F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0085	00-00246-01-FP	MCHENRY	236	45
STA.		TO STA.		
FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT		

CONTRACT NO: 63266

UW-09

PRESSURE TEST	2-HOUR	24-HOUR
TOTAL LENGTH OF MAIN (FEET)		
PIPE DIAMETER (INCHES)		
TEST PRESSURE (PSI)		
TOTAL ALLOWABLE LEAKAGE IN ONE HOUR (GALLONS)		
TOTAL ALLOWABLE LEAKAGE IN TIME FRAME (GALLONS)		

PROJECT NAME: ____________

CONTRACTOR: ____________

WITNESS: ____________

LINE PRESSURIZED DATE: ________ TIME: ______ am / pm

LINE TESTED DATE: ________ TIME: ______ am / pm

CALCULATION FOR ACTUAL WATER VOLUME LOSS	2-HOUR	24-HOUR
SURFACE AREA OF SUPPLY VESSEL (FEET)		X
MAXIMUM ALLOWABLE DROP IN WATER LEVEL (FEET)		X
ACTUAL DROP IN WATER LEVEL (FEET)		X
GALLONS		X
INITIAL METER READING	X	
24TH HOUR METER READING	X	
TOTAL ALLOWABLE LEAKAGE (GALLONS)		
ACTUAL LEAKAGE (GALLONS)		
PASS OR FAIL		

LOCATION DIAGRAM:

INDICATE NORTH

NOTES:

Approved: City Engineer	Drawing Name	Drawing Number	
Victor C. Ramirez, P.E. Director of Engineering and Building	WATER MAIN TEST REPORT	UW-09 Date: 4/1/2007 Drawn EM Checked LZ	CRYSTAL LAKE ILLINOIS Engineering Division

L:\ENGINEERING AND BUILDING\ENGINEERING\DETAILS AND STANDARDS\

UW-08

CITY OF CRYSTAL LAKE WATER MAIN CHLORINATION SPECIFICATIONS:

1. DISINFECTION OF WATER MAINS SHALL BE DONE IN ACCORDANCE WITH THE STATE OF ILLINOIS STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION, CURRENT EDITION
2. THE CITY ENGINEERING DIVISION AND WATER DIVISION SHALL BE NOTIFIED 48 HOURS IN ADVANCE FOR SCHEDULING OF ANY TESTING CHLORINATING, FLUSHING, OR SAMPLING.
3. ONLY CITY WATER DIVISION PERSONNEL MAY OPERATE WATER VALVES ON LIVE MAINS.
4. A WATER VALVE JUMPER IS REQUIRED TO MAINTAIN PRESSURE ON THE CHLORINATED LINES DURING THE SAMPLING PROCEDURE FOR PROPER INSTALLATION AND REQUIREMENTS SEE THE STANDARD WATER VALVE JUMPER DETAIL.
5. WATER MAINS SHALL BE FLUSHED WITH A MINIMUM VELOCITY OF 2.5 FPS.
6. THE INITIAL CHLORINE CONCENTRATION SHALL BE 50 mg/L WITH A MINIMUM 24 HOUR RESIDUAL OF 25 mg/L.
7. THE METHOD OF CHLORINE APPLICATION SHALL BE APPROVED BY THE CITY:
   a. LIQUID CHLORINE W/CHLORINATING DEVICE WITH BACKFLOW PREVENTER.
   b. CHLORINE BEARING COMPOUNDS IN WATER.
   c. TABLET DISINFECTION.
8. ALL NEW VALVES AND HYDRANTS SHALL BE OPERATED WHILE LINE IS BEING CHLORINATED.
9. THE CITY ENGINEERING DIVISION SHALL DETERMINE LOCATION AND QUANTITY OF CORPORATION STOPS FOR FLUSHING AND CHLORINATING.
10. THE FINAL FLUSHING RESIDUAL IN THE NEW CHLORINATED LINES SHALL BE BETWEEN 0.2 AND 2.0 mg/L.
11. ALL WATER SAMPLES SHALL BE COLLECTED ON TWO (2) CONSECUTIVE DAYS AND PASS BACTERIOLOGICAL TEST RESULTS. IN THE EVENT THAT THE FIRST SET OF SAMPLES TAKEN TWO (2) CONSECUTIVE DAYS APART FAIL TO PASS, ANOTHER SET OF SAMPLES MAY BE TAKEN TWO (2) DAYS APART (PER STATE SPECS). IF THE SECOND SET FAILS TO PASS TESTING, THEN THE PROCEDURE MUST BE REPEATED WITH THE MAIN BEING RECHLORINATED, REFLUSHED, AND RESAMPLED.
12. STATE CERTIFIED LAB MUST BE USED FOR SAMPLES.

