

## **Section 1 Construction Supplement Requirements**

### **1.1 General**

- A. All work must be installed in accordance with the Township of Deptford Municipal Utilities Authority Rates, Rules and Regulations.
- B. All work must be inspected by the Municipal Utilities Authority Engineer. The developer must notify our Chief Field Representative, at least seventy-two (72) hours in advance of starting work on the site.

A performance bond in the amount of one hundred and twenty percent (120%) of the total estimated construction costs must be posted with the Authority prior to commencement of work in place. The Authority requires that ninety percent (90%) of the performance guarantee be in the form of a bond or letter of credit and the remaining ten percent (10%) be in the form of cash (or check) deposited into an escrow account set up by the Authority specifically for each project.

- C. An inspection escrow of five percent (5%) of total bonding cost must be posted with the Municipal Utilities Authority prior to commencement of work.
- D. All existing soil used for backfill of trenches must be approved by the Municipal Utilities Authority Engineer for the first two (2) feet of backfill. Clay and organic type soil is not permitted for backfill.
- E. All backfill must be compacted in eighteen (18") inch lifts with a jumping jack or roller. No plate tampers are permitted.
- F. All work performed for the Authority or in the Authority's jurisdiction shall comply with all OSHA and PEOSHA safety standards relating to but not limited to Trenching and Shoring, Confined Space Entry, Work Zone Safety and Personal Protective Equipment.
- G. Sanitary sewer and water mains to be tested prior to building permits being issued. Shop drawings are to be submitted for approval prior to start of construction.
- H. Upon completion of utility improvements and base paving, the applicant must request a pre-final inspection/punch list be prepared. Construction items that are uncompleted or unsatisfactory must be addressed prior to the installation of the top course of paving.
- I. If directed, concrete grid paving units shall be installed in easement areas that are to be dedicated to the Authority.
- J. As per the Rates, Rules and Regulations, all sewers shall be cleaned and flushed in an acceptable manner prior to performance bond release.

K. “Buy American” Provision

- i. All items or materials used in the construction of water or sewer plants, mains or appurtenances, or other projects, which are constructed by a private contractor for a customer but which are to be deeded or dedicated to the Authority and accepted by the Authority for ownership and maintenance, shall be manufactured products of the United States, wherever possible.

- L. Plumbing and floor plans to be submitted for commercial buildings for site plan approval.

## **1.2 Water Mains**

### 1.2.1 General

1. All work must be installed in accordance with AWWA C-600 standards.
2. Water mains and sewers generally shall be separated by a horizontal distance of ten feet (10'). If such lateral separation is not possible, the water main and sewer main must be in separate trenches, with the sewer at least eighteen inches (18") below bottom of water main.
3. The use of eight inch (8"), twelve inch (12") or sixteen inch (16") diameter mains as a standard are pre-approved by the MUA.
4. Water mains shall be laid in the loop system to eliminate dead ends. Dead ends, if unavoidable, must have a fire hydrant for flushing purposes.

### 1.2.2 Ductile Iron Cement Lined Pipe and Fittings

1. Water mains shall be ductile iron, minimum class 52, cement lined, push on Tyton “O” ring gaskets or mechanical joint, conforming to AWWA C-151, AWWA C-104, and AWWA C-111. PVC pipe shall be AWWA C-900 Polyvinyl Chloride Pressure Pipe push on Tyton “O” ring gaskets or mechanical joint in compliance with ASTM 3139. The use of PVC pipe as water main shall be subject to approval by the Authority on a case-by-case basis on Municipal roadways only.
2. Fittings shall be cast or ductile iron cement lined mechanical joint with Meg-a-Lug retaining flanges or approved equal.

### 1.2.3 Gate Valves

1. Valves shall be designed for 200psi working water pressure and have mechanical joint ends. Valve stems shall be the non-rising type unless otherwise specified. Valves shall be operated by a two (2) inch square wrench nut and shall open in the counterclockwise direction. The direction of opening shall be marked on the nut by an arrow and the word

“OPEN.”

2. Valves shall be resilient, epoxy-lined gate valve as manufactured by U.S. Pipe or approved equal.
3. Valves shall be supported with concrete block and installed with retaining flanges.

