

P. MEASUREMENT AND PAYMENT:

1. **Scope:** This section is not-applicable to water mains extended under the provisions of the "APPLICATION FOR PERMISSION TO EXTEND WATER MAIN" (Developer Extensions). This section covers methods of measurement and payment for items of Work under this Contract.
2. **General:** The total Contract Price shall cover all Work required by the Contract Documents. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction plans, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the prices bid.
3. **Estimated Quantities:** All estimated quantities stipulated in the Bid Response or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the Work and (b) for the purpose of comparing the bids submitted for the Work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. Contractor agrees that it will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefor.
4. **Excavation and Trenching:** Except where otherwise specified, the unit or lump sum price bid for each item of Work which involves excavation or trenching shall include all costs for such Work. No direct payment shall be made for excavation or trenching. All excavation and trenching except rock excavation shall be unclassified as to materials which may be encountered; in addition, trenches shall be unclassified as to depth.
 - 4.01 **Rock Excavation:** Rock excavation shall include any excavation which requires the contractor to utilize equipment intended specifically for the removal of rock which encompasses a volume of 1/2 cubic yard or greater

amount of rock measured in its original and undisturbed state. The unit price bid for each item of rock excavation shall include the excess cost only of the removal and subsequent handling of such rock, over and above that of earth excavation.

Trench width and depth in rock shall meet the minimum requirements specified in Section H and rock excavation pay quantities shall be based on the volume of the excavated material in its original and undisturbed condition with the following maximum limits. For pipe with a 10-inch diameter or less the payment for rock excavation shall be based on a trench width of 2 feet. For pipe having a nominal diameter larger than 10-inches, payment for rock excavation shall be based on a trench width 12 inches wider than the outside diameter on the pipe. Payment for rock excavation at air release manholes or other structures shall be based on the outside diameter or dimensions of the structure plus 4 feet. Maximum trench depth shall be 6 inches deeper than the pipe depth required.

All rock measurement or estimates to be used for payment purposes shall be made, recorded, and signed in the field in the presence of the City's Engineer and contractor or their duly authorized representatives.

When a contract unit price for rock excavation is not included in the contract, the payment for rock excavation shall be equivalent to the current rate for Class 3 Excavation in Rock included in the Missouri Department of Transportation's Specification Book for Highway Construction.

5. Pipelines: Ductile iron pipelines which are to be paid for on a unit price basis shall be measured for payment on a horizontal plane after installation of the pipe. Where lines are laid to conform to stationed profiles, payment shall be made on linear quantities based on the pipeline stationing as determined by surveys made after installation.

The measurement of the length of each line or run of pipe of each size will begin and end at:

- a. The end of the pipe where connected to an existing pipe, fitting, or valve; or at the end of a dead-end run.

b. The center line intersection of run and branch on tees, crosses, or laterals where a branch line connecting therewith is constructed under this Contract. Where a branch fitting is installed under this Contract, and the branch or connecting line is to be constructed by others at some future date or under another contract, the pay measurement will include the entire laying length of the branch or branches of such fitting.

c. The measurement of each line of pipe of each size which is to be paid for on a unit price basis will be continuous through, and shall include the full laying lengths of, all fittings and valves installed between the ends of each line; except that the laying lengths of reducers and increasers will be divided equally between the connected pipe sizes. Connected piping for fire hydrants will be measured for payment from the center of the main to the center of the auxiliary gate valve.

5.01 Connections to Existing Water Mains: Connections to existing water mains will be paid for at the lump sum prices bid. Each lump sum price named for a connection shall include all costs incurred for making the connection over and above the price of the connecting piping in place. Each lump sum price shall include furnishing and installing the tapping sleeve and valve, all excavation and backfilling work, all necessary thrust restraints and all other costs not included under other bid items. Tapping of existing main, and the costs associated with the tapping procedure, shall be the responsibility of the Water and Light Department unless otherwise stipulated in the Contract documents.

5.02 Gate Valves: Gate valves in water mains will be paid for at the unit price bid for each size. The unit price shall include all costs incurred in completing the gate valve installation over and above the amount paid for piping in place. The unit price shall include furnishing and installing the gate valve, valve box, and appurtenances; excavation and backfill not included under piping; and all other costs not included under other bid items.

No separate payment will be made for fire hydrant auxiliary gate valves or tapping valves.

