DEPTH OF FILL OVER PIPE CLASS

2 FEET OR LESS V

BETWEEN 2 FEET AND 10 FEET III

BETWEEN 10 FEET AND 16 FEET IV

16 FEET AND GREATER V

2. REINFORCED ELLIPTICAL CONCRETE PIPE SHALL BE CLASS HE-III OR HE-IV AS SPECIFIED IN ASTM C-507.

DEPTH OF FILL OVER PIPE

3 FEET OR LESS

BETWEEN 3 FEET AND 8 FEET

HE-III

3. LIFT HOLES ARE NOT ALLOWED FOR PIPE LESS THAN 24 INCHES IN DIAMETER. A MAXIMUM OF TWO LIFT HOLES ARE ALLOWED FOR PIPE 24 INCHES IN DIAMETER OR LARGER. LIFT HOLES SHALL BE REPAIRED IN ACCORDANCE WITH THE MOST RECENT INDOT STANDARD SPECIFICATIONS.

4. FITTINGS AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE TYPE OF PIPE BEING USED.

5. THE OUTSIDE OF EACH PIPE SECTION SHALL BE LEGIBLY MARKED WITH THE DATE OF MANUFACTURE, CLASS OF PIPE, SPECIFICATION DESIGNATION, NAME OR TRADEMARK OR MANUFACTURE AND IDENTIFICATION OF PLANT/LOCATION.

6. PIPE SHALL BE FURNISHED WITH A BELL OR GROOVE ON ONE END OF A UNIT OF PIPE AND A SPIGOT OR TONGUE ON THE ADJACENT END OF THE ADJOINING PIPE. ALL JOINTS SHALL HAVE A GROOVE ON THE SPIGOT FOR PLACEMENT OF A RUBBER "O"—RING OR PROFILE GASKET IN ACCORDANCE WITH ASTM C—443. THE GASKET SHALL BE A CONTINUOUS RING WHICH FITS SNUGLY ONTO THE ANNULAR SPACE BETWEEN THE OVERLAPPING SURFACES OF THE ASSEMBLED PIPE JOINT.

STORM SEWER GENERAL NOTES

1. STORM SEWER PIPE OF OTHER MATERIAL OR MATERIAL NOT MEETING THESE SPECIFICATIONS SHALL REQUIRE THE PRIOR WRITTEN APPROVAL OF THE TOWN OF CICERO.

2. THE SMALLEST PERMISSIBLE STORM SEWER PIPE DIAMETER IS 12

3. DRAWINGS AND CALCULATIONS FOR RUNOFF, RETENTION AND DISCHARGE RATES SHALL BE PROVIDED TO THE HAMILTON COUNTY SURVEYOR'S OFFICE AND THE TOWN OF CICERO FOR DRAINAGE REVIEW BY THE AGENCY OF JURISDICTION. DRAWINGS AND CALCULATIONS SHALL BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

STORM/DRAINAGE GENERAL NOTES

1. CONSTRUCTION OF DRAINAGE SWALES SHALL COMPLY WITH THE DETAIL SHOWN ON THIS SHEET AND SHALL ONLY BE PERMITTED WHEN COMPLYING WITH THE FOLLOWING CRITERIA:

	<u>DITCH GRADE WITH</u>	<u>DITCH GRADE WITH</u>
<u> PE OF DEVELOPMENT</u>	UNDERDRAIN, %	<u>UNDERDRAIN, %</u>
RESIDENTIAL COMMERCIAL/INDUSTRIAL	0.3 TO 0.99 0.5 TO 0.99	1.0 AND GREATER 1.0 AND GREATER

2. MANHOLES SHALL BE INSTALLED AT DISTANCES NOT GREATER THAN 400 FEET.

3. CASTINGS WHICH DRAIN ROLL CURB AND GUTTER, TYPE I CURBING, SHALL BE NEENAH R-3501-TR OR R-3501-TL OR AS APPROVED BY THE TOWN OF CICERO. CATCH BASIN TYPE A OR INLET TYPE A REQUIRED. MANHOLES SHALL NOT BE USED TO DRAIN TYPE I CURBING.

4. CASTINGS WHICH DRAIN COMBINED CURB AND GUTTER, TYPE II
AND TYPE III CURBING, SHALL BE NEENAH R-3287-15 OR AS
APPROVED BY THE TOWN OF CICERO. CATCH BASIN TYPE B OR
INLET TYPE B REQUIRED. MANHOLES SHALL NOT BE USED TO
DRAIN TYPE II CURBING.

5. CASTING FOR INLETS WHICH DRAIN OPEN PAVEMENT AREAS WITHOUT CURBING SHALL BE NEENAH R-3405 OR AS APPROVED BY THE TOWN OF CICERO.

6. CASTINGS FOR MANHOLES WHICH DRAIN OPEN PAVEMENT AREAS
WITHOUT CURBING SHALL BE NEENAH R-2502 OR AS APPROVED
BY THE TOWN OF CICERO.

