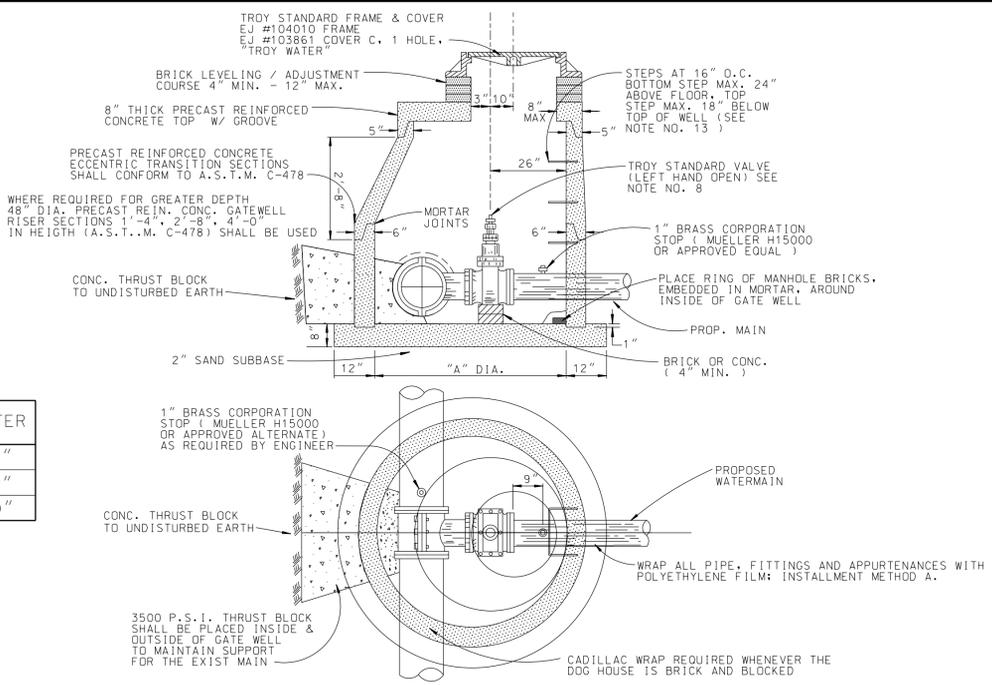
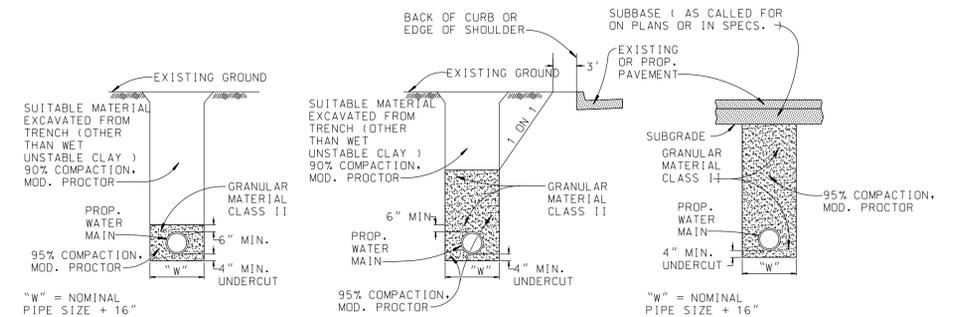


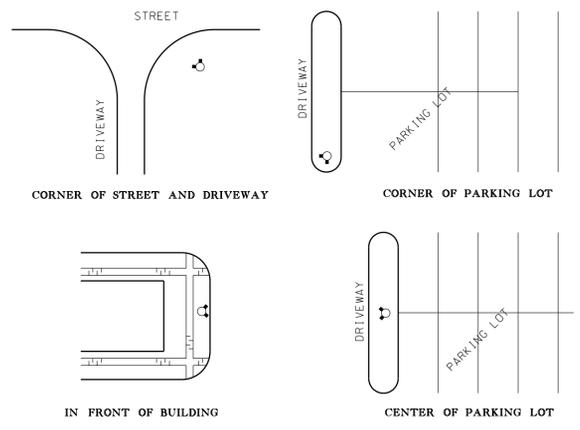
GATE VALVE & WELL DETAIL



TAPPING SLEEVE, VALVE & WELL DETAIL 6' DIA.



