

GENERAL NOTES

CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE NOTES AND SPECIFICATIONS CONTAINED HEREIN. CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE CONFORMANCE TO THESE REQUIREMENTS BY ALL SUBCONTRACTORS.

- THE FOLLOWING DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THIS SITE PLAN.

- BOUNDARY SURVEY, BY EBI SURVEYING, INC. DATED 03/06/2021.

PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THAT HESHE HAS THE LATEST EDITION OF THE DOCUMENTS REFERENCED ABOVE.

- ALL HANDICAPPED PARKING SPACES SHALL BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 ET SEQ. AND 42 U.S.C. § 4151 ET SEQ.) OR THE REQUIREMENTS OF THE JURISDICTION WHERE THIS PROJECT IS TO BE CONSTRUCTED.

- PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE COMMENTS TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES. CONTRACTOR SHALL HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.

- THE CONTRACTOR SHALL BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND ALL APPLICABLE REQUIREMENTS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES HAVING JURISDICTION OVER THIS PROJECT.

- THE GEOTECHNICAL REPORT AND RECOMMENDATIONS SET FORTH HEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, SHALL TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF ANY SUCH DISCREPANCY BETWEEN THE GEOTECHNICAL REPORTS AND PLANS AND SPECIFICATIONS PRIOR TO PROCEEDING WITH ANY FURTHER WORK.

- BOUNDARY SURVEY BY EBI SURVEYING, INC. DATED 03/06/2021 SHALL BE CONSIDERED A PART OF THESE PLANS.

- THESE PLANS ARE BASED ON INFORMATION PROVIDED TO THOMAS ENGINEERING BY THE OWNER AND OTHERS PRIOR TO THE TIME OF PLAN PREPARATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND NOTIFY THOMAS ENGINEERING IF ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.

- ALL DIMENSIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO THE GIVING OF SUCH NOTIFICATION AND THE ENGINEER'S WRITTEN AUTHORIZATION OF SUCH ADDITIONAL WORK.

- CONTRACTOR SHALL REFER TO THE ARCHITECTURAL/BUILDING PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, EXACT BUILDING UTILITY LOCATIONS.
- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE THE BUILDING LAYOUT BY CAREFUL REVIEW OF THE SITE PLAN AND LATEST ARCHITECTURAL PLANS (INCLUDING, BUT NOT LIMITED TO, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLAN, WHERE APPLICABLE). CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER, ARCHITECT AND SITE ENGINEER OF ANY DISCREPANCIES.

- DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE AND ALL UNSUITABLE EXCAVATED MATERIAL AND DEBRIS (SOLID WASTE) SHALL BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNMENTAL AUTHORITIES HAVING JURISDICTION OVER THIS PROJECT.

- THE CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT AND CONTIGUOUS STRUCTURES.

- THE CONTRACTOR IS TO EXERCISE EXTREME CARE WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING THE APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, ETC. WHICH ARE TO REMAIN, AND TO PROVIDE A SAFE WORK AREA.

- THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STOPING, CURB, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY SHALL RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE EXISTING CONDITIONS, AND IN CONFORMANCE WITH APPLICABLE CODES. CONTRACTOR IS RESPONSIBLE TO DOCUMENT ALL EXISTING DAMAGE AND NOTIFY THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.

- ALL CONCRETE SHALL HAVE THE MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS UNLESS OTHERWISE NOTED ON THE PLANS, DETAILS AND/OR GEOTECHNICAL REPORT.

- THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION METHODS / MEANS FOR COMPLETION OF THE WORK DEPICTED NEITHER ON THESE PLANS, NOR FOR ANY CONFLICTS/SCOPE REVISIONS WHICH RESULT FROM SAME. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE METHODS/MEANS FOR COMPLETION OF THE WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

- THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY NOR HAS THE ENGINEER OF RECORD BEEN RETAINED FOR SUCH PURPOSES.