7. CASTINGS FOR USE ON INLETS OR MANHOLES WHICH DRAIN SWALES OR DRY BOTTOM DETENTION BASINS SHALL BE NEENAH R-4215-C OR AS APPROVED BY THE TOWN OF CICERO.

8. CASTINGS FOR MANHOLES WHICH DO NOT DRAIN SURFACE WATER SHALL BE NEENAH R-1772-B OR AS APPROVED BY THE TOWN OF CICERO. ALL COVERS SHALL BE STAMPED "STORM SEWER" WITH 2" RAISED LETTERS.

9. MANHOLES WHICH CONNECT CATCH BASINS/INLETS AND MAINLINE SEWER SHALL, AS A MINIMUM, BE LOCATED AT EACH STREET

INTERSECTION.

10. MAINLINE PIPE SHALL NOT CONNECT TO CATCH BASINS OR INLETS. CATCH BASINS IF REQUIRED SHALL ONLY BE USED IMMEDIATELY UPSTREAM OF MAINLINE MANHOLE CONNECTIONS. CONNECTIONS TO MAINLINE PIPE SHALL OCCUR AT A MANHOLE. MAINLINE PIPE IS PIPE DOWNSTREAM OF A SINGLE SET OF INLETS/CATCH BASINS OR ANY PIPE LARGER THAN OR EQUAL TO 15—INCH DIAMETER WHICH DRAINS ONE SWALE INLET. PIPE WHICH DRAINS A SWALE INLET MAY BE CONNECTED TO INLETS WHEN THE INVERT DEPTH IS NOT GRATER THAN THAT SHOWN ON INLET

DETAIL.

11. CONTRACTOR SHALL PERMANENTLY SECURE MANHOLE CASTING TO ECCENTRIC CONE OR PRECAST FLAT CAP BY THREE (3) EQUALLY SPACED 3/8" DIA. STAINLESS STEEL ALL—THREAD DOWEL RODS OF 3/8" DIA. HILTI EXPANSION ANCHOR. SIKA EPOXY OR THE TOWN OF CICERO APPROVED EQUAL, SHALL BE USED WITH EACH STAINLESS STEEL ALL—THREAD DOWEL ROD.

12. ALL OPEN GRATED CASTING ARE TO HAVE THE WORDS "DUMP NO WASTE DRAINS TO WATERWAY" ENGRAVED IN CASTING.

13. DRIVE CULVERTS SHALL HAVE A 12" MINIMUM DIAMETER.

CONCRETE PIPE SANITARY SEWER POLYVINYL CHLORIDE (P.V.C.) PIPE

1. P.V.C. PIPE DIAMETERS OF 4 INCHES THROUGH 15 INCHES SHALL MEET OR EXCEED ALL THE REQUIREMENTS OF ASTM D-3034, AND SHALL HAVE A CELL CLASSIFICATION OF 12454-B, 12454-C, 12364-C OR 13364-B. REFERENCE SHOULD BE MADE TO ASTM D-1784 FOR A SUMMARIZATION OF CELL CLASS PROPERTIES

D-1784 FOR A SUMMARIZATION OF CELL CLASS PROPERTIES.
P.V.C. PIPE DIAMETERS GREATER THAN 15 INCHES SHALL MEET
OR EXCEED ALL REQUIREMENTS OF ASTM F-679, AND SHALL
HAVE A MINIMUM CELL CLASSIFICATION OF 12454-C OR 12364-C.
2. WHEN DEPTH OF SOIL COVER OVER THE PIPE IS LESS THAN 12
FEET, THE MINIMUM WALL THICKNESS OF P.V.C. PIPE, 6 INCHES
THROUGH 15 INCHES IN DIAMETER, SHALL CONFORM TO SDR-35,

THROUGH 15 INCHES IN DIAMETER, SHALL CONFORM TO SDR—35, TYPE PSM, AS SPECIFIED IN ASTM D—3034 (SEE NOTE 5 FOR FITTINGS). WHEN DEPTH OF SOIL COVER OF THE PIPE IS 12 FEET OR GREATER, THE MINIMUM WALL THICKNESS OF P.V.C. PIPE, 6 INCHES THROUGH 15 INCHES IN DIAMETER, SHALL CONFORM TO SDR—26, TYPE PSM, AS SPECIFIED IN ASTM D—3034. THE MINIMUM WALL THICKNESS FOR P.V.C. PIPE GREATER THAN 15 INCHES SHALL CONFORM TO T—1 OR T—2, AS SPECIFIED IN ASTM F—679. P.V.C SDR—35 PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 46 POUNDS PER SQUARE INCH FOR EACH DIAMETER WHEN MEASURED AT FIVE PERCENT DEFLECTION AND TESTED IN ACCORDANCE WITH ASTM D—2412. P.V.C. SDR—26 PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 POUNDS PER SQUARE INCH FOR EACH DIAMETER WHEN MEASURED AT FIVE PERCENT DEFLECTION AND TESTED IN ACCORDANCE WITH ASTM

J-2412.

