## **GENERAL NOTES:**

- 1. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY AND WAYS, MEANS AND METHODS OF CONSTRUCTION.
- 2. THE CONTRACTOR SHALL COMPLY WITH APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND OBTAIN ALL NECESSARY LICENSES AND PERMITS.
- 3. THE GENERAL SPECIFICATION WHICH APPLY TO THE CONSTRUCTION WORK AS SHOWN ON THE ENGINEERING PLANS, ARE CONTAINED IN STANDARD SPECIFICATIONS, CONSTRUCTION DETAILS, AND/OR THE CITY'S ENGINEERING DEPARTMENT.
- 4. GENERAL GRADING

#### THE GRADING CONTRACTOR SHALL:

- A. MAINTAIN PROPER SITE DRAINAGE AT ALL TIMES DURING THE COURSE OF CONSTRUCTION, AND PREVENT STORM WATER FROM RUNNING INTO OR STANDING IN EXCAVATED AREAS.
- B. SPREAD AND COMPACT UNIFORMLY TO THE DEGREE SPECIFIED ALL EXCESS TRENCH SPOIL AFTER COMPLETION OF THE UNDERGROUND IMPROVEMENTS (EARTHWORK CONTRACTOR SHALL MAKE APPROPRIATE ADJUSTMENTS IN ROUGH GRADING TO ACCOMMODATE TRENCH SPOIL).
- C. PROVIDE WATER TO ADD TO DRY MATERIAL IN ORDER TO ADJUST THE MOISTURE CONTENT FOR THE PURPOSE OF ACHIEVING THE SPECIFIED COMPACTION.
- D. BACKFILL THE CURB AND GUTTER AFTER ITS CONSTRUCTION AND PRIOR TO THE PLACEMENT OF BASE COURSE MATERIAL.
- E. UNSUITABLE MATERIAL SHALL BE CONSIDERED AS MATERIAL WHICH IS NOT SUITABLE FOR THE SUPPORT OF PAVEMENT AND BUILDING CONSTRUCTION, AND IS ENCOUNTERED BELOW NORMAL TOPSOIL DEPTHS AND THE PROPOSED SUB-GRADE ELEVATION. THE DECISION TO REMOVE SAID MATERIAL, AND TO WHAT EXTENT, SHALL BE MADE BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.
- 5. GENERAL PAVING

#### THE PAVING CONTRACTOR SHALL:

- A. REPAIR ANY BASE COURSE AND BINDER COURSE FAILURES PRIOR TO THE INSTALLATION OF THE FINAL BITUMINOUS CONCRETE SURFACE
- B. SWEEP CLEAN THE BINDER COURSE PRIOR TO THE INSTALLATION OF THE FINAL BITUMINOUS CONCRETE SURFACE COURSE. EXCESSIVE CLEANING OF THE BINDER COURSE THAT MAY BE REQUIRED. AND IS NOT THE FAULT OF THE PAVING CONTRACTOR, SHALL BE PAID FOR ON A TIME AND MATERIAL BASIS BY PRIOR AGREEMENT WITH THE GENERAL CONTRACTOR.
- 6. INCIDENTAL TO CONSTRUCTION

PRELIMINARY PLANS

### THE CONTRACTOR SHALL:

A. ADHERE TO THE CRITERIA FOR THE SEPARATION BETWEEN WATER MAINS AND THE STORM AND SANITARY SEWER LINES AS DESCRIBE: WHEREVER A SANITARY/COMBINED SEWER CROSSES UNDER A WATER MAIN, THE MINIMUM VERTICAL DISTANCE FROM THE TOP OF THE SEWER TO THE BOTTOM OF THE WATER MAIN SHALL BE 18 INCHES. FURTHERMORE, A MINIMUM HORIZONTAL DISTANCE OF 10 FEET BETWEEN SANITARY/COMBINED SEWERS AND WATER MAIN SHALL BE MAINTAINED UNLESS: THE SEWER IS LAID IN A SEPARATE TRENCH, KEEPING A MINIMUM 18 INCH VERTICAL SEPARATION; OR THE SEWER IS LAID IN THE SAME TRENCH WITH THE WATER MAIN LOCATED AT THE OPPOSITE SIDE ON A BENCH OF UNDISTURBED EARTH. KEEPING A MINIMUM 18 INCH VERTICAL SEPARATION. IF EITHER THE VERTICAL OR HORIZONTAL DISTANCES DESCRIBED ABOVE CANNOT BE MAINTAINED, OR THE SEWER CROSSES ABOVE THE WATER MAIN, THE SEWER SHALL BE CONSTRUCTED TO WATER