- ALL CONTRACTORS MUST CARRY THE SPECIFIED STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE (COL). ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME THOMAS ENGINEERING, AND ITS SUB-CONSULTANTS AS ADDITIONAL NAMED INSURERS AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE THIS HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED BY THE CONTRACTORS. ALL CONTRACTORS MUST FURNISH THOMAS ENGINEERING WITH CERTIFICATIONS OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE PRIOR TO COMMENCING WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION. IN ADDITION, ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS THOMAS ENGINEERING AND ITS SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES, LIABILITIES, OR COSTS, INCLUDING REASONABLE ATTORNEY'S FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS.

- THOMAS ENGINEERING WILL REVIEW AND APPROVE OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION OF THE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THOMAS ENGINEERING'S SHOP DRAWING REVIEW WILL BE CONDUCTED WITH REASONABLE PROMPTNESS WHILE ALLOWING SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF A SPECIFIC SHOP DRAWING DOES NOT INDICATE THAT THOMAS ENGINEERING HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. THOMAS ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS NOT BROUGHT TO ITS ATTENTION, IN WRITING, BY THE CONTRACTOR. THOMAS ENGINEERING WILL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.

- NEITHER THE PROFESSIONAL ACTIVITIES OF THOMAS ENGINEERING, NOR THE PRESENCE OF THOMAS ENGINEERING OR ITS EMPLOYEES AND SUB-CONSULTANTS AT A CONSTRUCTION / PROJECT SITE, SHALL RELIEVE THE GENERAL CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHOD, OR CONSTRUCTION TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THOMAS ENGINEERING AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THOMAS ENGINEERING SHALL BE INDEMNIFIED BY THE GENERAL CONTRACTOR AND SHALL BE NAMED AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE.

- IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THOMAS ENGINEERING AND THE OWNER FOR SUCH DEVIATIONS, CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ALL SUCH COSTS RELATED TO SAME.

- CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE R.O.W. OR ON SITE. THE COST FOR THIS ITEM SHOULD BE INCLUDED IN THE CONTRACTOR'S PRICE.

- IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND ENGINEER, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE, ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ALL SUCH COSTS TO CORRECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATION AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.

- CONTRACTOR SHALL CONFIRM ADA ACCESSIBILITY PRIOR TO INSTALLING FINISHING COURSES OF SIDEWALKS AND PARKING AREAS.

- UPON THE RECEIPT OF THE "NOTICE TO PROCEED", THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD AND ARRANGE A PRECONSTRUCTION CONFERENCE TO INCLUDE ALL INVOLVED GOVERNMENTAL AGENCIES, UTILITY OWNERS, THE OWNER AND THE ENGINEER OF RECORD.
- ALL UTILITY EASEMENTS TO BE SECURED PRIOR TO CONSTRUCTION (IF REQUIRED) PRIOR TO CERTIFICATE OF OCCUPANCY, THESE EASEMENTS SHALL BE SKETCHED, DESCRIBED, AND RECORDED AT THE SOLE COST OF THE OWNER.

- CONTRACTOR SHALL PROVIDE MINIMUM 48 HOUR NOTICE TO THE ENGINEER AND APPLICABLE AGENCIES FOR SCHEDULING INSPECTIONS.

- PRIOR TO THEIR CONSTRUCTION OR INSTALLATION, SHOP DRAWINGS AND SMALL-SCALE MATERIALS SHALL BE SUBMITTED BY THE ENGINEER OF RECORD AND GOVERNING AGENCY FOR THE FOLLOWING: CATCH BASINS, MANHOLES, FIRE HYDRANTS, VALVES, PIPE, AND ALL REQUIRED ACCESSORIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL OTHER AGENCY APPROVALS IF REQUIRED.

- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE FOR OR SUPPLY TEMPORARY WATER SERVICE, SANITARY FACILITIES AND ELECTRICITY.
- MAINTENANCE OF TRAFFIC IN THE PUBLIC RIGHTS-OF-WAY SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND APPROVED BY THE GOVERNING AGENCY OR FOOT WHERE APPLICABLE PRIOR TO IMPLEMENTATION.

