

ALL ON-SITE WATER AND WASTE WATER FACILITIES WILL BE MAINTAINED BY MANATEE COUNTY. THE ONLY NEW CONSTRUCTION TO BE CONSTRUCTED BY THE CONTRACTOR IS THAT WHICH IS LISTED WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL MEET ALL THE REQUIREMENTS OF 287.00 WATER MAINS.

2. PVC PIPE SIZES 8" THROUGH 12" FOR USE IN NON-PRESSURE GRAVITY SEWER MAINS AND LATERALS SHALL HAVE AN SDR OF 26 AND CONFORM TO ASTM D3034. PVC PIPE SHALL BE MADE OF PVC PLASTIC, HOMOGENEOUS THROUGHOUT AND FREE FROM VISIBLE CRACKS, HOLES, FOREIGN INCLUSIONS OR OTHER INJURIOUS DEFECTS. THE PIPE SHALL BE UNIFORM IN COLOR, DENSITY AND OTHER PHYSICAL PROPERTIES. THE PIPE SHALL BE IDENTIFIED BY THE MANUFACTURER'S MARKING. THE PIPE SHALL BE IN COMPLIANCE WITH THE ABOVE STANDARD AND BE CLEARLY MARKED AS FOLLOWS AT INTERVALS OF 5 FEET OR LESS:

- 1. NORMAL PIPE SIZE
- 2. NORMAL PIPE CLASSIFICATION (E1234-AB)
- 3. THE LEGEND "TYPE PSR SDR=26 PVC SEWER PIPE" AND THE DESIGNATION ASTM D3034.

IN ADDITION TO THE ABOVE MENTIONED REQUIREMENTS, ALL PVC SANTARY SEWER PIPE SHALL BE COLOR CODED GREEN TO CONFORM WITH MANATEE COUNTY STANDARDS.

3. INSTALL ALL SEWER MAINS AT A MINIMUM 36 INCHES OF COVER.

4. JOINTS SHALL MEET THE REQUIREMENTS OF ASTM D3212 USING RUBBER GASKETS CONFORMING TO ASTM F477.

5. SEWER FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF ASTM D3034 AND SHALL HAVE AN SDR OF 26. SIX INCH JOINT FITTINGS FOR SEWER LATERALS SHALL BE SDR 26. FITTINGS SHALL BE MOLDED IN ONCE PIECE WITH ELASTOMERIC JOINTS AND MINIMUM 1/2" THICKNESS. FITTINGS SHALL BE APPROVED BY THE AUTHORITY. NOT CURRENTLY AVAILABLE IN MOLDED FORM MAY BE FABRICATED IN ACCORDANCE WITH ASTM D3034 WITH MANUFACTURER'S STANDARD PIPE BELLS AND GASKETS. GASKET SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 0.20 SQ. INCHES AND CONFORM TO ASTM F477 SPECIFICATION.

6. PVC SEWER PIPE SHALL BE COLOR CODED GREEN, STENCILED "SEWER LINE" (2" LETTERING ON TWO SIDES OF THE PIPE IN AT LEAST THREE AREAS PER JOINT).

7. INSTALL ADHESIVE IDENTIFICATION TAPE ALONG PIPELINE. TAPE SHALL BE MINIMUM THICKNESS 4 MILS, WIDTH 4 INCHES, LETTER SIZE 1" HIGH. TAPE COLOR AND LETTERING SHALL BE "SEWER LINE", BLACK PRINTING ON GREEN BACKGROUND. PLACE TAPE AS FOLLOWS: 2" INCH TAPE - CENTER ALONG TOP HALF OF PIPE, 10" - 16" PIPE - PLACE ALONG BOTH SIDES OF THE TOP HALF OF PIPE, 20" PIPE AND LATERALS - PLACE ON BOTH SIDES OF THE TOP HALF OF PIPE, CENTERED ALONG TOP HALF OF PIPE.

8. INSTALL WARNING TAPE ALONG WORKED PORTIONS. TAPE SHALL BE 3"X4" WIDE VINYL CONTINUOUS TAPE, COLORED GREEN WITH BLACK LETTERING. TAPE SHOULD CAUTION "SEWER BELL BELOW". INCH TAPE SHALL BE PLACED EVERY 10 FEET ABOVE PIPE, MINIMUM OF 1 FOOT BELOW GRADE.

9. CONNECTIONS TO EXISTING SEWER PIPE SHALL BE CONDUCTED IN SUCH A MANNER THAT THE EXISTING SEWER REMAINS IN OPERATION. PROVIDE BY PASS PUMPING OF EXISTING FLOWS OR COLLECT AND LEGALLY DISPOSE OF EXISTING SEWER FLOW AS NEEDED TO MAINTAIN EXISTING SEWER LINE IN SERVICE.

10. PRIOR TO INSPECTIONS AND TESTING, CLEAN ALL INSTALLED LINES AND MANHOLES. TEST PROCEDURES SHALL BE APPROVED BY THE ENGINEER. ALL TESTS SHALL BE MADE IN THE PRESENCE OF THE ENGINEER AND UTILITY. NOTIFY THE ENGINEER AND THE UTILITY COMPANIES, AT LEAST 72 HOURS BEFORE ANY WORK IS TO BE INSPECTED OR TESTED.