### MAIN STANDARDS.

- B. BE RESPONSIBLE TO PLACE GRADE AND COORDINATE WITH OTHER CONTRACTORS, ALL UNDERGROUND UTILITY STRUCTURE FRAMES SUCH AS MANHOLES, CATCH BASINS, AND INLETS
- C. BE AWARE OF POTENTIAL CONFLICTS WITH EXISTING UTILITIES. THE CONTRACTOR SHALL EXCAVATE AROUND THE EXISTING UTILITIES TO DETERMINE THEIR EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE CONSTRUCTION OF THE PROPOSED UTILITY IMPROVEMENTS.
- D. PROVE POURED CONCRETE FILLETS CONFORMING TO THE SHAPE OF THE PIPE IN ALL SANITARY AND STORM MANHOLES, AND INLETS.
- E. BE RESPONSIBLE FOR MAINTAINING THE TOP OF ANY UTILITY TRENCH AT LEAST TWO (2) FEET AWAY FROM ANY EXISTING OR PROPOSED CURB OR PAVEMENT, IN THOSE INSTANCES WHERE THE TRENCH RUNS PARALLEL TO THE SAID CURB OR PAVEMENT.
- F. BE RESPONSIBLE FOR THE DE-WATERING OF UTILITY TRENCHES DURING CONSTRUCTION AND PROVIDING THE NECESSARY TRENCH BRACING THAT MAY BE REQUIRED IN ORDER TO ADHERE TO CURRENT SAFETY STANDARDS.
- G. REMOVE SOFT MATERIAL THAT MAY BE ENCOUNTERED AT THE PIPE INVERT ELEVATION TO A DEPTH OF AT LEAST ONE (1) FOOT BELOW THE BOTTOM OF THE PIPE, AND BACKFILL WITH COMPACTED BEDDING MATERIAL.
- H. REMOVE ALL EXCESS MATERIAL OFF THE SITE.
- I. COMPLETE ANY REQUIRING ADJUSTMENTS OR RECONSTRUCTION TO ANY EXISTING UTILITY STRUCTURES TO THE SATISFACTION OF THE UTILITY OWNER. ADJUSTMENTS AND/OR RECONSTRUCTION NOT CALLED FOR ON THE PLANS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. NO MORE THAN A TOTAL OF EIGHT (8) INCHES OF ADJUSTING RINGS SHALL BE ALLOWED.
- 7. TESTING AND FINAL ACCEPTANCE
- A. THE CONTRACTOR SHALL PROVIDE AS A MINIMUM, A FULLY LOADED SIX-WHEEL TRUCK FOR PROOF ROLLING THE PAVEMENT SUB-GRADE PRIOR TO THE PLACEMENT OF THE CURB AND GUTTER AND THE BASE MATERIAL.
- B. SPECIFIC COMPACTING TESTING MAY BE REQUIRED BY THE OWNER IN SELECTED FILL AREAS. THE CONTRACTOR SHALL BEAR THE COST OF COMPACTION TESTING AS WELL AS THE RESPONSIBILITY FOR THE NECESSARY CORRECTIONS.
- C. APPROVAL OF THE PAVEMENT SUB-GRADE BY THE OWNER'S GEOTECHNICAL ENGINEER SHALL BE REQUIRED PRIOR TO THE PLACEMENT OF THE PAVEMENT MATERIAL
- D. SANITARY SEWER MAINS AND SERVICES SHALL BE TESTED FOR LEAKAGE AND DEFLECTION IN ACCORDANCE WITH THE REQUIREMENT OF THE LOCAL JURISDICTIONAL AUTHORITIES PRIOR TO THEIR FINAL ACCEPTANCE. ALLOWABLE TESTING LIMITS SHALL BE AS DESCRIBED IN THE "GENERAL SPECIFICATIONS" UNLESS THE LOCAL REQUIREMENTS ARE MORE RESTRICTIVE. SERVICE STUBS MUST BE PROPERLY PLUGGED AND SEALED AND CLEARLY LOCATED AT THEIR TERMINATION POINTS PRIOR TO TESTING. ALL SEWER MAINS, SERVICE LINES, AND MANHOLES SHALL BE CLEAN AND FREE OF DEBRIS PRIOR TO THEIR FINAL ACCEPTANCE.
- E. WATER MAINS SHALL BE TESTED IN ACCORDANCE WITH THE LOCAL JURISDICTIONAL REQUIREMENTS PRIOR TO ITS FINAL ACCEPTANCE. THE PRESSURE AND LEAKAGE TESTS AND DISINFECTION OF THE MAINS SHALL BE DESCRIBED IN THE "GENERAL SPECIFICATIONS" UNLESS THE LOCAL REQUIREMENTS ARE MORE RESTRICTIVE. ALL VALVE VAULTS SHALL BE CLEAN AND FREE OF DEBRIS AND WATER PRIOR TO THEIR FINAL ACCEPTANCE. THE INDIVIDUAL SERVICE BOXES SHALL BE VISIBLE AND CLEARLY LOCATED PRIOR TO THEIR FINAL ACCEPTANCE.