3. THE ASSEMBLY OF JOINTS SHALL BE IN ACCORDANCE WITH PIPE MANUFACTURERS RECOMMENDATIONS AND ASTM D-3212. SOLVENT CEMENT JOINTS SHALL NOT BE ALLOWED FOR MAINLINE PIPE.

4. PIPE FITTINGS SHALL BE SDR-26 MANUFACTURED FITTINGS MADE OF P.V.C. PLASTIC HAVING A CELL CLASSIFICATION OF 12454-B, 12454-C OR 13343-C, AS DEFINED IN ASTM D-1784. SADDLE CONNECTIONS SHALL NOT BE ALLOWED FOR NEW CONSTRUCTION. LATERAL CONNECTIONS SHALL OCCUR AT SDR-26 WYES.

5. IN ACCORDANCE WITH ASTM D-3034, THE OUTSIDE OF EACH PIPE SECTION SHALL BE LEGIBLY MARKED WITH THE DATE OF MANUFACTURE, CLASS OF PIPE, SPECIFICATION DESIGNATION, NAME OR TRADEMARK OF MANUFACTURER AND IDENTIFICATION OF PLANT/LOCATION.

6. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM RECOMMENDED PRACTICE D-2321.

SANITARY SEWER LEAKAGE TESTING

1. A LEAKAGE TEST SHALL BE PERFORMED FOR ALL MAINLINE SEGMENTS. LOW PRESSURE AIR SHALL BE SLOWLY INTRODUCED INTO THE SEALED LINE UNTIL THE INTERNAL PRESSURE REACHES 4 PSIG PLUS THE GROUNDWATER HEAD DIVIDED BY 2.31 (MAXIMUM TEST PRESSURE ID 9 PSIG). TESTS SHALL BE IN ACCORDANCE WITH TOWN REQUIREMENTS.

2. SHOULD CONTRACTOR EXCAVATE PIPE FOR THE PURPOSE OF REPAIRING A LEAK, THEN THE ENTIRE MAINLINE SEGMENT SHALL BE RETESTED FOR BOTH LEAKAGE AND DEFLECTION.

3. THE TOWN ENGINEER OR HIS/HER REPRESENTATIVE SHALL ATTEST THAT EACH MAINLINE SEGMENT WAS TESTED FOR LEAKAGE, WITH SUCCESSFUL RESULTS, IN COMPLIANCE WITH STATED LEAKAGE TESTING REQUIREMENTS.

SANITARY SEWER DEFLECTION TESTING

1. AN IN-PLACE DEFLECTION TEST SHALL BE PERFORMED ON ALL FLEXIBLE PIPE TO BE USED FOR THE PURPOSES OF CONVEYING SANITARY SEWAGE. TESTING FOR AN ALLOWABLE DEFLECTION OF 5 PERCENT INTERNAL PIPE DIAMETER SHALL NOT COMMENCE UNTIL AFTER ALL BACKFILLING HAS BEEN IN PLACE FOR 30 DAYS. A NINE-POINT, "GO-NO-GO" MANDREL SHALL BE USED FOR THE DEFLECTION TEST. A PROVING RING SHALL BE PROVIDED FOR EACH MANDREL.

2. ALL PIPE EXCEEDING THE ALLOWABLE DEFLECTION SHALL BE REPLACED OR REROUNDED. A REPLACED SECTION SHALL BE RETESTED 30 DAYS AFTER REPLACEMENT OR REROUNDING. THE CONTRACTOR SHALL BEAR ALL COSTS FOR TESTING AND TESTING EQUIPMENT. THE "GO—NO—GO" MANDREL SHALL BE MANUALLY PULLED WITHOUT THE USE OF ANY WINCHING OR OTHER MECHANICAL DEVICE. SHOULD CORRECTIVE MEASURES BE CONDUCTED, THE ENTIRE SEGMENT SHALL BE TESTED AGAIN FOR LEAKAGE. AS STATED ABOVE.

3. THE TOWN ENGINEER OR HIS/HER REPRESENTATIVE SHALL ATTEST THAT EACH MAINLINE SEGMENT WAS TESTED FOR DEFLECTION, WITH SUCCESSFUL RESULTS, IN COMPLIANCE WITH STATED DEFLECTION TESTING REQUIREMENTS.

SANITARY SEWER TELEVISING AND AS-BUILT DRAWINGS

1. CLOSED—CIRCUIT TELEVISION INSPECTION MAY BE PERFORMED ON ALL MAINLINE PIPE TO BE USED FOR PURPOSES OF CONVEYING SANITARY SEWAGE.

2. THE TOWN OF CICERO SHALL EMPLOY/HIRE THE CONTRACTOR RESPONSIBLE FOR THE TELEVISION INSPECTION SERVICES. THE DEVELOPER SHALL CONTACT THE TOWN OF CICERO TO SCHEDULE THE CLOSED—CIRCUIT TELEVISION INSPECTION, IMMEDIATELY FOLLOWING THE THOROUGH CLEANING OF ALL LINE SEGMENTS.