11. PROVIDE ALL EQUIPMENT FOR TESTING. INCREMENTS ON GAGES USED FOR LOW PRESSURE AIR TESTING SHALL BE OF THE SCALE TO THE NEAREST 0.1 PSI. GAGES, PUMPS, AND HOSES SHALL BE IN GOOD WORKING ORDER WITH NO NOTICEABLE LEAKS.

12. SERVICE LATERALS SHALL BE COMPLETED PRIOR TO TESTING, AND ARE SUBJECT TO THE SAME TESTING REQUIREMENTS AS THE MAINLINE.

13. ALL PROVIDE LIGHT SOURCE AND MIRRORS FOR LAMPING OF SEWER. ANY SEWER IN WHICH THE DIRECT LIGHT OF A LAMP CANNOT BE VIEWED IN EITHER DIRECTION, FULL CIRCLE, BETWEEN ADJACENT MANHOLES SHALL BE CONSIDERED UNSATISFACTORY, UNLESS THE LINE IS DESIGNED WITH HORIZONTAL DEFLECTIONS, AND SHALL BE REPAIRED BY THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION.

14. CONDUCT LOW PRESSURE AIR TESTS AT 4.0 PSI INITIAL PRESSURE, 10" MINIMUM COVER, 10" MINIMUM SURFACE AREA BEING TESTED. MINIMUM ALLOWABLE LEAKAGE IS 0.0015 CUBIC FEET PER MINUTE PER SQUARED FOOT INTERNAL SURFACE AREA BEING TESTED. ALLOWABLE AIR PRESSURE DROP DURING THE TEST IS 0.5 PSI. MINIMUM REQUIRED TEST TIME (DURATION) IS: A) 4" PIPE = 1 MIN 53 SECS; B) 6" PIPE = 1 MIN 40 SECS; C) 8" PIPE = 1 MIN 27 SECS; D) 10" PIPE = 1 MIN 14 SECS; E) 12" PIPE = 1 MIN 01 SECS. LENGTH OF PIPE TESTED, WHICHEVER IS GREATER, D) 10" PIPE = 4 MIN 43 SEC, OR 1.87 X LENGTH OF PIPE TESTED, WHICHEVER IS GREATER; E) 12" PIPE = 5 MIN 40 SEC, OR 1.709 X LENGTH OF PIPE TESTED, WHICHEVER IS GREATER.

15. CONDUCT LEAKAGE TESTS OF MANHOLES. PUGH INVERTS AND FILL MANHOLE WITH WATER. ALLOWABLE WATER DROP PER MANHOLE TO BE FIELD DETERMINED BY UTILITY AND ENGINEER. MINIMUM TEST DURATION IS 1 HOUR.

16. CONDUCT DEFLECTION TESTS OF PIPELINE AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. MAXIMUM ALLOWABLE DEFLECTION IS 5%. MEASURE DEFLECTION BY MANUALLY PULLING A MANHOLE THROUGH THE PIPE. THE MINIMUM MANHOLE OUTLET DIAMETER SHALL BE IN ACCORDANCE WITH THE FOLLOWING: A) MANHOLE = 4.5" MANHOLE; B) MANHOLE = 7.25" MANHOLE; C) MANHOLE = 10" MANHOLE; D) MANHOLE = 12" MANHOLE; E) MANHOLE = 15" MANHOLE; F) MANHOLE = 18" MANHOLE; G) MANHOLE = 21" MANHOLE; H) MANHOLE = 24" MANHOLE; I) MANHOLE = 30" MANHOLE.

17. DEFLECTION TESTING IS CONSIDERED SATISFACTORY IF THE MANHOLE CAN BE PULLED BY HAND THROUGH THE PIPE BEING TESTED IF THE MANHOLE CANNOT BE PULLED THROUGH THE PIPE, REPLACE OR CORRECT THE PIPE AND RETEST UNTIL THE PIPE IS SATISFACTORY. ANY PIPE REMOVED OR CORRECTED DUE TO FAILING DEFLECTION TESTING SHALL ALSO BE RE-TESTED FOR LEAKAGE.

STORM SEWER SYSTEMS

1. STORM SEWER PIPE SHALL BE CORRUGATED POLYETHYLENE (PE) OR REINFORCED CONCRETE PIPE (RCP) UNLESS SPECIFICALLY NOTED OTHERWISE. 24" OR SMALLER RCP SHALL BE CONCRETE PIPE WITH ASTM C78, ELLIPTICAL CONCRETE PIPE SHALL CONFORM WITH ASTM C507. PIPE JOINTS AND O-RING GASKETS SHALL COMPLY ASTM C434. MINIMUM COVER OVER THE PIPE, INCLUDING COVER OVER THE CREST OF THE PIPE WHERE APPLICABLE, SHALL BE 30 INCHES.

2. RCP PIPE SHALL NOT BE SHIPPED FROM MANUFACTURER UNTIL THE COMPRESSIVE STRENGTH OF THE PIPE HAS REACHED 4000 PSI AND A MINIMUM OF 5 DAYS HAVE PASSED SINCE THE MANUFACTURING OR REPAIR OF THE PIPE HAS BEEN COMPLETED.

