

GENERAL NOTES

1. STANDARDS AND SPECIFICATIONS

- A. ALL WATER MAIN AND WATER SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT AND THE DETROIT WATER AND SEWERAGE DEPARTMENT. DETAILED WRITTEN SPECIFICATIONS ARE AVAILABLE UPON REQUEST.
- B. ANY MATERIALS OTHER THAN THOSE LISTED ON THE STANDARD DETAIL SHEETS MUST BE APPROVED IN WRITING BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. CONTRACTOR MUST SUBMIT THREE (3) COPIES OF SHOP DRAWINGS AND SPECIFICATIONS FOR PROPOSED ALTERNATE MATERIAL TO THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT FOR REVIEW AS AN APPROVED EQUAL. DETERMINATION OF ACCEPTANCE BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT SHALL BE CONSIDERED FINAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REVIEW OF SHOP DRAWINGS AND THE PROPOSED ALTERNATE MATERIAL AS AN APPROVED EQUAL. PAYMENT SHALL BE PRIOR TO THE FIRST REVIEW.

2. PRECONSTRUCTION REQUIREMENTS

- A. THE DEVELOPER SHALL PROVIDE A BREAKDOWN OF CONSTRUCTION COST TO THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT AND PAY ALL REQUIRED FEES PRIOR TO SCHEDULING A PRECONSTRUCTION MEETING.
- B. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ATTEND A PRECONSTRUCTION MEETING AT A TIME AND PLACE AS ARRANGED BY THE TOWNSHIP ENGINEER. THE TOWNSHIP ENGINEER SHALL NOTIFY AFFECTED UTILITY COMPANIES AND GOVERNMENTAL AGENCIES A MINIMUM OF TEN (10) DAYS PRIOR TO THE PRECONSTRUCTION MEETING. THE OWNER'S ENGINEER SHALL SUBMIT APPROVED PLANS TO ALL UTILITY COMPANIES AND GOVERNMENTAL AGENCIES A MINIMUM OF TEN (10) DAYS PRIOR TO PRECONSTRUCTION MEETING. CONSTRUCTION SHALL START WITHIN TWO (2) WEEKS OF THE MEETING UNLESS WAIVED BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT.
- C. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION, OR INSURE THAT ALL REQUIRED PERMITS HAVE BEEN OBTAINED PRIOR TO CONSTRUCTION.
- D. THE CONTRACTOR SHALL NOTIFY MISS DIG AT (800) 482-7171, THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT AT (586) 949-0400 EXT. 3 AND ANDERSON, ECKSTEIN AND WESTRICK, INC. AT (586) 726-1234 THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY REPRESENTATIVES OF ANY OTHER FACILITIES, LOCATED IN THE VICINITY OF THE WORK, WHICH ARE NOT PARTICIPANTS OF THE MISS DIG SYSTEM.