#### 1.2.4 Valve Boxes

1. Valve boxes shall be cast iron, two (2) piece, 5 1/4", sliding type, as manufactured by the Mueller Company, Kennedy Valve Company, or approved equal.
2. Covers shall have the word “water” and an arrow showing the opening direction.

#### 1.2.5 Fire Hydrants

All new fire hydrant installations serving the Deptford Township Municipal Utilities Authority system shall be fed from an eight (8") water line.

The height of the nozzle of any fire hydrant shall be a minimum of twenty-four (24) inches and no more than thirty-six (36) inches from grade level to the center of the steamer cap.

Fire hydrants shall conform to the requirements of the Deptford Township as shown on the plan attached hereto.

Hydrants shall be cast or ductile iron bronze mounted, compression type with 5 1/4" valve opening, six (6") inch inlet connection styled to accomplish approved joint assembly with a six (6") inch branch, two (2) 2 1/2" National Standard Fire Thread (NSFT) and one (1) 4 1/2" NSFT steamer (pumper) connection retrofitted with a five (5") inch Storz fitting, Harrington Fitting #HPHA50-45NH, equipped with Cap #HBC-50 or approved equal. Retrofitted Storz fitting shall be equipped with locking setscrews. Operating nut shall be a pentagon shaped National Standard details. Stuffing box shall incorporate "O" Ring Seals, asphaltum coating exterior below ground line, two (2) finishing coats of paint on above ground line exterior, with the final coat to be color as directed by the Engineer. Hydrant shall have breakable flange and stem coupling and be suitable for a working pressure of 150 psi. A minimum two feet by two feet by four-inch (2' x 2' x 4") concrete pad must be installed at base of each fire hydrant to ensure breakaway. If placed between curb and sidewalk, pad shall extend between curb and sidewalk. Hydrant must be thrust blocked and installed with retaining flanges. Bleeder holes of fire hydrant must be covered with four (4) cubic feet of 3/4" crushed stone to provide drainage.

Hydrants shall be of a suitable length for a trench five (5') feet deep, measured

from the surface of the ground to the bottom of the connecting pipe.

Hydrants shall be equipped with a two (2) piece outer casing which will permit its extension without excavating in case of future grade changes. The casing shall have a free vertical travel of not less than four (4") inches.

Fire Hydrants shall be Waterous Pacer Model 250, American Darling B-62-B, US Pipe Metropolitan M-94 dry barrel type or approved equal. Further, the hydrant type shall be the same as now in use by the Authority.

Hydrants must be covered with a burlap bag until system has been approved.

Fire hydrant locations must be approved by the Deptford Township Fire Marshall in writing, with copy to MUA.

### 1.2.6 Water Services

1. Type "K" copper, flared or Mueller Compression type, underground type shall be used up to and including one inch (1") in diameter. For 1 ½" to 2" services, copper or copper sized black poly pipe with S.S. inserts with Mueller compression fittings to be used.
2. For services over two inches (2"), ductile iron cement lined pipe class 52 shall be used. The minimum service size shall be ¾".
3. Service from the water main to the curb stop, and the property, shall be one piece and be laid in a straight line at right angles to the curb line, within the building limits of the structure to be served, and shall be at least four feet (4') below the surface of the ground, when final grading has been completed.

The water service shall have five (5) feet horizontal separation from the sanitary sewer lateral for single-family dwellings. Under no circumstances shall the horizontal separation be less than The Minimum requirements of the plumbing sub code adopted by the Township of Deptford.

For townhouses, the minimum separation between the water service and sanitary sewer shall be five feet (5') minimum at the shutoff/cleanout location. The lot width shall be designed accordingly to accommodate this separation as well as three feet (3') from property line and driveway width.

Shutoff valves shall not be installed in driveways or sidewalks. Shutoff valve box shall be placed within two feet (2') of the curb or edge of paving.