3. CORRUGATED POLYETHYLENE (PE) PIPE AND FITTINGS SHALL BE HIGH DENSITY, IN ACCORDANCE WITH ASTM D3030, CELL 1 ASSOCIATION SPECIFICATION. 24" OR SMALLER PE SHALL COMPLY WITH ASTM C78, ELLIPTICAL CONCRETE PIPE WITH ASTM C507. PE 12" SDR 35 SHALL COMPLY WITH ASSHTO M224, TYPE S. BELL JOINTS FOR 4"-10" PIPE SHALL BE PUSH-ON SLEEVE. BELL JOINTS FOR 12" AND LARGER PE SHALL BE BELL AND GASKET. PE SHALL BE MANUFACTURED AND INSTALLED BY PIPE MANUFACTURER AND SHALL COMPLY WITH ASTM D1556, GRADE 22. FITTINGS SHALL COMPLY WITH ASSHTO M224.

4. UNDERDRAIN PIPE SHALL BE PERFORATED POLYVINYL CHLORIDE PIPE IN ACCORDANCE WITH ASTM F758. FILTER FABRIC UNDERDRAIN SOCK SHALL BE TYPE D-3 IN ACCORDANCE WITH FOOT INDEX NO. 199.

5. ALL PIPE JOINTS SHALL BE WRAPPED WITH FILTER FABRIC. FILTER FABRIC SHALL BE IN ACCORDANCE WITH FOOT INDEX NO. 199, TYPE D-3, A.O.S. 70-YEILD. INSTALL IN ACCORDANCE WITH FOOT INDEX NO. 280. PROVIDE MINIMUM 12" OVERLAP.

6. INSTALL POLYETHYLENE PIPE IN ACCORDANCE WITH ASTM D2321. BACKFILL AND COMPACT EVENLY ON EACH SIDE TO PREVENT DISPLACEMENT. MINIMUM COVER OVER POLYETHYLENE PIPE SHALL BE AS FOLLOWS: A) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR ASPHALT. B) PIPE UNDER RIGID PAVEMENT OR ASPHALT. C) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR ASPHALT. D) PIPE UNDER RIGID PAVEMENT, RIGID PAVEMENT, OR ASPHALT. E) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. F) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. G) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. H) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. I) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. J) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. K) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. L) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. M) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. N) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. O) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. P) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. Q) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. R) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. S) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. T) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. U) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. V) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. W) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. X) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. Y) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE. Z) PIPE UNDER FLEXIBLE PAVEMENT, RIGID PAVEMENT, OR UNPAVED SURFACE.

7. INSTALL UNDERDRAINS IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 40.0. INSTALL CLEANOUTS AS SHOWN ON THE DRAWINGS.

8. PRIOR TO INSPECTIONS AND TESTING, CLEAN ALL INSTALLED LINES AND STRUCTURES.

9. ALL STORM PIPE SHALL BE SUBJECTED TO LEAKAGE TESTING. WHEN THE GROUND WATER LEVEL ABOVE THE TOP OF THE PIPE, AN INFILTRATION TEST SHALL BE PERFORMED BY SEALING A LENGTH OF PIPE AND MEASURING THE DEPTH OF FLOW OVER THE STORMING WEIR, OR BY PUMPING THE INFILTRATED WATER INTO CONTAINERS FOR MEASUREMENT. TESTS SHALL BE CONDUCTED AT A RATE OF FLOW FOR EACH SECTION OF PIPE TO BE TESTED OF 10 GALLONS PER LINEAL FOOT OF PIPE PER HOUR. FOR EACH MILE OF PIPE, WHEN THE GROUND WATER LEVEL IS BELOW THE TOP OF THE PIPE, THE PIPE SHALL BE TESTED FOR LEAKAGE BY EXFILTRATION. EXFILTRATION LEAKAGE TEST SHALL CONSIST OF ISOLATING THE PARTICULAR SECTION, FILLING WITH WATER TO A DEPTH OF 4 FEET FOR EACH SECTION OF PIPE TO BE TESTED. THE WATER SHALL BE ALLOWED TO STAND NOT LESS THAN FOUR HOURS. THE SECTION SHALL THEN BE REFILLED WITH WATER UP TO THE ORIGINAL LEVEL AND AFTER TWO HOURS THE DROP IN WATER LEVEL SHALL BE MEASURED. THE COMPUTED LEAKAGE SHALL NOT EXCEED 150 GALLONS PER TWO INCH DIAMETER, PER 24 HOURS, PER MILE OF PIPE.

STORM SEWER PIPE SHALL BE CORRUGATED POLYETHYLENE (PE) OR REINFORCED CONCRETE PIPE (RCP) UNLESS SPECIFICALLY NOTED OTHERWISE.

1. RCP SHALL BE MANUFACTURED TO THE FOLLOWING REQUIREMENTS:

- a. RCP SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C567. PIPE JOINTS AND GASKETS SHALL COMPLY ASTM C484. MINIMUM COVER OVER THE PIPE, INCLUDING COVER OVER THE BELL OF THE PIPE WHERE APPLICABLE, SHALL BE 30 INCHES.

