

"A" PIPE SIZE DIAMETER	"B" TRENCH WIDTH	"C" TRENCH HEIGHT	TRENCH AREA	PIPE AREA	SANITARY SEWER BEDDING MAT. AREA	SANITARY SEWER BEDDING MAT. **TONS/LF
4"	28"	16"	3.11 Sq.Ft.	0.09 Sq.Ft.	3.02 Sq.Ft.	0.18
6"	30"	18"	3.75 Sq.Ft.	0.20 Sq.Ft.	3.55 Sq.Ft.	0.21
8"	32"	20"	4.44 Sq.Ft.	0.35 Sq.Ft.	4.10 Sq.Ft.	0.25
10"	34"	22"	5.19 Sq. Ft.	0.55 Sq.Ft.	4.65 Sq.Ft.	0.28
12"	36"	24"	6.00 Sq.Ft.	0.79 Sq.Ft.	5.22 Sq.Ft.	0.31
15"	39"	27"	7.31 Sq.Ft.	1.23 Sq.Ft.	6.09 Sq.Ft.	0.37
18"	42"	30"	8.75 Sq.Ft.	1.77 Sq.Ft.	6.98 Sq.Ft.	0.42
21"	45"	33"	10.31 Sq.Ft.	2.41 Sq.Ft.	7.91 Sq.Ft.	0.47
24"	48"	36"	12.00 Sq.Ft.	3.14 Sq.Ft.	8.86 Sq.Ft.	0.53
27"	51"	39"	13.81 Sq.Ft	3.98 Sq.Ft.	9.84 Sq.Ft.	0.59
30"	54"	42"	15.75 Sq.Ft.	4.91 Sq.Ft.	10.84 Sq.Ft.	0.65
36"	60"	48"	20.00 Sq.Ft.	7.07 Sq.Ft.	12.93 Sq.Ft.	0.78

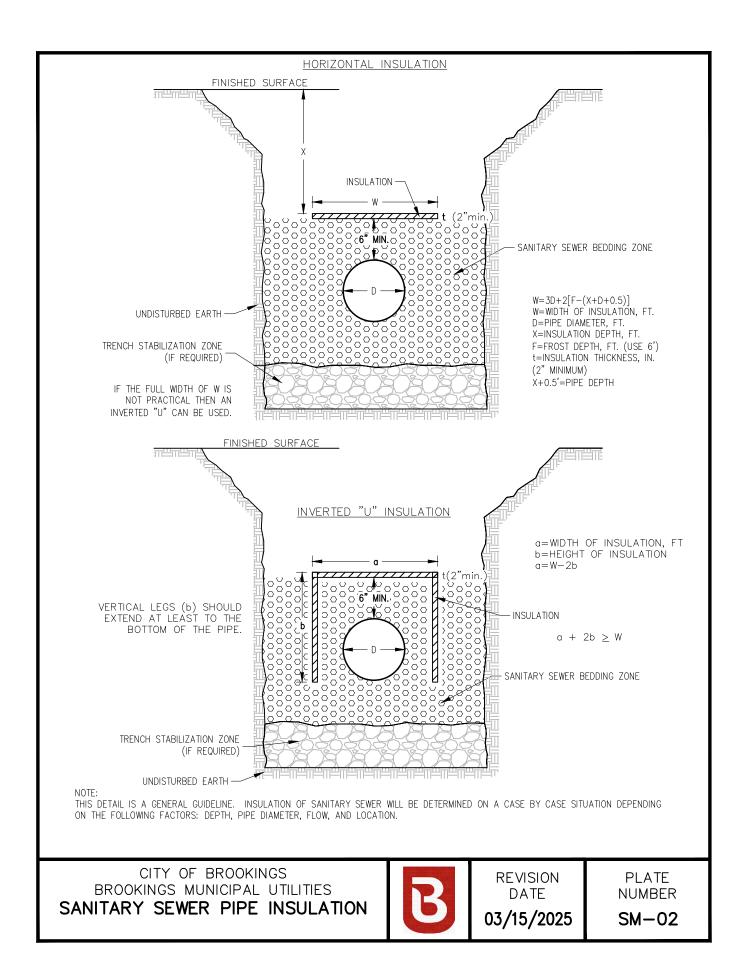
<sup>\*</sup> LENGTH BASED ON ONE (1) FOOT OF SANITARY SEWER PIPE.

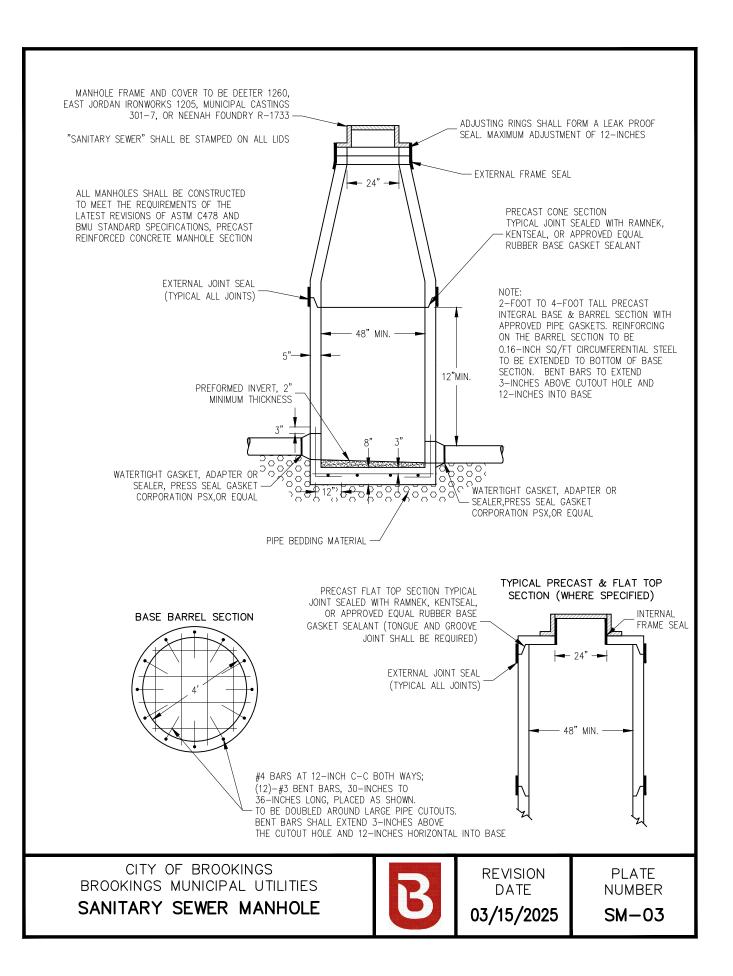
CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
SANITARY SEWER MAIN BEDDING

