MOUNT LAUREL TOWNSHIP MUNICIPAL UTILITIES AUTHORITY

Resolution No. 1996 - 29

RESOLUTION ADOPTING REVISED RULES AND REGULATIONS FOR FURNISHING WATER AND SEWER SERVICE IN MOUNT LAUREL TOWNSHIP

WHEREAS, the rules and regulations of the Authority concerning the furnishing of water and sewer service in Mount Laurel Township have been revised and updated; and

WHEREAS, such rules and regulations as adopted apply to all parties conducting business related to water and sewer service in Mount Laurel Township.

NOW, THEREFORE, BE IT RESOLVED by the Mount Laurel Township Municipal Utilities Authority, in the Township of Mount Laurel, County of Burlington, New Jersey, that:

1. The rules and regulations for water and sewer service, as revised and updated in the form on file with the Executive Director of the Authority, be adopted and shall be in effect immediately.

Dated: May 2, 1996

MOUNT LAUREL TOWNSHIP MUNICIPAL UTILITIES AUTHORITY

Attest:

Vice-President for Elwood Knight, Sec.

Elwood Knight, Secretary

BY: Mark Hanson

Mark J. Hanson, Chairman

This Resolution was passed at a meeting of the Mount Laurel Township Municipal Utilities Authority held on May 2, 1996.

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SECTION I

INTRODUCTION

THE MOUNT LAUREL TOWNSHIP MUNICIPAL UTILITIES AUTHORITY ("MLTMUA") has been created by the Township of MOUNT LAUREL to provide water and sewer service to the residents of the municipality. It was organized on December 6, 1965 under the Municipal Utilities Authority Law (N.J.S.A. 40:14B-1 et seq.). While the MLTMUA has broad statutory powers to provide these essential utility services, it has certain obligations as well. Its responsibilities include compliance with the adopted bond resolution, the adopted service agreement with the Township of Mount Laurel; Federal and State laws governing pollution control, drinking water quality and quantity, biosolid management contractual undertakings and other applicable State and Municipal Laws and Ordinances.

The official office of the Mount Laurel Township Municipal Utilities Authority is located at 1201 S. Church Street, Mount Laurel, New Jersey 08054, and is open for business Monday through Friday from 8:00 a.m. to 4:30 p.m. Regular meetings of the Mount Laurel Township Municipal Utilities Authority are held the first and third Thursday of each month at 7:30 p.m. at the MLTMUA Offices. In the months of June, July and August the regular meeting shall be on the third Thursday of those months. Also, special meetings can be called for by the Chairman. All meetings are held in accordance with the provisions of the Open Public Meetings Act (N.J.S.A. 10:4-6 et seq.).

The following sets forth the rates, procedural rules, standard terms and conditions of service, standard technical specifications and other regulations under which water and sewage service will be supplied by the MLTMUA to its customers.

SECTION II

DEFINITIONS

1. "Applicant" shall mean the property owner applying for permission to connect to the MLTMUA water and/or sewer system.

2. "Back Flow Preventer" means a device that has been investigated and approved by the MLTMUA. The approved devices must be effective to prevent back flow into a potable water system.

3. Biosolids: those solids produced by any secondary treatment process. Those solids are to be finely dispersed waste solids that have been exposed to a microbial population in the presence of dissolved oxygen. The metabolic process of microorganisms act upon the waste materials. These solids shall be totally digested, free of pathogens, and have the ability to be land applied.

4. "Board" shall mean the appointed officials acting as the governing body of the MLTMUA.

5. "Clean Out": a device no smaller than 4" installed a minimum of every 50 ft. on a user's gravity sewer line. The clean out will be accessed by a 4" N.P.T. plug or cap. The reason for the clean out device is emergency maintenance and access.

6. Cross connection: any connection or structural arrangement between potable water system and any other non-potable system whether known or unknown origin.

7. "Curb stop" shall mean the valve a service line, under the jurisdiction of the MLTMUA, which can be used to discontinue or provide the flow of water to a property.

8. "Customer" shall mean the party contracting for service to a property.

9. Commercial sewage: That portion of any waste streams that contain types of waste waters other than domestic wastewater, regardless of strength or volume.

10. "Domestic Sewage" shall mean the normal waterborne fluid wastes from residential dwellings, commercial establishments, institutions and industries, including the wastes from kitchens, bathrooms, water closets, lavatories and laundries or other facilities normally associated with personal uses or residential dwellings.

11. "Dwelling Unit" shall mean a dwelling or structure normally occupied by a single family.

12. "Engineer" shall mean the consulting professional engineer,

13. "Equivalent Dwelling Unit" or "EDU" shall mean a building or structure or any portion of a building or structure not being used as a dwelling unit, but having a demand on the water and or sewer system equal to that of a dwelling unit as determined in Schedule IV.

14. "Executive Director" shall mean the representative designated by the Board to act in administrative and operational matters.

15. Fire service": a water service connection separate from domestic or commercial service lines equipment with proper back flow preventer and alarms, and to be sized by a professional fire service installer. Service must be sized and meet all approvals with Mt. Laurel Township officials, plumbing inspector and fire department.

16. "Industrial Waste" shall mean the wastewater from industrial processes or other commercial operations which is distinct from or incompatible with domestic sewage.

17. "Lateral" shall mean the sewer pipe servicing a property for an individual customer, connected to an MLTMUA sewer main.

18. Licensed Operator - the MLTMUA may require licensed water or sewer operators

19. "MLTMUA" shall mean the Mount Laurel Township Municipal Utilities Authority.

20. Potable Water shall be known as water supplied by MLTMUA and its contracted suppliers. This water shall be supplied for human consumption, commercial and industrial use. This water shall not be abused or wasted by any user nor shall it be resold without approval by MLTMUA.

21. "Service District" shall mean the area within the boundaries of the Township of Mount Laurel or areas serviced by MLTMUA's water and sewer systems.

22. "Service Line" shall mean a water pipe serving a property for an individual customer, connected to an MLTMUA water main.

23. "Sewer main" shall mean the MLTMUA owned and operated sewer pipes, located in public right-of-ways or easements acquired by the MLTMUA.

24. "Sewer System" shall mean all facilities, sewer mains and appurtenances connected with the collection, treatment and disposal of sewage.

25. Underdrains - A township owned pipe line. Found around the perimeter of dwellings and under sanitary sewer lines. The pipe is usually made of porous wall cement usually 8" in diameter. The purpose of this pipe is to carry away unwanted ground water to area streams.

26. Vents - An opening in a sewer line for the purpose of allowing liquid or gas to escape, or for the relief of pressure. Also used for entrance into the sewer for maintenance and equipment.

27. Water Box - A housing made of plastic or cast iron used for the purpose of access and protecting shut off valves on customer on MLTMUA water and sewer lines. Sizes range from 2" to 6" in diameter.

28. "Water main" shall mean the MLTMUA owned and operated water pipes, located in public right-of-ways or easements acquired by the MLTMUA.

29. "Water Service" shall mean the same as "Service Line"

30. "Water System" shall mean all facilities, water mains and appurtenances connected with the treatment and distribution of potable water.

31. "Residential User" shall mean:

    a. Single-Family: a building on a lot designed and occupied exclusively as a residence for one family.

    b. Two-Family: a building on a lot designed and occupied exclusively as a resident for two families.

    c. Three-Family: a building on a lot designed and occupied exclusively as a residence for three families.

    d. Multiple-Family: a building on a lot designed and occupied exclusively as a residence for four or more families.

    e. Garden, High-Rise, Trailer Camps and Multiple Type: a multiple dwelling or group of multiple dwellings on a lot which is held, and is designed to be held, in single ownership on which common years and other common facilities and services may be provided.

    f. Boarding House, Lodging House, Nursing Home, Hospital, Hotel or Motel: a dwelling having one kitchen and used for the purpose of providing lodging or both

32. "Other than Residential User" shall mean:

    All users and connections other than residential as described above.

SECTION III

STANDARD TERMS AND CONDITIONS OF SERVICE

A. Obtaining new or modifying existing service.

1. Availability of service

It is the policy and intent of the MLTMUA to provide potable water and sanitary sewer service to applicants owning or occupying properties located in Mount Laurel Township and who have received approvals from the relevant Mount Laurel Township Municipal Land Use Agencies, consistent with applicable laws and sound utility management practices. In the event that an extension or improvement of the MLTMUA's water mains, sewer mains or facilities is necessary to provide service to an applicant, it shall be the applicant's obligation to pay for such extension(s) or improvements. From time to time the capacities of the MLTMUA water and/or sewer systems may be limited due to physical limitations, prohibiting additional connections until an increase in capacity has been approved and constructed or due to regulatory requirements, promulgated by Federal and/or State agencies. At such times applications for such connections will be postponed until the limitations or restraints have been removed.

The determination of available capacity and the processing and approval of applications for connections shall be within the sole discretion of the MLTMUA Board. (See also Section V of these rules and regulations.) The MUA shall have the right to reserve a sufficient supply of water at all times in storage to provide for fire and other emergencies and may restrict or regulate the quantity of water used by its customers in case of scarcity or whenever public welfare may require.

2. Uniform Procedures

a) Forty-eight (48) hours notice and meter installation is required for Certificate of Occupancy release forms and tenant fit-ups. Commercial accounts should allow up to ten (10) days, for review of applicable applications.

b) Application: Applicants for potable water and/or sanitary sewer service must submit a signed application to the MLTMUA describing their projected needs. The application shall be made on the form provided by the MLTMUA. All applications must be approved by the MLTMUA before any connection can be made. No application for water and/or sewer service shall be accepted by the MLTMUA until all previous charges have been paid, including any arrears, liens or other water and/or sewer charges on the property for which application has been made or any other property owned by the applicant.

Following review of the application for connection to the MLTMUA water and/or sewer systems, the MLTMUA may grant approval to connect to the system(s). Such approvals shall expire by their own terms within a period of no more than twelve (12) months and shall be subject to compliance with Federal and State Laws and Regulations governing such approvals. They shall not be binding on the MLTMUA in the event that a responsible regulatory agency should impose restrictions on further connections to the MLTMUA system(s). The Board of the MLTMUA may specify a period shorter than twelve (12) months for connection and commencement of service or impose such other terms and conditions as it deems appropriate or desirable and in accordance with sound utility management practices.

c) Applications for Low and Moderate Income Housing

1. A developer that intends to develop property and has reserved a minimum of 10% of the units for housing for low income households and a minimum of 10% of the units for housing for moderate income households and whose development has been certified by the the Mt. Laurel Township Planning Board as being in compliance with, and is in satisfaction of, a Fair Share Plan for the Township of Mt. Laurel approved by the Council on Affordable Housing, may request a reservation of sewer and water capacity in accordance with this regulation.

2. Upon the filing and approval of an S-1 application and a W-1 application and upon the execution of an S-2/W-2 agreement, a Fair Share Plan developer may request a reservation of sewer and water capacity for all units referenced in the S-1 and W-1 application by filing a "Request for Reservation of Sewer and Water capacity for Low and Moderate Income Housing" form with the Authority and by depositing twenty-five percent (25%) of the amount of estimated connection fees with the Authority.

3. Provided that such capacity is available at the time that the request for reservation is made or is reasonably anticipated to become available within two years of such request, the Authority shall approve the request for a reservation of capacity; provided, however, that the developer continues to comply with all rules and regulations of the MLTMUA, NJDEP and USEPA and provided that the developer remains a Fair Share Plan developer, as certified by the Planning Board. The reservation of capacity given by the Authority pursuant to this regulation shall be valid for two years from the date that the request for reservation is

approved. If a CP-1 permit is not issued to the developer by the NJDEP within the period of reservation, the reservation shall expire and eighty percent (80%) of the connection fee deposit shall be returned to the developer. Twenty percent (20%) of the connection fee deposit shall be retained by the Authority as liquidated damages and not as a penalty.

4. The connection fees that are deposited by the developer at the time that the reservation for capacity is requested shall be placed into an account that shall not bear interest to the developer but which may bear interest to the Authority.

5. The sewer and water connection fees that are to be charged to the developer at the time that the S-4 and W-4 permits are issued, shall be those connections fees in effect at the time that the S-4 and W-4 permits are issued.

d) Escrow Accounts

Any new construction projects with water or wastewater connections must establish an escrow account. The MLTMUA's Consulting Engineer will coordinate the establishment of this account with MUA personnel. The amount to be deposited in the newly established account is governed by New Jersey State Assembly Bill #182, which was signed into law in November, 1991. Generally, the developer/project owner has options on depositing funds to pay for anticipated engineering charges. The options differ, depending on whether those charges are estimated to be greater or less than $10,000.

An escrow agreement will be executed between the MLTMUA and the Developer/project owner in conjunction with the establishment of all new escrow accounts. This agreement will be binding on all parties and will be comprised of, among other things, pertinent information on the developer, project owner, contractor, etc., method and timing of deposits of funds, interest payments to escrow account owners (when applicable), conditions of compliance, final release of escrow funds, etc.

e) Commercial and Industrial Applications.

Commercial and Industrial establishments making application for water and/or sanitary sewer service, in addition to making written application for such services, shall furnish a detailed description of the type and size of buildings, structure, the type, volume and chemical characteristics of the waste to be discharged. This shall be done via the

MLTMUA'S Commercial/Industrial User applications. All such connections must be approved by the MLTMUA prior to construction, occupancy and/or discharge.

f) Construction, Occupancy and/or Discharge.

All such connections must be approved by the MLTMUA prior to construction. All industrial and/or commercial sewer service laterals or connections shall be supplied with an adequate means of sampling for periodic determination of all characteristics and concentrations of the wastes. The MLTMUA reserves the right to disconnect, remove or terminate service should it be utilized in a manner which is inconsistent with or in violation of any federal or state standard. These regulations have the potential to affect public health, welfare or safety. The services shall not be restored until the deficiencies have been corrected and all expenses and damages have been paid by the user.

g) Connection Permits

The following conditions must be met prior to obtaining a connection permit to the MLTMUA water and/or sewer system(s):

1. The appropriate connection fee(s) must be submitted to the MLTMUA in accordance with the current rate schedule. (Schedules III and IV.)

2. All Performance Bonds, in amounts as determined by the Engineer, shall be submitted and approved by the MLTMUA.

3. All permits pertaining to water and/or sewer service, as required by the New Jersey Department of Environmental Protection , shall be obtained.