- F. SPECIAL CONDITIONS ALTERNATE SOLUTIONS SHALL BE PRESENTED TO THE EPA WHEN EXTREME TOPOGRAPHICAL, GEOLOGICAL OR EXISTING STRUCTURAL CONDITIONS MAKE STRICT COMPLIANCE WITH THE ABOVE (D) OR (E) TECHNICALLY AND ECONOMICALLY IMPRACTICAL. ALTERNATE SOLUTIONS WILL BE APPROVED PROVIDED WATERTIGHT CONSTRUCTION STRUCTURALLY EQUIVALENT TO APPROVED WATER MAIN MATERIAL IS PROPOSED.
- G. WATER MAINS AND WATER SERVICE LINES SHALL BE PROTECTED AGAINST ENTRANCE OF HYDROCARBONS THROUGH DIFFUSION AND THROUGH ANY MATERIAL USED IN CONSTRUCTION OF THE LINE.
- 8. MINIMUM REQUIREMENT FOR MANHOLE STRUCTURES
- A. THE FRAME LIP SHALL BE CLEANED OF ALL MUD AND DEBRIS TO PROVIDE WATERTIGHT SEAL BETWEEN THE FRAME AND THE MANHOLE COVER
- B. MORTAR SHALL BE USED BETWEEN THE FRAME AND ADJUSTING RINGS AND BETWEEN ADJUSTING RINGS AND THE CONE SECTION IN ALL PAVED AREAS. E-Z STICK MAY BE USED IN LANDSCAPE AREAS.
- C. ALL STEPS MUST BE INSTALLED, ALIGNED AND CLEANED.
- D. ALL PINHOLES MUST BE MORTARED WITH BRUSH FINISH TO PROVIDE A WATERTIGHT SEAL.
- E. THE UPSTREAM AND DOWNSTREAM PIPE CAVITIES MUST BE FILLED WITH MORTAR AND SMOOTHED WITH A BRUSH FINISH.
- F. THE UPSTREAM AND DOWNSTREAM FLOW LINES (INVERTS) SHALL HAVE A SMOOTH TRANSITION FROM THE PIPE TO THE MANHOLE INVERT.
- G. ALL MANHOLE STRUCTURES SHALL BE FREE OF ANY TYPE OF INFILTRATION (WATER LEAKING INTO THE STRUCTURE).
- H. IF THERE IS AN INTERNAL DROP IN THE STRUCTURE THERE MUST BE A SMOOTH TRANSITION FROM THE PIPE TO THE INVERT (I.E. CHANNEL THE FLOW FROM THE PIPE TO THE MANHOLE INVERT).
- I. ALL MANHOLES SHALL BE CLEANED OF ANY ACCUMULATION OF SILT, DEBRIS, OR FOREIGN MATTER OF ANY KIND, AND SHALL BE FREE FROM SUCH ACCUMULATIONS AT THE TIME OF FINAL INSPECTION.
- 9. THE CONTRACTOR SHALL PRESERVE BENCHMARKS, REFERENCE POINTS AND STAKES.
- 10. IF THE CONTRACTOR IN THE COURSE OF WORK FINDS ANY DISCREPANCIES BETWEEN THE PLANS AND THE PHYSICAL CONDITIONS OF THE LOCALITY, OR ANY ERRORS OR OMISSIONS IN THE PLANS OR IN THE LAYOUT AS GIVEN BY THE ENGINEER, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER, IN WRITING AND THE ENGINEER WILL PROMPTLY VERIFY THE SAME. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
- 11. ASSURANCES OF COMPLIANCE WITH AMERICAN WITH DISABILITIES ACT (ADA) IS THE RESPONSIBILITY OF THE OWNER/DEVELOPER.
- 12. THE TRAFFIC CONTROL DEVICES MUST COMPLY WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND APPROVED BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT).

### MATERIALS SPECIFICATIONS FOR WATER DISTRIBUTION

#2016 (OSHA 1910.44- ANSI 53.1).

#### 1. PIPE MATERIAL FOR WATER MAINS IN ACCORDANCE WITH SECT. 15106

- A. WATER MAINS SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE. 4" THROUGH 12" SHALL BE PRESSURE CLASS 350. PIPE 16" AND GREATER SHALL BE PRESSURE CLASS 250. ALL WITH CEMENT MORTAR LINING AND SEAL COATING (AWWA-C104).
- B. THE JOINTS SHALL BE RUBBER GASKET PUSH-ON OR MECHANICAL (AWWA-C111). WATER MAIN FITTINGS SHALL BE OF DUCTILE IRON WITH CEMENT MORTAR LINING AND SEAL COATING WITH MECHANICAL JOINTS AND SHALL CONFORM TO
- C. ALL PIPE AND FITTINGS SHALL BE MANUFACTURED IN THE UNITED STATES UNLESS PRIOR APPROVAL IS RECEIVED FROM ILLINOIS AMERICAN.