CHLORINE REQUIREMENTS TO PRODUCE 50 mg/L CONCENTRATION IN 100 FEET OF PIPE-BY DIAMETER

PIPE SIZE IN INCHES	100% CHLORINE, LB.	1% CHLORINE SOLUTION, GALS.
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88

NUMBER OF 5-GRAIN HYPOCHLORITE TABLETS REQUIRED FOR A DOSAGE OF 50mg/L PER LENGTH OF PIPE SECTION

	LENGTH OF PIPE SECTION IN FEET				
PIPE SIZE IN INCHES	UP TO 13	18	20	30	40
2	1	1	1	1	1
4	1	1	2	2	2
6	2	2	3	3	4
8	2	3	5	5	6
10	3	5	7	7	9
12	5	6	10	10	14

Approved: City Engineer	Drawing Name	Drawing Number	
Victor C. Ramirez, P.E. Director of Engineering and Building	CHLORINATION SPECIFICATIONS	UW-08 Date: 4/15/2007 Drawn EM Checked LZ	CRYSTAL LAKE ILLINOIS Engineering Division

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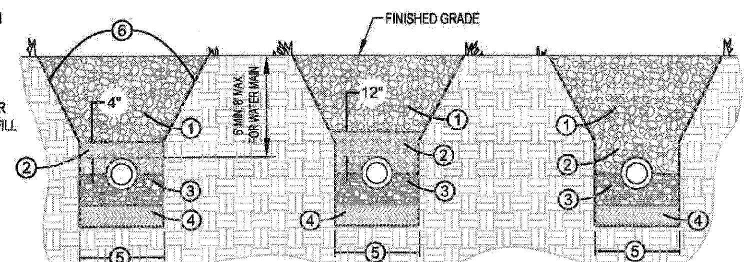
UG-03

1. TRENCH BACKFILL TO SUBGRADE AND WITHIN 2 FEET OF PROPOSED PAVEMENT, DRIVEWAY, CURB AND GUTTER OR SIDEWALK. TRENCH BACKFILL MATERIALS SHALL BE IDOT APPROVED GRADATION CA-6, GRADE 7, 8, OR 9 COMPACTED TO 90% OF MODIFIED PROCTOR DENSITY. IN NON-STRUCTURAL AREAS BACKFILL WITH APPROVED EXCAVATED MATERIALS.
2. INITIAL BACKFILL TO DEPTH AS INDICATED. MATERIAL SHALL BE IDOT APPROVED GRADATION CA-6, GRADE 7, 8, OR 9.
3. PIPE BEDDING SHALL BE FRACTURED GRANULAR MATERIAL IDOT GRADATION CA-7 OR CA-11 FROM 4 INCHES BELOW HORIZONTAL CENTER OF PIPE.
4. UNSUITABLE MATERIAL TO BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH COMPACTED SUITABLE MATERIAL.
5. TRENCH WIDTH:
   PIPE O.D. + 12 INCHES MINIMUM
   PIPE I.D. + 18 INCHES MAXIMUM
6. CONTRACTORS SHALL COMPLY WITH THE LATEST OSHA STANDARDS INCLUDING, BUT NOT LIMITED TO:
   SLOPING AND BENCHING TRENCHING WALLS;
   TRENCH SUPPORT AND SHORING SYSTEMS;
   SHIELD SYSTEMS; AND
   HAZARDOUS ATMOSPHERES.



SECTION A:
WATER MAIN (DIP*)
FORCE MAIN (DIP*)
SANITARY SEWER MAIN & SERVICES (ESVCP,DIP*)

SECTION B:
SANITARY SEWER & SERVICES (PVC)
STORM SEWER (PVC)
SANITARY MAIN & WATER MAIN (HDPE)

SECTION C:
STORM SEWER (RCP)

* NOTE: ALL DUCTILE IRON SHALL BE SUBJECT TO POLY WRAP PER CITY ENGINEER

Approved: City Engineer	Drawing Name	Drawing Number	
Victor C. Ramirez, P.E. Director of Engineering and Building	TYPICAL TRENCH CROSS SECTION	UG-03 Date: 6/1/2007 Drawn EM Checked LZ	CRYSTAL LAKE ILLINOIS Engineering Division