4. All Commercial/Industrial applications must be approved.

5. All escrow accounts shall be paid through the current billing cycle.

6. The issued connection permit shall constitute a contract between the MLTMUA and the customer. This obligates the customer to pay the quarterly rates for water and/or sewer service as established in the MLTMUA rate schedule from the date of issue of the connection permit. The MLTMUA reserves its legal and statutory rights to assert all remedies against the owner of the property, as well as the customer, in cases where the customer is a party other than the owner.

h) Initiation of Service.

The following steps must be completed before service will be initiated.

1. Prior to excavating with any mechanical device, customers or their agent, must have the utilities marked out. MLTMUA water and sewer mains can be marked out by calling 1-800-272-1000.

   If an emergency request is made and MLTMUA personnel determine it is, in fact, not an emergency, a one time charge of $[redacted] will be levied. Anyone caught digging or damaging MLTMUA property without proper application and approval, will be fined a minimum of $[redacted] and a minimum of $[redacted] for damages to MLTMUA equipment.

2. Any connection(s) to the main(s) of the MLTMUA must be made in a manner acceptable to the MLTMUA and be inspected by the authorized representative of the MLTMUA.

   Maps indicating the location of water service lines, sewer laterals, curb stops, valves, etc., which service each unit, must be supplied to the MLTMUA.

3. Installations of service lines and laterals must conform to State and local laws, codes and/or ordinances and must be inspected and certified by the Mount Laurel Township Plumbing Inspector.

4. For water service, the location of the meter and related meter equipment on the premises must meet the specified requirements of the MLTMUA and must be approved by the authorized representative of the MLTMUA.

5. In cases where main extensions are to be connected to the water and/or sewer system(s) of the MLTMUA, the engineer and/or the authorized representative of the MLTMUA will determine the extent of testing required to assure the safe, clean and sound construction and condition of the main extension(s), before acceptance by the MLTMUA and before service will be initiated. Such testing may include, but is not limited to, pressure and infiltration tests, CCTV inspection, bacteriological testing, etc. All test results shall be submitted to and approved by the MLTMUA prior to operation.

6. Upon supplying service to a property, either new or reinstatement of prior service, it will be the responsibility of the customer to insure that the piping and fixtures on their premises are in good condition. The MLTMUA shall not be responsible or liable in any event, for any accident, breaks or leakage arising in

any way from the connection to and initiating the supply of water from the MLTMUA system to the customer's premises, nor for any damages or loss, directly or indirectly, resulting therefrom.

7. The lateral to the property line involved shall be inspected by the authorized representative of the MLTMUA and no back filling shall take place before this inspection. Requests for inspections and/or initiation of service must be made during the regular business hours of the MLTMUA. Said requests must be made at the office of the MLTMUA with a minimum of 48 hours notice in advance of the desired service.

B. PERMITS, EASEMENTS AND NOTIFICATIONS

Special attention is directed to the fact that all permits, easements and notifications of the planned construction of the service line to the water system or the lateral to sewer system of the MLTMUA must be carried out at the owner's own time and expense. The owner must be in compliance with all regulations set forth with the Department of Health and Labor, OSHA, Department of Environmental Protection, and any other regulatory agencies, where applicable. This includes the securing of a road opening permit from local, state or county agencies, where applicable. Any work, excavation, traffic controls and restoration shall conform to any ordinances, laws, and regulations which may be imposed by such agencies for this work.

C. PROVISIONS FOR OBTAINING WATER SERVICE

1. Service lines must be constructed according to the MLTMUA construction specifications. The service line and all valves and appurtenances used in supplying water from the "water main" to the premises must be supplied by the owner, conform to the MLTMUA construction specifications and must be inspected by the authorized representative of the MLTMUA before backfilling.

Curb stop valves and valve boxes, installed by the owner, shall not be located in sidewalks and driveways. Such valve and valve box at the property line or curb shall be provided and installed by the owner at a point designated by the MLTMUA. Such valve shall be under the exclusive control of the MLTMUA for shutting off or turning on water. Any damage or obstruction of the valve or valve box shall be reported immediately to the MLTMUA. Any expense for the repair and maintenance will be the responsibility of, and billed to the owner.

2. A service line from the curb stop, or the meter pit, to the property, shall not supply more than one dwelling unit or property. For billing purposes, a service line shall be considered as being one customer account. In all cases, each dwelling unit will have its own service line and its own curb stop. Curb stops will be clearly marked to identify the dwelling unit serviced.

3. Turn On/Off Without Authority

Neither the customer nor his agent shall turn the water on or off at any corporation stop, curb stop or meter valve; or removal, without the consent of the Authority.

D. PROVISIONS FOR OBTAINING SEWER SERVICE

1. Laterals must be constructed according to the MLTMUA construction specifications. Special attention is directed to the fact that all permits, easements and notifications of the planned construction of the lateral to the sewer system must be in place, and are the responsibility of the owner.

The MLTMUA or its authorized representative, shall be contacted at least 48 hours in advance of lateral connection to the sewer main.

E. PROPERTY SUPPLIED BY SINGLE SERVICE LINE

a. A service line from the curb stop (or vent) to a dwelling unit, property, facility or structure as described below, shall not supply more than one dwelling unit, property, facility or structure:

(1) A dwelling house, either detached, or one side of a double house, or a house in a row or group of houses, provided that a garage, a conservatory and similar structures accessory to the life of one family shall be considered as a portion of the dwelling.

(2) An industrial, commercial or manufacturing establishment.

(3) A building separated from adjacent buildings by a party wall or party walls, and comprising apartments or stores, or office, or any combination thereof.

(4) A detached building comprising apartments or stores or offices, or any combination thereof.

Any of the aforesaid properties, facilities or structures, however, upon proper application of the owner, and subsequent MLTMUA approval, may be supplied by two or more service lines and meters provided that the supply to each such meter has an individual stop at or near the curb line.

b. Any existing property, facility or structure which does not conform to the above regulation shall install separate services to each property, facility or structure upon either subdivision of land, change of the use of any facility thereon, further extension of water service by the Authority thereon or upon repair or replacement of the existing service line or lines.

c. Where two or more customers are now supplied through a single service line, any violation of the rules of the Authority, with respect to either or any of said customers, shall be deemed a violation as to all. Unless said violation is corrected after reasonable notice has been given to the owner, the Authority may take such action as can be taken for a single customer. Such action will not be taken until the customer(s) who has/have violated the Authority's rules has/have been given a reasonable opportunity to attach his pipe to a separately controlled service connection.

Where more than one residential dwelling unit is serviced by a single water service, and a single meter, a separate shut off valve, service and meter must be installed if these dwelling units are owned by more than one owner. The costs of the separate shut off valve, service and meter are to be borne by the owners according to mutual agreement between the owners. The MLTMUA will have no responsibility to bear any of these costs. Once work has been completed, the MLTMUA must be contacted in order to set the new meter and take a reading on the meter being shared by the dwelling units.

F. OTHER UTILITIES DURING CONSTRUCTION

1. The attention of the applicant is directed to the existence of underground utilities, i.e., PSE&G, Bell Telephone, Continental and Sohio Pipelines, Mt. Laurel Township, MLTMUA Water & Sewer. The notification of these utility companies is the responsibility of the applicant and the applicant shall be solely responsible for any direct or indirect damage to such utilities in the installation of the service line or lateral. The applicant is instructed to call the "One Call" system at 1-800-272-1000. No service line or lateral of the MLTMUA shall be installed in the same trench with any other utility service unless specifically authorized, in writing, by the MLTMUA.

G. PROHIBITED CONNECTIONS

1 Under no circumstances are any of the following connections permitted to the sewer mains and/or sewer systems of the MLTMUA:

a) Sump pumps
b) Roof gutters and downspouts conducting rainwater

c) Storm water inlets or catch basins
d) Air conditioning equipment.
e) Floor drain, area drain, yard drain.
f) Grease Pit.
g) Storm Water Inlets or catch basins.

NOTE: For Industrial and/or Commercial Wastewater, see the requirements in Section IV.

The MLTMUA reserves the right to prohibit connections other than those listed if, in the opinion of the MLTMUA, such connections and/or discharges through such connections are harmful or incompatible with the MLTMUA sewer system or its treatment processes. Likewise, the MLTMUA reserves the right to test and analyze discharges to the MLTMUA sewer system to confirm that no prohibited discharges are taking place, and pass on the fees if it is determined that the discharges are prohibited.

H. TEMPORARY WATER SERVICE FOR CONSTRUCTION AND RELATED PURPOSES.

A customer requiring water for construction purposes on premises not already supplied by a metered water service line must make a special application on a form provided by the MLTMUA and pay a daily, weekly, monthly rate of [redacted], [redacted] and [redacted] respectively.

a. Individuals, companies, developers, etc., requiring the filling of tank trucks for Hydro seeding, fertilizer spraying, insecticide spraying, etc., may be given authorization to fill the tanks by the MLTMUA from a specifically identified fire hydrant upon application and payment of the associated fees, as mentioned above. Failure to obtain a permit from the MLTMUA for this purpose will result in fines and penalties.

b. A hydrant cannot be opened without using a proper wrench. The only hydrant that is allowed to be opened is located at the MUA's Elbo Lane Water Treatment Plant. The loss of security deposit and fines may be imposed for noncompliance to these restrictions. A positive control device for backflow prevention or an air gap, must be used.

I. SPECIAL CONNECTIONS

1. Connections requiring installation of back flow prevention devices.

The purpose and intent of these regulations is to protect the MLTMUA water system from back flow from a water supply which may be contaminated, of questionable or unknown quality or over which the MLTMUA has little or no control.

The requirements contained herein are not to be confused with the requirements of the Plumbing Sub-code of the New Jersey State Uniform Construction Code, N.J.A.C. 7:23-3.5., for the

prevention of illegal plumbing cross-connections, nor with any State or local requirements for the practice or procedure known as "cross-connection control by containment" whereby a back flow prevention device may be required to protect a public water system from contamination as a result of possible illegal plumbing cross connections.

J. FIRE SERVICE CONNECTIONS

In providing fire service the MLTMUA does not assume any liability as insurer of properties or persons and the MLTMUA does not guarantee any special service, water pressure, capacity or facility.

1. USE OF FIRE HYDRANTS:

No person shall open, use or turn on, or assist in the use, opening or turning on of, any fire hydrant without the permission of the MLTMUA. Opening of a fire hydrant in the Mt. Laurel MUA service area is just cause for imposition of fines of up to $1000 per occurance.

Nonapplicability to fire companies.

Shall not apply to the use of any fire hydrant by a fire company or fire department rendering public fire service.

2. DAMAGE TO HYDRANTS

No person shall damage, injure or deface or assist in the damaging, injuring or defacing of any fire hydrant.

Restitution for repair or replacement of the hydrants will be charged to the person(s) deemed responsible for the damage.

Violations and penalties (Amended 10-1-84 by Ord. No. 1984-33).

Anyone found guilty of violating any provision of this chapter will be subject to a fine not to exceed one thousand dollars ([redacted]) or imprisonment in the county jail for a term not to exceed ninety (90) days, or both.

Proper hydrant wrenches and positive control devices for backflow prevention or an air gap must be used.

3. PUBLIC FIRE SERVICE

Fire hydrants on the MLTMUA water system are solely for the purpose of providing water in the event of fire. Only persons authorized by the MLTMUA shall operate or take water from a hydrant of the MLTMUA or the authorized members of the Mount Laurel Township fire departments in the case of fire. No fire hydrant shall be used for fire drills unless prior notification and approval has been obtained from the MLTMUA. Opening a

hydrant without a MLTMUA permit constitutes a violation of the MLTMUA's Rules and Regulations and is subject to fines and penalties.

The MLTMUA shall provide maintenance for public fire hydrants such as painting and operation of each hydrant and lubrication of the stem and caps, as necessary.

ALLOWABLE USES

No person(s) shall take water from any public fire hydrants, except for fire purposes or for use of the fire department in case of fire. No fire hydrant, public or private, shall be used for sprinkling streets, flushing storm sewers or gutters or for any other purpose other than fire, except with written approval and consent of the MLTMUA. A permit for public use other than the aforementioned, will designate a specific hydrant location.

4. PRIVATE FIRE SERVICE

A. COMMERCIAL: HYDRANTS, AUTOMATIC SPRINKLERS AND SIAMESE CONNECTIONS

1. Fill out and submit MLMUA application for service. (No connection fee).

2. Detector check meter must be installed and approved by MLTMUA and must be accessible by MLTMUA personnel after installation. The MLTMUA reserves the right to require such back flow prevention, detector check or other suitable devices and appurtenances which, in the opinion of the MLTMUA Engineer, are required and necessary to prevent any contamination of the MLTMUA water system or eliminates any possible threat to the public health and welfare, consistent with any other state or local laws. The detector check meter or other approved device shall be supplied and maintained by the customer.

3. Plumbing permit and road opening permits must be obtained by the owner, if required, at the township building on Mt. Laurel Road (609-234-0001)

4. At least forty-eight (48) hours notice must be given, for the MLTMUA to inspect the tap.

5. When service is completely on line, contact the MLTMUA office and advise. (609-722-5901)

6. Any and all major repairs to private hydrants, including, but not limited to, replacement of valve seats, excavation or replacement of the hydrant, shall be the responsibility of the individual private owner. Each separate fire service shall be subject to the charge as outlined in the MLTMUA's rate schedule.

7. For automatic sprinklers or other fire service devices or appurtenances located in or on a building, a separate service line is required to be used exclusively for fire service. At the option of the applicant, private fire hydrants located outside the building(s) on private property, may be connected in the fire service line. Each such separate fire service line shall be subject to the charges as outlined in the MLTMUA's rate schedule.

5. RESIDENTIAL FIRE SERVICE

A. Townhouse and Single Family

1. Provide required size, separate fire only service for each individual unit.

2. Install a buffalo-type curb box, the cover shall be a standard size (5") water valve cover marked "FIRE".

3. MLTMUA will set the required size water meter inside the unit (in a utility area) or in an exterior box. If a hot box is utilized, it shall be secured and the MLTMUA shall be provided with one key (for meter servicing). A remove readout (touch pad) shall be installed on the exterior of the townhouse unit or on the outside of the hot box. (See standard for space around meter.)

4. Plumber shall supply a level 2 backflow preventer (dual check valve) on the MLTMUA's side of the fire service meter. If an anti-freeze system is used, then a level 3 backflow preventer must be installed (i.e. PRZ by Watts, Model 909 or 009).

