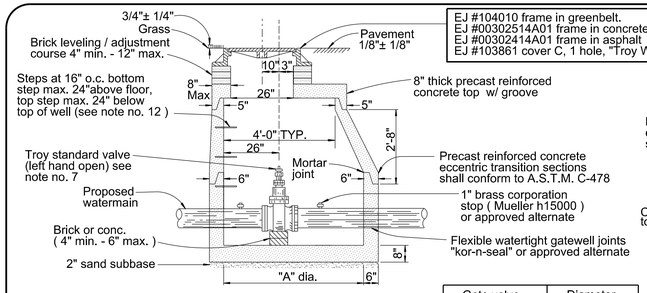
*ALL WATER MAIN SHALL BE INSTALLED WITH A MINIMUM OF SIX FEET ( 6' ) OF COVER*

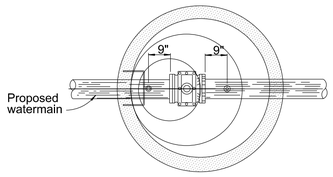
*NOTIFY CITY OF TROY ENGINEERING DEPT. AT 248-524-3409 PRIOR TO STARTING ANY WORK*



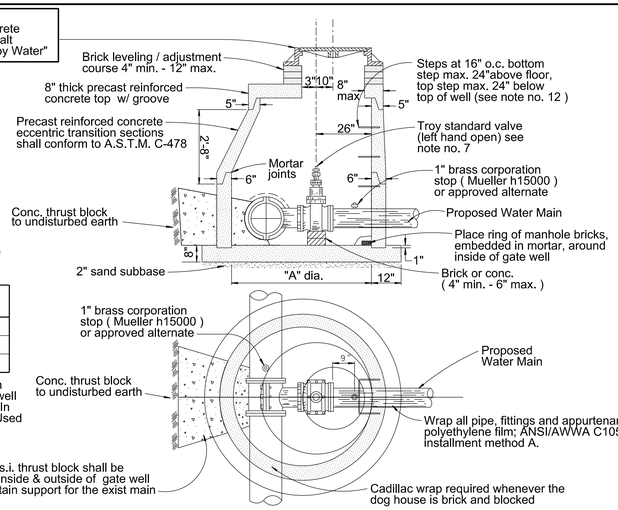

EJ #104010 frame in greenbelt.
EJ #00302514A01 frame in concrete
EJ #00302414A01 frame in asphalt
EJ #103861 cover C, 1 hole, "Troy Water"

| Gate valve size | Diameter "A" |
|---|---|
| 6" & 8" | 5'-0" |
| 10" & 12" | 6'-0" |
| 16" | 6'-0" |

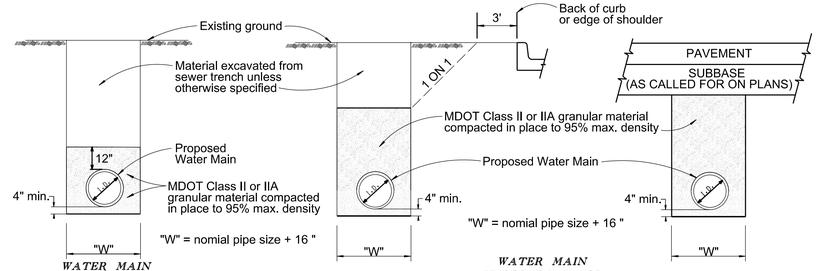
Where Required For Greater Depth 48" Dia. Precast Rein. Conc. Gatewell Riser Sections 1'-4" 2'-8", 4'-0" In Height (A.S.T.M. C-478) Shall Be Used




*GATE VALVE & WELL DETAIL*




*TAPPING SLEEVE, VALVE & WELL DETAIL 6' DIA.*




*TRENCH DETAIL 'F'*

*TRENCH DETAIL 'G'*

## *GENERAL NOTES*

1. All Water Main and Water System construction shall conform to the current standards and specifications of The City of Troy. Detailed written specifications are available upon request.

2. Prior to construction, the contractor shall attend a pre-construction meeting at a time and place as arranged by the City Engineer, in which various utility companies and governmental agency representatives may be present. The owner's, Engineer shall submit approved plans to all utility companies and governmental agencies 10 days prior to pre-construction meeting. Construction shall start within 3 weeks of meeting.

3. Ductile iron pipe shall meet the requirements of ANSI/AWWA C151/A21.51 for Class 54, double cement lined (with interior bituminous coating) with push on type joints. Push on joints shall be tyton, super belltite or approved alternate with serrated brass wedges. 6" thru 12" pipe requires 2 wedges per joint, 16" and larger requires 4 wedges per joint.

