SECTION 1.3 - DESIGN PARAMETERS FOR WATER DISTRIBUTION SYSTEMS

1.03.01 GENERAL

Where water mains are to be installed for residential or commercial development, the Developer is responsible for all improvements. Developer shall hire a Contractor approved by the Town of Easton and Easton Utilities and pay all costs associated with the work. The Developer is also responsible for installation of all service lines inclusive of corporation stops and meter assemblies prior to paving.

1.03.02 PROJECT DRAWINGS

The Developer and his Engineer are responsible for preparation of detailed drawings. These drawings must be approved by Easton Utilities.

A. TITLE SHEET

1. Title of Project and Address.
2. Phase of Project (if necessary).
3. Developer's Name and Address.
4. Design Engineer's Name and Address.
5. Drawing Index.
6. Approval Block for Town Engineer's signature and date.
7. Vicinity Map showing location of Project within the Town. Typical scale shall be 1 inch equals 1000 feet.
8. Location Map if drawings are for one phase of the development.
9. Design Engineer's Seal and Signature.
10. Certification by the Design Engineer to the accuracy of the drawings.
11. Certification by the Developer approving the drawings.
12. Certification by a Professional Wetlands Scientist for wetland determination if hydric soils are present.

B. HORIZONTAL PLAN (WATER MAINS)

1. The scale shall be 1 inch equals 20 feet for small projects up to a maximum of 1 inch equals 50 feet for large projects.
2. North Arrow shall be shown.
3. The existing and proposed legend.
4. All necessary utility notes.
5. Location, elevation and description of all the Project Bench Marks, referenced to, and using, NAVD 88 monuments.
6. Location and sizes of all proposed water lines with stationing.
7. Locations of proposed valves, fittings, and fire hydrants.
8. Property lines and ownership, with details of existing and proposed easements where required.
9. Location of all existing and proposed structures and buildings.

10. Beginning and end of proposed construction.
11. Locations of proposed service lines.
12. Location of all other drainage facilities, sewer facilities, and public utilities.
13. Location of all existing utilities, including water mains, valves, hydrants, services, etc.
14. Provide profiles showing all utility crossings.

C. DETAILS (WATER MAINS)

Standard Construction Details shall be included on the drawings where applicable.

1.03.03 DESIGN CAPACITY

A. WATER MAINS

In determining the required size and capacity of the water main, the following factors should be considered:

1. Estimated average and maximum water demand for the design period.
2. Topography of area.
3. Depth of excavation.
4. Fire fighting requirements.
5. Number of proposed services.
6. The calculations for design of the water mains, when requested, shall accompany the Project Drawings, when submitted to the Town.
7. Hydrant tests or hydraulic field conditions determined by the developer.

B. WATER SERVICE LINES

Individual water services shall be installed to each lot of a subdivision including separate corporation stop, service line, and meter assembly. The PE service lines shall be one continuous piece from the main to the meter and no curb stops shall be utilized. The provision for individual services shall apply whether dwellings are under common ownership or individually owned, unless a variance is granted in writing by Easton Utilities. Townhouses, apartments, duplexes and condominiums are not required to have separate meters, unless the units are going to be classified as owner occupied. All reclassifications of a complex from renter to owner occupied shall be required to install a separate meter for each unit. All office complexes and retail units shall have a separate meter for each unit. Service lines shall be designed by the developer for the use intended.

1.03.04 DESIGN SIZE

A. PRESSURE

All water mains shall be sized after a hydraulic analysis based on flow demands and pressure

requirements. The system shall be designed to maintain a minimum pressure of 23 psi at ground level at all points in the distribution system under all conditions of flow. The normal working pressure in the distribution system should be designed for approximately 50 psi.

B. DIAMETER

The minimum size of water main for providing fire protection shall be 6-inch diameter. Larger mains will be required, if necessary, to allow the withdrawal of the required fire flow while maintaining the minimum residual pressure. All dead end water mains shall be a minimum of 8-inches in diameter.

C. SMALL MAINS

Any departure from minimum requirements shall be justified by hydraulic analysis and future water use and can be considered only in special circumstances.

1.03.05 DEPTH OF WATER MAINS

Minimum depth of water mains shall be 3'-6" as measured from the top of the pipe to finished grade or as indicated in the standard details.

1.03.06 VALVES

Sufficient valves shall be provided on the water mains for isolation during repairs. Valves should be located at not more than one block or 1000 foot intervals in other districts. Also, valves shall be placed on all legs of tee and cross connections.

1.03.07 HYDRANTS

Hydrants should generally be provided at each street intersection and at intermediate points between intersections as required. Generally, hydrant spacing may range from 375 to750 feet depending on the area being served. Fire hydrants shall by installed a maximum of 7 feet from the curb face unless authorized in writing by Easton Utilities. Hydrants shall not be installed outside of the public right-of-way or utility easement, unless authorized in writing by Easton Utilities and property owner.

1.03.08 SERVICE METERS

Each service connection, except fire service, shall be individually metered. Fire services shall be installed with a detector check meter system.

1.03.09 DEAD ENDS

Dead ends shall be minimized by looping of all water mains whenever practical. Hydrants shall be placed at the end of all dead end lines. Blow-offs shall be as shown in the standard details, if approved by Easton Utilities.

1.03.10 SEPARATION OF WATER MAINS, SANITARY SEWERS AND FORCE MAINS

A. HORIZONTAL SEPARATION

Water mains and water laterals shall be laid at least 10 feet horizontally from existing or proposed sewer mains or laterals.

B. VERTICAL SEPARATION

Water mains crossing sewers shall be laid to provide a minimum vertical distance of 12 inches between the outside of the water main and the outside of a storm sewer, sanitary sewer or force main. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required. Additionally, water laterals shall be laid to provide a minimum vertical distance of 12 inches between the outside of the water lateral and the outside of the sewer or force main.

C. SEWER MANHOLES

No water pipe shall pass through or come in contact with any part of a sewer manhole.

D. SPECIAL CONDITIONS

When it is impossible to obtain proper horizontal and vertical separation as stipulated above, concrete encasement shall be required. Transition carrier pipe to ductile iron or use steel casing prior to concrete encasement being installed a minimum of 5 feet each side of the crossing point on the lowest utility, as required by the Engineer.

END OF SECTION