- ALL OPEN TRENCHES AND HOLES ADJACENT TO ROADWAYS OR WALKWAYS SHALL BE PROPERLY MARKED AND BARRICADED TO ASSURE THE SAFETY OF BOTH VEHICULAR AND PEDESTRIAN TRAFFIC.

- NO TRENCHES OR HOLES NEAR WALKWAYS, IN ROADWAYS OR SHOULDERS ARE THE BE LEFT OPEN DURING NIGHTTIME HOURS WITHOUT EXPRESS PERMISSION FROM GOVERNING AGENCY.

- IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR FOR ANY NECESSARY CONSTRUCTION, PAVEMENT MARKING AND SIGNAGE OR ANY PEDESTRIAN SIGNALIZATION AND/OR SIGNAL MODIFICATION TO ACCOMMODATE AN ALTERNATE SAFE WALK ROUTE. ALL RESTORED TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE GOVERNING AGENCY'S TRAFFIC ENGINEERING STANDARDS.

PAVEMENT MARKING & SIGNAGE:

(REFER TO RTG DEVISION 2 SPECIFICATION SECTION 02511)

- ALL PAVEMENT MARKINGS AND SIGNAGE SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS," LATEST EDITION AND FOOT STANDARDS, LATEST EDITION.

SANITARY SEWER NOTES:

(REFER TO RTG DIVISION 2 SPECIFICATION SECTION 02730)

- GENERAL:
 - DISTANCE AND LENGTHS SHOWN ON PLANS REFERENCE THE CENTER OF STRUCTURES.

- MATERIALS:
 - ALL PVC SEWER PIPE AND FITTINGS SHALL BE DR-14 POLYVINYL CHLORIDE (PVC) PIPE, WITH PUSH-ON RUBBER GASKET JOINTS. (24" SHALL BE DR-25)

- DUCTILE IRON PIPE (DIP) SHALL BE CEMENT OR POLYLINE INSIDE AND SHALL HAVE A COAL TAR EPOXY COATING, MANUFACTURED IN ACCORDANCE WITH ANSII/AWWA C151/A21.51-86 OR LATEST REVISION, MINIMUM WALL THICKNESS CLASS 52 (4"-12") & CLASS 51 (14"-20") (UNLESS OTHERWISE SPECIFIED).

- ALL FITTINGS AND ACCESSORIES SHALL BE AS MANUFACTURED OR SUPPLIED BY THE PIPE MANUFACTURER OR APPROVED EQUAL.

- INSTALLATION:
 - PIPE AND FITTINGS:
 - SEWER PIPES SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2231, AND THE UN-BELL PLASTICS PIPE ASSOCIATION'S "RECOMMENDED PRACTICE FOR THE INSTALLATION OF PVC SEWER PIPE".

- D.I.P. SHALL BE INSTALLED IN ACCORDANCE WITH ANSII/AWWA C800-93 OR LATEST REVISION.

- BEDDING AND INITIAL BACKFILL (12 INCHES) OVER SEWER MAINS AND SERVICES SHALL BE SAND WITH NO ROCK LARGER THAN 1" IN DIAMETER. PEA ROCK OR 3/4" WASHED ROCK WILL BE USED IN WATER OR WHERE UNSUITABLE BEDDING EXISTS AT THE DISCRETION OF THE OVERNMENTAL AGENCY. ALL OTHER FILL SHALL NOT HAVE ROCK LARGER THAN 6" IN DIAMETER.

- SERVICE LATERALS:
 - MINIMUM SLOPE OF ALL SERVICE LINES SHALL BE AS INDICATED IN THE FLORIDA BUILDING CODE.

- SERVICE LATERALS SHALL TERMINATE AT A DEPTH 30" BELOW FINISHED GRADE OR AS INDICATED ON PLUMBING PLAN.