NOTE: The MLTMUA is not certified as an inspector for backflow preventers. The owner shall be responsible to have the backflow preventer annually certified and inspected.

5. Plumber shall supply isolation valves on either side of the fire service meter.

6. Maintenance of the fire service from the water main to the building shall be the responsibility of the home owner (not the MLTMUA).

7. Tests and maintenance of the fire service system shall be the responsibility of the home owner.

8. CHARGES:

Meter: shall be according to the MLTMUA's meter charge schedule.

Billing: shall be according to the MLTMUA's rate schedule for the appropriate sized domestic service.

B. Condo:

1. Provide a 2" or required size, separate fire-only service.

2. Install a buffalo-type curb box with a standard size cover marked 'FIRE SERVICE".

3. MLTMUA will set a 2" (or required size) water meter in the hot box. Hot box size shall accommodate the MLTMUA standards for meter spacing requirements. (See standard for space around meter.)

4. Plumber shall supply isolation valves on either side of the meter.

5. Plumber may utilize an anti-freeze system for the condo units as long as a level 3 backflow preventer is installed (i.e. PRZ by Watts, Model 909, 009). The MLTMUA is not certified as an inspector for backflow preventers. The owner shall be responsible to have the backflow preventer annually certified and inspected.

6. Hot box shall be secured; the MLTMUA shall be provided with one key (for meter servicing). A remote readout (touch pad), shall be affixed to the exterior of each hot box.

7. Maintenance of the fire service from the water main to the building shall be the responsibility of the owner (not the MLTMUA).

8. Tests and maintenance of the entire fire service system shall be the responsibility of the owner.

9. CHARGES:

Meter: shall be according to the MLTMUA meter charge schedule.

Billing: shall be according to the MLTMUA's rate schedule for the appropriate sized domestic fire service.

K. <u>WATER METERS - GENERAL</u>

1. Requirements.

a) Each water service from the MLTMUA water main serving a property shall be metered. The MLTMUA reserves the right to determine the size and location of the water meter. No fixture of any kind, from which water can be drawn, shall be installed in the service line before the water meter. Any violations will result in discontinuance of service, imposition of fines and possible legal action.

b) All water meters, for premises serviced by the MLTMUA shall be purchased and supplied by the MLTMUA. The MLTMUA will install such meter(s) in the premises to be served after the customer informs the MLTMUA that the interior plumbing is complete and has been inspected and prepared to install the meter(s). Service will not be initiated before installation of such meter(s). A jumper or spreader to provide unmetered service is illegal, and is subject to fines of up to $[redacted] per day.

c) It is the customer's responsibility to provide for an accessible location of the meter and the related equipment as directed by the MLTMUA. The water pipe in which the meter will be installed shall contain the proper valves on each side of the meter location to allow the meter to be isolated. Access to the meter(s) shall be kept unobstructed by the customer and the customer shall be responsible for any damage to the meter and/or related meter equipment. In cases where it is not practical to place a meter within a building, a meter box or pit, approved by the MLTMUA shall be constructed inside the property line by the customer at an approved location.

d) No meter shall be installed, repaired, replaced, disconnected, adjusted or relocated by any other person except the authorized representative of the MLTMUA or its appointed agent. Exceptions pertain to irrigation meters. Please refer to the section on irrigation meters for further details.

e) The customer shall provide for the safekeeping of the meter and other equipment of the MLTMUA and shall not tamper with or remove such meter or other equipment, nor permit access thereto, except by duly authorized employees or agents of the MLTMUA. In case of loss or damage to said property caused by the customer or his agents or servants, the customer shall pay to the MLTMUA the amount of loss or damage to the property. The water meter and all equipment furnished at the expense of the MLTMUA shall remain its property and may be replaced whenever deemed necessary and removed after discontinuance of service. In case of defective service, the customer shall not interfere or tamper with the equipment belonging to the MLTMUA but shall immediately notify the MLTMUA to have the defects remedied. The customer shall notify the MLTMUA of a non-working water meter as soon as possible.

2. Meter Testing and/or Replacement

a) From time to time the MLTMUA will replace water meters to assure accuracy.

b) In cases where the meter or read out is found not working due to mechanical failure and not as a result of negligence by the customer, the replacement will be made by the MLTMUA free of charge. Frozen meters will be replaced at the homeowner's expense.

c) In the event a customer disputes the accuracy of a meter, the MLTMUA will, on request by the customer, remove and test a meter for accuracy only after other requirements have been met. The testing will be performed under the guidelines of the National Bureau of Standards and a written report will be furnished to the customer. The established standards for meter accuracy are not less than 98 percent nor more than 102 percent of manufacturer's specifications and in accordance with AWWA standards C-700 et seq. If the meter so tested shall be found to be accurate within these limits, the customer shall pay a testing fee as outlined in Schedule V.

d) If the meter so tested is found not to conform to the established standards as herein outlined, the MLTMUA shall adjust the current quarterly bill accordingly and test and repair the meter at no cost to the customer.

e) Read outs sometimes stop functioning, even while the meter continues to record all usage. In the event of a stopped read out, customers are billed by the reading on the meter, not the read out.

NOTE: Customers are advised that high meter reads are often due to undetected leaky fixtures and heavy lawn watering. An overnight test for leaks is required before a meter will be pulled for testing.

3. Reasonable Access

The properly identified authorized representative of the MLTMUA shall have the right of access to a customer's premises and to all property under the control of the MLTMUA at all reasonable hours for the purpose of inspection of customer's premises incident to the rendering of service, reading meters, sampling or testing discharges to the MLTMUA sewer system or inspecting, testing, replacing or repairing facilities of the MLTMUA used in connection with supplying service to the premises.

L. DISCONTINUANCE AND CURTAILMENT OF SERVICE

1. Policy - The MLTMUA may, in its discretion, discontinue or curtail service, upon reasonable notice where such notice can be reasonably provided, for any reasons necessary to carry out the business of the MLTMUA including, but not limited to the following:

a) For the purpose of making temporary or permanent repairs, changes or improvements on any part of the MLTMUA system(s) or on any equipment and appurtenances on a customer's premises which are under the jurisdiction and control of the MLTMUA.

b) In a good faith effort to comply with any governmental order or directive, whether or not such order or directive subsequently should prove valid or applicable.

c) For any of the following acts or omissions of a customer:

1) Misrepresentation in application or in relation to use of service; or violation of any MLTMUA rules or regulations.

2) Willful waste of water through improper or faulty pipes, fixtures or otherwise.

3) Failure to comply with restrictions or curtailment of service imposed with due notice or in case of emergencies.

4) Use of water or providing water and/or sewer service to other persons or to other properties without the consent of the MLTMUA or not as described in the application for service. Failure to comply will result in fines.

5) Tampering with any service line, meter, shut-off valve, seals or related equipment under the jurisdiction of the MLTMUA.

6) Prolonged vacancy of premises, whether the MLTMUA is notified by the customer or not, to prevent damage to the water/sewer system and waste of water.

7) Refusal of reasonable access by authorized MLTMUA personnel to the property for purposes of inspecting or maintaining facilities, equipment or appurtenances of the MLTMUA or for installing, reading, testing, replacing or removing meters.

8) Making or refusing to sever any cross connection between a pipe or fixture carrying water furnished by the MLTMUA and a pipe or fixture carrying water and/or sewage from any other source.

9) Tendering a check in payment for service, which is subsequently dishonored.

10) Failure to repair or replace any faulty pipes or fixtures or connecting and operating pipes, fixtures and appurtenances in such a manner as to disturb, interrupt or affect the MLTMUA's system(s) or those of other customers.

11) Nonpayment of bills, as provided in Section M.

2. Discontinuance by Customer's request:

a. Water Service. All contracts covering water services shall continue in force, unless and until receipt of reasonable notice in writing of a desire to terminate the service. Water service to any premises will be terminated upon the written order of the applicant, without in any way affecting the existing agreement for sewer service.

Water service will be considered as terminated at the time that the Authority is given reasonable access, during regular business hours, for an inspection and final reading of the inside water meter. In the event that the owner of any premises which is let to tenants requests that the water service to said premises be terminated, and the existence of the tenants is known to the Authority, the Authority shall terminate water service only in accordance with its procedures for discontinuing service as outlined in these Rules and Regulations. However, if both the owner and the tenant consent, in writing, to the termination of service, the MLTMUA may terminate the service as arranged.

b. Sewer Service. Sewer service will not be considered a service subject to shut off. Requests for discontinuance of sewer service will be permitted only in cases of demolition, fire, flooding, or by order of the Board of Health for vacating of the building serviced, for health reasons. The owner will be responsible for the payment of sewer rental at the minimum charges as established by the Authority during the time the property or structure is vacant.

3. Discontinuance Due to Emergencies

As necessity may arise in the event of a breakdown, emergency or for any other unavoidable cause, the MLTMUA shall have the right to temporarily discontinue or curtail the water supply. The MLTMUA will use reasonable and practical measures to notify the customer(s) affected by such discontinuance or curtailment of service.

In such cases the MLTMUA shall not be held responsible or liable for any injury, property damage, loss or inconvenience, nor for any damages or loss, directly or indirectly, resulting therefrom, arising out of such discontinuance or curtailment; or liable on any claim against it at any time for interruption of service, lessening of the supply, inadequate pressure or for any cause beyond the control of the MLTMUA.

Any customers having boilers on their premises, depending on the pressure of water supplied by the MLTMUA are cautioned against the possibility of damage in these cases should the proper safeguards not be installed or maintained by the customer in regards to water pressure and quality and direction of flow. Without limitation on the foregoing, customers are specifically cautioned here that the MLTMUA is not liable for any damage to these boilers.

4. Unauthorized Termination or Reinstatement of Service

a. Neither the customer nor any plumber shall turn the water on or off at any corporation stop, curb stop or meter valve or disconnect or remove the meter or permit its disconnection or removal without the written consent of the Authority. Exceptions apply to irrigation meters. Please see the irrigation section of these Rules and Regulations for details.

b. In the event that water service shall be turned on at any corporation stop, curb stop or meter valve after water service has been turned off by the Authority, or before service has been authorized by the Authority, the customer and/or property owner shall be charged for all expenses incurred by the Authority in reinstating the water service, including wages, overhead, supplies and expenses; and further, the Authority may require that the customer and/or property owner pay in advance an estimated water and sewerage bill for the ensuing 12 month period for all properties which the customer and/or property owner have connected to any system of this Authority.

M. BILLING AND PAYMENTS FOR SERVICE

1. Procedures

Billing is on a quarterly basis . There are three basic billing cycles for the MLTMUA service area. The cycles have been designated as cycles A, B, and C. The billing months for cycle "A" will be January, April, July and October. The billing months for cycle "B" are February, May, August and November. The billing months for cycle "C" are March, June, September and December. The billing cycle for a customer is established by the MLTMUA depending on the section of the service district in which the property is located. The MLTMUA will make every effort to read every water meter on this schedule but reserves the right to render estimated bills when weather conditions, mechanical failures or other circumstances beyond the control of the MLTMUA prevent the timely and accurate reading of the water meters. In those cases adjustment will be made to the billed charges in the following quarter when the meter is read. Cycle M, Fire Service, is billed quarterly, following the schedule for cycle "A".

2) Charges.

a. Water - each residential and commercial meter installed is subject to a total quarterly water charge consisting of a customer charge (except irrigation meters, which will not be subject to a customer charge), and a volume charge. The customer charge is a fixed minimum quarterly charge which is based on the meter size. Such minimum quarterly customer charges shall be nonabatable for non-users. The volume charge is based on actual water readings.

b. Sewer - each sewer service customer is subject to a total quarterly sewer charge consisting of a customer charge and a volume charge. The customer charge is a fixed minimum quarterly charge which is based on the water meter size. Such minimum quarterly customer charges shall be nonabatable for non-users. The volume charge is based on actual water consumption as determined by the quarterly water meter readings.

3) Rendering of Bills.

Bills will be rendered on or about the third working day of the month following the end of the quarter of the applicable billing cycle. The bills are due when presented and are payable at the office of the MLTMUA either in person, by mail, or an acceptable bill payment arrangement with a financial institution or payment service. No third party checks will be accepted under any circumstances. If a bill remains unpaid on the last day of the month in which it was presented, it shall be classified as delinquent. Payments received by mail will be credited to the customer's account on the date received at the MLTMUA office, not on the date mailed.

4) Delinquent Bills.

If a bill is unpaid on the last day of the month in which it was presented, a delinquency notice will be mailed to the customer on or about the seventh working day of the subsequent month. Only one delinquency notice will be rendered per quarter. A delinquent bill shall accrue interest in accordance with Chapter 530, Laws of 1981, State of New Jersey at the rate of 1-1/2% (one and one-half percent) per month on any unpaid principal balance, until such delinquent account and the interest thereon, shall be fully paid to the MLTMUA.

5) Shut-off Procedures.

If a bill continues to remain unpaid for a period of 90 days after it has been rendered delinquent, the MLTMUA will mail the customer a shut-off notice, indicating a date that action will be taken to discontinue service. The account must be paid in full by said date with no further extensions rendered. If full payment has not been received in the MLTMUA office on that date the service will be terminated without further notice. If an "irrigation" account remains unpaid, the primary service will be terminated until said bill is paid in full.

6) Liens, Fees, Deposits, Escrow

a. The Authority will collect all outstanding delinquent charges and file, in the case of those delinquencies not readily collectible by ordinary means, property liens as provided by applicable law. The MLTMUA shall be responsible for determining the point at which outstanding delinquent charges shall be classified as uncollectible, and shall thereafter, with the aid of the Authority solicitor, take the necessary steps to file liens against the properties in question.

b. There shall be an administrative fee, as established in Schedule V, for any utility search, and the request for said search shall be made at least forty-eight hours in advance of the date on

which the party requesting the same, desires to utilize it. This administrative fee will be charged to the buyer of a resale property. Final water/sewer charges will be verbally given to the Title Company or other responsible persons.

c. There shall be a fee, as established in Schedule V, payable in cash, for processing customer checks returned by the bank for any reason. Water service shall be terminated if the account was on the MLTMUA shut off list and service will not be restored until payment in full, including all fees, has been received in cash, certified check, or money order during normal working hours at the Authority office.

d. Sheriff Sales

For any property acquired by a Sheriff Sale that has an outstanding water and sewer bill, the new owner of said property will be responsible for payment of said bill. It will be up to the new owner to try to collect past due monies from the previous owner.

e. Deposits

- The MLTMUA may, in its discretion, require deposits from customers requesting service for a period of less than 90 days in an amount equal to one and one-half times the estimated bill for the service requested, plus the cost of making and discontinuing said service.

