

Brookings Municipal Utilities (BMU)
Measurement and Payment
For
Sanitary Sewer Main Construction
(City of Brookings)

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PART 4.0 - METHOD OF MEASUREMENT AND BASIS OF PAYMENT

4.1 TRENCH STABILIZATION MATERIAL

- A. Trench stabilization material furnished, transported, placed and compacted into place shall be measured as tons to the nearest 0.1 ton for the trench stabilization material.
- B. Payment for trench stabilization material shall be paid at the contract unit price per ton for trench stabilization material. Payment for trench stabilization material will be full compensation for furnishing, transporting, placing, compacting, labor, equipment, and incidentals necessary to complete the work.

4.2 PIPE BEDDING MATERIAL

- A. Pipe bedding material furnished, transported, placed and compacted into place shall be measured as tons to the nearest 0.1 ton for the pipe bedding material.
- B. Payment for pipe bedding material shall be paid at the contract unit price per ton for pipe bedding material. Payment for pipe bedding material will be full compensation for furnishing, transporting, placing, compacting, labor, equipment, and incidentals necessary to complete the work.

OR

- A. No measurement or individual Bid Item payment will be made for pipe bedding material. Pipe bedding material shall be considered incidental to the installation of the sanitary sewer main, sewer service, manhole and appurtenances.

4.3 IMPORTED ENGINEERED FILL

- A. Imported engineered fill material furnished, transported, placed and compacted into place shall be measured as tons to the nearest 0.1 ton for the engineered fill material.
- B. Payment for engineered fill material shall be paid at the contract unit price per ton for engineered fill material. Payment for engineered fill material will be full compensation for furnishing, transporting, placing, compacting, labor, equipment, and incidentals necessary to complete the work.

OR

- A. No measurement or individual Bid Item payment will be made for imported engineered fill material. Imported engineering fill material shall be considered incidental to the installation of the sanitary sewer main, sewer services, manhole or any other appurtenances.

4.4 IMPORTED CLAY MATERIAL

- A. Imported clay material furnished, transported, placed and compacted into place shall be measured as cubic yards to the nearest 1.0 cubic yards for the imported clay material.

- B. Payment is for loading, hauling and placing acceptable clay materials from an acceptable source or the Brookings Regional Landfill. Payment for imported clay material will be full compensation for furnishing, transporting, placing, compacting, labor, equipment, and incidentals necessary to complete the work.
- C. Quantity will be determined by documenting the trench width, length and depth to determine the in-place, compacted volume of imported clay material install on the project.

4.5 AGGREGATE BASE MATERIAL

- A. Aggregate base material furnished, transported, placed and compacted into place shall be measured as tons to the nearest 0.1 ton for the aggregate base material.
- B. Payment for aggregate base material shall be paid at the contract unit price per ton for aggregate base material. Payment for aggregate base material will be full compensation for furnishing, transporting, placing, compacting, labor, equipment, and incidentals necessary to complete the work.

4.6 GRAVEL SURFACING MATERIAL

- A. Gravel surfacing material furnished, transported, placed and compacted into place shall be measured as tons to the nearest 0.1 ton for the gravel surfacing material.
- B. Payment for gravel surfacing material shall be paid at the contract unit price per ton for gravel surfacing material. Payment for gravel surfacing material will be full compensation for furnishing, transporting, placing, compacting, labor, equipment, and incidentals necessary to complete the work.

4.7 FLOWABLE FILL MATERIAL

- A. Flowable fill furnished and installed shall be measured as cubic yards of flowable fill to the nearest 0.1-cu. yd.
- B. Payment for flowable fill will be paid for at the contract unit price for flowable fill. Payment for flowable fill will be full compensation for furnishing and pouring concrete, labor, equipment, and incidentals necessary to complete the work.

