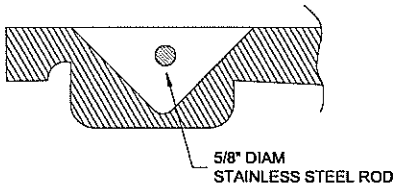
MANHOLE FRAME AND COVER





NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 182 LBS. WITHIN PUBLIC ROW AND 160 LBS WITHIN EASEMENTS
3. COVER SHALL WEIGH A MIN. OF 120 LBS
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME





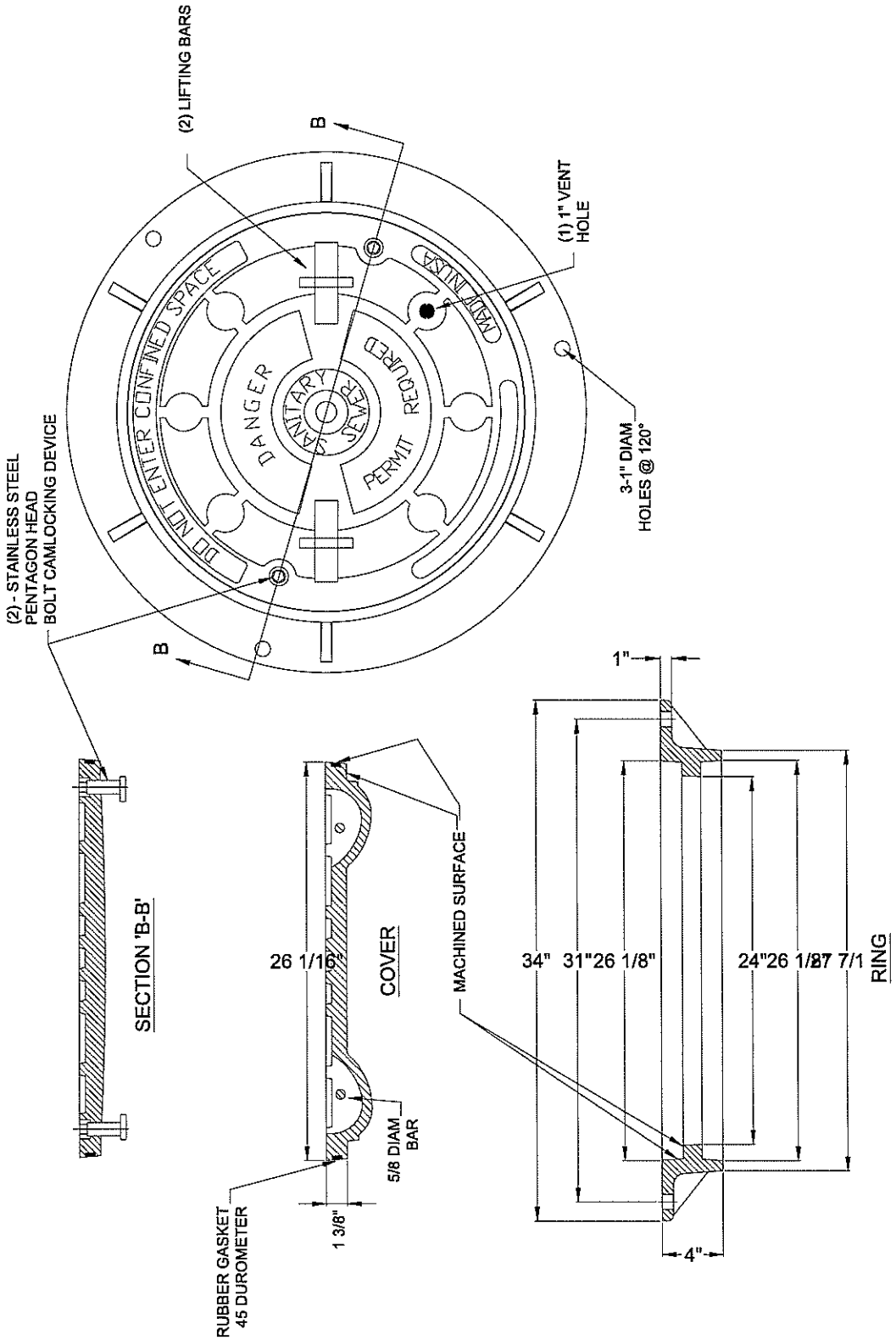
SECTION A

TYPICAL LIFTING DEVICE

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-032	SCALE: 1=N.T.S.	
STANDARD MANHOLE FRAME AND COVER	DATE: 12/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



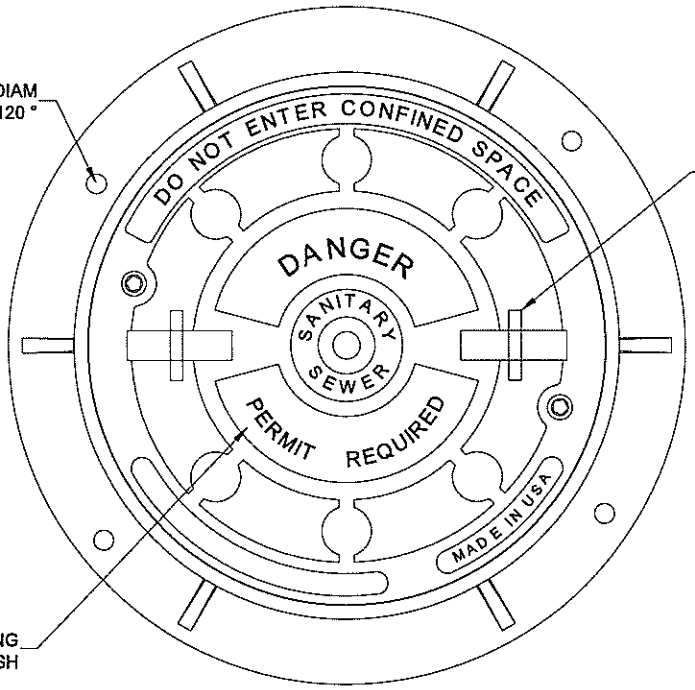
NOTES:

1. SOLID COVER REQUIRED WHEN WATER TIGHT MANHOLE SPECIFIED

ANDERSON COUNTY
SOUTH CAROLINA

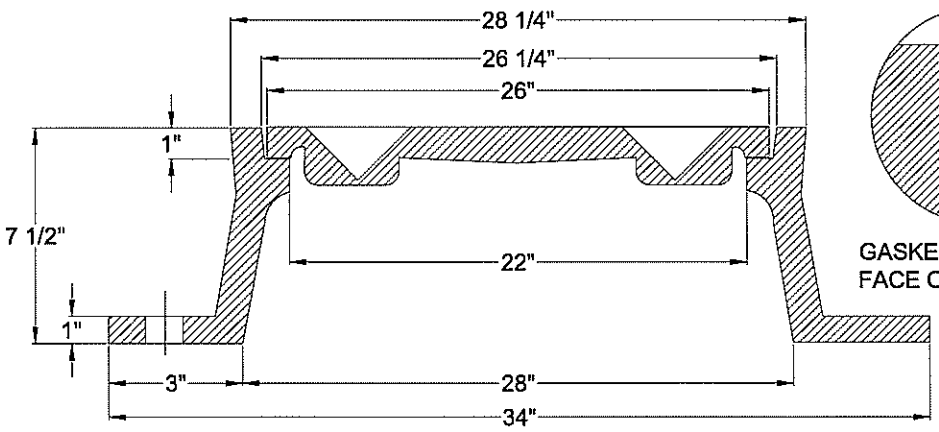
JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-033 FLAT TOP MANHOLE COVER	SCALE: 1=N.T.S.	
	DATE: 12/2018	
	JOB NUMBER	SHEET

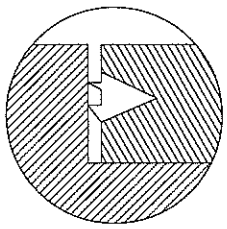
REV	DESCRIPTION	BY	DATE



MINIMUM A/G WEIGHT
FRAME 182
COVER 160
TOTAL 342

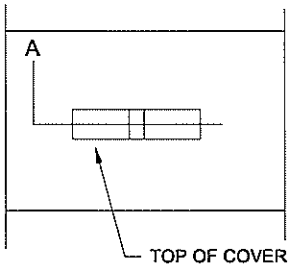
PLAN

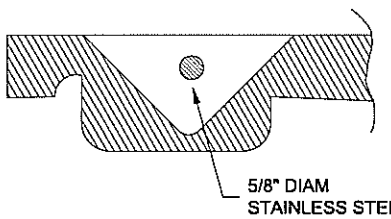




GASKET IN VERTICAL
FACE OF COVER

RING MUST BE
ANCHORED IN
ACCORDANCE
WITH WW-24





SECTION A

TYPICAL LIFTING DEVICE

ANDERSON COUNTY
SOUTH CAROLINA

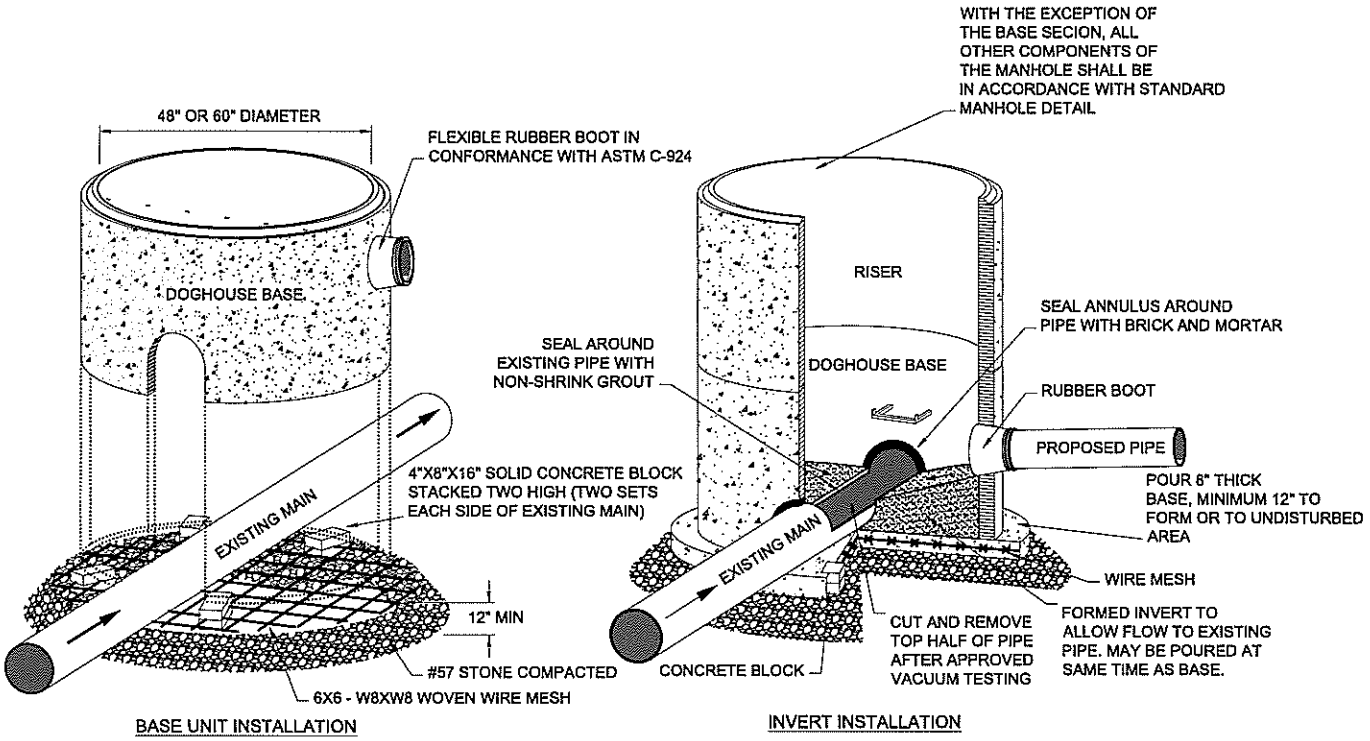
JOB NAME:

WW-034

MANHOLE FRAME AND WATER TIGHT COVER

DRAWN BY:TAH	CHK'D BY:DS
SCALE: 1=N.T.S.	
DATE: 12/2018	
JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



