

THE CITY'S PUBLIC UTILITIES DEPARTMENT (386) 506-5750 SHALL BE GIVEN A MINIMUM OF 48 HOURS ADVANCE NOTICE (NOT INCLUDING HOLIDAYS OR WEEKENDS) PRIOR TO BEGINNING ANY SANITARY SEWER CONSTRUCTION.

CONSTRUCTION:

1. ALL WORK PERFORMED ON SANITARY SEWER FACILITIES OWNED OR PROPOSED TO BE OWNED BY THE CITY SHALL BE CONSTRUCTED BY AN UNDERGROUND UTILITY CONTRACTOR, OR FLORIDA LICENSED GENERAL CONTRACTOR REGISTERED WITH THE CITY.
2. THE PLANS SHALL DIMENSION THE LOCATION, OF ALL MAINS MEASURED FROM THE BACK OF CURB (OR EDGE OF PAVEMENT, IF NO CURBING EXISTS. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PROPOSED AND EXISTING PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE.
3. PROFILE VIEWS SHALL BE PROVIDED FOR ALL SEWER MAINS. PROFILE VIEWS SHALL BE ON THE SAME SHEET AS THE ASSOCIATED PLAN VIEW AND SHALL INCLUDE THE FOLLOWING INFORMATION:
 - A. SIZE, SLOPE, LENGTH AND CLASS OF PIPE
 - B. MANHOLE RIM AND INVERT ELEVATIONS
 - C. UTILITY CROSSINGS WITH VERTICAL SEPARATION
 - D. SHOW PROPOSED SEWER AND EXISTING UTILITY
 - E. EXISTING GROUND PROFILE
 - F. MATCH LINE
 - G. VICINITY MAP
 - H. PROFILE VIEW STATIONS TO COINCIDE WITH PLAN VIEW STATIONS
4. GREASE INTERCEPTORS ARE REQUIRED FOR ALL COMMERCIAL BUILDINGS HAVING KITCHEN, FOOD PREPARATION OR SERVING FACILITIES AND / OR MISCELLANEOUS USES. GREASE INTERCEPTORS CONSTRUCTED EXTERNAL TO BUILDINGS SHALL BE SIZED IN ACCORDANCE WITH FAC 64-E-6. CALCULATIONS TO DETERMINE SIZING REQUIREMENTS SHALL BE SUBMITTED AS PART OF BUILDING PERMITTING. AN INSPECTION MANHOLE MAY BE REQUIRED IMMEDIATELY DOWN STREAM OF THE GREASE INTERCEPTOR FOR INSPECTION PURPOSES, AS DEEMED APPROPRIATE BY THE CITY.
5. ON ALL EXCAVATION AND BACKFILLING, THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING AND BRACING IN ACCORDANCE TO OSHA GUIDELINE IN ORDER TO PROVIDE FOR THE SAFETY OF WORKMEN, AS WELL AS REPRESENTATIVES OF THE CITY, THE DESIGN ENGINEER, AND THE DEVELOPER.
6. ALL PVC. PIPE SHALL BE STORED IN SUCH A WAY AS TO PREVENT WARPING, DEFLECTION, OR DEFORMATION. ANY PIPE DEEMED TO BE MISSHAPED IN ANY WAY FOR ANY REASON SHALL BE REJECTED.
7. NO USED, RE-USED, RUSTED, SECOND HAND, OR ANY MATERIAL THAT IS NOT NEW SHALL BE USED IN ANY UTILITY IMPROVEMENT PROJECTS WITHIN THE CITY SERVICE AREA.
8. THE CONTRACTOR SHALL AT ALL TIMES, DURING PIPE LAYING OPERATIONS DEWATER THE GROUND SUFFICIENTLY TO KEEP THE GROUNDWATER ELEVATION A MINIMUM OF 6" BELOW THE PIPE BEING LAID WITHIN THE AREA OF THE TRENCH.
9. ALL PIPES SHALL BE LAID ON A FIRM FOUNDATION. SOFT OR SPONGY BEDDING FOR PIPES IS NOT ACCEPTABLE. ANY UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH A DRY, COMPACTED, GRANULAR MATERIAL SATISFACTORY TO THE CITY. MORTAR TO CONTAIN "HYDRATITE" OR APPROVED EQUAL, TO PREVENT SHRINKAGE. CEMENT USED IN CONCRETE MIX FOR PRECAST STRUCTURES SHALL BE TYPE II, ACID RESISTANT AND SULFIDE RESISTANT CONCRETE.
10. MORTAR TO CONTAIN "HYDRATITE" OR APPROVED EQUAL, TO PREVENT SHRINKAGE. CEMENT USED IN CONCRETE MIX FOR PRECAST STRUCTURES SHALL BE TYPE II, ACID RESISTANT AND SULFIDE RESISTANT CONCRETE.