2. RCP PIPE SHALL NOT BE SHIPPED FROM MANUFACTURER UNTIL THE COMPRESSIVE STRENGTH OF THE PIPE HAS REACHED 4000 PSI AND A MINIMUM OF 7 DAYS HAVE ELAPSED SINCE CASTING.

3. CORRUGATED POLYETHYLENE (PE) PIPE AND FITTINGS SHALL BE HIGH DENSITY, IN ACCORDANCE WITH ASTM D3505, CELL CLASSIFICATION 3344C09 (4"X10") OR CELL CLASSIFICATION 3354C02 (12"-36"). PIPE 4"X10" SHALL COMPLY WITH ASTMD M252. TYPE S PIPE 12"-36" SHALL COMPLY WITH ASSHTO M294. TYPE S. BELL JOINTS FOR ALL PE PIPE SHALL BE PUSH-ON SLEEVE. BELL JOINTS FOR ALL PE PIPE SHALL BE FIELD JOINTS. ALL PE PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM D1556. ALL PE PIPE SHALL BE INSTALLED BY PIPE MANUFACTURER'S RECOMMENDED PRACTICES.

4. UNDERDRAIN PIPE SHALL BE PERFORATED POLYVINYL CHLORIDE PIPE IN ACCORDANCE WITH ASTM F768. FILTER FABRIC UNDERDRAIN SHALL BE TYPE D-3 IN ACCORDANCE WITH FOOT INDEX NO. 199.

5. ALL JUNCTIONS SHALL BE WRAPPED WITH FILTER FABRIC. FILTER FABRIC SHALL BE IN ACCORDANCE WITH FOOT INDEX NO. 199. TYPE D-3, ASTM D7015. INSULATION SHALL BE IN ACCORDANCE WITH ASTM D675. PROVIDE MINIMUM 6" COVER.

INSTALL POLYETHYLENE PIPE IN ACCORDANCE WITH ASTM D3231. BACKFILL AND COMPACT EVENLY ON EACH SIDE TO PREVENT DISPLACEMENT. MINIMUM COVER OVER POLYETHYLENE PIPE SHALL BE AS FOLLOWS: (A) PIPE UNDER FLEXIBLE PAVEMENT, ROAD PAVEMENT, OR UNPAVED AREAS WHERE BEDDING IS SUITABLE SOLIDS AS DEFINED IN THE GENERAL NOTES; MINIMUM COVER SHALL BE 18 INCHES OR ONE PIPE DIAMETER, WHICHEVER IS GREATER. (B) PIPE UNDER FLEXIBLE PAVEMENT, ROAD PAVEMENT, OR UNPAVED AREAS WHERE BEDDING IS MANUFACTURED AGGREGATES CLASS 1A OR 1B AS DEFINED IN ASTM D3231; MINIMUM COVER SHALL BE 30 INCHES OR ONE PIPE DIAMETER, WHICHEVER IS GREATER.

3. INSTALL UNDERDRAINS IN ACCORDANCE WITH FOOT SPECIFICATION SECTION 440. INSTALL CLEANOUTS AS NOTED ON THE DRAWINGS.

PRIOR TO INSPECTIONS AND TESTING, CLEAN ALL INSTALLED LINES AND STRUCTURES.

ALL STORM PIPE SHALL BE SUBJECTED TO LEAKAGE TESTING. WHEN THE GROUND WATER LEVEL IS ABOVE THE TOP OF THE PIPE, AN INFILTRATION TEST SHALL BE CONDUCTED. IF THE GROUND WATER LEVEL IS BELOW THE TOP OF THE PIPE, A DROP-IN TEST OR A MEASURING WEIR, OR BY PUMPING THE INFILTRATED WATER INTO CONTAINERS FOR MEASUREMENT. TESTS SHALL BE CONDUCTED FOR A MINIMUM OF FOUR HOURS. INFILTRATION LEAKAGE SHALL NOT EXCEED 150 GALLONS PER 24 HOURS, PER INCH DIAMETER, PER FEET OF LENGTH OF PIPE. IF THE LEAKAGE RATE EXCEEDS 150 GALLONS PER 24 HOURS, PER INCH DIAMETER, PER FEET OF LENGTH OF PIPE, THE CONTRACTOR SHALL REPAIR THE LEAKAGE. IF THE LEAKAGE RATE DOES NOT EXCEED 150 GALLONS PER 24 HOURS, PER INCH DIAMETER, PER FEET OF LENGTH OF PIPE, THE CONTRACTOR SHALL PROCEED WITH THE NEXT STEP IN THE TESTING PROCESS. IF THE LEAKAGE RATE DOES NOT EXCEED 150 GALLONS PER 24 HOURS, PER INCH DIAMETER, PER FEET OF LENGTH OF PIPE, THE CONTRACTOR SHALL PROCEED WITH THE NEXT STEP IN THE TESTING PROCESS. IF THE LEAKAGE RATE DOES NOT EXCEED 150 GALLONS PER 24 HOURS, PER INCH DIAMETER, PER FEET OF LENGTH OF PIPE, THE CONTRACTOR SHALL PROCEED WITH THE NEXT STEP IN THE TESTING PROCESS.