BASE UNIT INSTALLATION

INVERT INSTALLATION

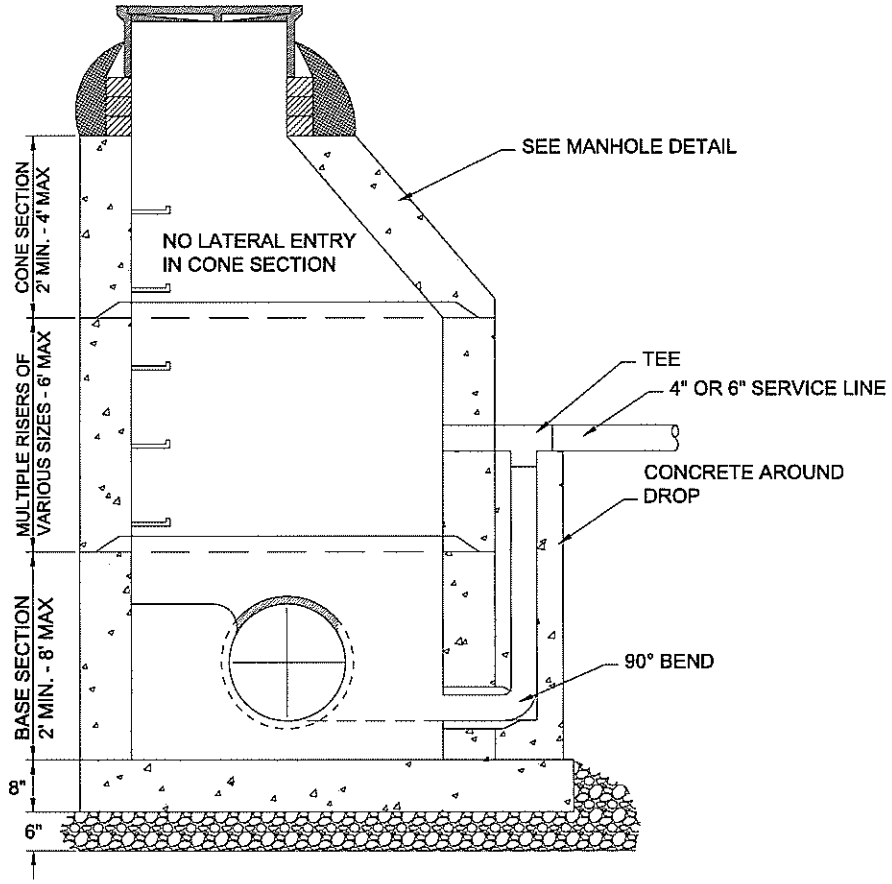
NOTE:

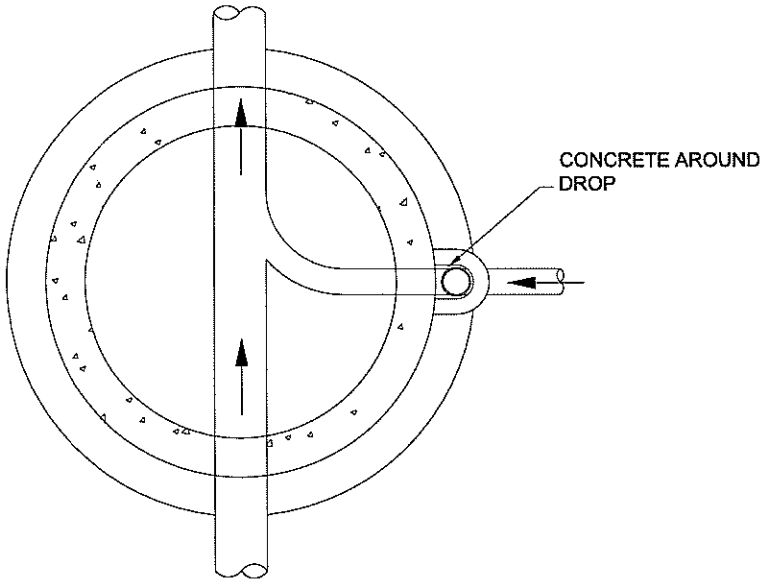
1. DOGHOUSE OPENINGS IN PRECAST UNITS SHALL HAVE A RADIUS OF 4 TO 8 INCHESL LARGER THAN THE EXISTING PIPE DIAMETER
2. CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI, PER ASTM C-94
3. ALL PRECAST MANHOLE COMPONENTS SHALL MEET ASTM C-478
4. BENCH SHALL SLOP UPWARD FROM THE SPRINGLINE TO THE PROJECTED LEVEL OF THE PIP CROWN OR 8 INCHES ABOVE THE SPRINGLINE, WHICHEVER IS LESS

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-035 DOGHOUSE MANHOLE DETAIL	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 7/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE





ANDERSON COUNTY
SOUTH CAROLINA

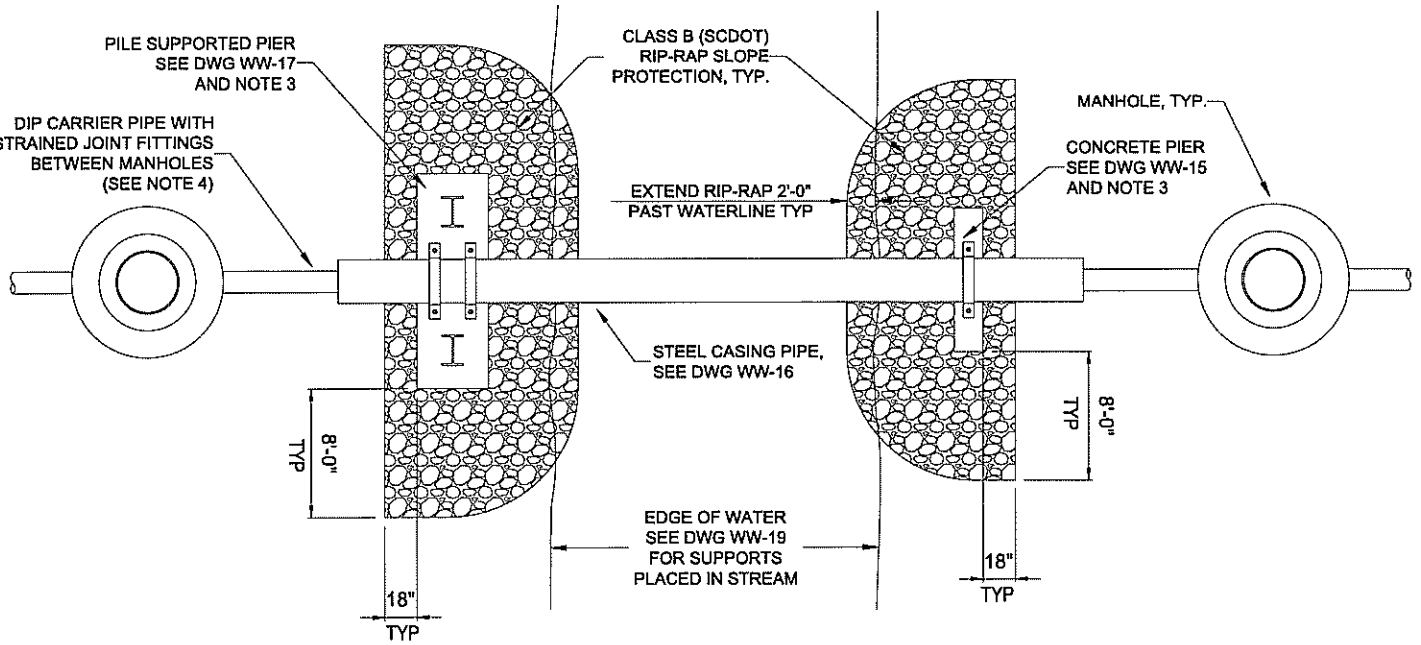
JOB NAME:

WW-036
STANDARD OUTSIDE DROP

DRAWN BY:TAH	CHK'D BY:DS
SCALE: 1=N.T.S.	
DATE: 12/2018	
JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE

S:\Roland\Logos\County Seal.JPG



NOTES:
1. RIP RAP FOR SLOPE PROTECTION SHALL BE CLASS B (PER SCDOT SPECIFICATIONS)
2. RIP RAP SHALL BE PLACED IN ACCORDANCE WITH SCDOT STANDARD DRAWINGS
3. SUPPORT TYPE FOR PIERS SHALL BE DETERMINED BY ENGINEER BASED ON SUBGRADE CONDITIONS AT SITE. SEE DRAWING WW-15 FOR SUBGRADE PARAMETERS FOR EACH TYPE OF FOUNDATION
4. WHERE DUCTILE IRON PIPE IS USED FOR CARRIER PIPE, DUCTILE IRON CARRIER PIPE SHALL BE INSTALLED UTILIZING 2 PIPE ALIGNMENT GUIDES PER JOINT ONE FOURTH OF THE PIPE JOINT LENGTH FROM BOTH THE BELL AND SPIGOT ENDS.

ANDERSON COUNTY
SOUTH CAROLINA

REV	DESCRIPTION	BY	DATE

JOB NAME:

WW-040

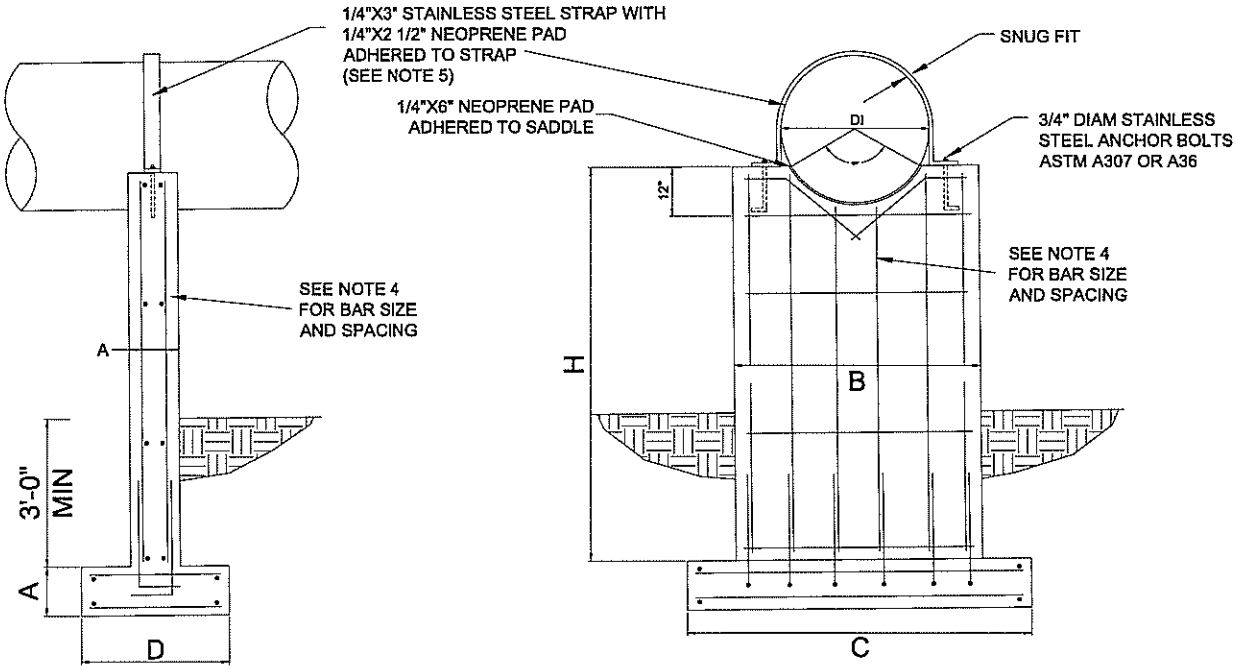
STANDARD AERIAL CROSSING

DRAWN BY:TAH | CHK'D BY:DS

SCALE: 1=N.T.S.

DATE: 12/2018

JOB NUMBER | SHEET



CASING PIPE DIA. "DI" (IN.)	"H" (FT.)	THICKNESS "A" (IN.)	PIER WIDTH "B" (FT.)	FOOTING LENGTH "C" (FT.)	FOOTING WIDTH "D" (FT.)
6-12	< 6	12	2'-4"	5'-6"	3'-0"
	8	12	2'-4"	6'-3"	3'-0"
	10	12	2'-4"	6'-8"	3'-0"
	12	12	2'-4"	7'-2"	3'-0"
14-20	< 6	12	3'-0"	8'-0"	3'-0"
	8	12	3'-0"	9'-0"	3'-0"
	10	12	3'-0"	9'-10"	3'-0"
	12	14	3'-0"	10'-6"	3'-0"
22-28	< 6	14	3'-8"	8'-9"	4'-0"
	8	14	3'-8"	10'-0"	4'-0"
	10	14	3'-8"	11'-0"	4'-0"
	12	14	3'-8"	11'-10"	4'-0"
30-36	< 6	18	4'-4"	9'-0"	4'-0"
	8	18	4'-4"	10'-6"	4'-0"
	10	18	4'-4"	11'-6"	4'-0"
	12	18	4'-4"	12'-4"	4'-0"
36-48	< 6	18	5'-4"	9'-6"	5'-0"
	8	18	5'-4"	11'-0"	5'-0"
	10	18	5'-4"	12'-0"	5'-0"
	12	18	5'-4"	12'-10"	5'-0"
51-56	< 6	18	6'-4"	9'-10"	5'-0"
	8	18	6'-4"	11'-4"	5'-0"
	10	18	6'-4"	12'-4"	5'-0"
	12	18	6'-4"	13'-2"	5'-0"

NOTES:

1. SHALLOW FOUNDATION DESIGN SHOWN ON THIS DETAIL IS BASED ON THE FOLLOWING PARAMETERS
   - ALLOWABLE SOIL BEARING CAPACITY = 2000 PSF
   - CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
   - GRADE 60 REINFORCING STEEL
   - MAXIMUM VELOCITY = 10 FT/SEC
   - MAXIMUM SUPPORT HEIGHT (H) - 12'-0"