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11. THE CITY MAY REQUIRE ALL NEW SANITARY SEWER GRAVITY SYSTEMS TO BE SMOKE TESTED PRIOR TO FINAL ACCEPTANCE. ALL TESTING MUST BE DONE IN THE PRESENCE OF THE CITY'S DESIGNATED SITE INSPECTOR.
12. THE CITY OF PORT ORANGE RESERVES THE RIGHT TO REQUIRE THE DEVELOPER TO PERFORM VACUUM TESTING OF ALL SANITARY MANHOLES, AIR TEST SEWER MAINS, AND REQUIRES THAT ALL SANITARY SEWER MAIN LINES BE TELEVIEWED PRIOR TO FINAL ACCEPTANCE. LATERALS SHALL BE TELEVIEWED UPON DEMAND BY THE CITY PRIOR TO FINAL ACCEPTANCE WHEN IT IS SUSPECTED THAT A PROBLEM EXISTS.
13. ALL TAPPING OF PRESSURE MAINS AND CORING OF MANHOLES SHALL BE PERFORMED BY THE CITY AND BILLED IN ACCORDANCE WITH THE ADOPTED FEE RESOLUTION. SCHEDULING OF THESE CONNECTIONS SHALL REQUIRE A MINIMUM 48 HOURS NOTIFICATION DIRECTED TO THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE THE WORK DIRECTLY WITH THE PUBLIC UTILITIES DEPARTMENT. SUBSEQUENTLY, THE CONNECTION SHALL BE SCHEDULED TO COMMENCE BETWEEN 8:00 A.M. AND NOON ON THE APPROPRIATE DAY ESTABLISHED BY CITY. WITH RESPECT TO TIE-IN CONNECTIONS AND CORING OPERATIONS, THE CITY RESERVES THE RIGHT TO REQUIRE CONNECTIONS TO BE PERFORMED DURING PERIODS OF LOW FLOW (MIDNIGHT TO 6:00 A.M.) IN ORDER TO MINIMIZE SERVICE DISRUPTION TO EXISTING CUSTOMERS. CONTRACTORS HAVING EXPERIENCE AND PROPER EQUIPMENT MAY BE GRANTED PERMISSION TO CORE MANHOLE BY PUBLIC UTILITIES DEPARTMENT.
14. NEW OR RELOCATED, UNDERGROUND MAINS SHALL BE LAID TO PROVIDE THE FOLLOWING MINIMUM HORIZONTAL SEPARATIONS (OUTSIDE TO OUTSIDE):

	WATER	STORM GRAVITY	STORM FORCE	RECLAIM	SANITARY GRAVITY	SANITARY FORCE
WATER		3'	3'	3'	6', PREFERRED 10'	6', PREFERRED 10'
STORM GRAVITY	3'		3'	3'	6', PREFERRED 10'	6', PREFERRED 10'
STORM FORCE	3'	3'		3'	6', PREFERRED 10'	6', PREFERRED 10'
RECLAIM	3'	3'	3'		3'	3'
SANITARY GRAVITY	6', PREFERRED 10'	6', PREFERRED 10'	6', PREFERRED 10'	3'		6', PREFERRED 10'
SANITARY FORCE	6', PREFERRED 10'	6', PREFERRED 10'	6', PREFERRED 10'	3'	6', PREFERRED 10'	

