

SECTION II - DESIGN/CONSTRUCTION PLAN REQUIREMENTS

A. GENERAL DESIGN REQUIREMENTS

Prior to beginning design work on a project, the EOR shall arrange a pre-engineering meeting with Seacoast staff to determine feasibility, master plan ramifications and any other special project requirements. The EOR shall comply with the following prior to making a utility construction plan submittal to Authority:

1. Master Plan/Main Extensions Required

- a. Engineering design for all new projects will be evaluated by Authority staff for conformance with the most current Authority approved Master Plan. In areas where master plan facilities have not been constructed, the Developer will incorporate the design and construction of these facilities in the overall design of the project.
- b. Developer/Property Owner shall extend water and sewer mains to the project boundaries most remote from the current system terminus, or to a point which best facilitates service to properties as yet unconnected. The specific size and location of service extensions shall be determined by Authority. Individual residential lot owners requesting water or sewer service shall be required to extend water and sewer mains based on the developer criteria set forth above. The use of long service lines to avoid extending mains is prohibited. In instances where the residential property to be served is a corner lot and water and/or sewer lines of adequate size are located in a public road right of way or easement adjacent to a property line of that lot, service line connections to the existing mains will be permitted.

2. Piping Orientation

All water, sewer and reclaimed water facilities shall be designed in accordance with these specifications. To the greatest extent possible, all water mains shall be designed to cross over all other pipelines i.e.: storm drainage, gas, sanitary sewer and force mains. Water mains crossing under the above referenced mains will warrant special design consideration based on actual circumstances. Force mains must be designed to be full of liquid under all operating conditions to avoid areas of gas accumulation. Special corrosion resistant linings on all ductile iron gravity sewer and force main pipe, fittings and valves are required. In general, the alignment of gravity sewer mains between dwelling units is not permitted.

3. Separation Requirements

- a. The Palm Beach County Health Department's requirements for design, construction, clearance and separation of water, sewer and other facilities shall be strictly observed in addition to those as outlined in these Standards.
- b. When storm drainage piping > 15 inch is to be installed parallel to gravity sewer lines a minimum of 15 feet of separation as measured from the outside edge of the pipes is required. Large storm drainage pipe (> 24 inch) to be located parallel to deep

sanitary sewer lines (> 8 foot cut) requires separation greater than 15 feet as determined by Authority.

- c. When drainage piping runs parallel to force mains, reclaimed mains, the minimum separation shall be eight feet. When running parallel to water main, the minimum separation shall be ten feet. Greater separation may be required from drainage pipe larger than 48 inches. When storm drainage piping crosses over or under sanitary sewer lines a minimum of 0.75 feet of separation as measured from the outside edge of the pipes is required. The sanitary sewer must be designed with a full length of polyethylene or Protecto 401 lined ductile iron pipe (DIP) centered on the crossing.
- d. Sanitary sewer mains and sewer service runs (< 100 feet) or runs with multiple drainage crossings require polyethylene or Protecto 401 lined DIP from manhole to manhole.
- e. No underground electric conductors, natural gas mains/feeders, or other utilities shall be placed closer than 4 feet horizontally and 6.0 inches vertically to water, sewer, or reclaimed lines and appurtenances as measured between the closest point between outside pipe walls.

4. Cover Requirements

Water, force and reclaimed mains shall have a minimum cover of 30 inches and a maximum cover of 48 inches unless otherwise specifically approved by Authority in writing. Sanitary sewer mains shall have a minimum of 3.3 feet of cover. Roadway crossings shall conform to requirements of the applicable permitting agency.