- EACH SERVICE CONNECTION SHALL BE PLUGGED WATER-TIGHT WITH AN APPROVED PLUG.

- THE END OF EACH SERVICE CONNECTION SHALL BE MARKED WITH A 2"x4" TREATED STAKE PAINTED RED, EXTENDING 18"(MIN) ABOVE GRADE.

- CONTRACTOR SHALL ROUGH IN RISER TO 1' FOOT ABOVE FINISHED GRADE AND PLUG, AT PROJECT COMPLETION, CUT BACK TO FINISHED GRADE.

- CONNECTION OF SERVICES TO BUILDING'S PLUMBING SHALL BE COORDINATED WITH THE GOVERNMENTAL AGENCY'S BUILDING AND ZONING DEPARTMENT, PLUMBING SECTION.

- TESTING:
 - AFTER CONSTRUCTION OF THE SEWER SYSTEM, THE ENGINEER MAY REQUIRE A VISUAL INFILTRATION AND/OR EXFILTRATION TEST TO BE PERFORMED ON THE ENTIRE SYSTEM OR ANY PART THEREOF.

- AN AIR TEST MAY BE SUBSTITUTED FOR THE WATER EXFILTRATION TEST, UPON APPROVAL OF THE ENGINEER.

- MANHOLE LEAKAGE TEST SHALL NOT EXCEED FOUR GALLONS PER DAY PER UNIT. NO VISIBLE LEAKAGE ALLOWED.

- SEWER PIPE LEAKAGE ALLOWABLE SHALL NOT EXCEED 150 GALLONS PER DAY PER INCH DIAMETER PER MILE IN A 2 HOUR TEST PERIOD FOR ANY SECTION TESTED. NO VISIBLE LEAKAGE SHALL BE ALLOWED AND ALL LINES SHALL BE T.V. INSPECTED.

- SANITARY SEWER SHALL BE TELEVISED AND LAMPED AT DEVELOPER'S EXPENSE, PRIOR TO FINAL ACCEPTANCE. OWNER / CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY DEFICIENCIES PRIOR TO CERTIFICATION TO ANY AGENCY.

- VISIBLE INFILTRATION LEAKAGE INTO MANHOLES AND SEWER PIPE SHALL NOT BE PERMITTED.

WATER DISTRIBUTION AND/OR SANITARY SEWER FORCE MAIN SYSTEM

(REFER TO SPECIFICATION SECTION 02730)

- GENERAL:
 - NO CONNECTIONS TO THE EXISTING LINES SHALL BE MADE UNTIL PRESSURE TESTS, FOR THE WATER AND SEWER FORCE MAINS, AND BACTERIOLOGICAL TESTS HAVE BEEN PERFORMED AND THE SYSTEM IS ACCEPTABLE TO THE GOVERNMENTAL AGENCY'S UTILITIES DEPARTMENT.

- BEDDING AND INITIAL BACKFILL FOR MAINS SHALL BE SAND WITH NO ROCKS LARGER THAN 1" IN DIAMETER.

- USE DETECTOR TAPE ON ALL PVC MAINS (18" ABOVE), AND USE NON-DETECTOR TAPE ON ALL D.I.P. MAINS (18" ABOVE).

- A THREE (3) FOOT HORIZONTAL SEPARATION IS REQUIRED BETWEEN WATER MAINS AND OBSTRUCTIONS (I.E. CATCH BASINS, POWER POLES, ETC.). FIVE (5) FEET OF SEPARATION IS REQUIRED BETWEEN WATER MAINS AND TREES.

- MATERIALS:

- DUCTILE IRON PIPE (DIP) SHALL BE CLASS 52 UP TO 12" SIZE & CLASS 51 FOR 14" AND LARGER WITH INTERIOR CEMENT LINING AND BITUMINOUS COATED OUTSIDE. WATER MAIN & EPOXY LINED & COATED FORCE MAIN MANUFACTURED IN ACCORDANCE WITH ANSII/AWWA C151/A21.51-91 OR LATEST REVISION. THE PIPE SHALL WITHSTAND A WORKING PRESSURE OF 350 PSI. THE JOINTS SHALL BE BELL AND SPIGOT PUSH-ON TYPE UNLESS OTHERWISE NOTED ON THE PLANS.

