CITY OF COLUMBIA 2020

WATER & SEWER CONSTRUCTION DETAILS

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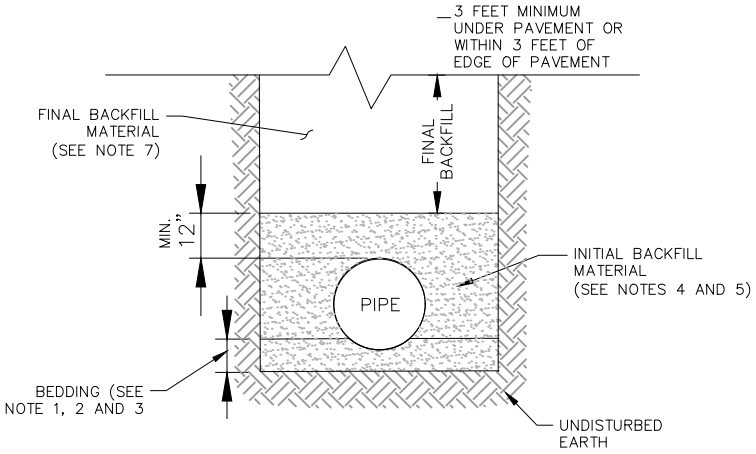


MINIMUM BEDDING FOR WATER MAIN DETAIL

NOT TO SCALE

NOTES:

1. BEDDING DEPTH SHALL BE 1/8" PIPE DIAMETER, 6" MINIMUM.

2. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING MATERIAL BELOW THE PIPE. THE ENGINEER SHALL DETERMINE IN THE FIELD THE AMOUNT OF UNSUITABLE MATERIAL REQUIRED TO REACH A SUITABLE FOUNDATION.

3. BELL HOLES SHALL BE DUG TO PERMIT THE ENTIRE STRAIGHT BARREL OF THE PIPE TO REST ON THE BEDDING MATERIAL.

4. BEDDING AND INITIAL BACKFILL MATERIAL SHALL BE SAND CONTAINING NOT MORE THAN 10% TOTAL MATERIAL PASSING THE NO. 200 SIEVE WITH A MAXIMUM OF 6% CLAY OR SUITABLE SAND CLAY MATERIAL AS APPROVED BY A LICENSED GEOTECHNICAL ENGINEER.

5. BEDDING AND INITIAL BACKFILL MATERIAL SHALL BE COMPACTED IN 6" LAYERS TO A MINIMUM COMPACTION OF 95% STANDARD PROCTOR WITH AN ALLOWABLE ±5% OF OPTIMUM MOISTURE CONTENT. BACKFILL MATERIAL UP TO A LEVEL 6" OVER TOP OF PIPE.

6. WHERE COMPACTION IS REQUIRED IN NOTES 5, AND NOTE 7B, CONTRACTOR WILL PROVIDE TESTING TO DEMONSTRATE COMPACTION COMPLIANCE ONCE PER LIFT AND AT LEAST ONCE PER EVERY 500 LINEAR FEET.

7. FINAL BACKFILL MATERIAL:

   A. IN CROSS COUNTRY AREAS: FINAL BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO M145 GROUP CLASSIFICATION A1–A6 AND BE COMPACTED IN SUFFICIENT DEPTHS TO MEET A MINIMUM COMPACTION OF 90% STANDARD PROCTOR WITH AN ALLOWABLE ±5% OF OPTIMUM MOISTURE CONTENT.

   B. AREAS INSIDE THE SCDOT, COUNTY, AND CITY RIGHTS–OF–WAY: FINAL BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO M145 GROUP CLASSIFICATION A–1, A–2–4 & A–3 AND BE COMPACTED IN 6" LAYERS TO A MINIMUM COMPACTION OF 95% STANDARD PROCTOR WITH AN ALLOWABLE, OR SUITABLE MATERIAL AS APPROVED BY A LICENSED GEOTECHNICAL ENGINEER, ±5% OF OPTIMUM MOISTURE CONTENT.

   C. UNDER PAVEMENT AND WITHIN THREE FEET OF EDGE OF PAVEMENT: FINAL BACKFILL MATERIAL SHALL BE SCDOT EXCAVATABLE (200 PSI MAX) FLOWABLE FILL TO SUB–BASE OF PAVEMENT OR TO GROUND SURFACE A MINIMUM OF 3 FEET. IN CASES OF DEEP TRENCHING, THE ENGINEER MAY SPECIFY ALTERNATE BACKFILL MATERIALS UP TO 3 FEET BELOW PAVEMENT SUB–BASE OR GROUND SURFACE.

   D. USE OF NATIVE MATERIAL: CLEAN NATIVE MATERIAL MAY BE USED IN BACKFILL ONLY WHEN APPROVED BY THE OWNER.

CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

Columbia Water

CITY OF COLUMBIA

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

SCALE: N.T.S.

DATE:05/18/2023

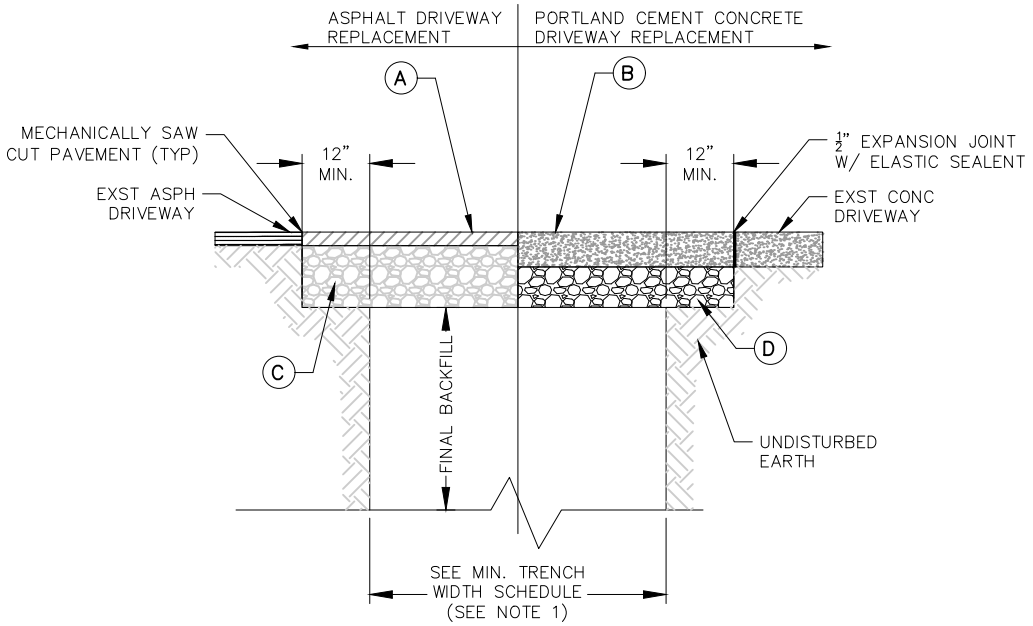
REVISED:
04/01/2024

MINIMUM BEDDING
FOR WATER MAIN DETAIL

DRAWING NO:
1

DATE: XXX XX, 20XX

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 19071
DANA R. HIGGINS



ASPHALT/CONCRETE DRIVEWAY REPAIR DETAIL

NOT TO SCALE

NOTES:

1. REFER TO MINIMUM BEDDING FOR WATER/SEWER MAIN DETAIL.
2. SEE ASPHALT AND PORTLAND CEMENT PAVEMENT SCHEDULE SHOWN BELOW FOR MATERIAL TYPE AND THICKNESS.
3. INTERFACE BETWEEN NEW AND EXISTING SURFACES SHALL BE SMOOTHED TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT ANY DRIVING SURFACE IRREGULARITIES.

ASPHALT AND PORTLAND CEMENT CONCRETE PAVEMENT SCHEDULE

- (A) HMA SURFACE COURSE SCDOT TYPE B (2" THICK)
- (B) SCDOT CLASS 4000 PORTLAND CEMENT CONCRETE (6" THICK)
- (C) SCDOT MACADAM BASE COURSE (6" THICK) TO 98% MAX DENSITY
- (D) SCDOT MACADAM BASE COURSE (4" THICK) TO 98% MAX DENSITY

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Columbia Water

CITY OF COLUMBIA DEPARTMENT OF ENGINEERING P.O. BOX 147 COLUMBIA SOUTH CAROLINA 29217	SCALE: N.T.S. DATE:02/17/2020 REVISED: 01/05/2022
ASPHALT/CONCRETE DRIVEWAY REPAIR DETAIL	DRAWING NO: 2

DATE: XXX XX, 20XX

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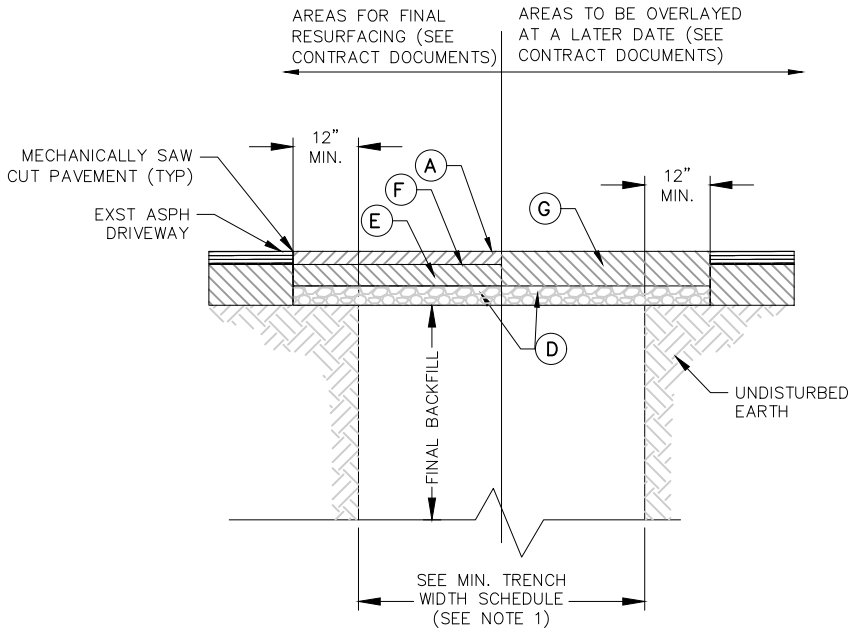

ASPHALT PAVEMENT REPAIR DETAIL

NOT TO SCALE

NOTES:

1. REFER TO MINIMUM BEDDING FOR WATER/SEWER MAIN DETAIL.
2. SEE ASPHALT AND PORTLAND CEMENT PAVEMENT SCHEDULE SHOWN BELOW FOR MATERIAL TYPE AND THICKNESS.
3. INTERFACE BETWEEN NEW AND EXISTING SURFACES SHALL BE SMOOTHED TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT ANY DRIVING SURFACE IRREGULARITIES.