3. PIPE MATERIAL

- A. DUCTILE IRON PIPE WITH EXTERIOR ASPHALTIC MATERIAL COATING SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C151/A21.51 CURRENT SPECIFICATIONS FOR DUCTILE-IRON PIPE, CENTRIFUGALLY CAST, FOR WATER. DUCTILE IRON PIPE SHALL BE SPECIAL THICKNESS CLASS 54 FOR PUSH-ON JOINT DUCTILE-IRON PIPE. DUCTILE IRON PIPE SHALL BE DOUBLE CEMENT LINED WITH ASPHALTIC MATERIAL SEAL COATING, MEETING THE REQUIREMENTS OF ANSI/AWWA C104/A21.4 CURRENT SPECIFICATIONS FOR CEMENT-MORTAR LINING FOR DUCTILE-IRON PIPE AND FITTINGS FOR WATER. PUSH-ON JOINTS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C111/A21.11 CURRENT SPECIFICATIONS FOR RUBBER-GASKET JOINTS FOR DUCTILE-IRON PRESSURE PIPE AND FITTINGS. PUSH ON JOINTS SHALL BE TYTON OR SUPER BELLETTE WITH SERRATED BRASS WEDGES. 6" THROUGH 12" PIPE REQUIRES TWO (2) WEDGES PER JOINT, 16" AND LARGER REQUIRES FOUR (4) WEDGES PER JOINT.
 - B. POLYVINYL CHLORIDE (PVC) PIPE SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C900 CURRENT SPECIFICATIONS FOR PVC PRESSURE PIPE AND FABRICATED FITTINGS, 4 INCH THROUGH 12 INCH, FOR WATER DISTRIBUTION. PVC PIPE SHALL BE PRESSURE CLASS 235 (DR 14) WITH PUSH ON TYPE JOINTS. THE CONTRACTOR SHALL INSTALL TWO NUMBER 10 TRACER WIRES HAVING "UF" OR "USE" COVER INSULATION AT THE SAME TIME NEW WATER MAIN IS INSTALLED.
- NOTE: PVC WATER MAIN SHALL ONLY BE USED WITH WRITTEN AUTHORIZATION OF THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT.
- C. HIGH-DENSITY POLYETHYLENE (HDPE) PIPE SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C906 CURRENT SPECIFICATIONS FOR POLYETHYLENE PIPE AND FITTINGS, 4 INCH THROUGH 63 INCH, FOR WATER DISTRIBUTION AND TRANSMISSION, AND NSF 61. HDPE PIPE SHALL BE DIPS, DR 11 (MINIMUM), SOLID BLUE SHELL OR BLUE STRIPE AND MEET THE REQUIREMENTS OF STANDARD PE CODE DESIGNATION PE 4710. HDPE PIPE SHALL BE JOINED BY AN APPROVED BUTT FUSION OR ELECTROFUSION TECHNIQUE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. THE CONTRACTOR SHALL INSTALL THREE NUMBER 6 TRACER WIRES HAVING "UF" OR "USE" COVER INSULATION AT THE SAME TIME NEW WATER MAIN IS INSTALLED.
- NOTE: HDPE WATER MAIN SHALL ONLY BE USED WITH WRITTEN AUTHORIZATION OF THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. IN NO CASE SHALL THE INSIDE DIAMETER OF THE EQUIVALENT HDPE PIPE BE LESS THAN THE INSIDE DIAMETER OF THE STANDARD DUCTILE IRON PIPE.

