Proposed Amendments
May 28, 2008

DIVISION II - DESIGN CRITERIA

Section A. Purpose - The section shall be amended to include the following:

9. All gravity sanitary sewer laterals shall have an approved cleanout with backflow prevention measures in accordance with the municipality's adopted building code.

Section B. Sanitary Sewer System Design Criteria -The following shall be deleted:

9. Pumps

d.	Grinder pump station minimum storage capacity (hours)	24
e.	Grinder pump station wet well minimum diameter (feet)	6

Section B. Sanitary Sewer System Design Criteria - The following shall be revised:

11. Site:

    a. Fence (chain link is preferred, wood meeting the specified criteria is acceptable)

Additional Sanitary Sewer Requirements - The following item shall be included:

12. Sanitary sewer mains twelve (12) feet deep or greater shall be ductile iron.

Section C Water System Design Criteria - The following shall be deleted:

4. Small Mains for Domestic Service:

   The minimum size of water main in the distribution system where fire protection is not to be provided should be a minimum of three (3) inch diameter. Any departure from minimum requirements shall be justified by hydraulic analysis and future use, and may be considered only in special circumstances.

Section C Water System Design Criteria - The following shall be revised:

2. Diameter: The minimum size of water mains for providing fire protection and serving fire hydrants shall be six (6) inch diameter. Larger size mains will be required if necessary to allow the withdrawal of the required fire flow while maintaining a minimum residual pressure of 20 psi.

5. Dead Ends

    b. Where dead-end mains occur, they shall be provided with a fire hydrant if flow and pressure are sufficient to meet at least minimum system hydraulic requirements, or with an approved flushing hydrant or blow-off for flushing purposes. In this case flow and pressure calculations must be provided to Daphne Utilities. Flushing devices shall be sized to provide flows which will provide a velocity of at least 2.5 feet per second in the water main being flushed. No flushing device shall be directly connected to any sewer system.

Section E Low Pressure System Design Criteria - The following shall be included:

1. All collector pipes shall be a minimum of two (2) inches in diameter. Force main cleanouts with valves shall be placed at dead end lines to allow for cleaning. Refer to drawing of cleanout in Appendix D.

2. The minimum allowable depth of cover is thirty (30) inches.

3. A Hazen Williams Coefficient of 130 to 140 shall be used for hydraulic analyses.

4. For design purposes, a velocity of 3 to 5 fps shall be obtained at least once a day.

5. The design conditions of the pump shall be in accordance with the pump manufacturer's guidelines and recommendations.

6. All systems shall have a quick disconnect, a high level alarm, and an external/remote control panel. The alarm shall have a light and auditory device.

7. Force mains shall not be constructed under pavement or concrete.

8. Air release valves, shall be located at high points in the line and shall be properly sized for the design operating conditions. Air release valves shall be either brass or stainless steel. Galvanized steel valves will not be accepted.

10. All laterals shall have a ball valve in lieu of a gate valve.

DIVISION III – SECTION 1 – WATER MAINS

1.04 Materials

All references to cast iron fittings shall be deleted.

B. PVC Pipe for Water Lines - This section shall be amended to include the following:

2. Polyvinyl chloride (PVC) plastic pipe for diameter sizes less than 4-inch shall conform to the requirements of ASTM D-1784 and shall be minimum of Schedule 40 manufactured from a Type I, Grade I polyvinyl chloride compound with a cell classification of 12454 per ASTM D1784. Pipe joints shall be integral bell and spigot type with rubber ring sealing gasket. Lubricant for making joints shall be non-toxic, and shall be as recommended by the pipe manufacturer. The pipe bell shall be designed to be at least as strong as the pipe wall. Bells shall be manufactured so that o-rings gaskets are square to the barrel of the pipe. Standard lengths shall be 20 feet except that 15 percent of total footage for a particular project may be random lengths of not less than 10 feet each. Ductile iron fittings conforming to the requirements of these specifications shall be used with PVC pipe. Fittings shall be mechanical joint and shall be provided with a transition gasket specifically designed to accommodate the outside diameter of the pipe.

D. Gate Valves - This section shall be deleted:

1. **Metal Seated Gate Valves** - All valves shall be non-rising stem for underground

direct burial service and shall close when the operating nut is turned in clockwise rotation. Valves shall be in accordance with and meet the requirements and recommendations of AWWA C500. O-ring seals shall be provided. Seats shall be parallel with double disc. Valves shall be furnished complete with necessary gaskets, bolts, and nuts as needed for mechanical joint ends.