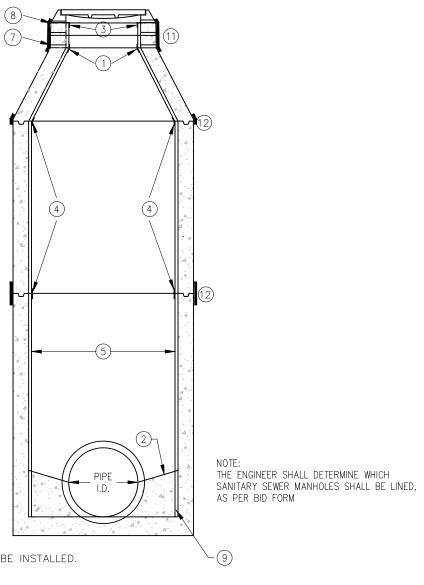


REVISION DATE **03/15/2025**  PLATE NUMBER SM-01

<sup>\*\*</sup> TONS PER LF IS BASED ON (120 LBS/FT3)







1) PREFORMED CORNER WELD STRIP TO BE INSTALLED.

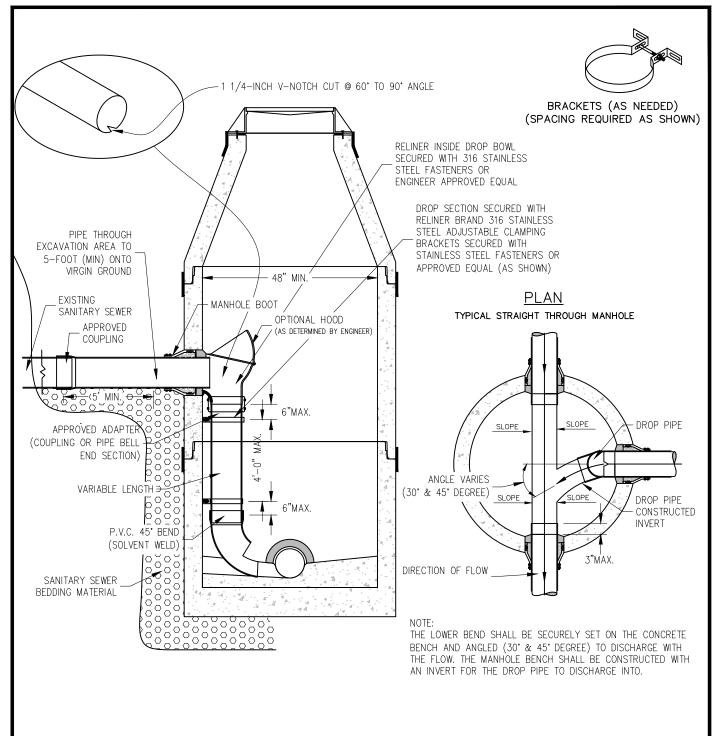
- (2) PRE-FORMED BENCH AND INVERT.
- (3) INSTALL (2) PREFORMED CORNER TURNBACKS UNDER RING.
- (4) WELD STRIPS.
- (5) ALL CONCRETE SURFACES, EXCEPT THE INVERTS, WHICH WILL BE EXPOSED TO SEWER GASES SHALL BE LINED. THIS INCLUDES ALL CONCRETE PIPE SURFACES IF CONCRETE PIPE IS USED.
- (6) INSTALLATION OF THE MANHOLE LINER PLATE SHALL CONFORM TO THE REQUIREMENTS OF THE SUPPLEMENTAL SPECIFICATIONS.
- (7) THE LINER SHALL BE EXTENDED OVER THE TOP OF THE CORBEL SECTION TO FORM A CONTINUOUS SEAL WITH THE MANHOLE WALL LINING. THE LINER SHALL BE EXTENDED TO ONE—HALF THE THICKNESS OF THE CORBEL TOP SECTION.
- (8) where adjusting rings are allowed and/or required, hdpe adjusting rings shall be used.
- 9 THE LINER SHALL BE EXTENED DOWN TO THE BOTTOM OF THE BASE SECTION TO FORM A CONTINUOUS SEAL WITH THE MANHOLE WALL LINING.
- (10) ALL VERTICAL LINER JOINTS SHALL BE WELDED IN THE SHOP.
- (11) EXTERNAL FRAME SEAL.
- 12 EXTERNAL JOINT SEAL (TYPICAL ALL JOINTS).

CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
SANITARY SEWER MANHOLE
LINED TYPE



REVISION DATE 03/15/2025

PLATE NUMBER **SM-04** 



THE P.V.C. DROP SECTION SHALL BE SECURED TO THE BARREL SECTION WITH APPROVED NON-CORROSIVE ADJUSTABLE CLAMPING BRACKET(S), AND THE LOWER BEND SHALL BE SECURED AND FORMED INTO THE BENCH OF THE FLOWLINE. THE DROP BOWL SHALL BE SECURED WITH STAINLESS STEEL FASTENERS OR ENGINEER APPROVED EQUAL AND CONNECTED TO THE DROP PIPE WITH APPROVED ADAPTERS. THE DROP BOWL SHALL ALLOW CLEARANCE FOR MAINTENANCE EQUIPMENT INTO THE EXISTING LINE.

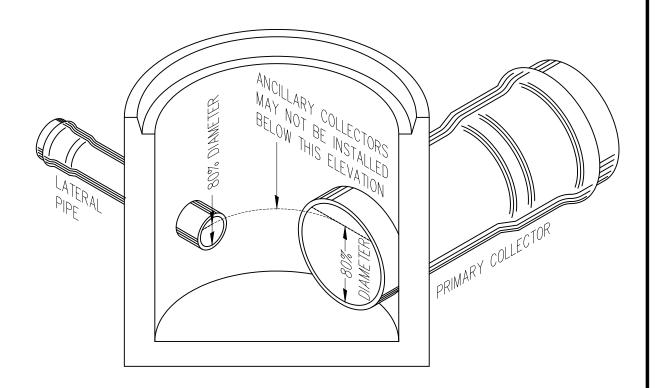
THE MANHOLE BOOT SHALL BE SIMILAR TO THE MANHOLE BASE SECTION SPECIFICATION MINIMUM OF 8-INCHES BETWEEN THE OPENING FOR THE DROP SECTION AND THE NEAREST JOINT.

CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
SANITARY SEWER MANHOLE
BOWL TYPE DROP SECTION



REVISION DATE 03/15/2025

PLATE NUMBER SM-05



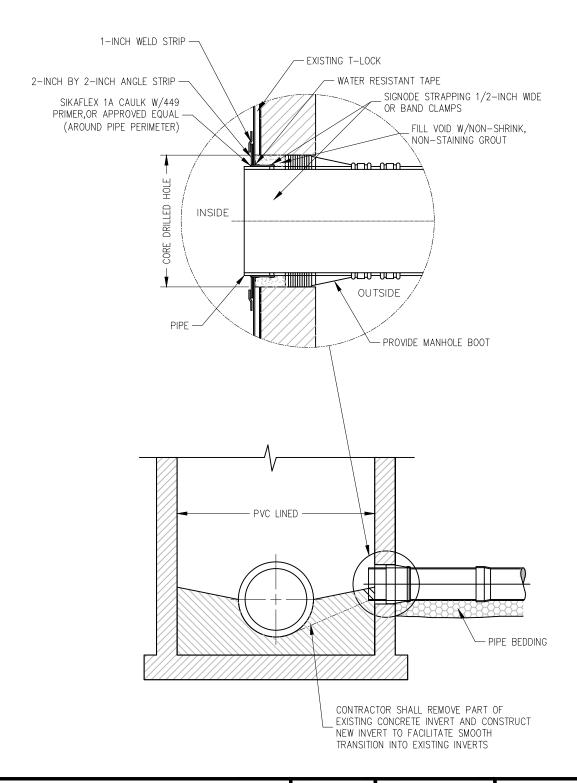
LATERAL PIPES MAY NOT BE INSTALLED BELOW THE ELEVATION AT WHICH THE 80% OF DIAMETER HEIGHT OF EACH PIPE MEETS. THIS SHALL APPLY WHEN PRIMARY COLLECTORS ARE 10" AND LARGER.

CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
LOWEST LATERAL ELEVATIONS
ON COLLECTOR PIPES



REVISION DATE 03/15/2025

PLATE NUMBER



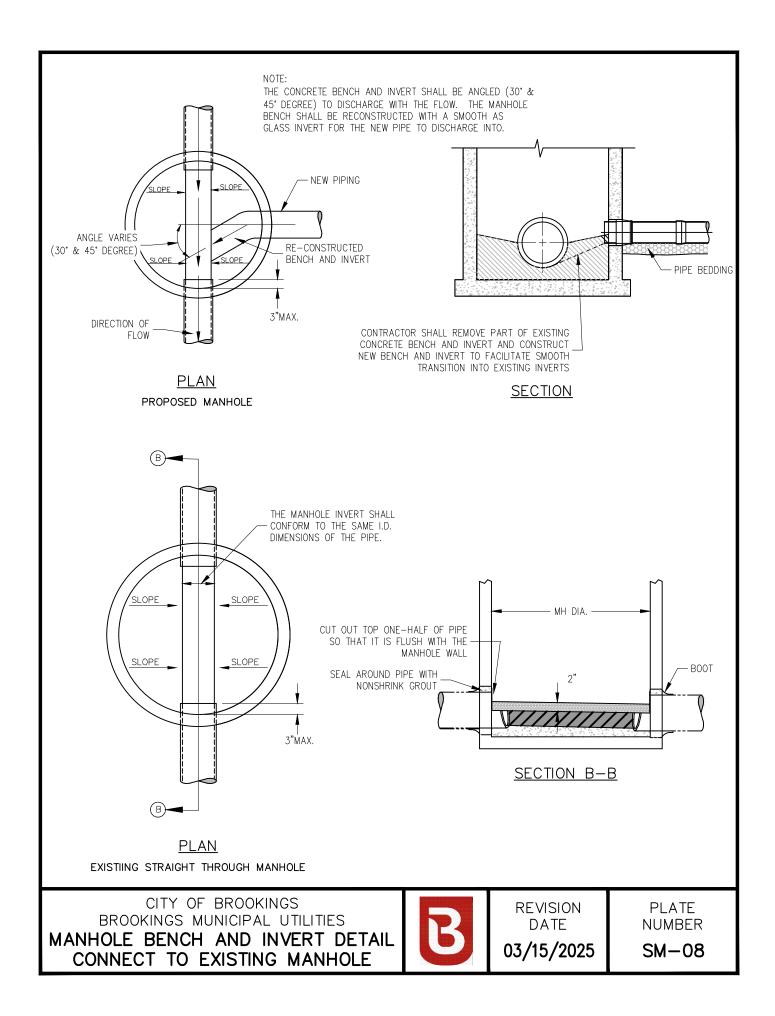
CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
SANITARY SEWER LINED
MANHOLE PIPE SECTION

