GENERAL NOTES:

WATER MAINS/SERVICES:

All water mains, services and appurtenances shall be designed and constructed according to the City of Canton Water Department requirements and specifications in effect at the time of construction.

For new developments inside the City, all water main pipe materials, fittings, bends, valves, valve boxes, megalugs, gaskets and hydrants will be supplied by the City of Canton. The contractor will be responsible for transporting materials to the project site. Backfill, bedding, thrust blocking, etc. and associated labor is the responsibility of the contractor.

MAINS - Water mains shall be Class 52 (8” and under), Class 53 (12") or Class 54 (over 12") ductile iron, meeting AWWA C151 with push joints. The outside surface of all ductile iron pipe, fittings and appurtenances shall be shop coated with asphaltic material. If the coating material is found to be damaged prior to the pipe trench being backfilled, the contractor shall provide an additional approved material as required to repair as directed. The contractor shall have sufficient coating materials available at the job site prior to laying the pipe. The interior of all pipes and fittings shall be lined with cement mortar and seal coated in complete conformance with AWWA C104, or the latest revision.

All ductile iron pipe, including fittings, bends, tees, valves and appurtenances buried underground, shall be encased with 8 mil. polyethylene film conforming to AWWA C105.

Plastic pipe larger than 2” shall be JM Eagle, Ultra Blue PVCO AWWA C909 Pressure Pipe, Pressure Class 235 or approved equal and installed per manufacturer recommendation.

When plastic pipe is used, a tracer wire shall be installed on top of the pipe.

a. The tracer wire shall be #14 AWG copper clad steel wire with 30 mils of high-density polyethylene (HDPE) insulation.
b. The tracer wire shall be installed in a continuous fashion with the wire on top of the water main and secure to the main every five (5) feet with tape.
c. The tracer wire shall be brought to the surface at every valve box and/or as called out in the drawings. Tracer wire shall be brought to the surface at least every one thousand (1,000) feet.
d. If the wire coating gets damaged, repair damaged coating with electrical tape.
e. The tracer wire shall pass a continuity test before the waterline installation is accepted.

The minimum cover over water mains shall be 4'-6" from ground surface to the barrel of the pipe.

Pipe lengths may be deflected at the joint, if required, at one-half the degree recommended by the manufacturer.

Fittings shall be ductile iron and be rated for 250 psi working pressure in accordance with AWWA C110 or AWWA C153. Fittings shall include, but not limited to bends, tees, sleeves, couplings, crosses, reducers and caps.

Any fittings or valves adjacent to a tee or cross shall be anchored to the tee or cross with either the use of an anchor tee or anchor cross and/or anchor couplings.

VALVES – The items covered by this specification shall meet all applicable AWWA C509 or C515 standards and the following: All valves shall be non-rising stem, iron body, resilient wedge disc. The design of the thrust collar shall be such that the thrust collar is sealed from line pressure by means of an "O" ring seal. All valves shall be furnished with a two (2) inch square operating nut, OPEN RIGHT. All valves shall be furnished with mechanical joint end connections. The stem shall be protected from external grit by a weather shield and an upper "O" ring. Stem shall be lubricated. Gate coating shall

have a minimum thickness of 10 mils. Valve shall be tested at the rated working pressure of 250 psi with no leakage. Shell test of 500 psi shall be applied to body with valve in the open position with no leakage through the metal, stem seals or joints. Valve must have traditional stuffing box. All bolting material in the thrust collar and bonnet shall be #316 ss bolts. All valves with accessories pack (flanges, rubbers, nuts, bolts)

All valve boxes shall be heavy duty, three (3) piece screw type, with “Water” lids.

Flushing and disinfection of water mains shall be in accordance with AWWA C651.
All water line pressure testing shall conform to AWWA C600.
Water mains shall be installed and backfilled per O.D.O.T. Item 638.

Water lines located within the limits of or within a 1/2 to 1 slope of existing and/or proposed roadways, parking areas, buildings, sidewalks, and/or drives shall be installed as Type B conduits. All other water mains shall be installed as Type C conduits. Bedding shall be as specified, except that slag will not be permitted.

All fittings (bends, tees, valves, dead ends, etc.) shall be restrained utilizing megalugs, field lok gaskets or approved equal. Poured-in-place concrete thrust blocks may also be provided at/for each fitting. This blocking shall be carefully placed to ensure it is positioned properly to withstand the resultant forces at each bend, fitting, etc. and shall bear on stable undisturbed ground capable of withstanding the potential loading. When directed by the City, tie rods are to be 3/4 inch diameter. Two tie rods are required for an 8 inch pipe, and four tie rods are required for 12 inch and greater pipe. This cost shall be included in the unit price bid for the fittings.

In addition to the restraint of all bends, fittings, tees, valves, dead ends, etc. The contractor shall also secure/restrain all joints for at least three (3) pipe joints (50 lf min.) Beyond each dead end, bend, fitting, valve, tee, etc. utilizing megalugs, field lok gaskets, or approved equals. This cost shall be included in the unit prices bid for the pipe.

The contractor shall provide 18" vertical clearance between proposed waterlines and any sanitary or storm sewers. When 18" clearance cannot be obtained:
- for storm sewers, concrete encase the storm sewer pipe, 6 ft. on each side of water main.
- for sanitary sewers, replace the sanitary sewer pipe with PVC C900 pipe, 10 ft. on each side of the water main. Approved couplings shall be used to tie onto the existing sewer.

The contractor shall maintain ten (10) foot horizontal clearance between waterlines/services and sanitary or storm sewers.