4.8 X" PVC SANITARY SEWER MAIN PIPE

- A. Sanitary sewer main shall be measured by the lineal foot for each type and size of pipe furnished and installed. Piping shall be measured from end to end with no deduction for length through sanitary sewer manholes. Where two or more pipes of different size enter a sanitary sewer manhole, each pipe will be measured to the center of the sanitary sewer manhole. The measured length shall be rounded up to the nearest 1-foot increment.
- B. Payment for sanitary sewer main will be at the contract unit price per lineal foot and will be full compensation for all materials, dewatering (unless there is a Bid Item for this), excavation, backfilling, testing, materials, labor, equipment, and incidentals necessary to complete the work.
- C. No measurement or individual Bid Item payment will be made for extra depth sewer main unless otherwise noted on the Bid Form.

4.9 X" SANITARY SEWER SERVICE

- A. Sanitary sewer service shall be per each type and size of sanitary sewer service furnished and installed. Sanitary sewer service installation will normally be from the sanitary sewer main to the property line.
- B. Payment will be at the contract unit price per each type and size of sanitary sewer service. Payment shall be full compensation for sanitary sewer service pipe, cap, stub marker, materials, labor, equipment, and incidentals necessary to complete the work.

OR

- A. Sanitary sewer service pipe shall be measured to the nearest lineal foot for each type and size of sanitary sewer service pipe installed. Measurement will normally be from the sanitary sewer main to the property line. The measured length shall be rounded up to the nearest 1-foot increment.
- B. Payment will be at the contract unit price per foot for sanitary sewer service pipe. Payment shall be full compensation for sanitary sewer service pipe, cap, stub marker, materials, labor, equipment, and incidentals necessary to complete the work.

4.10 X" PVC SANITARY SEWER FORCE MAIN PIPE

- A. Sanitary sewer force main shall be measured by the lineal foot for each type and size of pipe furnished and installed. Piping shall be measured from end to end with no deduction for length to the center of the sanitary sewer manholes. The measured length shall be rounded up to the nearest 1-foot increment.
- B. Payment for sanitary sewer force main will be at the contract unit price per lineal foot and will be full compensation for all materials, dewatering (unless there is a Bid Item for this), excavation, backfilling, testing, tracer wire system with terminal boxes and ground rods, materials, labor, equipment, and incidentals necessary to complete the work.

4.11 SANITARY SEWER FORCE MAIN TRACER WIRE

- A. No measurement or individual bid Item payment will be made for tracer wire. Tracer wire and all appurtenances shall be considered incidental to the installation of the PVC sanitary sewer force main.

OR

- A. Tracer wire, for PVC sanitary sewer, shall be measured to the nearest lineal foot where tracer wire is deemed necessary.
- B. Payment will be at the contract unit price per foot for tracer wire furnished and installed. Payment shall be full compensation for tracer wire, access points, grounding rods, splices, connectors, labor, equipment, and incidentals necessary to complete the work.

4.12 X" SANITARY SEWER COUPLING

- A. Sanitary sewer couplings shall be measured by each type and size of coupling furnished and installed.
- B. Payment will be at the contract unit price per each type and size of coupling. Payment for couplings shall full compensation for bands, pipe, materials, labor, equipment, and incidentals necessary to complete the work.

4.13 X" x X" SANITARY SEWER WYE

- A. Sanitary sewer wyes shall be per each size of sanitary sewer wye furnished and installed. If an existing sanitary sewer main is required to be tapped by BMU Personnel, an applicable tapping fee will be required.
- B. Payment will be at the contract unit price per each size of sanitary sewer wyes. Payment for wyes shall full compensation for gaskets, bands, cutting of pipe openings, materials, labor, BMU tapping fee (if appropriate), equipment, and incidentals necessary to complete the work.

4.14 X" SANITARY SEWER CAPS/PLUGS

- A. Sanitary sewer caps/plugs shall be measured by each type and size of cap or plug furnished and installed.
- B. Payment will be at the contract unit price per each type and size of sanitary sewer caps/plugs. Payment for sanitary sewer caps/plugs shall full compensation for materials, labor, equipment, and incidentals necessary to complete the work.

4.15 X" SANITARY SEWER CLEANOUT ASSEMBLY

- A. Sanitary sewer cleanout assembly shall be for each size of sanitary sewer cleanout assembly furnished and installed.
- B. Payment will be at the contract unit price per each size of sanitary sewer cleanout assembly. Payment shall be full compensation sanitary sewer cleanout assembly pipe, bends, protective covers, materials, labor, equipment, and incidentals necessary to complete the work.