15. A 3' MINIMUM HORIZONTAL SEPARATION BETWEEN THE SANITARY GRAVITY AND WATER MAINS SHALL BE ALLOWED WHEN THE WATER MAIN IS INSTALLED IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF AT LEAST 6" ABOVE THE SANITARY GRAVITY MAIN. ALTERNATIVELY, THE 3' MINIMUM HORIZONTAL SEPARATION SHALL BE ALLOWED WHEN THE SEWER MAIN IS ENCASED WITH CONCRETE OR ENCLOSED IN A WATER TIGHT CARRIER PIPE OR UPGRADED TO PRESSURE RATED PVC PIPE (MEETING AWWA C-900 OR C-905 SPECIFICATION AND PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING).



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16. NEW OR RELOCATED, UNDERGROUND MAINS SHALL BE LAID TO PROVIDE THE FOLLOWING MINIMUM CROSSING/VERTICAL SEPARATIONS (OUTSIDE TO OUTSIDE):

	WATER	STORM GRAVITY	STORM FORCE	RECLAIM	SANITARY GRAVITY	SANITARY FORCE
WATER		OVER STORM GRAVITY 6", PREFERRED 12"	OVER STORM FORCE 12"	OVER RECLAIM 12"	OVER SANITARY GRAVITY 6", PREFERRED 12"	OVER SANITARY FORCE 12"
		UNDER STORM GRAVITY 12"	UNDER STORM FORCE 12"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
STORM GRAVITY	OVER WATER 12"		OVER STORM FORCE 6"	OVER RECLAIM 6", PREFERRED 12"	OVER SANITARY GRAVITY 6", PREFERRED 12"	OVER SANITARY FORCE 6", PREFERRED 12"
	UNDER WATER 6", PREFERRED 12"		UNDER STORM FORCE 6"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
STORM FORCE	OVER WATER 12"	OVER STORM GRAVITY 6"		OVER RECLAIM 12"	OVER SANITARY GRAVITY 12"	OVER SANITARY FORCE 12"
	UNDER WATER 12"	UNDER STORM GRAVITY 6"		UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
RECLAIM	OVER WATER 12"	OVER STORM GRAVITY 12"	OVER STORM FORCE 12"		OVER SANITARY GRAVITY 12"	OVER SANITARY FORCE 12"
	UNDER WATER 12"	UNDER STORM GRAVITY 6", PREFERRED 12"	UNDER STORM FORCE 12"		UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
SANITARY GRAVITY	OVER WATER 12"	OVER STORM GRAVITY 12"	OVER STORM FORCE 12"	OVER RECLAIM 12"		OVER SANITARY FORCE 12"
	UNDER WATER 6", PREFERRED 12"	UNDER STORM GRAVITY 6", PREFERRED 12"	UNDER STORM FORCE 12"	UNDER RECLAIM 12"		UNDER SANITARY FORCE 12"
SANITARY FORCE	OVER WATER 12"	OVER STORM GRAVITY 12"	OVER STORM FORCE 12"	OVER RECLAIM 12"	OVER SANITARY GRAVITY 12"	
	UNDER WATER 12"	UNDER STORM GRAVITY 6", PREFERRED 12"	UNDER STORM FORCE 12"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	