- The MLTMUA may require deposits from customers who are habitually delinquent in payment of their bills. The Authority may require that estimated service charges shall be paid in advance for periods of not more than one year.

- Deposits may be required from customers who have claimed bankruptcy and have had all or a portion of any Authority bills discharged in bankruptcy. The Authority may require that the estimated service charge to such customer be paid in advance for periods of not more than one year.

- No interest shall be paid to customers on their deposits.

7. Escrow

The MLTMUA has the right to escrow money in amounts up to $1,000 (more for commercial properties), for final bills that are verbally rendered at the settlement table if the MLTMUA was unable to gain access to the property for a final reading prior to settlement.

8) Restoration of Service.

After service has been discontinued as a result of delinquent water and/or sewer service charges or checks returned by the bank as

uncollectible, service will be restored only on the following conditions:

a. That payment in full be received by the MLTMUA of all outstanding charges in cash, certified check or money order;

b. That the service charge, outlined in Schedule V for restoring service after shut-off for a delinquent account, be paid prior to restoring service, during regular business hours of the MLTMUA;

c. Service will only be restored Monday thru Friday 8:30 a.m. to 4:00 p.m.; in the event of an emergency and at the discretion of the MLTMUA, there will be added charges if the MLTMUA agrees to restore service after normal working hours. See Schedule V.

d. Customers who are chronically on a shut-off list can be mandatorily put on a monthly payment plan. If plan is not adhered to, said customer's service will be subject to termination within five (5) days of the monthly due date.

9) Landlord - Tenant Relationship and/or Obligation

a. It is the responsibility of the applicant/owner of the premises, connected to the MLTMUA water and/or sewer system, to pay for any outstanding charges incurred for services provided by the MLTMUA to those premises.

b. In cases where the customer of the MLTMUA is a person or party other than the owner of the property, and should such customer vacate the premises and fail to pay any outstanding service charges, such charges shall be paid by the owner of the property before service is continued to the property. The MLTMUA reserves the right to recover those charges in accordance with procedures outlined in Section III, L-M. The MLTMUA will not get involved in tenant/landlord disputes.

In cases where a landlord-tenant relationship exists at residential premises served by the MLTMUA of which the MLTMUA is fully informed, the MLTMUA may, at its discretion, mail bills to the owner in care of the tenant at the property address. This will only be done upon written request by the landlord, or an authorized MLTMUA Tenant Form.

10) Disputed Bills

The MLTMUA will not discontinue service because of nonpayment of bills in cases where a charge is in dispute, provided that:

a. The customer brings the disputed bill to the attention of the MLTMUA within thirty (30) days of the date of the bill, including any supporting evidence the customer wishes to submit to substantiate his/her claim, in writing; and

b. The customer pays the amount charged after the MLTMUA investigates the claim and renders a new bill if applicable; within ten (10) days after the date of the new bill.

c. The MLTMUA will report the results of the investigation of the claim to the customer in writing and, in the event the customer's claim is substantiated, any interest charged on the account will be deleted as pertains to the portion of the bill in question. All other charges shall be paid on time or said charges will be considered delinquent and subject to interest.

d. In cases where meter testing is required to determine the validity of the disputed charge, meter testing procedures, as outlined in these Rules and Regulations and Schedule V, will apply.

e. If the MLTMUA determines that the disputed charge is valid, or that good cause does not exist to modify such charge, it shall promptly advise the customer in the event that payment is not forthcoming in ten (10) days, the MLTMUA may proceed to implement its shut-off procedures for nonpayment of the charge. No abatement on bills will be made for leaks or for water wasted by damage to fixtures.

11) Reduction of Charges Due to Vacancies

At times a property owner may want to request a discontinuation of service due to a property being vacant for a prolonged period of time. Such request shall be made to the MLTMUA in writing, giving property location, account number and the anticipated length of time the property will be vacant. Such reductions shall be granted by the MLTMUA only for full quarterly billing cycles (3 months each). The granting of such request shall be additionally contingent upon the following:

a. The anticipated vacancy shall exceed a three (3) months period;

b. The continuation of service may impose a hazard on the property due to freezing and/or other damage to the pipes, fixtures and appurtenances;

c. The water meter shall be removed and the owner agrees to pay the applicable service charges as outlined in Schedule V;

d. That payment, in full, be received for any outstanding charges in that account.

12) Back-billing

In the event a customer is not charged for services rendered, the MLTMUA has the right to back-bill by figuring charges due from the date of tie in to water/sewer. The MLTMUA has the right to back-bill for water/sewer services (consumption) from the reading on the actual meter when a readout device malfunctions.

N. OWNERSHIP AND MAINTENANCE RESPONSIBILITIES

1. MLTMUA Responsibilities.

The MLTMUA shall exercise control over and assume responsibility for only that portion of the water and sewer system encompassing treatment facilities, pumping stations, water storage tanks and water and/or sewer mains, located in public right-of-ways and MLTMUA easements.

a) MLTMUA Responsibility to Associations and Management Companies

The Mount Laurel Township Municipal Utilities Authority will respond to Association problems and in the event that the MUA is responsible for the repairs, said repairs will be done at the expense of the MLTMUA. The MLTMUA shall only be responsible for repairs to public water and sanitary sewer mains. All other problems the MLTMUA responds to will be investigated to determine ownership. In some cases actual work must be done to determine said ownership. If the problem is found to be the Association's, these repair charges will be billed to the Association. In all cases, MLTMUA personnel will make a good faith effort to inform a responsible person in the Association before work has begun.

If possible, the MLTMUA will not get involved with any repairs that are not MLTMUA related. If, due to an emergency situation, the MLTMUA must get involved, the Association/Management company will be responsible for any charges incurred.

Please note - the Association/Management company is expected to pay for all charges incurred in investigation of a problem that is found not to be the MLTMUA's responsibility. Once it is determined that the problem is not a MLTMUA responsibility, the MLTMUA will not be summoned back out for the same problem.

b) . Insurance Claims

The Authority maintains adequate business insurance for property and casualty. Where the Authority is found responsible under the terms of these policies for damage claims, it will certainly recognize its liability. However, the Authority is not responsible for any claims relating to damages to person or property unless the same results from negligence of the Authority or its employees.

If homeowners or business coverage does not cover damage to persons or property, homeowner or business is welcome to submit a written claim to the MLTMUA for damages. This in no way, however, is to be mistaken as the MLTMUA's acceptance of responsibility. The MLTMUA should be notified when the damage occurs and MLTMUA personnel must be given access to the damage.

MLTMUA personnel will generate a formal internal complaint form and file it with the main office. If a written claim is submitted to the Authority, it should include estimates, receipts, photos and any other available evidence of the damage. The Authority will forward the claim to its insurance carrier and will comply with the carrier's decision.

c) The properly identified authorized representative of the MLTMUA shall have the right of access to the customer's premises, served by the MLTMUA at all reasonable hours, for the purpose of reading, repairing, or replacing water meters, examining fixtures and pipes, observing the manner of using water or discharging sewage, or for any other purpose, necessary and proper in the conduct of the MLTMUA's business and responsibility.

d) No agent, employee or representative of the MLTMUA has the authorization to bind the MLTMUA to any promise, agreement, oral statement or representation not provided for in these rules and regulations.

e) The MLTMUA expressly disclaims any responsibility or liability for maintenance of such facilities, which are the customer's responsibility and for any backups or for any injury, property damage, loss or inconvenience and any damages or loss directly or indirectly resulting therefrom, arising out of the customer's failure to install or maintain such facilities in a safe and proper manner.

2. Customer Responsibilities

a) All other service lines, laterals, valves, equipment, facilities and appurtenances are the responsibility of the customer or owner. The customer or owner is responsible for compliance with all applicable laws, ordinances, codes, rules and regulations for the construction, installation and maintenance of the same.

b) All connections, service lines, laterals, valves and fixtures furnished and installed by the customer shall be maintained by him/her in good working order and condition. Water meters and related equipment, located on the customer's property, shall be properly protected by the customer from damage, freezing, obstruction and breakage. Damage, leakage or malfunction of any such equipment, on or about the water and/or sewer system, located on a customer's property shall be reported immediately to the MLTMUA. In addition, the MLTMUA shall have access to and control over the water meter and any equipment furnished at the MLTMUA's expense, on the customer's premises as provided in these Rules and Regulations. Frozen meters shall be replaced at the customer's expense. All repair work by the customer or the customer's agent on the water and/or sewer facilities located on the customer's property, must be inspected and approved by the MLTMUA and/or the designated, authorized code enforcement official of the Township of Mount Laurel.

c) The maintenance of the lateral from the sewer and/or water main to the property or building of a customer shall be the responsibility of the owner or customer. Special attention is directed to the possibility of sewer line backups which may, from time to time occur, and are beyond the control of the MLTMUA. Such backups may affect the fixtures installed by the customer, particularly if they are installed below ground elevations, such as in basements. Any fixtures installed below grade or in a basement are required to have backflow preventers installed in accordance with the Plumbing Sub-code of the New Jersey State Uniform Construction Code.

It is recommended that the proper precautions be taken by the customer, in accordance with allowable provisions of the State or local Plumbing Codes, to prevent damage resulting from sewer backups.

The maintenance of the service line from the water main to the property or building of a customer shall be the responsibility of the customer/owner. Special attention is directed to the curb shut-off valve. It is the responsibility of the customer/owner to maintain the valve in an operable condition at all times.

1) In those cases where there is any suspected breakage to a sewer lateral in the street (specifically limited to that portion of the lateral running from the curb line to the main underneath the street paving) the MLTMUA will make repairs to the lateral for all other reasons than stoppage, clogging and/or backup of sewage caused by said stoppage or clogging (including stoppage or clogging from root intrusion). Any work in the street area which proves that problems with the lateral were caused by stoppage or clogging (including stoppage or clogging from root intrusion), by materials passing through the lateral from the owner's property, will be at the owner's expense and will be charged, at cost, to the owner.

2) In those cases where there is any suspected breakage/leakage to a service line in the street (specifically limited to that portion of the service line running from the curb line to the main underneath the street paving), the MLTMUA will make repairs to the service line, at the customer's expense.

3. Charges for Maintenance and/or Repairs and Stopped Meters

a) In those cases where there is any suspected breakage to a sewer lateral in the street (specifically limited to that portion of the lateral running from the curb line to the main underneath the street paving) the MLTMUA will make repairs to the lateral for all other reasons than stoppage, clogging and/or backup of sewage caused by said stoppage or clogging (including stoppage or clogging from root intrusion). Any work in the street area

which proves that problems with the lateral were caused by stoppage or clogging (including stoppage or clogging from root intrusion), by materials passing through the lateral from the owner's property, will be at the owner's expense and will be charged, at cost, to the owner.

b) In those cases where there is any suspected breakage/leakage to a service line in the street (specifically limited to that portion of the service line running from the curb line to the main underneath the street paving), the MLTMUA will make repairs to the service line, at the customer's expense.

c) The MLTMUA may, in its absolute discretion, upon request by a customer, agree to assist in the repairs or maintenance of service lines or laterals on the customer's property. The MLTMUA takes no responsibility for accidental damage. Any repairs are the responsibility of the homeowner. In any event, such assistance shall be rendered only in emergencies or when it appears that the health and welfare of the public or other customers of the MLTMUA may be affected. The customer, in requesting this assistance, shall pay to the MLTMUA, the costs of manpower, equipment and material associated with such repairs and maintenance as outlined in Schedule VI.

d) In the event that the MLTMUA undertakes such assistance, such action shall not constitute an acceptance of any responsibility on the part of the MLTMUA for the proper installation, operation or maintenance of service lines, laterals or related appurtenances on the customer's property, or relieve the customer of his/her duty of care therefor. The MLTMUA shall not be responsible to the customer for any injury, property damage or loss or resulting damages, arising out of the provision of such assistance unless same is due to gross negligence by the MLTMUA.

4. Stopped Meters

We encourage owners to compare meter readings with readout readings. In the event of a stopped Read Out, the customer will be billed from the reading on the actual meter. In the event the actual meter stops, the MLTMUA will estimate a bill based on past usage or number of people in a family.

O. <u>MISCELLANEOUS</u>

1. The MLTMUA reserves the right to change or amend, from time to time, these rules and regulations and the rates for water and/or sewer services.

2. If any section, paragraph, sentence, clause, phrase, term, provision or part of these rules and regulations shall be adjudged by any court of competent jurisdiction to be invalid or inoperative, such judgement shall not affect, impair or

invalidate the remainder thereof, but shall be confined in its operation to the section, paragraph, sentence, clause, phrase term, provision or part thereof, directly involved in the controversy in which such judgement shall have been rendered.

IV. RULES FOR COMMERCIAL AND/OR INDUSTRIAL WASTEWATER DISCHARGES.

WHEREAS, the Federal Clean Water Act Amendments of 1977, P.L. 95-271; as amended, the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. and the New Jersey Pretreatment Act, N.J.S.A. 58:11-49 et seq., 1972 have resulted in a program of cleaning up our Nation's waters; and

WHEREAS, Mount Laurel Municipal Utilities Authority has previously made and will continue to make substantial financial investments in the treatment of wastewater to achieve the goals of these Acts; and

WHEREAS, the Mount Laurel Municipal Utilities Authority seeks to provide, for the use of its wastewater treatment facilities by industries served by it without damage to the physical facilities without impairment of their normal function of collecting, treating and discharging domestic wastewater, and without the discharge by the Mount Laurel Township Municipal Utilities Authority's treatment facilities of pollutants which would violate the discharge allowed under its New Jersey Pollutant Discharge Elimination System (NJPDES) permit and the applicable rules of all governmental authorities with jurisdiction over such discharges.

NOW, THEREFORE, BE IT RESOLVED, that the Mount Laurel Township Municipal Utilities Authority, adopt the following Rules and Regulations:

1. - GENERAL PROVISIONS.

1.1 Purpose and Policy

These rules and regulations set forth uniform requirements for commercial and industrial contributors into the wastewater collection and treatment system of the MLTMUA and enables the MLTMUA to comply with all applicable State and Federal laws and regulations pertaining to wastewater treatment and industrial pretreatment.