3. IF ANY PIPE AND/OR JOINT IS FOUND TO BE LEAKING, THE CONTRACTOR SHALL REPAIR THAT PORTION OF THE WORK TO THE SATISFACTION AND APPROVAL OF THE TOWN OF CICERO.

SATISFACTION AND APPROVAL OF THE TOWN OF CICERO.

4. DEVELOPER SHALL BEAR ALL COSTS OF LINE SEGMENT CLEANING, DEBRIS REMOVAL AND DISPOSAL, AND THROUGH SUBSEQUENT INVOICING FROM THE TOWN OF CICERO FOR THE CLOSED—CIRCUIT TELEVISION INSPECTION.

5. AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE TOWN OF CICERO FOR THEIR RECORDS IN A DIGITAL FORMAT IN COMPLIANCE WITH THE TOWN GIS MAPPING. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS AND ALL LEAKAGE AND DEFLECTION CERTIFICATIONS OF ATTESTMENT WITHIN 30 DAYS OF SUCCESSFUL COMPLETION OF ALL TESTING REQUIREMENTS.

SANITARY SEWER LATERAL PIPE AND FITTINGS

1. SERVICE LATERALS SHALL BE SDR—26 PIPE FROM THE SEWER
MAIN TO THE BUILDING. ONE LATERAL SHALL BE INSTALLED PER
BUILDING. ALL LATERALS SHALL BE INSPECTED BY THE TOWN OF

CICERO PRIOR TO BACKFILLING.

2. JOINTS SHALL BE FLEXIBLE GASKET PUSH—ON—COMPRESSION TYPE CONFORMING TO ASTM D—3212 AND ASTM F—477. NO SOLVENT CEMENT JOINTS SHALL BE ALLOWED.

3. LATERAL SIZE SHALL BE A MINIMUM OF 6 INCHES IN DIAMETER
BETWEEN MAINLINE SEWER AND CLEAN—OUT CLOSEST TO
BUILDING. LATERAL SIZE SHALL BE A MINIMUM OF 4 INCHES IN
DIAMETER BETWEEN BUILDING AND FIRST DOWNSTREAM CLEAN—OUT.

4. A MINIMUM OF ONE CLEAN—OUT SHALL BE INSTALLED FOR EACH LATERAL. WHERE THE LENGTH OF A LATERAL EXCEEDS 100 FEET, THEN ONE CLEAN—OUT SHALL BE INSTALLED FOR EVERY 100 FEET OF LATERAL LENGTH. IN ANY EVENT, A CLEAN—OUT SHALL

BE LOCATED NO FURTHER THAN 4 FEET FROM THE BUILDING.
5. CONTRACTOR SHALL, WHEN CURBS ARE AVAILABLE, ENGRAVE A 3
INCH HIGH BY 1/8" INCH DEEP "S" ON THE CURB DIRECTLY
ABOVE EACH SERVICE LATERAL. SEE CURB STAMP DETAIL SHEET

6. FOR SERVICE LATERALS, CONTRACTOR SHALL INSTALL 10 GAUGE INSULATED, SOLID COPPER WIRE AND POLYETHYLENE IDENTIFICATION TAPE. BOTH ITEMS SHALL BE HIGHLY RESISTANT TO ALKALIS, ACIDS AND OTHER DESTRUCTIVE AGENTS FOUND IN SOIL. THE 10 GAUGE TRACER WIRE SHALL BE ATTACHED DIRECTLY TO THE OUTSIDE OF THE PVC SERVICE LATERAL EVERY 10 FEET. THE POLYETHYLENE IDENTIFICATION TAPE SHALL HAVE A MINIMUM THICKNESS OF 4 MILS AND SHALL BE PLACED DIRECTLY OVER PIPE, 1'-6" BELOW FINAL GRADE.

7. THE APPROVAL OF A NEW SANITARY SEWER SERVICE LATERAL OF THE RELOCATION OF AN EXISTING SERVICE LATERAL REQUIRES THE PROCUREMENT OF A SEWER CONNECTION PERMIT FROM THE TOWN OF CICERO.

OIL/GREASE TRAP REQUIREMENTS

1. ALL NEW COMMERCIAL OR INDUSTRIAL ENTITIES, WHICH EITHER GENERATE AND/OR WASTE OIL, GREASE OR THE BY-PRODUCTS THERETO, SHALL CONSTRUCT A 1,000 GALLON (MINIMUM) GREASE TRAP. THE DESIGN ENGINEER SHALL SUBMIT DETAILED CALCULATIONS CONSISTENT WITH BULLETIN SE-13 FOR SIZE JUSTIFICATION OF SAID TRAP. CALCULATIONS SHALL BE ACCOMPANIED WITH REFERENCES, SPECIFICALLY DENOTING DESIGN OF SIZING/CALCULATION METHOD.