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17. SEWER LATERAL LOCATIONS SHALL BE MARKED ALONG THE OUTSIDE OF THE CURB WITH A SAW CUT "V", OR BY A METAL TAB SET INTO THE PAVEMENT.
18. THE CONTRACTOR SHALL INSTALL A METALLIZED FOIL LOCATOR TAPE, OR SIMILAR DEVICE AS MAY BE APPROVED BY THE CITY FOR THE FULL LENGTH OF ALL PVC SEWAGE FORCE MAINS. THIS PIPE LOCATOR AID SHALL BE INSTALLED BETWEEN 15" AND 24" BELOW FINISHED GRADE OR AS DIRECTED BY THE MANUFACTURER. TAPE SHALL BE COLOR CODED GREEN FOR SANITARY SEWER AND FORCE MAIN. A CONTINUOUS NO. 10 COPPER HEAD WIRE SHALL BE INSTALLED WITH WIRE BROUGHT UP AT ALL VALVES.

FORCE MAIN SANITARY SEWER:

1. PVC SANITARY SEWER FORCE MAINS, INCLUDING FITTINGS, SHALL BE GREEN PVC AWWA C-900, OR C-905, UNLESS SPECIFICALLY NOTED OTHERWISE. PRESSURE FITTINGS SHALL BE PRESSURE CLASS 150 OR C-907.
2. HDPE SANITARY SEWER FORCE MAINS SHALL BE SDR11 (OR THICKER) UNLESS SPECIFICALLY NOTED OTHERWISE. THE HDPE PIPE SHALL BE SIZED TO MATCH THE EXTERNAL DIAMETER OF THE PVC TO WHICH IT IS ATTACHED. PRESSURE FITTINGS SHALL BE PRESSURE CLASS 150 OR C-907.
3. ALL SANITARY SEWER FORCE MAINS SHALL USE A THRUST RESTRAINT JOINT METHOD IN COMPLIANCE WITH THE DUCTILE IRON PIPE RESEARCH ASSOCIATION GUIDELINES MODIFIED TO ACCOMMODATE PVC PIPE BY FOLLOWING THE RECOMMENDED INCREASE IN RESTRAINT LENGTH CORRESPONDING TO THE INSTALLATION OF POLYETHYLENE WRAP. IN NO INSTANCE SHALL THRUST BLOCKS BE PERMITTED.
4. ALL IN-LINE SANITARY SEWER FORCE MAIN VALVES SHALL BE AWWA C-509 OR C-515 COMPLIANT RESILIENT SEAT VALVES FEATURING AN EPOXY LINED DUCTILE IRON BODY.
5. FORCE MAIN SYSTEMS SHALL BE PRESSURE TESTED AT 100 PSI STATIC PRESSURE FOR A PERIOD OF 2 HOURS PER AWWA STANDARDS.
6. FORCE MAINS SHALL BE FLUSHED, PRESSURE TESTED, PIGGED AND CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE WITH CITY PERSONNEL AT THE WATER OR WASTEWATER TREATMENT PLANT (AS APPROPRIATE) AT LEAST 48 HOURS PRIOR TO BEGINNING A FULL-DIAMETER FLUSH OF THE MAINS AND PRIOR TO THE COMMENCEMENT OF PRESSURE TESTING (SUBJECT TO AVAILABILITY).
7. THE CONTRACTOR SHALL BE REQUIRED TO PIG ALL FORCE MAINS AND PRIMARY TRANSMISSION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS. LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CONTRACTOR. ALL PIGGING OPERATIONS SHALL BE WITNESSED BY A PORT ORANGE REPRESENTATIVE.

GRAVITY SANITARY SEWER:

1. ALL GRAVITY SANITARY SEWER LINES IN PUBLIC RIGHTS-OF-WAY SHALL BE GREEN PVC SDR26, ASTM D-3034. SEWER LINES CONSTRUCTED OUTSIDE OF PUBLIC RIGHTS-OF-WAY, WITHIN SIDE YARDS, BACKYARDS, AND OTHER POORLY ACCESSIBLE AREAS SHALL BE CONSTRUCTED OF GREEN AWWA C-900 PVC SDR25. USE OF PLASTIC STYRENE FITTINGS SHALL NOT BE ALLOWED.
2. IN PLACES WHERE A MINIMUM COVER OF 36" CANNOT BE MAINTAINED, AWWA C-900 GREEN PVC SDR25 OR CONCRETE ENCASEMENT SHALL BE USED. WATER LINES, RECLAIMED LINES, AND STORM DRAINAGE CROSSINGS SHALL ALSO FOLLOW THE CONCRETE ENCASEMENT REQUIREMENT PER THESE STANDARDS AND AS PER REGULATORY REQUIREMENTS.
3. GRAVITY SANITARY SEWER PIPE SIZES SHALL BE:
 - MAINS - 8" DIAMETER MINIMUM
 - COMMERCIAL SERVICE LATERALS WITH MULTIPLE CONNECTIONS - 6" DIAMETER MINIMUM
 - SINGLE FAMILY RESIDENTIAL SERVICE LATERALS - 4" DIAMETER
 - MULTI-FAMILY RESIDENTIAL SERVICE LATERALS - 6" DIAMETER MINIMUM



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4. SINGLE FAMILY RESIDENTIAL SERVICE LATERALS SHALL BE CONSTRUCTED AT EACH LOT OR UNIT AND LOCATED ON THE DOWNSTREAM SIDE OF THE LOT CENTER LINE. THESE SERVICES SHALL BE EXTENDED 48" ABOVE GROUND AT THE PROPERTY LINE WITH A PVC RISER AND PLUG BEING EASILY VISIBLE FROM THE ROAD. RUBBER SEAL FITTINGS SHALL BE USED ON ALL LINES. NO GLUED JOINTS ARE PERMITTED ON LATERALS.
5. GRAVITY SANITARY SEWER LINE CONSTRUCTION SHALL BE ACCOMPLISHED BY THE USE OF A LASER INSTRUMENT UNLESS ANOTHER METHOD IS PREVIOUSLY APPROVED BY THE CITY.
6. MINIMUM GRAVITY SANITARY SEWER SLOPES ARE AS FOLLOWS:
 - 8" PIPE - 0.40 %
 - 10" PIPE - 0.30 %
 - 12" PIPE - 0.22 %
7. GRAVITY SANITARY SEWER LINES SHALL BE INSTALLED WHENEVER POSSIBLE UNDER PAVED AREAS WITHIN PUBLIC RIGHTS-OF-WAY. UTILITY EASEMENTS SHALL BE PROVIDED WHENEVER PUBLICLY-OWNED SEWER LINES ARE CONSTRUCTED OUTSIDE OF A PUBLIC RIGHT-OF-WAY.
8. AS A GENERAL RULE, THE NUMBER OF JOINTS SHALL BE LIMITED WHENEVER POSSIBLE. IN SPECIAL CASES WHERE A POINT REPAIR TO AN 8" TO 12" PVC SEWER MAIN IS REQUIRED, THE PROPER RIGID WRAP AROUND SLEEVE SUCH AS A JCM-210 OVERSIZED DUCTILE IRON COUPLING OR AN APPROVED EQUAL MAY BE ALLOWED BY SPECIAL APPROVAL BY THE CITY.
9. SEWER MAINS SHALL BE FLUSHED, PRESSURE TESTED, PIGGED AND CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE WITH CITY PERSONNEL AT THE WATER OR WASTEWATER TREATMENT PLANT (AS APPROPRIATE) AT LEAST 48 HOURS PRIOR TO BEGINNING A FULL-DIAMETER FLUSH OF THE MAINS AND PRIOR TO THE COMMENCEMENT OF PRESSURE TESTING (SUBJECT TO AVAILABILITY).
10. THE CONTRACTOR SHALL BE REQUIRED TO PIG ALL MAINS AND PRIMARY TRANSMISSION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS. LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CONTRACTOR. ALL PIGGING OPERATIONS SHALL BE WITNESSED BY A PORT ORANGE REPRESENTATIVE.