5. Setback Requirements

- a. Mains (water, gravity sewer, force and reclaimed water) which are less than 9.5 feet deep, as measured from the pipe invert to finished grade, shall be installed a minimum of 15 feet horizontally from structures. This setback requirement also applies to new structures being constructed in the vicinity of existing Authority facilities. The 15 foot horizontal setback shall be as measured from the outside edge of the pipe to the nearest point of the structure, including underground (e.g. footers) or aboveground (e.g. roof overhangs) features. In addition, the 15-foot setback applies only to mains skirting a single structure. Where deep mains are installed between structures, setbacks greater than 15 feet will be required on each side. Mains deeper than 9.5 feet shall have a minimum horizontal setback calculated in accordance with the following equation:

$$S = 1' + (D/0.67)$$

S = Required horizontal set back from edge of main or structure to edge of pipe

D = Depth from bottom of structure to pipe invert

- b. In general, sanitary sewer manholes shall be located in the center of roadway pavement. Manholes and sewer mains shall not be located closer than five feet to the

curb line or the right-of-way line; whichever is closer, as measured from the outside edge of the manhole or pipe.

6. Replacement of Existing Facilities Required

- a. Developer is required to replace any existing Authority facilities constructed of cement asbestos (CAP), cast iron (CIP), polyvinyl chloride (PVC) or vitrified clay (VCP) within the proposed development with currently approved materials at no cost to Authority. Design for relocation of existing water and sewer facilities must provide for continuity of service to existing customers as well as verification that the relocated facilities will not cause additional operation and maintenance expense to Authority. In no event will Authority schedule a preconstruction meeting for a relocation project until replacement easements are received in proper form for the relocated facilities. Removal and proper disposal of all CAP shall be in strict accordance with all applicable regulations and shall be the responsibility of the Developer/contractor performing same. A copy of the permit and a copy of the Solid Waste Authority (SWA) disposal ticket shall be supplied to Authority.
- b. When a development causes offsite drainage and/or road improvements to be constructed, the Developer of same shall be required to replace any existing CAP, CIP, PVC or VCP lines located within road or drainage right-of-way/easements with approved materials as described above. All such installations, whether planned or unplanned, shall be subject to review by Authority prior to the actual commencement of any site/road work.
- c. When Developer's project causes existing Authority offsite facilities to be overloaded or subject to risk, Developer will be required to upgrade same to comply with current Authority specifications. The intent of this requirement is to cover situations similar to the following:
 - i. project flows cause an existing lift station, gravity sewer line or force main to be overloaded.
 - ii. project fire flows cannot be delivered by existing water distribution mains.
 - iii. roadway or drainage improvements cause existing facilities to be at risk.

7. Improvements Installed Over Water, Sewer, or Reclaimed Facilities

- a. No paving or sidewalks shall be permitted within four feet of existing CAP or PVC water mains, force mains or reclaimed mains. No paving, sidewalk, landscaping, berms, or other improvements will be permitted over any portion of an existing utility easement (by plat or instrument), which has existing CAP, PVC or VCP water, sewer or reclaimed water lines.
- b. Water mains, force mains and reclaimed water mains shall not be constructed under existing or proposed structures, sidewalks, concrete slabs, roadways, parking lots or other paved areas, unless specifically noted on the plans and approved by Authority. Areas to be covered with either concrete or paving, parking garages, walls, landscape berms, etc. shall be clearly noted on the plans. All utility easements must

be clearly depicted on the landscaping plans. The EOR shall coordinate layout of water and sewer facilities with the landscaping plans for the project such that landscaping is minimized over water, sewer and reclaimed water lines and their respective easements. In general, easements shall preclude structures, trees, shrubs, berms, etc. so that unhindered access to all such facilities and mains is available at all times. Landscaping placed within a utility easement, with or without Authority's approval, is at property owner's risk. Developer is required to execute Authority's standard Encroachment Agreement prior to a meter being set if improvements are designed to be located over Authority facilities. This includes, but is not limited to, landscaping, walls, berms, paver block, sidewalk and the like.

- c. When a Developer causes grade changes at or near existing valve boxes, fire hydrants, manholes, backflow preventers, cleanouts, meter boxes or any other water, sewer or reclaimed facility the Developer shall adjust the affected facilities to finish grade in accordance with the Authority's standards.