## FIRE HYDRANTS

- FIRE HYDRANTS SHALL BE MUELLER "SUPER CENTURIAN". EACH HYDRANT SHALL HAVE A TRAFFIC FLANGE, BE COMPRESSION TYPE, OPEN WITH PRESSURE IN A COUNTERCLOCKWISE DIRECTION WITH RISING STEM, AND MEET OR EXCEED AWWA SPECIFICATION C-502.
- B. THREADS FOR FIRE HYDRANTS IN ALL PROPERTIES SHALL BE NATIONAL STANDARD. HYDRANT IS TO HAVE ONE 4 1/2" PUMPER PORT AND TWO 2 1/2"
- C. HYDRANT LENGTH SHALL BE SUPPLIED TO PROVIDE A MINIMUM OF 5.5 FEET OF COVER OVER THE TOP OF THE WATER MAIN. D. ALL FIRE HYDRANTS ARE TO BE SUPPLIED PAINTED ON THE EXTERIOR WITH TWO

COATS OF TNEMEC BRAND "TNEME-GLOSS" FEDERAL SAFETY YELLOW ENAMEL

- MECHANICAL JOINT (MJ) ANCHORING TEE'S SHALL BE USED FOR THE AUXILIARY CONNECTION TO THE WATER MAIN. THE AUXILIARY VALVE SHALL BE MECHANICAL JOINT, RESILIENT WEDGE TYPE AS MANUFACTURED BY MUELLER. F. CONNECTION OF THE AUXILIARY VALVE TO THE FIRE HYDRANT SHALL BE
- COMPLETED UTILIZING A 6" DIA. U.S. PIPE MJ ANCHORING (ONE ROTATING) COUPLING FOR LAYING DISTANCES 12" TO 18". FOR GREATER DISTANCES, USE CLASS 52 DUCTILE IRON PIPE WITH "MEGALUG" (AS MANUFACTURED BY EBBA IRONS SALES, INC.) RETAINER GLANDS.
- G. COVER FOR FIRE HYDRANT AUXILIARY VALVE SHALL BE PAINTED WITH INEMEC BRAND "INEME- GLOSS" FEDERAL SAFETY BLUE ENAMEL #2045 (OSHA 1910.144 -

## 3. VALVES - 16' AND SMALLER

- A. VALVES 16" AND SMALLER SHALL BE MECHANICAL JOINT FITTED RESILIENT WEDGE TYPE (COMPLETE WITH 304 STAINLESS STEEL NUTS AND BOLTS) AND SHALL CONFORM TO AWWA C-509-80. VALVES SHALL OPEN COUNTER CLOCKWISE HAVING NON-RISING STEM.
- B. VALVES SHALL BE RESILIENT WEDGE TYPE AS MANUFACTURED BY MUELLER.

## 4. VALVES - LARGER THAN 16"

- A. VALVE SHALL BE MANUFACTURED MUELLER. GATE VALVES SHALL BE EPOXY COATED IN ACCORDANCE WITH AWWA C515
- B. VALVES LARGER THAN 16" SHALL BE OF THE BUTTERFLY TYPE WITH RUBBER SEAT AND STAINLESS RING ON THE DISC EDGE TO MATE WITH THE RUBBER SEAT, SHALL OPEN COUNTERCLOCKWISE, SHALL MEET OR EXCEED AWWA C-504 OR AVWA C-505
- THE ENTIRE VALVE BOX ASSEMBLY SHALL BE BINGHAM & TAYLOR 5 1/4" SHAFT, TWO PIECE SCREW TYPE ADJUSTABE WITH VALVE HOLDER, SIZE 22.

## VAULTS

- A. VAULTS REQUIRED FOR PRESSURE TAPS, CHECK VALVES AND METER INSTALLATIONS, SHALL BE OF PRECAST CONCRETE UNIT CONSTRUCTION (ASTM-10. SERVICE LINES C478) WITH A CONCENTRIC CONE AND JOINTS SEALED WITH BUTYL-BASED MATERIAL. CONCRETE ADJUSTMENT RINGS SHALL BE USED IF ADJUSTMENT IS NECESSARY, ADJUSTMENT SECTIONS SHALL NOT EXCEED 12" VERTICALLY OVERALL. ALL JOINTS SHALL BE SEALED WITH RUBBER-NEC, OR APPROVED EQUAL BUTYL-BASED MATERIAL. CEMENT GROUTING OF THE SEAMS AND JOINTS SHALL NOT BE COMPLETED. BUTYL MATERIAL SHALL TOTAL A MINIMUM WIDTH OF 2" AS APPLIED IN TWO PIECES.
- A FLEXIBLE UNION BETWEEN THE PIPE AND MANHOLE WALL, MEETING ASTM C-923, CAST INTEGRALLY INTO THE MANHOLE WALL, SHALL BE PROVIDED FOR EACH PIPE CONNECTION TO THE MANHOLE. UNIONS SHALL BE INTERPACE LOCK JOINT FLEXIBLE MANHOLE SLEEVE, A-LOK MANHOLE PIPE CONNECTOR, LINK SEAL, OR APPROVED EQUAL, SUCH UNIONS SHALL BE SELECTED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS FOR THE SPECIFIC TYPE OF PIPE USED. MANHOLE CASTING SHALL BE NEENAH R-1772-B OR APPROVED EQUAL. LID SHALL BE NEENAH FOUNDRY TYPE B "SELF SEALING" WITH THE WORD "WATER" IMPRINTED. MANHOLE STEPS SHALL BE M-A INDUSTRIES PLASTIC COATED. MANHOLES ARE TO BE WATER-TIGHT.