SANITARY MANHOLES:

1. STANDARD MANHOLES SHALL BE LOCATED AT INTERVALS NOT EXCEEDING 350'. SHOP DRAWINGS FOR ALL STRUCTURES SHALL BE SUBMITTED TO AND APPROVED BY THE DESIGN ENGINEER PRIOR TO INSTALLATION WITH TWO COPIES FORWARDED BY THE DESIGN ENGINEER TO THE CITY.
2. MAXIMUM DEPTH OF SANITARY MANHOLES SHALL BE 15'.
3. LOCAL COLLECTION SANITARY SEWER MANHOLES SHALL BE PRECAST WITH A MINIMUM INSIDE DIAMETER OF 48" .
4. THICKER MANHOLE WALLS AND BASES MAY BE REQUIRED TO PREVENT FLOATATION BASED ON HIGH GROUND WATER TABLE ELEVATIONS AS DETERMINED USING ACCEPTED ENGINEERING PRACTICES AND/OR PUBLIC UTILITIES DEPARTMENT.
5. ALL SANITARY SEWER MANHOLES SHALL HAVE ALL INTERIOR SURFACES COATED WITH THREE (3) COATS OF WHITE/GRAY OVER RED OVER BLACK EW-1 EPOXY PAINT WITH A TOTAL OF 12 MILS THICKNESS OR BLACK COAL-TAR EPOXY WITH A TOTAL OF 16 MILS THICKNESS. OUTSIDE SURFACE TO BE COATED WITH TWO (2) COATS OF BLACK OVER BLACK EW-1 EPOXY PAINT WITH A TOTAL OF 8 MILS OR ONE (1) COAT OF BLACK COAL-TAR EPOXY WITH A TOTAL OF 8 MILS. ALL COATS SHALL BE APPLIED AT THE FACTORY EXCEPT MINOR FIELD TOUCH UP AT JOINTS AND AT MANHOLE NECK.
6. ALL MANHOLES CONSTRUCTED IN SIDE YARDS, BACKYARDS, AND EASEMENTS OUTSIDE OF THE RIGHT-OF-WAY SHALL BE OUTFITTED WITH FIBERGLASS OR EPOXY LINERS IN COMPLIANCE WITH ASTM-3753 OR OTHER TYPES OF LINERS APPROVED BY THE CITY. IN ADDITION, THE CITY MAY REQUIRE LINERS TO BE INSTALLED IN OTHER AREAS WHERE THE PUBLIC UTILITIES DEPARTMENT BELIEVES THE NEED IS JUSTIFIED SUCH AS IMMEDIATELY UPSTREAM OF FORCE MAINS CONNECTING TO GRAVITY MAINS.



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7. MANHOLE RIMS SHALL MATCH FLUSH WITH THE FINISH GRADE ELEVATION IN PAVED AREAS AND A MINIMUM OF 0.2' AND MAXIMUM OF 0.5' ABOVE GRADE ELEVATION IN UNPAVED AREAS.
8. ALL SANITARY SEWER MANHOLE COVERS SHALL HAVE THE WORDS "PORT ORANGE FLORIDA SANITARY SEWER" CAST INTO THEM.
9. THE CONTRACTOR SHALL CONSTRUCT SANITARY SEWER MANHOLES IN SUCH A WAY THAT SEWER LINES DO NOT INTERSECT SEALED JOINTS BETWEEN SECTIONS OF THE MANHOLE.
10. NO BUG HOLES OR HONEYCOMB WILL BE ACCEPTED.
11. INDIVIDUAL SANITARY SERVICE ON NEW CONSTRUCTION SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES. THE SERVICE CONNECTION WILL BE BY USE OF WYE CONNECTIONS, UNLESS OTHERWISE APPROVED BY THE CITY.
12. RUBBER BOOTS WITH 316 STAINLESS STEEL BANDS SHALL BE UTILIZED IN THE CONNECTION OF THE SEWER MAIN TO THE MANHOLES. COMPLETELY COVER RUBBER BOOTS AT OUTSIDE CONNECTION AND SEAL INSIDE PROTRUSION WITH HYDRAULIC CEMENT.
13. EZ-WRAP PLASTIC, AS MANUFACTURED BY PRESS SEAL GASKET CORPORATION, SHALL BE USED ON THE OUTSIDE OF ALL MANHOLE AND WET WELL JOINTS. APPLY ONE LAYER OF 9" WRAP CENTERED ON EACH JOINT. A CITY INSPECTOR SHALL PERSONALLY INSPECT ALL JOINT SEALS PRIOR TO BACKFILLING OPERATIONS.