ASPHALT AND PORTLAND CEMENT CONCRETE PAVEMENT SCHEDULE

- (A) HMA SURFACE COURSE SCDOT TYPE B (2" THICK)
- (D) SCDOT MACADAM BASE COURSE (4" THICK) TO 98% MAX DENSITY
- (E) ASPHALT INTERMEDIATE BASE COURSE SCDOT TYPE B (5" THICK)
- (F) TACK COAT PER SCDOT SPECIFICATIONS
- (G) ASPHALT INTERMEDIATE BASE COURSE SCDOT TYPE B (7" THICK)

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ASPHALT PAVEMENT REPAIR DETAIL

DRAWING NO: 3

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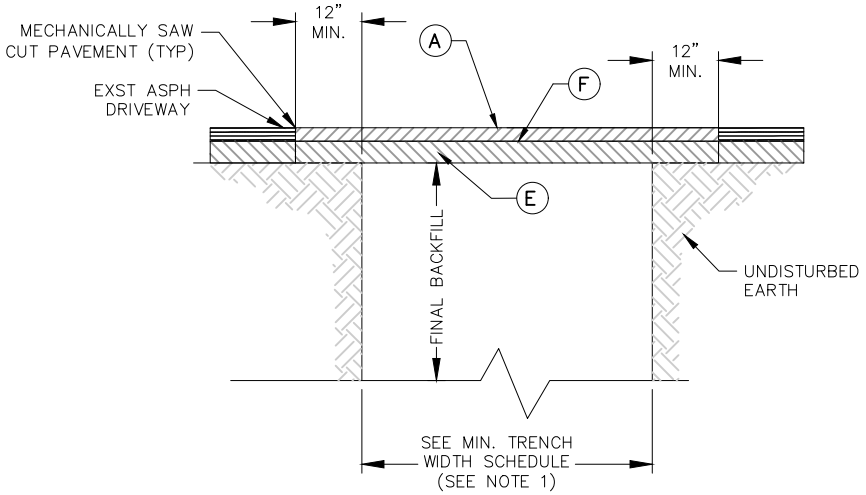

ASPHALT PAVEMENT REPAIR (LOCAL) DETAIL

NOT TO SCALE

NOTES:

1. REFER TO MINIMUM BEDDING FOR WATER/SEWER MAIN DETAIL.
2. SEE ASPHALT AND PORTLAND CEMENT PAVEMENT SCHEDULE SHOWN BELOW FOR MATERIAL TYPE AND THICKNESS.
3. INTERFACE BETWEEN NEW AND EXISTING SURFACES SHALL BE SMOOTHED TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT ANY DRIVING SURFACE IRREGULARITIES.

ASPHALT AND PORTLAND CEMENT CONCRETE PAVEMENT SCHEDULE

(A) HMA SURFACE COURSE SCDOT TYPE B (2" THICK)

(E) ASPHALT INTERMEDIATE BASE COURSE SCDOT TYPE B (5" THICK)

(F) TACK COAT PER SCDOT SPECIFICATIONS

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ASPHALT PAVEMENT REPAIR (LOCAL) DETAIL

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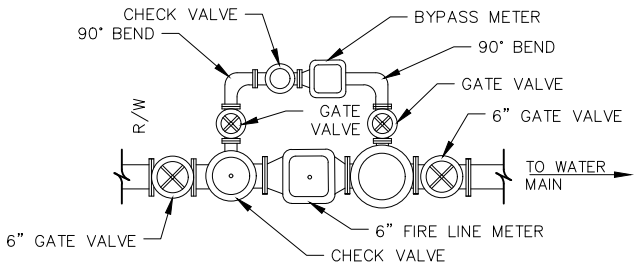
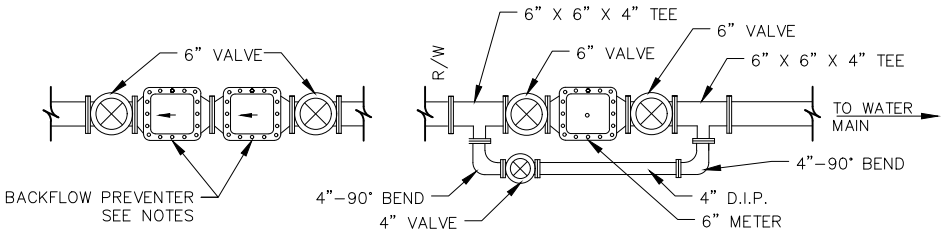
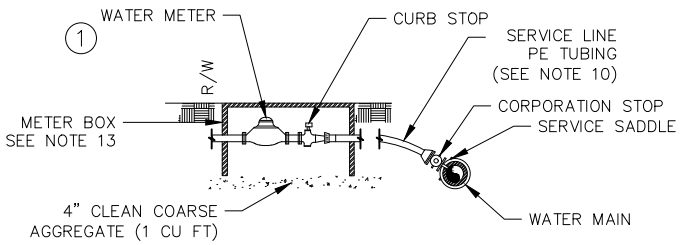


FIRE SERVICE COMBINED WITH DOMESTIC SERVICE (TYPICAL)

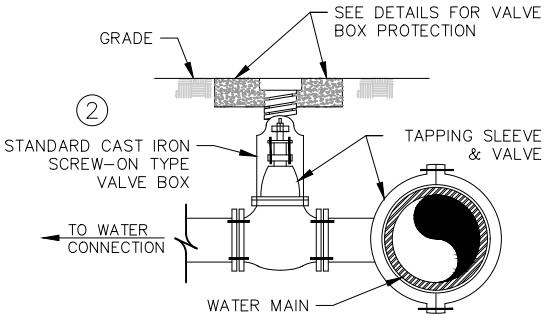


SERVICE CONNECTION 4" & OVER WITHOUT FIRE SERVICE

NOTE:
BACKFLOW PREVENTERS MAY BE HOUSED INSIDE BUILDING OR IN SEPARATE VALVE PIT



SERVICE SADDLE DETAIL TYPICAL



SERVICES 2" AND LARGER

NOTE:
1. SIZE-ON-SIZE TAPPING SLEEVES SHALL BE MECHANICAL JOINTS.
2. SMALLER TAPS ONTO LARGER LINES MAY USED FABRICATED TAPPING SLEEVES AND VALVES

TYPICAL SERVICE CONNECTIONS

NOT TO SCALE

NOTES:

1. FIRE SERVICE METER ASSEMBLY UTILIZES ONLY ONE LINE FOR FIRE PROTECTION SERVICE AND DOMESTIC WATER SERVICE. ONLY ONE METER BOX REQUIRED TO HOUSE SERVICE TO PROPERTY.
2. THE SIZES OF FIRE LINE METER AND BYPASS METER VARIES WITH APPLICATION.
3. METERS AND BACKFLOW PREVENTERS ARE IN SEPARATE PITS NORMALLY.
4. TYPE OF BACKFLOW PREVENTER VARIES WITH APPLICATION.
5. METERS ARE INSTALLED BY CITY FORCES AT OWNER'S EXPENSE.
6. ALL VALVES MUST MEET CITY OF COLUMBIA SPECIFICATIONS.
7. VALVES NOT IN PITS WILL BE IN VALVE BOXES AS SPECIFIED.
8. ALL COPPER JOINTS TO BE FLARED.
9. SERVICE LINES 2" AND SMALLER SHALL BE POLYETHYLENE AS SPECIFIED. SERVICE SADDLES ARE REQUIRED ON ALL SERVICE CONNECTIONS 2" OR SMALLER ON ALL WATER MAINS. SERVICE SADDLES USED TO MAKE SERVICE CONNECTIONS SHALL PROVIDE FULL SUPPORT AROUND THE CIRCUMFERENCE OF THE WATER MAIN. DIRECT SERVICE TAPS ON WATER MAINS SHALL NOT BE ALLOWED.
10. WHEN THE CITY ELECTS TO INSTALL THE SERVICE ON NEW MAINS, THE CONTRACTOR SHALL STUBOUT THE SERVICE WITH A FLANGED TO MECHANICAL JOINT VALVE.
11. ALL PRESSURE REDUCING BACKFLOW PREVENTERS SHALL BE IN ACCORDANCE WITH SCDHEC REQUIREMENTS.
12. METER BOXES FOR METERS 2" AND SMALLER WITHIN THE TRAVELED WAY MUST BE CAST IRON OR CONCRETE. METER BOXES OUTSIDE THE TRAVELED WAY MAY BE CAST IRON, CONCRETE, OR PLASTIC. CAST IRON METER READER COVERS ARE REQUIRED. FOR METERS 3" AND LARGER REFER TO THE STANDARD DETAIL.
13. ALL LONG LINE SERVICES 2" AND SMALLER ARE TO BE DRY BORED.
14. ALL SERVICES WILL BE CONTINUOUS FROM MAIN TO METER, TAKING INTO ACCOUNT ANY STRUCTURES I.E. STORMWATER, SIDEWALKS, ETC.

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Columbia Water

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SCALE: N.T.S.

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TYPICAL SERVICE CONNECTIONS DETAIL

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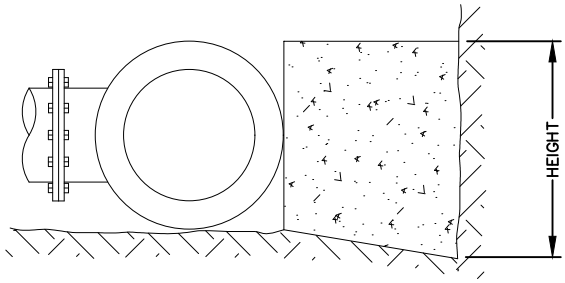
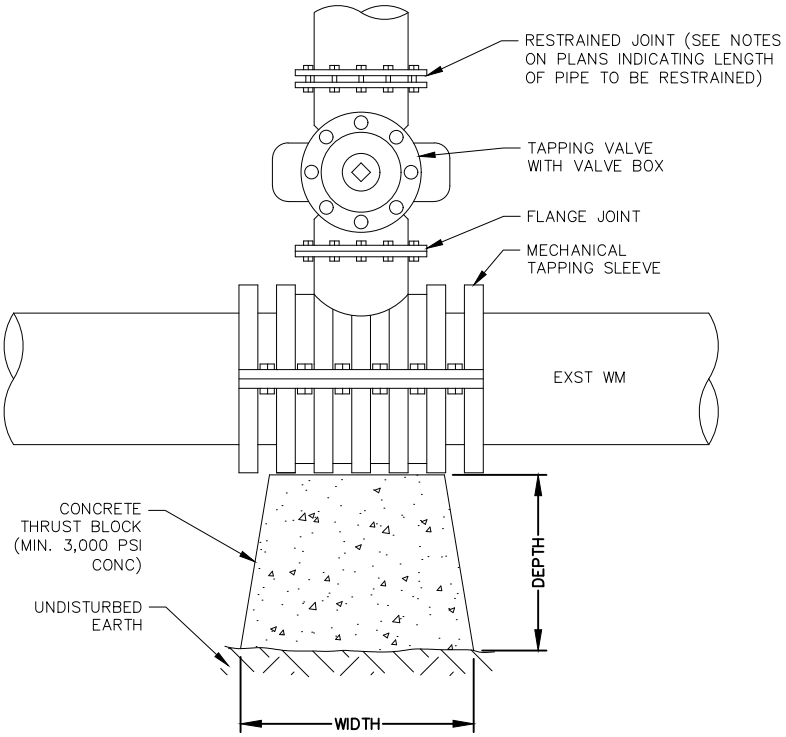
DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS





TYPICAL TAPPING SLEEVE AND VALVE DETAIL

NOT TO SCALE

NOTES:
1. BASED ON 100 PSI STATIC PRESSURE PLUS AWWA WATER HAMMER ALLOWANCE
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND WITH 2000 PSF BEARING CAPACITY
3. THRUST BLOCKS TO BE USED AT ALL LINES OPERATING UNDER PRESSURE.
4. KEEP ALL PIPING JOINTS CLEAR OF THRUST BLOCKS.
5. POOR SOIL A-4-A-8, SILTY SOILS, CLAYS, MUCK, AND PEAT WILL REQUIRE LARGER THRUST BLOCKS.

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SCALE: N.T.S.