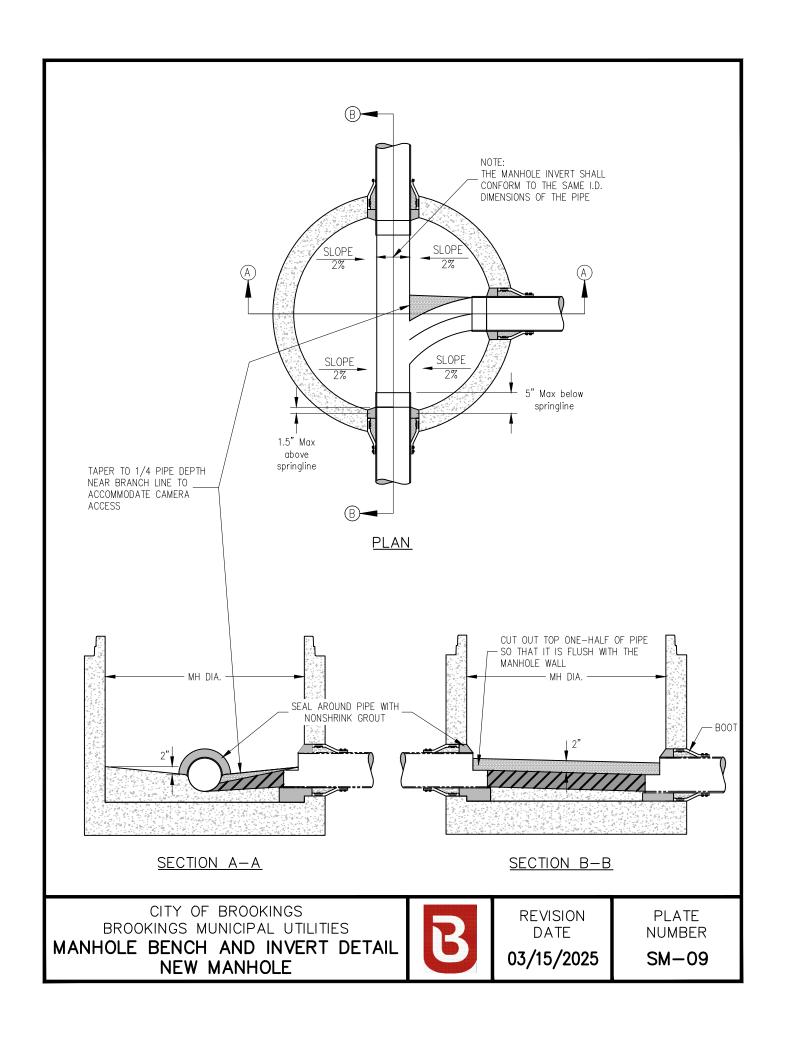


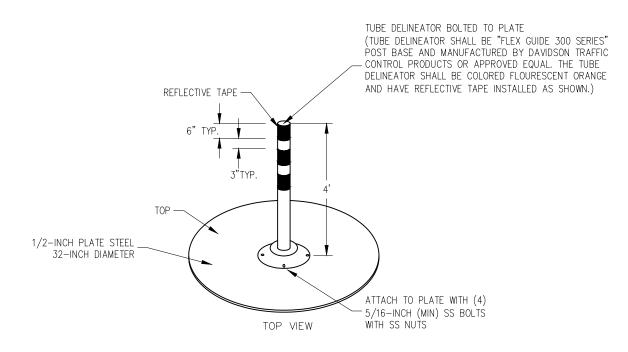
REVISION DATE **03/15/2025** 

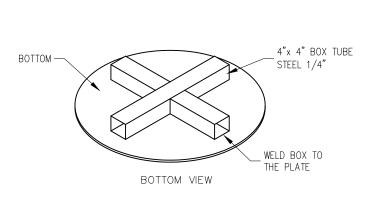
PLATE NUMBER

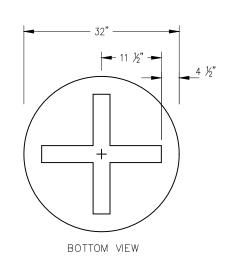
SM - 07











A SEALANT MATERIAL SHALL BE INSTALLED BETWEEN THE MANHOLE CONSTRUCTION PLATE MARKER AND THE MANHOLE TO FORM A WATERTIGHT SEAL.

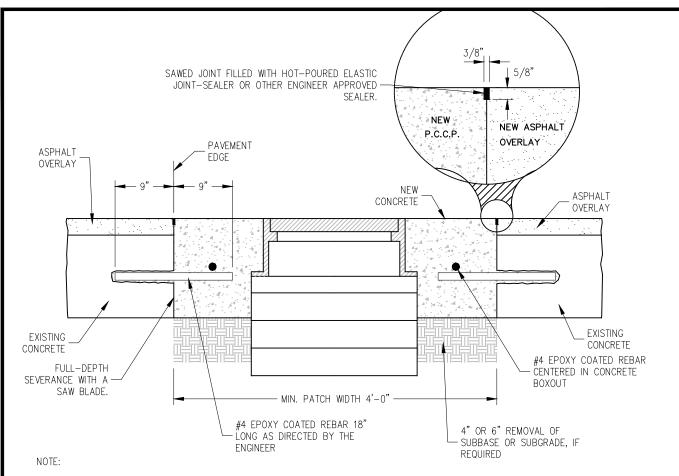
BREAKAWAY LIFT HOOKS WILL BE ALLOWED ON THE TOP OF THE PLATE FOR USE IN INSTALLING AND REMOVING THE PLATE. THE LIFT HOOKS SHALL BE LOCATED WITHIN A 10 INCH RADIUS OF THE PLATE CENTER.

CITY OF BROOKINGS BROOKINGS MUNICIPAL UTILITIES MANHOLE CONSTRUCTION PLATE MARKER



**REVISION** DATE 03/15/2025

PLATE NUMBER



- 1. THE ADJUSTMENT OF MANHOLE CASTINGS INVOLVES ADDING OR REMOVING ADJUSTING RINGS UNDER THE FRAME. IF THE ELEVATION OF THE COVER IS TOO HIGH, IT MAY BE NECESSARY FOR THE CONTRACTOR TO REPLACE THE UPPER MANHOLE SECTION OR INTERMEDIATE SECTION SO THAT THE ELEVATIONS FOR THE COVERS ARE FLUSH WITH THE TOP OF THE FINISHED SURFACE. ADJUSTMENT OF FRAME AND COVERS SHALL BE IN ACCORDANCE WITH THIS STANDARD PLATE AND THE CITY OF BROOKINGS STANDARD SPECIFICATIONS FOR SANITARY SEWER MAIN CONSTRUCTION.
- 2. A CONCRETE BOXOUT IS REQUIRED FOR ASPHALT OVERLAY ON EXISTING CONCRETE STREETS. THE CONCRETE BOXOUT SHALL BE CENTERED ON THE MANHOLE OR JUNCTION BOX FRAME AND COVER OR VALVE BOX.
- 3. THE BOXOUT SHALL BE CUT OUT AFTER THE INSTALLATION OF THE ASPHALT OVERLAY. THE PAVEMENT SHALL BE SAWED FULL DEPTH WITH A VERTICAL FACE. THE CONTRACTOR SHALL ENSURE THAT THE ADJACENT ASPHALT SURFACE IS LEFT INTACT AND UNDAMAGED WHEN REMOVING THE BOXOUT.
- 4. THE ALLOWABLE VERTICAL TOLERANCE BETWEEN THE ASPHALT PAVEMENT AND ANY PART OF THE FRAME AND COVER OR VALVE BOX SHALL BE 0-INCHES TO 1/2-INCH LOW FOR ALL ADJUSTMENTS. IN NO CASE SHALL THE MANHOLE COVER OR VALVE BOX BE ABOVE THE SURFACE OF THE FINISHED PAVEMENT.
- 5. THE CONCRETE BOXOUT SHALL BE SQUARE OR RECTANGULAR, AND HAVE MINIMUM DIMENSION OF 4-FOOT BY 4-FOOT FOR A MANHOLE FRAME AND LID