The objectives of these rules and regulations are:

a. to prevent the introduction of pollutants into the Publicly Owned Treatment Works (POTW) which will interfere with the operation of the system or contaminate the resulting sludge;

b. to prevent the introduction of pollutants into the POTW which will pass through the system, inadequately treated, into the receiving waters or the atmosphere or otherwise be incompatible with the system; and

c. to improve the opportunity to recycle and reclaim wastewaters and sludges from the system.

These rules and regulations authorize monitoring and enforcement activities, require user reporting and provide for the regulation of indirect dischargers to the POTW through enforcement of general requirements for all users and through the issuance of permits to certain non-domestic users. These rules and regulations shall apply to the customers in the Township of Mount Laurel and to persons outside the Township of Mount Laurel who are, by contract or agreement with the MLTMUA users of the MLTMUA's Publicly Owned Treatment Works. Except as otherwise provided herein, the Executive Director of the Mount Laurel Township Municipal Utilities Authority shall administer, implement and enforce the provisions of these rules and regulations.

1.2 Definitions.

The following definitions shall be in addition to those published and outlined in Section II of these rules and regulations. Unless the context specifically indicates otherwise, the following terms and phrases, as used in these rules and regulations, shall have the meanings hereinafter designated:

a. Act or "the Act", The Federal Water Pollution Control Act, known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

b. Approval Authority. The Director of the Division of Water Resources of the Department of Environmental Protection for the State of New Jersey or his/her authorized representative.

c. Authorized Representative of Industrial User, an authorized representative of an industrial user may be: (1) A principal executive officer of at least the level of vice president, if the industrial user is a corporation; (2) A general partner or proprietor if the industrial user is a partnership or proprietorship, respectively; or (3) A duly authorized representative of the individual designated above if such representative is responsible for the overall operation of the facilities from which the indirect discharge originates.

d. Biochemical Oxygen Demand or BOD. The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure five (5) days at 20 degrees Centigrade expressed in terms of weight (kilograms per day) and concentration (milligrams per liter Amg/10).

e. Categorical Standards. Pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties which may be discharged or introduced to a POTW by existing or new industrial users in specific industrial subcategories.

f. Chemical Oxygen Demand or COD. The amount of chlorine expressed in mg/1 which will complete the normal reactions with all chemicals and materials in the waste leaving an excess of 0.1 mg/1 after thirty (30) minutes contact time at room temperature.

g. CID 1 & 2 - MLTMUA Applications for Commercial and/or Industrial Customers.

h. Commissioner. The Commissioner of the New Jersey Department of Environmental Protection or his/her authorized representative.

i. Compatible Pollutant. Biochemical oxygen demand, suspended solids, pH and fecal coliform bacteria, oil and grease, and such additional pollutants as are now or may be in the future specified and controlled in the MLTMUA's NJPDES permit, where the POTW is designed to treat such pollutants and, in fact, does treat such pollutants to the degree required by the NJPDES permit.

j. Control Authority. Refers to the "Approval Authority" defined herein above; or the Executive Director of the MLTMUA if the MLTMUA has an approved Pretreatment program under the provisions of 40 CFR 403.11.

k. Composite Sample. A sample consisting of several effluent portions collected during a specific time period and combined to make a representative sample.

l. Cooling Water. Any water used for the purpose of carrying away excess heat and which may contain biocides used to control biological growth or other additives to protect the system against corrosion, freezing, scaling and the like.

m. Domestic Wastewater. The liquid waste or liquid borne waste resulting from (1) the noncommercial preparation, cooking and handling of food and/or (2) consisting of human excrement and similar wastes from sanitary conveniences.

n. EPA. The United States Environmental Protection Agency.

o. Garbage. Solid wastes from the domestic and commercial preparation, cooking, dispensing, handling storage and/or sale of food.

p. Executive Director. The Executive Director of the MLTMUA or his/her duly appointed deputy, agent or representative.

q. Grab Sample. A sample which is taken from a waste stream on a one time basis with no regard to the flow in the waste stream and without consideration of time.

r. Holding Tank Waste. Any waste from holding tanks such as vessels, chemical toilets, campers, trailers, septic tanks and vacuum pump tank trucks.

s. Incompatible Pollutant. Any pollutant which is not a "compatible pollutant" as defined in this section.

t. Indirect Discharge. The discharge or the introduction of non-domestic pollutants from any source regulated under section 307(b) or (c) of the Act, (33 U.S.C. 1317), into the POTW (including holding tank waste discharged into the system).

u. Industrial Pre-Treatment Officer. A person in the employ of the MLTMUA who is responsible for the review, monitoring and inspection of commercial and industrial discharge.

v. Industrial Process Wastewater. The liquid waste or liquid borne waste resulting from the processes employed by any user or users identified in the Standard Industrial Classification Manual 1972, Office of Management and Budget, as amended and supplemented under one of the following divisions;

Division A: Agriculture, Forestry and Fishing
Division B: Mining
Division C: Cooling Water
Division D: Manufacturing
Division E: Transportation, Communications, Electric, Gas and Sanitary Services.
Division F: Photo Processing
Division G: Food Processing
Division H: Medical Waste
Division I: Services

also with any ground water, surface water and storm water that may be present, whether treated or untreated, that is discharged into a treatment works.

w. Interference. Means (1) inhibiting or disrupting a POTW system or its treatment processes or operation so as to contribute to, or cause a violation of any condition of a State or Federal permit under which the POTW operates, or (2) discharging industrial process wastewater which, in combination with existing domestic flows are of such volume and/or strength as to exceed the treatment process design capacity; or (3) preventing the use or disposal of sludge produced by the POTW in accordance with Section 405 of the Federal Clean Water Act of 1977 (33 U.S.C. 1251 et seq.) and the New Jersey Guidelines for the Utilization and Disposal of Municipal and Industrial Sludges and Sewage; or any regulations or criteria or guidelines developed pursuant to Federal Resource Conservation and Recovery Act of 1976 (42 U.S.C. 3251 et seq.), the Federal Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Toxic Substances Control Act (15 U.S.C. 2601 et seq.).

x. NJDEP. The New Jersey Department of Environmental Protection.

y. NJPDES (New Jersey Discharge Pollution Elimination Sytem) The New Jersey system for the issuing, modifying, suspending, revoking and reissuing, termination, monitoring and enforcing of discharge permits pursuant to the State Act. The term also includes discharge permits (NJPDES) issued pursuant to Section 402 of the Clean Water Act of 1977 (33 U.S.C. 1251 et seq.)

z. Normal Sewage. Analyses by the MLTMUA showing not more than the following:

BOD - 2083 pounds per million gallons (250 mg/1) or less.
Chlorine Demand - 125 pounds per million gallons (15 mg/1)
Ether Soluble Materials - 417 pounds per million gallons (50 mg/1) or less.
pH - no less than 6.0 nor more than 8.5
Suspended Solids - 2083 pounds per million gallons (250 mg/1) or less.

aa. Person. Any individual, firm, company, partnership, corporation, association, group or society, including the State of New Jersey, and agencies, districts, commissions and political subdivisions, created by or pursuant to State law, and Federal agencies, departments or instrumentalities thereof.

bb. pH. The logarithm (base 10) of the reciprocal of the hydrogen ion concentration in moles per liter of solution. Solutions with a pH greater than 7 are said to be basic; solutions with a pH less than 7 are said to be acidic; pH equal to 7 is considered neutral.

cc. Pollutant. Any dredged spoil, solid waste, incinerator residue, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, radioactive substance, thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal or agricultural waste or other residue discharge into the waters of the State.

dd. Pretreatment. The application of physical, chemical and biological processes to reduce the amount of pollutants in, or alter the nature of the polluting properties of, an industrial process wastewater prior to discharging such wastewater into the POTW system.

ee. Pretreatment Standards. All applicable Federal and State rules and regulations implementing Section 307 of the Clean Water Act of 1977 (33 U.S.C. 1251 et seq.) or N.J.S.A. 58:11-49, as well as any non-conflicting State or local standards. In cases of conflicting standards or regulations, the more stringent thereof shall be applied.

ff. Publicly Owned Treatment Works (POTW). A treatment works as defined by Section 212 of the Act, (33 U.S.C. 1292) which is maintained in this instance by the Mount Laurel Township Municipal Utilities Authority. For the purpose of these rules and regulations, "POTW" shall also include any sewer lines that convey wastewaters to the POTW from persons outside the MLTMUA's service area who are, by contract or agreement with the MLTMUA users of the MLTMUA's POTW.

gg. Regional Administrator. The Administrator of Region II of the United States Environmental Protection Agency or his/her authorized representative.

hh. Significant Industrial User (SIU). Any user who discharges into the POTW of the MLTMUA, industrial process wastewater which either (1) exceeds 10,000 gallons per day, or (2) exceeds the mass equivalent of 10,000 gallons per day of the domestic wastes of the POTW of the MLTMUA based on the values for Normal sewage as defined herein above, or (3) exceeds five percent (5%) of the average daily flow of the POTW of the MLTMUA or (4) contributes five percent (5%) or more of the daily mass loading of any of the pollutants listed in Table I which are entering the POTW.

ii. State. The State of New Jersey.

jj. State Act. The New Jersey "Water Pollution Control Act", N.J.S.A. 58:10A-1 et seq.

kk. Standard Industrial Classification (SIC). A classification pursuant to the Standard Industrial Classification Manual issued by the Executive Office of the President, Office of Management and Budget, 1972.

ll. Storm Water. Any flow occurring during or immediately following any form of natural precipitation and resulting therefrom.

mm. Suspended Solids. The total nonfilterable residue as defined in "Manual of Methods for Chemical Analysis of Water and Wastes".

nn. Toxic Pollutant. Those pollutants, or combination of pollutants, including disease-causing agents, which after discharge into the environment in sufficient quantities and upon exposure, ingestion, inhalation or assimilation into any organism either directly or indirectly by ingestion through food chains, will, on the basis of information available to the Commissioner, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, including malfunctions in reproduction, or physical deformation, in such organisms or their offspring. Toxic pollutants shall include but not be limited to those pollutants designated under Section 307 of the Federal Act or Section 4 of the State Act.

oo. Treatment Works. Any device or system, whether public or private, used in the storage, treatment, recycling or reclamation of municipal or industrial waste of a liquid nature, including: intercepting sewers, outfall sewers, sewage collection systems, cooling towers and ponds, pumping, power and other equipment and their appurtenances; extensions, improvements, remodeling, additions and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; any other works including sites for the treatment process or the ultimate disposal of residues resulting from such treatment. Additionally, "treatment works" means any other method or system for preventing, abating, reducing, storing, treating, separating or disposing of pollutants, including storm water runoff, or industrial waste in combined or separate storm water and sanitary sewer systems.

pp. Treatment Works Plant. That portion of the treatment works designed to provide treatment to wastewater.

qq. Unpolluted Water. Water not containing any pollutants limited or prohibited by the effluent standard in effect and/or water whose discharge will not cause any violation of receiving water quality standards or interference with their designated uses.

rr. User. Any person who discharges, causes, or permits the discharge of industrial process wastewater into the treatment works.

ss. User Classification. A classification of users based on the 1972 (or subsequent) edition of the Standard Industrial Classification (SIC) Manual prepared by the Federal Office of Management and Budget.

tt Wastewater. The liquid or water-carried industrial or domestic wastes from dwellings, commercial buildings, industrial facilities and institution, together with any ground water, surface water and storm water that may be present, whether treated or untreated, which is discharged into or permitted to enter the MLTMUA treatment works.

uu. Terms not otherwise defined herein shall be as adopted in the latest edition of "Standard Methods for Examination of Water and Wastewater", published by the American Public Health Association, the American Water Works Association and the Water Pollution Control Federation; the Federal Guidelines for State and Local Pretreatment Programs, EPA-430/9-76-017a, Volume 1, 1977; or the latest revision thereof; the Clean Water Act N.J.S.A. 58:10A-1 et seq. or N.J.S.A. 58:11-49 et seq., 1972.

1.3 Abbreviations

The following abbreviations shall have the designated meanings:

BOD - Biochemical Oxygen Demand
CFR - Code of Federal Regulations
COD - Chemical Oxygen Demand
EPA - United States Environmental Protection Agency
1 - Liter
mg - Milligrams
mg/1 - Milligrams per liter
N.J.A.C. - New Jersey Administrative Code
N.J.S.A. - New Jersey Statutes Annotated
NJPDES - New Jersey Pollutant Discharge Elimination System
NPDES - National Pollutant Discharge Elimination System
POTW - Publicly Owned Treatment Works.
SIC - Standard Industrial Classifications
USC - United States Code
TSS - Total Suspended Solids

2. PROHIBITIONS AND LIMITATIONS ON WASTEWATER DISCHARGES.

2.1 Prohibitions on Wastewater Discharges.

All participants and customers shall provide the MLTMUA with information on the physical and chemical characteristics of all wastes proposed to be discharged into their local collection sewerage system and the regional sewerage system.

Any industry which is connected to a local collection sewerage system and is discharging industrial wastes thereto which shall charge its method of operation so as to alter the type of wastes previously discharged shall notify the participant and the MLTMUA at least fifteen (15) days prior to such change, in order that the participant and the MLTMUA representatives can sample and determine whether or not the new waste can be accepted in the local collection sewerage system and the regional sewerage system.

No person shall discharge, deposit, cause or allow to be discharged or deposited into the MLTMUA treatment works any wastewater which significantly contributes to a violation of any of the parameters in the NJPDES permit of the MLTMUA, or which contains any of the following:

A. Oil and Grease. - (1) oil and grease from industrial facilities, in concentrations or amounts violating pretreatment standards; this includes petroleum based hydrocarbons as determined by silica gel absorption; (2) wastewater from industrial facilities containing floatable fats, wax, grease or oil; whether emulsified or not or containing substances which may solidify or become vicous at temperatures between 32 degrees F and and 150 degrees F (0 degrees C and 150 degrees C) at the point of discharge into the treatment works.