8. Subaqueous Crossings

Design for subaqueous crossings requires the use of special materials. Class 56 DIP with ball and socket joints is required for pressure pipe (polyethylene or Protecto 401 lining is required for sewer force mains). Gravity sewer crossings of water bodies such as canals, lakes, water management tracts, etc. require the use of Class 56 polyethylene or Protecto 401 lined DIP for the entire tract (i.e. boundary line to boundary line). Manholes are not allowed in drainage easements, water management tracts or canal rights-of-way. Any gravity sewer pipe crossing of a water body will require the gravity sewer pipe to be installed within a steel casing. The casing shall be in accordance with Authority's Construction Detail Drawing No. 7 and installed, at a minimum, twenty feet beyond the top of each bank.

9. Service Connections

Each customer is required to have a dedicated service connection and meter. The Authority will not submeter water consumption to differentiate types of water use or for any other reason. The foregoing requirement does not preclude a Developer from submetering water usage on his property for his own purposes. Similarly, sewer customers are not permitted to connect to Authority facilities if their flow is piped through facilities not owned by the Authority. Each customer must have a dedicated service connection to the Authority's facilities. Residential uses shall be metered separately from non-residential uses in projects with mixed uses. Turbine meters are not permitted for any uses where low flows may occur. Permanent installations shall be metered in a manner acceptable to the Authority. The Authority requires that fire service lines be installed in conformance with requirements of the fire service agency of jurisdiction. Each such agency shall determine the appropriate fire flow requirements for each application and note the required fire flow in gallons per minute with their approval of the construction plans.

10. Prohibited Discharges to Sewer System

- a. Projects handling or generating any toxic/hazardous substances shall be identified and their methods of pretreatment specified. Untreated discharges are not permitted into Authority facilities. Pretreatment procedures shall be acceptable to Authority and shall conform to all State and Federal regulations. Affected businesses include, but are not limited to, all commercial and industrial users of Authority facilities for which Federal and/or State pretreatment standards have been promulgated. This includes businesses such as plating and metal finishing operations. Businesses that qualify as significant users will be required to obtain a Wastewater Discharge Permit in accordance with Authority's Wastewater Pretreatment Program.
- b. Storm water, roof drains, air conditioning and refrigeration condensate, cooling tower, blowdown, softener brine, reverse osmosis reject water, treated groundwater or other "nondomestic sewage" are not permitted to discharge into Authority's sewer system.

B. CONSTRUCTION PLAN PREPARATION REQUIREMENTS

1. Prepare plans on 24" X 36" sheets using a scale no smaller than 1" =40', unless specific approval for a smaller scale is obtained from Authority. Zero lot line projects (when frontage is 45 feet or less on 50% or more of the lots) require plans prepared at a scale of no smaller than 1"=30'. Plans shall be drawn to scale using a scale that appears on a standard engineer's box scale. Like scales shall be used on plan & profile submittals with correct grids. (i.e. 1" 40' hor., 1"= 4'vert.) Scales and grid count must be consistent. Computer generated scales that cannot be read with a standard engineer's box scale will not be accepted for review.

2. Plans must indicate proposed finish floor/slab elevations and finished grade for roads, catch basins and other pertinent items. Place sanitary sewer data, including manhole invert and rim elevations, on plan sheets at each manhole; rim and invert elevations shown in tabular form only will be rejected. Profiles are required for gravity sewers and force mains (show all crossings). Profiles are also required for water mains with significant grade changes, including, but not limited to, aerial crossings, jack and bore and subaqueous crossings. When separate profile sheets are used all sewer lines must be depicted from manhole to manhole, pipe breaks between manholes will not be accepted. In addition, invert elevations must be clearly shown on profile sheets at each manhole. All profiles shall utilize the grid format. Plans utilizing the datum format shall be rejected.

3. An overall Master Plan sheet will be required for projects requiring more than two water and sewer plan sheets. The Master Plan sheet shall clearly show all water, sewer and reclaimed mains, valves, fire hydrants, manholes, lift stations, metering facilities, connection points and existing facilities.

Other information pertinent to the project such as roadway, lakes, buildings, drainage system, etc. shall also be shown.

4. All piping crossings must be clearly identified on the plan sheets (this includes but not limited to, water mains, force mains, gravity mains, reclaimed mains, storm sewers, gas mains, underground electric, telecommunication lines and cable TV lines showing elevations of each). Clearance between the outside walls of the pipes/conduits, as well as pipe materials, must be clearly indicated on the drawings for each crossing.