2. TOILETS, URINALS AND OTHER SIMILAR FIXTURES SHALL NOT WASTE THROUGH THE GREASE INTERCEPTOR. ALL OTHER WASTE SHALL ENTER THROUGH THE GREASE INTERCEPTOR, THROUGH THE INLET PIPE ONLY.

3. THE GREASE INTERCEPTOR AND GREASE TRAP SHALL BE DESIGNED SUCH THAT IT IS EASILY ACCESSIBLE FOR INSPECTION/SAMPLING AND CLEANING, AT ALL TIMES. THE GREASE TRAP SHALL HAVE A MINIMUM OF TWO (2) COMPARTMENTS, WITH FITTINGS, DESIGNED FOR GREASE INTERCEPTION.

4. THE OIL/GREASE TRAP SHALL BE LOCATED OUTSIDE THE BUILDING AND AT A DISTANCE FAR ENOUGH TO ALLOW SOLUBLE GREASE/OIL TO BECOME INSOLUBLE.

SANITARY MANHOLES

1. THE LOWEST INTERNAL PLUMBING FINISH FLOOR ELEVATION TO RECEIVE GRAVITY SANITARY SERVICE MUST BE ONE (1) FOOT ABOVE THE TOP OF MANHOLE CASTING ELEVATION OF EITHER THE FIRST UPSTREAM OR DOWNSTREAM MANHOLE ON THE PUBLIC SEWER TO WHICH CONNECTION IS TO BE MADE. THOSE PORTIONS OF THE BUILDING NOT MEETING THE STATED GRAVITY SERVICE REQUIREMENTS SHALL BE PROVIDED AND MAINTAINED BY THE PROPERTY OWNER WITH A GRINDER PUMP SYSTEM OR THE TOWN OF CICERO APPROVED EQUAL DISCHARGING TO THE GRAVITY BUILDING CONNECTION OUTSIDE OF THE PUBLIC RIGHT—OF—WAY.

2. MANHOLES SHALL BE INSTALLED AT DISTANCES NO GREATER THAN 400 FEET.

3. AFTER MANHOLE ASSEMBLY AND BACKFILLING, A TOWN REPRESENTATIVE WILL VISUALLY INSPECT EACH STRUCTURE FOR LEAKAGE OR EVIDENCE THEREOF. IN ADDITION, ALL MANHOLES INSTALLED SHALL BE VACUUM TESTED IN ACCORDANCE WITH ASTM C-1244-93. IF ANY MANHOLE SHOWS LEAKAGE OR SIGNS THEREOF, SAID MANHOLE SHALL BE REPAIRED TO THE SATISFACTION OF THE TOWN OF CICERO AND RETESTED. THE TOWN ENGINEER OR HIS/HER REPRESENTATIVE SHALL CERTIFY THAT ALL MANHOLES WERE VACUUM TESTED, WITH SUCCESSFUL RESULTS, IN ACCORDANCE WITH ASTM C-1244-93.

4. CONTRACTOR SHALL PERMANENTLY SECURE CASTING TO ECCENTRIC CONE OR FLAT CAP SECTION BY INSTALLATION OF THREE (3) EQUALLY SPACED 3/8" DIA. STAINLESS STEEL ALL—THREAD DOWEL RODS OR 3/8" HILTI EXPANSION ANCHOR. SIKA EPOXY, OR THE TOWN OF CICERO APPROVED EQUAL, SHALL BE USED WITH EACH STAINLESS STEEL ALL—THREAD DOWEL ROD.

SANITARY LIFT STATIONS

1. SEE CONSTRUCTION STANDARD SPECIFICATIONS FOR LIFT STATION REQUIREMENTS.

WATERMAIN MATERIALS

1. ALL DUCTILE IRON PIPE PROVIDED FOR USE IN THE TOWN OF CICERO WATER SYSTEM SHALL BE MANUFACTURED BY GRIFFITH, U.S. PIPE, OR TOWN APPROVED EQUAL. ALL POLYETHYLENE PIPE PROVIDED FOR USE IN THE TOWN OF CICERO WATER SYSTEM SHALL BE MANUFACTURED BY PERFORMANCE PIPE, NORTH AMERICAN PIPE COMPANY, CSR POLY PIPE INDUSTRIES, OR TOWN APPROVED EQUAL. ALL FITTINGS PROVIDED FOR USE IN THE TOWN OF CICERO WATER SYSTEM SHALL BE MANUFACTURED BY MUELLER, OR AS APPROVED BY THE TOWN OF CICERO.

2. DUCTILE IRON PIPE FOR WATERMAINS SHALL BE CENTRIFUGALLY CAST AND SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATION A21.5 AND AWWA C151. DUCTILE IRON PIPE, 10 INCHES IN DIAMETER OR LESS, WITH PUSH—ON OR MECHANICAL JOINTS SHALL BE SPECIAL THICKNESS CLASS 50. DUCTILE IRON PIPE, 12 INCHES IN DIAMETER OR LARGER, WITH PUSH—ON OR MECHANICAL JOINTS SHALL BE PRESSURE CLASS 350. THE PIPE SHALL BE PROVIDED WITH A MINIMUM LAYING LENGTH OF 18 FEET.