- AS-BUILT DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER THREE WEEKS PRIOR TO FINAL INSPECTION. ALL AS-BUILT DATA SHALL BE PROVIDED BY A FLORIDA LICENSED SURVEYOR, SIGNED, SEALED AND DATED BY THE RESPONSIBLE PARTY.
2. AT THE COMPLETION OF THE WORK, DELIVER THE DRAWINGS DOCUMENTING AS-BUILT INFORMATION, MEASURED BY A LICENSED SURVEYOR, TO THE ENGINEER, IN GOOD CONDITION AND FREE FROM ANY EXTRANEOUS NOTATION. THE AS-BUILT INFORMATION IS TO INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. HORIZONTAL LOCATIONS AND VERTICAL ELEVATIONS FOR ALL UTILITY AND STORM STRUCTURES INCLUDING BUT NOT LIMITED TO MANHOLES, INLETS AND CLEANOUTS, INCLUDING STRUCTURE TOP AND INVERT ELEVATIONS.
 - B. DISTANCE ALONG PIPELINES BETWEEN STRUCTURES.
 - C. STORMWATER POND TOP OF BERM AND POND BOTTOM ELEVATIONS AT A MINIMUM OF SIX LOCATIONS PER POND.
 - D. STORMWATER CONTROL STRUCTURE DIMENSIONS AND ELEVATIONS, INCLUDING ALL WEIRS, SLOTS, ORIFICES, GRATES, AND SKIMMERS.
 - E. STORMWATER POND TOP AND BOTTOM HORIZONTAL DIMENSIONS MEASURED AT A MINIMUM OF SIX LOCATIONS PER POND, WITH LOCATIONS TIED TO PROPERTY CORNERS, EASEMENTS, AND RIGHTS-OF-WAY.
 - F. STORMWATER CONVEYANCE SYSTEMS INCLUDING DIMENSIONS, ELEVATIONS, CONTOURS, AND CROSS SECTIONS.
 - G. HORIZONTAL LOCATIONS AND VERTICAL ELEVATIONS OF ALL UTILITY VALVES, FITTINGS, CONNECTION POINTS, ETC.
 - H. VERTICAL ELEVATIONS OF ALL PIPELINES AT CROSSINGS OF POTABLE WATER MAINS (WHETHER THE WATER MAIN IS EXISTING OR NEW) IN ORDER TO DOCUMENT THAT THE MINIMUM REQUIRED VERTICAL SEPARATION HAS BEEN MET.
 - I. UTILITY PIPELINE TIED HORIZONTALLY TO EDGE OF PAVEMENT AND RIGHT-OF-WAY LINES, LOCATED EVERY 200-FT PLUS ALL CHANGES IN HORIZONTAL OFFSET.
 - J. PAVEMENT WIDTHS AND ELEVATIONS AT THE CENTERLINE AND EDGE OF PAVEMENT EVERY 200 FEET PLUS AT ALL CHANGES IN LONGITUDINAL SLOPE, CROSS-SLOPE, INLET LOCATIONS, AND AT ALL DRIVEWAY AND STREET INTERSECTIONS. FOR PARKING LOTS, RECORD CENTERLINE AND EDGE OF PAVEMENT ELEVATIONS ALONG LAID DRIVEABLES AND ISLANDS.
 - K. ALL PARKING AREAS AND SIDEWALK RAMPS DESIGNATED FOR HANDICAP ACCESS SHALL CONTAIN HORIZONTAL AND VERTICAL MEASUREMENTS IN ORDER TO VERIFY REQUIRED WIDTHS AND SLOPES HAVE BEEN MET.
 - L. HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION THAT DEVIATES FROM THE APPROVED ENGINEERING DRAWINGS.
 - M. WHERE THE PLANS CONTAIN SPECIFIC HORIZONTAL LOCATION DATA, SUCH AS STATION AND OFFSET, THE AS-BUILT DRAWINGS ARE TO REFLECT THE ACTUAL HORIZONTAL LOCATION.
 - N. WHERE THE PLANS CONTAIN SPECIFIC VERTICAL ELEVATION DATA, THE AS-BUILT DRAWINGS ARE TO REFLECT THE ACTUAL MEASURED VERTICAL ELEVATION.