Example:

Bottom 6" DIP WM = 14.73

Top 24" RCP = 13.18

All sewer service crossing water mains and drainage lines shall be clearly identified on plan sheet with elevations called out in tabular form on the construction plans and on the record drawings.

5. If the project will be built in phases the limits of each phase must be clearly indicated with the initial submittal; phasing must be decided prior to review. Each phase shall be separated by a valve and/or manhole.

6. Facilities which will ultimately be dedicated to the Authority which are installed on private property shall be in easements dedicated to Authority. Plans must show proposed easements by shading or otherwise easily distinguishable on plans.

7. All projects shall clearly indicate proposed driveway locations, streetlights and location of other utilities (electric, telephone, cable TV and gas). Particular emphasis must be given for proposed structures such as switch cabinets, transformers Bellsouth splice boxes and signal booster stations.

8. Provide a cover sheet showing the applicable project name and project number, sheet index, category of improvements, and vicinity sketch.

9. Provide all applicable detail drawings, including special profile sheets as required to show special or unique situations.

10. Authority's details must be used where applicable and shall include Board approved date. If details are found to have been altered without the knowledge of the Authority or without specifically stating in the transmittal which details are altered, the plans will be returned without review.

11. Obtain Fire Marshall approval of water system plans (approving fire hydrant placement and wet fireline requirements) prior to plan submission to the Authority. The Fire Marshall approved set shall indicate the minimum fire flow requirement for the project.

12. Submit Fire Marshall approved set, paving and drainage plan, preliminary plat or utility easement plan at scale matching potable water, reclaimed water, and/or wastewater plans, landscaping plan, master plan, survey, cover sheet and all plan sheets with relevant and easily readable location sketch, completed wastewater survey for projects with potential pretreatment requirements, lift station calculations, canal and road permits, including preliminary FDEP forms.

13. A utility plan is required for all subdivisions. The plan shall include a typical section of the utility easement showing all proposed utilities, all utility crossings, location and size of all utility above grade infrastructure boxes. This plan shall be provided prior to the Authority approving plans.

14. Prior to making plan submittal to Authority, verify all items on prerequisite checklist have been completed (see "Plan Submittal Prerequisite Checklist Water and Sewer").

C. INSTALLATION PROTOCOL (to be incorporated in construction drawings or project specifications)

1. All pipe is to be laid in a clean dry trench.

2. All muck and unsuitable materials encountered in trench bottom shall be removed and replaced with compacted granular material to 95% of maximum density per AASHTO T-180. Proctor and density test results shall be submitted to the EOR with a copy to the Authority.

3. All backfill within road rights-of-way shall be placed in 12 inch lifts and compacted by mechanical means to 98% of maximum density per AASHTO T-180 or as otherwise required by the permitting agency. Proctor and density test results shall be submitted to the EOR with a copy to the Authority.

4. Utilities crossing road rights-of-way shall be installed prior to road construction and backfilled and compacted within right-of-way limits in strict accordance with the directions of the EOR and requirements of all agencies of jurisdiction.

5. Embedment materials below pipe shall conform to Unified Soil Classification System (U.S.C.S.) Soil Classification Class I or II as noted in ASTM D2321.

6. All lines under construction shall be plugged with a wing plug, and all pressure pipes are to be plugged with a mechanical plug or cap at the end of the working day to prevent ground water and potential contaminants from entering completed lines and lines under construction.

7. Above ground piping, including but not limited to, aerial crossings, lift station piping, fire lines, meter/backflow prevention device assemblies, etc. shall be flanged and be coated in the following manner:

Sandblast and remove all paint and any loose material in accordance with SSPC-SP10. Sandblasting shall be performed using non-silica media. Paint all exterior ferrous metal surfaces. The manufacturer's recommendations for surface preparation, priming, recoating, etc. shall be strictly followed. Do not paint or coat any nameplates, brass or stainless steel surfaces. Contractor shall use the following paint system or approved equal.

