JOINT CONSTRUCTION:

A. Construct expansion, weakened-plane (Contraction), and construction joints true-to-line with face perpendicular to surface of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

1. Weakened-Plane (Contraction) Joints:
   - A. Provide weakened-plane (contraction) joints, sectioning concrete into areas at 15'-0" o.c. maximum each way.
   - B. Sidewalks shall have contraction joints at 5'-0" o.c.
   - C. Construct weakened-plane joints for depth equal to at least 1/4 concrete thickness.
2. Tooled Joints:
   - A. Form weakened-plane joints in fresh concrete by grooving top portion with recommended cutting tool and finishing edges with jointer.

B. Construction Joints:

1. Plan concrete placement such that construction joints fall at expansion joints as detailed in the plans.

C. Expansion Joints:

1. Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks, and other fixed objects.
2. Locate expansion joints at 40'-0" o.c. maximum for each pavement lane or for curb.
3. Locate expansion joints at 50'-0" o.c. maximum for walkways.

D. Joint Fillers:

1. Extend joint fillers full-width and depth of joint, and not less than 1/2" or more than 1" below finished surface where joint sealer is indicated.
2. Furnish joint filler in one-piece lengths for full width being placed, wherever possible. where more than one length is required, lace or clip joint filler sections together.

E. Joint Sealants:

1. Exterior pavement joint sealants shall be composed of a non-priming, pourable, self-leveling type polyurethane sealant, such as grey shep-calk, or approved equal suitable for use in pavements and sidewalks.

CONCRETE FINISHING:

A. After striking-off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture.

B. After floating, test surface for trueness with 10'-0" straightedge (maximum deviation of 1/4 inch). Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide continuous smooth finish.

C. Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to 1/2" radius. Eliminate tool marks on concrete surface.

D. After completion of floating and troweling when excess moisture or surface sheen has disappeared, complete surface finishing as follows:

1. Curbs, Gutters, and Walks:
   - A. Broom finish by drawing fine-hair broom across concrete surface perpendicular to line of traffic. Repeat operation if required to provide fine line texture.
2. Inclined Slab Surfaces:
   - A. Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to line of traffic.
3. Paving:
   - A. Burlap finish by dragging seamless strip of damp burlap across concrete perpendicular to line of traffic. Repeat operation to provide gritty texture.

E. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up any minor honeycombed areas. Remove and replace areas or section with major defects, as directed.

F. Protect and cure finished concrete paving in accordance with "Florida Department of Transportation Specifications for Road and Bridge Construction" section 350-13.

CLEANING AND ADJUSTING:

A. Repair or replace broken or defective concrete as directed.

B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials.

C. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.

SPECIFICATION: FENCING

Chain link fencing is not allowed. Fencing is to be aluminum fencing with vertical pickets and electrostatic finish.

The Contractor shall install fencing as shown on the plans and in accordance with the manufacturer's brochure. The following are minimum requirements and shall govern except that all local, state and/or federal codes and ordinances shall govern when their requirements are in excess hereof.

MATERIAL CERTIFICATES:
Furnish copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

MATERIALS:
All materials and equipment incorporated in the work shall be new, clean, and free of visual defects unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not conforming to these requirements may be considered defective.

Height shall be as required as shown on the construction plans.

Fabric shall be #9 gauge, chain link open hearth steel wire, hot-dipped galvanized after weaving with minimum coating of 2.0 ounce of zinc per square foot or aluminum coating with .40 ounces per square foot, woven in 2" diamond mesh.

Line post, top, intermediate and bottom rails, shall be 1 5/8" O.D. steel pipe, weight 2.27 lbs per foot, hot-dipped galvanized. Set 36" deep in concrete.

Terminal, corner, gate and pull posts shall be 3" O.D. pipe, 5.79 lbs. Set 36" deep in concrete.

Concrete for setting posts shall be Portland Cement complying with ASTM C-150, aggregates complying with ASTM C-33, and clean water. Mix materials to obtain concrete with a minimum 28-day compressive strength of 2,500 psi.

Stretcher bar bands, tie wires, hog rings, couplings, nuts, stretcher bars, bolts, and miscellaneous fastening devices shall be manufacturer's standard for heavy construction fence.

Swing gates shall consist of the following components.

2" O.D. steel pipe 2.72 lbs. per foot, hot-dipped galvanized. Each frame to be equipped with 3/8" diameter adjustable truss rods.