3. DUCTILE IRON FITTINGS, 3 INCHES THROUGH 48 INCHES, SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATION A21.10 AND AWWA C110. DUCTILE IRON COMPACT FITTINGS, 3 INCHES THROUGH 16 INCHES SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATION A21.53 AND AWWA C153. FITTINGS IN AND WITHIN 2 FEET OF STRUCTURES SHALL BE FLANGED. ALL OTHER FITTINGS SHALL BE MECHANICAL JOINT TYPE.

4. DUCTILE IRON PIPE COATINGS SHALL CONFORM TO THE LATEST REVISION OF ANSI A21.51, AWWA C151 AND ANSI A21.4, AWWA C104. INTERIOR PIPE LINING SHALL BE CEMENT—MORTAR WITH ASPHALTIC SEAL COAT. EXTERIOR PIPE COATING SHALL BE STANDARD ASPHALTIC COATING, EXCEPT EXPOSED PIPING WITHIN STRUCTURES SHALL RECEIVE SHOP PRIMING COMPATIBLE WITH FINISH PAINTING.

5. POLYETHYLENE PIPE WHEN ALLOWED BY THE TOWN SHALL
CONFORM TO THE LATEST EDITION OF ANSI/AWWA C901 AND
C906, AS APPROPRIATE. MATERIAL USED IN THE MANUFACTURE
OF HDPE PIPE SHALL CONFORM TO THE PE STANDARD CODE, PE
3408. ALL HDPE PIPE SHALL HAVE THE SAME OUTSIDE DIAMETER
AS DUCTILE IRON PIPE SIZE (DIPS), WITH THE EXCEPTION OF
3—INCH PIPE OR SMALLER, WHERE IRON PIPE SIZE SHALL BE
USE. HDPE PIPE SHALL BE DR—9, RATED FOR 200 PSI, UNLESS
OTHERWISE APPROVED BY THE TOWN. WHERE FITTINGS ARE
REQUIRED, DUCTILE IRON FITTINGS SHALL BE USED.

6. HDPE PIPE SHALL BE TAPPED USING SIDEWALL FUSION.
7. JOINING OF HDPE TO MECHANICAL JOINTS FITTINGS SHALL BE ACCOMPLISHED BY RESTRAINING THE HDPE PIPE TO THE MECHANICAL JOINT FITTINGS TO PREVENT PIPE PULL OUT. THIS CONNECTION SHALL BE MADE BY MEANS OF MECHANICAL RINGS AND BOLTS USING A MOLDED COUPLING OR HDPE MJ (HARVEY) ADAPTER FUSED TO THE PIPE.

8. HDPE MJ "HARVEY" ADAPTER SHALL HAVE A PRE-INSTALLED STAINLESS STEEL STIFFENER, IN ACCORDANCE WITH THE PLASTIC PIPE INSTITUTE (PPI) RECOMMENDATIONS, TO NEUTRALIZE POINT-LOADING, ACQ, CREEP AND LOSS OF GASKET SEAL DUE TO DIAMETER CONTRACTION. THE STIFFENER SHALL BE ENGINEERED SUFFICIENTLY THICK TO AVOID RADIAL BUCKLING DUE TO GASKET PRESSURE.

9. MECHANICAL JOINTS AND ACCESSORIES SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATION A21.10 AND AWWA C110. RUBBER GASKETS SHALL BE VULCANIZED SYNTHETIC RUBBER AND SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATION A21.11 AND AWWA C111.

10. FLANGED DUCTILE IRON PIPE SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATION A21.15 AND AWWA C115.

RUBBER GASKETS SHALL BE EITHER RING OR FULL FACE AND SHALL BE 1/8" THICK. BOLTS AND NUTS SHALL CONFORM TO ANSI B18.2.1 AND ANSI B18.2.2.

11. PUSH—ON JOINTS SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATION A21.11 AND AWWA C111. RUBBER GASKETS SHALL BE VULCANIZED SYNTHETIC RUBBER AND SHALL CONFORM TO THE LATEST REVISION OF ANSI SPECIFICATIONS A21.11 AND AWWA C111.

12. SERVICE TUBING FROM MAIN TO CUSTOMER SHALL BE 200 psi RATED HDPE OR COPPER WATER TUBE, TYPE K, SOFT TEMPER FOR 3/4" AND 1", HARD TEMPER FOR GREATER THAN 1", FOR UNDERGROUND SERVICE, CONFORMING TO ASTM B-88, ASTM B-251, AND AWWA C-800. THE PIPE SHALL BE MARKED WITH THE MANUFACTURER'S NAME OR TRADEMARK INDICATIVE OF THE TYPE OF PIPE. THE OUTSIDE DIAMETER OF THE PIPE AND MINIMUM WEIGHT PER FOOT OF PIPE SHALL NOT BE LESS THAN THAT LISTED IN ASTM B-251.