BEDDING DETAILS



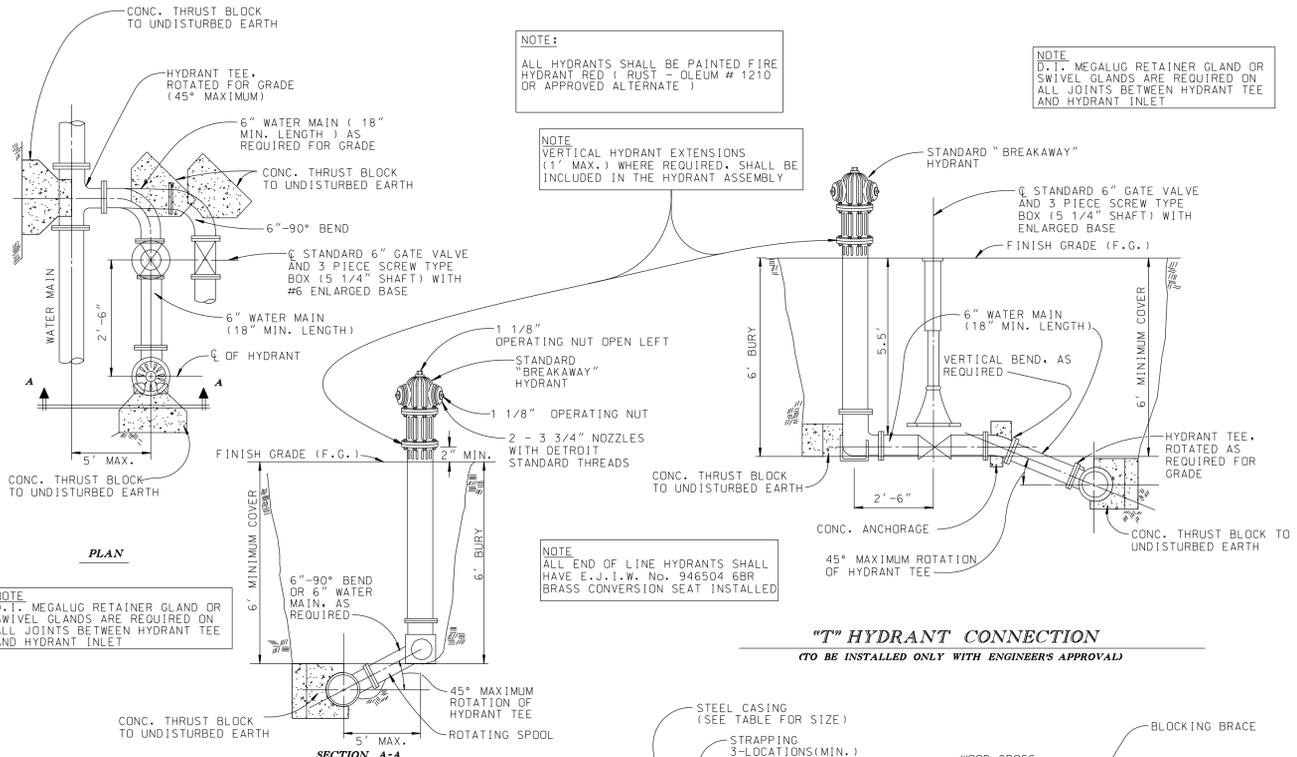
TYPICAL FIRE HYDRANT FACING

HYDRANTS SHALL BE FACED SUCH THAT IT IS IN THE MOST OPTIMUM POSITION FOR FIRE DEPARTMENT USAGE. THE HYDRANT SHALL BE FREE FROM OBSTRUCTIONS, I.E. SCREEN WALL, LANDSCAPING MATERIAL, DUMPSTER, ETC.

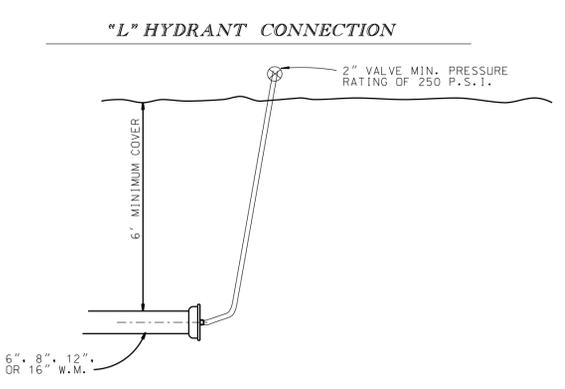
FINAL GRADE OF HYDRANTS SHALL BE CHECKED AFTER FINAL GRADE OF GROUND HAS BEEN APPROVED. ADJUSTMENT OF HYDRANT SHALL INCLUDE NO MORE THAN 12" EXTENSION.