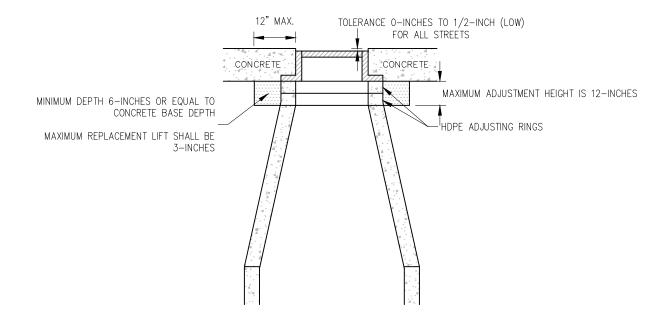
- 6. APPLY TACK COAT TO THE VERTICAL ASPHALT AND CONCRETE SURFACES PRIOR TO PLACEMENT OF CONCRETE FOR BOXOUT.
- 7. CLASS M6 CONCRETE SHALL BE USED FOR THE BOXOUT. FAST TRACK CONCRETE MAY BE USED AT THE DISCRETION OF THE ENGINEER.
- 8. STEEL REINFORCING SHALL BE EPOXY COATED GRADE 40.
- 9. STEEL REINFORCING SHALL CONSIST OF #4 REBAR SUPPORTED BY APPROVED CHAIRS.
- 10. THE CONCRETE BOXOUT WORK SHALL BE COMPLETED PRIOR TO OPENING THE STREET TO TRAFFIC.
- 11. CONCEALED PICK HOLES AND THE SEAL BETWEEN THE FRAME AND COVER SHALL BE PROTECTED FROM FOREIGN MATERIAL. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE A SYSTEM TO PREVENT FOREIGN MATERIAL FROM ENTERING THE CONCEALED PICK HOLE AND FRAME AND COVER SEAL DURING THE WORK.
- 12. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A SYSTEM TO PREVENT FOREIGN MATERIAL FROM ENTERING THE VALVE BOX DURING THE WORK.

CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
MANHOLE CONCRETE BOXOUT
IN CONCRETE STREETS



REVISION DATE 03/15/2025

PLATE NUMBER



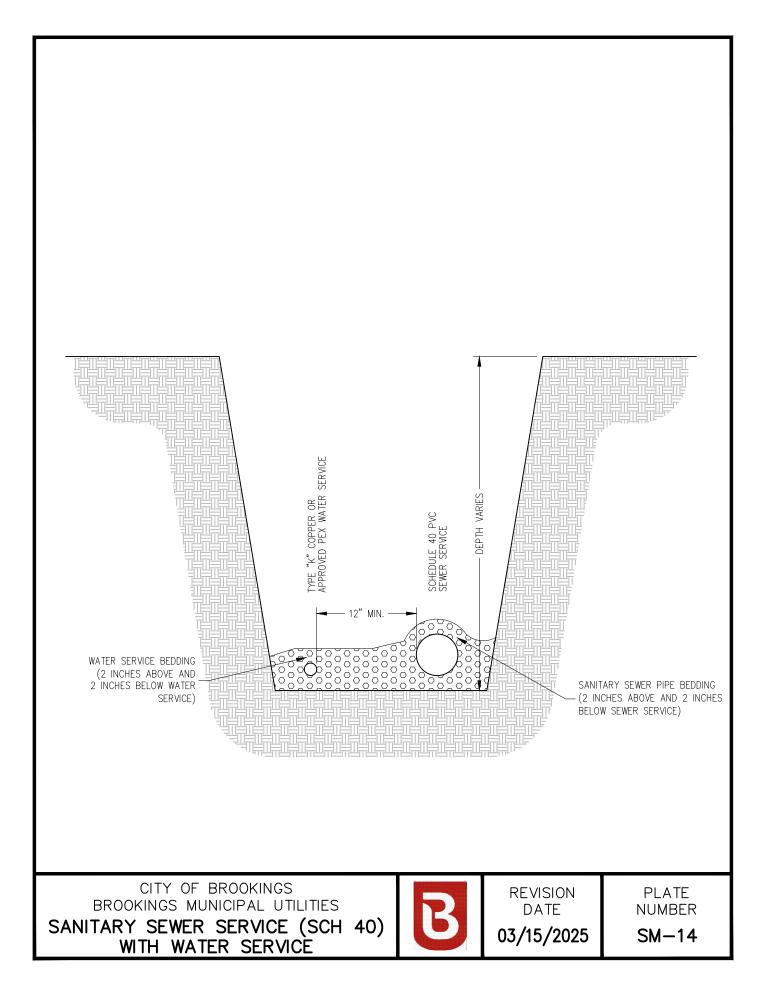
- 1. THE ADJUSTMENT OF MANHOLE CASTINGS INVOLVES ADDING OR REMOVING ADJUSTING RINGS UNDER THE FRAME. IF THE ELEVATION OF THE COVER IS TOO HIGH, IT MAY BE NECESSARY FOR THE CONTRACTOR TO REPLACE THE UPPER MANHOLE SECTION OR INTERMEDIATE SECTION SO THAT THE ELEVATIONS FOR THE COVERS ARE FLUSH WITH THE TOP OF THE FINISHED SURFACE. ADJUSTMENT OF FRAME AND COVERS SHALL BE IN ACCORDANCE WITH THIS STANDARD PLATE AND THE BROOKINGS MUNICIPAL UTILITES STANDARD SPECIFICATIONS FOR SANITARY SEWER MAIN CONSTRUCTION.
- 2. MANHOLE CASTINGS SHALL BE ADJUSTED TO FINAL GRADE PRIOR (INCLUDING SIDE SLOPE) TO PLACEMENT OF CONCRETE SURFACING.
- 3. ALL MANHOLES SHALL BE ADJUSTED TO BE FLUSH WITH THE CONCRETE SURFACE. THE ALLOWABLE VERTICAL TOLERANCE BETWEEN THE CONCRETE PAVEMENT AND ANY PART OF THE FRAME AND COVER SHALL BE 0-INCHES TO 1/2-INCH LOW. IN NO CASE SHALL THE MANHOLE OR JUNCTION BOX FRAME AND COVER BE ABOVE THE SURFACE OF THE CONCRETE PAVEMENT.
- 4. CONCEALED PICK HOLES AND THE SEAL BETWEEN THE FRAME AND COVER SHALL BE PROTECTED FROM FOREIGN MATERIAL. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE A SYSTEM TO PREVENT FOREIGN MATERIAL FROM ENTERING THE CONCEALED PICK HOLE AND FRAME AND COVER SEAL DURING THE WORK.