## 7. PRESSURE TAPS

PRESSURE TAPS SHALL BE PERFORMED IN THE PRESENCE OF AN ILLINOIS-AMERICAN REPRESENTATIVE. THE OUTSIDE DIAMETER OF THE CUTTER MUST BE AT LEAST 1/4" LESS THAN THE NOMINAL SIZE OF THE TAP TO BE MADE. ILLINOIS-AMERICAN MUST BE PROVIDED WITH A MINIMUM OF 48 HOURS ADVANCE NOTICE (630/739-8831 ISRAEL SANDOVAL) SO THAT INSPECTION BY AN ILLINOIS-AMERICAN REPRESENTATIVE CAN BE SCHEDULED.

### 8. SIZING OF TAPS

### A. TAPS 2" AND LARGER ON

CLOW MODEL F-5205 TAPPING SLEEVE, OR APPROVED EQUAL, FOR SIZES 4 INCH THROUGH 16 INCH. ALL BOLTS SHALL BE STAINLESS STEEL (TYPE 304), OR HIGH STRENGTH, CORROSION RESISTANT, LOW ALLOY MATERIAL SUCH AS ARMCO CORTEN.

- b. ASBESTOS CEMENT PIPE CLOW MODEL F-5207 TAPPING SLEEVE, OR APPROVED EQUAL FOR SIZES 4 INCH THROUGH 12 INCH.
  - IN SPECIFYING TAPPING SLEEVES TO FIT ON THE "ROUGH BARREL" OR, THAT IS, THE FULL OUTSIDE DIAMETER PORTION OF THE PIPE, IT IS IMPORTANT THAT THE OUTSIDE DIAMETER OF THE PIPE BE MEASURED BEFORE ORDERING THE TAPPING SLEEVE. OUTSIDE DIAMETERS OF ASBESTOS PIPE CAN VARY SIGNIFICANTLY AND MAY NOT REMAIN CONSISTENT EVEN WITHIN THE SAME PRESSURE CLASS OF PIPE.
  - iii. ALL BOLTS SHALL BE STAINLESS STEEL (TYPE 304), OR HIGH STRENGTH, CORROSION RESISTANT LOW ALLOY MATERIAL SUCH AS ARMCO COR TEN.

## c. DUCTILE IRON PIPE

ROMAC INDUSTRIES, INC., STYLE "SST", STAINLESS STEEL TAPPING SLEEVE MAY USE THE SLEEVE INDICATED ABOVE FOR CAST IRON, OR APPROVED EQUAL TAPPING VALVES SHALL BE THE RESILIENT WEDGE TYPE AS MANUFACTURED BY

# TAPS TWO INCH AND LESS MAY BE MADE BY DIRECT TAP CONNECTION ON

CAST OR DUCTILE IRON MAINS. A TWO INCH DIRECT TAP ON A 6" CAST OR DUCTILE IRON MAIN IS NOT ALLOWED AND REQUIRES A SADDLE. ALL ASBESTOS CEMENT AND PVC MAIN TAPS REQUIRE SADDLES. SADDLES MUST BE OFF ALL BRONZE OR ALL STAINLESS STEEL CONSTRUCTION.

### STAINLESS STEEL SMALL SERVICE LINE APPURTENANCES

## CASCADE CS22

## A. CURB BOX

- a. CURB BOX SHALL BE MINNEAPOLIS PATTERN, 1-1/2 INCH INSIDE DIAMETER UPPER SECTION WITH A 6 FOOT FULLY EXTENDED LENGTH TAPPED 2 INCH AT THE BOTTOM AND SUPPLIED WITH A BUSHING FOR SMALLER CURB STOPS. THE LID SHALL BE A TWO-PIECE PLUG TYPE. WITH A BRASS SLEEVE IN THE CAP THREADED TO RECEIVE THE BRASS
- ACCEPTABLE UNITS ARE: MUELLER H-10302-72" WITH LID AND PLUG #89980 WITH AN H-10343 BUSHING

## B. CURB STOP

- a. FOR 1" SERVICE LINES THE CURB STOP SHALL BE: MUELLER MARK II ORISEAL H-15155
- b. FOR 1-1/2" AND 2" SERVICES THE CURB STOP SHALL BE: MUELLER MARK II ORISEAL.
- C. CORPORATION STOP

#### CORPORATION STOPS FOR 1" THROUGH 2" SHALL BE MUELLER 110 #15008 NOTE: THE CURB STOP AND CORPORATION STOP SHALL BE EQUIPPED WITH CONDUCTIVE COMPRESSION CONNECTIONS. FLARED OR SWEAT CONNECTIONS ARE NOT ALLOWED.