4.16 X" SANITARY SEWER SERVICE RISER

- A. Sanitary sewer service risers shall be per each size of sanitary sewer service riser furnished and installed. Sanitary sewer service riser installation will normally be from the sanitary sewer main to the property line.
- B. Payment will be at the contract unit price per each type and size of sanitary sewer service riser. Payment for the sanitary sewer service riser will be full compensation for sanitary sewer service pipe, bends, cap, stub marker, materials, labor, equipment, and incidentals necessary to complete the work.

OR

- A. Sanitary sewer service riser pipe shall be measured to the nearest lineal foot for each size of sanitary sewer service pipe installed. Measurement will normally be

from the sanitary sewer main to the property line. The measured length shall be rounded up to the nearest 1-foot increment.

- B. Payment will be at the contract unit price per foot for sanitary sewer service pipe. Payment for the sanitary sewer service pipe will be full compensation for sanitary sewer service pipe, bends, cap, stub marker, materials, labor, equipment, and incidentals necessary to complete the work.

4.17 XX" PRECAST SANITARY SEWER MANHOLE

- A. Sanitary sewer manholes shall be measured per each manhole, by inside nominal diameter, furnished and installed. Sanitary sewer manholes shall be a complete sanitary sewer manhole with all appurtenances such as bench and inverts, HDPE adjustment rings, frame and cover, and external frame seal. Inside drop assembly, if required, shall be a separate Bid Item, unless otherwise noted.
- B. Payment will be at the contract unit price per each inside diameter size manhole. Payment for sanitary sewer manholes shall full compensation for gaskets or butyl rubber rope sealant between manhole sections, bench and inverts, resilient (boot) connectors, HDPE adjustment rings, frame and cover, external frame seal, materials, labor, equipment, and incidentals necessary to complete the work.

4.18 CAST-IN-PLACE SANITARY SEWER MANHOLE

- A. Cast-in-place sanitary sewer manholes shall be measured per each manhole, by inside nominal diameter, furnished and installed. Cast-in-place sanitary sewer manholes shall be a complete sanitary sewer manhole with all appurtenances such as bench and inverts, HDPE adjustment rings, frame and cover, and external frame seal. Inside drop assembly, if required, shall be a separate Bid Item, unless otherwise noted.
- B. Payment will be at the contract unit price per each cast-in-place manhole. Payment for sanitary sewer manholes shall full compensation for concrete, forms, gaskets or butyl rubber rope sealant between manhole sections, bench and inverts, resilient (boot) connectors, HDPE adjustment rings, frame and cover, external frame seal, materials, labor, equipment, and incidentals necessary to complete the work.

4.19 SANITARY SEWER MANHOLE CASTING

- A. No measurement or individual bid Item payment will be made for sanitary sewer castings. Equipment, labor and materials, including but not limited to cast iron frame, lid, gaskets, bolts, or other associated hardware shall be considered incidental to the installation of the precast Sanitary sewer manhole and/or cast-in-place sanitary sewer manhole.

4.20 HDPE ADJUSTMENT RING

- A. No measurement or individual bid Item payment will be made for the manhole HDPE adjustment rings. Equipment, labor and materials, including but not limited to adjustment rings, or other associated hardware shall be considered incidental

to the installation of the precast sanitary sewer manhole and/or cast-in-place sanitary sewer manhole.

4.21 SANITARY SEWER MANHOLE BOOT

- A. No measurement or individual bid Item payment will be made for the manhole boot(s). Equipment, labor and materials, including but not limited to manhole boot, banding, clamps, bolts and nuts, or other associated hardware shall be considered incidental to the installation of the precast sanitary sewer manhole and/or cast-in-place sanitary sewer manhole.

4.22 SANITARY SEWER EXTERNAL FRAME SEAL

- A. No measurement or individual bid Item payment will be made for sanitary sewer manhole frame seal. Equipment, labor and materials, including but not limited to seal, adhesive, sealant or other associated hardware shall be considered incidental to the installation of the precast sanitary sewer manhole and/or cast-in-place sanitary sewer manhole.