All ductile iron pipe, fittings and appurtenances shall be encased in polyethylene film conforming to A.N.S.I./A.W.W.A. specification C-105/A21.5; installment method A.

4. Hydrants shall be set on property line side of the ditch so they are not in the ditch line or back slope of ditch.

5. All hydrants shall be City of Troy standard EJ 5BR250 or Mueller A425 Super Centurion 200 with a breakaway flange. Hydrants shall open counter-clockwise and be supplied with two 3-3/4" nozzles having GLWA standard thread.

6. Unless otherwise shown on plans hydrants shall be Type "L" hydrants and shall be set to the elevation of the existing ground. When the existing ground is higher than the road centerline, the hydrant shall be extended upward (from road centerline) by inserting barrel extensions between the head and the top barrel flange. (the purpose of this requirement is to provide for the future lowering of the hydrant to the elevation of the road centerline). Hydrant extensions shall be included in the hydrant assembly.

7. All gatewells shall be City of Troy standard EJ series "RW" or Mueller series 2360 & 2361 conforming to ANSI/AWWA C-509 and C-515. All valves shall have double resilient seats. The valve shall be cast with an iron body with a bronze non-rising stem, double "O" Ring replaceable seal plates and mechanical joints. The valve shall be furnished with a 2" square operating nut, left to open, counterclockwise.

Shop drawings must be submitted for all gate valves greater than sixteen (16) inches in diameter. Bypass in accordance with ANSI/AWWA C-500 unless otherwise specified by the Engineer. Bypass valve shall be a gate valve conforming to the requirements of the City of Troy.

8. Gate valves and tapping valves shall be housed within a precast concrete gatewell. Hydrant valves shall be housed in a 3-piece screw type box (5-1/4" shaft) with #6 enlarged base.

9. All end-of-the-line gatewells shall have a capped stub extending 6 feet beyond the gatewell. The valve, pipe and cap shall be installed with megalug retainer glands and a concrete thrust block at the cap. Oak blocking is required for all end-of -the-line gate valves, inside the gatewell.

10. All fittings shall be ductile iron in accordance with ANSI/AWWA C153/A21.53 (compact fittings), 350 p.s.i. pressure rating with double cement lining, mechanical joints and megalug retaining gaskets. Field lock glands may be required by the Engineer or Inspector. Split retainers not allowed.

11. Concrete thrust blocks are required at all bends, tees, caps or pugs. Concrete shall have a compressive strength of 3500 p.s.i. (minimum) at 28 days. Dry mix not permitted.

12. Steps are to be MSU# 360 ALU Poly, MA Industries PSI Polypropylene or approved alternate and installed by the gatewell manufacturer. Steps shall align over the center of the pipe along the straight vertical wall of the eccentric gatewel, there must be clear access to steps.

13. A two (2) inch blow-off assembly shall be installed, for testing purposes, in all stubs and points of connection to the existing main. Upon successful completion of the tests and with the approval of the City of Troy Water Department, the contractor shall remove the blow-off assembly.

14. A vertical clearance of 1.5 feet (minimum) must be maintained between the water main and any utilities or as specified on the plans or permit, whichever is greater adjustments to the water main depth in order to obtain the desired clearances must be accomplished with vertical bends, thrust blocks and anchorages.

15. Deflection of pipe joints to obtain the desired clearances or alignment shall only be accomplished with the owner's approval. The maximum allowable deflection (for 1 full length of pipe with push-on joint) is 14 inches for 4" thru 12" pipe and 8.25 inches for 16" and 24" pipe.

16. The maximum permissible leakage, during hydrostatic testing, shall not exceed 0.18 gallon per inch diameter of main per 1000 feet of pipe in 2 hours at a test pressure of 150 p.s.i. The maximum text length is 3000 feet. The City of Troy reserves the right to test shorter lengths. The City will perform all pressure tests and pull all samples for bacteriological tests.

17. Connections to the existing water system shall not be made until the new main has been successfully pressure tested and has passed bacteriological testing. Final connections shall be coordinated with the City of Troy Engineering Department.

18. In new developments, water main shall not be installed until rough grading is completed to within 12" of proposed finish grade.

19. The contractor shall provide a 3 year maintenance and guarantee bond to the City, dated from the time of final acceptance by the City. The bond shall be for 35% of the construction costs.

20. Before final acceptance, As-Built drawings must be submitted to the City of Troy Engineering Department. One electronic copy ( PDF ) and one digital copy ( DWG or DGN ) is required.