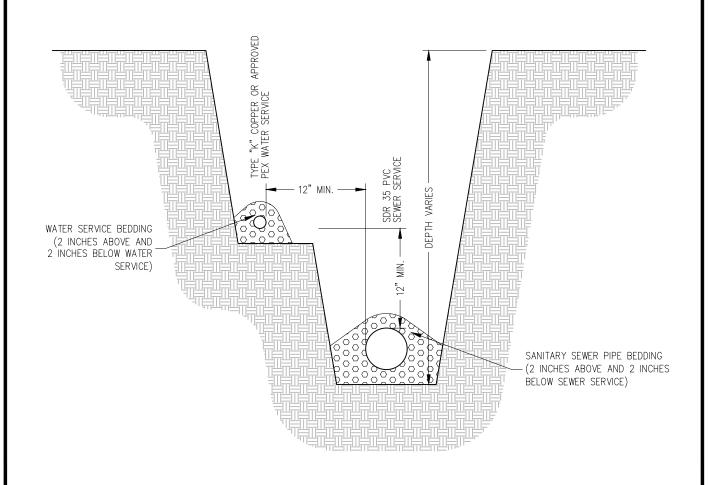
CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
MANHOLE ADJUSTMENT
IN CONCRETE STREETS



REVISION DATE 03/15/2025

PLATE NUMBER





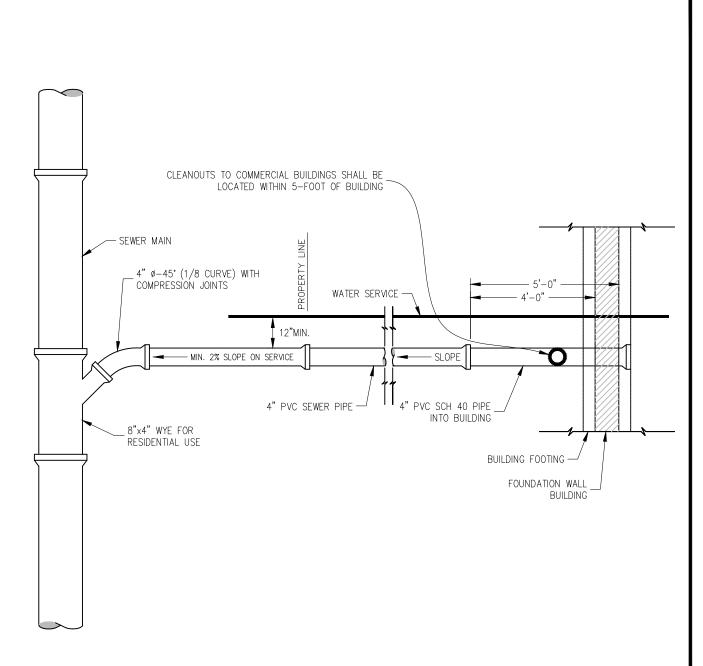
CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES

SANITARY SEWER SERVICE (SDR35)
WITH WATER SERVICE



REVISION DATE 03/15/2025

PLATE NUMBER



- A 12-INCH MINIMUM SEPARATION IN ALL DIRECTIONS BETWEEN THE SEWER AND WATER SERVICES SHALL BE MAINTAINED FROM THE PROPERTY LINE TO THE BUILDING AT ALL TIMES.
- 2. MINIMUM SIZE FOR SERVICES FOR RESIDENTIAL BUILDINGS IS 4-INCH. DETAIL ABOVE IS FOR A RESIDENTIAL SERVICE. MINIMUM SIZE FOR SERVICES FOR COMMERCIAL BUILDINGS IS 6-INCH.
- 3. CLEAN OUTS ARE REQUIRED ON ALL RESIDENTIAL SERVICES THAT EXCEED 75 FEET IN LENGTH, AND COMMERCIAL SERVICES THAT EXCEED 100 FEET IN LENGTH.

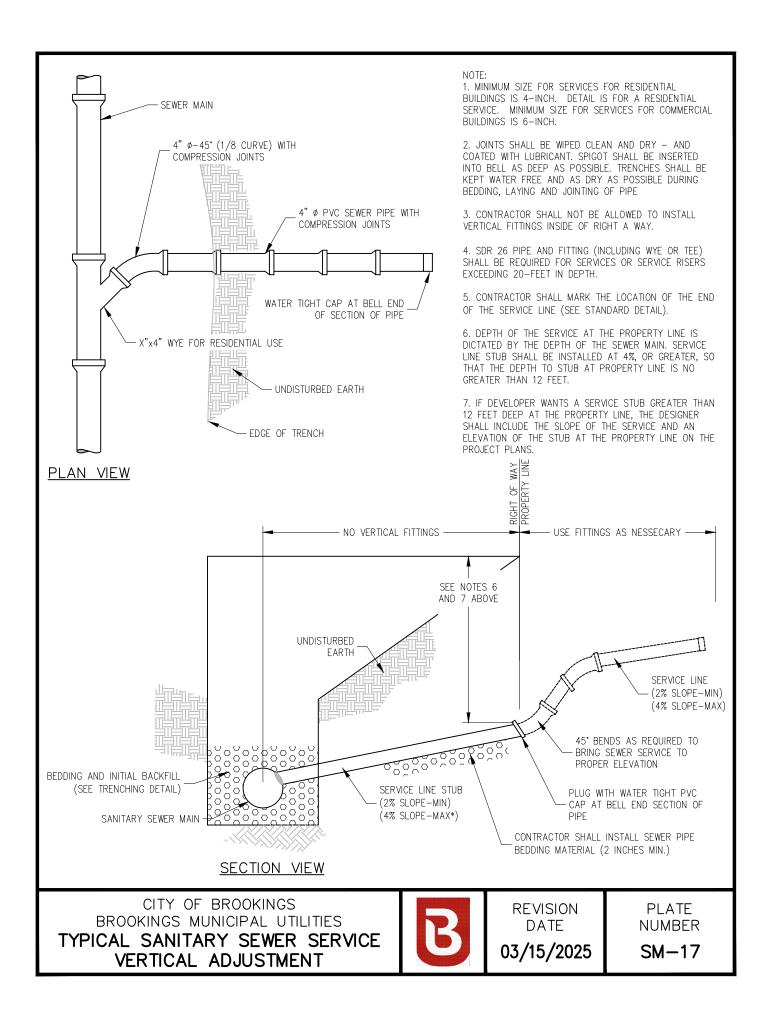
CITY OF BROOKINGS BROOKINGS MUNICIPAL UTILITIES