4. HYDRANTS

- A. HYDRANTS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C502 CURRENT SPECIFICATIONS FOR DRY-BARREL FIRE HYDRANTS. HYDRANTS SHALL BE CHESTERFIELD TOWNSHIP STANDARD EAST JORDAN IRON WORKS MODEL 5BR-250 WATERMASTER WITH PENTAGON OPERATING NUT MEASURING 1-1/8" POINT TO FLAT AND BREAKAWAY FLANGE. THE CONTRACTOR SHALL PLUG ANY HYDRANT DRAIN HOLES. ALL BOLTS, FROM HYDRANT TEE TO BREAKAWAY FLANGE, INCLUSIVE, SHALL BE STAINLESS STEEL.
- B. HYDRANTS SHALL OPEN COUNTER CLOCKWISE AND BE SUPPLIED WITH TWO (2) - THREE AND THREE-QUARTER INCH (3-3/4") PUMPER NOZZLES HAVING DETROIT FIRE DEPARTMENT (DFD) STANDARD THREAD.
- C. HYDRANTS SHALL HAVE A MINIMUM BURY OF FIVE FEET (5') FROM FINISH GRADE TO BOTTOM INLET INVERT WITH A MINIMUM GROUND CLEARANCE FROM CENTER OF PUMPER NOZZLE TO FINISH GRADE OF EIGHTEEN INCHES (18") AND FROM CENTER OF BASE FLANGE TO FINISH GRADE OF AT LEAST SIX INCHES (6").
- D. PRIOR TO FINAL ACCEPTANCE BY THE MUNICIPALITY, ALL HYDRANTS MUST BE DEWATERED AND PAINTED. PAINT SHALL BE MARINE ENAMEL, COLOR YELLOW, WHITE CAPS WITH TWO APPLICATIONS.
- E. HYDRANTS SHALL BE OF THE "L" TYPE CONNECTION UNLESS OTHERWISE SPECIFIED ON THE PLANS OR DIRECTED BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. HYDRANT PUMPER NOZZLE(S) SHALL FACE THE ROAD CENTERLINE IN PUBLIC RIGHT-OF-WAYS OR FACE THE DIRECTION OF FIRE EQUIPMENT ACCESS ON PRIVATE DEVELOPMENTS. HYDRANTS SHALL BE SET TO THE PROPOSED PLAN GRADE ELEVATION UNLESS OTHERWISE AUTHORIZED BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. ALL VERTICAL EXTENSIONS REQUIRED TO OBTAIN THE DESIRED GRADE SHALL BE INCLUDED IN THE COST OF THE HYDRANT.
- F. 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 FUTURE LOWERING OF THE HYDRANT TO THE ELEVATION OF THE ROAD CENTERLINE). HYDRANT EXTENSIONS SHALL BE INCIDENTAL TO HYDRANT ASSEMBLY.
- G. HYDRANTS SHALL BE SET ON PROPERTY LINE SIDE OF THE DITCH SO THEY ARE NOT IN THE DITCH LINE OR BACK SLOPE OF DITCH.
- H. WHEN HYDRANTS AND VALVES ARE INSTALLED IN OPEN DITCH AREAS, CULVERTS WITH END SECTIONS SHALL ALSO BE INSTALLED TO ALLOW ACCESS. SIZING SHALL BE SUBJECT TO ROAD COMMISSION OF MACOMB COUNTY AND/OR TOWNSHIP ENGINEER'S APPROVAL.

5. GATE VALVES

- A. GATE VALVES SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C509 CURRENT SPECIFICATIONS FOR RESILIENT-SEATED GATE VALVES FOR WATER SUPPLY SERVICE. THE VALVE SHALL BE CAST WITH AN EPOXY COATED DUCTILE IRON BODY AND BRONZE MOUNTED WITH A BRONZE NON-RISING STEM, TRIPLE "O"-RING REPLACEABLE SEALS AND MECHANICAL JOINTS. IT SHALL BE FURNISHED WITH A TWO INCH (2") SQUARE OPERATING NUT AND SHALL TURN COUNTER CLOCKWISE TO OPEN. GATE VALVE OPERATING NUT EXTENSIONS SHALL BE PROVIDED WITH STAINLESS BRACING, AS REQUIRED TO ASSURE THAT THE TOP OF THE OPERATING NUT IS NO GREATER THAN FIVE FEET (5') BELOW THE COVER. GATE VALVES SHALL BE EAST JORDAN IRON WORKS FLOWMASTER RESILIENT SEATED GATE VALVES OR MUELLER 2360 SERIES RESILIENT WEDGE GATE VALVES. ALL BOLTS SHALL BE STAINLESS STEEL.
- B. ALL GATE VALVES GREATER THAN TWENTY INCHES (20") SHALL BE SUPPLIED WITH A BYPASS IN ACCORDANCE WITH ANSI/AWWA C515 UNLESS OTHERWISE SPECIFIED BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. THE BYPASS VALVE SHALL BE A GATE VALVE CONFORMING TO THE REQUIREMENTS OF THESE STANDARDS. THE BYPASS VALVE SHALL BE INDEPENDENTLY SUPPORTED WITHIN THE VALVE CHAMBER AND THE OPERATING NUT MUST BE OPERABLE FROM ABOVE GRADE WITH STANDARD GATE KEY.
- C. TAPPING VALVES SHALL CONFORM TO THE REQUIREMENTS OF GATE VALVES AS SPECIFIED IN THESE STANDARDS. THE VALVE SHALL BE CONSTRUCTED TO ALLOW A TAPPING MACHINE TO TAP DIRECTLY THROUGH THE OPEN VALVE. THE VALVE SHALL BE SUPPLIED WITH A FLANGED JOINT FOR CONNECTION TO THE TAPPING SLEEVE AND A MECHANICAL JOINT FOR CONNECTION TO THE BRANCH WATER MAIN. THE TAPPING SLEEVES SHALL BE DUCTILE IRON, SPLIT SLEEVES WITH MECHANICAL JOINTS AND A FLANGED OUTLET, OR STAINLESS STEEL TAPPING SLEEVE, SOLID BACK.
- D. GATE VALVES AND TAPPING VALVES SHALL BE HOUSED WITHIN A PRECAST CONCRETE GATEWELL. PRECAST BOTTOM SECTIONS, RISER SECTIONS, CONCENTRIC TRANSITION SECTIONS SHALL CONFORM TO ASTM SPECIFICATION C478. HYDRANT VALVES SHALL BE HOUSED IN A CAST IRON VALVE BOX. VALVE BOX SHALL BE A THREE (3) PIECE SCREW TYPE BOX (5-1/4" SHAFT) WITH AN ENLARGED BASE.
- E. GATEWELL FRAMES AND COVERS SHALL BE EAST JORDAN IRON WORKS 1040 FRAME TYPE "C" COVER WITH "CHESTERFIELD TOWNSHIP WATER" IN RAISED LETTERS.
- F. ALL END-OF-THE-LINE GATEWELLS SHALL HAVE A CAPPED STUB EXTENDING ONE FULL LENGTH OF PIPE BEYOND THE GATEWELL. THE VALVE, PIPE AND CAP SHALL BE INSTALLED WITH RETAINER GLANDS AND A CONCRETE THRUST BLOCK AT THE CAP. OAK MARKING IS REQUIRED FOR ALL END OF THE LINE GATE VALVES.