1. ALL VALVES, FIRE HYDRANTS, MANHOLES, WATER, RECLAIM WATER AND SEWER SERVICES, WATER AND FORCE MAIN FITTINGS, UNDERGROUND CLEANSOUTS, CATCH BASINS, JUNCTION BOXES AND ANY OTHER STRUCTURES LOCATED IN THE RIGHT-OF-WAY OR AN EASEMENT SHALL BE IDENTIFIED AND LOCATED BY THE DESIGN PROFESSIONALS AND THE SURVEYOR LICENSED IN FLORIDA, AS REQUIRED BY THE DEPARTMENT OF TRANSPORTATION. THE IDENTIFICATION SHALL BE BASED ON INTERSECTION PIS AND CENTERLINE OF RIGHT-OF-WAY, FOR FACILITIES LOCATED ON PRIVATE ROADS, THE DIMENSIONING SHALL BE FROM CENTERLINE OF PAVING OR ANOTHER READILY VISIBLE BASELINE.
2. ELEVATIONS SHALL BE PROVIDED AS LISTED ABOVE FOR ALL MANHOLE RIMS AND INVERTS, JUNCTION BOX RIM AND INVERTS, CATCH BASIN AND INVERTS, AND BATTLE WEIR AND INVERT ELEVATIONS IN CONTROL STRUCTURES. ELEVATIONS SHALL ALSO BE PROVIDED AT THE PVSIS AND AT EVERY OTHER LOT LINE OR 200 FEET, WHICHEVER IS LESS, OF DRAINAGE SWALES AND DITCHES. BENCH MARKS AND ELEVATION DATUM SHALL BE INDICATED.
3. SLOPES FOR PIPES AND DITCHES SHALL BE RECALCULATED, BASED ON ACTUAL FIELD MEASURED SLOPES, ELEVATIONS, PIPE SIZE AND TYPE. SHOWING CROSS SECTION OF DRAINAGE DITCHES AND SLEAVES SHALL BE VERIFIED.
4. CENTERLINE OF ROADS SHALL BE TIED TO RIGHT-OF-WAY LINES. ELEVATION OF ROADWAY CENTERLINE SHALL BE GIVEN AT PVSIS AND ALL INTERSECTIONS.
5. RECORD DRAWINGS SHALL SHOW BENCHMARKS AND DISTANCES FOR ALL RIGHT-OF-WAY AND EASEMENT LINES, AND PROPERTY CORNERS.
6. LOCATIONS AND ELEVATIONS OF DRAINAGE DITCHES, SWALES, WATER LINES AND FORCE MAINS SHALL BE SHOWN EVERY 200 FEET (MEASURED ALONG THE CENTERLINE) OR ALTERNATE LOT LINES, WHICHEVER IS CLOSER. DIMENSIONS AT THESE LOCATIONS SHALL INDICATE DISTANCE FROM THE CENTERLINE OF RIGHT-OF-WAY TO THE FACILITY.
7. SIDEWALKS, FENCES AND WALLS, IF INSTALLED AT THE TIME OF INITIAL RECORD DRAWING SUBMITTAL, SHALL BE LOCATED EVERY 200 FEET OR ALTERNATE LOT LINES, WHICHEVER IS CLOSER. DIMENSIONS SHALL INCLUDE DISTANCE FROM THE RIGHT-OF-WAY LINE AND THE BACK OF CURB AND LOT LINE OR EASEMENT LINE.
8. UNDERGROUND CLEANSOUTS FOR RETENTION SYSTEMS OUTSIDE THE RIGHT-OF-WAY SHALL BE LOCATED BY STATION AND OFFSET FROM AN APPROPRIATE BASLINE.
9. SANITARY SEWER MAINLINE WYES SHALL BE LOCATED FROM THE DOWNSTREAM MANHOLE. THESE DIMENSIONS SHALL BE PROVIDED BY ON-SITE INSPECTIONS OR TELEVIEWINGS OF THE SEWER FOLLOWING INSTALLATION.
10. ELEVATIONS SHALL BE PROVIDED ON THE TOP OF OPERATING NUTS FOR WATER AND FORCE MAIN VALVES AT MAJOR INTERSECTIONS CONNECTING TO COUNTY AND/OR STATE ROADS FOR PROPOSED OR EXISTING ARTERIAL/HIGHWAYS AND AT DRAIN CROSSINGS.
11. ALLOWABLE TOLERANCE SHALL BE ± 0.01 INCHES FOR HORIZONTAL DIMENSIONS, VERTICAL DIMENSIONS SHALL AS THE DIFFERENCE IN ELEVATIONS BETWEEN MANHOLE INVERTS SHALL HAVE AN ALLOWABLE TOLERANCE OF $\pm .18$ INCH PER 50 FEET (OR PART THEREOF) OF HORIZONTAL DISTANCE UP TO A MAXIMUM OF $\pm .36$ INCH.
12. RECORD DRAWINGS SHALL BE CERTIFIED BY THE DESIGN PROFESSIONALS (ENGINEER AND SURVEYOR LICENSED IN FLORIDA, AS REQUIRED BY THE DEPARTMENT OF TRANSPORTATION) AND SUBMITTED ON SIGNED AND DATED MYLAR DRAWINGS TOGETHER WITH ITS 1/2" INCH SKETCHES, AUTOCAD RELEASE 12 FOR LATER FOR REVIEW AND THE USE OF THE COUNTY IN THE FOLLOWING FORMAT:

ALL RECORD DRAWING REQUIREMENTS MUST BE SUBMITTED TO THE ENGINEER PRIOR TO STARTING THE BACTERIA TESTING OF WATER LINES

1. DATE
2. PROJECT TITLE AND NUMBER
3. CONTRACTOR'S NAME AND NUMBER
4. TITLE AND NUMBER OF EACH RECORD DOCUMENT
5. SIGNATURE OF CONTRACTOR OR HIS AUTHORIZED REPRESENTATIVE