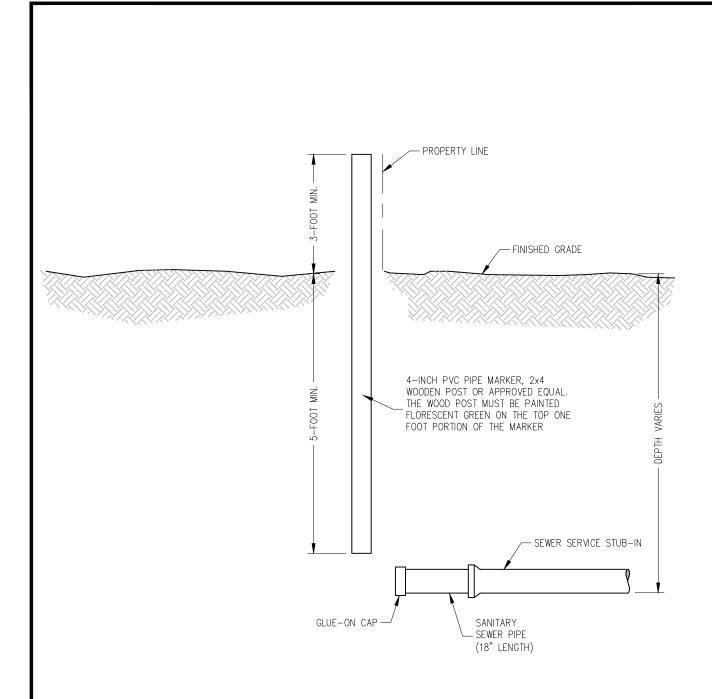
TYPICAL SANITARY SEWER SERVICE



REVISION DATE **03/15/2025** 

PLATE NUMBER





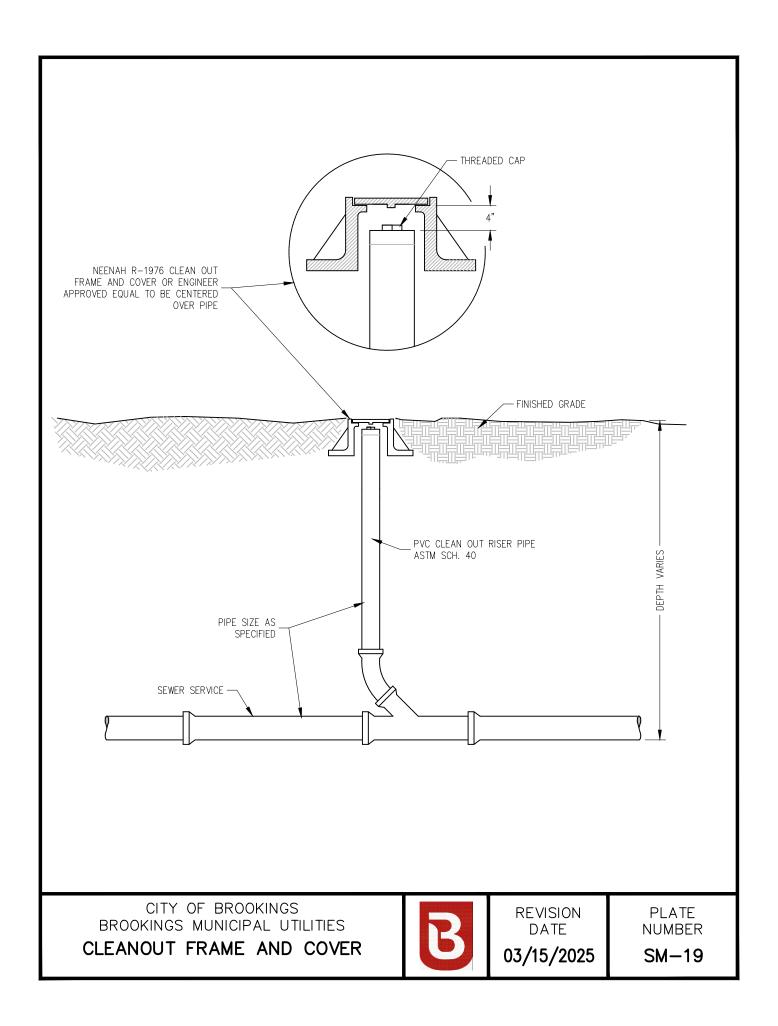
- MARKERS SHALL BE MAINTAINED BY THE DEVELOPER OR PROPERTY OWNER UNTIL THE SERVICE IS EXTENDED TO THE HOUSE, BUILDING OR OTHER STRUCTURE.
- 2. DEVELOPER OR PROPERTY OWNER WILL BE RESPONSIBLE FOR REPLACING DAMAGED MARKERS.
- 3. MARKERS SHALL BE PLACED VERTICAL FROM THE END OF THE SEWER SERVICE AND NOT OFFSET.