HYDRANTS - The fire hydrant setting shall include the hydrant, anchor tee, valve, valve box, 6 inch ductile iron (Class 52) piping and all fittings needed for proper installation to final grade. Fire hydrants shall be Mueller A423 meeting the City of Canton Water Department standards and requirements. All costs for the 6" piping associated with the installation of fire hydrants shall be included with the fire hydrant pay item. All hydrants shall be installed with the pumper nozzle facing the street. All fire hydrant threads shall be lubricated with a food grade lubricant and operated upon installation.

When tying a new water main to an existing water main the following should be followed:
a. New cut-in-tee on existing water main
b. New gate valve to new water main
c. Plug on the blank side of the new tee

Cut-in sleeves for tie-in to existing water mains shall be Smith Blair 441 sleeves with #316 ss bolts.

All water taps and services must be installed before any pavement for the proposed roadway has been placed. Contractor shall make all service taps on the water main.

Prior to making the tap, the contractor shall expose the existing curb box and verify the size of the water service line on the owner's side. The proposed tap and service shall match the size of the owner's service line, with 1" being a minimum. An existing 1 1/4" service shall be replaced with a 1 1/2" service and tap.

The proposed water services and taps shall be 1" unless noted otherwise on the plans or determined otherwise per previous note.

Any service to the far side of the street shall be pushed or bored under the pavement. Trenching across the road is not permitted.

The contractor shall take any and all necessary precautions to protect and maintain in service, any existing water mains and/or services exposed during construction. If the contractor breaks a water main and/or service, he shall be responsible to repair the break, at his own expense, and will not be compensated for any downtime.

Any water service line that is broken, cut or otherwise damaged, shall be replaced from the corporation stop to the curb stop with a single piece of HDPE tubing, CTS, PE4710. No splicing of the service line will be permitted.

Service branches will be installed as per O.D.O.T Item 638.16, with the following exceptions:

1. When a service branch is disturbed for lowering, raising, extending or shortening on the property side on the service stop, it shall be replaced with new materials from the corporation stop to the service stop.

In a street improvement, no existing water curb box will be left in the pavement, curb and gutter or sidewalk. The curb box will be moved to a suitable location determined by the Canton Water Department. When the curb box is moved, all new material will be used from the corporation stop to the curb stop which is a single piece of HDPE tubing, CTS, PE4710. No splicing of the service line will be permitted. A new tap (corporation stop) and curb stop and box may also be required. The determination will be made by the Canton Water Department.

Polyethylene water main and service tubing 2" and under shall be copper tube size, SDR 9, with a minimum pressure class of 200 psi and meet standards ASTM-D2737 PE4710 and AWWA C901. The acceptable tubing is:

1. CP Chem Performance Pipe Driscoplex 5100-Ultra-line
2. Charter Plastics Inc. Blue Ice
3. Endot Endopure
4. ADS Polyflex.

Any commercial or industrial water service must have site and plumbing plans submitted to the Canton Building Department for approval. The Canton Building Department will distribute the plans to the appropriate departments for review and comments. Corrections must be made and resubmitted. Price estimates will not be issued and service taps will not be made until the plans have been approved by the Canton Water Department.

Regardless of the service line size, the water service from the curb box to the facility, must be installed by a City of Canton licensed plumber. A City of Canton plumbing permit must be issued to the plumber installing the service line before the water service can be installed.

The proposed facilities shall maintain a minimum 35 psi pressure delivered to the curb stop during normal operating conditions.

A minimum pressure of 20 psi at ground level shall be maintained at all points in the distribution system under all conditions of flow.

Booster pumps are not permitted on service connections.

All water mains will be installed under the pavement with a minimum of 3 feet from the edge of pavement or the curb and/or gutter. In existing streets, a saw cut will be made to ensure a clean edge.

When an existing water main must be shut down to perform required work, the contractor shall notify the properties to be affected a minimum of 24 hours in advance of said shut down. The work will be scheduled and coordinated to minimize the time the main is out of service.
The contractor shall notify the City 48 hours in advance of any shut down of an existing main. The contractor will not operate any valves. Valves will be operated by Canton Water Department personnel only. Valves damaged by the contractor's operation will be replaced at the contractor's expense.

All valve boxes will be adjusted to final grade of surrounding pavement or finished surface treatments when the project is completed.

Any digging within the Right-of-Way of any street requires a road opening permit. Please contact the appropriate governmental entity for information regarding the permitting process and/or fees due.

The contractor shall replace any traffic signal loop detector wire damaged during the waterline installation. This cost shall be included in the unit prices bid for all items in the proposal.

The contractor shall replace any roadway pavement markings damaged or removed during this project. The pavement markings shall be per the governing authority's specifications. This cost shall be included in the unit prices bid for all items in the proposal.

The contractor shall replace any private irrigation systems and/or underground electric fences that are damaged or removed during the waterline construction. This cost shall be included in the unit prices bid for all items in the proposal.

Valves that are called out to be abandoned shall include all labor, material, and equipment necessary to abandon existing water valves. This item shall also include any necessary excavation and backfill required. Valves shall be closed and have the top 6” of the casting removed. Valves in pavement shall be filled with concrete with the top 6” matching the existing pavement composition. Valves in yard area shall be filled with sand.

Fire hydrants that are called out to be removed shall include all labor, material and equipment necessary to remove the fire hydrant, hydrant valve and plug the hydrant tee.

For waterlines called out to be abandoned, the contractor shall plug and abandon the existing waterline with a ductile iron plug or as directed by the Canton Water Department.

Removal of any existing thrust blocks will be considered incidental to the overall project cost.