- A. ALL WATER SERVICE LINES SHALL BE TYPE K COPPER. ONE PIECE SHALL BE USED FROM THE MAIN TO THE CURB STOP AND ONE PIECE FROM THE CURB STOP TO THE METER SPREAD, FOR LENGTHS OF 100 FEET OR LESS. THE MINIMUM SIZE SHALL BE 1" FOR A SINGLE-FAMILY RESIDENCE. LINES FOR LARGER SERVICES SHALL BE IN ACCORD WITH AVWA MANUAL OF PRACTICE #22
- B. WHEN THE DISTANCE FROM THE CURB STOP TO THE METER IN THE BUILDING EXCEEDS THE LENGTH OF COPPER AVAILABLE, A CONNECTION MAY BE MADE USING A MUELLER THREE-PART UNION (MODEL H-15403) WITH CONDUCTIVE, COMPRESSION CONNECTIONS

## **INSTALLATION SPECIFICATIONS**

## PROTECTION OF WATER MAINS FROM SANITARY SEWERS AND STORM SEWERS

WATER MAINS SHALL BE PROTECTED FOR HORIZONTAL AND VERTICAL SEPARATION IN ACCORDANCE WITH THE TECHNICAL POLICY STATEMENTS OR THE REQUIREMENTS OF MWRDGC, WHICHEVER APPLIES. FURTHER, NO WATER MAIN SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE.

## DEPTH OF PIPE COVER

A MINIMUM DEPTH OF FIVE FEET SIX INCHES SHALL BE MAINTAINED FOR ALL WATER MAIN. THE FIVE FEET SIX INCHES DEPTH SHALL BE FROM PROPOSED FINAL GRADE ELEVATION TO THE CROWN OF THE MAIN. MAXIMUM DEPTH OF COVER SHALL BE SEVEN FEET

#### MINIMUM BEARING AREA IN SQUARE FEET BENDS (DEGREES)

PAPEK	11-7/4	22-1/2	45	30		UEAU	
SIZE						END	
6"	1.0	2.5	4.5	8.0	5.5	5.5	
8"	2.0	4.0	7,5	14.0	10.0	10.0	
10"	3.0	6.0	11.0	20.5	14.5	14.5	
12"	4.0	8.0	16.0	29.0	20.5	20.5	
BEARING	AREAS A	RE BASE	D ON SC	IL HAVIN	G AN AL	LOWABLE	
SAFE LATERAL BEARING OF ONE TON PER SQUARE FOOT.							
AREAS M	REAS MUST BE REVISED FOR SOILS WITH A LOWER BEARING						
CAPACITY	<b>′</b> .						

### CORROSION PROTECTION

ALL PIPE, FITTINGS, FIRE HYDRANT LEADS, SLEEVES AND VALVES ARE TO BE ENCASED IN POLYETHYLENE IN ACCORDANCE WITH AWWA C-105, UNLESS A SOIL SURVEY HAS BEEN PERFORMED AND NON-CORROSIVE SOILS ARE SHOWN TO EXIST.

## LAYING OF PIPE ON CURVES

5. THRUST RESTRAINT

- A. LONG RADIUS CURVES, EITHER HORIZONTAL OR VERTICAL, MAY BE LAID WITH STANDARD PIPE BY DEFLECTIONS AT THE JOINTS. IF THE PIPE IS SHOWN CURVED ON THE PLANS AND NO SPECIAL FITTINGS ARE SHOWN, IT MAY BE ASSUMED THAT THE CURVES CAN BE MADE BY DEFLECTION OF THE JOINTS WITH STANDARD LENGTHS OF PIPE. IN APPROVED SITUATIONS, SHORTER LENGTHS OF PIPE MAY BE USED TO AVOID THE USE OF FITTINGS.
- B. MAXIMUM DEFLECTIONS AT PIPE JOINTS AND LAYING RADIUS FOR VARIOUS PIPE LENGTHS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS BASED ON THE SIZE OF PIPE AND TYPE OF JOINT. WHEN RUBBER GASKETED PIPE IS LAID ON A CURVE, THE PIPE SHALL BE JOINTED IN A STRAIGHT ALIGNMENT, THEN DEFLECTED. TRENCHES SHALL BE MADE WIDER ON CURVES FOR THIS PURPOSE

### ALL FITTINGS, BENDS AND HYDRANTS SHALL BE PROPERLY BRACED BY MEANS OF RESTRAINED JOINT ASSEMBLIES AS SHOWN IN THE STANDARD DETAIL OR USING