5.03 Fire Hydrant Assemblies: Fire hydrants and air release fire hydrants will be paid for at the unit price bid. The unit price named for each fire hydrant

installation shall include all costs incurred in installing the fire hydrant; furnishing and installing hydrant, tee, auxiliary gate valve, accessories, and appurtenances; concrete blocking; drainage facilities; and all other costs not included under other bid items.

- 5.04 Fire Hydrant Assembly Relocation: Existing fire hydrants indicated on the drawings to be relocated will be paid for at the unit price bid. The unit price bid for each fire hydrant assembly relocation shall include removing the existing fire hydrant. The unit price bid shall also include furnishing and installing a mechanical joint end cap or plug at the main, new tee, auxiliary gate valve, accessories and appurtenances, concrete blocking, re-installation in accordance with paragraph 5.03 above and all other costs not included under other bid items.
- 5.05 Air Release Manhole Assembly: Air release manhole assemblies shall be paid for on a unit bid. The unit price shall include all labor and material including all excavation and backfilling not paid for as trenching for the water main, precast concrete manhole, concrete, reinforcing steel, manhole frame and cover, manhole steps, air release valve, corporation stop, miscellaneous valves and piping, and all other appurtenances required to complete the air release manhole assembly as indicated in the drawing as specified.
- 5.06 Fittings and Tees: The unit price bid for fittings and tees shall be the additional cost of such fitting or tee over and above that of an equivalent length of pipe and shall include all necessary thrust restraints.
- 5.07 Site Restoration, Seeding, and Sodding: No separate payment shall be made for site restoration seeding, or sodding as specified or required. All costs in connection with restoration, seeding, and sodding shall be included in the cost of the pipe.
6. Cased Bore: Where tunneling is required in connection with highway or primary road crossings, each crossing shall be measured for payment horizontally along the longitudinal center line of the enclosing conduit or pipe installed there, from end to end of the enclosing conduit or from end to end of the tunnel excavation where an enclosing conduit is not required. Each designated type of crossing shall include the following:

a. Crossings in Conduit: The unit price bid for each crossing in pipe conduit or tunnel liner shall include all costs in connection with excavation and backfilling, pipe conduit or tunnel liner, the excess cost of installing pipe in pipe conduit or tunnel liner above the amount bid for the pipe laid in open trench, all skids, jointing materials, jacking pipe, jacking pits, sand backfill, end closures, and all other work for and in connection with the crossing, not paid for separately.

7. Pavement Removal and Replacement: Pavement removal and replacement shall be measured in place and the areas computed in square yards. The area measured shall be the actual areas required or as ordered by the City's Engineer. If additional surface is removed or damaged due to the negligence on the part of the Contractor, the additional quantities shall not be measured for payment, but shall be done at the Contractor's expense.

The unit prices bid for pavement removal and replacement shall include all costs in connection therewith, including cutting, removal, and disposal of old pavement; construction of new pavement; and all extra compaction effort required for backfill beneath pavement.

8. Traffic Control: Signs and other traffic control devices required for traffic control during construction will be paid for at the lump sum price for traffic control. This item includes the submittal of a traffic control plan.
9. Miscellaneous Concrete: No separate payment shall be made for concrete for encasement or blocking of pipe and fittings or thrust collars at valves not included as parts of manholes and other structures.

All concrete which is required in connection with manholes or structures, pavement or sidewalk replacement, and other pay items shall be included in the lump sum or unit price bid for the pay item.

10. Cleaning, Pressure and Leak Testing: Will be as specified and will be paid for at the unit price bid. The unit price bid shall include all materials and equipment needed to perform the specified functions including but not limited to pigs and pig assemblies, temporary water supply taps, pumps, gauges and other testing equipment. It shall be the responsibility of the contractor to ensure the main is properly cleaned by pigging and flushing,

that it is pressure and leak tested as required and any repairs made to ensure compliance with the listed allowable leak schedule.

11. Disinfection: Disinfection will be done in accordance with Section M (paragraph 2) and will be paid for at the unit price bid. The unit price bid shall include all materials and equipment needed to perform the required functions but is not limited to temporary water supply taps, chlorine, neutralizer, pumps, gauges and other testing equipment. It shall be the responsibility of the contractor to ensure that the main is disinfected and flushed so as to pass the required bacteriological testing all for the unit price bid. No increase in allowances will be made for repeat of any function to ensure compliance with the specifications.