4. No water service line shall be laid in same trench with gas pipe, sanitary sewer lateral, or any other facility or any public service company, nor within three feet (3') of any open excavation, vault, cesspool or septic

- tank; nor shall the location be in conflict with any sidewalk or driveway or be subject to vehicular traffic.
5. All services must be tapped at water main with Mueller Corporation Type H 15000 (3/4" through 2") or approved equal. Taps must be located at 10:00 or 2:00. Ball curb valve to be Mueller 300.
  6. The water main shall be tested after installation of water services.
  7. Water meters shall be installed for each house in accordance with Deptford Township Municipal Utility Authority's Rates, Rules and Regulations. The meter shall be Radio Frequency type for billing purposes.
  8. All fittings must be Mueller or Ford, flared type or Mueller Compression type.
  9. Curb box to be marked with a "W" saw cut on top of curb.
  10. For commercial buildings, an Ames Silver Bullet Series 3000-SS detector check valve or equal equipped with bypass meter in gallons should be installed by the owner on the fire service line inside the building.

**METER SIZES AND REQUIREMENTS FOR TOTAL GALLONS PER MINUTE (gpm) AND TOTAL METER UNITS**

Required	Flow gpm	No. of Units	Meter Required		Alternate Meter	
			No.	Size	No.	Size
	20	1		5/8" x 3/4"		
	30	1 1/2		3/4"		
	50	2		1"	2	3/4"
	51-100	3		1 1/2"	2	1"
	101-150	4		2"	2	1 1/2"
	151-250	5-8		2"	2	1 1/2"
	251-350	8-14		3"	2	2"
	351-550	14-22		4"	3	2"
	551-750	23-30	2	3"		
	751-1150	30-46	3	3"	1	6"
	1151-1350	46-54	4	3"		
	1351-1700	54-68	3	4"		
	1701-1800	68-72	6	3"	2	6"

1801-1900	72-76	6	3"	2	6"
1901-2000	76-78	2	6"	4	4"
2001-2300	78-90	1	8"	4	4"
2301-2500	90-98	1	8"	5	4"
2501-2750	98-108	5	4"		
2751-3200	108-126	3	6"	6	4"
3201-3700	126-144	7	4"		
3701-3800	144-150	4	6"	8	4"

Service size subject to review and approval by the Township Building Code Official.

11. Where multiple units are served in a commercial building, one (1) master meter will be installed for single account billing. The owner of the building may install sub-meters at each unit for his/her use only. Owner shall supply and install commercial meter.

One (1) separate irrigation meter may be installed per project, inside of commercial building, for billing purposes of irrigation water only.

1.2.7 Thrust Blocks

1. All bends in the water main must have 4,000 p.s.i. concrete thrust blocks.
2. Concrete must be cured for at least seven (7) days prior to the water main being filled and pressurized.
3. Where concrete thrust blocks have been cast with high early strength concrete, the water main can be filled after thirty-six (36) hours.

1.2.8 Testing

1. All water mains are subject to a two (2) hour hydrostatic pressure test at 150 psi
2. Bacteria Test
  1. After flushing has been completed and the chlorine residual is not greater than 0.2 PPM, a bacteriological sample shall be taken in accordance with the New Jersey Department of Environmental Protection Agency, Potable Water Standards, Bulletin PW-10, December 1970.
  2. Copies of the analysis must be sent to Engineer directly from a New Jersey DEP certified laboratory.

### 1.2.9 Disinfection

1. All water mains must be chlorinated in accordance with AWWA C-651 standards.

### 1.2.10 Pipe Bedding

1. Where groundwater is encountered, a six-inch (6") thick 3/4" clean crushed stone bed must be provided.

### 1.2.11 Pipe through Walls

1. Wall pipes or wall sleeves must be used where ductile water main passes through concrete walls or meter vaults, large valve pits, or concrete walls of meter vaults, large valve pits, or concrete building foundation walls to eliminate a rigid connection between the pipe and wall.

### 1.2.12 Pipe Crossings

1. Where water main crosses with any storm sewer, sanitary sewer, or force main, there must be eighteen inches (18") of clearance between lines. In no case can the pipe have less than twelve inches (12") of clearance. Where eighteen inches (18") of clearance cannot be maintained, it must be encased with concrete.
2. Where water main crosses under any sanitary sewer or force main, it must be encased with concrete ten feet (10') in each direction.