- ALL PVC MAINS SHALL BE SERIES 1120, CLASS 150 (DR 18) PRESSURE PIPE CONFORMING TO ANSII/AWWA C900-89 OR LATEST REVISION, AND SHALL HAVE PUSH-ON JOINTS, AND IRON PIPE O.D. (PVC ON-SITE ONLY)

- FITTINGS FOR MAINS 4" AND LARGER SHALL BE DUCTILE IRON MECHANICAL JOINT CONFORMING TO ANSII/AWWA C110/A21.10-93 OR LATEST REVISION, COMPLETE WITH GLANDS, GASKETS, BOLTS, AND NUTS. ALL FITTINGS SHALL BE CEMENT LINED AND SEAL COATED WITH THE SAME MATERIALS AS THE PIPE & USE MEGALUG SERIES 1100 RESTRAINED JOINT ADAPTERS.

- VALVES SHALL BE GATE VALVES, IRON BODY, FULLY RESILIENT SEAT BRONZED MOUNTED NON-RISEING STEM, RATED AT 200 PSI, AND CONFORMING TO ANSII/AWWA C509-87 OR LATEST REVISION, AND SHALL HAVE MECHANICAL JOINTS.

- GATE VALVES 4" AND LARGER SHALL BE MUELLER A-2360-20, RESILIENT SEATED GATE VALVES SHALL BE AMERICAN 5002/500 LINE OR CLOW F-6100, CONFORMING TO ANSII/AWWA C509-87.

- TAPPING VALVES SHALL BE MUELLER H667 OR APPROVED EQUAL.

- GATE VALVES 3" OR LESS SHALL BE NIBCO T-133 OR T-136 WITH MALLEABLE HAND WHEELS. NO SUBSTITUTIONS ALLOWED.

- TAPPING SLEEVES SHALL BE MUELLER H615 OR APPROVED EQUAL.

- VALVE BOXES SHALL BE TYLER/UNION 461-S OR APPROVED EQUAL.

- RETAINER GLANDS SHALL CONFORM TO ANSII/AWWA C111/A21.11-90 OR LATEST REVISION, ALL GLANDS SHALL BE MANUFACTURED FROM DUCTILE IRON AS LISTED BY UNDERWRITERS LABORATORIES FOR 250 PSI MINIMUM WATER PRESSURE RATING. CLOW CORPORATION MODEL F-1058 OR STANDARD FIRE PROTECTION EQUIPMENT COMPANY OR APPROVED EQUAL.

- DRESSER COUPLINGS SHALL BE REGULAR BLACK COUPLINGS WITH PLAIN GASKETS FOR GALVANIZED STEEL PIPE. THEY SHALL BE DRESSER STYLE 90, NO SUBSTITUTIONS ALLOWED.

- FIRE HYDRANTS SHALL HAVE A 5 1/4" MAIN VALVE OPENING. HYDRANT NOZZLE TO BE 1/2" NPT. ALL HYDRANTS TO BE INSTALLED WITH ANCHORING TEE AND CONTROL VALVE. FIRE HYDRANT SHALL COMPLY WITH ANSII/AWWA C502-85 (OR LATEST REVISION). HYDRANTS SHALL BE KENNEDY GUARDIAN K-81-4 OR APPROVED EQUAL. BLUE REFLECTIVE PAVEMENT MARKER REQUIRED IN CENTER OF NEAREST DRIVING LANE FOR FIRE HYDRANTS.

- SERVICE CONNECTION:
 - CORPORATION STOPS SHALL BE MANUFACTURED OF BRASS ALLOY IN ACCORDANCE WITH ASTM B62 WITH THREADED ENDS, AS MANUFACTURED BY MUELLER OR APPROVED EQUAL.