4.23 SANITARY SEWER EXTERNAL JOINT SEAL

- A. No measurement or individual bid Item payment will be made for sanitary sewer manhole joint seal. Equipment, labor and materials, including but not limited to seal, adhesive, sealant or other associated hardware shall be considered incidental to the installation of the precast sanitary sewer manhole and/or cast-in-place sanitary sewer manhole.

4.24 SANITARY SEWER MANHOLE DROP ASSEMBLY

- A. Inside drop assembly for sanitary sewer manholes shall be measured as per each drop assembly, furnished and installed in sanitary sewer manholes.
- B. Payment will be at the contract unit price per each inside drop assembly for sanitary sewer manholes. Payment for inside drop assembly shall full compensation for bowl, pipe, fittings, clamping brackets, setting the drop section in concrete in the bottom of the sanitary sewer manhole, materials, labor, equipment, and incidentals necessary to complete the work.

4.25 SANITARY SEWER MANHOLE PLATE MARKER

- A. No measurement or individual bid Item payment will be made for sanitary sewer manhole construction plate marker. Equipment, labor and materials, including but not limited to fabricated steel plate, sealant, reflective marker, nuts, bolts or other associated hardware shall be considered incidental to the installation of the precast sanitary sewer manhole and/or cast-in-place sanitary sewer manhole.

4.26 XX" LINED SANITARY SEWER MANHOLE

- A. Lined sanitary sewer manholes shall be measured per each lined manhole, by inside nominal diameter, furnished and installed. Lined sanitary sewer manholes

shall be a complete sanitary sewer manhole with all appurtenances such as bench and inverts, HDPE adjustment rings, frame and cover, and external frame seal. Inside drop assembly, if required, shall be a separate Bid Item, unless otherwise noted.

- B. Payment will be at the contract unit price per each inside diameter size lined manhole. Payment for lined sanitary sewer manholes shall full compensation for lining the sanitary sewer manhole, welding lining joints, gaskets or butyl rubber rope sealant between manhole sections, bench and inverts, resilient (boot) connectors, HDPE adjustment rings, frame and cover, external frame seal, materials, labor, equipment, and incidentals necessary to complete the work.

4.27 X" BACKFLOW PREVENTER

- A. Payment for coupling adapters shall be at the contract unit price per each type and size of sanitary sewer backflow preventer. Payment shall be full compensation for all materials, labor, equipment, and incidentals necessary to complete the work, included but not limited to backflow valve, notification sticker, PVC riser and incidentals necessary to complete the work.

4.28 X" x X" SANITARY SEWER SERVICE TAPPING TEE

- A. Sanitary sewer service tapping tee shall be measured for per each type and size of tapping tee furnished and installed. Payment shall be full compensation for BMU tapping fee, tapping tee, labor, equipment, and incidentals necessary to complete the work.
- B. Refer to BMU annually published "SERVICE CHARGES – WATER/SEWER" rate sheet for sanitary sewer service tapping fee costs.

OR

- C. Sanitary sewer service tapping tee shall be measured for per each type and size of tapping tee furnished and installed. Payment shall be full compensation for tapping tee, labor, equipment, and incidentals necessary to complete the work.

OR

- D. No measurement or individual bid Item payment will be made for each type and size of sanitary sewer service tapping tee. BMU Tapping fee, Labor, equipment and materials, including but not limited to tapping tee, corporation stop or other associated hardware shall be considered incidental to the installation of the sanitary sewer service.

4.29 PIPE INSULATION

- A. No measurement or individual bid Item payment will be made for insulation necessary to protect the sanitary sewer pipe or water pipe crossing. Labor, equipment and materials, including but not limited to insulation, or other associated hardware shall be considered incidental to the installation of the sanitary sewer main.

