

- FIRE HYDRANTS SHALL BE FROM THE FOLLOWING LIST, AS APPROVED BY THE CITY:**
- MUELLER CENTURION FIRE HYDRANT, OPT-004 (5 1/4" BARREL) WITH MUELLER VALVE HARDWARE AND AUXILIARY VALVE 6" GATE VALVE NO. 2360-23-9020 MODIFIED WEDGE RESILIENT SEAT
 - WATEROUS WB-67-250 HYDRANT (5 1/4" PACER) WITH SERIES 2500-1 RESILIENT WEDGE GATE VALVE
- PROVIDE CLASS SI CONCRETE BASE AND BLOCKING AGAINST UNDISTURBED EARTH
 - DRAIN SUMP TO BE 3/4 CUBIC YARD OF 3/4" WASHED STONE
 - CONCRETE SUPPORT
 - CONCRETE BLOCK OR BRICK SUPPORT
 - PIPE AS REQUIRED TO MAINTAIN 24" SEPARATION AS SHOWN (DIRECT MECHANICAL JOINT CONNECTION IF APPROVED BY CITY)
 - RUBBER VALVE BOX STABILIZER
 - USE "CORTEN" STEEL TIE RODS BETWEEN AUXILIARY VALVE AND WATER MAIN (STAINLESS STEEL MAY BE REQUIRED BY THE CITY ENGINEER). ANY DISTANCE GREATER THAN 30" SHALL BE RODDED TO MEGA-LUG FLANGE. NO COUPLINGS ARE PERMITTED IN RODS.
 - CONCRETE BLOCKING CAST IN PLACE 3000 P.S.I.
 - 4 1/2" PORT TO FACE PAVEMENT OR AS DIRECTED BY CITY ENGINEER
 - ALL NEWLY INSTALLED HYDRANTS MUST BE TOP COATED WITH RUST-OLEUM FIRE HYDRANT ENAMEL (COLOR = FIRE HYDRANT RED)
 - MIN. 48" BETWEEN HYDRANT AND ANY VERTICAL OBSTRUCTIONS.
 - MIN. 72" BETWEEN HYDRANT AND ANY LANDSCAPING WITH A MATURE HEIGHT GREATER THAN 12".
 - ALL VALVE AND HYDRANT HARDWARE MUST BE STAINLESS STEEL INCLUDING NUTS, BOLTS, AND WASHERS.

Approved: City Engineer
Victor C. Ramirez, P.E.
 Victor C. Ramirez, P.E.
 Director of Engineering and Building

Drawing Name: **FIRE HYDRANT**

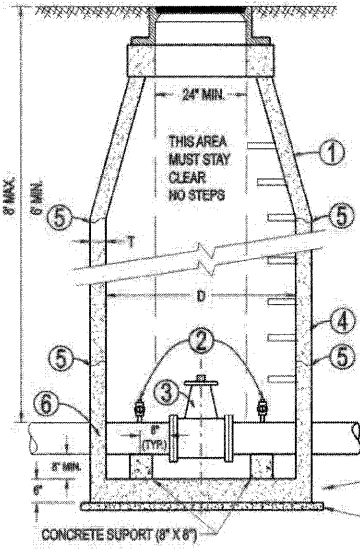
Drawing Number: **UW-06**

Date: 11/2/2007

Drawn: EM
Checked: JN

CRYSTAL LAKE ILLINOIS Engineering Division

| DIAMETER OF WATER MAIN | D | T |
|------------------------|-------|----|
| 8 INCHES AND OVER | 5 FT. | 5' |



- CONCENTRIC CONES REQUIRED
 - 1" (PREFERRED, 3/4" MIN.) MUELLER, A.Y. McDONALD, OR FORD CORPORATION STOP EACH SIDE OF VALVE MUST BE A COMPRESSION FITTING.
 - MUELLER 2360-23-9020 OR AMERICAN FLOW CONTROL 2500-1 RESILIENT SEAT GATE VALVE
 - PRECAST CONCRETE MANHOLE SECTIONS WITH A MINIMUM THICKNESS OF 5"
 - WATERTIGHT JOINT
 - GASKET-TYPE WATERSTOP COLLAR FOR ALL WATER MAIN CONNECTIONS
 - CAST IRON MANHOLE FRAME & COVER SIMILAR TO NEEHAH R-1712, OR EQUAL WITH STANDARD DUTY, NON-ROCKING TYPE LIDS WITH "CITY OF CRYSTAL LAKE WATER" CAST INTO LID. (NEEHAH R-2535, OR EQUAL MAY BE USED IN GRASSY AREAS)
- ADJUSTING RING HEIGHT NOT TO EXCEED 8" WITH A MAXIMUM OF THREE (3) ADJUSTMENT RINGS.