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01/05/2022

TYPICAL TAPPING SLEEVE AND VALVE DETAIL

DRAWING NO:
6

DATE: XXX XX, 20XX

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
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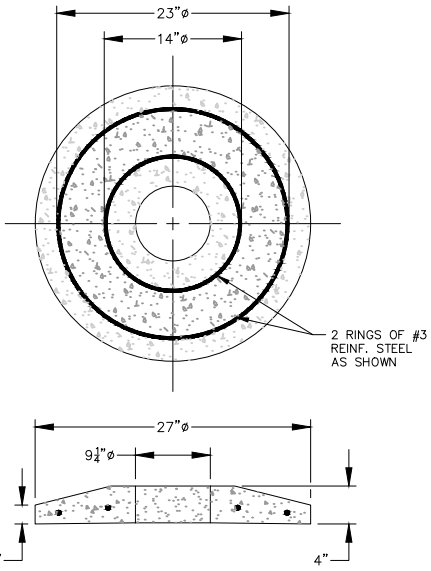
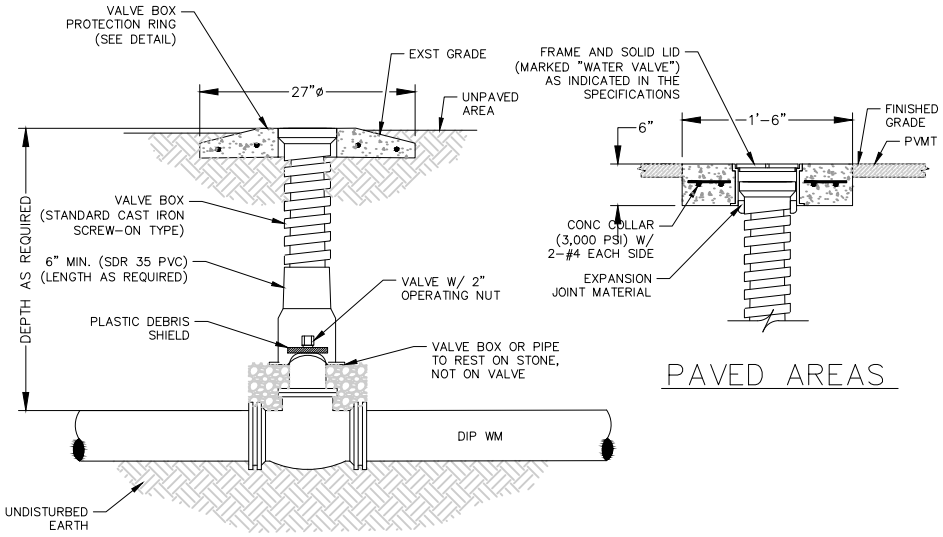


CONCRETE PROTECTION RING DETAIL

NOT TO SCALE



PAVED AREAS

GATE VALVE AND VALVE BOX DETAIL

NOT TO SCALE

NOTES:

1. FOR UNPAVED LOCATIONS, A CONCRETE VALVE BOX PROTECTOR RING SHALL BE PROVIDED AND INSTALLED FLUSH WITH GRADE. PROTECTOR RING PAD IS NOT REQUIRED FOR VALVE LOCATED IN THE ROADWAY, UNLESS SHOWN OR NOTED OTHERWISE.

3. FOR NEW CONSTRUCTION, THE VALVE BOX SHALL BE ADJUSTED TO MIDRANGE TO ALLOW FOR FUTURE BOX ADJUSTMENTS. ROUTE LOCATE WIRES THROUGH THE ADJUSTMENT SECTION OF BOX OR DRILL ¾" HOLE IN THE BOX TOP SECTION. THE LOCATE WIRES SHALL BE CONNECTED TOGETHER WITH WIRE NUT.

4. GATE VALVES SHALL OPEN LEFT.

5. PROVIDE A WHITE OR BLACK PLASTIC DEBRIS SHIELD WHICH INSTALLS BELOW THE OPERATING NUT. SHIELD SHALL BE BY AFC, BOXLOK OR APPROVED EQUAL.

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GATE VALVE AND VALVE BOX DETAIL

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7

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REGISTERED PROFESSIONAL ENGINEER
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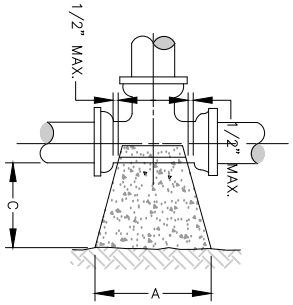

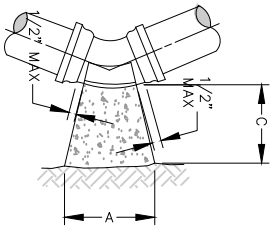

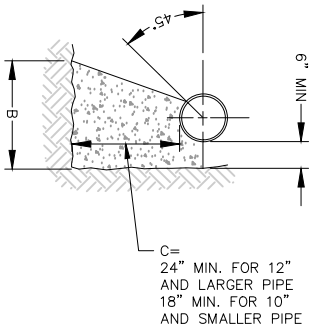

THRUST BLOCK FOR TEES & PLUGS				
SIZE	TEES A	TEES B	TEES C	S.F. BEARING SURFACE
4"	16"	16"	18"	1.78
6"	20"	24"	18"	3.33
8"	26"	32"	18"	5.78
10"	32"	40"	18"	8.89
12"	36"	48"	24"	12.00
14"	40"	56"	24"	15.56
16"	48"	60"	24"	20.00
18"	56"	64"	24"	24.89
20"	60"	76"	24"	31.67
24"	72"	90"	24"	45.00
30"	86"	102"	24"	60.67
36"	116"	108"	24"	86.11

THRUST BLOCK FOR BENDS																
SIZE	90° BEND A	90° BEND B	90° BEND C	S.F. BEARING SURFACE	45° BEND A	45° BEND B	45° BEND C	S.F. BEARING SURFACE	22-1/2° BEND A	22-1/2° BEND B	22-1/2° BEND C	S.F. BEARING SURFACE	11-1/4° BEND A	11-1/4° BEND B	11-1/4° BEND C	S.F. BEARING SURFACE
4"	16"	16"	18"	1.78	14"	16"	18"	1.56	14"	16"	18"	1.56	14"	16"	18"	1.56
6"	22"	32"	18"	4.89	16"	18"	18"	2.00	14"	16"	18"	1.56	14"	16"	18"	1.56
8"	32"	36"	18"	8.00	24"	28"	18"	4.67	16"	18"	18"	2.00	14"	16"	18"	1.56
10"	36"	46"	18"	11.50	26"	36"	18"	6.50	20"	24"	18"	3.33	14"	18"	18"	1.75
12"	44"	56"	24"	17.11	32"	40"	24"	8.89	24"	30"	24"	5.00	16"	20"	24"	2.22
14"	52"	62"	24"	22.39	36"	48"	24"	12.00	26"	36"	24"	6.50	20"	24"	24"	3.33
16"	58"	72"	24"	29.00	40"	54"	24"	15.00	32"	38"	24"	8.44	22"	26"	24"	3.97
18"	64"	80"	24"	35.56	46"	60"	24"	19.17	36"	42"	24"	10.50	24"	32"	24"	5.33
20"	72"	88"	24"	44.00	52"	66"	24"	23.83	38"	48"	24"	12.67	26"	36"	24"	6.50
24"	96"	96"	24"	36.89	64"	78"	24"	34.67	46"	56"	24"	17.89	32"	40"	24"	8.89
30"	122"	102"	24"	86.11	72"	94"	24"	47.00	56"	62"	24"	24.11	36"	48"	24"	12.00
36"	166"	104"	24"	123.33	88"	108"	24"	66.00	64"	78"	24"	34.67	44"	54"	24"	16.50

NOTES:

1. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED SOIL.
2. THESE TABLES SHOW MINIMUM SIZES FOR THRUST BLOCKS IN GOOD SOIL (A-1 THRU A-3, CLEAN SANDS AND GRAVELS) WITH MINIMUM BEARING CAPACITY OF 2000 psi.
3. POOR SOILS A-4 THRU A-8, SILTY SOILS, CLAYS, MUCK AND PEAT WILL REQUIRE LARGER THRUST BLOCKING.
4. BOTH CONCRETE THRUST BLOCKS AND TIE RODS/RESTRIANED JOINTS MUST BE USED WHEN, IN THE JUDGEMENT OF THE ENGINEER, THE NATURE AND CRITICALITY OF AN INSTALLATION IS SUCH AS TO REQUIRE POSITIVE ASSURANCE OF STABILITY.
5. THE USE OF THRUST BLOCKS SHALL BE LIMITED TO SITUATIONS SUCH AS POINT REPAIR WHERE EXPOSING SEVERAL JOINTS OF PIPE IS NOT FEASIBLE DUE TO EXISTING GROUND CONDITIONS.
6. MAXIMUM TEST PRESSURE TO BE 150 PSI.

THRUST BLOCK SIZE CHART AND DETAIL

NOT TO SCALE

Columbia Water

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CITY OF COLUMBIA
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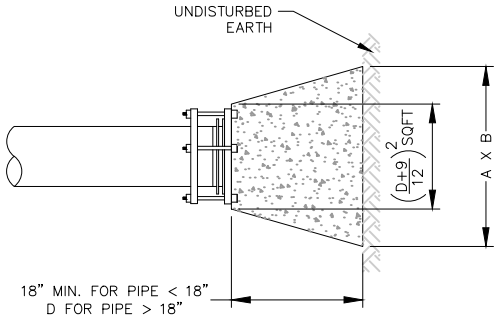
8

THRUST BLOCK SIZE CHART DETAIL

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 19071
DANA R. HIGGINS

MIN THRUST BLOCK BEARING AREAS (SF) FOR PLUG & DEAD END MAINS	
PIPE DIAMETER, D (INCHES)	A X B (SQUARE FEET)
4	0.9
6	2.1
8	3.8
12	8.5
16	15.1
18	19.1
20	23.6
24	33.9
30	53.0
36	76.3



SIDE VIEW OF PLUG AND DEAD END MAIN

THRUST BLOCK FOR PLUGS AND DEAD END MAINS DETAIL

NOT TO SCALE

NOTES:

1. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED SOIL.
2. POOR SOILS A–4 THRU A–8, SILTY SOILS, CLAYS, MUCK AND PEAT WILL REQUIRE LARGER THRUST BLOCKING.
3. BOTH CONCRETE THRUST BLOCKS AND TIE RODS/RESTRIANED JOINTS MUST BE USED WHEN, IN THE JUDGEMENT OF THE ENGINEER, THE NATURE AND CRITICALITY OF AN INSTALLATION IS SUCH AS TO REQUIRE POSITIVE ASSURANCE OF STABILITY.
4. THE USE OF THRUST BLOCKS SHALL BE LIMITED TO SITUATIONS SUCH AS POINT REPAIR WHERE EXPOSING SEVERAL JOINTS OF PIPE IS NOT FEASIBLE DUE TO EXISTING GROUND CONDITIONS.
5. MAXIMUM TEST PRESSURE TO BE 150 PSI.

CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

Columbia Water

CITY OF COLUMBIA

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

SCALE: N.T.S.

DATE:02/17/2020

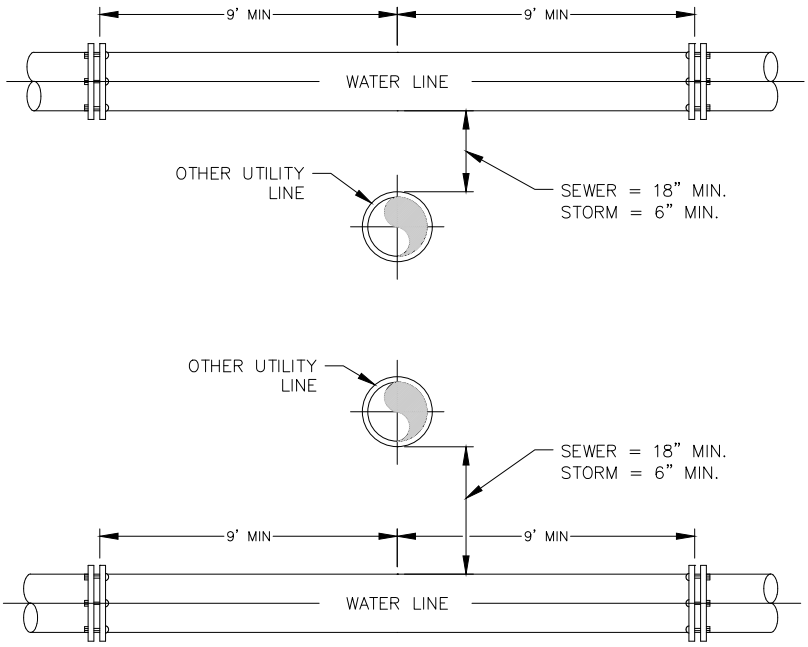
REVISED: 01/05/2022

THRUST BLOCK FOR PLUG AND DEAD END MAINS DETAIL

DRAWING NO: 9

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



WATER AND SEWER/STORM CROSSING DETAIL

NOT TO SCALE

NOTES:

1. WHERE A WATER LINE CROSSES UNDER AN EXISTING UTILITY, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVED FOR THE OTHER EXISTING UTILITY TO PREVENT DAMAGE TO THE WATER MAIN.
2. IF CLEARANCE OF STORM DRAIN IS LESS THAN 18", USE CONCRETE ENCASEMENT ON DIP, WHICH SHALL HAVE POLYETHYLENE ENCASEMENT PRIOR TO CONCRETE BEING POURED.
3. IF CLEARANCE OF SEWER IS LESS THAN 18", USE CONCRETE ENCASEMENT ON DIP, WHICH SHALL HAVE POLYETHYLENE ENCASEMENT PRIOR TO CONCRETE BEING POURED.