B. Explosive and/or Flammable Mixtures. - Liquids, solids or gases which by reason of their nature or quantity are, or may be sufficient, either alone or by interaction with other substances, to cause fire or explosion or be injurious in any other way to the treatment works or to the operation of the works; at no time shall two (2) successive readings on an explosion hazard meter, at the point of discharge into the treatment works, be more than five percent (5%) nor any single reading over ten percent (10%) of the Lower Explosive Limit (L.E.L.) of the meter with the meter limited to: gasoline, kerosene, naptha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hybrids and sulfides;

C. Noxious Materials. - Pollutants which, either singly or by interaction with other wastes, are capable of creating a hazard to life and health, or are present in sufficient concentrations to prevent entry into the treatment works for its maintenance and repair;

D. Garbage. Garbage of any kind;

E. Radioactive Wastes. - Radioactive wastes of any type in any concentration;

F. Solid or Viscous Wastes. - Solid or viscous wastes which will or may cause obstruction to the flow in a sewer, or otherwise interfere with the proper operation of the treatment works. Specific materials may be prohibited at the discretion of the Executive Director.

G. Excessive Discharge. - Wastewater at a flow rate or containing such concentrations or quantities of pollutants that, in the judgment of the MLTMUA would cause a treatment process upset and subsequent loss of treatment efficiency;

H. Toxic Pollutants. - Any toxic substance in amounts exceeding standards promulgated by these rules and regulations and/or the Administrator of the EPA pursuant to Section 307 of the Federal Act or Section 4 of the State Act, including, but not limited to, those listed in Table 1, or any materials which may interfere with the biological processes or the efficiency of the treatment works or which will pass through the system;

I. Storm Water. - Discharge of storm water including surface water and ground water from sump pumps and cellar drains, roof drains, into the treatment works from any source;

J. Discolored Materials. - Wastes with color which would cause the treatment works to exceed water quality standards;

K. Substances Interfering with Sludge Management. - Any substance which may cause the POTW's sludge to be unsuitable for reclamation and reuse or to interfere with the reclamation process where the POTW is pursuing a reuse and reclamation program. In no case shall a substance discharged to the POTW cause the POTW to be in noncompliance with sludge use or disposal criteria, guidelines or regulations developed under Section 405 of the Act; any criteria, guidelines or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act or the "New Jersey Guidelines for the Utilization and Disposal of Municipal and Industrial Sludges and Septage";

L. Corrosive Wastes. - Any waste which will cause corrosion or deterioration of the treatment works; all wastes discharged to the treatment works must have a pH value in the range of 6.0 to 8.5 standard units; prohibited materials include, but are not limited to: acids, alkalies, sulfides, concentrated chloride and fluoride compounds and substances which will react with water to form acidic or alkaline products which have a pH value that does not fall within the range stated above;

M. Heat. - Heat in amounts which will inhibit biological activity in the treatment works, resulting in interference or causing damage, but in no case heat in such quantities that the temperature exceeds 65 degrees C (150 degrees F) at the point of discharge at the MUA collection system, unless the NJDEP, upon request of the POTW approves alternate temperature limits;

N. Pathogenic Bacteria (viable). - Other than those normal to domestic sewage.

2.2 Limitations on Wastewater Discharges.

Table I represents the maximum concentrations of certain pollutants allowable in wastewater discharges to the treatment works by any user. Dilution of any wastewater discharge for the purpose of satisfying these requirements at the point of discharge in lieu of installation of holding surge tanks, shall be considered a violation of these rules and regulations.

All users are limited by restrictions and prohibitions set forth in applicable State and Federal regulations, including categorical Pretreatment Standards, as promulgated.

TABLE I
Maximum Permissible Concentration (mg/1)

Pollutant	1 day max.	30 day avg.
Aldrin	*	*
Dieldrin	*	*
DDE	*	*
DDD	*	*
DDT	*	*
PCB	*	*
Endrin (Manufacturer)	.0075	.0015
Endrin (Formulator)	*	*
Toxaphene (Manufacturer)	.0075	.0015
Toxaphene (Formulator)	*	*
Benzidine (Manufacturer)	.050	.010
Benzidine (Dye Applicators)	.025	.010

* = Prohibited from discharge.

The characteristics, per sample, of sewage and wastes discharged into the treatment works shall not exceed the following standards in mg/1:

BOD	300
COD	600
Suspended Solids	350
Total Solids	5,000
Phenols	1.0
Cyanide as Cn	1.0
Chromium as Cr	1.0
Copper as Cu	1.0
Iron as Fe	5.0
Nickel as Ni	3.0
Zinc as Zn	2.0
Boron as B	1.0
Lead as Pb	0.1
Ether soluble matter	100.0
Arsenic as As	1.0
Aluminum Sulfate	10.0
Cadmium as Cd	0.04
Silver as Ag	0.05
Selenium as Se	0.01
Mercury as Hg	0.02
Grease and Oil	50.0
Pet. Hydrocarbons	10.0

Surfactants - active agents or synthetic detergents shall be of an approved type with a high degree of biodegradability.

2.3 Federal Categorical Pretreatment Standards.

Upon the effective date of the Federal Categorical Pretreatment Standard for a particular industrial subcategory, the Federal Standard, if more stringent than limitations imposed under these rules and regulations for sources in that subcategory, shall immediately supersede the limitations imposed under these rules and regulations. The MLTMUA shall notify all affected users of the applicable reporting requirements under 40 CFR, Section 403.12.

2.4 Modification of Federal Categorical Pretreatment Standards.

Where the MLTMUA wastewater treatment system achieves consistent removal of pollutants limited by Federal Pretreatment Standards, the MLTMUA may apply to the Approval Authority for modification of specific limits in the Federal Pretreatment Standards. "Consistent Removal" shall mean reduction in the amount of a pollutant or alteration of the nature of the pollutant by the wastewater treatment system to a less toxic or harmless state in the effluent which is achieved by the system as measured according to the current procedures set forth in Section 403.7 (c)(2) of the "General Pretreatment Regulations for Existing and New Sources of Pollution" (40 CFR, Part 403) promulgated pursuant to the Act and as may be amended. The MLTMUA may modify pollutant discharge limits in the Federal Pretreatment Standards if the requirements contained therein are fulfilled and prior approval from the Approval Authority is obtained.

2.5 State Requirements.

State requirements and limitations on discharges shall apply in any case where they are more stringent than Federal requirements and limitations or those in these rules and regulations.

2.6 MLTMUA Right of Revision.

The MLTMUA reserves the right to establish, by resolution, more pretreatment requirements if deemed necessary to comply with objectives presented in Section 1.0 of these rules and regulations.

2.7 Dilution of Discharge.

No user shall ever increase the use of process water to dilute a discharge as a partial or complete substitute for adequate pretreatment to achieve compliance with the limitations contained in the Federal Categorical Pretreatment Standards, or in any other pollutant-specific limitation developed by the MLTMUA or State.

3. - CONTROL OF PROHIBITED WASTES.

If wastewaters containing any substance prohibited, exceeding prescribed limits, or violating restrictions imposed by Section 2 of these rules and regulations, are discharged into the treatment works of the MLTMUA, the MLTMUA shall take all actions necessary to:

a. Prohibit the discharge of such wastewater;
b. Require a user to demonstrate that in-plant modifications will reduce or eliminate the discharge of such substances so as to be in conformance with these rules and regulations;
c. Require pretreatment; including storage facilities, or flow equalization necessary to ensure complete compliance with these rules and regulations;
d. Require the user making, causing or allowing the discharge, to pay all the additional cost of expense incurred by the MLTMUA for any damages caused by excess loads imposed on the treatment works; and
e. Take such other remedial action, including discontinuation of service, as may be deemed necessary or desirable to achieve the purpose of these/rules and regulations.

3.2 Pretreatment.

Users shall provide necessary wastewater treatment as required to comply with these rules and regulations and shall achieve compliance with all Federal Categorical Pretreatment Standards within the time limitations as specified by the Federal Pretreatment Regulations. Any facilities required to pretreat wastewater to a level acceptable to the MLTMUA shall be provided, operated and maintained at the user's expense. Detailed plans, specifications and other pertinent data relating to the pretreatment facilities and operating procedure shall be submitted by the user to the MLTMUA for review and shall be approved by the MLTMUA before construction of the facility. The review of such plans and operating procedures will in no way relieve the user from the responsibility of modifying the facility, as necessary, to produce an effluent acceptable to the MLTMUA under the provisions of these rules and regulations. Any subsequent changes in the pretreatment facilities or method of operating shall be reported to and be acceptable to the MLTMUA prior to the user's initiation of the changes.

a. Grease Traps: Restaurants, food processing and preparation facilities, etc., producing grease and/or oil in their discharge shall install a grease trap. The grease trap shall be API approved. The type, size and location details shall be approved by the MLTMUA prior to its installation.

b. Bio-Augmentation: Bacteria addition for control of grease, metals, high organic loadings and sulfides shall be added by the facility discharging the grease and/or oil. The type of bacteria additive and the amounts shall be approved by the MLTMUA.

c. Operating Logs: The facility shall maintain an operation log on site. The log shall detail the amounts of bacteria added, the date and time of the addition and any information concerning the waste discharges. Monthly copies of the log shall be sent to the MLTMUA no later than the 10th of the next month.

3.3 Pretreatment Facilities Operations.

Pretreatment facilities shall be maintained in good working order and operated efficiently by the owner or operator at his/her own costs and expense, subject to the requirements of these rules and regulations and all other applicable State and Federal codes, ordinances and laws. It should be noted that NJDEP Regulations require pretreatment facilities to have an NJDEP licensed operator employed full time.

3.4 Admission to Property.

Whenever it shall be necessary for the purpose of these rules and regulations, the MLTMUA, the Commissioner and/or the Regional Administrator, upon the presentation of credentials, may enter upon any property or premises at reasonable times for the purpose of inspecting/copying any records required to be kept under the provisions of these rules and regulations.

The MLTMUA, the Commissioner and/or the Regional Administrator, upon presentation of credentials, may enter upon any property or premises at any time for the purpose of inspecting any monitoring equipment or method and/or measuring, sampling and/or testing any discharge of wastewater to the treatment works.

Duly authorized employees of the MLTMUA shall observe all safety rules applicable to the premises established by the company, and the company shall be held harmless for injury or death of the Authority employees and the MLTMUA shall indemnify the company against loss or damage to its property by MLTMUA employees and against liability claims and demands for personal injury or property damages asserted against the company and growing out of the gauging and sampling operation, except as such may be caused by negligence of the company.

3.5 Accidental Discharges.

Each user shall provide protection from accidental discharge of prohibited materials or other substances regulated by these rules and requisitions. Facilities to prevent accidental discharge of prohibited materials shall be provided and maintained at the

owner's or user's own cost and expense. Detailed plans showing facilities and operating procedures to provide this protection shall be prepared by the user and kept on file. In case of an accidental discharge, the user shall immediately make available discretion, request from any user copies of the plan prior to the occurrence of an accidental discharge. No user who commences contribution to the POTW after the effective date of these rules and regulations shall be permitted to introduce pollutants into the system until accidental discharge procedures have been approved by the MLTMUA. Review and approval of such plans and operating procedures shall not relieve the industrial user from the responsibility of modifying his/her facility as necessary to meet the requirements of these rules and regulations.

Telephone Notice. In the case of an accidental discharge, or if for any reason a user does not comply, or will be unable to comply, with any prohibition or limitation in these rules and regulations, the user responsible for such discharge shall immediately telephone and notify the MLTMUA of the incident. The notification shall include location of discharge, type of waste, concentration and volume. Furthermore, such user shall take immediate action to contain the problem within the facility and minimize the discharge in order to prevent interference with the treatment process and/or damage to the treatment works.

Written Notice. Within five (5) days following the accidental or noncomplying discharge, the user shall submit to the MLTMUA a detailed written report describing the date, time and cause of the discharge, the quantity and characteristics of the discharge and corrective action taken at the time of the discharge, and the measures taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage or other liability which may be incurred as a result of damage to the POTW, fish kills or any other damage to person or property; nor shall such notification relieve the user of any fines, civil penalties or other liability which may be imposed by this article or other applicable law.

Procedures: Each user shall establish and furnish to the MLTMUA a procedure to provide the above referenced notification procedures along with names and telephone numbers of personnel involved.

Notice to Employees. A notice shall be permanently posted on the user's bulletin board or other prominent place advising employees of the procedure to be followed in the event of a dangerous discharge. Employers shall insure that all employees who may cause or suffer such a dangerous discharge to occur are advised of the emergency notification procedure.

4. - INDUSTRIAL WASTEWATER MONITORING AND REPORTS.

4.1 Reporting Requirements for Industrial Users.

a. All industrial users shall, at a minimum, comply with the reporting requirements contained in 40 CFR 403.12.

b. Periodic Discharge Reports. Every significant industrial user shall submit to the MLTMUA, on a monthly basis, a flow report of the daily flow into the POTW contributed by that user. In addition, a periodic discharge report shall be submitted during the months of June and December, unless required more frequently in a pretreatment standard by the MLTMUA or Approval Authority. At the discretion of the MLTMUA and in consideration of such factors as local high or low flow rates, holidays, budget cycles, etc., the MLTMUA may agree to alter the months during which the above reports are to be submitted. The MLTMUA may require any other industrial users discharging or proposing to discharge into the treatment works to file such periodic reports.

The discharge report shall include, but not be limited to: nature of process, volume, rates of flow, concentrations of incompatible pollutants, total mass of each incompatible pollutant discharged, hours of operation and other information which relates to the generation of waste. Such reports may also include the chemical constituents and quantity of liquid materials stored on site even though they are not normally discharged.

4.2 Records and Monitoring.

a. All users who discharge or propose to discharge wastewaters to the treatment works shall maintain such records of production and related factors, effluent flows and pollutant amount or concentration as are necessary to demonstrate compliance with the requirements of these rules and regulations and any applicable State or Federal pretreatment standards or requirements.

b. Such records shall be made available upon request by the MLTMUA. All such records relating to compliance with pretreatment standards shall be made available to officials of the NJDEP and/or the EPA upon demand. A summary of such data indicating the user's compliance with these rules and regulations shall be prepared and submitted to the Executive Director as provided in Section 4.1. All records shall be retained by the discharger as directed. Industrial/Commercial dischargers may be required, at the discretion of the MLTMUA, to install a composite sampler at his/her own cost and expense to facilitate the accurate observation, sampling and measurement of wastes. Such equipment shall be maintained in proper working order and kept safe and accessible at all times.

c. Whether constructed on public or private property, the monitoring facilities shall be constructed in accordance with

MLTMUA requirements and all applicable construction standards and specifications. Plans and specifications for all such work will be submitted to the Executive Director for approval prior to construction.