NOTE:
D.I. Megalug Retainer Gland Or Swivel Glands Are Required On All Joints Between Hydrant Tee And Hydrant Inlet




*PLAN*

*"L" HYDRANT CONNECTION*

NOTE:
All Hydrants Shall Be Painted Fire Hydrant Red ( Rust - Oleum # 1210 Or Approved Alternate )



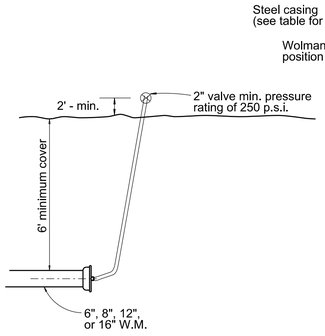

*SECTION A-A*

NOTE:
Vertical Hydrant Extensions (1' max.) Where Required, Shall Be Included In The Hydrant Assembly

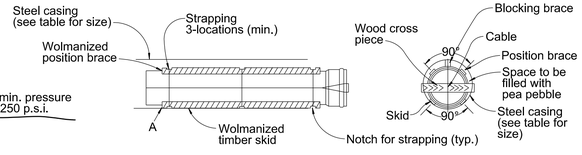



*"T" HYDRANT CONNECTION*
*(TO BE INSTALLED ONLY WITH ENGINEER'S APPROVAL)*

NOTE:
All End Of Line Hydrants Shall Have E.J. No. 946504 6BR Brass Conversion Seat Installed



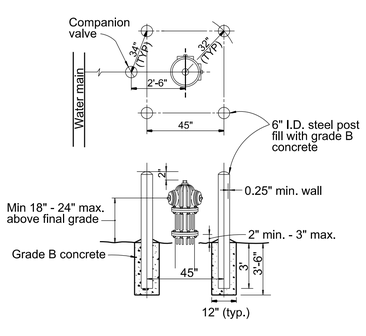

*2" BLOWOFF ASSEMBLY*



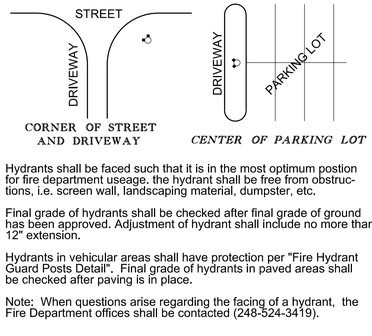

Note: The Ends Of The Casing Shall Be Sealed After The Water Main Is Installed Through The Casing

| Pipe Size | Recommended Minimum Casing Diameter | Minimum Casing Wall Thickness |
|---|---|---|
| 4" | 12.75" | 0.375" |
| 6" | 14" | 0.375" |
| 8" | 16" | 0.375" |
| 12" | 20" | 0.375" |
| 16" | 24" | 0.406" |
| 24" | 36" | 0.532" |

*STEEL CASING REQUIREMENTS*




*FIRE HYDRANT GUARD POSTS DETAIL*




Hydrants shall be faced such that it is in the most optimum postion for fire department useage. the hydrant shall be free from obstructions, i.e. screen wall, landscaping material, dumpster, etc.

Final grade of hydrants shall be checked after final grade of ground has been approved. Adjustment of hydrant shall include no more than 12" extension.

Hydrants in vehicular areas shall have protection per "Fire Hydrant Guard Posts Detail". Final grade of hydrants in paved areas shall be checked after paving is in place.

Note: When questions arise regarding the facing of a hydrant, the Fire Department offices shall be contacted (248-524-3419).

*TYPICAL FIRE HYDRANT FACING*

TROY MICHIGAN

# *STANDARD WATER MAIN DETAILS*

*ENGINEERING DEPARTMENT*

APPROVED BY : WILLIAM J. HUOTARI, CITY ENGINEER DATE : JUNE 2019

| REVISIONS | DATE | REMARKS |
|---|---|---|
| APRIL 2019 | GENERAL UPDATES | |

SEAL OF MICHIGAN — WILLIAM J. HUOTARI — ENGINEER NO. 43231 — LICENSED PROFESSIONAL ENGINEER

WILLIAM J. HUOTARI, P.E. #43231

Contractor Note:
The locations of existing underground utilities are approximate and in some cases may be inaccurate and incomplete. The contractor shall determine the exact location of all existing utilities before commencing work and agrees that he will be fully responsible for any and all damages which might be occasioned by the contractor's failure to exactly locate and preserve any and all underground utilities.

3 FULL WORKING DAYS BEFORE YOU DIG CALL 811
Know what's below. Call before you dig.
MISS DIG System Inc. 1-800-482-7171 www.missdig.net

CONTRACT NO. XX-XX
PROJECT NO. XX.XXXX.X