### 1.2.13 Blow-offs

1. All blow-offs must be two inches (2") in diameter or larger. A two-inch (2") galvanized steel pipe with two-inch (2") gate valve and drain must be provided.
2. Blow-offs must have prior approval with Engineer before installation.
3. All blow-offs shall be on grade level in a street valve box with a 2" female coupling with brass plug-anti-seizing compound shall be utilized on plug threads.

### 1.2.14 Wet Taps

1. All wet taps must be installed with mechanical joint tapping sleeves manufactured by Waterous Series 2800, Mueller H-615, U.S. Pipe Model T-9, or approved equal.
2. Contractor must have wet tap sleeve approved by the Authority's Engineers 48 hours prior to installation. Shop drawing shall be submitted for approval.

3. Wet taps for A-C pipe to be Mueller H-619 or approved equal. A Mueller H-304 stainless steel tapping sleeve shall be used for "egg-shaped" ACP.

#### 1.2.15 Retaining Flanges

1. All fittings, bends, valves, fire hydrants, and sleeves must be installed with Meg-a-Lug or approved equal retaining flanges.

#### 1.2.16 Miscellaneous

1. Bell type repair clamps are not permitted to repair leaks. A solid sleeve must be installed.
2. Where new D.I.P. pipe is joined with asbestos cement pipe, a Dresser HYMAX, or approved equal. Transition Coupling must be installed.

### **1.3 Sanitary Sewer Mains**

#### 1.3.1 General

1. All sanitary sewers shall be installed in strict accordance with the New Jersey Department of Environmental Protection and Energy "Rules and Regulations" and Deptford Township Municipal Utilities Authority Rates, Rules and Regulations.
2. The minimum size of sewers shall be eight inch (8") diameter. A minimum cover of three (3') is required for all sewers to be installed.
3. A laser and target must be used to lay pipe to proper slope.
4. Minimum fall for eight inch (8") P.V.C. is 0.004 feet per foot and maximum is ten percent (10%) per foot.
5. All sewer main must be laid with a six-inch (6") thick 3/4 inch clean crushed stone bed up to the spring line of the pipe.

#### 1.3.2 Polyvinyl Chloride (PVC) Sewer Pipe

1. Material Standards for Pipe and Fittings
  1. PVC sewer pipe shall have bell and spigot ends, and O-ring rubber gasket joints. PVC pipe and fittings shall conform to ASTM D3034 with a minimum wall thickness designation of SDR 35, or shall conform to ASTM F679, F789, F794, or F949 with a designated pipe stiffness of PS-46.
    - i. The plastic material from which the pipe and fittings and extruded shall be impact types of PVC, unplasticized, having high mechanical strength and maximum chemical resistance, conforming to Type 1, Grade 1 of the specification for rigid polyvinyl chloride compounds, ASTM

D1784.

- ii. Pipe shall be free from defects, such as bubbles or other imperfections, in accordance with accepted commercial practice. Test results demonstrating that the pipe meets ASTM D2444 for impact, and ASTM D2321 for deflection and pipe stiffness, shall be provided when requested by the municipality or utility authority.
- iii. Joints shall conform to ASTM D3212. Rubber-ring gaskets shall conform to ASTM F477. The gasket shall be the sole element depended upon to make the joint watertight.

### 1.3.3 Laterals

1. A size four-inch (4") lateral shall be laid at a minimum grade of 1/4 inch per foot and in a straight line from the point of connection to the main to the vertical riser and shall include a ten foot (10') length behind the riser.
2. The lateral shall be connected to the main with a wye fitting and shall be at least four feet (4') below the surface of final ground. Lateral to be installed at ninety degrees (90°) to the main.
3. A four-inch (4") vertical riser shall be installed for each lateral.
4. A four-inch by four inch (4" x 4") Tyler two-way type tee shall be installed for each lateral at the riser.
5. Each riser shall have a five inch (5") cast iron ferrule with a four (4) inch brass plug.
6. Riser shall be placed within two feet (2') of the curb or edge of paving.
7. Riser location shall be permanently marked on curb with an "S" saw cut on top of curb.
8. Risers cannot be installed in driveways and sidewalks (no exceptions).
9. All laterals shall be installed before pressure test is performed.
10. A deep cut lateral shall be installed where the depth of the main is eight feet (8') and over. This may be accomplished with forty-five degree (45°) bends.
11. Lateral connection to existing sanitary sewer connection shall be made with saddle type connection consisting of stainless steel bands, cast iron flange and rubber gasket.