Approved: City Engineer
Victor C. Ramirez, P.E.
 Victor C. Ramirez, P.E.
 Director of Engineering and Building

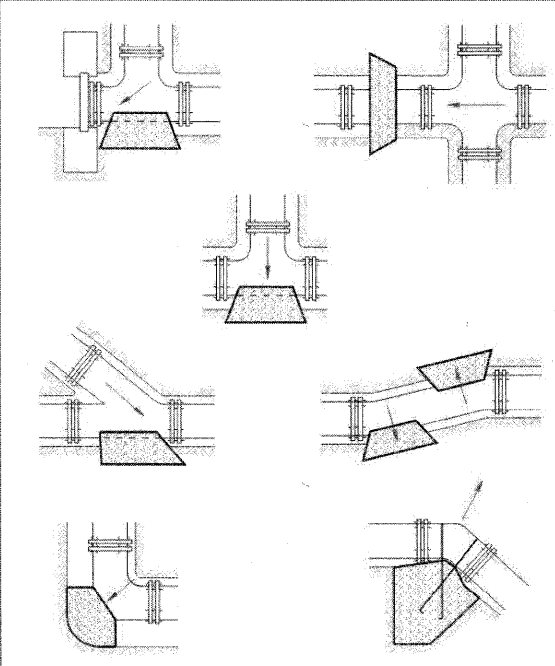
Drawing Name: **STANDARD VALVE VAULT**

Drawing Number: **UW-01**

Date: 4/15/2007

Drawn: EM
Checked: JN

CRYSTAL LAKE ILLINOIS Engineering Division



BEARING AREA (SQ. FT.)

| PIPE SIZE | TEE/PLUG | 90° | 45° | 21 1/2° | 11 1/4° |
|-----------|----------|-----|-----|---------|---------|
| 6 | 4 | 2 | 1 | 1 | 1 |
| 8 | 6 | 4 | 3 | 1 | 1 |
| 10 | 7 | 5 | 3 | 2 | 1 |
| 12 | 8 | 6 | 4 | 3 | 2 |
| 14 | 12 | 9 | 6 | 4 | 3 |
| 16 | 15 | 12 | 7 | 5 | 3 |
| 18 | 18 | 15 | 9 | 5 | 4 |
| 24 | 40 | 30 | 15 | 10 | 5 |

NOTES:

ALL BLOCKING SHALL BE POURED CLASS SI CONCRETE AGAINST UNDISTURBED EARTH.

ALL BENDS OR ELBOWS GREATER THAN 11 1/4" SHALL HAVE THRUST BLOCKING. FORM AS TO NOT COVER BOLTS.

IN LIEU OF THRUST BLOCKING "MEGA LUG" (EBA) JOINT RESTRAINTS OR APPROVED EQUAL CAN BE USED AS APPROVED BY THE ENGINEER.

Approved: City Engineer
Victor C. Ramirez, P.E.
 Victor C. Ramirez, P.E.
 Director of Engineering and Building

Drawing Name: **THRUST BLOCK INSTALLATION**

Drawing Number: **UW-03**

Date: 4/15/2007

Drawn: EM
Checked: JN

CRYSTAL LAKE ILLINOIS Engineering Division

WATER MAIN:

- Thrust blocking shall be installed on water mains at all bends, tees, elbows, etc. except as noted below.
- Thrust blocks not permitted with 45° vertical bends in water main □ these shall be restrained with □ Mega-Lug □ or equivalent.
- Water main shall be ductile iron pipe, Class 52 conforming to A.N.S.I. A-21.51 or AWWA C-151.
- Gaskets and cast iron fittings shall conform to A.N.S.I. A-21.11 or AWWA C-110 and C-111 water main shall be cement lined in conformance with A.N.S.I. A-21.4 or AWWA C-104.
- Minimum cover from finished grade to top of water main shall be six (6) feet; Maximum cover shall be eight (8) feet.
- Water Main Taps: an Illinois licensed plumber is required for any water main tap.
- All water mains shall be subjected to a pressure test and a separate leakage test at system pressure for 24 hours by the Contractor. Hydrostatic pressure test and leakage shall be based on 125 psi for two (2) hours. Water mains shall be chlorinated in accordance with the Standard Specifications.
- The Underground Contractor shall consider incidental to the contract any chlorination and testing of existing water main where connections to and conclusion of such mains is indicated on the drawings. In the event that the pressure attributable to defective original workmanship and material, then the Contractor shall be entitled to additional payment for correcting the deficiencies.