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Columbia Water

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COLUMBIA SOUTH CAROLINA 29217

SCALE: N.T.S.

DATE:02/17/2020

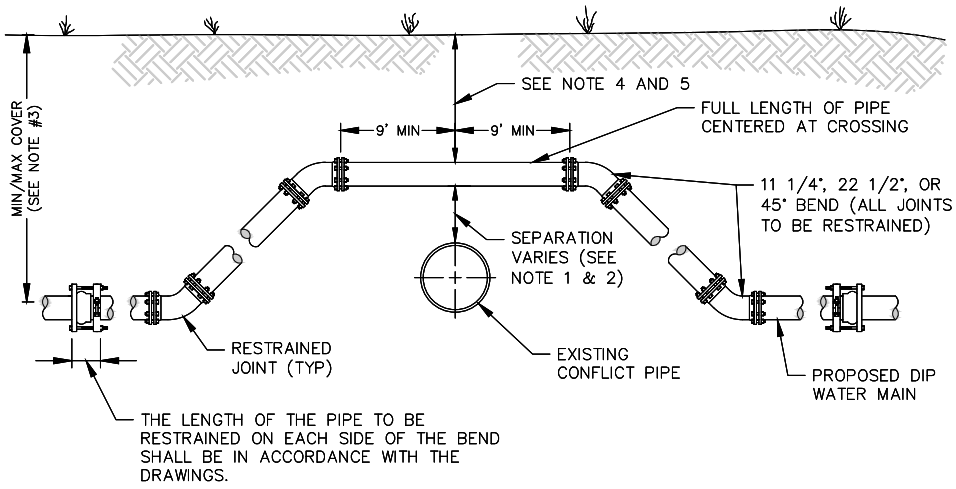
REVISED:
01/05/2022

WATER
AND SEWER/STORM CROSSING DETAIL

DRAWING NO:
10

DATE: XXX XX, 20XX

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 19071
DANA R. HIGGINS



ADJUSTMENT OVER EXISTING UTILITIES DETAIL

NOT TO SCALE

NOTES:

1. THE SOILS BETWEEN THE NEW MAIN AND THE CONFLICT PIPE SHALL BE COMPACTED IN 6" LAYERS TO A MINIMUM COMPACTION OF 98% STANDARD PROCTOR WITH AN ALLOWABLE ±5% OF OPTIMUM MOISTURE CONTENT.
2. FOR MINIMUM VERTICAL SEPARATION REQUIREMENTS SEE WATER AND SEWER/STORM CROSSING DETAIL.
3. THE COVER FOR PIPING LESS THAN 24" SIZE SHALL BE 36" (MIN) IN UNPAVED AREAS, 48" (MIN) IN PAVED AREAS AND A MAXIMUM COVER OF 60", UNLESS APPROVED BY THE CITY ENGINEER.
4. IF UTILITY CONFLICT IS LOCATED IN A NON-TRAFFIC AREA (NO TRAFFIC LOADS), THEN THE MINIMUM COVER MAY BE REDUCED TO 24 INCHES (ONLY IN THE AREA OF THE CONFLICT AND AS APPROVED BY THE CITY ENGINEER).
5. IF UTILITY CONFLICT IS LOCATED IN A TRAFFIC AREA, THEN THE MINIMUM COVER MAY BE REDUCED TO 36 INCHES (ONLY IN THE AREA OF THE CONFLICT AND AS APPROVED BY THE CITY ENGINEER). BACKFILL SHALL BE FLOWABLE FILL.

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SCALE: N.T.S.

DATE:02/17/2020

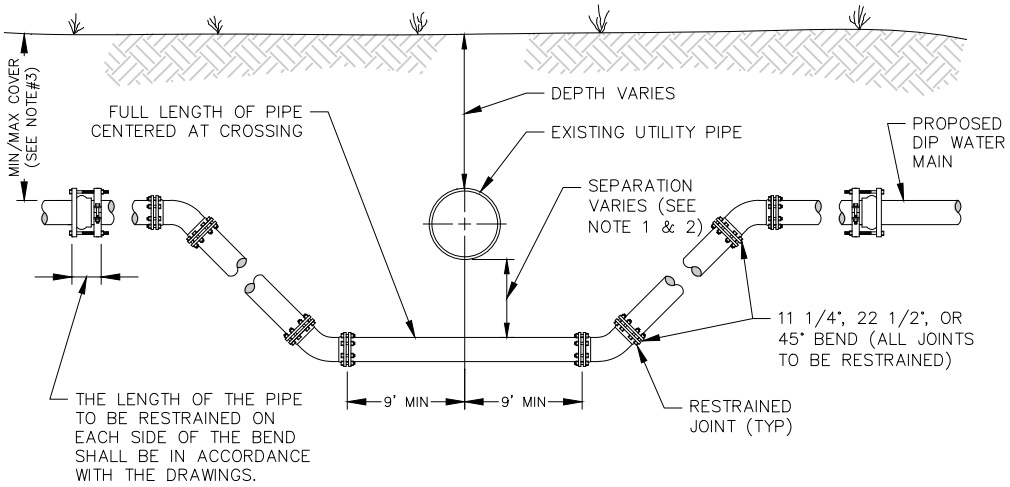
REVISED: 01/05/2022

ADJUSTMENT OVER EXISTING UTILITIES DETAIL

DRAWING NO: 11

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



ADJUSTMENT UNDER EXISTING UTILITIES DETAIL

NOT TO SCALE

NOTES:

1. THE SOILS BETWEEN THE NEW MAIN AND THE CONFLICT PIPE SHALL BE COMPACTED IN 6" LAYERS TO A MINIMUM COMPACTION OF 98% STANDARD PROCTOR WITH AN ALLOWABLE ±5% OF OPTIMUM MOISTURE CONTENT.
2. FOR MINIMUM VERTICAL SEPARATION REQUIREMENTS SEE WATER AND SEWER/STORM CROSSING DETAIL.
3. THE COVER FOR PIPING LESS THAN 24" SIZE SHALL BE 36" (MIN) IN UNPAVED AREAS, 48" (MIN) IN PAVED AREAS AND A MAXIMUM COVER OF 84", UNLESS APPROVED BY THE CITY ENGINEER.

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SCALE: N.T.S.

DATE:02/17/2020

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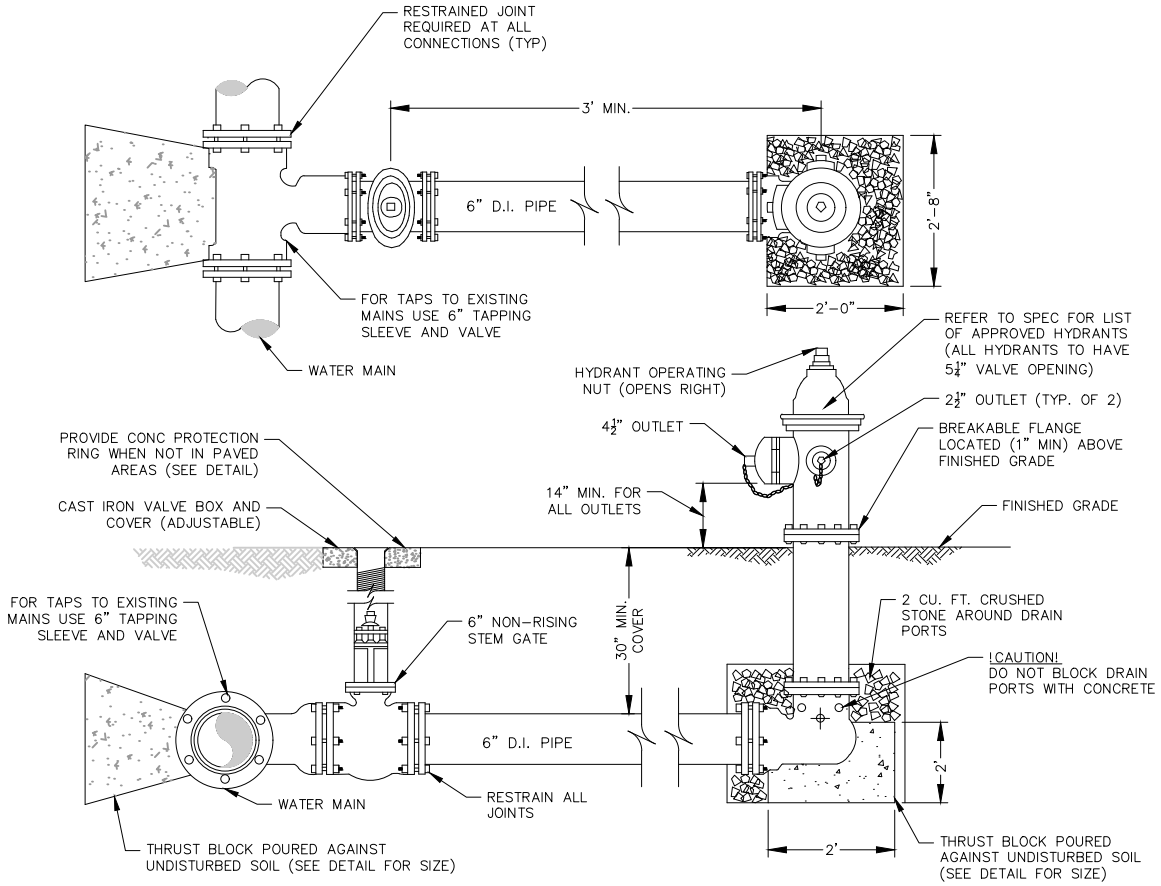
ADJUSTMENT UNDER EXISTING UTILITIES DETAIL

DRAWING NO: 12

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



FIRE HYDRANT ASSEMBLY DETAIL

NOT TO SCALE

NOTES:

1. POOR SOIL A-4-A-8, SILTY SOILS, CLAYS, MUCK, AND PEAT WILL REQUIRE LARGER THRUST BLOCKS OR THE ADDITION OF TWO 3/4" DIA (THREADED ENDS) STEEL RODS AND EYE BOLTS BETWEEN THE TEE AND GATE VALVE AND BETWEEN THE GATE VALVE AND THE HYDRANT. ALL OTHER JOINTS NOT RESTRAINED BY RODS MUST BE MECHANICALLY RESTRAINED.
2. PRIOR TO PROJECT FINAL INSPECTION, THE HYDRANT AND ALL ABOVE GROUND PIPING SHALL BE OILED, GREASED AND PAINTED. PAINT HYDRANT IN ACCORDANCE WITH THE SPECIFICATIONS.
3. FIRE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS. THE USE OF HYDRANT EXTENSIONS SHOULD BE MINIMIZED.
4. BLUE REFLECTIVE MARKERS SHALL BE INSTALLED AS INDICATED IN THE SPECIFICATIONS.
5. IN RESIDENTIAL AND COMMERCIAL DEVELOPMENTS, FIRE HYDRANTS SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE STREET RIGHT-OF-WAY, BUT NOT LESS THEN 3' FROM THE BACK OF CURB OR EDGE OF ROADWAY..
6. MINIMUM DISTANCE BETWEEN THE VALVE AND THE HYDRANT SHALL BE 3'.
7. BENDS MAY BE USED IN HYDRANT LEAD TO FACILITATE HYDRANT LOCATION.
8. FIRE HYDRANT ASSEMBLY INCLUDES TEE.
9. GATE VALVE TO OPEN LEFT.