6. FITTINGS

- A. ALL FITTINGS SHALL BE DUCTILE IRON AND MEET THE REQUIREMENTS OF ANSI/AWWA C153/A21.53 CURRENT SPECIFICATIONS FOR DUCTILE-IRON COMPACT FITTINGS FOR WATER SERVICE. FITTINGS SHALL BE CEMENT LINED WITH ASPHALTIC MATERIAL SEAL COATING MEETING THE REQUIREMENTS OF ANSI/AWWA C104/A21.4 CURRENT SPECIFICATIONS FOR CEMENT-MORTAR LINING FOR DUCTILE-IRON PIPE AND FITTINGS FOR WATER OR EPOXY COATED MEETING THE REQUIREMENTS OF ANSI/AWWA C116/A21.16 FOR PROTECTIVE FUSION-BONDED EPOXY COATINGS FOR THE INTERIOR AND EXTERIOR SURFACES OF DUCTILE-IRON AND GRAY-IRON FITTINGS FOR WATER SUPPLY SERVICE. FITTINGS SHALL BE 350 PSI PRESSURE RATED WITH MECHANICAL JOINTS AND RETAINING GLANDS. SPLIT RETAINERS ARE NOT ALLOWED.
- B. CONCRETE THRUST BLOCKS ARE REQUIRED AT ALL BENDS, TEES, CAPS OR PLUGS. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 2500 PSI (MINIMUM) AT 28 DAYS.
- C. MECHANICAL JOINTS FOR ALL FITTINGS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C111/A21.11 CURRENT SPECIFICATIONS FOR RUBBER-GASKET JOINTS FOR DUCTILE-IRON PRESSURE PIPE AND FITTINGS.
- D. ALL MECHANICAL JOINTS, FITTINGS, GLANDS AND BOLTS SHALL BE COATED WITH RUBBERIZED UNDERCOATING AND ENCASED WITH LOW DENSITY POLYETHYLENE FILM WITH A MINIMUM THICKNESS OF 8 MIL AND SECURED WITH TAPE. POLYETHYLENE WRAP SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C105/A21.5 CURRENT SPECIFICATIONS FOR POLYETHYLENE ENCASEMENT FOR DUCTILE-IRON PIPE SYSTEMS. ALL BOLTS SHALL BE STAINLESS STEEL.
- E. ALL INSTALLATION OF SERVICE FITTINGS (IE. "T"s OR VALVES) ARE TO BE INSTALLED WITH CLASS 54 DUCTILE IRON PIPE EXTENDING 3" EITHER SIDE OF FITTING OR GATE WELL CONNECTED BY SOLID SLEEVES TO EXISTING WATER MAIN.