TNEMEC

- a. Primer: TNEMEC CHEMBUILD- MODIFIED POLYAMIDOAMINE EPOXY #135 (3.0 to 5.0 mils DFT) aluminum color.
- b. Intermediate Coat: TNEMEC CHEMBUILD-MODIFIED POLYAMIDOAMINE EPOXY #135 (3.0 to 5.0 mils DFT) off white color
- c. Finish Coat: Series 1074 Endura-Shield II with 644 UV Blocker (2.0 to 3.0 mils)

The finished coat of paint shall be black in color for sanitary sewer, safety purple (5C08) for reclaimed appurtenances and delft (6B03) blue for potable water appurtenances.

Inspections by the Authority are required after sandblast and before primer, after primer and after intermediate coat.

8. All flanged pipe shall be caulked between each flange and threads with Sika 1 A urethane caulk.

9. All tie rods, bolts, nuts, etc. installed underground must be Cor Ten and shall be painted with Koppers 300-M or an Authority approved equal. Brass and stainless steel hardware is exempt from this requirement.

10. Coatings and linings damaged during construction due to field cutting, mishandling or otherwise must be repaired in strict accordance with the manufacturer's recommendations. This includes, but is not limited to, cement mortar and polyethylene pipe linings, Protecto 401, galvanized coatings, PVC fence coatings and other paint type coatings. Specific approval must be obtained from Authority prior to performing coating and lining repairs.

11. All stainless steel nuts, bolts and hardware referenced in these standards, shall be SS 316 grade and shall be so stamped by the manufacturer to verify alloy. The use of any other stainless steel alloy will require specific approval by Authority. In general, stainless steel nuts, bolts and hardware are required in and around lift stations and for facilities installed over or under brackish or marine waters. This requirement applies to flange bolts and nuts on flanged piping, mounting brackets, all thread rod, anchor bolts, washers, clamps and other miscellaneous hardware. Anti-galling compound anti-seize lubricant shall be applied to the threads of all stainless steel bolts prior to installation.

Anti-seize lubricant shall be graphite 50 anti-seize by Loctite Corporation, 1000 anti-seize paste by Dow Corning, 3M Lube and anti-seize by 3M.

12. All rubber and synthetic elastomeric components of products that come in contact with potable water shall be manufactured with chloramine resistant elastomers and shall bear NSF approval.

13. All main, including fittings, shall be easily identifiable as to their contents and shall be color coded or marked using the universal color code of blue for water, green for sewer and lavender for reclaimed. Pipe striped during manufacturing of the pipe shall have continuous stripes that run parallel to the axis of the pipe, that are located at no greater than 90-degree intervals around the pipe, and that will remain intact during and after installation of the pipe. If tape is used to

stripe pipe during installation of the pipe, the tape shall be applied in a continuous line that runs parallel to the axis of the pipe and that is located along the top of the pipe; for pipes with an internal diameter of 24 inches or greater, tape shall be applied in continuous lines along each side of the pipe as well as along the top of the pipe. Tape shall be vinyl plastic adhesive back with a minimum width of 6 inches. Field application of paint shall not be acceptable.

14. Fire hydrants shall be clearly identified as out of service until mains have been released for service and the Authority has verified the system is fully operational.

15. Any lines taken out of service shall be either removed or grouted in place as required. Those lines grouted in place shall be grouted full with a concrete grout mixture design Rinker #1315167 or approved equal.

D. LANDSCAPE GUIDELINES

1. Seacoast Utility Authority has developed these guidelines to help prevent damage to its facilities and help to limit damage to landscape plantings caused by the Authority when necessary maintenance and repair activities are performed. The Authority requires landscape plans be submitted as part of the construction plan review process for all projects. These plans shall include the Authority's "typical tree with root barriers" details, if applicable. Water and sewer service shall not be activated if plantings are installed within the specified area of the Authority's facilities without the express written consent of the Authority. Property owners that wish to place landscaping in Authority easements will be required to submit proposed plans for approval and to execute Authority's Encroachment Agreement. Landscaping placed near the Authority's facilities is at the property owners' risk.