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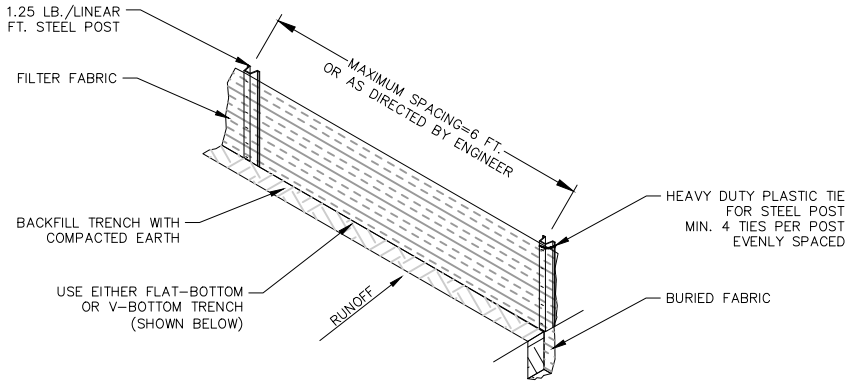
FIRE HYDRANT ASSEMBLY DETAIL

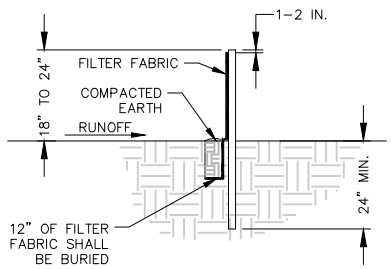
DRAWING NO: 13

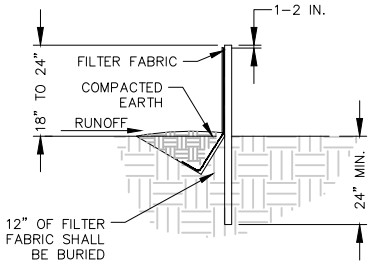
DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



SILT FENCE INSTALLATION DETAIL





FLAT-BOTTOM TRENCH DETAIL V-SHAPED TRENCH DETAIL

STANDARD SILT FENCE DETAIL

NOT TO SCALE

NOTES:

1. SILT FENCE CHECKS MUST BE LOCATED EVERY 100 FEET MAXIMUM AND AT LOW POINTS ALONG THE FENCE LINE.
2. ONLY STEEL POSTS MAY BE USED. POSTS SHALL BE A MINIMUM OF 5 FEET LONG AND INSTALLED TO A MINIMUM DEPTH OF 24 INCHES WITH NO MORE THAN 3 FEET OF THE POST ABOVE GROUND. STEEL POSTS SHALL WEIGH A MINIMUM OF 1.25 POUNDS PER FOOT AND HAVE PROJECTIONS FOR FASTENING THE FABRIC TO THE POST. AT LEAST 1 TO 2 INCHES OF THE POSTS SHALL EXTEND ABOVE THE TOP OF THE FABRIC. POST SPACING WILL BE A MAXIMUM OF 6 FEET ON CENTER.
3. ATTACHED FABRIC TO STEEL POSTS USING HEAVY DUTY PLASTIC TIES THAT ARE EVENLY SPACED AND PLACED IN A MANNER TO PREVENT SAGGING OR TEARING OF THE FABRIC. IN ALL CASES, TIES SHOULD BE AFFIXED IN NO LESS THAN 4 PLACES

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DATE:02/17/2020

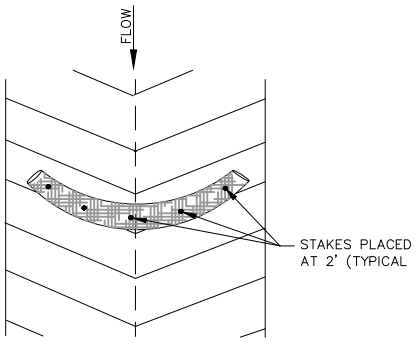
REVISED: 01/05/2022

STANDARD SILT FENCE DETAIL

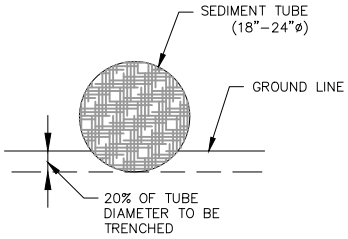
DRAWING NO: 14

DATE: XXX XX, 20XX

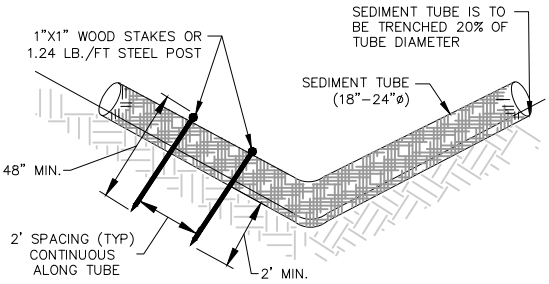
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



TOP VIEW OF DITCH



SECTION A–A



END VIEW OF DITCH

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

SEDIMENT TUBE DITCH APPLICATION DETAIL

NOT TO SCALE

NOTES:

1. SEDIMENT TUBES SHALL COMPLY WITH THE REQUIREMENTS OF THE SCDOT STANDARD SPECIFICATIONS, LATEST ADDITION AND BE FREE FROM DEFECTS OR TRANSPORTATION DAMAGE.
2. SEDIMENT TUBES ARE TO BE IN COMPLETE CONTACT WITH UNDERLYING SOIL. SEDIMENT TUBES ARE TO BE 18–24 INCHES IN DIAMETER AND ARE TO BE TRENCHED TO A DEPTH OF 20% OF THE TUBES DIAMETER.
3. SEDIMENT TUBES ARE TO BE INSTALLED PERPENDICULAR TO WATER FLOW AND EXTEND UP SIDE SLOPES UP TO ONE FOOT ABOVE DESIGN FLOW DEPTH. SPACE TUBES IN ACCORDANCE WITH THE TABLE ABOVE.
4. SELECT PROPER LENGTH OF TUBE TO MINIMIZE THE NUMBER NEEDED TO SPAN THE WIDTH OF DRAINAGE AREA. ONE CONTINUOUS LENGTH IS PREFERRED COMPARED TO TWO OVERLAPPING TUBES. IF NECESSARY, SEDIMENT TUBES CAN BE LAPPED A MINIMUM OF 6 INCHES TO PREVENT PASSAGE OF FLOW AND SEDIMENT THROUGH THE FIELD JOINT.
5. INSTALL SEDIMENT TUBES FOR DITCH CHECKS OVER BARE SOIL, MULCHED AREAS, OR EROSION CONTROL BLANKETS. KEEP SEDIMENT TUBES FOR DITCH CHECKS IN PLACE UNTIL FULLY ESTABLISHED VEGETATION AND ROOT SYSTEMS HAVE COMPLETELY DEVELOPED AND CAN SURVIVE ON THEIR OWN.
6. REPAIR ALL RILLS, GULLIES, AND UNDERCUTTING NEAR SEDIMENTS TUBES. REMOVE ALL SEDIMENT DEPOSITS THAT IMPAIR THE FILTRATION CAPABILITY OF THE SEDIMENT TUBES WHEN THE SEDIMENT REACHES ½ THE HEIGHT OF THE EXPOSED SEDIMENT TUBE.
7. REMOVE AND/OR REPLACE INSTALLED SEDIMENT TUBES AS REQUIRED TO ADAPT TO CHANGING CONSTRUCTION SITE CONDITIONS. REMOVE SEDIMENT TUBES WHEN THE FUNCTIONAL LONGEVITY IS EXCEEDED AS DETERMINED BY THE ENGINEER, INSPECTOR, OR MANUFACTURE'S REPRESENTATIVE.
8. PRIOR TO FINAL STABILIZATION, BACKFILL ALL TRENCHES, DEPRESSIONS, AND OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF SEDIMENT TUBES.

CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

Columbia Water

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DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

SCALE: N.T.S.

DATE:02/17/2020

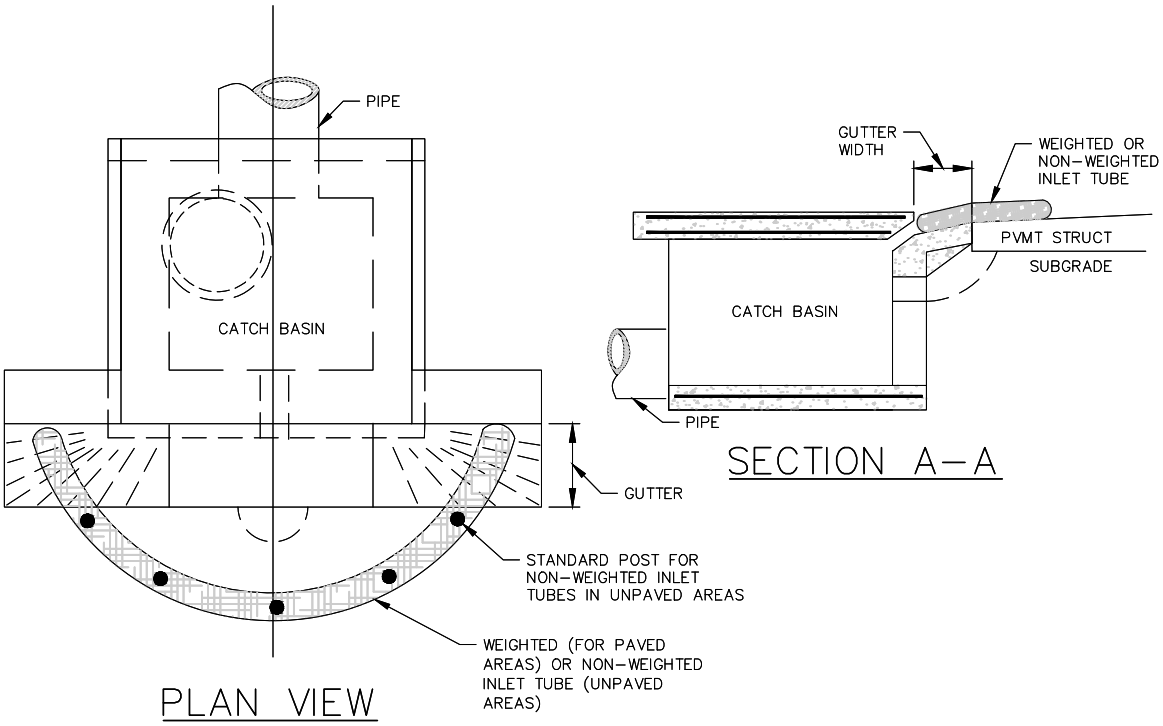
REVISED:
01/05/2022

SEDIMENT TUBE DITCH APPLICATION DETAIL

DRAWING NO:
15

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 19071
DANA R. HIGGINS



INLET TUBE DETAIL

NOT TO SCALE

NOTES:

1. DO NOT COMPLETELY BLOCK INLETS WITH WEIGHTED INLET TUBES.
2. INSTALL WEIGHTED INLET TUBES LYING FLAT ON THE GROUND, WITH NO GAPS BETWEEN THE UNDER LAYING SURFACE AND THE INLET TUBE. DO NOT STACK INLET TUBES ON TOP OF ONE ANOTHER.
3. INSTALL WEIGHTED INLET TUBES IN SUCH A MANNER THAT ALL OVERFLOW OR OVERTOPPING WATER HAS THE ABILITY TO ENTER THE INLET UNOBSTRUCTED.
4. REPLACE INLET TUBES DAMAGED DURING INSTALLATION AS DIRECTED BY THE INSPECTOR OR MANUFACTURER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
5. INLET TUBES MAY BE TEMPORARILY REMOVED DURING CONSTRUCTION AS NEEDED.