Hinges shall be hot-dipped galvanized pressed steel or malleable iron to suit gate size, non-lift-off type. Hinges shall be offset to permit 180 degree opening. Provide one (1) pair of hinges per lead.

Latch shall be forked type to permit operation from either side with provisions to lock both leaves with padlock.

ACCEPTABLE MANUFACTURERS: Cyclone Fence, Page Fence, and Hackney Corporation.

SPECIFICATION: TRAFFIC STRIPING AND PAINTING

The Contractor shall paint traffic striping as shown on the plans. The following are minimum requirements and shall govern except that all local, state and/or federal codes and ordinances shall govern when their requirements are in excess hereof. All traffic striping and painting shall be in accordance with sections 710 and 971 of the "Florida Department of Transportation Specifications for Road and Bridge Construction" and "Florida Department of Transportation Roadway and Traffic Design Standards".

ESCAMBIA COUNTY SPECIFICATIONS

CONTINUED ON NEXT COLUMN

MATERIAL CERTIFICATES:
Furnish copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

TRAFFIC STRIPING AND PAINTING:
Traffic control markings shall be marked on pavement as indicated on drawings.

Paint shall be in sealed containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's name, formulation number, and directions, all of which shall be plainly legible at the time of use. The paint shall be homogeneous, easily stirred to smooth consistency, and shall show no hard settlement or other objectionable characteristics during a storage period of six months.

All machines, tools, and equipment used in performance of the work shall be approved and maintained in satisfactory operating condition. Hand-operated push-type machines of a type commonly used for application of paint to pavement surfaces shall be acceptable for marking small street and parking areas. Applicator machines shall be equipped with necessary paint tanks and spraying nozzles, and shall be capable of applying paint uniformly at the coverage specified. Sandblasting equipment shall be provided as required for cleaning surfaces to be painted. Hand-operated spray guns shall be provided for use in areas where push-type machines cannot be used.

New pavement surfaces shall be allowed to cure for a period of not less than thirty days before application of marking materials. All surfaces to be marked shall be thoroughly cleaned before application of the paint. Dust, dirt, and other granular surface deposits shall be removed by sweeping, blowing with methods as required. Rubber deposits, surface laitance, existing paint markings and other coatings adhering to the pavement shall be completely removed with scrapers, wire brushes, sandblasting, approved chemicals, or mechanical abrasion as direction.

Paint shall be applied evenly to the pavement surface to be coated at a rate of 105 plus or minus 5 square feet per gallon. Paint shall be applied as shown on the drawings.

Paint shall be applied to clean, dry surfaces, and unless otherwise approved, only when air and pavement temperatures are above 40 degrees F and less than 95 degrees F. Paint temperature shall be maintained within these same limits. Paint shall be applied pneumatically with approved equipment at rate of coverage specified herein. The Contractor shall provide guidelines and templates as necessary to control paint application. Special precautions shall be taken in marking numbers, letters, and symbols. All edges of marking shall be sharply outlined. The maximum drying time requirements of the paint specifications will be strictly enforced, to prevent undue softening bitumen, and pickup, displacement, or discoloration by tires of traffic. If there is a deficiency in drying of the markings, painting operations shall be discontinued until cause of the slow drying is determined and corrected.

Suitable warning signs shall be placed near the beginning of the worksite and well ahead of the worksite for alerting approaching traffic from both directions. Small markers shall be placed along newly painted lines to control traffic and prevent damage to newly painted surfaces. Painting equipment shall be marked with large warning signs indication that slow moving painting equipment is in operation.

Markings which must be visible at night shall be reflectorized unless ambient illumination assures adequate visibility.

SPECIFICATION: WATER DISTRIBUTION SYSTEM

The Contractor shall provide and install all materials for a potable water distribution system as shown on the drawings and in this specification. In addition, he shall obtain all permits and conduct all tests required by local, state and federal authorities and as specified on these drawings.

MATERIALS:
All materials and equipment incorporated in the Work shall be new, clean, and free of visual defects unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements may be considered defective.