- MECHANICAL JOINT FITTINGS, BENDS AND HYDRANTS SHALL BE PROPERLY ANCHORED BY MEANS OF "MEGALLIG" (AS MANUFACTURED BY EBBA IRON SALES INC.) RETAINER GLANDS. ALL SET SCREWS SHALL BE INSTALLED AND TIGHTENED IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS
- B. ALL PUSH-ON JOINT FITTINGS AND BENDS SHALL BE PROPERLY ANCHORED BY MEANS OF A U.S. PIPE FIELD LOK GASKET OR APPROVED EQUAL. C. ALL PUSH-ON OR MECHANICAL JOINT FITTINGS, BENDS, AND HYDRANTS SHALL BE PROPERLY ANCHORED BY MEANS OF A CONCRETE THRUST BLOCK AS OUTLINED IN THE STANDARD DETAILS: THE MINIMUM BEARING AREA
- SPECIFICATIONS TO BE UTILIZED ARE OUTLINED AS FOLLOWS: REACTION BLOCKING SHALL BE DESIGNED FOR A MINIMUM INTERNAL PIPE PRESSURE OF 300 PSI. THE BLOCKING SHALL BE KEPT CLEAR OF THE ENTIRE BELL CONFIGURATION OF ANY ADJACENT JOINT AND SHALL BE AT LEAST AS LARGE AS IS NECESSARY TO RESTRAIN THE FITTINGS FROM MOVEMENT. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT
- THE END OF 28 DAYS. FIRE HYDRANT SHALL BE POSITIVELY ANCHORED DIRECTLY TO THE TEE ON THE MAIN USING MECHANICAL JOINT ANCHORING FITTINGS, OR OTHER APPROVED RESTRAINING SYSTEM
- VALVES AT TEES AND CROSSES, WHERE REQUIRED, SHALL BE ANCHORED DIRECTLY TO THE FITTING USING CLOW (OR EQUAL) MECHANICAL JOINT ANCHORING FITTINGS, OR OTHER APPROVED RESTRAINING SYSTEM.

## BEDDING

- TYPE I BACKFILL IN ACCORDANCE WITH ANSI/AWWA C600-87 AS ILLUSTRATED IN THE STANDARD DETAIL SHALL BE USED UNLESS THE MAIN IS BEING LAID UNDER PAVEMENT OR WITHIN RIGHT-OF-WAY. IF SOIL CONDITIONS ARE ENCOUNTERED WHICH REQUIRE REMOVAL OF
- UNSUITABLE MATERIAL BELOW THE DEPTH OF THE STANDARD BEDDING, THE MATERIAL REMOVED SHALL BE REPLACED WITH GRANULAR MATERIAL OF THE GRADATION APPROVED BY ILLINOIS-AMERICAN.

## **TESTING AND DISINFECTION**

## PRESSURE TEST

PRESSURE TEST EQUAL TO 200 PSI FOR A PERIOD OF AT LEAST TWO HOURS. THE PRESSURE SHALL BE MAINTAINED AT 200 PSI FOR THE DURATION OF THE TEST. EACH SECTION OF THE MAIN TO BE TESTED, AS DETERMINED BY ILLINOIS-AMERICAN, SHALL BE SLOWLY FILLED WITH WATER TO THE SPECIFIED TEST PRESSURE UTILIZING A TEST PUMP CONNECTED TO THE MAIN IN A SATISFACTORY MANNER. THE TEST PUMP, PIPE CONNECTION AND ALL NECESSARY APPARATUS, INCLUDING GAUGES AND THE METERS, SHALL BE FURNISHED BY THE CONTRACTOR.

ALL NEWLY LAID WATER MAIN SHALL BE SUBJECTED TO HYDROSTATIC

B. BEFORE APPLYING THE SPECIFIED TEST PRESSURE, ALL AIR SHALL BE EXPELLED FROM THE MAIN UTILIZING FIRE HYDRANTS OR PRESSURE TAPS, IF NECESSARY, INSTALLED AT POINTS OF HIGHEST ELEVATION ALONG THE WATER MAIN INSTALLATION.

- C. CONNECTION TO ILLINOIS-AMERICAN'S WATER SYSTEM WILL NOT BE PERMITTED UNLESS THE INSTALLATION HAS BEEN CONSTRUCTED IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS AND HAS BEEN SATISFACTORILY PRESSURE TESTED IN THE PRESENCE OF AN ILLINOIS-AMERICAN DESIGNATED REPRESENTATIVE. DURING THE TEST, THE ENTIRE LENGTH OF MAIN BEING TESTED, ALONG WITH ALL APPURTENANCES, WILL BE CAREFULLY INSPECTED BY AN ILLINOIS-AMERICAN REPRESENTATIVE.
- D. ANY CRACKED OR DEFECTIVE PIPES, FITTINGS, VALVES OR HYDRANTS DISCOVERED AS A RESULT OF THIS PRESSURE TEST SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS EXPENSE WITH SOUND, NEW MATERIAL AND RETESTED UNTIL SATISFACTORY TO AN ILLINOIS-AMERICAN REPRESENTATIVE WHEN PRESSURE TESTING AGAINST AN EXISTING WATER MAIN VALVE AND SHOULD THE VALVE BE FOUND TO BE LEAKING OR FAIL DURING THE PRESSURE TEST. THE CONTRACTOR SHALL PROVIDE AND INSTALL A NEW VALVE AT THE LOCATION OF THE DEFECTIVE VALVE.