The Authority offers the following guidelines for placing landscaping near Authority facilities whether in an easement or the road right-of-way:

- a. Ground cover type plants shall not be planted within five (5) feet of the Authority's valve boxes, metering or pumping facilities, gravity sewer manholes, water meters, sewer cleanouts, fire hydrants, and backflow prevention devices without approval from the Authority. Should ground cover be approved within five (5) feet of the Authority's facilities it shall not cover, block or in any way hinder access to the Authority's facilities.
- b. Palm trees (other than Royal and exotic palms), shrubs, accent plants, and small trees, shall not be planted closer than ten (10) feet of water mains, force mains, gravity mains, reclaimed facilities, sewer service laterals, water service lines, water meters, sewer cleanouts, fire hydrants, or any other water and sewer appurtenances owned by the Authority without the approval of the Authority. The Authority will consider approving less than ten (10) feet separation, with the use of an approved root barrier, when it has been demonstrated that there are no other alternatives and the authority's facilities can be accessed and maintained and will not be at risk. The Authority will not consider any landscaping in the small tree, palm category which is less than seven (7) feet from its facilities with the root ball being a minimum of five (5) feet as measured from the outside of the root ball to the outside of the pipe.

The Authority will consider approving accent plants and small shrubs with less than (7) feet of clearance from its facilities, with a minimum of (5) feet from facilities when there are no other alternatives.

- c. Large trees, Royal Palms, and exotic palms are not to be planted closer than fifteen (15) feet to water mains, force mains, gravity mains, reclaimed facilities, sewer service laterals, water service lines, water meters, sewer cleanouts, fire hydrants and any other water or sewer appurtenances owned by the Authority without the approval of the Authority. The Authority will consider approving less than fifteen (15) feet separation, with the use of an approved root barrier, when it has been demonstrated that there are no other alternatives and the Authority's facilities can be accessed and maintained and will not be at risk. The Authority will not consider any landscape in this category which is less than ten (10) feet from its facilities with the root ball being a minimum of eight (8) feet as measured from the outside of the root ball to the outside of the pipe.
 - d. Only those plants which are classified as palm trees, shrubs, ground cover or accent plants are to be planted within five (5) feet of lift station or reclaimed water metering facilities and shall not interfere with the telemetry antenna.
 - e. Notorious invasive plants nuisance and problem trees are not to be planted within twenty five (25) feet of water mains, force mains, gravity mains, sewer service laterals, water service lines, water meters, sewer cleanouts, fire hydrants or any other water or sewer appurtenances owned by the Authority without the approval of the Authority.
 - f. Landscape berms, root barrier designation and root barrier details must be noted on all landscape and construction plans where used and shall be reviewed by the Authority for acceptance on a case by case basis.
 - g. Root barriers shall be Deep Root UB36-2, Root Solution RS-36, Biobarrier Root Control System or approved equal. All root barriers shall be installed to a minimum depth of thirty-six (36) inches and in strict accordance with manufacturer's written instructions and SUA Standards. Root barriers shall be installed a minimum of four (4) feet from the Authority' facilities.
 - h. All landscaping including accent plants shall be a minimum of 7.5 feet from fire hydrants.
2. Accent Plant is a plant which is not covered by any of the following definitions and is used sparingly within landscape areas.
 3. Ground Cover is a plant in height no greater than two (2) feet at maturity.
 4. Shrubs are plants in height no greater than three (3) feet at maturity.
 5. Small Tree is a tree in height less than twenty (20) feet at maturity.

6. Nuisance and Problem Trees are generally invasive in nature. The following is a partial list of trees which are in this category:

EARLEAF ACACIA	<i>Acacia auriculiformis</i>
AUSTRALIAN PINE	<i>Casuarina</i> spp.
MELALEUCA	<i>Melaleuca quinquenervia</i>
BRAZILIAN PEPPER	<i>Schinus terebinthifolius</i>
WOMAN'S TONGUE TREE	<i>Albizzia lebeck</i>
NORFOLK ISLAND PINE	<i>Araucario heterophylla</i>
TREE BAMBOO	<i>Bambusa vulgaris</i>
BISCHOFIA	<i>Bischofia javanica</i>
SCHEFFERLA	<i>Brassaia actinophylla</i>
EAR TREE	<i>Enterolobium cyclocarpum</i>
EUCALYPTUS	<i>Eucalyptus</i> spp.
NON-NATIVE FICUS	<i>Ficus</i> spp.
SILK OAK	<i>Grevillea robusta</i>
MAHOE	<i>Hibiscus tiliaceus</i>
CHINESE TALLOW TREE	<i>Sapium sebiferum</i>
JAVA PLUM	<i>Syzygium cumini</i>
CORK TREE	<i>Thespesia populnea</i>
ROYAL POINCIANA	<i>Delonix regia</i>

E. PLAN SUBMITTAL - REVIEW PROCEDURES

1. The design criteria noted in the next three (3) sections of this Construction Standards and Specifications Manual shall be used to review the utility design of the systems included in any project site development. However, when required by good engineering practice and/or economics, the design engineer shall request, in advance and in writing, deviations from these criteria. Deviations shall be approved, in writing by SUA.

2. Provide the utility plan(s) in accordance with Section II.B.

- a. An incomplete submittal shall **NOT** be reviewed and shall be noted as **NOT APPROVED**.
- b. If the submittal is reviewed and an excess of twenty (20) comments are noted on the submitted plans prior to the completion of the review, the entire submittal may be returned to the design engineer as incomplete due to lack of quality assurance check and shall be noted as **NOT APPROVED**.

3. It is incumbent upon the design engineer that prior to any submission, the drawings (and corresponding applications) shall be thoroughly checked and coordinated. Quality control is the responsibility of the design engineer.

F. PLAN SUBMITTAL PREREQUISITE CHECKLIST

DATE: _____

Project Engineer: _____ Project _____ Name: _____

Your plans that were submitted on, _____20_____ are not complete. The review of this project will not start until the submittal is complete with the following required items:

- _____ Property Questionnaire
- _____ Survey (one copy)
- _____ Administrative Fee _____

DEP FORMS: 2 Copies Each

- _____ Water
- _____ Sewer

PLANS: Two sets of each required (no smaller than 1" = 40', zero lot line 1" = 30')

- _____ Water and Sewer with Location Sketch/Key Map
- _____ Fire Marshall approval (original indicating required fire flow)
- _____ Complete Preliminary plat or easement dedication
- _____ Paving and Drainage Plans
- _____ Landscape Plans (utility easements and water and sewer appurtances must be shown)
- _____ Utility Plan
- _____ Off Site Roadway /Drainage Improvements (or letter stating no off site roadway/drainage Improvements required for this project.

PROJECT SPECIFIC REQUIREMENTS

- _____ Master Plan - Overall water and sewer plan (more than one plan sheet)
- _____ Water Meter Sizing Calculations
- _____ Engineering Calculations for Lift Station
- _____ Irrigation Calculations
- _____ A/C Cooling Tower Calculations

_____ Architectural/Mechanical Building Plans (nonresidential only)

_____ Grease Traps/Oil/Sand Interceptors

_____ Other

If you have any further questions, please contact _____ at this office.

SEACOAST UTILITY AUTHORITY

G. PLAN REVIEW CHECKLIST

PROJECT:

ENGINEER: _____

PHONE: _____

REVIEWER: _____

DATE STARTED: _____

GENERAL:

1. _____ Master Plan Requirements/Well sites required
2. _____ Authority detail sheets used
3. _____ Plat showing existing and proposed easements
4. _____ Plat has proper dedication language
5. _____ Easements shown where facilities are on private property
6. _____ Water and sewer separation statement
7. _____ Project in wellfield protection zone
8. _____ Overall Master Utility Plan
9. _____ Pipe crossings shown with clearances (Horizontal & Vertical)
10. _____ Off site water, sewer and reclaimed appurtenances properly shown
11. _____ Replace CAP, PVC or VCP pipe
12. _____ Proper materials specified
13. _____ Clearance from buildings (15' min including footers and overhangs & other structures)
14. _____ Connections to existing facilities clearly detailed