1. FOR LEGAL DESCRIPTION, BOUNDARY INFO., AND BENCHMARK INFO., SEE SITE SURVEY SHEETS.
2. PRIOR TO ANY CONSTRUCTION, CONTRACTOR SHALL FIELD STAKE ALL CENTERLINE GEOMETRY TO ENSURE PROPOSED DIMENSIONS FIT EXISTING CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARISE.
3. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS.
4. CONTRACTOR SHALL MATCH PROPOSED CURB AND GUTTER, CONCRETE AND PAVEMENT TO EXISTING IN GRADE AND ALIGNMENT.
5. CONTRACTOR SHALL REMOVE PAVEMENT & CONCRETE IN ACCORDANCE WITH SPECIFICATIONS OF THE FLORIDA DEPT. OF TRANSPORTATION.
6. THE EARTHWORK FOR ALL BUILDING FOUNDATIONS AND SLABS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL, BUILDING PLANS AND SPECIFICATIONS.
7. CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE DONE TO ANY EXISTING ITEM DURING CONSTRUCTION, SUCH AS, BUT NOT LIMITED TO, DRAINAGE UTILITIES, PAVEMENT, STRIPING, CURB, ETC. REPAIRS SHALL BE EQUAL OR BETTER THAN THE ORIGINAL EXISTING CONDITIONS.
8. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
9. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ALL NEW/EXISTING PROPOSED BUILDING DIMENSIONS AND EXISTING UTILITY ENTRANCE LOCATIONS.
10. ALL DISTURBED AREAS ARE TO RECEIVE FOUR INCHES OF TOPSOIL, SEED OR SOD, SEE SECTIONS AND LANDSCAPE PLAN AND WATER INTO A HEALTHY STAND OF GRASSES IS ESTABLISHED.
11. ALL CURBED RADI ARE TO BE 10' AND 3" UNLESS OTHERWISE NOTED, STRIPPED RADI ARE TO BE 10' AND 3".

1. ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
2. CONTRACTOR SHALL NOTIFY THE UTILITY AUTHORITIES INSPECTORS 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.
3. MINIMUM TRENCH WIDTH SHALL BE 2 FEET.
4. ALL WATER MAIN JOINTS ARE TO BE MECHANICAL, RESTRAINED JOINTS AS CALLED OUT IN SPECIFICATIONS.
5. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3'-0" COVER ON ALL WATER MAINS.
6. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.
7. TOPS OF EXISTING MANHOLES SHALL BE RAISED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS, AND TO BE ONE FOOT ABOVE FINISHED GRADE ELEVATION OF CURB OR STREET TEST LINES.
8. ALL CONCRETE FOR ENCHASTES SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH AT 3000 P.S.I.
9. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.
10. REFER TO INTERIOR PLUMBING DRAWINGS FOR TIE-IN OF ALL UTILITIES.
11. CONTRACTOR IS RESPONSIBLE FOR COMPLYING TO THE SPECIFICATIONS OF THE LOCAL AUTHORITIES (MANATEE COUNTY) WITH REGARDS TO MATERIALS AND INSTALLATION OF THE WATER AND SEWER LINES.
12. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, HEADGAGE TAPING IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
13. CONTRACTORS ARE RESPONSIBLE FOR ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES. THIS AND THE FINAL CONNECTIONS OF THE SERVICE SHALL BE COMPLETED 30 DAYS PRIOR TO STORE POSSESSION.
14. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION OF WATER AND SEWER LINES.
15. REFER TO BUILDING PLANS FOR SITE LIGHTING ELECTRICAL PLAN.
16. FIRE DEPARTMENT ACCESS ROADS AND WATER SUPPLY SYSTEM WILL NEED TO BE IN PLACE PRIOR TO ANY COMBUSTIBLES BEING BROUGHT ON SITE.

CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.

2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITIES AND NOTIFYING THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING CONSTRUCTION.

3. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING STORM SEWER STRUCTURES, PIPES AND ALL UTILITIES PRIOR TO CONSTRUCTION.

4. IF ANY EXISTING STRUCTURES ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.

5. CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF EXISTING STRUCTURES, INCLUDING REMOVAL OF ANY EXISTING UTILITIES SERVING THE STRUCTURE. UTILITIES ARE TO BE REMOVED TO THE PROPERTY BOUNDARY.

6. FINISHED GRADE CONTOURS ARE SHOWN AT ONE FOOT (1') INTERVALS.

7. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.

8. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE INVOLVED UTILITIES AND TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATION OF THESE UTILITIES WITH THE OWNER OF THE UTILITY. ANY INTERFERENCE WITH ANY UTILITY REQUIRES CAUTION WHEN CROSSING AN UNDERGROUND UTILITY, WHETHER SHOWN ON THE PLANS OR LOCATED BY THE UTILITY COMPANY. ANY UTILITIES, WHETHER SHOWN ON THE PLANS OR LOCATED BY THE UTILITY COMPANY, SHALL BE PROTECTED. ANY RELOCATION OF ANY UTILITY SHALL BE COORDINATED WITH THE ENGINEER AND THE RESPECTIVE UTILITY COMPANY FOR RELOCATION OR PROPER INDICATION. DELAY OR INCONVENIENCE TO THE UTILITY COMPANY BY THE CONTRACTOR BY THE RELOCATION OF VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION WILL BE ALLOWED.