   IF THE FIELD CONDITIONS REQUIRE ANY DEVIATIONS FROM THESE PARAMETERS, THE FOUNDATION DESIGN SHALL BE STAMPED BY A STRUCTURAL ENGINEER
2. IF SUBGRADE AT LOCATION OF SUPPORTS IS DEEMED UNABLE TO WITHSTAND 2000 PSF BEARING PRESSURE, A PILE SUPPORTED FOUNDATION SHALL BE UTILIZED AS PER DRAWING WW-20
3. IF BEDROCK IS ENCOUNTERED WHICH WILL PREVENT 3-FEET MINIMUM COVER OVER FOOTING, DOWELS SHALL BE DRILLED INTO BEDROCK PRIOR TO PLACING FOUNDATION. SEE DRAWING WW-21
4. TWELVE-INCH AND FOURTEEN-INCH THICK PIERS AND FOOTINGS SHALL BE REINFORCED WITH #5 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE. EIGHTEEN-INCH WIDE PIERS AND FOOTINGS SHALL BE REINFOCED WITH #7 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE.
5. EIGHTEEN-INCH THICK PIERS SHALL REQUIRE TWO STRAPS OVER THE PIPE INSTEAD OF ONE (AS SHOWN)
6. WHEN CONCRETE SUPPORTS ARE REQUIRED TO BE LOCATED WITHIN A STREAM AND ARE NOT COVERED WITH BACKFILL, SEE DRAWING WW-19 FOR MODIFICATIONS TO UPSTREAM FACE OF SUPPORT

ANDERSON COUNTY
SOUTH CAROLINA

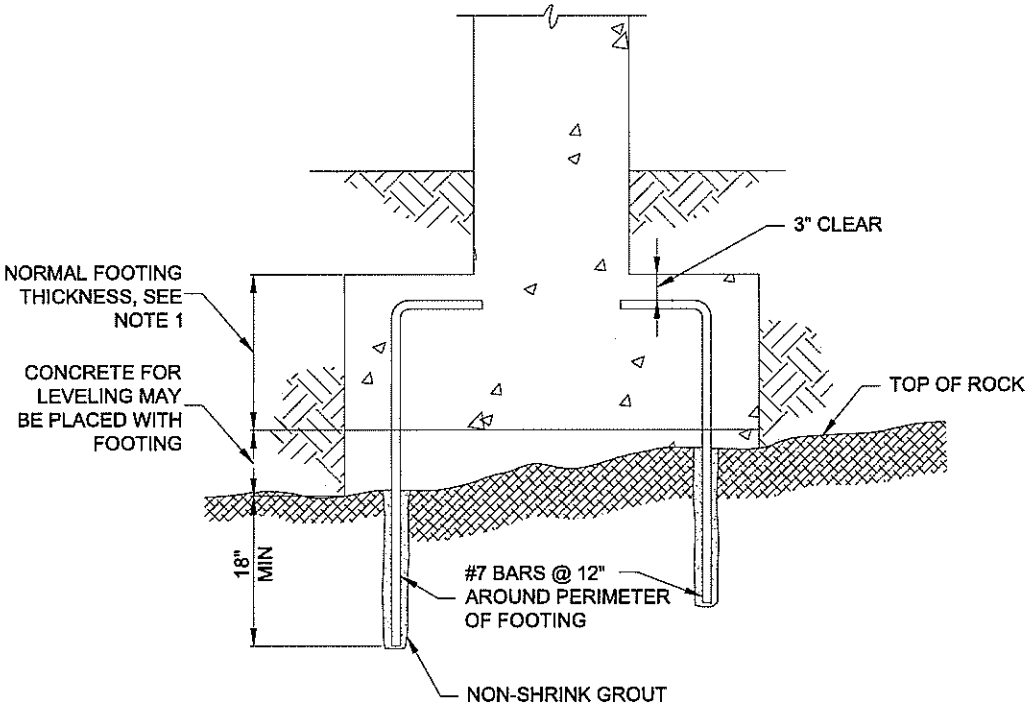
JOB NAME:

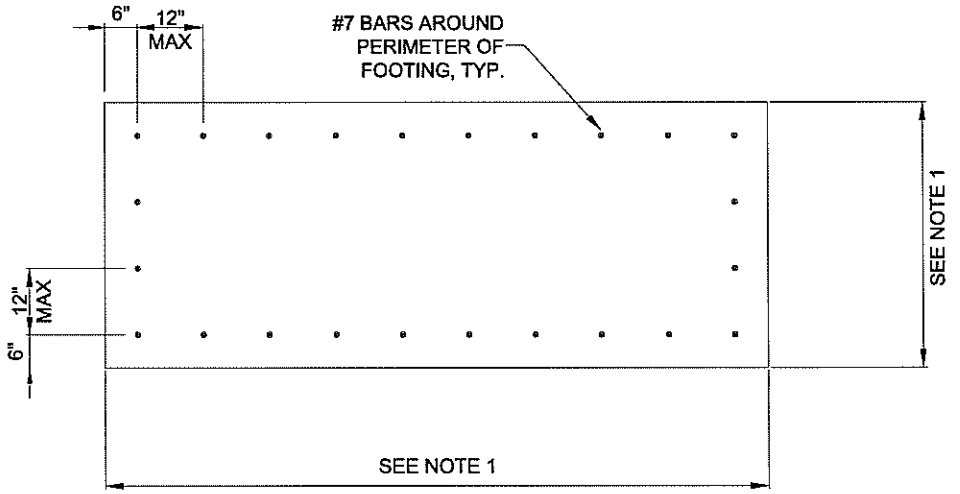
WW-041

AERIAL PIPE CROSSING
CONCRETE PIER DETAIL

DRAWN BY:TAH	CHK'D BY:DS
SCALE: 1=N.T.S.	
DATE: 12/2018	
JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE





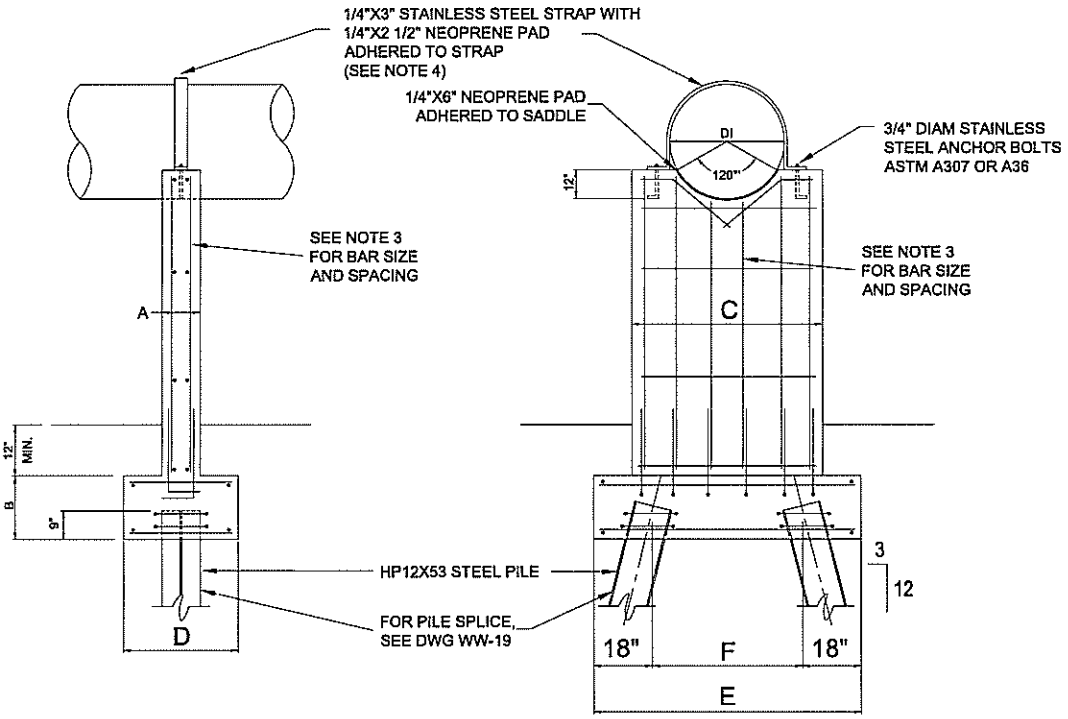
NOTES:

1. GEOMETRY OF FOOTING SHALL MATCH GEOMETRY OF CONCRETE PIERS WITH HEIGHT OF 6 FEET OR LESS AS PER DRAWING WW-15
2. NON-CHRINK GROUTH SHALL BE EUC-N-S BY THE EUCLID CHENICAL COMPANY; "MASTERFLOW 713" BY MASTER BUILDERS OR EQUAL

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-042 AERIAL PIPE CROSSING CONCRETE PIER ON BEDROCK	SCALE: 1=N.T.S.	
	DATE: 12/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



NOTES:

1. PILE SUPPORTED PIER FOUNDATION DESIGN SHOWN ON THIS DETIAL IS BASED ON THE FOLLOWING PARAMETERS:
   - MINIMUM CAPACITY OF HP12X53 PILE = 30 TONS
   - CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
   - GRADE 60 REINFORCING STEEL
   - MAXIMUM STREAM VELOCITY - 10 FT/SEC

   IF FIELD CONDITIONS REQUIRE ANY DEVIATION FROM THESE PARAMETERS, THE FOUNDATION DESIGN SHALL BE REVIEWED BY THE ENGINEER

2. LENGTH OF PILES SHALL BE AS REQUIRED TO DEVELOP 30 TON CAPACITY BY EITHER IND BEARING, FRICTION OR A COMBINATION OF END BEARING AND FIRCTION. AS A MINIMUM, PILES SHALL BE DRIVEN AT LEAST 15 FEET INTO UNDISTURBED SOIL.
3. TWELVE-INCH AND FOURTEEN-INCH WIDE PIERS SHALL BE REINFORCED WITH #5 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE. EIGHTEEN-INCH WIDE PIERS SHALL BE REINFORCED WITH #7 BARS ATH 12 INCHES OC IN EACH DIRECTION ON EACH FACE. FOTTINGS SHALL BE REINFORCED TYPICALLY TO PIERS
4. EIGHTEEN-INCH WIDE PIERS SHALL REQUIRE TWO STRAPS OVER THE PIPE INSTEAD OF ONE (AS SHOWN).
5. WHEN CONCRETE SUPPORTS ARE REQUIRED TO BE LOCATED WITHIN A STREAM AND ARE NOT COVERED WITH BACKFILL, SEE DRAWING WW-19 FOR MODIFICATIONS TO UPSTREAM FACE OF SUPPORT

CASING PIPE DIA. "DI" (IN.)	PIER THICKNESS "A" (IN.)	FOOTING THICKNESS "B" (IN.)	PIER WIDTH "C" (FT.)	FOOTING WIDTH "D" (FT.)	FOOTING LENGTH "E" (FT.)	PILE SPACING "F" (FT.)
6-12	12	20	2'-4"	3'-0"	6'-0"	3'-0"
14-20	12	20	3'-0"	3'-0"	8'-0"	5'-0"
22-28	18	26	3'-8"	4'-0"	8'-9"	5'-9"
30-36	18	26	4'-4"	4'-0"	9'-0"	6'-0"
38-48	18	26	5'-4"	5'-0"	9'-6"	6'-6"
51-60	18	26	6'-4"	5'-0"	9'-10"	6'-10"

ANDERSON COUNTY
SOUTH CAROLINA

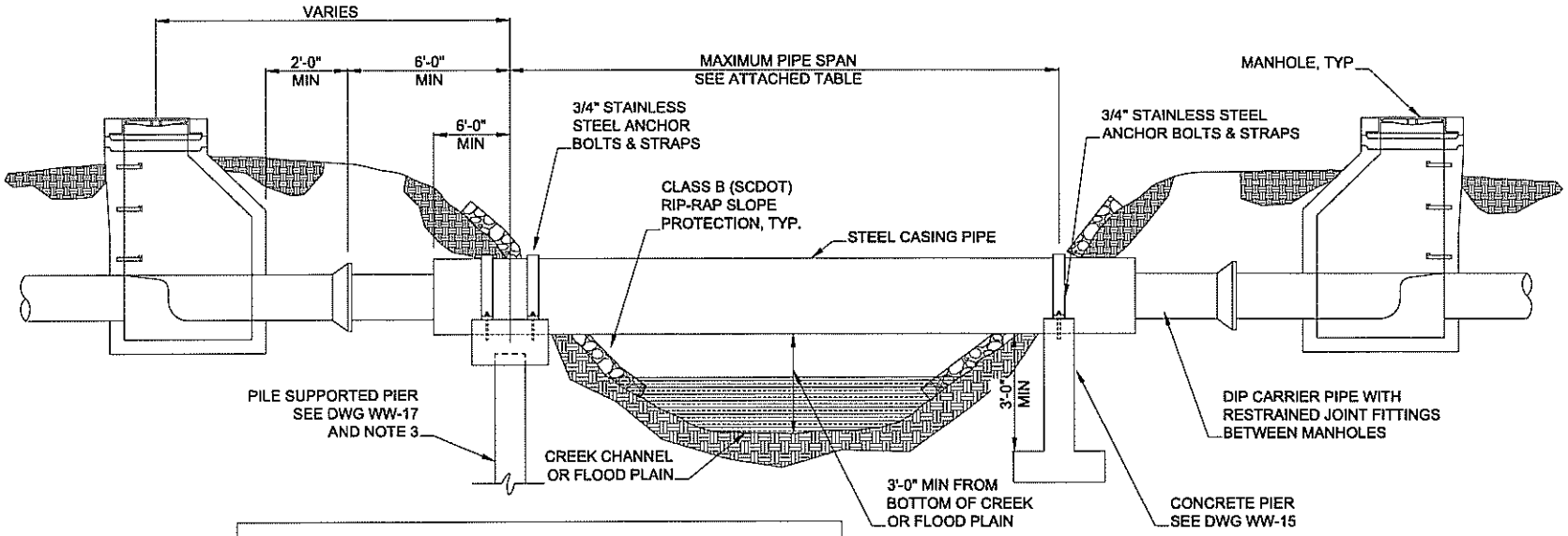
JOB NAME:

WW-043

AERIAL PIPE CROSSING
PILE SUPPORTED PIER DETAIL

DRAWN BY:TAH	CHK'D BY:DS
SCALE: 1=N.T.S.	
DATE: 12/2018	
JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



ALLOWABLE SPANS FOR STEEL CASING PIPE			
CARRIER PIPE, DIP DIAMETER (IN.)	CASING PIPE, STEEL DIAMETER (IN.)	MINIMUM CASING PIPE WALL THICKNESS (IN.)	ALLOWABLE SPAN (FT.)
6	14	0.3750	40
8	16	0.3750	45
10	18	0.3750	50
12	20	0.3750	50
14	24	0.3750	55
16	26	0.3750	55
18	30	0.3750	60
20	32	0.3750	65
24	36	0.4375	65
30	42	0.4375	65
36	48	0.500	65
42	56	0.500	65

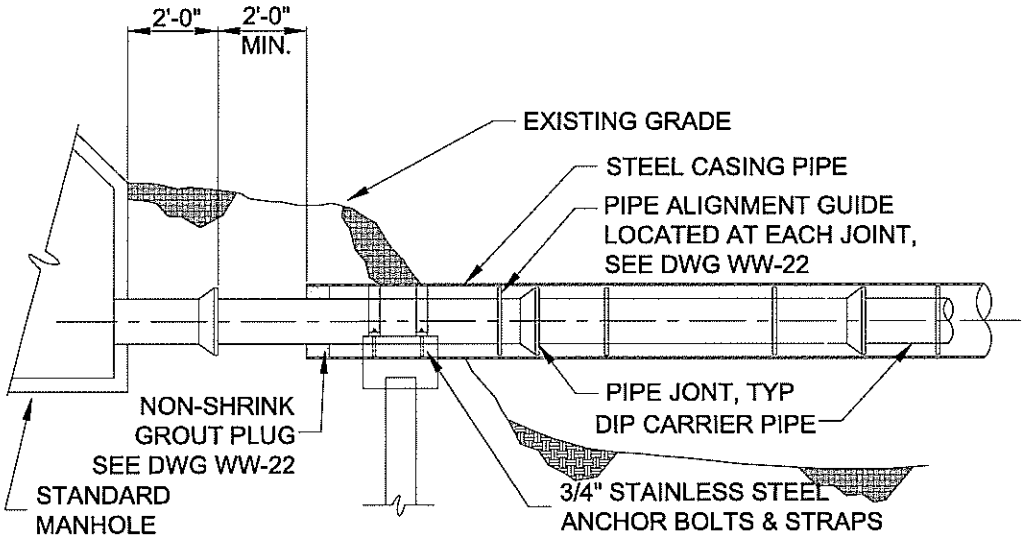
NOTES:
1. STEEL PIPE SHALL BE EITHER SPIRAL WELDED OR SMOOTH WALL SEAMLESS WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI. PAINTING AND LINING SHALL BE AS REQUIRED BY ANDERSON COUNTY
2. DUCTILE IRON PIPE SHALL BE SUPPORTED WITH TWO SPIDERS AT EVERY JOINT WITHIN THE CASING PIPE USING APPROVED PIPE ALIGNMENT GUIDE. SEE DRAWING WW-22. ALL JOINTS SHALL BE RESTRAINED JOINT. SEE NOT 2, DWG WW-23
3. SUPPORT TYPE FOR PIERS SHALL BE DETERMINED BY ENGINEER BASED ON SUBGRADE CONDITIONS AT SITE. SEE DRAWING WW-15 FOR SUBGRADE PARAMETERS FOR EACH TYPE OF FOUNDATION, SEE DRAWINGS WW-15 FOR SUPPORTS PLACED WITHIN STREAM
4. BOTTOM OF PIPE TO BE AT A MINIMUM OF 1' ABOVE THE 25 YEAR FLOOD ELEVATION.

ANDERSON COUNTY
SOUTH CAROLINA

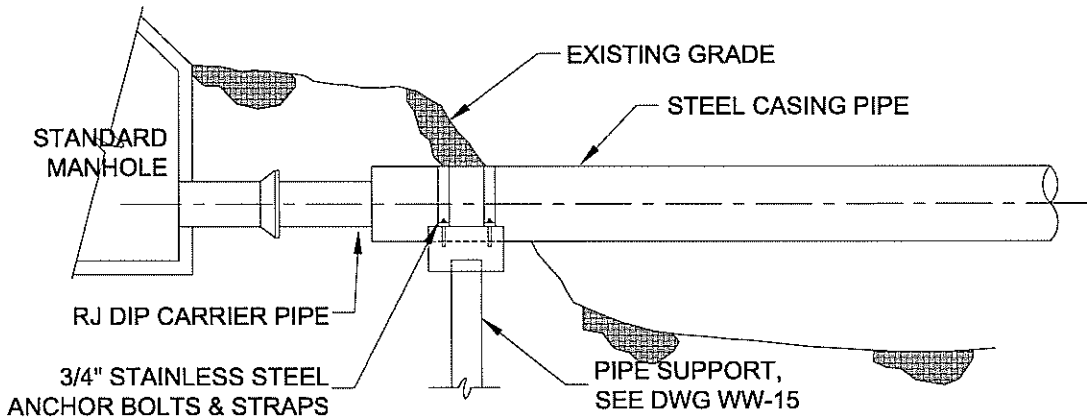
JOB NAME:
WW-044
ARIAL PIPE CROSSING
STEEL CASING PIPE ELEVATION

DRAWN BY:TAH
CHK'D BY:DS
SCALE: 1=N.T.S.
DATE: 12/2018
JOB NUMBER
SHEET

REV | DESCRIPTION | BY | DATE



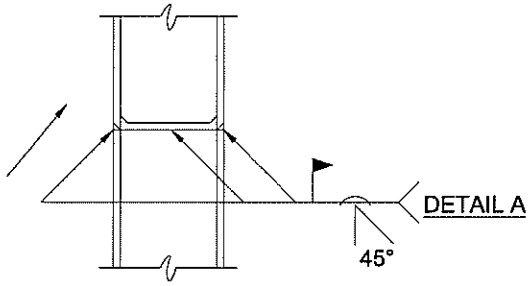
SECTION



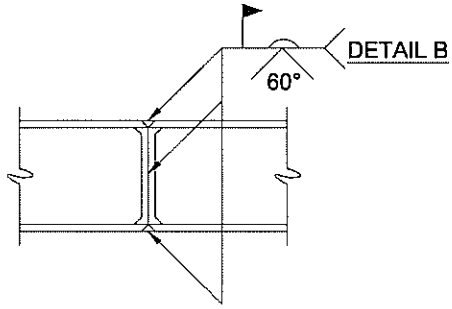
ELEVATION

ANDERSON COUNTY SOUTH CAROLINA	JOB NAME: WW-045 AERIAL PIPE CROSSING TYPICAL PIPE SECTION AND ELEVATION	DRAWN BY:TAH	CHK'D BY:DS
		SCALE: 1=N.T.S.	
		DATE: 12/2018	
		JOB NUMBER	SHEET

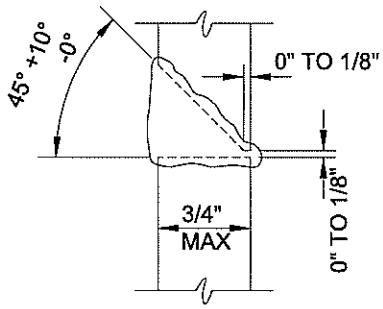
REV	DESCRIPTION	BY	DATE



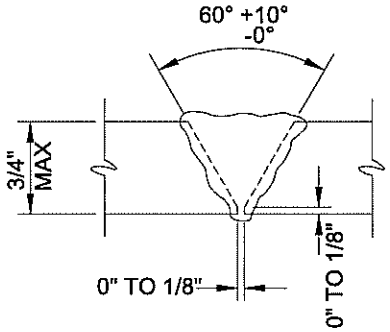
COLUMN VERTICAL



* COLUMN HORIZONTAL OR VERTICAL



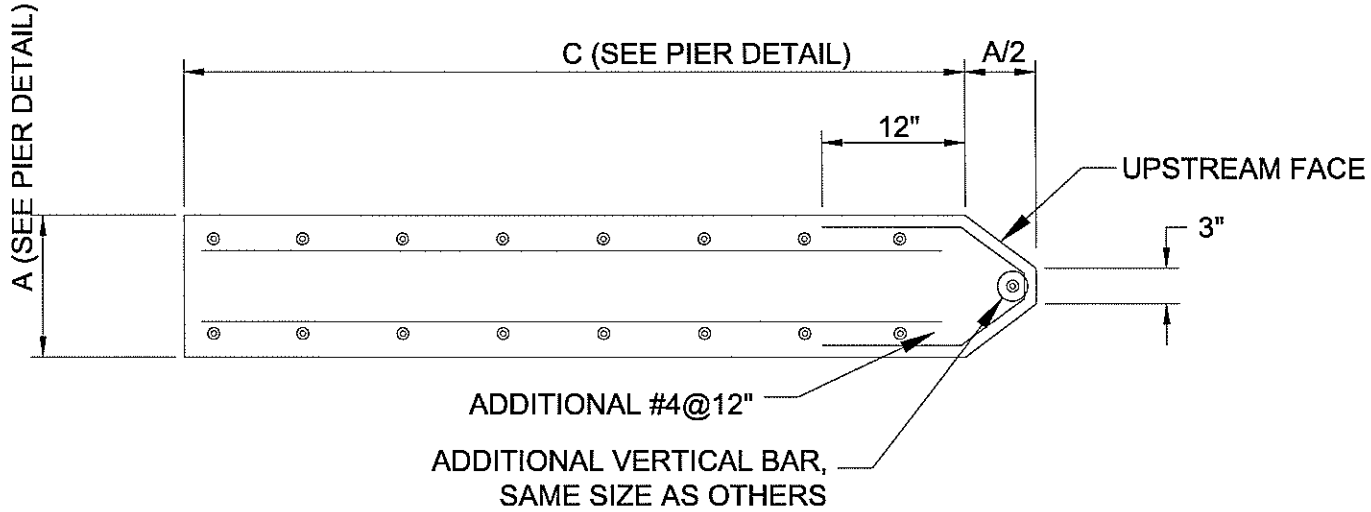
DETAIL A



DETAIL B

* POSITION OF COLUMN DURING WELDING

STEEL PILE SPLICE



PLAN - CONCRETE SUPPORT NOSING
(WHEN EXPOSED TO STREAM FLOW)

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-046 AERIAL PIPE CROSSING CONCRETE SUPPORT DETAILS AND STEEL PILE SPLICE		DRAWN BY:TAH	CHK'D BY:DS
		SCALE: 1=N.T.S.	
		DATE: 12/2018	
		JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE

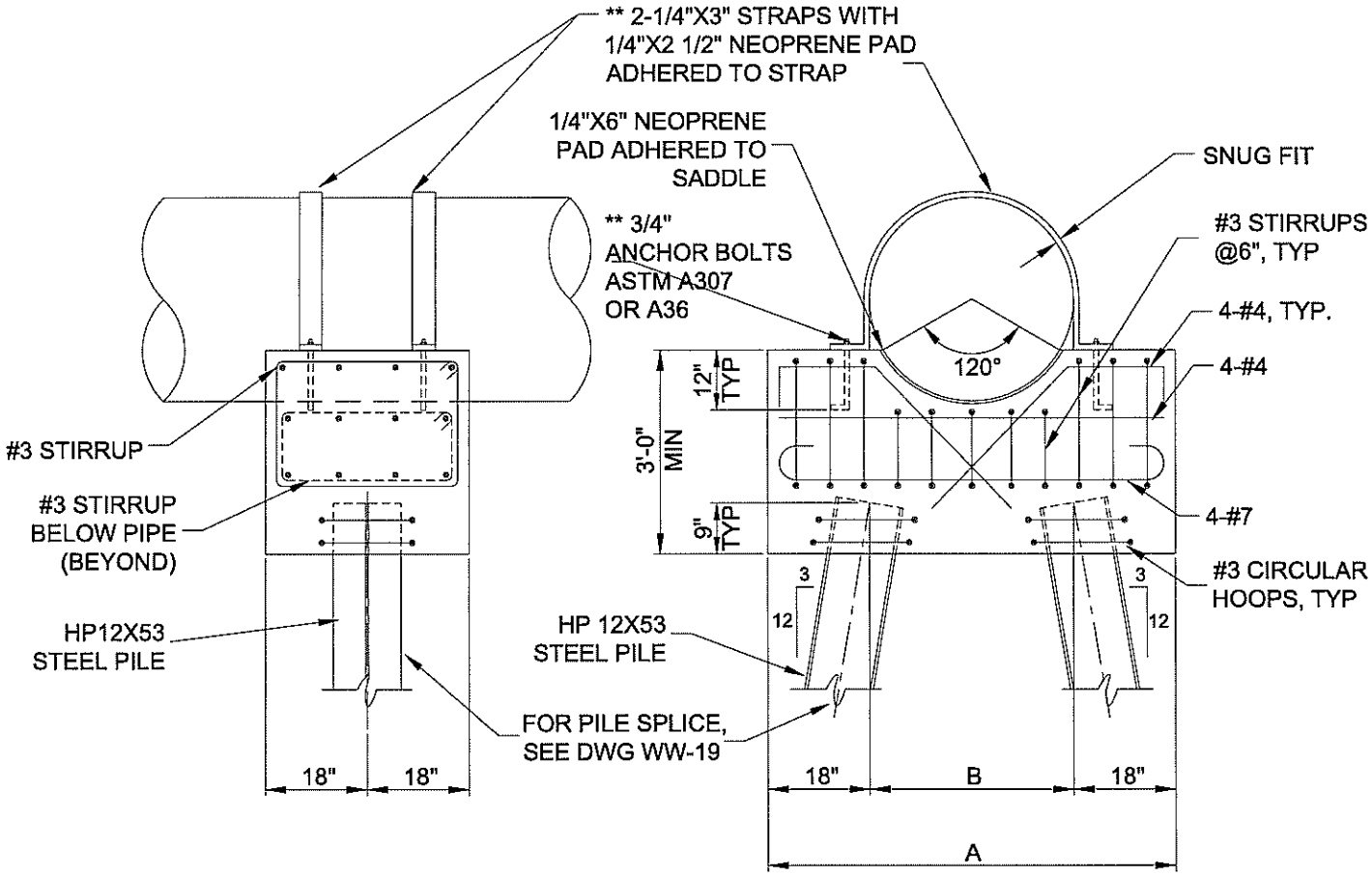
AERIAL PIPE CROSSING
GENERAL NOTES:

1. ALL MATERIALS UTILIZED ON THESE DETAIL SHEETS SHALL CONFORM TO THE APPROPRIATE SECTIONS OF THE ANDERSON COUNTY WASTEWATER DEPARTMENT HANDBOOK UNLESS NOTED OTHERWISE HEREIN.
2. RESTRAINED JOINT PIPE AND FITTINGS SHALL CONSIST OF BOLTED RETAINER RINGS AND WELDED RETAINER BARS OR BOLTLESS TYPE WHICH INCLUDE DUCTILE IRON LOCKING SEGMENTS AND RUBBER RETAINERS. BOLTS FOR RESTRAINED JOINTS (IF APPLICABLE) SHALL CONFORM TO ANSI B18.2. RESTRAINED PIPE AND FITTINGS SHALL BE FLEX-RING OR LOK-RING TYPE JOINTS AS MANUFACTURED BY AMERICAN CAST IRON PIPE CO.; TR FLEX AS MANUFACTURED BY US PIPE, SUPER-LOCK AS MANUFACTURED BY CLOW, BOLT-LOK OR SNAP-LOK AS MANUFACTURED BY GRIFFIN PIPE PRODUCTS, OR APPROVED EQUAL
3. CONCRETE PROPERTIES SHALL BE AS FOLLOWS;
   CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
   NOMINAL SLUMP = 4 INCHES
   WATER/CEMENTITIOUS MATERIALS RATIO = 0.45 (MAX)
   AIR CONTENT = 6% * 1.5%PCONCRETE SHALL BE COMPOSED OF CEMENT, WATER, COARSE AGGREGATES, FINE AGGREGATES AND AIR. CEMENT SHALL BE TYPE I/II OR II IN ACCORDANCE WITH ASTM C-150. MATERIAL REQUIREMENTS FOR ALL FINE AND COARSE AGGREGATES SHALL CONFORM TO ASTM C-33. COARSE AGGREGATE SHALL BE SIZE No. 57 OR 67. AN APPROVED CLASS 'F' FLYASH MAY BE SUBSTITUTED FOR AN EQUAL AMOUNT OF CEMENT BY WEIGHT UP TO 25%.
4. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4"
5. CONVENTIONAL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60 AND SHALL BE PLACED IN ACCORDANCE WITH "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS" (LATEST EDITION) AS PUBLISHED BY THE CONCRETE REINFORCING INSTITUTE. SPLICES SHALL BE CLASS 'B' CONFORMING TO THE PROVISIONS OF ACI 318-"BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
6. NEOPRENE BEARING PADS SHALL BE FORMED FROM PREVIOUSLY UNVULCANIZED, 100% VIRGIN NEOPREN, WITH DUROMETER HARDNESS = 50
7. PILES SHALL BE STRUCTURAL STEEL HP12X53 PILES AND SHALL CONFORM TO THE REQUIREMENT OF ASTM A36. PILES SHALL BE DRIVEN TO DEPTHS REQUIRED TO OBTAIN AN ULTIMATE BEARING CAPACITY OF NOT LESS THAN TWO TIMES THE DESIGN LOADING OF 30 TONS. PILES SHALL PENETRATE A MINIMUM OF FIFTEEN FEET INTO UNDISTURBED SOIL. IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED. IF REQUESTED BY THE ENGINEER, PILES SHALL BE TESTED TO DETERMINE THE ULTIMATE CAPACITY OF THE PILES. THE METHOD OF LOAD TESTING SHALL CONFORM TO ASTM D1143. WHERE PILES ARE EXPOSED, PILES SHALL BE PAINTED AND/OR COATED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-047 AERIAL PIPE CROSSING GENERAL NOTES	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 12/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



WIDTH OF PILE CAP		
CASING PIPE DIAMETER (IN.)	TOTAL WIDTH "A" (FT.)	PILE SPACING "B" (FT.)
< 36	6'-0"	3'-0"
38-42	6'-6"	3'-6"
45-51	7'-3"	4'-3"
54-60	8'-0"	5'-0"

NOTES:

1. PILE SUPPORTED FOUNDATION DESIGN SHOWN ON THIS DETAIL IS BASED UPON THE FOLLOWING PARAMETERS:
   - MINIMUM CAPACITY OF HP 12X53 PILE = 30 TONS
   - CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
   - GRADE 60 REINFORCING STEEL
   - MAXIMUM STREAM VELOCITY = 10 FT/SEC

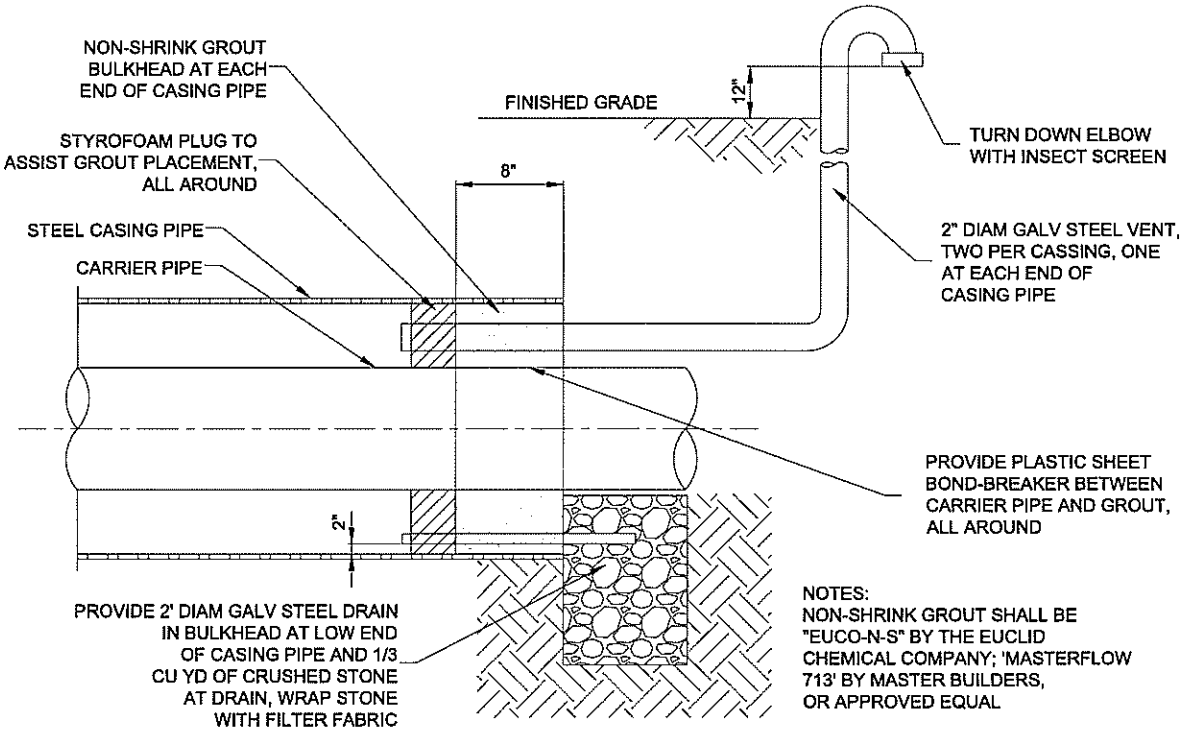
   IF FIELD CONDITIONS REQUIRE ANY DEVIATION FROM THESE PARAMETERS, FOUNDATION DESIGN SHALL BE STAMPED BY APPROPRIATE DESIGN ENGINEER
2. LENGTH OF PILES SHALL BE AS REQUIRED TO DEVELOP 30 TON CAPACITY BY EITHER END BEARING AND FRICTIONS. AS A MINIMUM, PILES SHALL BE DRIVEN AT LEAST 15 FEET INTO UNDISTURBED SOIL.
3. **ANCHOR BOLTS AND STRAPS SHALL BE STAILESS STEEL

ANDERSON COUNTY
SOUTH CAROLINA

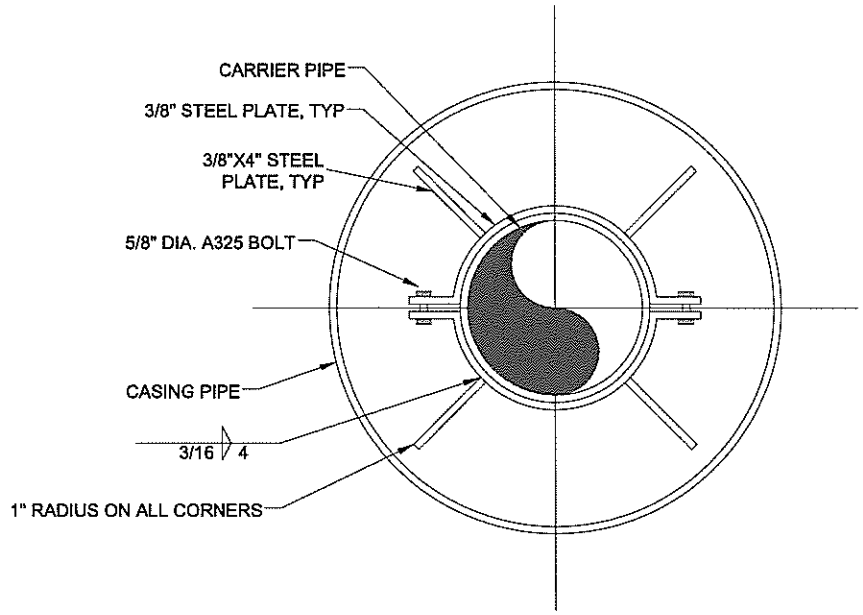
JOB NAME:
WW-048
AERIAL PIPE CROSSING
PILE CAP DETAIL

DRAWN BY:TAH	CHK'D BY:DS
SCALE: 1=N.T.S.	
DATE: 12/2018	
JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



TYPICAL CASING PIPE PLUG



NOTES:

1. USE A MINIMUM OF TWO SPIDERS PER PIPE JOINT ONE FOURTH OF THE PIPE JOINT LENGTH IN FROM BOTH THE BELL AND SPIGOT ENDS

PIPE ALIGNMENT GUIDE

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-050 CASING PIPE DETAILS	SCALE: 1=N.T.S.	
	DATE: 12/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE

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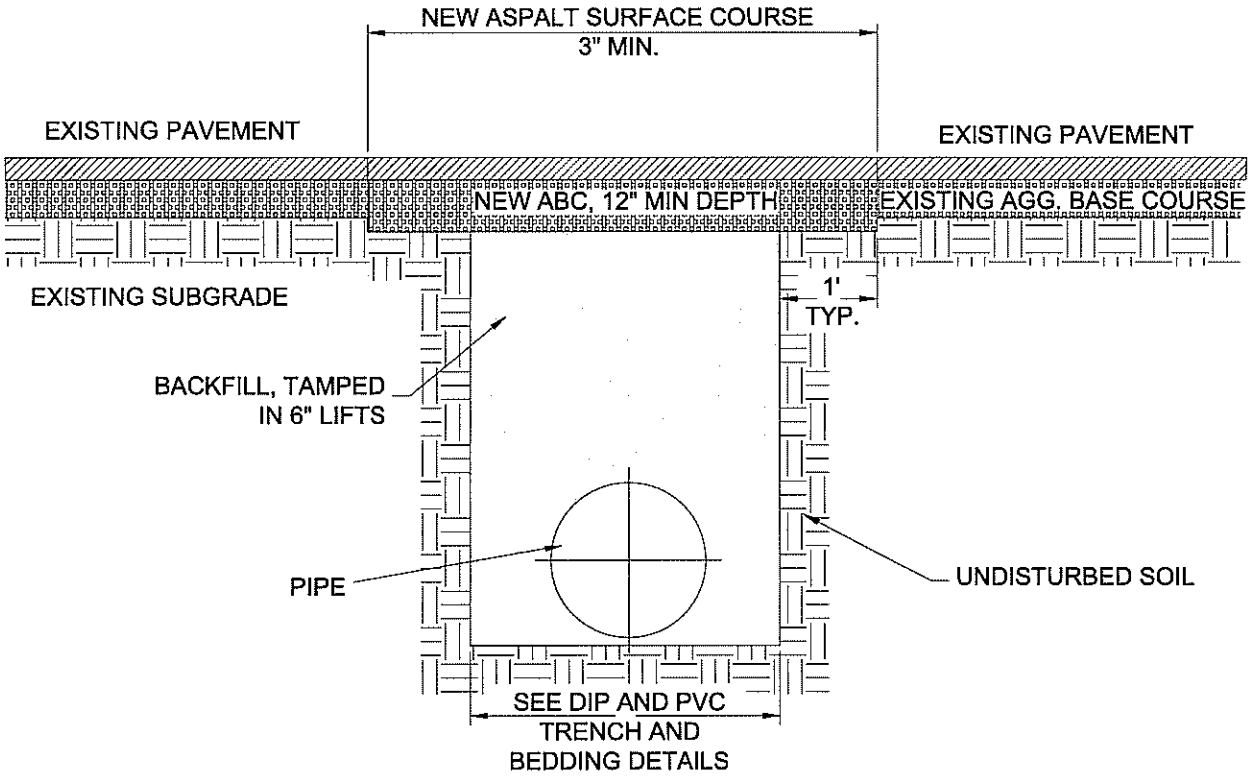


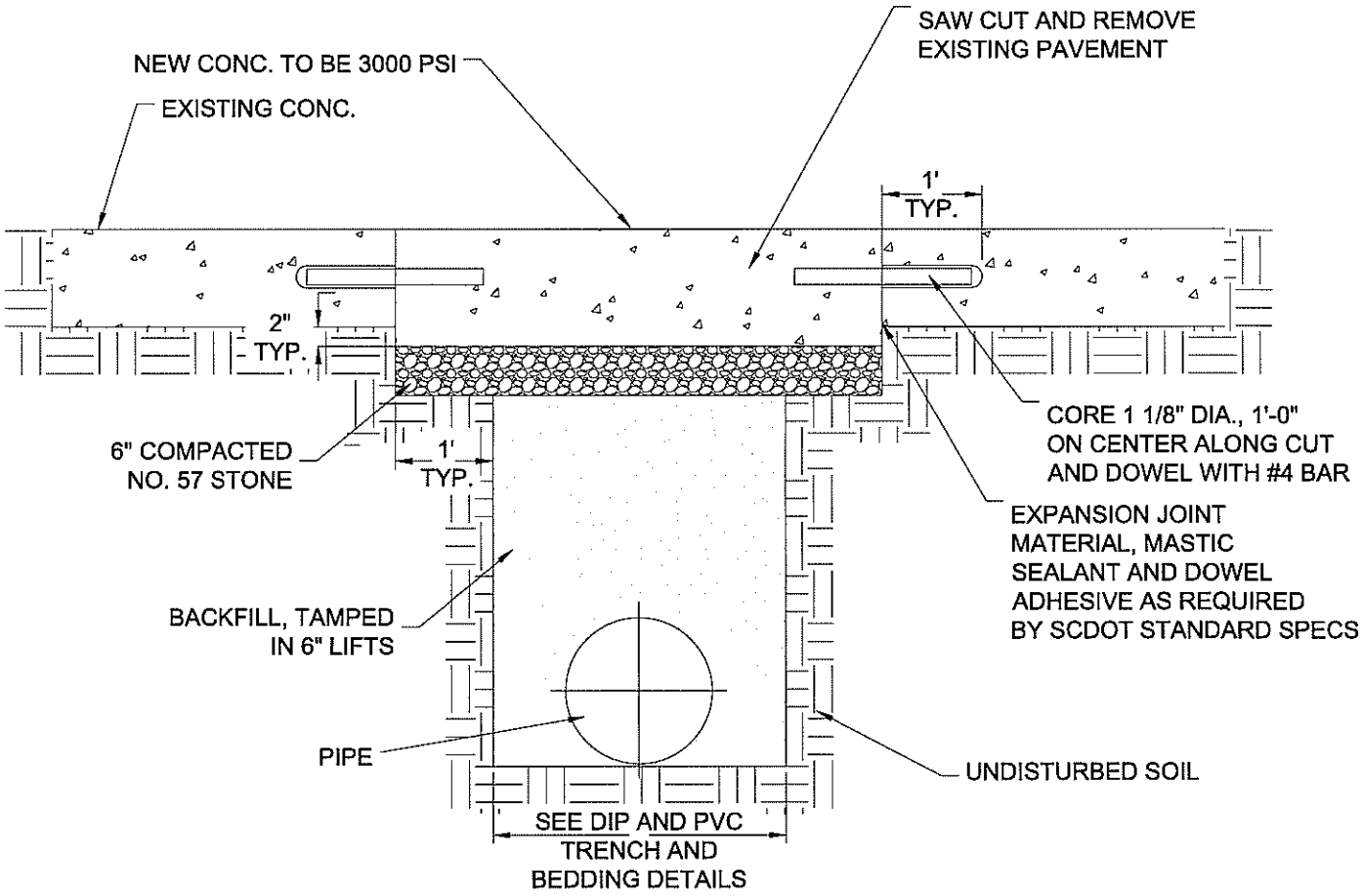
NOTE:

1. IN SCDOT MAINTAINED ROADWAYS, ENCROACHMENT PAVEMENT PATCH REQUIREMENTS SHALL TAKE PRECEDENCE
2. THE PAVE MENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROPRIATE SAW CUT MACHINE
3. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKIFLLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY SCDOT
4. THE FINAL 1" OF FILL SHALL CONSIST OF AGGREGATE BASE COURSE MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-80 AS MODIFIED BY SCDOT
5. THE ENTIRE THICKNESS AND VERTICAL EDGE OF CUT SHALL BE TACKED
6. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK
7. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH
8. REFER TO ANDERSON COUNTY STANDARDS FOR TRENCHES AND PIPE BEDDING FOR ADDITIONAL DETAILS
9. NO HAND PATCHING ALLOWED

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-060 STANDARD ASPHALT PATCH DETAIL	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 7/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



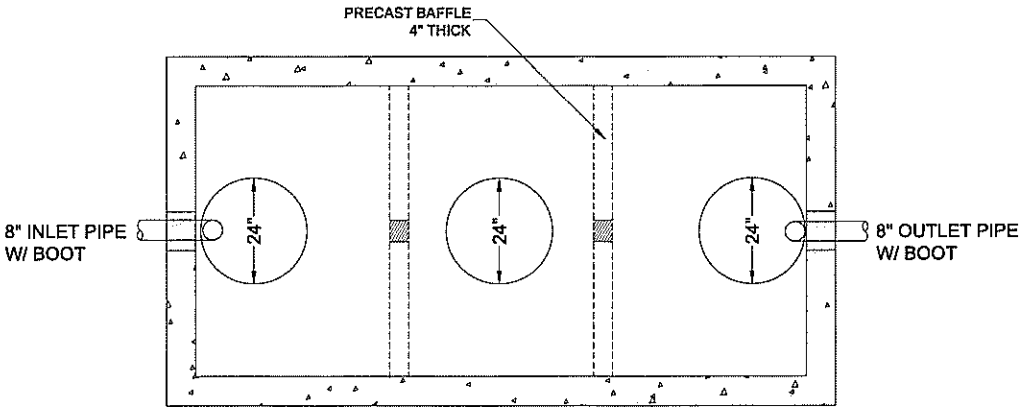
NOTE:

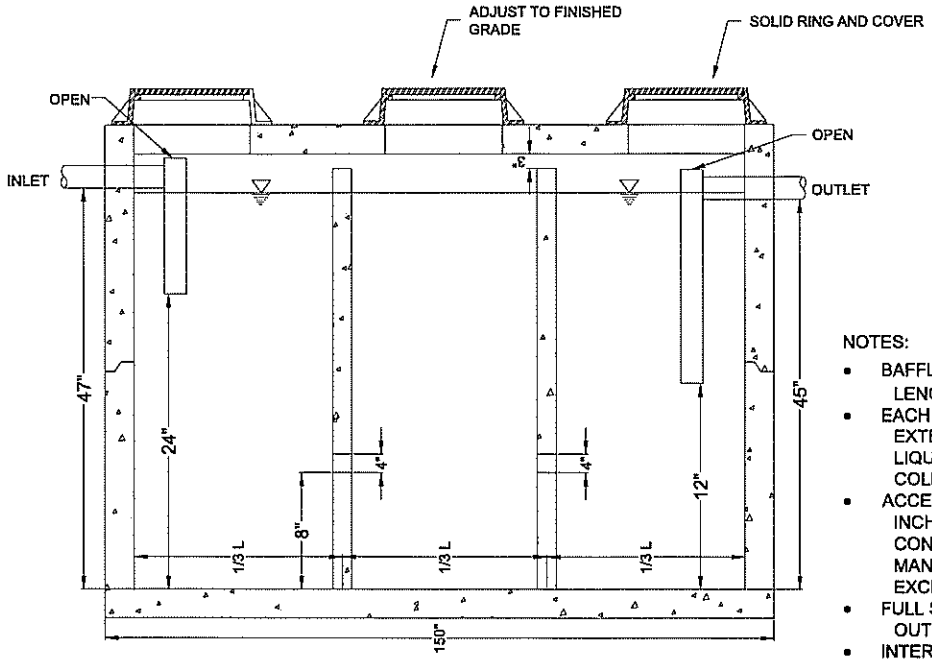
1. SEE ANDERSON COUNTY STANDARDS FOR TRENCHES AND PIPE BEDDING FOR ADDITIONAL DETAILS
2. PAVEMENT CUTS OVER 5' IN WIDTH SHALL BE REINFORCED TO SCDOT STANDARDS
3. PAVEMENT CUTS SHALL BE MADE WITH AN APPROPRIATE SAW CUT MACHINE
4. PAVEMENT CUTS WITHIN SCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-061 STANDARD CONCRETE PATCH DETAIL	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 7/2018	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE





NOTES:

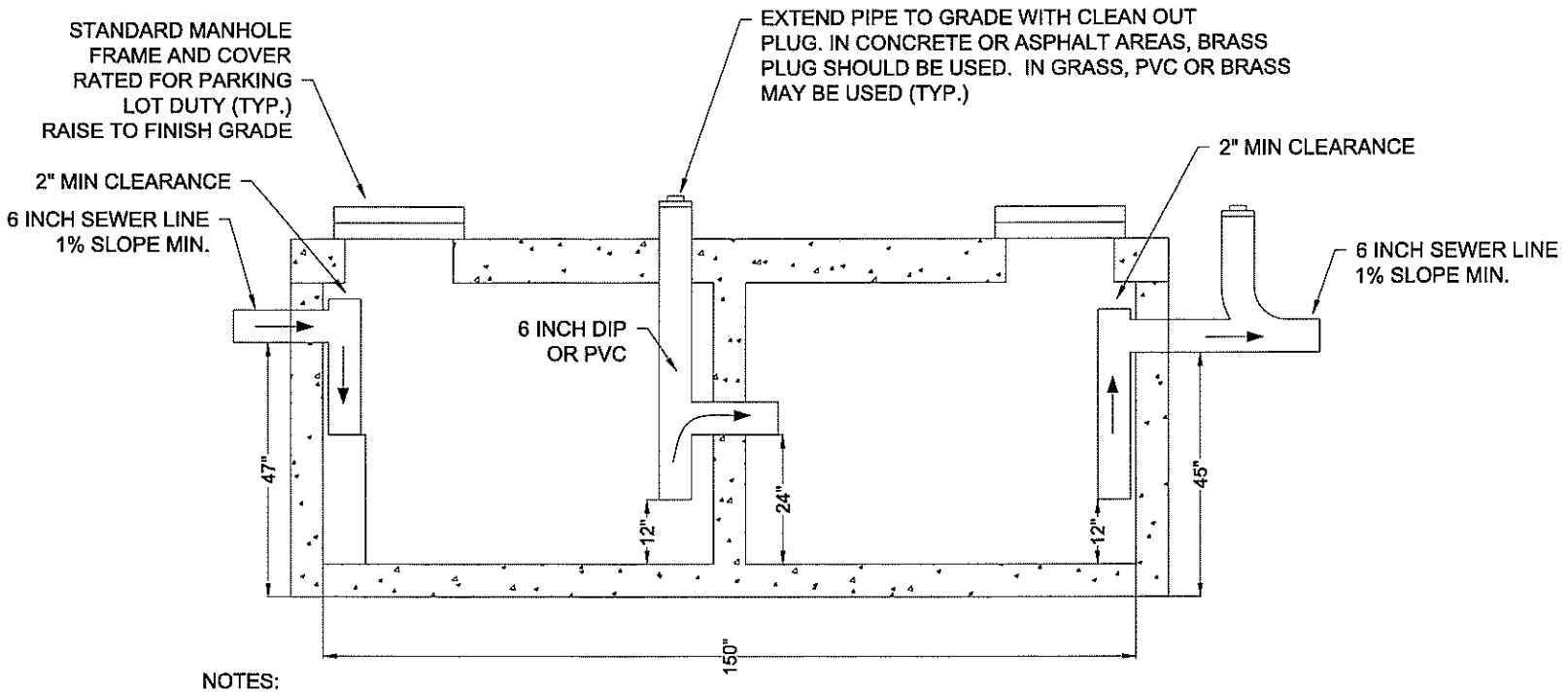
- BAFFLE WALLS LOCATED AT A DISTANCE APPROXIMATELY OF 1/3 OF THE TOTAL LENGTH OF THE SEPARATOR AS SHOWN ON DETAIL S-40.01.
- EACH SEPARATOR SHALL HAVE INLET AND OUTLET TEES. THE OUTLET TEE SHALL EXTEND 50% INTO THE LIQUID DEPTH. THE INLET TEE SHALL EXTEND 25% INTO THE LIQUID DEPTH. INLET AND OUTLET TEES MUST BE OPEN TO ALLOW THE COLLECTION OF F.O.G. SAMPLE.
- ACCESS OPENINGS OVER EACH COMPARTMENT WITHIN THE EPARATOR SHALL BE 24 INCHES IN DIAMETER AND CONTAIN PICK HOLES. ALL COVERS SHALL BE CONSTRUCTED OF CAST IRON OR EQUIVALENT TRAFFIC BEARING MATERIAL. MANHOLE COVERS MUST EXTEND TO FINISH GRADE AND BE INSTALLED TO EXCLUDE THE ENTRANCE OF STORMWATER INTO THE SEPARATOR.
- FULL SIZE DUAL SWEEP CLEANOUTS SHALL BE INSTALLED ON THE INLET AND OUTLET SIDES OF THE SEPARATOR.
- INTERCEPTORS AND SEPARATORS MUST BE VENTED IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODE.
- CONCRETE: 4000 PSI @ 28 DAYS.
- REINFORCEMENT: H-20 BRIDGE LOADING (TRAFFIC RATED)
- DESIGN: ACI 318 BUILDING CODE ASTM C1613-06 FOR GREASE INTERCEPTORS ASTM C913-02 FOR WATER AND WASTEWATER STRUCTURES ASTM C890-06 FOR MINIMAL STRUCTURAL DESIGN LOADING
- SEPARATORS SHALL BE DESIGNED TO WITHSTAND AN H-20 WHEEL LOAD.
- SEPARATORS MADE OF POLYETHYLENE OR FIBERGLASS SHALL INCLUDE A MINIMUM 12,000 PSI TENSILE STRENGTH, 19,000 PSI FLEXURAL STRENGTH, AND 800,000 PSI FEXURAL MODULUS.
- SEPARATORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.

DRAWN BY:TAH | CHK'D BY:DS
SCALE: 1=N.T.S.
DATE: 12/2018
JOB NUMBER | SHEET

JOB NAME: WW-070
OIL WATER SEPERATOR

ANDERSON COUNTY
SOUTH CAROLINA

REV	DESCRIPTION	BY	DATE



NOTES:

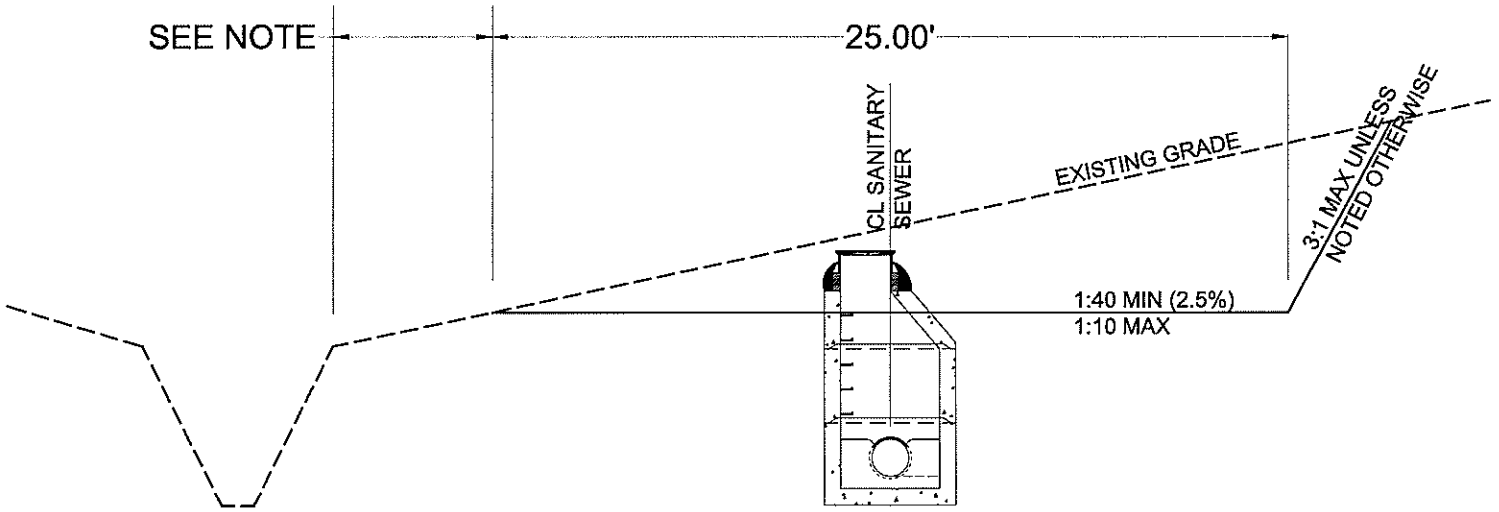
1. THE INVERT OF THE INLET PIPE SHALL NOT BE LESS THAN 2" ABOVE THE INVERT OF THE OUTLET PIPE
2. BAFFLE WALL SHALL BE LOCATED 2/3 OF THE DISTANCE FROM THE INLET SIDE AND 1/3 THE DISTANCE FROM THE OUTLET SIDE
3. THE DEPTH AND LENGTH DIMENSIONS SHOWN ARE FOR STANDARD 1500 GALLON PRE CAST TANK. THE EXACT SIZE AND TYPE OF EACH GREASE TRAP SHALL BE SUBMITTED FOR APPROVAL BY ANDERSON COUNTY
4. ALL PIPING SHALL BE DUCTILE IRON OR SDR 35 OR SCHEDULE 40 PVC
5. USE BUTYL RUBBER TO SEAL BETWEEN SECTIONS AND TOP AND USE NON-SHRINK GROUT AT ALL PENETRATIONS
6. LOCATE RISER UNDER MANHOLE COVER TO ENABLE INSPECTION OF PIPE INSIDE GREASE TRAP
7. CLEANING SHALL BE PERFORMED AS NECESSARY TO ASSURE PROPER FUNCTION OF THE GREASE TRAP. WASTE MATERIAL REMOVED FROM GREASE TRAP SHALL BE DISPOSED OF PROPERLY; I.E. NOT INTO SANITARY SEWER

DRAWN BY:TAH | CHK'D BY:DS
SCALE: 1=N.T.S.
DATE: 12/2018
JOB NUMBER | SHEET

JOB NAME: WW-071 STANDARD OIL AND GREASE TRAP

ANDERSON COUNTY SOUTH CAROLINA

REV	DESCRIPTION	BY	DATE



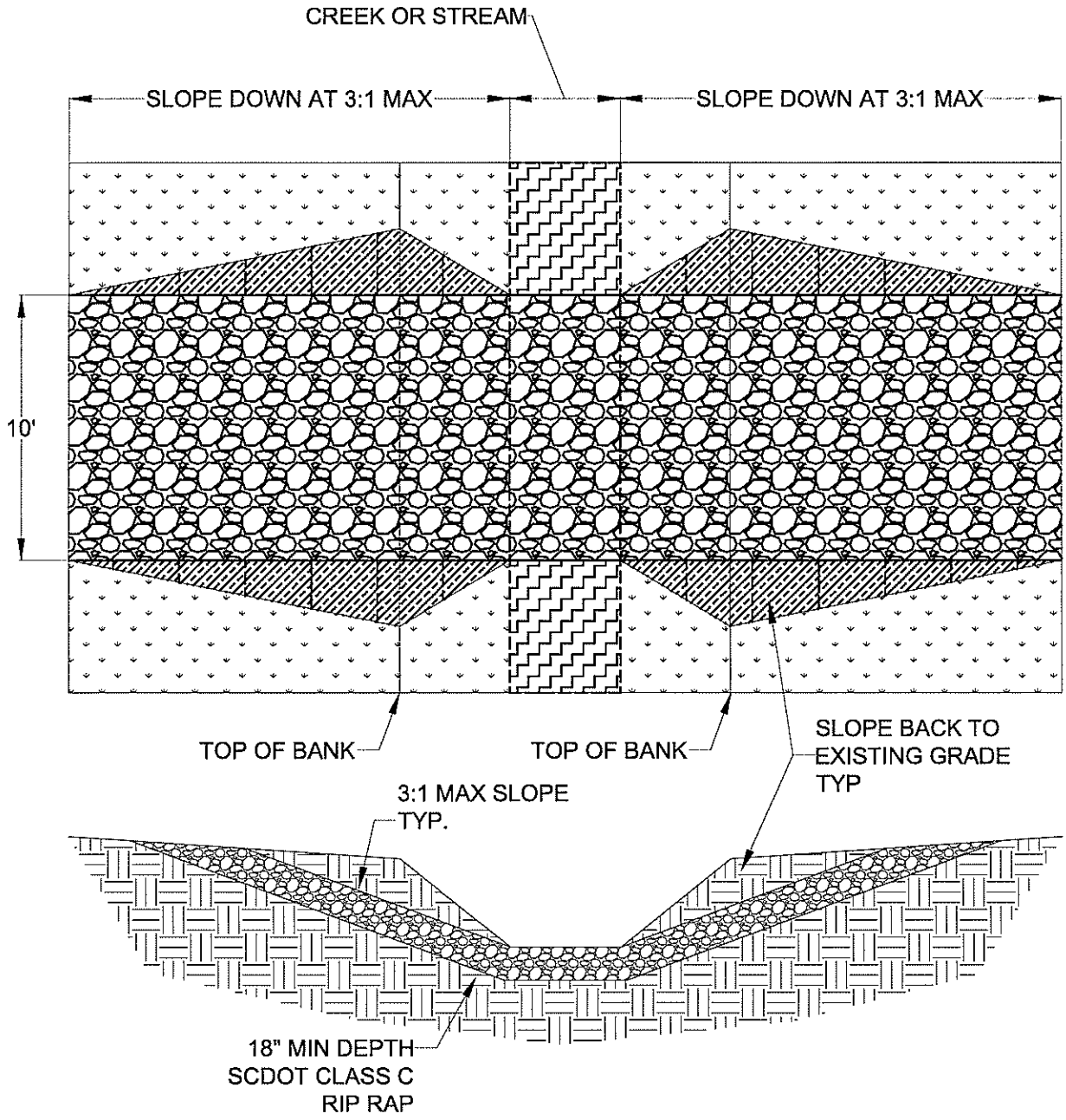
NOTES:

- RIM ELEVATION SHALL BE SET IN ACCORDANCE WITH MANHOLE AND RIM ELEVATION DETAILS. BUT ALL MANHOLES MUST BE SET 1 FOOT ABOVE 100 YEAR FLOOD PLAIN OR HAVE SEALED MANHOLE COVERS (THIS APPLIES WHEN THE MANHOLE WOULD EXTEND MORE THAN 3 FEET ABOVE FINISHED GRADE)
- MINIMUM SEPARATION FROM TOP OF BACK SHALL BE AS FOLLOWS,
  - 5' - FOR DRAINAGE SWALES AND DITCHES
  - 15' - FOR CREEKS
  - 25' - FOR RIVERS
- CUT/FILL FOR ROW ACCESS, AS WELL AS SEWER LINE INSTALLATION, SHALL COMPLY WITH FLOODPLAIN REQUIREMENTS FROM THE STATE AND ANDERSON COUNTY. ANY WORK IN THE 100 YEAR FLOOD PLAIN WILL REQUIRE A PERMIT FROM ANDERSON COUNTY DEVELOPMENT STANDARDS
- NO EXCAVATION, FILLING OR STOCKPILING MATERIALS MAY TAKE PLACE WITHING THE SEWER ROW WITHOUT WRITTEN PERMISSION FROM ANDERSON COUNTY
- FENCES PARRALLEL TO THE SEWER LINE ARE NOT ALLOWED IN THE SEWER ROW, ALL GATES ACROSS THE SEWER ROW MUST BE APPROVED BY ANDERSON COUNTY
- MAX VERTICAL AND HORIZONTAL SLOPE WITHIN THE ROW IS TO BE 1:10