Piping:

Less than 4" inches in diameter:	
Polyvinyl Chloride (PVC) 160 psi, SDR 26	ASTM D-2241
Polyethylene pipe 160 psi, SDR 9	ASTM D-3350 & ASTM D-2239
Polyethylene tubing 200 psi, SDR 9	ASTM D-3350 & ASTM D-2737
Greater than 4" inches in diameter:	
Polyvinyl Chloride (PVC) 150 psi	AWWA C-900 (DR 18)
Ductile Iron (Class 50)	ANSI A21.51

Joints:

Joints for PVC pipes:
Joints shall comply with ASTM D-3139
No solvent cements or toxic lubricant will be allowed.
Expansion capability will be provided.

Joints for Ductile Iron pipes:
Joints shall comply with AWWA C-153 or AWWA C-110 Valve box shall be CLOW [illegible] screw type & lids shall be marked "water" as required.

Gate Valves:
Valves shall comply with AWWA C-509
200 psi iron body, bronze mounted, Non-rising stems with square operating nut and a suitable valve box as manufactured by M & H model 4067 NRS for valves > 2". Gate valves under 2" shall be bronze body, threaded ends, NRS solid wedge disc & shall be American model 3FG.

INSTALLATION:
Shall comply with all local, state and federal regulations. The Contractor shall provide proper facilities for handling and laying pipe and accessories. No pipe will be laid in unsuitable weather or in water. The Contractor will verify all field dimensions with the design Engineer (including Field Stake-out) prior to commencing work. The contractor shall notify the Engineer at least 24 hours prior to installing any portion of the water main distribution system. He shall also stake all service connections and provide as-built dimensions to the Engineer. Connections to the existing system shall be coordinated with the utility company. Minimal service interruption shall occur and traffic safeguards shall be taken. Provide 30" minimum cover.

The Contractor shall conduct hydrostatic pressure and leakage tests as follows:
Apply 150 psi or 150% of the working pressure whichever is greater to the test line. Duration of the pressure test shall be at least two (2) hours. After 1/2 hour, check pressure, if pressure has dropped, inspect for leaks and correct as required. Repeat tests until there are no leaks or pressure loss. Pressure must hold for two hours.

NOTE: The contractor shall notify the utility company and the Engineer at least 48 hours prior to conducting pressure and leakage tests. A 3/4" hose bibb connection will be required for guage connection.

After satisfactory hydrostatic test contractor shall disinfect water system in accordance with AWWA specification C-601 which provides for contact with a 50 ppm solution of chlorine remaining for twenty-four hours, with the chlorine residual of at least 10 ppm. All valves or other appurtenances shall be operated while the pipe line is filled with the chlorinating agent. All treated water shall be thoroughly flushed from the pipe until the replacement water is approved, both chemically and bacteriologically, by the Florida Department of Environmental Protection. The chlorination procedure shall be repeated until tests show that the water sampled conforms to the requirements stated above. Samples shall be taken by and tested at the expense of the contractor.

NOTES:
All water piping and fittings used shall be National Sanitation Foundation (N.S.F). approved for potable water.

A minimum separation of 10 ft. horizontal, outside to outside and 18 inches vertical is required between all water lines and the sanitary sewer system.

When trench excavation depth exceeds five feet, the Contractor shall provide trench protection (shields, sloping, shoring, etc.) and shall comply with OSHA Standard 29 CFR, Section 1926.650 Subpart P.

In accordance with rules of the Florida Department of Environmental Protection (DEP), Chapter 62-555, the Engineer of record will be responsible for observation of construction of the Potable Water System. The Engineer SHALL be notified at commencement and completion of construction. To assure compliance with plans and specifications, said Engineer will report to DEP upon completion of construction and cleaning and disinfecting described above before the system can be placed in service.

All PVC potable water lines and services will be marked with No. 14 copper insulated tracer wire to enable location with a Ferrous Metal Detector. The tracer wire will be placed 12 inches above and throughout the length of all such pipe.

CONCRETE ENCASEMENT AND SPECIALS

Provide concrete pipe encasements or special pipe supports as shown on the drawings or directed by the Engineer. Various pipe supports shall be as worked out in the field to suit local conditions and emergencies. Where, in the opinion of Engineer that pipe covering is inadequate, concrete encasement for protection shall be provided in accordance with the details on the approved drawings. Concrete encasements shall be made using concrete with a 28-day strength of 2000 psi and shall be to the dimensions indicated on the construction plans and as required by the applicable Department of Transportation or Public Health regulations. All other concrete needed to build and protect the pipe work shall be used at the direction of the Engineer.