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SEDIMENT TUBE DITCH APPLICATION DETAIL

DRAWING NO:
16

DATE: XXX XX, 20XX

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No. 19071
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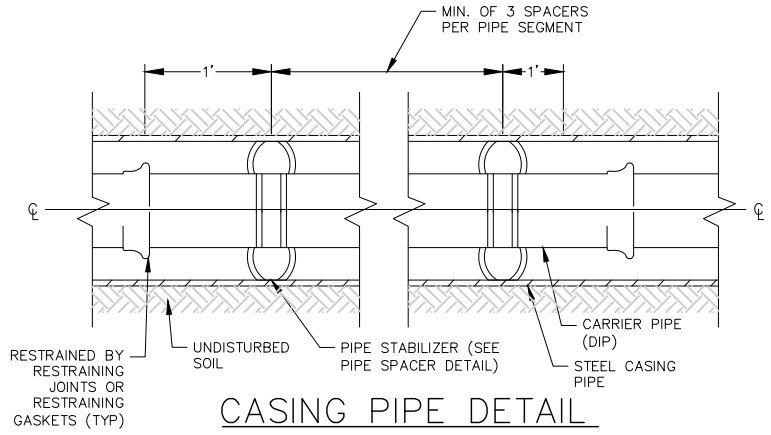
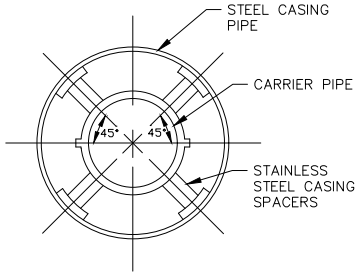
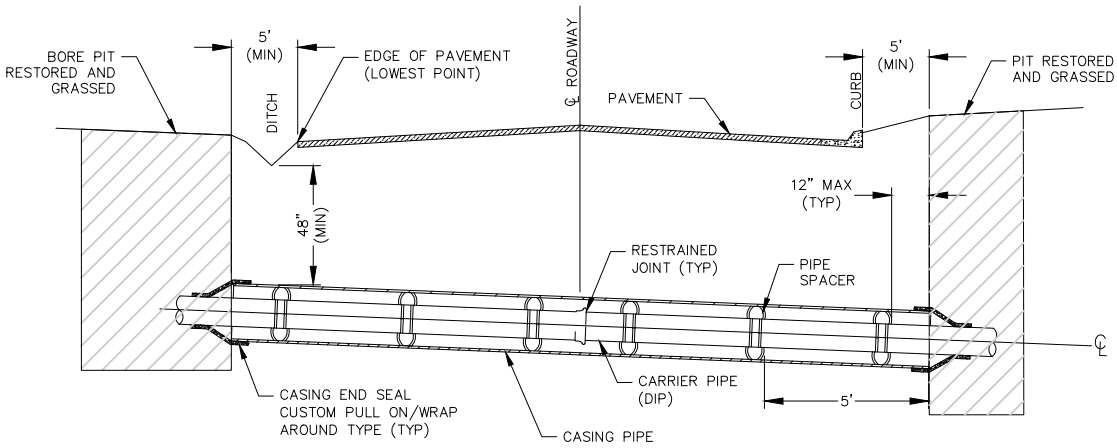


CASING PIPE DETAIL



SPACER DETAIL



BORE AND JACK AND CASING DETAIL

NOT TO SCALE

NOTES:

1. STEEL CASING LENGTH SHALL BE IN ACCORDANCE WITH SCDOT "A POLICY FOR ACCOMMODATING UTILITIES ON HIGHWAY RIGHTS-OF-WAY OR "RAILROAD SPECIFICATIONS FOR PIPELINE OCCUPANCY" AND THE SPECIFICATIONS.
2. CASING PIPE AND CARRIER PIPE DIAMETERS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS.
3. USE SPIDER SUPPORTS (SEE DETAIL) TO MOVE CARRIER PIPE INTO CASING PIPE. SPACING OF SPIDERS WILL BE DICTATED BY THE LENGTH OF CASING PIPE AND NUMBER OF JOINTS OF CARRIER PIPE.
4. MINIMUM OF 3 SPACERS PER JOINT OF PIPE.
5. SCDOT REQUIRES A MINIMUM OF 48" OF COVER BENEATH ALL SCDOT ROADWAYS.

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BORE AND JACK CASING DETAIL

SCALE: N.T.S.

DATE:02/17/2020

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DRAWING NO: 17

DATE: XXX XX, 20XX

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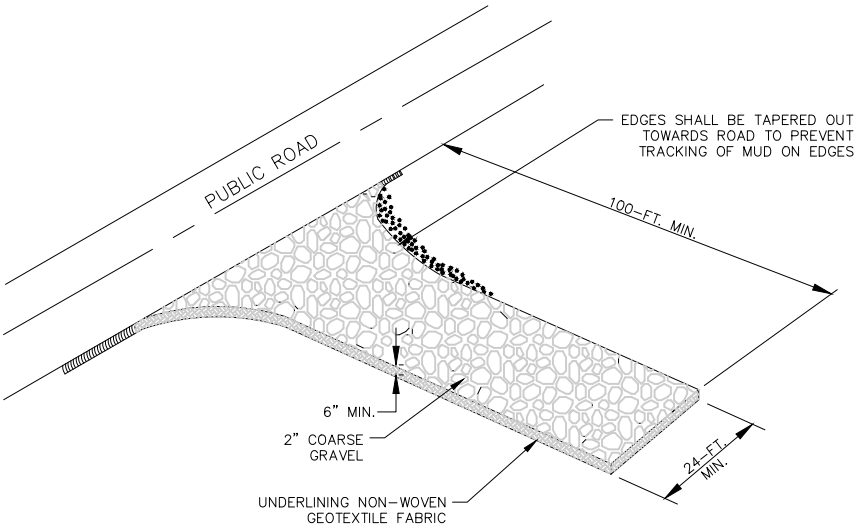

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT TO SCALE

NOTES:

1. STABILIZED CONSTRUCTION ENTRANCE SHOULD BE USED AT ALL POINTS WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD.
2. INSTALL A CULVERT PIPE ACROSS THE ENTRANCE WHEN NEEDED TO PROVIDE POSITIVE DRAINAGE.
3. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASTE WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE. WASHDOWN AREAS IN GENERAL MUST BE ESTABLISHED WITH CRUSHED GRAVEL AND DRAIN INTO A SEDIMENT TRAP OR SEDIMENT BASIN. CONSTRUCTION ENTRANCES SHOULD BE USED IN CONJUNCTION WITH THE STABILIZATION OF CONSTRUCTION ROADS TO REDUCE THE AMOUNT OF MUD PICKED UP BY VEHICLES.
4. REMOVE ALL VEGETATION AND AY OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA.
5. DIVERT ALL RUNOFF AND DRAINAGE FROM STONES TO A SEDIMENT TRAP OR BASIN.
6. INSTALL A NON-WOVEN GEOTEXTILE FABRIC IN ACCORDANCE WITH SCDOT'S STANDARD SPECIFICATION, LATEST EDITION, PRIOR TO PLACING ANY STONE.
7. MINIMUM DIMENSIONS OF THE ENTRANCE SHALL BE 24 FEET WIDE X 100 FEET LONG, AND MAY BE MODIFIED AS NECESSARY TO ACCOMMODATE SITE CONSTRAINTS.
8. CHECK MUD AND SEDIMENT BUILDUP, AS WELL AS PAD INTEGRITY. RESHAPE THE STONE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.
9. WASH OR REPLACE STONES AS NEEDED AND AS DIRECTED BY THE ENGINEER. THE STONE IN THE ENTRANCE SHOULD BE WASHED OR REPLACED WHENEVER THE ENTRANCE FAILS TO REDUCE MUD BEING CARRIED OFF SITE BY VEHICLES.
10. IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED WHEN THE WATER CAN BE DISCHARED TO A SEDIMENT TRAP OR BASIN.
11. REPAIR ANY BROKEN PAVEMENT IMMEDIATELY.

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SCALE: N.T.S.

DATE:02/17/2020

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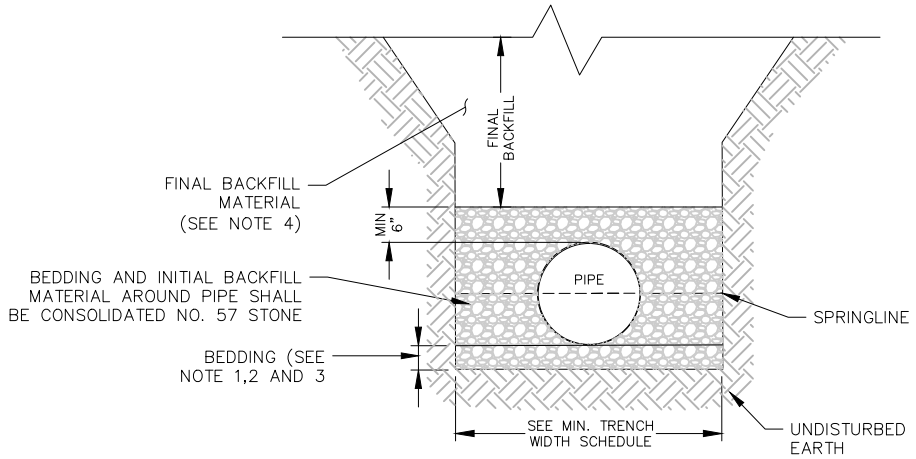
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT DETAIL

DRAWING NO: 18

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



MINIMUM TRENCH WIDTH SCHEDULE				
PIPE SIZE I.D.	12" OR LESS	12" TO 21"	24" TO 30"	33" TO 54"
TRENCH WIDTH (W/O SHORING)	36"	I.D. + 24"	I.D. + 30"	I.D. + 30"
TRENCH WIDTH (W/ SHORING)	48"	I.D. + 36"	I.D. + 42"	I.D. + 42"

MINIMUM BEDDING FOR GRAVITY SEWER MAIN DETAIL

NOT TO SCALE

NOTES:

1. BEDDING DEPTH SHALL BE 6" MINIMUM FOR PIPE DIAMETER LESS THAN 12".

2. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING MATERIAL BELOW THE PIPE. THE ENGINEER SHALL DETERMINE IN THE FIELD THE AMOUNT OF UNSUITABLE MATERIAL REQUIRED TO REACH A SUITABLE FOUNDATION.

3. THE PIPE BEDDING SHALL BE CONSOLIDATED NO. 57 STONE IN 6" LAYERS TO THE BOTTOM OF THE PIPE. THEN BACKFILLED WITH HAND PLACED MATERIAL CONSOLIDATED IN 6" LAYERS TO THE SPRINGLINE OF THE PIPE.

4. FINAL BACKFILL MATERIAL

   A. AREAS OUTSIDE THE SCDOT, COUNTY, AND CITY RIGHT-OF-WAYS: FINAL BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO M145 GROUP CLASSIFICATION A1-A6 AND BE COMPACTED IN SUFFICIENT DEPTHS TO MEET A MINIMUM COMPACTION OF 85% STANDARD PROCTOR WITH AN ALLOWABLE ±5% OF OPTIMUM MOISTURE CONTENT.

   B. AREAS INSIDE THE SCDOT, COUNTY, AND CITY RIGHT-OF-WAYS: FINAL BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO M145 GROUP CLASSIFICATION A1-A3 AND BE COMPACTED IN 6" LAYERS TO A MINIMUM COMPACTION OF 95% STANDARD PROCTOR WITH AN ALLOWABLE ±5% OF OPTIMUM MOISTURE CONTENT.