12. The lateral shall have five (5) feet horizontal separation from the water service for single-family dwellings. Under no circumstances shall the horizontal separation be less than The Minimum requirements of the plumbing sub code adopted by the Township of Deptford.
13. For townhouses, the minimum separation between the water service and sanitary sewer shall be five feet (5') minimum at the shutoff/cleanout location. The lot width shall be designed accordingly to accommodate this separation as well as three feet (3') from property line and driveway width.

#### 1.3.4 Manholes

1. All manholes shall be constructed of precast reinforced concrete in accordance with ASTM C-478.
2. Joints of manhole sections shall be formed entirely of concrete in accordance with ASTM C-443 and shall be made with a rubber gasket. Joints shall be self-centering and watertight. All seams and lift holds must be grouted with non-shrink grout.
3. Base sections shall be furnished with a compressible rubber ring.
4. Channels are to be smooth and properly constructed of concrete, if not pre-cast. The height of the channel shall be 2/3 of the pipe.
5. The outside surface of entire manhole shall be given a protective coating of asphalt paint with the total dry film thickness of not less than four (4) mils.
6. The manhole shall be laid on a bed of twelve-inch (12") thick 3/4 clean crushed stone. Also, stone bedding shall be installed under first pipe in and out.
7. No more than twelve inches (12") of concrete block can be used to raise casting to proper grade.
8. Between manholes, pipe shall be straight and at uniform grade. Spacing shall not exceed 300 feet.
9. Where pipe is tied into existing manhole, the opening must be core drilled. A gasket must be installed in the opening. A detail must be submitted.
10. The cone section of the manhole shall have a thirty-inch (30") diameter opening at the top.

### 1.3.5 Manhole Appurtenances

1. Manhole frames and covers shall be of the circular flared type frame with round flange equal to Catalog Number 1012B thirty inch (30") opening as manufactured by Campbell Foundry Company. Frames and covers must be manufactured in the United States.
2. All manhole covers shall have two (2) recessed lifting handles.
3. Locking devices, equal to Campbell Foundry Company number 1460B with lock device type D - countersunk bolts, shall be provided on frames and covers on all manholes located in easements. A key shall be supplied to the DTMUA with each locking type unit.
4. All covers shall be cast with the identifying letters "sewer." Letters shall be two inches (2") high and embossed against a recessed background.
5. Manhole rungs shall be extruded aluminum alloy with the step drop front design. Rungs shall be cast in the vertical sides of the manhole sections on twelve-inch (12") centers.
6. Manhole inserts shall be installed beneath the cover to prevent storm water inflow.

### 1.3.6 Drop Manholes

1. A drop manhole shall be provided for sewers entering manholes above manhole invert wherever the difference in elevation is two feet (2') or more.
2. The drop connection must be made outside the manhole.
3. The pipe must be encased with 4,000 psi concrete on the outside of the manhole.
4. The base of the manhole must be anchored with the base of the drop connection.

### 1.3.7 Testing

1. An infiltration test must be performed where groundwater is entering the sanitary sewer system. The MUA Engineer will outline the test procedures. Minimum test for eight-inch (8") pipe will be 3.5 psig for 5.5 minutes. Test to be modified based on pipe size and groundwater depth.
2. An ex-filtration test (air test) must be performed in the presence of the MUA Engineer.
3. A pipe alignment test to include a lamp test and mandrel test must be performed in the presence of the MUA Engineer.