CONTINUED ON NEXT COLUMN

FIRE HYDRANTS:
All fire hydrants shall be 6 inch, three way hydrants with two 2-1/2 inch hose nozzles and one 4-1/2 inch pumper nozzle, designed for 150 lbs working pressure or 300 lbs hydrostatic pressure and shall conform to the latest specifications of the AWWA. All working parts shall be bronze. All hose threads shall be National Standard Threads. Hydrants shall have a mechanical joint end inlet. Hydrants shall be Traffic Breakaway Model. The hydrant main valve shall be a compression type that closes with the water pressure. Hydrants shall have not less than a 5-1/4 inch valve opening. All hydrants shall be equipped with automatic self-oiling reservoirs that lubricate the stem threads and all bearing surfaces each time the hydrant is operated. Hydrants shall be painted one coat of red iron oxide, zinc oxide primer conforming to Steel Structures Painting Council SSPC-paint 25 and two finish coats of silicone alkyd paint conforming to Steel Structures Painting Council SSPC-paint 21. Fire hydrants shall be painted in accordance with NFPA 291, Recommended Practice For Fire Flow Testing and Marking of Hydrants.

SPECIFICATION: SANITARY SEWER SYSTEM

The Contractor shall provide and install all gravity sewer material shown on the drawings and in this specification. In addition, he shall obtain all permits and conduct all tests required by local, state and federal authorities and as specified on these drawings.

MATERIALS:
All materials and equipment incorporated in the Work shall be new, clean, and free of visual defects unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements may be considered defective.

Piping:	PVC Gravity Sewer	ASTM D-3034, SDR-35
	Ductile Iron Pipe (D.I.P.)	ANSI A21.51
	PVC Force Mains (160 psi)	ASTM D-1784 and D 2241
Joints:	PVC, Rubber Ring	ASTM D-1869
	D.I.P. Joints, Rubber Gasket	ANSI A21.11

NOTE: ALL JOINTS TO BE BELL AND SPIGOT TYPE.

Concrete: Poured or Pre-cast 4000 psi at 28 days;

INSTALLATION:
Shall comply with all local, state and federal regulations. The Contractor shall provide proper facilities for handling and laying pipe and accessories. Trenches shall be properly prepared; pipe shall be supported over its full length and bell holes hand dug as required. No pipe will be laid in unsuitable weather or in water. The Contractor will verify all field dimensions and report all discrepancies (including field stake-out) prior to commencing work. The contractor shall notify the Engineer at least 24 hours prior to installing any portion of the sanitary sewer system. He shall also stake all service connections and provide as-built dimensions to the Engineer. Manholes, cleanouts and the like shall be located, built and sized as shown on these drawings. Connections with existing sewer systems shall be coordinated by the Contractor with the utility company.

A minimum separation of 10 ft. horizontal measured outside to outside and 18 inches vertical is required between sanitary sewer lines and all water lines.

When trench excavation depth exceeds five feet, the Contractor shall provide trench protection (shields, sloping, shoring, etc.) and shall comply with OSHA Standard 29 CFR, Section 1926.650 Subpart P.

In accordance with rules of the Florida Department of Environmental Protection (DEP), Chapter 62-604, the Engineer of record will be responsible for observation of construction of the Sanitary Sewer System. The Engineer SHALL be notified at commencement and completion of construction. To assure compliance with plans and specifications, said Engineer will report to DEP upon completion of construction before the system can be placed in service.

The Contractor shall coordinate all tests with the utility company and the Engineer. All lines, fittings and manholes shall be clean and dry before conducting tests. Tests and subsequent corrections shall be at the expense of the Contractor. Provide 30" minimum cover.

GRAVITY SEWERS:
Leakage tests by exfiltration and/or infiltration will be made on all pipe. The Engineer shall have the option determining which test shall be employed. Generally, if the groundwater table is below the bottom of the pipe, an exfiltration test shall be used. Duration of test shall be not less than two (2) hours. Visible leaks encountered shall be corrected regardless of leakage test results. Leakage as measured by either the infiltration or exfiltration test shall not exceed [illegible] gallons per inch diameter per 100 feet of pipe per hour. When leakage exceeds the maximum amount specified, satisfactory correction shall be made and retesting accomplished.