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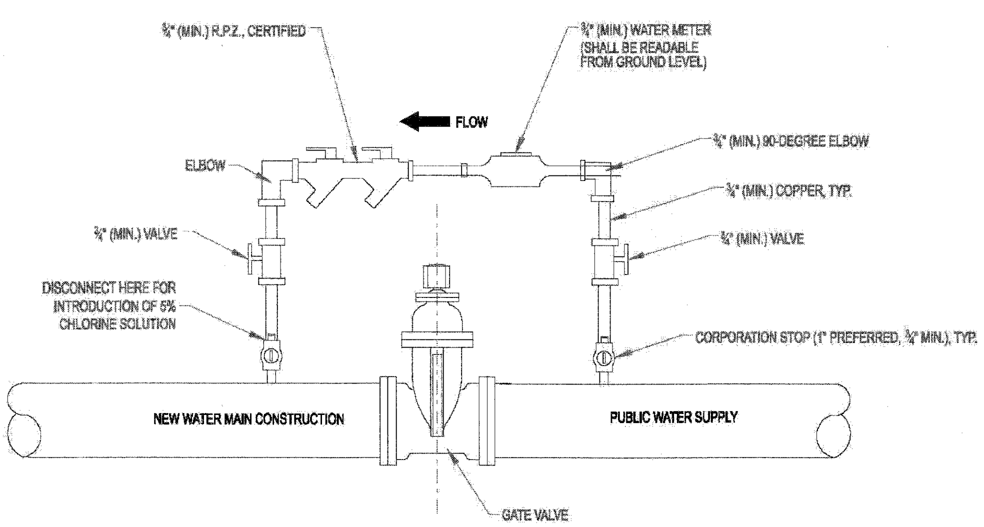
UW-05



NOTE:
VALVE JUMPER MUST BE ABOVE MANHOLE LID.

Approved: City Engineer	Drawing Name	Drawing Number	
Victor C. Ramirez, P.E. Director of Engineering and Building	WATER VALVE JUMPER	UW-05 Date: 4/15/2007 Drawn EM Checked JN	CRYSTAL LAKE ILLINOIS Engineering Division

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WATER MAIN GENTERAL NOTES (cont.):

12. THE 12" x 6" HYDRANT TEE SHOWN ON THE PLANS AT STA. 105+17.12 AND STA. 107+78.80 SHALL BE FLANGED AND WILL BE PAID FOR AS DUCTILE IRON WATER MAIN FITTING 12" X 6" TEE.
13. FIRE HYDRANT AUXILIARY VALVES AT STA. 105+17.12 AND STA. 107+78.80 SHALL BE CONSTRUCTED ADJACENT TO THE PROPOSED WATERMAIN AND SHALL NOT BE LOCATED WITHING THE LIMITS OF THE PROPOSED PCC SIDEWALK 6", SPECIAL.
14. THE 72" MAXIMUM DISTANCE BETWEEN THE FIRE HYDRANT AUXILIARY VALVE AS SHOWN ON THE FIRE HYDRANT DETAIL DRAWING UW-06 SHALL NOT APPLY FOR FIRE HYDRANTS AT STA. 105+17.12 AND STA. 107+78.80.

WATER MAIN CONSTRUCTION SEQUENCE:

1. CONSTRUCT WATER MAIN AT STA. 103+75 AND STA. 109+41.59 INCLUDING FIRE HYDRANT AUXILIARY VALVES AT STA. 105+17.12 AND STA. 107+78.80.
2. WATER MAIN CONSTRUCTED BETWEEN VALVES AT STA. 103+75 AND STA. 109+41.59 SHALL BE TESTED, DISINFECTED, AND APPROVED FOR OPERATION BEFORE CONNECTIONS TO THE EXISTING WATER MAIN.
3. CONNECT WATER MAIN CONSTRUCTED BETWEEN STA. 103+75 AND STA. 109+41.59 TO THE EXISTING WATER MAIN AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
4. REMOVE EXISTING WATER MAIN WHERE CONFLICTS EXIST BETWEEN THE PROPOSED FIRE HYDRANT LATERAL PIPES AND EXISTING WATER MAIN.
5. CONSTRUCT FIRE HYDRANTS AND 6" WATER MAIN BETWEEN FIRE HYDRANTS AND AUXILIARY VALVES AT STA. 105+17.12 AND STA. 107+78.80.

REVISIONS	
NAME	DATE

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

WATER MAIN DETAILS
II

SCALE: N.T.S. DRAWN BY: MZD
DATE: 08/17/09 CHECKED BY: MCD

TENG — TENG & ASSOCIATES, INC. ENGINEERS/ARCHITECTS/PLANNERS 205 N. MICHIGAN AVE. CHICAGO, IL 60601 TELEPHONE: 312/616-0000