HYDRANTS IN VEHICULAR AREAS SHALL HAVE PROTECTION PER "CITY OF TROY STANDARD FIRE HYDRANT GUARD POSTS DETAIL". FINAL GRADE OF HYDRANTS IN PAVED AREAS SHALL BE CHECKED AFTER PAVING IS IN PLACE

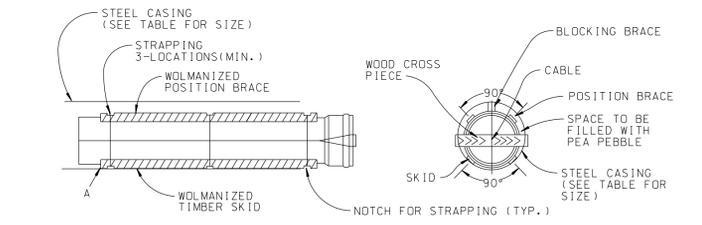
NOTE: WHEN QUESTIONS ARISE REGARDING FACING, FIRE DEPARTMENT OFFICES SHALL BE CONTACTED



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



"L" HYDRANT CONNECTION



PIPE SIZE	RECOMMENDED MINIMUM CASING DIAMETER (O.D.)	MINIMUM CASING WALL THICKNESS
4"	12.75"	0.375"
6"	14"	0.375"
8"	16"	0.375"
12"	20"	0.406"
16"	24"	0.406"
24"	36"	0.532"

STEEL CASING REQUIREMENTS

- GENERAL NOTES**
- 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.
 - 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.
 - 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 BELLITE 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.
 - HYDRANTS SHALL BE SET ON PROPERTY LINE SIDE OF THE DITCH SO THEY ARE NOT IN THE DITCH LINE OR BACK SLOPE OF DITCH.
 - WHEN HYDRANTS AND VALVES ARE INSTALLED IN OPEN DITCH AREAS, THEY CULVERTS WITH END SECTIONS SHALL ALSO BE INSTALLED TO ALLOW ACCESS.
 - 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.
 - ALL GATE VALVES SHALL BE CITY OF TROY STANDARD E.J. 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 DIA.. 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.
 - 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.
 - 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.
 - ALL FITTINGS SHALL BE DUCTILE IRON IN ACCORDANCE WITH ANSI/AWWA C153/A21.53 (COMPACT FITTINGS), 350 PSI PRESSURE RATING WITH DOUBLE CEMENT LINING, MECHANICAL JOINTS AND MEGALUG RETAINING GASKETS. FIELD LOCK GASKETS MAY BE REQUIRED BY THE ENGINEER OR INSPECTOR. SPLIT RETAINERS NOT ALLOWED.
 - CONCRETE THRUST BLOCKS ARE REQUIRED AT ALL BENDS, TEES, CAPS OR PLUGS. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 2500 PSI (MIN.) AT 28 DAYS. DRY MIX NOT PERMITTED.
 - STEPS ARE TO BE MSW 360 ALU POLY. MA INDUSTRIES P.S.I. 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 GATEWELL. THERE MUST BE CLEAR ACCESS TO STEPS.
 - 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.
 - A VERTICAL CLEARANCE OF 1.5 FEET (MIN.) MUST BE MAINTAINED BETWEEN THE WATER MAIN AND ANY UTILITIES AND 5 FEET (MIN.) BELOW DITCHES 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.
 - 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.
 - THE MAXIMUM PERMISSIBLE LEAKAGE, DURING HYDROSTATIC TESTING, SHALL NOT EXCEED 0.18 GAL. PER INCH DIAMETER OF MAIN PER 1000 FEET OF PIPE IN 2 HOURS AT A TEST PRESSURE OF 150 PSI. THE MAXIMUM TEST 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.
 - 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
 - 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.
 - IN NEW DEVELOPMENTS, WATER MAIN SHALL NOT BE INSTALLED UNTIL ROUGH GRADING IS COMPLETED TO WITHIN 12" OF PROPOSED FINISH GRADE.
 - VERTICAL TOLERANCES FOR HYDRANTS AND VALVES SHALL BE:
HYDRANTS (ANY LOCATION) + 0.25 FT.
GATE WELL (ANY LOCATION) + 0.25 FT.
 - BEFORE FINAL ACCEPTANCE A FINAL INSPECTION MUST BE MADE BY THE DPW AND AS-BUILT SEPIA MYLARS AND THREE SETS OF BLUE LINE PRINTS SHALL BE SUBMITTED TO THE CITY OF TROY ENGINEERING DEPARTMENT.

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

FIRE HYDRANT GUARD POSTS DETAIL

2" BLOWOFF ASSEMBLY

CITY OF TROY
OAKLAND COUNTY, MICHIGAN

STANDARD WATER MAIN DETAILS

ENGINEERING DEPARTMENT

APPROVED BY: STEVEN J. VANDETTE, CITY ENGINEER DATE: APRIL 2012

UPDATED APRIL 2012

PROJECT NO. _____

SHEET NO. _____

DATE: JANUARY 2001

DRAWN BY: _____ CHECKED BY: _____

G.S.F. W.D.U.

STEVEN J. VANDETTE, P.E. 28197