13. ALL WATERMAIN MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH AWWA C600, AND WITH A MINIMUM DEPTH OF COVER OF 54

14. TRACER WIRE AND IDENTIFICATION RIBBON WILL BE REQUIRED ON ALL WATERMAINS. IN OPEN TRENCH INSTALLATIONS, ALL MAINLINE PIPE SHALL BE PROVIDED WITH A #12 GAUGE SOLID TRACER WIRE WITH HIGH MOLECULAR WEIGHT POLYETHYLENE (HMWPE) INSULATION. THE TRACING WIRE SHALL HAVE A MINIMUM THICKNESS OF 0.045 INCHES. THE INSULATION THICKNESS AT ANY POINT SHALL NOT BE LESS THAN 90% OF THE SPECIFIED AVERAGE THICKNESS IN COMPLIANCE WITH UL 83. THE TRACING WIRE SHALL BE UL RATE FOR 600 VOLT SERVICE AND SHALL BE RATED FOR DIRECT—BURY APPLICATIONS. THE TRACING WIRE INSULATION COLOR SHALL MEET THE APWA UNIFORM COLOR CODE FOR THE APPROPRIATE UTILITY. THE WIRE SHALL BE AS MANUFACTURED BY KRIS—TECH WIRE CO., INC. IN ROME, NY (315—339—5268) OR APPROVED EQUAL.

15. THE CONTRACTOR SHALL INSTALL TRACING WIRE AND IDENTIFICATION RIBBON ALONG WITH WATERMAIN PIPE INSTALLATIONS.

16. THE SOLID TRACING WIRE MUST BE LAID DIRECTLY ON TOP OF THE WATERMAIN. THE WIRE SHALL BE ATTACHED TO THE PIPE AT A MAXIMUM OF 25 FOOT INTERVALS TO ENSURE IT STAYS IN PLACE DURING BACKFILLING.

#6 GAUGE HMWPE INSULATED TRACING WIRES THAT ARE RATED FOR DIRECT—BURY APPLICATIONS MUST BE ATTACHED TO THE MAIN AT MAXIMUM OF 25 FOOT INTERVALS. THE CONTRACTOR SHALL ENSURE THAT THE TRACING WIRE ATTACHED TO THE MAIN IS FUNCTIONAL BY PERFORMING A CONTINUITY TEST AFTER THE BORE IS COMPLETED. THE CONTRACTOR SHALL OVER—REAM THE

17. THE DIRECTIONAL BORE INSTALLATIONS A MINIMUM OF TWO (2)

18. AT VALVES, THE TRACING WIRE SHALL BE BROUGHT TO ONE (1) FOOT BELOW GRADE ON THE OUTSIDE OF THE VALVE BOX RISER. A ½" DIAMETER HOLE SHALL BE CUT IN THE SIDE OF THE RISER AND THE TRACING WIRE LOOPED AND KNOTTED ON THE INSIDE OF THE RISER TO KEEP THE TRACING WIRE AT THIS ELEVATION. A MINIMUM 12" LOOP OF TRACING WIRE MUST BE LEFT INSIDE OF THE VALVE BOX RISER. THE TRACING WIRE SHOULD CONTINUE DOWN THE VALVE BOX IN A CONTINUOUS RUN TO THE PIPE ON THE OPPOSITE SIDE OF THE VALVE.

BORE AS NECESSARY TO INSURE THAT THE LOCATOR WIRE IS

19. THE TRACING WIRE SHALL BE INSTALLED WITHOUT BURIED

INSTALLED SUCCESSFULLY WITH THE BORE.

CONNECTIONS.

20. LOCATOR SIGNAL STATIONS SHALL BE INSTALLED, SO THAT, THERE IS A MAXIMUM DISTANCE OF 1000 FEET BETWEEN LOCATIONS IN WHICH A SIGNAL GENERATOR CAN BE USED TO DETERMINE MAIN LOCATION. THE LOCATOR SIGNAL STATIONS SHALL BE REQUIRED AT EACH SIDE OF ALL BORE LOCATIONS. LOCATOR SIGNAL STATION DO NOT NEED TO BE PLACED WITHIN 1000 FEET OF A VALVE BOX IN WHICH THE TRACING WIRE HAS BEEN INSTALLED AS DESCRIBED IN THIS SECTION, UNLESS REQUIRED DUE TO BORE PROXIMITY, WHERE INSTALLED WITHIN THE RIGHT—OF—WAY.