- CURB STOPS SHALL BE MUELLER OR APPROVED EQUAL.

- METER STOPS SHALL BE 90° LOCK WING TYPE AND SHALL BE OF BRONZE CONSTRUCTION IN ACCORDANCE WITH ASTM B-62. METER STOPS SHALL BE CLOSED BOTTOM DESIGN AND RESILIENT "O" RING SEALED AGAINST EXTERNAL LEAKAGE AT THE TOP. STOPS SHALL BE EQUIPPED WITH A METAL CLAMPING BRACKET. THE NEW PIPE SHALL BE CONSTRUCTED OF DIP, AND THE CROSSING SHALL BE ARRANGED TO MEET THE REQUIREMENTS ABOVE.

- SERVICE PIPING SHALL BE TYPE 'K' DRAWN COPPER.

- INSTALLATION:
 - GENERAL: CONNECTION OF ALL NEW SYSTEMS TO EXISTING MAINS SHALL BE DONE BY USING ONE OF THE FOLLOWING METHODS:

- METHOD A, WHICH INVOLVES A REDUCED SIZE TEMPORARY CONNECTION BETWEEN THE EXISTING MAIN AND THE NEW ONE.

- METHOD B, WHICH INVOLVES A DIRECT CONNECTION BETWEEN THE NEW AND EXISTING MAINS USING TWO GATE VALVES SEPARATED BY A SLEEVE WITH A VENT PIPE.

- METHOD C, WHICH INVOLVES A TAP WITH ONE GATE VALVE OF INCHES DIAMETER. THE NEW SYSTEM PRIOR TO CONDUCTING THE PRESSURE TEST.

- BEDDING:
 - BEDDING AND INITIAL BACKFILL (12 INCHES ABOVE PIPE) FOR ALL PIPE SHALL BE SAND WITH NO ROCK LARGER THAN 1" IN DIAMETER. PEA ROCK OR 3/4" WASHED ROCK WILL BE USED IN WATER OR WHERE UNSUITABLE BEDDING EXISTS AT THE DISCRETION OF THE GOVERNMENTAL AGENCY. ALL OTHER FILL SHALL NOT HAVE ROCK LARGER THAN 6" IN DIAMETER.

- PVC PIPE:
 - PVC PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE UN-BELL PLASTIC PIPE ASSOCIATION'S GUIDE FOR INSTALLATION OF PVC PRESSURE PIPE FOR MUNICIPAL WATER DISTRIBUTION SYSTEMS.

- PVC PIPE SHALL BE INSTALLED WITH A MINIMUM OF 36" COVER.

- DETECTOR TAPE SHALL BE INSTALLED THE FULL LENGTH OF ALL PVC MAINS APPROXIMATELY 18" ABOVE THE PIPE, COLOR SIDE UP.

- DUCTILE PIPE:
 - D.I.P. SHALL BE INSTALLED IN ACCORDANCE WITH ANSII/AWWA C680-99 OR LATEST REVISION.

- D.I.P. SHALL BE INSTALLED WITH A MINIMUM OF 30" COVER.

- NON-DETECTOR TAPE SHALL BE INSTALLED THE FULL LENGTH OF ALL D.I.P. MAINS APPROXIMATELY 18" ABOVE THE MAIN COLOR SIDE UP.

- VALVES:
 - ALL VALVES SHALL BE INSTALLED WITH ADJUSTABLE CAST IRON VALVE BOXES WITH THE WORD "WATER" OR "SEWER" CAST IN THE COVER. A BRASS DISK INDICATING, SIZE, TYPE, KIND & OPERATOR INSTRUCTIONS SHALL BE INSTALLED ADJACENT TO VALVE BOX.

- MAIN VALVES SHALL BE LOCATED ON AN EXTENSION OF THE RIGHT-OF-WAY LINE UNLESS DIMENSIONED OTHERWISE.