4.3 Inspection, Sampling and Analysis.

When required by the participant or the MLTMUA, the owner of the property serviced by a building sewer carrying industrial wastes shall install a suitable control manhole together with such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling and measurement of the wastes. Such manhole or other appurtenances, when required, shall be accessibly and safely located and shall be constructed in accordance with plans approved by the participant and the Authority. The manhole shall be installed by the owner at his expense and shall be maintained by him so as to be safe and accessible at all times.

a. Representative sampling point. All users proposing to connect to or continue to discharge to any part of the treatment works must make available a sampling point representative of the discharge which is acceptable to, and approved by the Executive Director. This point must be available to the POTW, the NJDEP or EPA for purposes of conducting sampling inspections, compliance monitoring and/or metering operations.

All measurements, tests and analyses of the characteristics of waters and wastes to which reference is made in these rules and regulations shall be determined in accordance with the latest edition of the Standard Methods for the Examination of Water and Wastewater, published by the American Public Health Association, and shall be determined at the control points provided. In the event that no special control point has been required, the control point shall be considered to be the nearest downstream manhole in the public sewer to the point at which the building sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb and property.

b. Compliance Determination. Compliance determination by the MLTMUA, the Commissioner, and/or the Regional Administrator, with respect to Section 2 prohibitions and limitations, shall be made on the basis of either instantaneous grab samples or 24 hour composite samples of wastewater, or as otherwise may be determined by the NJDEP or the EPA.

c. Analysis of Industrial Wastewater. Laboratory analyses of industrial wastewater samples shall be performed in accordance with "Standard Methods for the Examination of Water and Wastewater", most current edition, published jointly by American Public Health Association, American Water Works Association and the Water Pollution Control Federation; EPA "Methods for Chemical

Analysis of Water Wastes", EPA 600/4-79-020; and EPA "Guidelines Establishing Test Procedures for the Analysis of Pollutants" published in the Federal Register, Vol. 41, No. 232, 2/1/76 and subsequent revisions. Analysis of those pollutants not covered by the publications referred to above shall be performed in accordance with procedures approved by the MLTMUA.

d. Sampling Frequency. Sampling of industrial wastewater for the purpose of compliance determinations with respect to Section 2 prohibitions and limitations will be done at such intervals as the MLTMUA, the Commission, and/or EPA Regional Administrator may designate. However, it is the intention of the MLTMUA to conduct compliance sampling or to cause such sampling to be conducted, at any time, for all significant industrial/commercial users but at least once in every one (1) year period.

4.4 Annual Public Notification.

The MLTMUA shall annually publish in its official newspaper, a list of the users which, during the previous 12 months, were significantly violating (as defined by 40 CFR 403.8(f)(2)(vii)) applicable Categorical Pretreatment Standards or other pretreatment requirements. The notification shall also summarize any enforcement actions taken against the user(s) during the same 12 months.

4.5 Confidential Information.

Information and data on a user obtained from reports, questionnaires, applications, permits and monitoring programs and from inspections shall be available to the public or other governmental agency without restriction unless the user specifically requests and is able to demonstrate to the satisfaction of the MLTMUA that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets of the user.

When requested by the person furnishing a report, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available upon written request to the EPA and/or the NJDEP for uses related to these rules and regulations, the NJPDES and/or the State or Federal Pretreatment Program; provided, however, that such portions of a report shall be available for use by the State in judicial review or enforcement proceedings involving the person furnishing the report. Wastewater constituents and characteristics will not be recognized as confidential information.

Information accepted by the MLTMUA as confidential, shall not be transmitted to any governmental agency by the MLTMUA until and unless a ten (10) day notification is given to the user.

5. - INDUSTRIAL DISCHARGE PERMIT SYSTEM.

Any person desiring to make a connection to the sewerage system or desiring to increase or otherwise change the composition of industrial process wastewater shall apply to the MLTMUA for an Industrial Discharge Permit in accordance with the requirements of these rules and regulations and in accordance with an application form approved by the MLTMUA. No person shall discharge, cause to be discharged or allow discharge of industrial wastes into the sewerage system without first having obtained a permit to do so from the MLTMUA.

In violation thereof, said person is subject to enforcement procedures (Section 6) and/or penalties and costs as provided by Section 7.

Where in the opinion of the MLTMUA, sewage and other wastes have a deleterious character or adversely affect the treatment processes the MLTMUA reserves the right to surcharge the person causing, allowing or otherwise permitting the discharge thereof into the sewerage system the added operating and treatment costs occasioned thereby and may terminate service to said person and/or require such sewage and wastes be treated by said person to remove or neutralize the objectionable substances or unduly high concentrations of substances before discharge into the system.

6.- ENFORCEMENT PROCEDURES.

6.1 Harmful Contributions.

The MLTMUA may suspend the wastewater treatment service and/or an Industrial Discharge Permit when such suspension is necessary in the opinion of the MLTMUA, in order to stop an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health and welfare of persons, to the environment, causes interference to the POTW or causes the MLTMUA to violate any condition of its NJPDES permit. Any person notified of a suspension of the wastewater treatment service shall immediately stop or eliminate the contribution. In the event of a failure of the person to comply voluntarily with the suspension order, the MLTMUA shall take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the POTW system or endangerment to any individuals. The MLTMUA shall reinstate the wastewater treatment service upon proof of the elimination of the noncomplying discharge. A detailed written statement submitted by the user describing the causes of the harmful contribution and the measures taken to prevent any future occurrence shall be submitted to the MLTMUA within fifteen (15) days of the date of occurrence.

6.2 Termination of Service.

Any user who violates the following conditions of these rules and regulations, or applicable State and Federal regulations, is subject to having his/her service terminated in accordance with the procedures of this section as follows:

a. Failure of a user to factually report the wastewater constituents and characteristics of his discharge;

b. Failure of the user to report significant changes in operations, or wastewater constituents or characteristics;

c. Refusal of reasonable access to the user's premises for the purpose of inspecting or monitoring;

d. Violation of provisions of these rules and regulations.

6.3 Notification of Violation.
Whenever the MLTMUA finds that a person has violated or is violating these rules and regulations, or any prohibition, limitation or requirement contained herein, he/she may serve upon such person a written notice stating the nature of the violation and providing a reasonable time, not to exceed thirty (30) days, for the satisfactory correction thereof.

6.4 Show Cause Hearing.

a. If the violation is not corrected by timely compliance, the MLTMUA may order a person who causes or allows an unauthorized discharge to show cause before the MLTMUA why service should not be terminated. A notice shall be served on the offending party, specifying the time and place of a hearing to be held by the MLTMUA regarding the violation and directing the offending party to show cause before the MLTMUA why an order should not be made directing the termination of service. The notice of the hearing shall be served personally or by registered or certified mail, return receipt requested, at least ten (10) days before the hearing. Service may be made on any agent or officer of a corporation.

b. The MLTMUA may itself conduct the hearing and take the evidence or designate any of its members or any officer or employee of the MLTMUA to:

1. Issue, in the name of the MLTMUA, notices of hearings requesting the attendance and testimony of witnesses and the production of evidence relevant to any matter involved in any such hearings;

2. Take the evidence;

3. Transmit report of the evidence and hearing, including transcripts/records and other evidence, together with recommendations to the MLTMUA for action thereon.

c. At any public hearing, testimony taken before the MLTMUA or any other person designated by it, must be under oath and recorded either by a hearing officer in a summary manner or stenographically. In the latter case, the transcript, so recorded, will be made available to any member of the public or any party to the hearing upon payment of the usual charges therefor.

d. After the MLTMUA has reviewed the evidence and recommendation of the hearing officer, it may issue an order to the party responsible for the discharge directing that, following a specified time period, the sewer service be discontinued unless adequate treatment facilities, devices or other related appurtenances are properly operated, and such further orders and directives as are necessary and appropriate.

6.5 Legal Action

Any discharge in violation of the substantive provisions of these rules and regulations or an Order of the MLTMUA shall be considered ground for legal action. If any person discharges sewage, industrial wastes or other wastes to the treatment works contrary to the substantive provisions of these rules and regulations or any Order of the MLTMUA, the MLTMUA shall commence an action for injunctive relief and appropriate legal damages in the Superior Court of this County.

7. - PENALTIES, COSTS.

7.1 Fines and Expenses.

Any person who is found to have violated an Order of the MLTMUA or who willfully or negligently failed to comply with any provisions of these rules and regulations, and the orders, rules and regulations issued hereunder, shall be fined in accordance with the Rules and Regulations of the MLTMUA for each offense. Each day on which a violation shall occur or continue shall be deemed a separate and distinct offense. In addition to the reasonable attorney's fees, court costs, court reporter's fees and other against the person found to have violated these rules and regulations issued hereunder.

7.2 Falsifying Information.

Any person who knowingly makes any false statements, representation or certification in any application, record, report, plan or other document filed or required to be maintained pursuant to these rules and regulations, or who falsifies, tampers with or knowingly renders inaccurate any monitoring device or sampling methodology required under these rules and regulations, shall upon conviction, be punished by a fine or imprisonment or both in accordance with the Rules and Regulations

8. - FEES. Visit the website for updated charges, fees, costs

It is the purpose of this section to establish fees for users of the MLTMUA wastewater disposal system for activities not included in the MLTMUA's annual operating budget. The applicable charges or fees shall be set forth in the MLTMUA's schedules of charges and fees.

8.1 Charges and Fees.

The MLTMUA may adopt charges and fees which may include:

a. fees for reviewing accidental discharge procedures and construction and the resolution or elimination thereof;

b. fees for filing appeals:

c. fees for consistent removal (by the POTW) of pollutants otherwise subject to Federal Pretreatment Standards;

d. other fees as the MLTMUA may deem necessary to carry out the requirements contained herein.

These fees relate solely to the matters covered by these rules and regulations and are separate from all other fees chargeable by the MLTMUA.

9. SEVERABILITY.

If any provisions, paragraph, word, section or article of these rules and regulations is invalidated by any court of competent jurisdiction, the remaining provisions, paragraphs, words, sections and articles shall not be affected and shall continue in full force and effect.

10.- CONFLICT.

All other rules and regulations, and parts of other rules and regulations, inconsistent or conflicting with any of these rules and regulations are hereby repealed to the extent of such inconsistency or conflict.

11. - EFFECTIVE DATE.

These rules and regulations shall be in full force and effect immediately after adoption by the Mount Laurel Township Municipal Utilities Authority. (Originally approved in September 1991 by Resolution 1991-33.)

SECTION V

WATER AND SEWER MAIN EXTENSIONS

A. General

In the event that extensions or improvements of the MLTMUA's water and/or sanitary sewer system or facilities are necessary to provide service to an applicant, it shall be the applicants obligation to make such extensions or improvements at his/her own expense.

The MLTMUA shall determine the feasibility of the extensions or improvements. Any such determination by the MLTMUA shall be subject to the availability of an adequate supply of water and/or the availability of sufficient capacity of the sanitary sewer system to service the proposed construction, development or improvement. Any such application for extensions or improvements shall be considered by the MLTMUA in light of its available sewerage capacity at that time, any alternative treatment and disposal methods for the proposed additional wastewater flows of the applicant, any operating mandates or restrictions imposed by law or responsible governmental agencies, and any other factors existing at that time affecting the MLTMUA's ability or responsibilities to provide adequate sewerage service to its customers or the inhabitants of Mount Laurel Township.

The MLTMUA shall have the sole and exclusive right to determine size, design, construction and operation of any such extension(s) or facilities, subject to the regulatory requirements promulgated by federal, state, county or local agencies having jurisdiction and/or approval authority over such extensions or facilities.

Any new subdivision, housing development, commercial or industrial development or project requiring main extensions must obtain approval from the applicable Mount Laurel Township Governing Agencies, such as the planning board, zoning board and/or the Mount Laurel Township Council.

Upon completion and acceptance of any such main extensions, the mains shall become the property of the MLTMUA for operation and maintenance purposes. All necessary deed and easements required for the operation and maintenance of the mains and/or facilities shall be turned over to the MLTMUA prior to final acceptance.

B. **Cost reimbursement for water and sewer main extensions. (Established by Resolution No. 1988-23) See Appendix D.**

SECTION VI

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SECTION VII Visit the website for updated charges, fees, costs

ENFORCEMENT OF RULES AND REGULATIONS

A. In the event of any violation of the Rules and Regulations of this Authority or of any improper or unauthorized use of any portion of the water system or sewer system by any user, then the user shall, in the discretion of the Authority, be fined for each violation or improper or unauthorized use. Each action constituting a violation of improper or unauthorized use, as well as each property affected by the violation or improper or unauthorized use, as well as each day that the violation of improper or unauthorized use exists, shall be counted as separate violations for the purposes of determining the fine to be imposed.

B. All fines shall be paid within 15 days from the date that the owner is notified in writing of the violations charged and the fine to be imposed. In the event that any person wishes to contest the violation of the fine imposed, the person aggrieved must file with the Authority within 15 days of receipt of notification of the violation and fine imposed, a written notice that the violation and fine be contested. A hearing shall thereafter be scheduled before the Authority at which time the executive director or his designee as well as the person aggrieved or his attorney, may present evidence regarding either the violation or the fine imposed. The fine, if any, that is imposed by the Authority after the hearing shall be paid within 15 days after the person aggrieved receives written notice of the decision of the Authority.

C. In the event that the fine is not paid as required under these Rules, then the Authority, in its discretion, may terminate all water and sewer services to the user and may declare all agreements or contracts with the user null and void and of no force and effect.

D. The penalties imposed in this section shall be cumulative to the penalties described in other sections of these Rules and Regulations and to the other remedies afforded to the Authority by statute.

E. Plumbers, contractors or builders, working in Mt. Laurel Township are subject to fines and penalties as described in the MLTMUA Rules and Regulations; if said Rules and Regulations are not adhered to, subsequent violations can result in the loss of permission to do work in said township for a minimum period of thirty (30) days to an indefinite period of time.

F. Any person found guilty of violating any provision of the Rules and Regulations shall be subject to a maximum fine of:

$ [redacted].00 for the first offense
[redacted].00 for the second offense
[redacted]00 for the third offense
[redacted].00 for the fourth offense

MOUNT LAUREL TOWNSHIP
MUNICIPAL UTILITIES AUTHORITY (MUA)

RATE SCHEDULE
Effective October 1, 1995

WATER & SEWER SERVICE RATES

SCHEDULE I

Visit the website for updated charges, fees, costs

All bills for both water and sewer service are made up of a quarterly customer charge and a quarterly volume charge, except for [B irrigation customers who will be charged only the volume charge. The minimum bill is the customer charge plus minimum volume charge.