## LEAKAGE TEST

IN CONJUNCTION WITH THE PRESSURE TEST, A LEAKAGE TEST SHALL BE CONDUCTED TO DETERMINE THE QUANTITY OF WATER LOST BY LEAKAGE UNDER THE SPECIFIED TEST PRESSURE. THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR PER PIPELINE SHALL NOT BE GREATER THAN THAT DETERMINED BY THE FORMULA:

- L = ALLOWABLE LEAKAGE IN GALLONS
- PER HOUR N= NUMBER OF JOINTS FOR LENGTH OF
- PIPELINE TESTED D= NOMINAL DIAMETER OF THE PIPE IN
- P = AVERAGE TEST PRESSURE DURING THE LEAKAGE TEST IN POUNDS PER
- THE TEST WILL BE CONDUCTED AT AN AVERAGE PRESSURE OF NOT LESS THAN 200 PSI AT THE HIGH POINT OF THE MAIN AND FOR A PERIOD OF NOT LESS THAN TWO

SQUARE INCH GAUGE

## 3. DISINFECTION OF WATER

- A. THE SECTION OF MAIN TO BE DISINFECTED SHALL FIRST BE FLUSHED TO REMOVE ANY SOLIDS OR CONTAMINATED MATERIAL THAT MAY HAVE BECOME LODGED IN THE MAIN. ALL FLUSHING IS TO BE DONE UNDER CONTINUOUS SUPERVISION OF AN ILLINOIS-AMERICAN REPRESENTATIVE.
- B. NO VALVES OR FIRE HYDRANTS OR OTHER APPURTENANCES ARE TO BE PURGED OR FLUSHED UNLESS AN ILLINOIS-AMERICAN REPRESENTATIVE IS PRESENT. ILLINOIS-AMERICAN MUST BE PROVIDED WITH A MINIMUM OF 48 HOURS ADVANCE NOTICE (630/739-8849 TOM CHINSKE) SO THAT INSPECTION BY AN ILLINOIS-AMERICAN REPRESENTATIVE CAN BE SCHEDULED.
- C. ALL CHLORINATION, FLUSHING. AND TESTING IS TO BE DONE IN STRICT ACCORD WITH "STANDARD SPECIFICATIONS FOR WATER & SEWER MAIN CONSTRUCTION IN ILLINIOS", DIVISION IV, SECTION 41-2.14. ALL NEW MAINS SHALL BE CHLORINATED SO THAT THE INITIAL CHLORINE RESIDUAL OF NOT LESS THAN 25 MG/L AND THAT A CHLORINE RESIDUAL OF NOT LESS THAN 10 MG/L REMAINS IN THE WATER AFTER STANDING 24 HOURS IN THE PIPE. WATERMAIN DISINFECTION IS PER AWWA STANDARD C651. ALL CHLORINE CONCENTRATIONS LISTED ARE FREE CHLORINE. WATER TEST SAMPLES ARE TO BE COLLECTED ON TWO CONSECUTIVE DAYS AFTER CHLORINATION AND FINAL FLUSHING. THE FIRST SAMPLE IS TO BE COLLECTED 24 HOURS AFTER THE FINAL FLUSHING.

## **OPERATION OF WATER SYSTEM**

THE OPERATION OF MAIN VALVES AND FIRE HYDRANTS ON THE WATER SYSTEM IN SERVICE OFTEN RESULTS IN DISTURBANCE OF THE NATURAL SEDIMENTS AND MINERAL DEPOSITS IN MAINS, CAUSING PROBLEMS FOR ILLINOIS-AMERICAN'S CUSTOMERS. ILLINOIS-AMERICAN HAS A RESPONSIBILITY TO PROVIDE ITS CUSTOMERS THE HIGHEST LEVEL OF SERVICE POSSIBLE. THEREFORE, ILLINOIS-AMERICAN HAS ADOPTED A STRICT POLICY THAT NO ONE, OTHER THAN AN EMPLOYEE OF ILLINOIS-AMERICAN, UNLESS EXPRESSLY AUTHORIZED, IS TO OPERATE ANY VALVE, FIRE HYDRANT, OR OTHER APPURTENANCE OF WATER SYSTEM THAT IS IN SERVICE OR WHICH WILL AFFECT THE SYSTEM THAT IS IN SERVICE. THIS OPERATION IS TO BE PERFORMED BY AN EMPLOYEE OF ILLINOIS-AMERICAN OR UNDER HIS DIRECT SUPERVISION.

CHLORINE SHALL BE APPLIED IN LIQUID OR GAS FORM.

ILLINOIS-AMERICAN MUST BE PROVIDED WITH A MINIMUM OF 48 HOURS ADVANCE NOTICE (630/739-8831) SO THAT THE FILLING/FLUSHING OPERATIONS CAN BE SCHEDULED.

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**PROJECT TEAM** 

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### **ISSUE/REVISION RECORD**

DESCRIPTION 10-28-11 VILLAGE REVIEW 1-10-14 VILLAGE REVIEW 2-7-14 VILLAGE REVIEW 5-12-14 REV. PER NEW BLDG. 5-29-14 BUILDING PERMIT 7-11-14 VILLAGE REVIEW 9-5-14 PLAN COMMISSION

10-7-14 BUILDING PERMIT

10-23-14 VILLAGE REVIEW

**PROFESSIONAL SEAL** 



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**PROJECT NUMBER** 

20130893.0

SHEET TITLE GENERAL NOTES

SHEET NUMBER