15. ____ Operating nut on valves no deeper than 24" below finish grade
16. ____ Pipe/service size
17. ____ Necessary water/sewer detail sheets attached
18. ____ Each unit building served
19. ____ Utility plan showing conduit crossings and utility boxes
20. ____ Proper cover over existing water, sewer and reclaimed facilities
21. ____ Existing and proposed easements by instrument shown
22. ____ Existing water, sewer, reclaimed, drainage and large diameter irrigation
23. ____ Water and sewer mains have to be extended to furthest property line
24. ____ Notation for contractor to adjust existing valve boxes, fire hydrants, manholes, etc. to finish grade when impacted by development

WATER:

1. ____ Proper backflow preventer (including auxiliary water supply user and dual backflows required for critical uses)
2. ____ Meter at property line - not in driveway or sidewalk
3. ____ Double services where possible
4. ____ Water mains looped for projects greater than 25 dwelling units and projects which are considered critical use.
5. ____ Proper valving - two at each tee, every 1500 feet, greater than 25 dwelling units
6. ____ Double valve point of feed
7. ____ Minimum/Maximum cover 2.5' to 4.0'
8. ____ Fire hydrant spacing/provision for line flushing
9. ____ Mains in green areas
10. ____ Valve boxes for corporations where tap is under paving
11. ____ Valve & length of pipe for future extension
12. ____ Thrust blocks, tie rods, restrained joints
13. ____ Booster pump > 2 stories for domestic service
14. ____ No services greater than 75' long
15. ____ Fire line for building (commercial or multi-family)

16. ____ Fire line for single family home
17. ____ Large meter/backflow assemblies clearly detailed
18. ____ Bypass on meters > 2" and all critical installations
19. ____ Velocity less than 10 fps during fire flows
20. ____ Dead ends minimized
21. ____ Mains and services perpendicular to street were possible
22. ____ Valves in accessible locations
23. ____ Sample points shown
24. ____ Air release valves at high points

SEWER:

1. ____ Minimum depth 4 feet invert of terminal manhole
2. ____ C-900 pipe for cuts greater than 12 feet
3. ____ D.I.P. installed at required crossings
4. ____ Maximum distance between manholes 400 feet
5. ____ Mains under paving - concrete collars on manholes if in green areas
6. ____ Outside drop if drop is greater than 2 feet
7. ____ Minimum/Maximum slopes
8. ____ No oversized pipe
9. ____ No future stubs - Terminate with manhole
10. ____ Entry to existing manhole - core only
11. ____ No services tied to manholes
12. ____ Double services where possible
13. ____ Clean out on service lines at property line and at 75' intervals on service laterals
14. ____ Grease trap/oil/sand interceptors
15. ____ Profile of gravity sewer mains including proposed finished grades
16. ____ Profile force main including proposed finished grade
17. ____ Valving on force main at 1,500 intervals, two at each tee

18. ____ Manholes and sewer lines designed to be a minimum of 5 feet to curb and right of way
19. ____ Sanitary sewer crossing elevations with conflicting pipe (including sewer service laterals)
20. ____ Valves and manholes in accessible locations
21. ____ Manhole flow channels 90° or greater
22. ____ Manhole depth less than 18 feet
23. ____ Sewer main from lift station to first manhole to be D.I.P.
24. ____ Air release valve at force main high points
25. ____ 2% maximum slope of sewer lines if connection to an existing manhole requires a steeper slope, a drop manhole must be utilized to minimize slope
26. ____ Lift Station depth less than 26 feet
27. ____ Lift Station Calculations - Signed & Sealed by EOR
 - a. average daily flow/peak flow calculations
 - b. force main minimum velocity
 - c. manifolded force main pressures
 - d. pump cycle time
 - e. floatation calculations
 - f. 240/480 volts
 - g. 100 year flood
 - h. System curve plotted on proposed pump curve

LANDSCAPING:

1. ____ Authority details utilized
2. ____ Root barriers shown on plans
3. ____ Water and sewer lines and appurtenances shown
4. ____ Water and sewer easements shown
5. ____ Screening of backflows required by other governmental agencies