Approved: City Engineer
Victor C. Ramirez, P.E.
 Victor C. Ramirez, P.E.
 Director of Engineering and Building

Drawing Name: **STANDARD NOTES AND SPECIFICATIONS**

Drawing Number: **GE-02d**

Date: 6/1/2007

Drawn: EM
Checked: LZ

CRYSTAL LAKE ILLINOIS Engineering Division

- WATER MAIN GENERAL NOTES:**
- THRUST BLOCKING SHALL BE INSTALLED ON WATER MAINS AT ALL BENDS, TEES, ELBOWS, ETC. EXCEPT AS NOTED BELOW. MEGA-LUG FITTINGS OR CITY APPROVED EQUAL MAY BE USED IN LIEU OF CONCRETE THRUST BLOCKING.
 - THRUST BLOCKS NOT PERMITTED WITH ANY VERTICAL BENDS IN WATER MAIN; THESE SHALL BE RESTRAINED WITH MEGA-LUG FITTINGS OR CITY APPROVED EQUAL.
 - WATER MAIN SHALL BE DUCTILE IRON PIPE, CLASS 52 CONFORMING TO A.N.S.I. A-21.51 OR AWWA C-151.
 - GASKETS AND CAST IRON FITTINGS SHALL CONFORM TO A.N.S.I. A-21.11 OR AWWA C-110 AND C-111
 - WATER MAIN SHALL BE CEMENT LINED IN CONFORMANCE WITH A.N.S.I. A-21.4 OR AWWA C-104.
 - MINIMUM COVER FROM FINISHED GRADE TO TOP OF WATER MAIN SHALL BE SIX (6) FEET; MAXIMUM COVER SHALL BE EIGHT (8) FEET OR AS NOTED ON THE PLAN.
 - WATER MAIN TAPS: AN ILLINOIS LICENSED PLUMBER IS REQUIRED TO PERFORM ANY WATER MAIN TAPS.
 - ALL WATER MAINS SHALL BE SUBJECTED TO A PRESSURE TEST AND A SEPARATE LEAKAGE TEST AT SYSTEM PRESSURE FOR 24 HOURS BY THE CONTRACTOR. HYDROSTATIC PRESSURE TEST AND LEAKAGE SHALL BE BASED ON 125 PSI FOR TWO (2) HOURS. WATER MAINS SHALL BE CHLORINATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
 - THE UNDERGROUND CONTRACTOR SHALL CONSIDER INCIDENTAL TO THE CONTRACT ANY CHLORINATION AND TESTING OF EXISTING WATER MAIN WHERE CONNECTIONS TO AND CONCLUSION OF SUCH MAINS IS INDICATED ON THE DRAWINGS. IN THE EVENT THAT THE PRESSURE ATTRIBUTABLE TO DEFECTIVE ORIGINAL WORKMANSHIP AND MATERIAL, THEN THE CONTRACTOR SHALL BE ENTITLED TO ADDITIONAL PAYMENT FOR CORRECTING THE DEFICIENCIES.

- 11" MINIMUM WATER SERVICE SIZE.
- ALL CORPORATION STOPS AND CURB STOPS SHALL BE COMPRESSION FITTINGS.
- WATER MAIN WITHIN CASING SHALL USE FORD UNI-FLANGE SERIES 1450 WEDGE ACTION RESTRAINER, CASCADE CASING SPACERS, AND CASCADE CCES CASING END SEALS.
- ALL DUCTILE IRON WATER MAIN SHALL BE POLYETHYLENE ENCASED. POLYETHYLENE ENCASEMENT MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF AWWA C-105 FOR TUBE TYPE INSTALLATION AND 8 MIL NOMINAL FILM THICKNESSES

REVISIONS

| NAME | DATE |
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MCHENRY COUNTY DIVISION OF TRANSPORTATION
 WALKUP ROAD F.A.U. 0085

WATER MAIN DETAILS
 SHEET 1 OF 2

SCALE: N.T.S. DRAWN BY: RJS
 DATE: 04/15/11 CHECKED BY: MCD

TENG
 TENG & ASSOCIATES, INC.
 ENGINEERS-ARCHITECTS-PLANNERS
 802 N. MICHIGAN AVE. CHICAGO, IL 60611
 TELEPHONE: 312.644.6600

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