#### **1.4 Force Mains**

- A. All force main pipe must be Ductile Iron epoxy lined.
- B. All bends must have concrete thrust blocks.
- C. All ninety degree (90°) bends must be tie-rod ten (10) feet in each direction. Any short direction changes must be tie-rod.
- D. All force mains installed is subject to a two (2) hour hydrostatic pressure test at 1 ½ times the working pressure of the pumps or 150psi.
- E. Residential force main connection to gravity lateral with cleanout.
- F. Force main shall connect to a gravity lateral with cleanout at surface for inspection.
- G. Force main shall not connect directly into sanitary sewer main.

#### **1.5 As-Built Plans**

The applicant shall provide three (3) sets of as-built plans conforming to these "Minimum As-Built Requirements."

The as-built plan should include both the proposed information (crossed out where it has changed, but remaining legible) and the as-built information shown clearly and underlined

The applicant must also provide a disk or CD in AutoCAD format of the submitted plans. The plans must be submitted on a 24" x 36" sheet and should not generally exceed 30 x 42 inches in size with a scale of 1" = 100'. All text must be drawn clearly, and at a minimum size of 0.07" and a maximum size of 0.10".

The following information, where applicable, shall each be drawn on its own individual layer:

- Water mains
- Water services/curb stops
- Hydrants/valves/blow-offs/etc.
- Water main text
- Sanitary sewer mains
- Sanitary sewer laterals/clean-outs
- Sanitary sewer manholes
- Sanitary sewer text
- Storm drain pipes
- Storm drain manholes and inlets

- Storm drainage basins and swales
- Storm drain text

The plans must include that portion of the existing systems where the proposed system connects.

The plans must be signed and sealed by a New Jersey licensed land surveyor.

All elevations must be on the 1929 datum (a/k/a NGVD 29, NJGCS, USGCS, and USC & G datum).

As a minimum, the following survey information is required: depicting all proposed facilities and as-built information.

#### 1.5.1 Storm Drainage:

- A. Pipes: Size, material, length, invert elevation, and direction of flow.
- B. Manholes: Rim elevation and invert elevation.
- C. Inlets: Type, grate elevation, and invert elevation.
- D. Headwalls and Flared End Sections: Location and invert elevation.
- E. Swales and Basins: Verify approved design configuration and elevation with contour lines and spot elevations at all breaks in grade. Verify that the design volume is provided for basins.
- F. Under drains: Size, material, length and direction of flow, cleanout locations, and invert elevations.
- G. Location of all easements and location of utility within that easement.
- H. All the above information shall be shown on plan drawing.
- I. A television investigation of all storm drainage pipes shall be performed by the developer and witnessed by the Municipal Engineer.

#### 1.5.2 Water Mains:

- A. Pipe lengths between bends.
- B. Pipe diameter and pipe material
- C. All bend angles.
- D. The lid and top of nut elevation for all water valves.
- E. All hydrants and valves.
- F. All valve sizes shall be shown and valves and blow-offs shall be located using three (3) tie-down dimensions (i.e., measurement from a permanent object; catch basin, manhole, hydrant, edge of pavement, etc.).

- G. All curb stops for water service. Provide a station from the nearest downstream manhole to each curb stop and provide an offset from the curb to each curb stop. If this cannot be accomplished, then tie down similar to valve location method. Each curb stop shall be clearly identified denoting the townhouse, condominium, house, office, store, etc., that it services.
- H. All concrete cradles and encasements.
- I. Location of all easements and location of utility within that easement. The as-built pipe length between bends.
- J. All the above information shall be shown on a plan drawing.

#### 1.5.3 Sewer Mains:

- A. As-built manhole rim and invert elevations and invert elevation of all pipes penetrating the manhole.
- B. As-built pipe diameter, pipe material, pipe lengths (measured from manhole centerline to manhole centerline), pipe slope, and flow direction arrows.
- C. All cleanouts for sewer laterals. Provide a station from the nearest downstream manhole to each lateral or cleanout. Provide an offset from the main to each cleanout.
- D. Any lateral left for a future connection shall have the pipe cover and three (3) tie-down dimensions taken at the end of the lateral (i.e., measurements from a permanent object; corner of house, catch basin, manhole, hydrant, edge of pavement, etc.).
- E. All as-built concrete encasements and concrete cradles shall be noted.
- F. Location of all easements and location of utility within that easement. Provide a minimum of two (2) tie dimensions from the utility to the easement line. A tie dimension shall be provided for all changes in direction and bends with stationing.
- G. All the above information shall be shown on a plan drawing.
- H. A television investigation of all sewer mains shall be performed by the developer and witnessed by the Municipal/Authority Engineer.