TESTING:

1. ALL TESTING REQUIRED BY THE CITY SHALL BE PAID FOR BY THE CONTRACTOR / DEVELOPER. THE CONTRACTOR SHALL EMPLOY AN INDEPENDENT TESTING LABORATORY AT HIS OWN EXPENSE.
2. TO ENSURE THAT COMPACTION OF ALL FILL MATERIAL IS COMPLETED PROPERLY, TESTS SHALL BE DONE 12" ABOVE THE PIPE AND THEN AT 12" VERTICAL INTERVALS UNTIL FINAL GRADE IS REACHED.
3. ALL TRENCHES SHALL BE BACKFILLED WITH ACCEPTABLE MATERIAL AND COMPACTED TO MINIMUM 95% IN UNPAVED AREAS AND 98% IN PAVED AREAS OF THE MAXIMUM DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST.
4. TEST RESULTS SHALL BE SUBMITTED TO THE CITY AT A MINIMUM FREQUENCY OF ONE SET OF TESTS BETWEEN EACH MANHOLE AND ONE ADDITIONAL SET OF TESTS AT EVERY MANHOLE. IDENTIFICATION OF TEST LOCATIONS SHALL BE CLEARLY INDICATED ON TEST REPORTS. TEST RESULTS SHALL BE FORWARDED PROMPTLY TO THE CITY'S DESIGNATED SITE INSPECTOR.

CLOSE-OUT:

1. ALL SEWER MAINS, PRIOR TO FINAL ACCEPTANCE BY THE CITY AND PRIOR TO ANY FINAL PAVING OPERATIONS, SHALL BE TELEVISED AND SUBMITTED TO THE CITY USING A "PAN AND TILT CAMERA" WITH DEPTH GAUGE IN FRONT OF THE CAMERA BY A CITY APPROVED CONTRACTOR. THE CAMERA SHALL RUN FROM DOWN STREAM MANHOLE TO UP STREAM MANHOLE. CITY INSPECTOR SHALL BE NOTIFIED IN ADVANCE AND BE PRESENT DURING THE TELEVISIONING OF THE SEWER SYSTEM. THE VIDEO SHALL BE NON-STOP WITH AUDIO DESCRIBING WHAT IS BEING REVIEWED. WRITTEN VIDEO LOGS DESCRIBING THE CONDITION OF THE LINES SHALL ACCOMPANY THE VIDEO SUBMISSION TO THE CITY 48 HOURS PRIOR TO COMMENCING ANY INSTALLATION OF ASPHALT OR CONCRETE PAVEMENT. THE CITY MAY REQUIRE ADDITIONAL VIDEO TAPING, VIDEO TAPING OF LATERALS, AND/OR INFILTRATION/EXFILTRATION TESTS IF DEFECTS ARE APPARENT OR WORKMANSHIP IS QUESTIONABLE.
2. UPON CONSTRUCTION COMPLETION AND ACCEPTANCE OF THE SYSTEM, IT SHALL BE THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THAT THE SYSTEM IS PROPERLY CERTIFIED AND ACCEPTED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND AS-BUILTS ARE PROVIDED TO THE CITY PRIOR TO ANY USE OF THE SYSTEM.



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