Deflection testing shall be done on all flexible pipe at the direction of the Engineer. Testing shall be done using a mandrel having a diameter equal to 95 percent of the inside diameter of the pipe. When a deflection device is used in lieu of the mandrel, such device shall be approved by the Engineer prior to use. No pipe deflection shall exceed 5 percent.

FORCE MAINS:
The Contractor shall conduct hydrostatic pressure and leakage tests as follows:

Apply 100 psi or 150% of the working pressure, whichever is greater, to the test line. Duration of the pressure test shall be at least two (2) hours. After 1/2 hour, check pressure, if pressure has dropped, inspect for leaks and correct as required. Repeat tests until there are no leaks or pressure loss. Pressure must hold for two hours.

NOTE: The contractor shall notify the utility company and the Engineer at least 24 hours prior to conducting pressure and leakage tests.

Force mains shall have thrust blocks designed for 100 PSI test pressure. Force Mains shall be colored other than white to distinguish from water lines. Force Mains in the right-of-way shall have 30 inches (minimum) cover over the crown.

All sanitary sewer force mains will be marked with No. 14 copper insulated tracer wire to enable location with a Ferrous Metal Detector. The tracer wire will be placed 12 inches above and throughout the length of all such pipe.

MANHOLES:
Shape: All manholes will be eccentric or as specified on the drawings.

Setting Manhole Castings: The frame of the casting shall be set in a full mortar bed composed of one part Portland Cement to two parts of fine aggregate.

Concrete: The minimum compressive strength required at twenty-eight days is 4,000 pounds per square inch. The minimum amount of water shall be used to produce a workable mix and shall not exceed six (6) U.S. Gallons per sack of cement. Concrete shall conform to ASTM Specification ASTM C-94.

Pre-cast Reinforced Concrete Manhole Sections: Pre-cast reinforced concrete manhole sections shall conform to ASTM Specification C-478. All joints for pre-cast sections shall be approved by the Engineer.

Castings: Cast iron frames and covers shall conform to the drawings in all essentials of design. All castings shall be made of clean, even grain, tough gray cast iron. The quality of iron in the castings shall conform to the current ASTM Specification A-48 for Class 20 Gray Iron Castings. The weight of castings shall be as shown in the plans. Castings shall be smooth, true to pattern, and free from projections, sand holes, or defects. A raised work "SEWER" shall be cast on the upper non-skid surface of all manhole covers. The portion of the frame and cover which forms the cover seat shall be machined so that no rocking of the cover is possible. The castings shall be coated with coal tar pitch varnish. On roadways the frame and cover shall be set flush with and in the plane of the surface. In other locations they shall be set to grades determined by the Engineer. A shop drawing of the manhole frame and cover must be approved by the Engineer for all covers and frames furnished on the project.

Water-Proofing: Both concrete and pre-cast sections below grade shall be painted on the outside with either two coats of bitumastic paint or a heavy layer of emulsified asphalt to water-proof completely. Manholes shall be inspected for water tightness prior to being placed in service. All incoming and outcoming sewer lines shall be plugged and the manhole filled with water to a level to create a minimum positive head of two feet or above the highest section joint. If the water level drop exceeds 1/8" per vertical foot of manhole depth in 5 minutes, the manhole shall have failed the test.

GENERAL:
Grout all riser joints and entry pipes.
Provide neat cement seals for pre-cast units.
Minimum radius allowed is 20 inches.
Invert grouting shall be uniform and smooth-sloped to center line of pipe.

NOTE: Roof drains, foundation drains and all other clean water connections to the sanitary sewer system are prohibited.

THRUST BLOCKS

Suitable concrete reaction or thrust blocks shall be applied on all lines (except those having screwed or flanged joints), at all tees, plugs, caps, and bends deflecting 22-1/2 degrees or more, or movements shall be prevented by attaching metal rods or straps approved by the Engineer. Unless otherwise directed, the pipe shall be laid with bell ends facing in the direction of laying. Whenever it is necessary to deflect the pipe from a straight line, either in the vertical or horizontal plane, to avoid obstruction, to plumb stems, or where long radius curves are permitted, the degree at deflection shall be as recommended by the manufacturer of the pipe.

CONTINUED ON NEXT COLUMN

SPECIFICATION: STORM SEWER SYSTEM

The Contractor shall provide and install all storm sewer material shown on the drawings and in this specification. In addition, he shall obtain all permits and conduct all tests required by local, state and federal authorities and as specified on these drawings.