9. PRE-CAST STRUCTURES MAY BE USED AT CONTRACTORS OPTION.

10. STORM PIPE ACCEPTABLE FOR USE WITH MANATEE COUNTY STORM WATER ENGINEERS PRIOR TO WRITTEN APPROVAL. (SEE MASTER SITE SPECIFICATIONS SECTION 02300 FOR ALLOWED MATERIALS).

A. RCP, CLASS III PER ASTM C-76 (UNLESS NOTED OTHERWISE.)

B. HIGH DENSITY POLYETHYLENE PIPE (HDPE) SMOOTH INTERIOR / ANNULAR EXTERIOR.

C. SPIRAL RIB METAL PIPE TYPE 1R.

D. POLYVINYL CHLORIDE (PVC) PIPE.

E. PIPE INSTALLATION SHALL COMPLY WITH MANUFACTURERS RECOMMENDATIONS.

F. ALL JOINTS SHALL BE WRAPPED WITH FILTER FABRIC PER FOOT INDEX NO. 280.

11. ALL STORM PIPE ENTERING STRUCTURES SHALL BE GROUDED TO ASSURE CONNECTION AT STRUCTURE IS WATERTIGHT.

12. ALL STORM STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR INVERT FROM INVERT IN TO INVERT OUT.

13. ALL STORM SEWER MANHOLES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT AND SHALL HAVE TRAFFIC BEARING RING AND COVERS. MANHOLES IN UNPAVED AREAS SHALL BE "E" ABOVE FINISH GRADE. LIDS SHALL BE LABELED "STORM SEWER".

14. ALL CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 3000 P.S.I. UNLESS OTHERWISE NOTED.

15. EXISTING DRAINAGE STRUCTURES TO BE INSPECTED AND REPAIRED AS NEEDED AND EXISTING PIPES TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS. ALL INSTALLED STRUCTURES SHALL BE CLEARED OF SILT AND DEBRIS PRIOR TO ANY CONSTRUCTION OF UTILITY LINES ARE PROTECTED.

16. ALL EROSION CONTROL MEASURES MUST BE INSTALLED PRIOR TO ANY LAND DISTURBANCE ACTIVITIES.

17. THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE EPA OR APPLICABLE STATE GENERAL N.P.D.# 5. PERMIT FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.

18. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.

19. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.

20. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.

21. CONTRACTOR SHALL MAINTAIN ALL EXISTING PARKING, SIDEWALK, DRIVES, ETC. CLEAR AND FREE FROM ANY CONSTRUCTION ACTIVITY AND/OR MATERIAL TO ENSURE EASY AND SAFE PEDESTRIAN AND VEHICULAR TRAFFIC.

22. CONTRACTOR SHALL COORDINATE PROPOSED UTILITY CONSTRUCTION WITH ALL UTILITY PROVIDERS TO ALLOW THEM TO WITNESS THE CONSTRUCTION AND ENSURE THEIR PARTS OF THE UTILITY LINES ARE PROTECTED.

23. CONTRACTOR MUST STOP OPERATION AND NOTIFY THE OWNER FOR PROPER DIRECTION IF ANY ENVIRONMENTAL OR HEALTH RELATED CONTAMINATE IS ENCOUNTERED DURING EXCAVATION/CONSTRUCTION.

24. SEE LANDSCAPE PLANS FOR TREE PROTECTION AND GRADING METHODS ADJACENT TO TREES.

25. CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF TREE PROTECTION BARRIERS WITH THE MAJOR COUNTY FORESTER PRIOR TO ANY CLEARING AND GRUBBING OF EXISTING VEGETATION.

26. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL BE SOODED OR SEED AND MULCH AS DELINEATED ON THE LANDSCAPE PLAN AND THE SECTION SHEETS. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES AND TO ALL EXPOSED SOILS. CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH GOVERNING SPECIFICATIONS UNTIL A HEALTHY STAND OF VEGETATION IS OBTAINED.

27. CONTRACTOR TO REFER TO LANDSCAPING AND IRRIGATION PLAN FOR RELOCATIONS AND ADDITIONS TO IRRIGATION.

28. ALL CUT OR FILL SLOPES SHALL BE 4:1 OR FLATTER UNLESS OTHERWISE NOTED.

29. ALL DISTURBED AREAS WITHIN FOOT RIGHT-OF-WAY SHALL BE SOODED.

30. ALL STRUCTURES WITHIN FOOT RIGHT-OF-WAY SHALL BE CONSTRUCTED WITH SIDE SLOPES AND SHALL CONFORM TO FOOT INDEX NOS 200 & 201.

31. ALL TYPE BOTTOMS FOR THE RETENTION PONDS AND SWALES SHALL BE SOODED.

32. RANDOM SAMPLES SHOULD BE OBTAINED FOR PERMEABILITY TESTING FOR VERIFICATION PURPOSES DURING CONSTRUCTION.

1. ALL WATER AND RECLAIMED WATER DISTRIBUTION SYSTEMS SHALL MEET OR EXCEED MANATEE COUNTY PUBLIC WORKS UTILITY STANDARDS. REFER TO SPECIFICATIONS FOR DETAILS.

3. ALL RECORD DRAWINGS SHALL MEET OR EXCEED MANATEE COUNTY PUBLIC WORKS UTILITY STANDARDS. REFER TO SPECIFICATIONS FOR DETAILS.