#### 1.5.4 Force Mains:

- A. Locate the force main using tie dimensions from the face of curb/edge of paving to the force main. A tie dimension shall also be provided for all changes in direction and bends with stations from nearest manhole.
- B. Location of all easements and location of utility within that easement.

Provide a minimum of two (2) tie dimensions from the utility to the easement line. A tie dimension shall be provided for all changes in direction and bends with stationing.

- C. The as-built pipe length between bends.
- D. Approximate elevations at each bend and high point.
- E. As-built pipe diameter and pipe material.
- F. Manufacturer's data on air relief valves, gauges, and all valves.
- G. Location of all easements and location of utility within that easement. Provide a minimum of two (2) tie dimensions from the utility to the easement line. A tie dimension shall be provided for all changes in direction and bends with stationing.
- H. All the above information shall be shown on plan drawing.

#### 1.5.5 Pumping Stations:

- A. As-built plans shall be submitted and should include both the proposed information (crossed out where changed, but remaining legible) and the as-built information shown clearly. Show all valves, curb stops, yard hydrants, underground sewer manholes, wet-well, dry well elevations and water piping, gates, etc. All valves and curb stops must be tied down as described above for water valves.
- B. Ten (10) copies of manufacturer's operation and maintenance information shall be submitted for all installed equipment.
- C. All the above information shall be shown on plan drawing.

### **1.6 Comments from Engineer**

The Municipal Utilities Authority Engineer will be inspecting the first two feet (2') of backfill for proper compaction over water and sewer main installations. As per previous cooperation with the Township Engineer; they will be responsible for all inspection of the trench above that point.

PROJECT: \_\_\_\_\_

PROJECT NO: \_\_\_\_\_

**DEPTFORD TOWNSHIP MUNICIPAL UTILITIES AUTHORITY  
MINIMUM TECHNICAL DESIGN STANDARDS – SEWAGE [CHECK  
LIST]**

- General Map and Key Map
- Area Map of future tributary flow
- Plans and Profiles of all proposed sewer
- Specifications of all proposed construction
- Engineer's Report
- Existing and proposed streets and elevations
- Existing structures above and below ground
- Existing and proposed sewers
- North Arrow
- Boundary lines, title, date and scale
- Any streams shall be shown
- Benchmark elevations and USGS Datum
- Sewer distances, grades, sizes and types
- Arrows shall be drawn to indicate flow
- All manholes, siphons, pumping stations, etc.
- Standard Details
- Minimum size of sewer to be 8 inch
- Minimum slope to be 0.0040
- Sewer and water to be separated by 10 feet
- Distances between manholes not to exceed 300 feet
- Lateral size to be 4" diameter

**PROJECT:** \_\_\_\_\_

**PROJECT NO:** \_\_\_\_\_

**DEPTFORD TOWNSHIP MUNICIPAL UTILITIES AUTHORITY  
MINIMUM TECHNICAL DESIGN STANDARDS – WATER [CHECK LIST]**

- Engineer's Report
- Map plan and specifications
- Cost estimates
- Locations, diameters and material of pipe
- Hydrants, blowoffs and main valves
- All water mains to be CLDIP
- Gates valves to be resilient seated
- Valve boxes to state water and arrow on cover
- Fire Hydrant to be Waterous-Pacer, Model 100, or US Pipe Metropolitan
- Hydrant to be thrust blocked
- Valves to be supported by Concrete block
- Fire hydrant location must be approved by Fire Marshall
- Service to be ¾" Type K copper
- Water main shall be tested after installation of services and base paving
- Two-hour pressure test at 150 psi
- Flushing and disinfection
- Wet taps to be MJ tapping sleeve by Waterous Series 2800, Mueller
- RETAINING FLANGES ON ALL FITTINGS, BENDS, VALVES AND SLEEVES