- MAIN VALVES SHALL BE INSTALLED AWAY FROM PARKING AREAS. IF THIS IS UNAVOIDABLE, PROPER MEASURES SHALL BE TAKEN TO AVOID THE PARKING OF VEHICLES OVER THE VALVE. VALVES SHALL BE INSTALLED AS CLOSE TO THE MAIN AS POSSIBLE. VALVES LOCATED IN NON-PAVED AREAS OR IN PARKING STALLS REQUIRE A REFLECTIVE PAVEMENT MARKER ON THE CENTER OF THE NEAREST LANE OF ROAD PAVEMENT. WHITE REFLECTORS FOR THE WATER MAIN VALVES, GREEN REFLECTORS FOR FORCE MAIN VALVES.

- THE DISTANCE FROM THE TOP OF THE VALVE ACTUATOR NUT TO FINAL GRADE SHALL BE A MINIMUM OF 12 INCHES AND A MAXIMUM OF 18 INCHES.

- SERVICE:
 - COVER OVER SERVICE LINES SHALL BE 18" MINIMUM, 36" MAXIMUM BELOW FINISHED GRADE AND 36" UNDER PAVEMENT.

- METERS UP TO 2" SHALL BE TYPE "K" COPPER.

- SEWER STOPS SHALL HAVE 6" TO 10" COVER AS REQUIRED FOR PROPER METERBOX INSTALLATION.

- WATER SERVICES UNDER PAVEMENT SHALL BE ENCASED IN A SCHEDULE 80 PIPE. THE FULL LENGTH OF THE PAVEMENT AND FOR 2' BEYOND THE EDGE, SLEEVE DIAMETER SHALL BE TWICE THE DIAMETER OF THE SERVICE PIPE.

- THE END OF EACH SERVICE CONNECTION SHALL BE MARKED WITH A 2"x4" TREATED STAKE, PAINTED BLUE EXTENDING 18" (MINIMUM) ABOVE GRADE UNLESS INDICATED OTHERWISE.

- TESTING:

- BEFORE ANY PHYSICAL CONNECTIONS TO THE EXISTING WATER MAINS ARE MADE, THE COMPLETE WATER SYSTEM SHALL BE PRESSURE TESTED AND DISINFECTED. HYDROSTATIC TESTING OF NEW MAINS SHALL BE PERFORMED AT A MINIMUM STARTING PRESSURE OF 150 PSI FOR TWO HOURS IN ACCORDANCE WITH ANSII/AWWA C600-99 OR LATEST REVISION. THE PRESSURE TEST SHALL NOT VARY MORE THAN ± 5 P.S.I. DURING THE TEST.

- THE PRESSURE TEST SHALL BE WITNESSED BY A REPRESENTATIVE OF THE GOVERNMENTAL AGENCY AND THE ENGINEER OF RECORD.

- BEFORE ACCEPTANCE FOR OPERATION, THE WATER SYSTEM SHALL BE DISINFECTED IN ACCORDANCE WITH THE ANSII/AWWA C651-92; 150 PSI MINIMUM STARTING TEST PRESSURE WITH BACTERIOLOGICAL SAMPLES APPROVED BY THE GOVERNMENTAL AGENCY.

- SAMPLING POINTS SHALL BE PROVIDED AT THE LOCATIONS SHOWN ON THE PLANS. IF NOT SPECIFIED, SAMPLING POINTS SHALL BE PROVIDED AT INTERVALS OF 1500' MAXIMUM FOR LINES GREATER THAN 1500' IN LENGTH. PROVIDE A MINIMUM OF TWO SAMPLING POINTS FOR ALL OTHER TEST SEGMENTS. SAMPLE POINTS MUST BE APPROVED BY THE GOVERNMENTAL AGENCY.

- THE ALLOWABLE LEAKAGE SHALL BE LESS THAN THE NUMBER OF GALLONS PER HOUR AS DETERMINED BY THE FORMULA:

$$L = \frac{S \cdot D^{0.5}}{133200}$$

IN WHICH:
L EQUALS THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR.
S EQUALS LENGTH OF PIPE (LINEAR FEET).
D EQUALS NOMINAL DIAMETER OF PIPE (INCHES) AND
P EQUALS THE MINIMUM TEST PRESSURE (POUNDS PER SQUARE INCH).