7. CONSTRUCTION

- A. THE WATER MAIN SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF FIVE FEET (5.0'), MEASURED FROM THE PAVEMENT CENTERLINE ELEVATION OR THE EXISTING GROUND, WHICHEVER IS LOWER, TO THE TOP OF PIPE. GENERALLY, THE MAXIMUM DEPTH OF COVER SHALL NOT EXCEED SEVEN FEET (7') FROM FINAL FINISH GRADE. A HORIZONTAL SEPARATION OF TEN FEET (10') (MINIMUM) MUST BE MAINTAINED BETWEEN THE WATER MAIN, SANITARY SEWER, AND STORM SEWER.
- B. A MINIMUM VERTICAL CLEARANCE OF ONE AND ONE-HALF FEET (1-1/2') MUST BE MAINTAINED BETWEEN THE WATER MAIN AND ANY UTILITIES. ADJUSTMENTS TO THE WATER MAIN DEPTH IN ORDER TO OBTAIN THE DESIRED CLEARANCES MUST BE ACCOMPLISHED WITH VERTICAL BENDS, THRUST BLOCKS AND ANCHORAGES. A VERTICAL CLEARANCE OF FIVE FEET (5.0') (MINIMUM) MUST BE MAINTAINED BELOW THE MASTER PLAN DEPTH OF DITCHES, DRAINS AND OPEN WATER COURSES. A GATE VALVE AND WELL SHALL BE CONSTRUCTED ON EACH SIDE OF A DRAIN OR OPEN WATER COURSE CROSSING.
- C. DEFLECTION OF PIPE JOINTS TO OBTAIN THE DESIRED CLEARANCES OR ALIGNMENT SHALL ONLY BE ACCOMPLISHED WITH THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT APPROVAL. THE MAXIMUM ALLOWABLE DEFLECTION (FOR 1 FULL LENGTH OF PIPE) IS FOURTEEN INCHES (14") FOR 4" THROUGH 12" PIPE AND EIGHT INCHES (8") FOR 16" AND 24" PIPE.
- D. THE CONTRACTOR SHALL SUPPLY AND PLACE A PLUG OR CAP OVER THE END OF THE PIPE AT THE END OF EACH WORK DAY.
- E. VERTICAL TOLERANCES FOR HYDRANTS AND VALVES SHALL BE:
 HYDRANTS (ANY LOCATION): [-0.00] TO + [0.25] FEET
 GATE WELL NOT IN R.O.W.: [-0.25] TO + [0.25] FEET
 GATE WELL IN R.O.W.: [-0.00] TO + [0.30] FEET
- F. IN NEW DEVELOPMENTS, WATER MAIN SHALL NOT BE INSTALLED UNTIL ROUGH GRADING IS COMPLETED TO WITHIN TWELVE INCHES (12") OF PROPOSED FINISH GRADE.