4.30 X" (RJ PVC OR STEEL) CASING PIPE VIA BORING

- A. Casing pipe shall be measured by the lineal foot for casing pipe with carrier pipe supported by casing spacers and capped with end seals, all furnished and installed. The measured length of casing pipe shall be rounded up to the nearest 1-foot increment.
- B. Payment will be at the contract unit price per lineal foot for the type and size of casing pipe. Payment for casing pipe shall be full compensation for excavating and backfilling of bore pits, bore pit dewatering, casing pipe by directional boring or jacking, welding, carrier pipe supported by casing spacers, end seals, materials, labor, equipment, and incidentals necessary to complete the work.

4.31 CASING SPACERS

- A. No measurement or individual bid item payment will be made for casing spacers. Labor, equipment and materials, including but not limited to casing spacers, nuts, bolts, gaskets, banding, or other associated hardware shall be considered incidental to the installation of the (RJ or Steel) Casing Pipe.

4.32 CASING END SEALS

- A. No measurement or individual bid item payment will be made for end seals. Labor, equipment and materials, including but not limited to end seals, nuts, bolts, gaskets, banding, or other associated hardware shall be considered incidental to the installation of the (RJ or Steel) Casing Pipe

4.33 TEMPORARY SANITARY SEWER BYPASS SYSTEM

- A. Temporary sanitary sewer bypass system shall include furnishing and installing a complete temporary sanitary sewer bypass system with all pumping apparatus and full-time monitoring of the pumping system when it is in use.
- B. Payment will be at the contract lump sum price for a temporary sanitary sewer bypass system. Payment will be full compensation for providing project design requirements for Engineer approval, installing duplex pumping apparatus, bypass piping, apparatus required for confined space entry, fuel and/or temporary electric hook-up, hydrotesting discharge pipe, full-time monitoring of the pump system when it is in use, plugging existing sanitary sewer manholes utilized for bypass sump connections, temporary sumps with piping, burying or ramping discharge piping for access requirements, discharge pipe flushing, temporary bypass system removal, sanitary sewer manhole repairs, water seals, non-shrink grouting, materials, labor, equipment, and incidentals necessary to complete the work.

4.34 XXX GALLON HYDROMECHANICAL GREASE TRAP

- A. Hydromechanical grease traps shall be measured for per each type and size of grease trap being furnished and installed. Payment shall be full compensation for grease trap, accessories, covers, piping, design/engineering for specific site consideration, labor, equipment, and incidentals necessary to complete the work necessary to furnish and install the grease trap.

4.35 DEWATERING

- A. No measurement or individual Bid Item payment will be made. Dewatering shall be considered incidental to the installation of the sanitary sewer main, sanitary sewer manholes, sanitary sewer services and appurtenances.

OR

- A. Dewatering for sanitary sewer main, sanitary sewer manholes and sanitary sewer services, shall be measured lump sum where trench dewatering is deemed necessary as an individual Bid Item on the Bid Form.
- B. Payment will be at the contract lump sum price for dewatering methods furnished and installed. Payment shall be full compensation for discharge permits, pumps, dewatering wells, electrical source fees, power costs, materials, labor, equipment, and incidentals necessary to complete the work.

OR

- A. Dewatering for sanitary sewer main, sanitary sewer manholes and sanitary sewer services, shall be measured to the nearest lineal foot where trench dewatering is deemed necessary as an individual Bid Item on the Bid Form. Dewatering on a lineal foot basis shall be payable when dewatering wells are deemed necessary and utilized, not for utilizing smaller pumps in the trench.
- B. Payment will be at the contract unit price per foot for dewatering methods furnished and installed. Payment shall be full compensation for discharge permits, pumps, dewatering wells, electrical source fees, power costs, materials, labor, equipment, and incidentals necessary to complete the work.

4.36 REMOVE SANITARY SEWER MAIN

- A. Removal of sanitary sewer pipe shall be measured as lineal foot of sanitary sewer pipe removed, unless otherwise noted. The removal footage shall be rounded up to the nearest 1-foot increment.
- B. Payment for removal of sanitary sewer pipe shall be paid at the contract unit price for each foot of sanitary sewer pipe removed. Payment for removal of sanitary sewer pipe shall be full compensation for all disposal costs, labor, equipment, and incidentals necessary to complete the work.