Mechanical joints and accessories shall comply with the latest published AWWA C111. Gaskets shall be of best grade quality of a type suitable for potable water service.

a. Valves (16 Inches and Smaller): Each valve shall have mechanical joint bell ends, and shall be on the Board's list of materials and approved manufacturers. Valves shall be installed with the operating stem in the vertical position. Valve stems shall be furnished with 2-inch square water works nut. A bypass valve with 2-inch square operating nut shall be provided on 14-inch and 16-inch valves.

b. Valves (18 Inches and Larger): Each valve shall have mechanical joint bell ends, and shall be on the Board's list of materials and approved manufacturers. Valves shall be horizontal mounting and shall be provided with bypass valve with 2-inch square operating nut. The main valve shall be provided with watertight bevel gear case with outside packed stuffing box with a gland enclosure. Both main valve stem and pinion stem shall be provided with accessible alemite connections. The test plug in each main valve shall be provided with the brass gauge cock with handle.

G. Fire Hydrants - This section shall be amended to include the following:

1. All hydrant manufacturers shall be on the Board's list of approved materials and manufacturers, or an Owner/Engineer approved equal. All hydrants shall meet or exceed AWWA C-502, latest revision, shall be the traffic-model design, and shall be rated at 200 psi working pressure, 400 psi hydrostatic test pressure. Size of hydrant valve shall be 5¼ inches minimum and of a compression type that closes with the pressure. Hydrants shall be located at a maximum of every 500 feet. All operating parts, including the drain ring, operating nut, hold-down nut, upper valve plate, seat ring, drain lever, and nozzles shall be made of bronze, in compliance with AWWA C-502, Section 2.2.501.

   i. Gate valves shall be located a maximum of two (2) feet from hydrants.

G. Fire Hydrants - This section shall be deleted:

1.O. Hydrants shall be painted in accordance with the requirements of AWWA C-502. The outside of the hydrant top section shall receive one coat of shop-applied primer (Federal Specifications TT-P-86-Type IV, TT-P-636, or equal). After hydrant is installed, it shall be cleaned and primer applied to scraped or abraded areas. Hydrants shall receive an intermediate coat and final coat of paint meeting Federal Specifications TT-E-489 applied at a dry thickness of 2 mils per coat. Hydrant barrel color for hydrants shall be red.

Hydrant shall be tagged to conform to the following table according to flow test results:

Class	Color	Rated
AA	Sky Blue	Capacity of 1500 GPM or greater
A	OSHA Green	Capacity of 1000-1499 GPM
B	International Orange	Capacity of 500-999 GPM
C	Red	Capacity of less than 500 GPM

O. Water Meters (5/8" x ¾" through 2") - This section shall be amended to include the following:

1. Copper pipe, Rigid type with compression fittings, shall be used on 1" and 2" meters. Ductile iron pipe or PVC C900 with ductile iron mechanical joint fittings shall be used on 3" and 4" meters.

2. Meters that are 1 ½ Inches and larger in size shall have a bypass. The meter and bypass shall be installed within a below ground concrete or fiberglass vault.

Q. Meter Boxes - This section shall be amended to include the following: Water meter boxes will be plastic with iron reader lids or concrete with cast iron lids in traffic areas. Boxes will be sufficient to size to house the meter and curb stop. Residential meter boxes for meters less than 1 ½ Inches will be provided by Daphne Utilities. Commercial meter boxes will not be provided by Daphne Utilities. Commercial meter boxes shall either be a lightweight concrete composite or fiberglass.

S. Corporation Stops - This section shall be amended to include the following: Corporation stops where required, shall have standard Mueller, AY MacDonald Thread on inlet as specified by AWWA C800, and copper tubing size O.D. outlet suitable for service piping. Corporation stops may be tapped directly into ductile iron water mains. A saddle shall be required for PVC pipe connection.

T. Curb Stops - This section shall be amended to include the following: Curb stops, where required, shall be suitable for service piping and shall be Mueller, AY MacDonald or an Engineer/Owner approved equal.

1.09 Excavation and Preparation of Trench – This section shall be amended to include the following:

P. Thrust Restraint for Water Mains: Thrust restraint for water mains at bends shall be provided by concrete thrust blocks and mechanical joint restraint. Thrust blocks of concrete of a mix not leaner than one cement, two fine aggregate and four course aggregate, having a compressive strength of not less than 3,000 psi shall be installed. The blocking shall be poured against undisturbed earth.

DIVISION III – SECTION 3 – SANITARY SEWER MAINS

3.04 Materials – This section to be amended to include the following:

All references to cast iron fittings shall be deleted.

C. High Density Polyethylene (HDPE): Polyethylene pipe shall be the nominal pipe size and dimension ratio shown on the plans, or in the proposal. Unless field conditions dictate a heavier wall thickness, SDR 17 shall be used. Installation shall be in accordance with ASTM D2321 or as modified herein.