SEPARATION OF WATER AND SEWER MAINS

- SANITARY SEWERS, STORM SEWERS, AND FORCE MAINS SHOULD CROSS UNDER WATER MAINS WHENEVER POSSIBLE. SANITARY SEWERS, STORM SEWERS, AND FORCE MAINS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE WHENEVER POSSIBLE.

WHERE SANITARY SEWERS, STORM SEWERS, OR FORCE MAINS MUST CROSS A WATER MAIN WITH LESS THAN 18 INCHES VERTICAL DISTANCE, BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AT THE CROSSING.

SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20 FEET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. THE NEW PIPE SHALL BE A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT ALL CROSSINGS.

ALL CROSSING SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING).

WHERE A NEW PIPE CONFLICTS WITH AN EXISTING PIPE WITH LESS THAN 18 INCHES VERTICAL CLEARANCE, THE NEW PIPE SHALL BE CONSTRUCTED OF DIP, AND THE CROSSING SHALL BE ARRANGED TO MEET THE REQUIREMENTS ABOVE.

- A MINIMUM 10-FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN ANY TYPE OF SEWER AND WATER MAIN IN PARALLEL INSTALLATIONS WHENEVER POSSIBLE. IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10 FOOT HORIZONTAL SEPARATION, THE WATER MAIN MUST BE LAID IN A SEPARATE TRENCH OR AN UNDISTURBED EARTH SHELVE LOCATED ON ONE SIDE OF THE SEWER OR FORCE MAIN AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.

WHERE IT IS NOT POSSIBLE TO MAINTAIN A VERTICAL DISTANCE OF 18 INCHES IN PARALLEL INSTALLATIONS, THE WATER MAIN SHALL BE CONSTRUCTED OF DIP AND THE SANITARY SEWER OR THE FORCE MAIN SHALL BE CONSTRUCTED OF DIP WITH A MINIMUM VERTICAL DISTANCE OF 6 INCHES. THE WATER MAIN SHALL BE LAID IN A SEPARATE TRENCH OR AN UNDISTURBED EARTH SHELVE LOCATED AS FAR APART AS POSSIBLE FROM JOINTS ON THE SEWER OR FORCE MAIN (STAGGERED JOINTS).

- ALL DIP SHALL BE CLASS 50 OR HIGHER. ADEQUATE PROTECTIVE MEASURES AGAINST CORROSION SHALL BE USED AS DETERMINED BY THE ENGINEER.

STORM DRAINAGE:

(REFER TO SPECIFICATION SECTION 02711)

- GENERAL:
 - CATCH BASIN GRATES AND RIM ELEVATIONS AS SHOWN ON PLANS SHALL BE ADJUSTED TO CONFORM TO NEW OR EXISTING GRADES.

- DISTANCES AND LENGTHS SHOWN ON PLANS REFERENCE THE CENTER OF STRUCTURES.

- MATERIALS:
 - ALL HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF AASHTO M- 294 LATEST REVISIONS. ALL PIPING TO BE NON-PERFORATED TUBING.

- YARD DRAIN BASINS ARE TO BE HIGH DENSITY POLYETHYLENE PRODUCT AND SHALL MEET ASTM LATEST MINIMUM STANDARDS.

- ALL DRAINAGE CATCH BASINS AND STRUCTURES SHALL BE PRECAST CONCRETE AND SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATION C-478 AND 641 UNLESS OTHERWISE NOTED IN THE PLANS. BLOCK CATCH BASINS WILL BE ALLOWED ONLY WITH APPROVAL OF THE ENGINEER. THE MINIMUM WALL AND SLAB THICKNESS SHALL BE 8 INCHES AND THE MINIMUM REINFORCING SHALL BE NO. 4 BARS AT 12 INCH