<u>WATERMAIN PRESSURE AND LEAKAGE TESTING</u>

1. THE TOWN ENGINEER SHALL BE GIVEN 48 HOURS WRITTEN NOTICE OF THE REQUIRED PRESSURE LEAKAGE TEST TO BE PERFORMED BY THE CONTRACTOR. THE PRESSURE AND LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE GENERALLY WITH THE PROVISIONS OF AWWA C600. THE TEST PRESSURE SHALL NOT BE LESS THAN 1.25 TIMES THE WORKING PRESSURE AT THE HIGHEST POINT ALONG THE TEST SECTION BUT NOT LESS THAN 1.5 TIMES THE ASSUMED WORKING PRESSURE AT THE POINT OF TESTING OR 100 PSIG WHICHEVER IS GREATER. TEST PRESSURE SHALL NOT EXCEED PIPE OR THRUST—RESTRAINT DESIGN PRESSURES OR RATED PRESSURE OF THE VALVES. THE TEST SHALL NOT BE LESS THAN A HOUR TEST DURATION. IF PRESSURE DROP OCCURS, THE MAKEUP WATER TO RETURN TO THE ORIGINAL PRESSURE SHALL BE ACCURATELY MEASURED TO DETERMINE PASS OR FAIL OF THE SYSTEM BY THE TOWN. SEE PART 3.06 OF THE CONSTRUCTION STANDARD SPECIFICATIONS FOR ALLOWABLE LEAKAGE. 2, EACH SECTION OF THE WATERMAIN SHALL BE COMPLETE, AND IN

PLACE FOR NOT LESS THAN 10 DAYS PRIOR TO BEING TESTED.

3. IF THE LEAKAGE FROM A TEST SECTION IS GREATER THAN PERMITTED BY THE TOWN SPECIFICATIONS, THE CONTRACTOR SHALL LOCATE AND REPAIR THE DEFECTIVE JOINTS, MAINS AND APPURTENANCES. THE PRESSURE AND LEAKAGE TEST SHALL THEN BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED. ALL LABOR AND MATERIALS REQUIRED TO MEET THE REQUIREMENTS OF THE PRESSURE AND LEAKAGE TEST SHALL BE AT THE

EXPENSE OF THE CONTRACTOR.

4. THE OPERATION OF THE TOWN OF CICERO WATER SYSTEM VALVES AND HYDRANTS SHALL ONLY BE CONDUCTED BY AUTHORIZED TOWN PERSONNEL.

WATERMAIN DISINFECTION AND BACTERIOLOGICAL TESTING

1. THE TOWN ENGINEER SHALL BE GIVEN 48 HOURS WRITTEN NOTICE OF THE REQUIRED DISINFECTION, FLUSHING AND TESTING PROCEDURES TO BE PERFORMED BY THE CONTRACTOR. ALL NEWLY INSTALLED WATERMAINS SHALL BE DISINFECTED (BY INJECTION) IN ACCORDANCE WITH ANSI/AWWA C651. LIQUID CHLORINE, HIGH—TEST CALCIUM HYPOCHLORITE (70 PERCENT CHLORINE), OR HIGH—TEST SODIUM HYPOCHLORITE (14.7 PERCENT CHLORINE) MAY BE USED TO PERFORM AN INITIAL MINIMUM CONCENTRATION OF 50 MG/L OF FREE CHLORINE IN ALL NEWLY INSTALLED MAINS.

2. A MINIMUM CONCENTRATION OF 10 MG/L OF FREE CHLORINE SHALL BE MAINTAINED IN ALL PARTS OF THE NEWLY INSTALLED MAINS FOR 24 HOURS OF CONTACT TIME. OPEN AND CLOSE VALVES SEVERAL TIMES DURING CONTACT PERIOD.

3. FOLLOWING THE INITIAL 24 HOUR CONTACT TIME BUT PRIOR TO 48 HOURS OF CONTACT TIME, ALL TREATED WATER SHALL BE THOROUGHLY FLUSHED FROM THE NEWLY LAID PIPE AT ITS EXTREMITY UNTIL THE REPLACEMENT WATER HAS A CHLORINE RESIDUAL EQUAL TO DISTRIBUTION SYSTEM RESIDUAL.

4. AFTER FLUSHING, TWO CONSECUTIVE WATER SAMPLES SHALL BE COLLECTED ON SUCCESSIVE DAYS FROM THE TREATED PIPING SYSTEM AS DIRECTED BY THE TOWN ENGINEER. EACH SAMPLE SHALL SHOW SATISFACTORY BACTERIOLOGICAL RESULTS. HOSE CONNECTIONS ON FIRE HYDRANTS SHALL NOT BE USED FOR COLLECTING SAMPLES.

5. THE TAKING OF SAMPLES AND THE TESTING OF CHLORINE
RESIDUAL SHALL BE CARRIED OUT BY THE CONTRACTOR AT THE
DIRECTION OF THE TOWN ENGINEER. A COPY OF THE TEST
RESULTS SHALL BE PROVIDED TO THE WATER SUPERINTENDENT.

JUNE 2010

I625 N. Post Roae Indianapolis, Indianapolis

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IS SPECIFICATIONS
SICERO, INDIANA
BOX 391

MISCELLANEOUS SPECIFICATI
TOWN OF CICERO, INDIAN

REVISIONS

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CERTIFIED BY:

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Pate: 8/11/09