8. CONNECTION TO EXISTING SYSTEM

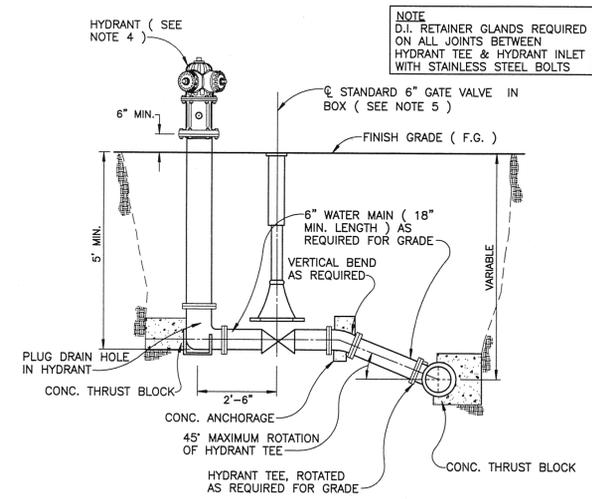
- A. A ONE INCH (1") CORPORATION SHALL BE INSTALLED, FOR TESTING PURPOSES, IN ALL STUBS AND POINTS OF CONNECTION TO EXISTING MAINS. UPON SUCCESSFUL COMPLETION OF THE TESTS AND WITH THE APPROVAL OF THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT, THE CONTRACTOR SHALL REMOVE THE TESTING CORPORATION AND INSTALL PLUGS.
- B. THE MAXIMUM PERMISSIBLE LEAKAGE, DURING HYDROSTATIC TESTING IN ACCORDANCE WITH THE APPROPRIATE AWWA STANDARDS, SHALL NOT EXCEED 0.16 GALLONS 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 CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT RESERVES THE RIGHT TO TEST SHORTER LENGTHS. THE CONTRACTOR IS TO SUPPLY ALL TESTING EQUIPMENT AND PERFORM THE TEST. THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT WILL PROVIDE THE MEASURING DEVICE. THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT WILL WITNESS THE TEST.
- C. A DOUBLE CHECK VALVE ASSEMBLY, FOR BACKFLOW PREVENTION, SHALL BE UTILIZED ON ALL TEMPORARY LINES USED TO FILL AND FLUSH THE NEWLY INSTALLED MAIN. THE DOUBLE CHECK VALVE ASSEMBLY SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C510 CURRENT SPECIFICATIONS FOR DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY.
- D. ALL WATER MAINS SHALL BE DISINFECTED ACCORDING TO THE REQUIREMENTS OF ANSI/AWWA C651 CURRENT SPECIFICATIONS FOR DISINFECTING WATER MAINS.
- E. ALL WATER USED FOR FLUSHING NEW WATER MAINS SHALL BE METERED AND PAID FOR BY THE CONTRACTOR. ALL WATER USED FOR FLUSHING NEW WATER MAINS MAY BE OBTAINED FROM THE LOCAL WATER SUPPLY. THE CONTRACTOR SHALL SECURE WRITTEN PERMISSION AND/OR PERMIT FROM THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT FOR WATER USED. FLUSHING OPERATIONS MUST BE ADMINISTERED UNDER THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT SUPERVISION. STANDARD HYDRANT WRENCHES SHALL BE USED FOR OPENING AND CLOSING THE HYDRANT. PIPE WRENCHES SHALL NOT BE USED TO OPEN OR CLOSE HYDRANTS. USE OF ANY HYDRANT SHALL INCLUDE THE REQUIREMENT THAT EACH HYDRANT SO USED BE COMPLETELY PUMPED DRY AFTER EACH USE.
- F. CONNECTIONS TO THE EXISTING WATER SYSTEM SHALL NOT BE MADE UNTIL THE NEW MAIN HAS BEEN SUCCESSFULLY PRESSURE TESTED AND HAS PASSED BACTERIOLOGICAL TESTING IN ACCORDANCE WITH CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT STANDARDS AND A COPY OF BOTH RESULTS ARE SUBMITTED TO THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. FINAL CONNECTIONS SHALL BE COORDINATED WITH THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT.
- G. AFTER CONNECTION IS MADE, THE CONTRACTOR WILL FLUSH THE WATER LINES AT THE END POINT OF THE NEW INSTALLATION TO THE MINIMUM FLOW RATE EQUAL TO THE TOTAL WATER REQUIRED (WITH HOSE DEMAND) OR THE RATE SPECIFIED BY SYSTEM DESIGN, WHICH EVER IS GREATER. THE CONTRACTOR IS RESPONSIBLE FOR THE COST AND DRAINAGE REQUIRED TO FULFILL THE FLUSHING PROCESS. THE CONTRACTOR SHALL NOT FLUSH THE WATER MAIN WITHOUT TOWNSHIP SUPERVISION.
- H. BEFORE ACCEPTANCE A FINAL REVIEW MUST BE MADE BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT AND TOWNSHIP ENGINEER.