3.06 Precast Manhole - This section shall be amended to include the following

I. The Contractor shall furnish and properly set in mortar to line and grade all cast iron covers and frames. Brick stacks not more than 12 inches in total height shall be used to adjust manhole covers and frames to the proper grade where tops of manholes are to be flush with existing or proposed ground or streets or where directed. Concrete adjusting rings shall have a tolerance of approximately 3/16 inch from the center of the manhole opening. In locations where manhole covers are flush with the ground, markers approved by the Board shall be placed near them for locating purposes. Where the manholes are flush with the ground and are located in the clear zone, a break away type markers shall be used.

3.42 Internal Video Inspection - All references to VHS shall be deleted.

DIVISION III – SECTION 6 – SEWAGE PUMPING STATIONS

This section shall be amended to include the following:

6.24 Grinder Pump Specification Sheet: to be owned by Daphne Utilities - to be revised

6.25 Grinder Pump Specification Sheet: not to be owned by Daphne Utilities

Service:	Sewage
Type of Pump:	Packaged Grinder Pump, Semi Positive Displacement or other High Head Pumps
Hardware:	300 Series Stainless Steel
Square Rings:	Buna N
Motor Housing:	Cast Iron, ASTM A-48, Class 30
Cord Cap:	Cast Iron, ASTM A-48, Class 30
Volute:	Cast Iron, ASTM A-48, Class 30
Seal Plate:	Cast Iron, ASTM A-48, Class 30
Impeller:	Bronze, 85-5-5-5 Vortex with Pump-out Vanes, Dynamically Balanced
Shredding Ring:	Hardened 440C Stainless Steel 56-60 Rockwell C
Grinder Impeller:	Hardened 440C Stainless Steel 56-60 Rockwell C
Shaft:	416 Stainless Steel
Shaft Seal:	(Primary) Mechanical Silicon – Rotating Face Carbide – Stationary Face Buna N – Elastomer 300 Stainless Steel (Secondary) Mechanical Carbon – Rotating Face Ceramic Stationary Face
Bearings (Upper):	Single Row, Ball, Oil Lubricated Bearings
Bearings (Intermediate):	Single Row, Ball, Oil Lubricated Bearings
Bearings (Lower):	Sleeve

Installation: 1. The Pump shall have a discharge connection elbow connected to a vertical discharge pipe. The discharge connection elbow shall be permanently installed in the wet well along with the

discharge piping. The pump shall be automatically aligned and connected to the discharge connection elbow when lowered into place, and shall be easily removed for inspection or service without a need for personnel to enter the wet well.

2. Sealing of the pumping unit to the discharge connection elbow shall be accomplished by a simple linear downward motion of the pump. A sliding guide bracket shall be an integral part of the pump unit. The entire weight of the pumping unit shall be guided by no less than two guide bars and pressed tightly against the discharge connection elbow with metal-to-metal contact. Sealing of the discharge interface by means of a diaphragm, o-ring, or other devices will not be acceptable. No portion of the pump or the guide support system other than the discharge connection shall bear directly on the floor of the sump. The pump, with its appurtenances and cable, shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 40 ft.

Drive Motor:

1. 1 Horsepower (min.) submersible, 120/230 V, 3 Phase, 60 Hz
2. Windings: Open Type, Class F Insulated
3. Service Factor: 1.15 continuous
4. Temperature not to exceed Class B ratings
5. Non-overloading at any point on pump curve
6. Explosion Proof

Seals: Type 21, Silicon, Carbide Dual Mechanical Seal Construction

Basin: The minimum allowable diameter of the wet well shall be two feet, and the minimum allowable depth shall be three feet. Allowable materials shall be fiberglass/resin or HDPE.

Basin Cover: HDPE and Fiberglass shall be the acceptable materials for the basin cover.

Valves: The pump discharge shall be equipped with a gravity operated, flapper type valve built into the discharge piping.

Liftout System: Shall be C-channel slide rail system, stainless steel. A stainless steel lifting cable shall be attached to the pump.

Controls: An external remote control panel with an alarm is preferred, but at a minimum a quick disconnect with a high level alarm will be accepted.

Warranty: The pump manufacturer shall warrant the unit being supplied to the Owner against defects in the workmanship and material for a period of five (5) years or 10,000 hours.

Manufacturer(s): Acceptable manufacturers include E-One or Myers.

The application and design guidelines are to be compiled with additional documents on post construction requirements.

A summary will be compiled from key points of the specifications.

Minor amendments will be made to the design criteria.

Standard Drawings will be revised.