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-080 ANDERSON COUNTY SEWER STANDARD ROW	SCALE: 1=N.T.S.	
	DATE: 4/2023	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE



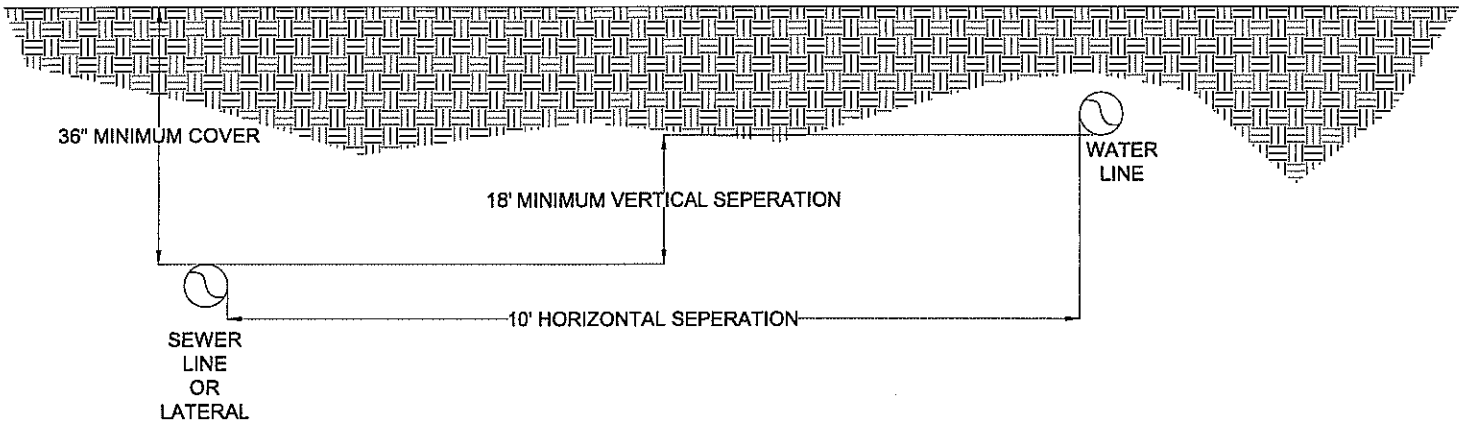
NOTES

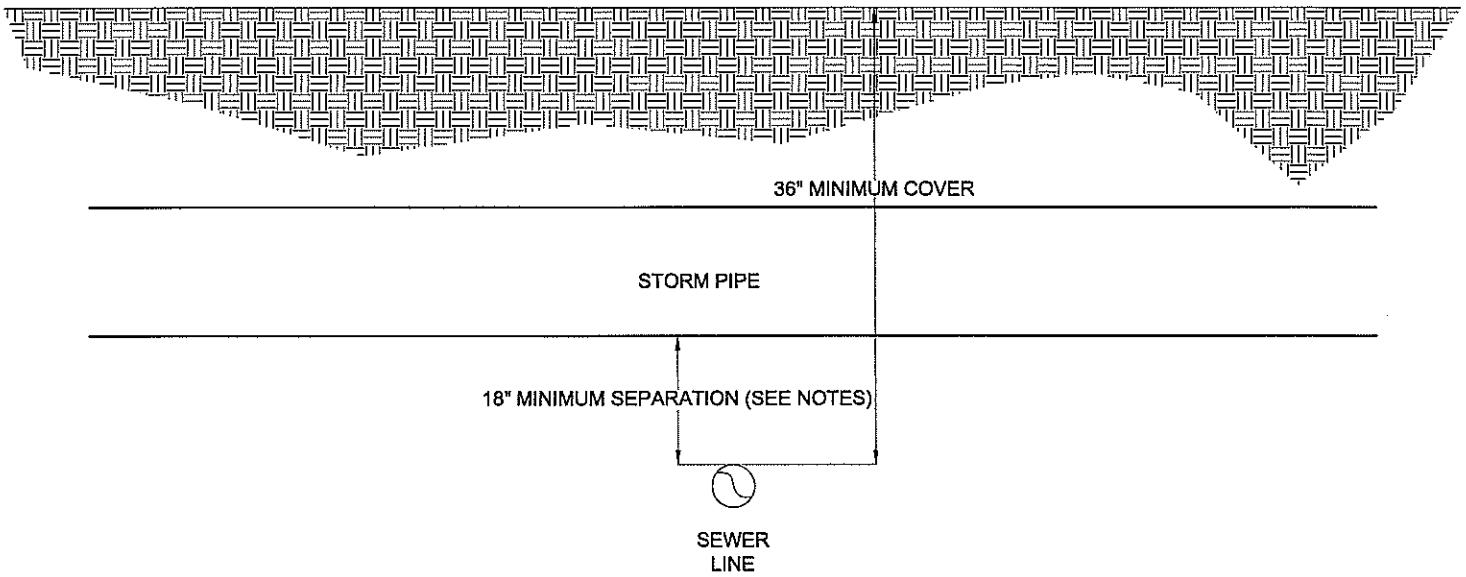
- ALL PLANS FOR FORDS MUST BE SUBMITTED TO ANDERSON COUNTY FOR REVIEW
- ENGINEER TO COORDINATE WITH ALL REGULATORY AGENCIES INCLDUING, BUT NOT LIMITED TO, ANDERSON COUNTY FLOOD PLAIN, ARMY CORP OF ENGINEERS AND SCDHEC AND OBTAIN ALL NECESSARY PERMITS

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-081 ANDERSON COUNTY STREAM FORD	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 4/2023	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE





NOTES:
1. ALL MEASUREMENTS ARE FROM OUTSIDE OF PIPES
2. WATER AND SEWER LINES SHALL MAINTAIN A 10 FT HORIZONTAL SEPERATION, WHERE A 10 FT SEPERATIONS IS NOT POSSIBLE A 18 INCH VERTICAL SEPERATION SHALL BE MAINTAINED WITH THE WATER LINE BEING AT A HIGHER ELEVATION AND THE WATER AND SEWER LINES ARE IN SEPERATE TRENCHES
3. A 24 INCH AN LARGER STORM SEWER LINE WILL REQUIRE A 36" VERTICAL SEPERATION FROM THE SEWER LINE. A 20 INCH AND SMALLER STORM SEWER PIPE SHALL REQUIRE A 18" VERTICAL SEPERATION FROM THE SEWER LINE
4. FOR SEPERATIONS, BETWEEN THE SEWER LINE AND STORM SEWER LINE, THAT CANNOT MEET THE MINIMUM SEPERATION; DIP OR C-900 WILL BE SUBSTITUTED FOR THE SEWER LINE (FROM MANHOLE TO MANHOLE)

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME:	DRAWN BY:TAH	CHK'D BY:DS
WW-082 SANITARY SEWER SEPERATIONS	SCALE: 1=N.T.S.	
	DATE: 9/2022	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE

LOW PRESSURE AIR TESTING REQUIREMENTS

- ALL TESTING SHALL CONFORM WITH ASTM F1417
- LOW PRESSURE TESTING SHALL BE PERFORMED WITH A CONTINOUS MONITORING GAUGE NO LESS THAN 4 INCHES IN DIAMETER WITH MINIMUM DIVISIONS OF 0.10 PSI, AN ACCURACY OF 0.04 PSI +/- AND A MAX READING OF 30 PSI. ALL AIR SHALL PASS THROUGH A SINGLE ABOVE GROUND HOSE WITH NO VALVING BELOW GROUND LEVEL. CONTRACTOR SHALL DEMONSTRATE THAT NO VALVING IS CLOSED BETWEEN GAUGE AND LINE BEING TESTED.
- DETERMINE THE TEST TIME BASED ON TABLE INCLUDED WITH STANDARD DETAILS
- PLUG ALL OPENINGS IN TEST SECTION
- PRESSURIZE THE SECTION GRADUALLY TO A MINIMUM OF 5.0 PSI (MAX OF 9 PSI) AND ALLOW PRESSURE TO STABILIZE (MAINTAIN MINIMUM PRESSURE FOR 5 MINUTES BEFORE START OF TEST). DO NOT OVER PRESSURIZE THE SECTION OF LINE. NO ONE IS TO ENTER MANHOLE DURING TEST.
- ONCE THE PRESSURE STABILIZATION TIME IS COMPLETE (AND MINIMUM PRESSURE HAS BEEN MAINTAINED), SHUT OFF PRESSURE SUPPLY AND START TIMING USING A STOP WATCH. MEASURE THE PRESSURE DROP FOR THE PERIOD OF TIME AS DETERMINED FROM THE TABLE IN THE STANDARD DETAILS
- IF THE PRESSURE DROPS MORE THAN 1.0 PSI WITHIN TIME, THEN THE SECTION HAS FAILED.

DEFLECTION TESTING OF FLEXIBLE GRAVITY SEWER PIPE

- TESTING SHALL CONFORM WITH ASTM D3034
- DEFLECTION SHALL BE TESTED BY PULLING A GO/NO-GO GAGE THROUGH THE PIPE
- DIAMETRIC DEFLECTION OF THE PIPE SHALL NOT EXCEED 5% OF THE INSIDE DIAMETER
- THE GAGE SHALL BE PULLED THROUGH THE PIPE FROM MANHOLE TO MANHOLE
- DEFLECTION TESTS SHALL BE PERFORMED NO SOONER THAN 30 DAYS AFTER INSTALLATION
- ANY PORTION OF PIPE SHALL BE DEEMD TO HAVE PASSED IF THE GAGE PASSES FREELY THOUGH THE PIPE

MANHOLE VACUUM TESTING

- THE VACUUM TEST SHALL BE MADE AFTER BACKFILLING HAS BEEN COMPLETED AND THE BASE COURSE OF THE ROADWAY HAS BEEN INSTALLED
- PLUG ALL MANHOLE ENTRANCES AND EXISTS OTHER THAN THE MANHOLE TOP ACCESS SUING SUITABLY SIZED PNEUMATIC OR MECHANICAL PIPELINE PLUGS
- INSTALL THE VACUUM TESTER HEAD ASSEMBLY AT THE TOP OF THE MANHOLE (WITHIN 12 INCHES OF THE BOTTOM OF THE MANHOLE LID FRAME)
- EVACUATE THE MANHOLE TO 10" Hg
- CLOSE THE VACUUM INLET/OUTLET VALVE AND SHUT OFF VACUUM PUMP. IF THE VACUUM DOES NOT DROP IN EXCESS OF 1" Hg, WITHIN THE TIME INDICATED ON THE TABLE IN STANDARD DETAILS, THE MANHOLE HAS PASSED THE TEST.
- VACUUM GAUGE SHALL BE ABLE TO READ UP TO -15 IN Hg AND MARKED IN 1 INCH Hg INCREMENTS

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-090 GRAVITY SEWER TESTING NOTES	DRAWN BY:TAH	CHK'D BY:DS
	SCALE: 1=N.T.S.	
	DATE: 9/2022	
	JOB NUMBER	SHEET

REV	DESCRIPTION	BY	DATE

MINIMUM TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED

		SPECIFIED TIME FOR LENGTH SHOWN (MIN:SEC)							
PIPE DIAMETER (IN.)	MINIMUM TIME	100 FT	150 FT	200 FT	250 FT	300 FT	350 FT	400 FT	450 FT
8	7:34	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	14:10	14:10	17:48	22:15	56:42	31:09	35:36	40:04
18	17:00	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15

* SOURCE: UNIBELL PVC PIPE ASSOCIATION

NOTES:

1. ROUND UP TO NEAREST 50 FT (FOR EXAMPLE 325 LF OF GRAVITY SEWER WOULD BE TESTED FOR THE 350 FT TIME)
2. FOR TESTING OF MORE THAN 1 HOUR, IF THERE HAS BEEN NO LEAKAGE AFTER 60 MINUTES THE TEST IS COMPLETE
3. ALL TESTING SHALL CONFORM TO ASTM F1418

MANHOLE DIAM (IN)	TEST TIME FOR MANOLE DEPTH OF 24 FT AND LESS (SEC)
48	60
60	75
72	90
84	105
96	120
120	150

FOR DEPTHS OF MORE THAN 24 FT TEST TIMES
AS RECOMMENDED BY ASTM C1244 SHALL BE USED

ANDERSON COUNTY
SOUTH CAROLINA

JOB NAME: WW-091 GRAVITY SEWER TEST TIMES

DRAWN BY:TAH | CHK'D BY:DS
SCALE: 1=N.T.S.
DATE: 9/2022
JOB NUMBER | SHEET

REV	DESCRIPTION	BY	DATE