   C. UNDER ROADWAY PAVEMENT (TO THREE FEET FROM EDGE OF PAVEMENT): FINAL BACKFILL MATERIAL SHALL BE SCDOT EXCAVATABLE (200 PSI MAX) FLOWABLE FILL TO SUBBASE OF PAVEMENT OR TO GROUND SURFACE A MINIMUM OF 5 FEET FOR ALL SCDOT ROADWAYS.

   D. UNDER DRIVEWAYS: FINAL BACKFILL MATERIAL SHALL MEET REQUIREMENTS OF AASHTO M145 GROUP CLASSIFICATION A1-A3 AND BE COMPACTED IN 6" LAYERS TO A MINIMUM COMPACTION OF 98% STANDARD PROCTOR WITH AN ALLOWABLE ±5% OF OPTIMUM MOISTURE CONTENT.

   E. USE OF NATIVE MATERIAL: NATIVE MATERIAL MAY BE USED IN FINAL BACKFILL ONLY WHEN APPROVED BY THE ENGINEER.

CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

Columbia Water

CITY OF COLUMBIA

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

SCALE: N.T.S.

DATE:02/17/2020

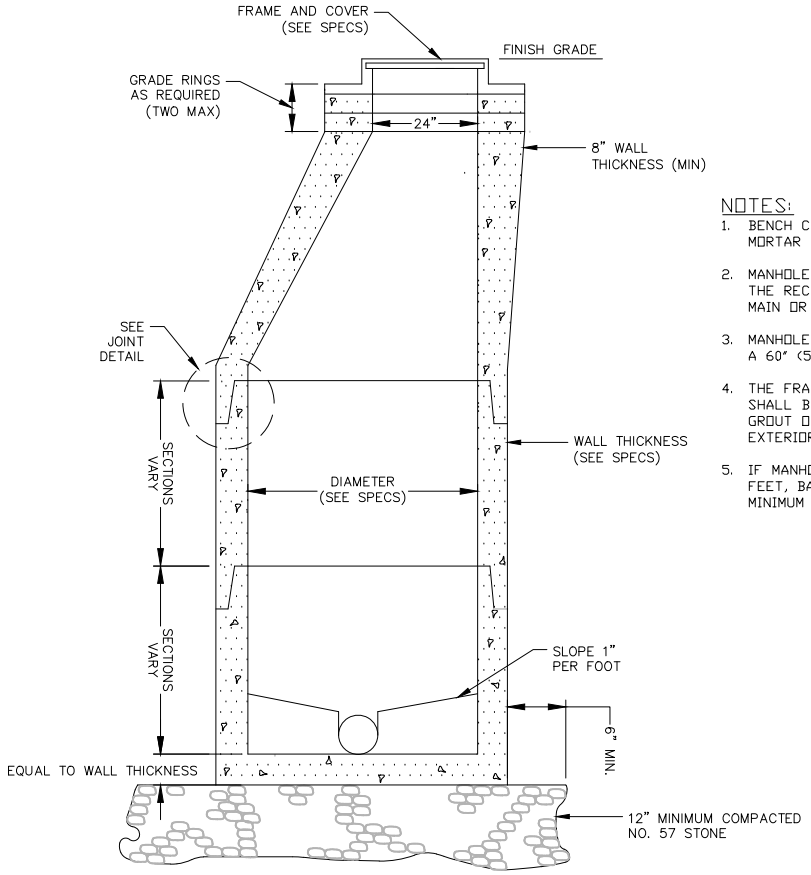
REVISED: 05/22/2025

MINIMUM BEDDING FOR GRAVITY SEWER MAIN DETAIL

DRAWING NO: 19

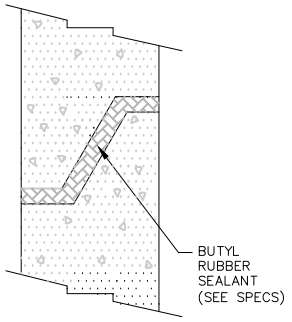
DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



NOTES:

1. BENCH CAN BE PRECAST, OR BRICK AND MORTAR TOWELED SMOOTH.
2. MANHOLE SHALL BE UNLINED UNLESS IT IS THE RECEIVING MANHOLE FOR A FORCE MAIN OR THE NEXT MANHOLE DOWNSTREAM.
3. MANHOLES OVER 12 FT. DEEP SHALL HAVE A 60" (5') MINIMUM INSIDE DIAMETER.
4. THE FRAME AND COVER AND GRADE RINGS SHALL BE SECURED TO THE CONE WITH GROUT ON BOTH THE INTERIOR & EXTERIOR.
5. IF MANHOLE DEPTH IS GREATER THAN 12 FEET, BASE THICKNESS SHALL BE A MINIMUM OF 8 INCHES.



JOINT

PRECAST MANHOLE DETAIL

NOT TO SCALE

NOTES:

1. SEE SPECIFICATIONS FOR MANHOLE FRAME AND COVER.
2. SEAL ALL JOINTS WITH MASTIC. SEE SPECIFICATIONS.

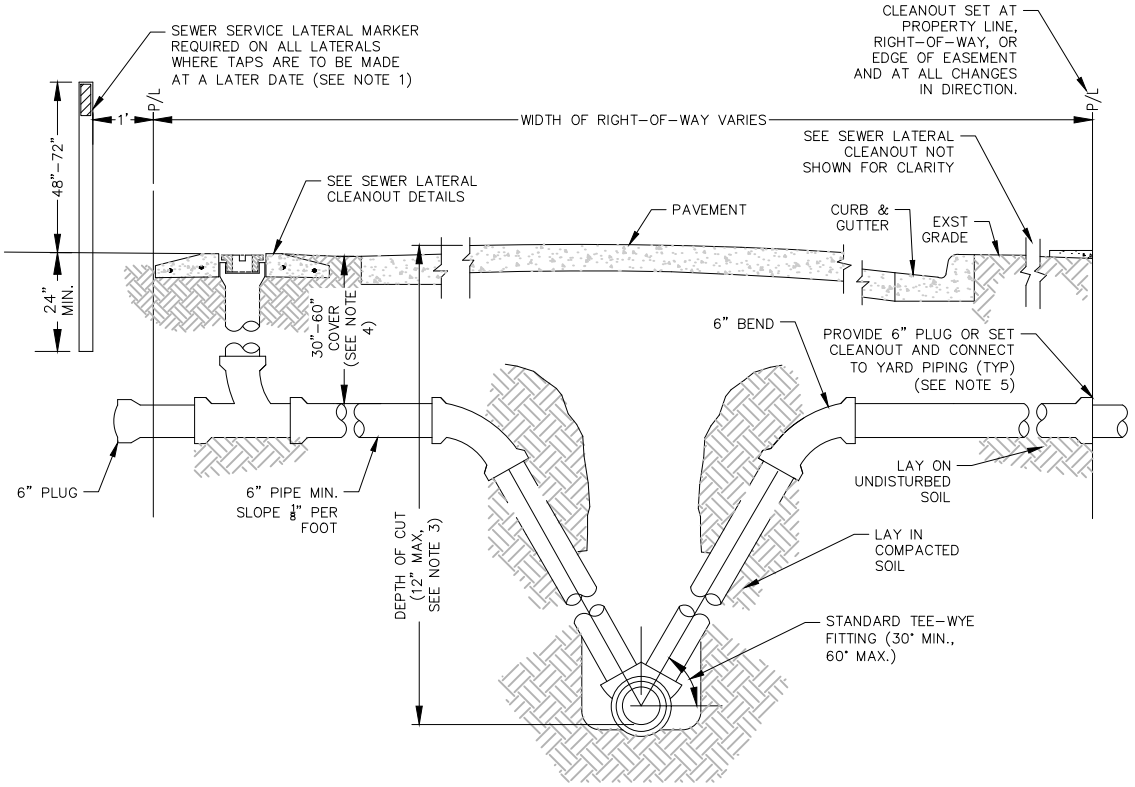
CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

Columbia Water

CITY OF COLUMBIA DEPARTMENT OF ENGINEERING P.O. BOX 147 COLUMBIA SOUTH CAROLINA 29217	SCALE: N.T.S. DATE:02/17/2020 REVISED: 01/05/2022
PRECAST MANHOLE DETAIL	DRAWING NO: 20

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 19071
DANA R. HIGGINS



SEWER SERVICE LATERAL SECTION VIEW DETAIL

NOT TO SCALE

NOTES:

1. FOR SEPTIC TANK PHASE-OUT PROJECTS, A SEWER SERVICE LATERAL MARKER IS REQUIRED FOR ALL LATERALS WHICH ARE "NOT IN USE". SEWER SERVICE LATERAL MARKER SHALL BE, A LANDSCAPE TIMBER OR 3x3 MIN. P.T. POST (TOP PAINTED GREEN) SHALL BE INSTALLED TO MARK THE LOCATION OF THE 6" PLUG.
2. THE MINIMUM SIZE OF ALL HOUSE LATERALS SHALL BE 6 INCHES. THE MAXIMUM LENGTH OF A HOUSE LATERAL SHALL BE 60 FEET (LENGTH BETWEEN SEWER MAIN TO CUSTOMERS PROPERTY LINE).
3. ALL SEWER SERVICE LATERAL PIPE AND FITTINGS (INCLUDING THE TEE-WYE FITTING) WITH A "DEPTH OF CUT" EQUAL OR GREATER THAN 12 FEET, SHALL BE DIP, PRESSURE CLASS 350, LINED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. THE SEWER SERVICE LATERAL SHALL BE CONSTRUCTED AT A DEPTH TO ALLOW A GRAVITY CONNECTION BY THE CUSTOMER, WHERE POSSIBLE (CONTINGENT UPON MEETING THE CUSTOMER'S ON-SITE CONDITIONS AND LOCAL CONSTRUCTION STANDARDS). A LATERAL REQUIRING MORE THAN 60" OF COVER MUST BE APPROVED, PRIOR TO CONSTRUCTION, BY THE ENGINEER.
5. CONNECTION TO EXISTING YARD PIPING (TO BE LOCATED PRIOR TO INSTALLING THE TEE BRANCH) SHALL BE MADE WITH A FLEXIBLE ADAPTER COUPLING (FERNCO OR EQUAL).

CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

Columbia Water

CITY OF COLUMBIA

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

SCALE: N.T.S.