MATERIALS:
All materials and equipment incorporated in the Work shall be new, clean, and free of visual defects unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements may be considered defective.

Corrugated Polyethylene Pipe:
Shall comply with section 948 of the latest edition "Florida Department of Transportation Specifications for Road and Bridge Construction" unless modified herein. Pipes 12 inches to 24 inches in diameter shall comply with ASTM F-405 and ASTM F-667. Joints shall be by means of dimpled band. If used outside of dry wells, joints shall be wrapped in filtercloth [illegible] feet in width and with 2 feet of overlap on the diameter. This pipe, in the perforated form, shall be used inside dry wells. It may be used outside dry wells only when used with a filter sock. Perforations shall be 1/4 inch diameter and spaced 10 inches on center in the valley of the corrugations.

Polyvinyl-Chloride Pipe:
Shall comply with section 948 of the latest edition "Florida Department of Transportation Specifications for Road and Bridge Construction" unless modified herein. Polyvinyl-Chloride Pipe shall meet the requirements of ASTM D 3034, SDR-35, or ASTM F 949 profile wall without perforations. Polyvinyl-Chloride Pipe for use as underdrain shall conform to the requirements of ASTM F 758 or ASTM F 949. Also PVC underdrain manufactured from PVC pipe meeting ASTM D 3033 or ASTM D 3034 perforated in accordance with the perforation requirements given in AASHTO M 36, or AASHTO M [illegible] will be permitted.

Reinforced Concrete Pipe:
Shall comply with requirements of ASTM C 76, [illegible] unless otherwise indicated on the Drawings, and shall be [illegible] with rubber gasketed joints complying with ASTM C 443. Install rubber gaskets in strict accordance with pipe manufacturer's recommendations.

Manholes:
Precast reinforced concrete manhole sections shall conform to ASTM Specification C-478. Construct manholes of precast concrete sections as required by Drawings to size, shape, and depth indicated, but never less than 4'-0" inside diameter. All joints for precast sections shall be approved by the engineer.

Inlets/Catch Basins:
Precast reinforced concrete Inlets/Catch Basins sections shall conform to ASTM Specification C-478. Construct Inlets/Catch Basins of precast concrete construction as required by Drawings to size, shape, and depth indicated.

Main and Lateral Pipes:
Neatly cut off main and lateral pipes flush with inside of manhole or inlet where they enter structure walls. Dress all irregularities and rough edges with non-shrinking grout (inside and outside).

Where pipes enter or exit manholes, a "Kor-N-Seal" molded neoprene boot with stainless steel internal and external bands as manufactured by the National Pollution Control Systems, Inc., Nashua, New Hampshire, or a polyurethane joint with a short transition joint as manufactured by Moorform Corporation, Centralia, Illinois, or an approved equal (or superior) connection shall be provided.

Cast Iron Frames, covers, and Grates:
After completion of manhole inlet, set cast iron frame in full mortar bed after adjusting to required elevation. Cast iron frames and covers shall conform to the drawings in all essentials of design. All castings shall be made of clean, even grain, tough gray cast iron. The quality of iron in the castings shall conform to the current ASTM Specification A-48 for Class 20 Gray Iron Castings. The weight of castings shall be as shown in the plans. Castings shall be smooth, true to pattern, and free from projections, sand holes, or defects. A raised word "STORM SEWER" shall be cast on the upper non-skid surface of all manhole covers. The portion of the frame and cover which forms the cover seat shall be machined so that no rocking of the cover is possible. The castings shall be coated with coal tar pitch varnish. On roadways the frame and cover shall be set flush with and in the plane of the surface. In other locations they shall be set to grades determined by the engineer. The frame and cover shall be heavy duty traffic bearing.

Plastic Filter Fabric:
Plastic Filter Fabric shall be the non-woven type and shall comply with sections 514 and 985 of the latest edition "Florida Department of Transportation Specifications for Road and Bridge Construction" unless modified herein.

Concrete:
Concrete shall comply with sections 345 of the latest edition "Florida Department of Transportation Specifications for Road and Bridge Construction" unless modified herein.. Minimum compressive strength at 28 days shall be 4,000 psi.

DETENTION AREAS AND GRASSED SWALES:
Swales must be landscaped with seeding, sodding, or sprigging, which does not inhibit the infiltration rate of the soil. Engineer requires 48 hours notice prior to landscaping of infiltration areas to make appropriate inspections.