9. PROJECT BONDS, INSURANCE, AND REGISTRATION

- A. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL BE REGISTERED AT THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT FOR THE YEAR THAT THE WORK IS BEING PERFORMED.
- B. PRIOR TO THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL PROVIDE CONTRACTUAL LIABILITY INSURANCE TO THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. THE INSURANCE SHALL BE MAINTAINED THROUGHOUT THE TERM OF THE PROJECT.
- C. A PERFORMANCE BOND MUST BE PROVIDED TO THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT PRIOR TO THE PRE-CONSTRUCTION MEETING. THE BOND AMOUNT SHALL BE ONE HUNDRED PERCENT (100%) OF THE PROPOSED IMPROVEMENTS THAT THE TOWNSHIP INSPECTS.
- D. THE CONTRACTOR SHALL PROVIDE A TWO (2) YEAR MAINTENANCE AND GUARANTEE PERFORMANCE, LABOR, AND MATERIAL BOND TO THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT FROM A SURETY LICENSED IN THE STATE OF MICHIGAN, DATED FROM THE TIME OF ACCEPTANCE BY THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT, FOR 100% OF THE CONSTRUCTION COSTS.

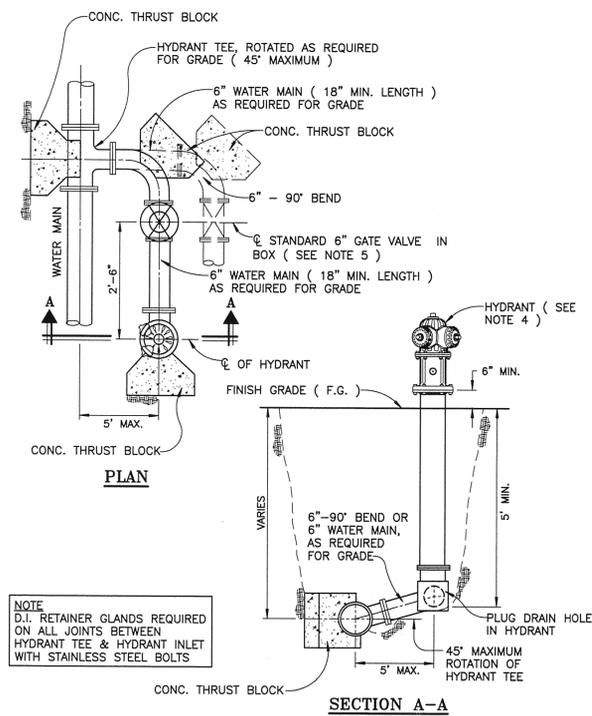
10. WATER SERVICES

- F. ALL WATER SERVICE TRANSFERS SHALL INCLUDE NEW COPPER TUBING, TYPE "K", CORPORATION STOPS, CURB STOP VALVES, SERVICE BOXES, AND UNIONS AS REQUIRED.
- G. ALL WATER SERVICE REPLACEMENTS SHALL INCLUDE NEW COPPER TUBING, CORPORATION STOPS, CURB STOP VALVES, SERVICE BOXES AND UNIONS AS REQUIRED. SERVICE REPLACEMENTS SHALL BE FROM THE WATER MAIN TO A CONNECTION POINT ONE FOOT (1') BEYOND THE EXISTING CURB STOP VALVE. SEE TYPICAL WATER SERVICE REPLACEMENT DETAIL.
- H. UNIONS FOR WATER SERVICE TRANSFERS SHALL BE MUELLER H-15400 STRAIGHT THREE PART UNION WITH COPPER FLARE NUT (BOTH ENDS). UNIONS SHALL NOT BE INSTALLED UNDER EXISTING OR PROPOSED ROADWAY PAVEMENT.