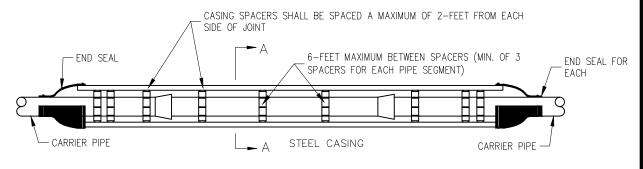
CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
SANITARY SEWER SERVICE
STUB-IN MARKER DETAIL



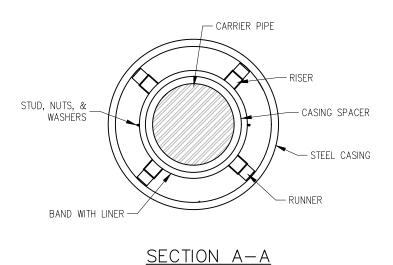
REVISION DATE 03/15/2025

PLATE NUMBER





# **ELEVATION**



PIPE SIZE	CASING SIZE		
4"	10"		
6"	12"		
8"	16"		
10"	18"		
12"	20"		
15"	24"		
18"	26"		
21"	30"		
24"	36"		
27"	40"		
30"	42"		
36"	48"		

### NOTE:

CASING PIPE MUST CONFORM TO AWWA C-200 WITH ASTM GRADE A36 PLATE STEEL MINIMUM YIELD STRENGTH OF 35,000 POUNDS PER SQUARE INCH

GROUTING OF THE ANNULAR SPACE WILL NOT BE REQUIRED UNLESS OTHERWISE NOTED

CITY OF BROOKINGS BROOKINGS MUNICIPAL UTILITIES

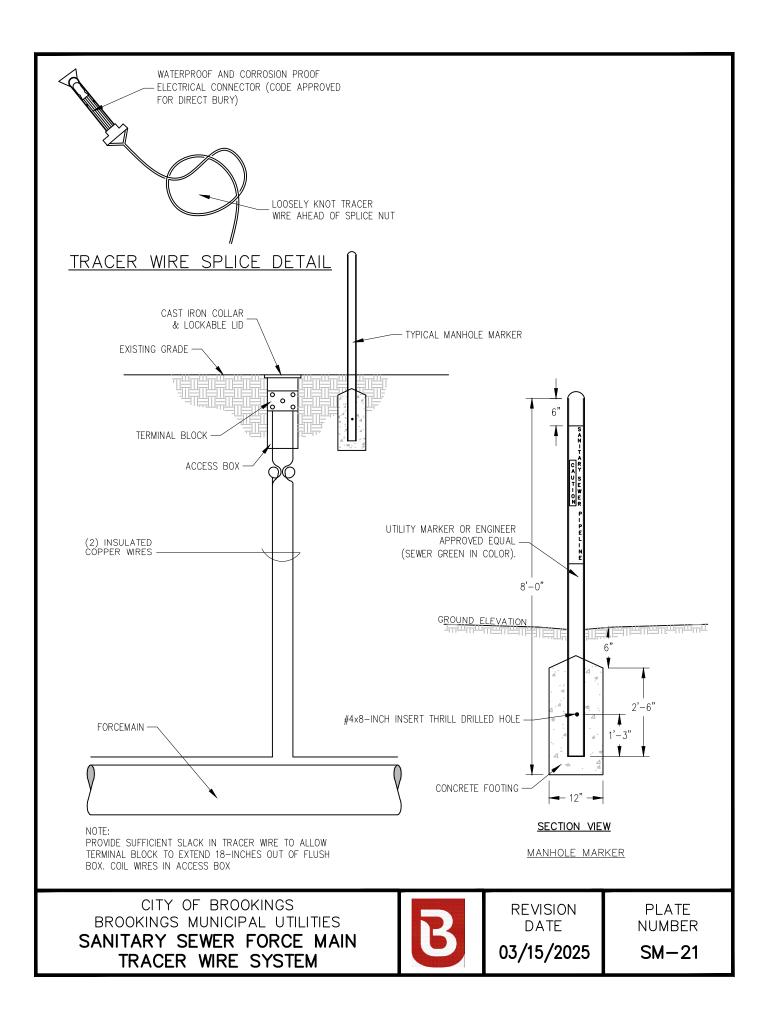
STANDARD CASING / CARRIER FOR SANITARY SEWER PIPE



REVISION DATE **03/15/2025** 

PLATE NUMBER

SM - 20



# EXISTING SANITARY SEWER MAIN SANITARY SEWER SERVICE AND SERVICE CONNECTION REPAIR METHOD REPAIR COUPLING SEWER MAIN VCP SEWER MAIN PVC VCP PVC PVC SEWER SERVICE VCP PVC VCP SEWER SERVICE WYE REPAIR COUPLING PVC VCP VCP REPAIR COUPLING SEWER MAIN - SEWER MAIN PVC PVC VCP PVC PVC SEWER SERVICE WYE PVC LINED VCP SEWER SERVICE PVC REPAIR COUPLING VCP PVC LINED VCP 24" LONG, EXTERNAL SEWER SERVICE REPAIR COUPLING CIPP VCP SEWER MAIN SEWER MAIN CIPP VCP

#### NOTE:

- 1. ALL TAPS AND REPAIRS TO THE EXISTING SANITARY SEWER MAIN SHALL BE MADE BY BMU.
- WHEN THE SANITARY SEWER MAIN IS CLAY PIPE OR CURED IN PLACE PIPE (CIPP) MATERIAL, A SECTION OF THE MAIN LINE PIPE WILL BE REMOVED, AND A NEW PVC PIPE WILL BE COUPLED ONTO THE EXISTING MAIN. A NEW WYE OR INSERTA—TEE SHALL BE USED FOR THE PROPOSED SERVICE.
- 3. UNUSED SEWER SERVICES SHALL BE ABANDONED AT THE SEWER MAIN BY ONE OF THREE WAYS. METHOD OF ABANDONMENT SHALL BE DETERMINED BE THE SEWER MAIN AND SERVICE PIPE MATERIALS. REFERENCE STANDARD SPECIFICATIONS FOR REQUIREMENTS.
- 4. IN NO CASE WILL THE SEWER BE ABANDONED BY CAPPING THE EXISTING SERVICE WITH NON-SHRINK GROUT PLACED CONTINUOUSLY FOR A 1-FOOT DISTANCE INTO THE PIPE.

CITY OF BROOKINGS
BROOKINGS MUNICIPAL UTILITIES
REPAIR OR ARANDON

REPAIR OR ABANDON
SANITARY SEWER SERVICE



REVISION DATE **03/15/2025** 

PLATE NUMBER