The system will require periodic maintenance for continued proper operation. This will include, as a minimum: A) removal of silt debris from surface infiltration areas and catch basins, and B) maintenance of vegetative cover in surface infiltration areas.

STORMWATER DRYWELLS:
Drywells shall be constructed to the dimensions as detailed in the plans. The washed granular material shall have of a void ratio of not less than 0.4 and the gradation shall conform to section 901 of the latest edition "Florida Department of Transportation Specifications for Road and Bridge Construction". The dry well shall be completely wrapped in woven (as opposed to spun) filter cloth with a minimum 2 feet of overlap at field joints. The dry well shall contain a perforated pipes as detailed in the plans.

INSTALLATION:
The Contractor shall comply with all local, state and federal regulations. The Contractor shall provide proper facilities for handling and laying pipe and accessories. Trenches shall be properly prepared; pipe shall be supported over its full length and bell holes hand dug as required. No pipe will be laid in unsuitable weather or in water. The Contractor will verify all field dimensions and report all discrepancies (including field stake-out) prior to commencing work. The contractor shall notify the Engineer at least 24 hours prior to installing any portion of the storm sewer system. He shall also stake all service connections and provide as-built dimensions to the Engineer. Manholes, cleanouts and the like shall be located, built and sized as shown on these drawings. Connections with existing storm sewer systems shall be coordinated by the Contractor with the Utility Authority. Adequate traffic control shall be provided.

A minimum separation of 10 ft. horizontal measured outside to outside and 18 inches vertical is required between storm sewer lines and all water lines.

When trench excavation depth exceeds five feet, the Contractor shall provide trench protection (shields, sloping, shoring, etc.) and shall comply with OSHA Standard 29 CFR, Section 1926.650 Subpart P.

In accordance with rules of the Florida Department of Environmental Protection (DEP), Chapter 62-25, the Engineer of record will be responsible for observation of construction of the Storm Sewer System. The Engineer SHALL be notified at commencement and completion of construction. To assure compliance with plans and specifications, said Engineer will report to DEP upon completion of construction before the system can be placed in service.

TESTS:
The Contractor shall coordinate all Tests and Inspections with the Utility Authority and the Engineer. All lines, fittings and manholes shall be clean and dry before the Inspector is summoned. Tests and subsequent corrections shall be at the expense of the Contractor.

Non-Perforated Storm Sewers:
Leakage tests by exfiltration and/or infiltration will be made on all pipe as deemed by the Engineer. The Engineer shall have the option determining which test shall be employed. Generally, if the groundwater table is below the bottom of the pipe, an exfiltration test shall be used. Duration of test shall be not less than two (2) hours. Visible leaks encountered shall be corrected regardless of leakage test results. Leakage as measured by either the infiltration or exfiltration test shall not exceed 0.2 gallons per inch diameter per 100 feet of pipe per hour. When leakage exceeds the maximum amount specified, satisfactory correction shall be made and retesting accomplished.

Deflection testing shall be done on all flexible pipe at the direction of the Engineer. Testing shall be done using a mandrel having a diameter equal to 95 percent of the inside diameter of the pipe. When a deflection device is used in lieu of the mandrel, such device shall be approved by the Engineer prior to use. No pipe deflection shall exceed 5 percent.

EROSION PROTECTION:
New and existing drainage structures shall be protected from soil erosion sedimentation by placing baled hay around structures.

Staked baled hay and silt fence barriers shall be installed downhill from any earthwork activity, and in all areas subject to soil erosion, prior to start of construction.

Soil erosion sedimentation shall be controlled during all phases of construction.

ALL SOIL EROSION SEDIMENTATION SHALL BE RETAINED ON SITE.

CEI
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CERTIFICATE OF AUTHORIZATION No. 1532

Revisions:

HOME2 SUITES
SPECIFICATIONS (2 OF 2)
Not valid unless bearing Engineer's embossed seal.
MARK C. SINER, P.E.
FL. REG. NO. 48831

Job No.:	2017-130-A
Date:	26 JUNE 2018
Fld. Vol.:	N/A
Scale:	N/A
Disk No.:	17130A-MISC
Designed:	MCS
Drawn:	SVD/KMB
Checked:	MCS
Sheet	9 of 9