- I. WATER SERVICES SHALL BE COPPER TYPE "K" FOR SERVICES UP TO 2". FOR SERVICES LARGER THAN 2", DUCTILE IRON CLASS 54 SHALL BE USED IN EVEN INCREMENTS. CONTRACTOR SHALL MATCH EXISTING WATER SERVICE SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- J. CORPORATION STOPS SHALL BE MUELLER H-15000 GROUND KEY CORPORATION VALVE WITH AWWA TAPER (MUELLER "CC") THREAD AND COPPER FLARE STRAIGHT CONNECTION OUTLET. A BRONZE DOUBLE STRAP SADDLE IS REQUIRED FOR ONE AND ONE HALF INCH (1-1/2") AND TWO INCH (2") WATER SERVICES. WHEN TAPPING DUCTILE IRON PIPE BRONZE DOUBLE STRAP SADDLES SHALL BE MUELLER BR-2-S SERIES WITH AWWA TAPER (MUELLER "CC") THREAD. FOR PVC PIPE A MUELLER SS SERIES STAINLESS SERVICE SADDLE IS REQUIRED. FOR ALL HDPE PIPE AN ISCO FRATEC VA SERVICE SADDLE IS REQUIRED.
- K. CURB STOP VALVES SHALL BE MUELLER H-15154 MARK II ORISEAL CURB VALVE WITH COPPER FLARE NUT (BOTH ENDS), QUARTER TURN CHECK AND MINNEAPOLIS THREAD TOP. CURB BOX SHALL BE MUELLER H-10300-08 SERIES EXTENSION TYPE CURB BOX WITH MINNEAPOLIS PATTERN BASE AND LID WITH PLUG FOR THREE QUARTER INCH (3/4") THROUGH TWO INCH (2") CURB STOP VALVES.
- L. CURB STOPS SHALL ONLY BE INSTALLED IN SIDEWALKS, DRIVES, OR PAVEMENT WITH THE WRITTEN AUTHORIZATION OF THE CHARTER TOWNSHIP OF CHESTERFIELD WATER DEPARTMENT. ADDITIONAL COPPER TUBING AND FITTINGS SHALL BE USED AS REQUIRED TO INSTALL CURB STOPS IN GREEN BELT AREA.
- M. ALL ABANDONED SERVICES MUST BE CAPPED AT THE MAIN.



"T" HYDRANT CONNECTION

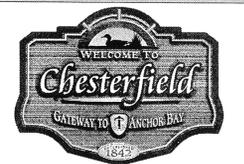
(TO BE INSTALLED ONLY WITH WRITTEN APPROVAL OF THE COMMUNITY)
NOT TO SCALE



"L" HYDRANT CONNECTION

NOT TO SCALE

Anderson, Eckstein and Westrick, Inc. logo and contact information:
 51301 Schoenherr Road
 Shelby Township
 Michigan 48315
 Phone 586 726 1234
 Fax 586 726 8780
 www.aewinc.com



DATE	SUBMITTALS/REVISIONS
DRAWN BY: MJS	CHECKED BY: AAP
DATE: SEPTEMBER 2010	

G:\COMPUT\CHSTRFLD\STD_DET\NEW DETAILS-PRELIMINARY\WATER_1.DWG
 Model: 9/1/2010 10:44:49 AM

Professional Engineer seal for Gordon B. Wilson, No. 34055, State of Michigan.
 Signature of Gordon B. Wilson, P.E. No. 34055.

WATER DEPARTMENT
 APPROVED BY: Joseph J. Gately, Director
 DATE: 9/2/2010

CHARTER TOWNSHIP OF CHESTERFIELD
STANDARD WATER MAIN DETAILS (1 OF 2)

SHEET NO. **W 1**