DATE:02/17/2020

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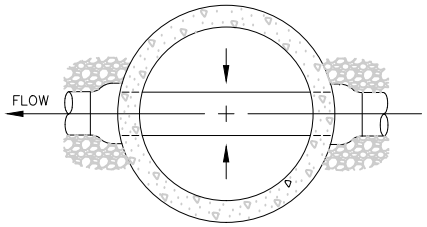
SEWER SERVICE LATERAL SECTION VIEW DETAIL

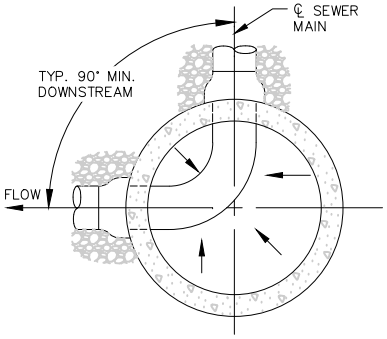
DRAWING NO: 21

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



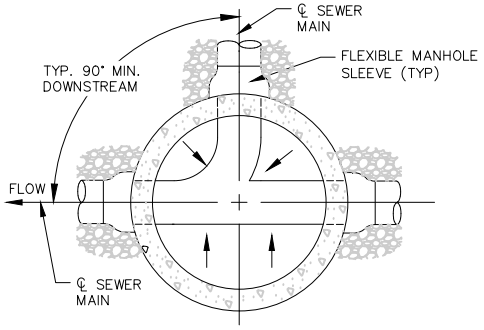
STRAIGHT



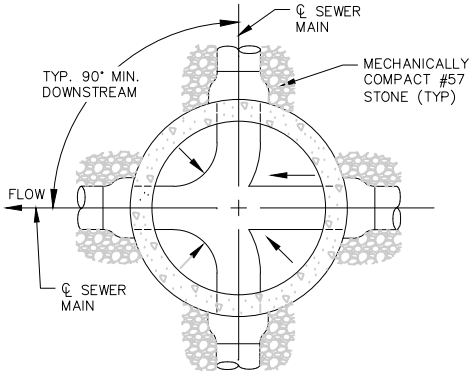
TWO–WAY INTERSECTION

STANDARD MANHOLES SCHEDULE OF GOVERNING DIMENSIONS				
PIPE SIZE	ANGLE △	INSIDE DIAMETER	"R"	"X'
8" TO 15"	0° TO 90°	4'–0" *	2'–0"	0"
16" TO 30"	0° TO 90°	5'–0"	2'–0"	6"
36" TO 42"	0° TO 60°	6'–0"	3'–0"	9"
36" TO 42"	60° TO 90°	6'–0	3'–0"	1'–2"
48" OR LARGER	0° TO 45°	7'–0	4'–0"	6"
48" OR LARGER	45° TO 90°	8'–0	3'–0"	1'–3"

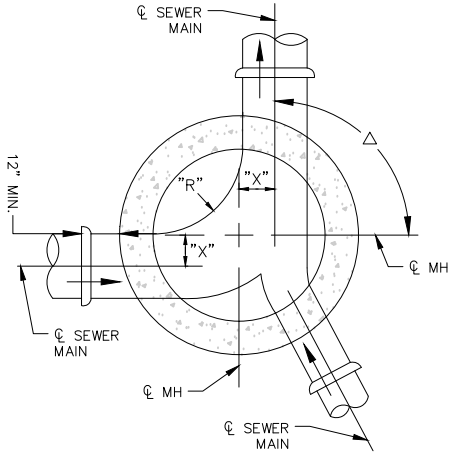
*MANHOLE DEEPER THAN 12' SHALL BE 5' MIN.



THREE–WAY INTERSECTION



FOUR–WAY INTERSECTION



TYPICAL STANDARD MANHOLE PLAN

MANHOLE PLAN AND INVERT DETAIL

NOT TO SCALE

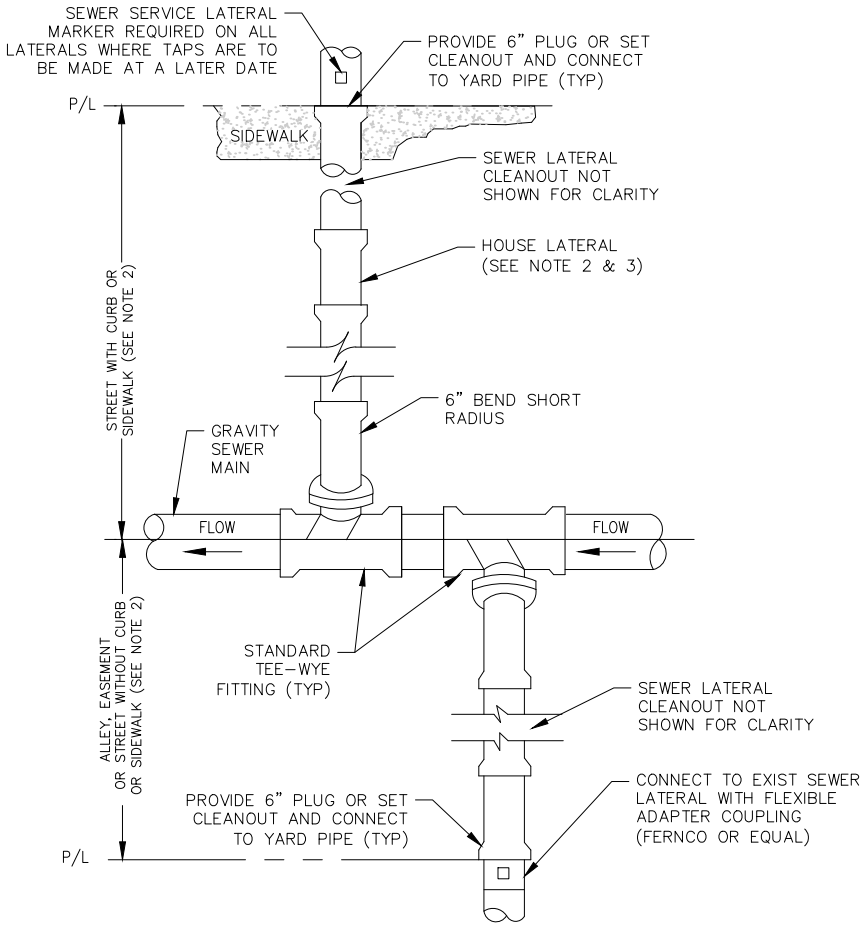
NOTES:

1. TROWEL SHAPE INVERTS TO BE UNIFORM AND SMOOTH.
2. ARROWS INDICATE DIRECTION OF SLOPE.

CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

Columbia Water

CITY OF COLUMBIA DEPARTMENT OF ENGINEERING P.O. BOX 147 COLUMBIA SOUTH CAROLINA 29217	SCALE: N.T.S. DATE:02/17/2020 REVISED: 01/05/2022	DATE: XXX XX, 20XX
MANHOLE PLAN AND INVERT DETAIL	DRAWING NO: 22	SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS



SEWER SERVICE LATERAL PLAN VIEW DETAIL

NOT TO SCALE

NOTES:

1. FOR SEPTIC TANK PHASE-OUT PROJECTS, A SEWER SERVICE LATERAL MARKER IS REQUIRED FOR ALL LATERALS WHICH ARE "NOT IN USE". SEWER SERVICE LATERAL MARKER SHALL BE, A LANDSCAPE TIMBER OR 3x3 MIN. P.T. POST (TOP PAINTED GREEN) SHALL BE INSTALLED TO MARK THE LOCATION OF THE 6" PLUG.
2. THE MINIMUM SIZE OF ALL HOUSE LATERALS SHALL BE 6 INCHES. THE MAXIMUM LENGTH OF A HOUSE LATERAL SHALL BE 60 FEET (LENGTH BETWEEN SEWER MAIN TO CUSTOMERS PROPERTY LINE).
3. ALL SEWER SERVICE LATERAL PIPE AND FITTINGS (INCLUDING THE TEE-WYE FITTING) WITH A "DEPTH OF CUT" EQUAL OR GREATER THAN 12 FEET, SHALL BE DIP, PRESSURE CLASS 350, LINED IN ACCORDANCE WITH THE SPECIFICATIONS.

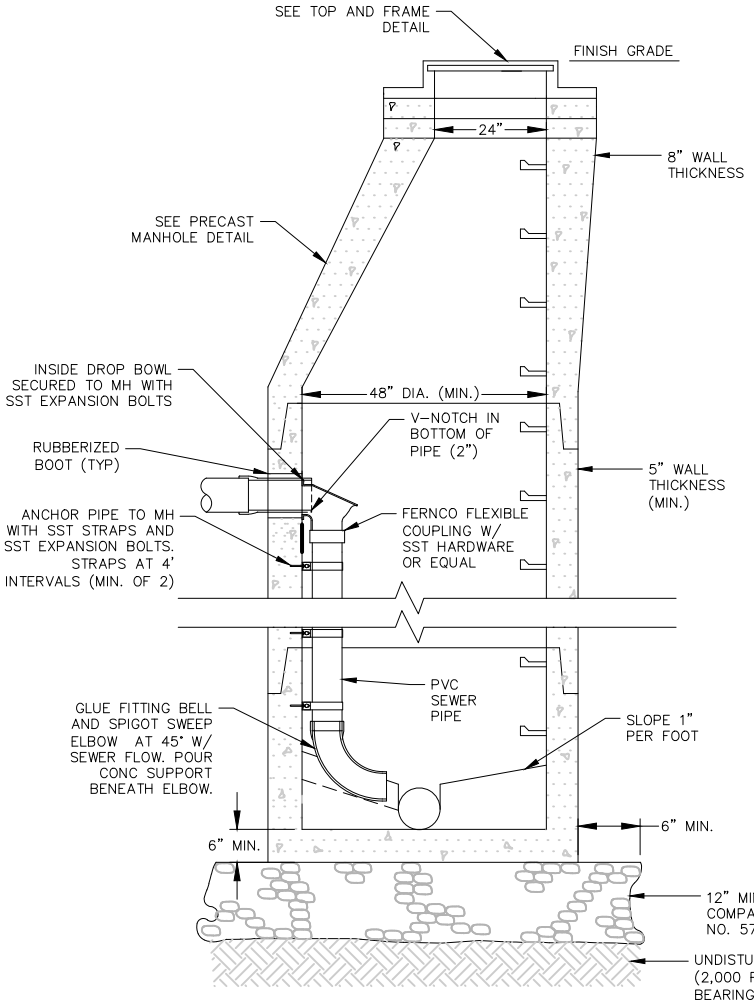
CITY OF COLUMBIA RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AS NEEDED IN THE FUTURE. ENGINEERS ARE RESPONSIBLE FOR SPECIFYING A HIGHER PRESSURE RATED PIPE IF FIELD CONDITIONS WARRANT.

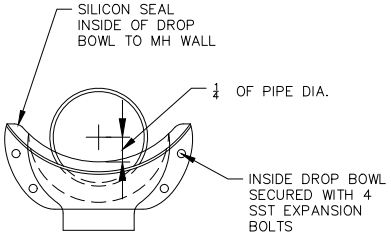
Columbia Water

CITY OF COLUMBIA DEPARTMENT OF ENGINEERING P.O. BOX 147 COLUMBIA SOUTH CAROLINA 29217	SCALE: N.T.S. DATE:2/17/2020 REVISED: XX/XX/XXXX
SEWER SERVICE LATERAL SECTION VIEW DETAIL	DRAWING NO: 23

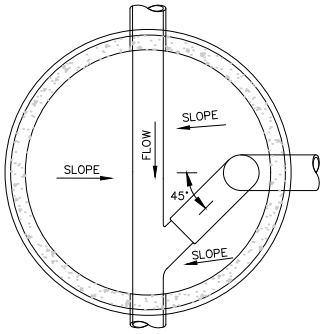
DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS





DROP BOWL MOUNTING POSITION



PLAN – INSIDE DROP

NOT FOR STANDARD USE. APPROVAL REQUIRED ON A CASE BY CASE BASIS.

INSIDE DROP MANHOLE DETAIL

NOT TO SCALE

NOTES:

1. INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE "DROP BOWL" BY RELINER-DURAN, INC OR EQUAL.
2. ONLY ONE INSIDE DROP CONNECTION PER MANHOLE WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER AND SHOWN ON THE DRAWINGS.
3. THE DROP BOWL SHALL NOT EXTEND INTO THE AREA DEFINED BY THE PROJECTION OF THE MANHOLE ENTRANCE VERTICALLY DOWN TO THE MANHOLE BOTTOM. IF NECESSARY, MANHOLE FRAME, COVER, STEPS, AND CONE SECTION SHALL BE REMOVED AND PLACED TO ALLOW FOR UNOBSTRUCTED ENTRY AND EXIST OF THE STRUCTURE.
4. INFLUENT PIPE SLOPE SHALL NOT EXCEED 10%.
5. MAXIMUM SIZE OF INFLUENT PIPE IS 12".
6. SIZE AND TYPE OF SST EXPANSION BOLT SHALL BE AS RECOMMENDED BY MANUFACTURER.

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Columbia Water

CITY OF COLUMBIA

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

INSIDE DROP MANHOLE DETAIL

SCALE: N.T.S.

DATE:2/17/2020

REVISED: 09/21/2022

DRAWING NO: 24

DATE: XXX XX, 20XX

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19071 DANA R. HIGGINS