4.37 REMOVE SANITARY SEWER MANHOLE

- A. Removal of sanitary sewer manholes shall be measured as a unit for each sanitary sewer manhole removed. The frame and lid shall be salvaged and delivered to BMU at 525 Western Avenue by the Contractor, delivery of the frame and lid shall be incidental to the sanitary sewer manhole removal.
- B. Payment for removal of sanitary sewer manhole shall be paid at the contract unit price for each sanitary sewer manhole removed. Payment for removal of sanitary sewer manhole shall be full compensation for frame & lid delivery to BMU, disposal costs, labor, equipment, and incidentals necessary to complete the work.

4.38 ABANDON SANITARY SEWER MANHOLE

- A. Abandoning of a sanitary sewer manhole shall be measured as a unit for each sanitary sewer manhole abandoned. The frame and lid shall be salvaged and

delivered to BMU at 525 Western Avenue by the Contractor, delivery of the frame and lid shall be incidental to the sanitary sewer manhole removal. If the required height is not specified, the sanitary sewer manhole shall be removed below final grade by a minimum of 4-feet.

- B. Payment for abandoning a sanitary sewer manhole shall be paid at the contract unit price for each sanitary sewer manhole abandoned. Payment for abandoning a sanitary sewer manhole shall be full compensation for breaking the sanitary sewer manhole down to the required height, constructing a hole in the sanitary sewer manhole base section, furnishing and installing granular material in the sanitary sewer manhole (unless there is a Bid Item for this), backfilling to finished grade, frame & lid delivery to BMU, disposal costs, labor, equipment, and incidentals necessary to complete the work.

4.39 SPOT REPAIR FOR SANITARY SEWER

- A. Spot repair for sanitary sewer main shall be measured by each spot repair required.
- B. Payment will be at the contract unit price per each spot repair. Payment for spot repair shall full compensation for trench excavation and backfill, removal of defective pipe section, pipe section, coupling, materials, labor, equipment, and incidentals necessary to complete the work.

4.40 PIPE LINING REPAIR FOR SANITARY SEWER MAIN

- A. Pipe lining repair for sanitary sewer main shall be measured by each pipe lining repair furnished and installed.
- B. Payment will be at the contract unit price per each pipe lining repair required. Payment for couplings shall full compensation for pipe cleaning, pre-inspection, liner repair, post-inspection, materials, labor, equipment, and incidentals necessary to complete the work.

4.41 SANITARY SEWER SERVICE RECONNECT

- A. Reconnecting sanitary sewer service lines where new main line sanitary sewer pipe is installed to replace existing main line sanitary sewer pipe.
- B. Sanitary sewer service reconnect shall be for each size of sanitary sewer service reconnect furnished and installed. A temporary sanitary sewer service reconnect may be required if the permanent sanitary sewer service reconnect is to be performed at the property line, and shall be included in the sanitary sewer service reconnect Bid Item.
- C. Payment will be at the contract unit price per each size of sanitary sewer reconnect. Payment shall be full compensation sanitary sewer pipe, bends, fittings, coupling, materials, labor, equipment, and incidentals necessary to complete the work.

4.42 CONNECTION INTO EXISTING SANITARY SEWER MANHOLE

- A. Connections into existing sanitary sewer manholes shall be measured by each connection which doesn't already have a pipe penetration with a resilient connector or boot.
 - B. Payment will be at the contract unit price per each connection required. Payment for connection shall full compensation for connecting into the existing sanitary sewer manhole, core-drilling and/or cutting, sanitary sewer manhole boot, grout, water seals, liner repair (if manhole is lined), materials, labor, equipment, and incidentals necessary to complete the work.
- 4.43 LINING EXISTING SANITARY SEWER MANHOLE
- A. Lining an existing sanitary sewer manhole shall be measured as per each manhole lined, by inside nominal diameter, furnished and installed in sanitary sewer manholes.
 - B. Payment will be at the contract unit price per each existing sanitary sewer manhole lined. Payment for lining an existing sanitary sewer manhole shall full compensation for cleaning the existing sanitary sewer manhole, lining the existing sanitary sewer manhole, materials, labor, equipment, and incidentals necessary to complete the work.