The customer charge is made up of indirect charges related to meter readings, billing services, accounting services, maintenance of meters, etc. These charges are unrelated to the volume charge.

The volume charge is made up of direct charges related to supplying or treating the volume consumption such as personnel, chemicals, repairs, maintenance, electricity, etc.

A. CUSTOMER CHARGE PER QUARTER

Water Service	Sewer Service
Meter Size	Meter Size
5/8", 3/4"	5/8", 3/4"
1"	1"
1-1/4"	1-1/4"
1-1/2"	1-1/2"
2"	2"
3"	3"
4"	4"
6"	6"

SCHEDULE II Visit the website for updated charges, fees, costs

B. VOLUME CHARGE

Water Service

1. Residential Customers

- [redacted] per 1,000 gallons up to 30,000 gallons.
- [redacted] per 1,000 gallons over 30,000 gallons.

2. Non-Residential Customers

- [redacted] per 1,000 gallons up to 30,000 gallons.
- [redacted] per 1,000 gallons over 30,000 gallons.

3. Irrigation Metered Customers

- No customer charge
- [redacted] per 1,000 gallons for all water used.

Sewer Charge (based on water consumption)

1. Residential Customers

- [redacted] per 1,000 gallons up to a maximum of 20,000 gallons.

2. Non-Residential Customers

- [redacted] per 1,000 gallons for all water used.

FIRE SERVICE

Public Fire Service Annual rate charged for each public hydrant	$ [redacted]
Private Fire Service (Residential and Commercial) Annual rate based on size of connection line:	
3" inches or smaller	$ [redacted].00
4"	$ [redacted].00
6"	$ [redacted].00
8"	$ [redacted].00
10"	$ [redacted].00
12"	$ [redacted].00

LOW INCOME SENIOR CITIZENS DISCOUNT

A low income senior citizens discount of 50% will apply to sewer charges only. Seniors must meet certain income and age or disability standards as defined under "N.J.S.A. 54:4-8:40 et seq". This calls for an annual income not to exceed $10,000, excluding certain Social Security, Railroad and Federal and State pension benefits and being at least 65 years old or determined to be totally and permanently disabled. Those seniors qualifying for the $250 property tax deduction with the Mt. Laurel Tax Assessors Office will automatically qualify, providing they submit the proper application to the M.U.A. Please call the MUA to register. In addition, any seniors not paying property taxes directly but owning their property, can qualify for the discount providing the following conditions are met:

I) Dwelling unit is separately metered and billed by the MUA.
II) Income and age or disability standards are met as described above.
III) Property is deeded in the name of the applicant.

WELL WATER SUPPLY

Residents having a sewer account with the MUA that are supplied with water from wells, can install a water meter under the regular charges and fees for meters and will be charged for sewer services at regular customer and volume charges set forth above. For those well water customers choosing not to install water meters, the quarterly sewer charge will be the customer charge of $[redacted] per quarter and a volume charge based on [redacted] gallons per quarter.

SCHEDULE III Visit the website for updated charges, fees, costs

CONNECTION FEES

The initial fee for the right to connect directly or indirectly to the Authority's potable water system and/or sanitary sewer system, shall include a connection charge.

RESIDENTIAL DWELLING UNITS

One family, two family, three family, garden, high rise, apartments, trailers.

CLASS I	WATER	$ [redacted].00
	SEWER	[redacted].00

A dwelling unit which has any number of bedrooms and more than 1,000 sq. ft.

CLASS II	WATER	$ [redacted].00
	SEWER	[redacted].00

A dwelling unit which has not more than two (2) bedrooms nor more than 1000 sq. ft.

CLASS III	WATER	$ [redacted].00
	SEWER	[redacted].00

A dwelling unit which has not more than one (1) bedroom nor more than 800 sq. ft.

CLASS IV	WATER	$ [redacted]00
	SEWER	[redacted].00

Boarding home, nursing home, hospital, hotel or motel (per unit)

LOW OR MODERATE INCOME UNIT	WATER	$ [redacted]
	SEWER	[redacted]

Low or moderate income unit in an Inclusionary Development

OTHER THAN RESIDENTIAL

All classes of users other than residential shall pay a connection charge based upon their estimated daily average water

usage/sewerage flow as determined by the Authority's Engineer. The charge per gallon per day of water usage will be $[redacted]. The charge per gallon per day of sewage flow will be $[redacted]. In no case shall the connection charge be less than the charge for an equivalent size residential unit.

PAYMENT OF CONNECTION FEES

All connections fees must be paid in full to the MLTMUA prior to the issuance of an MLTMUA release form. the MLTMUA release form is required by the Mount Laurel Township Community Development Department prior to the issuance of a Township Building Permit.

Any developments or projects requiring a NJDEP permit for sanitary sewage capacity shall pay the sanitary sewer connection fee for the capacity for the gallonage to be allocated prior to the approval and submission of the Treatment Works Approval Application by the MLTMUA. Upon issuance by the NJDEP of their permit to construct, the developer has two (2) years to begin construction of the sanitary sewer improvements. If construction work has not started prior to the expiration date of the NJDEP permit, the permit will be cancelled by the MLTMUA. Upon cancellation (for this or any other reason) the MLTMUA will refund 80% of the connection fee paid to the developer. The 20% retained by the MLTMUA is to offset lost service revenue and other miscellaneous expenses over the two year period.

SCHEDULE IV Visit the website for updated charges, fees, costs

CONNECTION FEE DETERMINATION

Residential:

The connection fee for residential dwelling units are based on the total square footage of the dwelling unit and the number of bedrooms. For determination of the connection fee based on size and number of bedrooms, see Schedule III.

Other than Residential:

The connection fee for units classed other than residential, shall be based upon the estimated daily average water usage/sewerage flow. The calculation shall be performed by the MLTMUA based on established NJDEP criteria as follows:

Office Building	[illegible] gallons per day per square foot.
Warehouse Building	[illegible] gallons per day per employee
(without shower)	plus process wastewater.
Stores	[illegible] gallons per day per square foot.
Restaurants:	
Average Restaurant	[illegible] gallons per day per seat.
Bar/Lounge	[illegible] gallons per day per seat.
Fast Food Restaurant	[illegible] gallons per day per seat.

NJAC 7:14A-23.3 will be used for other specialty buildings to determine flow.

For special cases, at the MLTMUA's discretion, historical data may be utilized to determine the appropriate water and/or sewer connection fee.

SCHEDULE V Visit the website for updated charges, fees, costs

MISCELLANEOUS FEES

The following is a list of fees and/or charges as established by the MLTMUA:

1.	Administration Fee For establishing a water and/or sewer account in the name of a new customer, after change of ownership.	$ [redacted]
2.	Water turn on fee - regular hrs.	[redacted]
3.	Water turn off fee - regular hrs.	[redacted]
4.	Turn on fee after hrs. emergency (nights, weekends)	[redacted]
5.	Turn on fee holidays	[redacted]
6.	Reprocessing Charge (check returned) by Bank	[redacted]
7.	Testing and Certification f meters up to 1"	[redacted]
	-1/2"-2" meter testing and certification	[redacted]
	3" or larger (on site testing - all types)	[redacted]
8.	Collection Fee MUA personnel delivery, shut-off notice hanger and collecting payment	[redacted]
9.	Labor charges for MUA personnel per regular business hour per man hr.)	[redacted]
10.	Labor charges MUA personnel after hours and weekends (per man hr.)	[redacted]
	Holidays (per man hr.)	[redacted]
11.	FHA well tests by MUA lab (incl.bacteria)	[redacted]
12.	Bacteria tests by MUA Lab (wells only)	[redacted]
13.	Special handling of accounts for billing - per account - per quarter	[redacted]
14.	Irrigation registration - new accts.	[redacted]
15.	Violations/fines-plumbers/customers	[redacted]
16.	Copy of Rules and Regulations	[redacted]
17.	Copy of MLTMUA Specs.	[redacted]
18.	Charge for missed appointments after first appointment has been missed	[redacted]

PARTS AND SUPPLIES

1.	Rover	$ [redacted] per bottle
2.	P.V.C. Cap (plastic) 4"	[redacted]
3.	P.V.C. Riser (plastic)3' or 4"	[redacted]
4.	Water Box -top & lid only	[redacted]
5.	Water Box -bottom part only	[redacted]
6.	Couplings or collars	[redacted]
7.	Water box (metal) 3" Buffalo style (used for single family homes)	[redacted]

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8.	Water box (metal) Mueller (used for Condo units)	[redacted]
9.	Water box (plastic) 3" Buffalo style	[redacted]
10.	Water box (plastic) 1" Mueller style - does not come in plastic	[redacted]
11.	Water box (longer)- extension piece	[redacted] added to the price of water box
12.	Vent cap and riser 4"	[redacted]
13.	Mushroom cap	[redacted] (if available)
14.	Brass spuds 1/2"	[redacted]
	" " 3/4"	[redacted]
	" " 1"	[redacted]
15.	Meter Couplings 1-1/2" & 2"	[redacted] (Brass)
16.	Water Box Cap (metal)	[redacted]
17.	3/4" curb stop	[redacted]

SCHEDULE VI Visit the website for updated charges, fees, costs

CHARGES FOR MLTMUA PERSONNEL & EQUIPMENT

1. Plant Labor and Material

a) Plant labor shall be charged at the hourly rate in effect at the time that labor is performed, plus 40% for fringe benefits and overhead.

b) Materials, including water meters supplied, shall be charged at the cost of said materials to the MLTMUA, plus 25% for overhead and handling.

	Per Hour
2. Sewer jet truck with operator	$[redacted]00
3. Combination vacuum and jetter truck w/operator	$[redacted].00
4. CCTV Inspection truck with operator	$[redacted]00
5. Backhoe with operator	$[redacted].00
6. Support vehicles i.e., pickup truck, van & cars	$[redacted]00
7. Plunging sewer vents due to customer plumbing problems (per man hr.)	See schedule V for applicable charges

All portable equipment i.e., pumps, generators, lights, tools, safety equipment, barricades, etc., are included in the above.

SCHEDULE VII Visit the website for updated charges, fees, costs

COSTS FOR TEMPORARY WATER OR SEWER SERVICE FOR CONSTRUCTION AND RELATED ACTIVITIES. ONLY UNDER EXTREMELY SPECIAL CIRCUMSTANCES WITH PRIOR PERMIT AND APPROVAL OF THE MOUNT LAUREL TOWNSHIP MUNICIPAL UTILITIES AUTHORITY i.e. NEW JERSEY-AMERICAN WATER COMPANY FOR INSTALLATION OF THE TRI-COUNTY PIPELINE.

Size of Meter	Deposit	Plus Cost per 1000 Gallons (1.84 per) (According to Schedules I and II Non-Residential)
5/8 x 3/4"	$ [illegible]	+ [illegible] (non-refundable)
1"	[illegible]	+ [illegible] (non-refundable)
2" (hydrant meter)	[illegible]	+ [illegible] (non-refundable)

The charges for such water service shall be billed and paid monthly and only hydrants, fixtures or appurtenances, designated by the authorized representative of the MLTMUA, shall be used for this purpose.

Any special tools required to operate such hydrants, fixtures or appurtenances will be returned by the customer upon completion of the job, to the MLTMUA in good condition. Any damages to such tools, hydrants, fixtures, meters or appurtenances shall be paid for by the customer as determined by the MLTMUA, before any deposits are refunded or any permanent service is initiated.

The MLTMUA reserves the right to discontinue any temporary service where, in the opinion of the MLTMUA, the operation or maintenance of this temporary service will result in damage to the MLTMUA systems or presents a hazard to the public health and welfare.

The above mentioned may be done only by special permit with the MLTMUA. At the present time (1996) water is only allowed to be drawn from the hydrant in front of the M.L.T. MUA's water treatment plant on Elbo Lane in Mt. Laurel. Opening a hydrant in any other area of Mt. Laurel or opening one without a permit, is just cause for fines of up to $[illegible].00 per occurrence to be imposed.

APPENDIX A

OUTSIDE MLTMUA SERVICE AREA POLICY

The MLTMUA does not consider that it has the duty, responsibility or obligation to provide water and sanitary sewer services to residents or businesses of other municipalities. The MLTMUA is a public agency established by Mount Laurel Township to provide water and sanitary sewer services to the residents and businesses located within the boundaries of Mount Laurel Township.

There may, however, be situations where the MLTMUA, in its sole discretion, determines that water or sanitary sewer service may be extended to customers outside the township. It is intended that these situations shall be rare and that any such extensions shall be undertaken only where the facts are compelling. Such extensions will be considered only when it is determined that they will not adversely affect the availability of a safe, adequate and dependable water supply or the capacity of the wastewater treatment facilities. In addition, extensions will be approved primarily where necessary, to provide services to existing residences or commercial facilities to relieve quality or supply problems, rather than to promote new construction.

APPENDIX B

WATER CONSERVATION MEASURES

1. It is the policy of the MLTMUA to encourage water conservation by its customers. To that end, the MLTMUA will assist customers with general recommendations on how to conserve water.

The purchase and installation of commercially available water saving devices is at the option of the customer. The MLTMUA declines to accept any responsibility for any of these products installed by the customer.

At times it may be necessary to restrict or curtail water service and supply due to regulatory restrictions, governmental proclamations of emergency conditions or limitations on the water supply of the MLTMUA.

2. The following ordinance was adopted by Mount Laurel Township:

ARTICLE II
[Adopted 12-19-77 as Ord. No. 1977-18]

151-3. Prohibited use during emergency situations.

In the event of a declaration by the Mount Laurel Township Municipal Utilities Authority of an emergency situation with respect to the availability of potable water from its water distribution system, it shall be unlawful for any person or corporation that is a customer of said Authority for water services, after receiving actual or constructive notice of said declaration, to use water from the distribution system of said Authority for the purposes of watering lawns or gardens, washing motor vehicles or filling swimming pools.

151-4. Limited use during periods of low water pressure.

In the event of a declaration by the Mount Laurel Township Municipal Utilities Authority of an existing or anticipated state of low water pressure in the distribution system of said Authority, it shall be unlawful for any person or corporation having an address ending in an odd numeral, or in the event there is no numeral, using lot number, after receiving actual or constructive notice of such declaration, to use water from the distribution system of said Authority for the purposes of watering lawns or gardens, washing motor vehicles or filling swimming pools on other than an odd date, and it shall be unlawful for any person or corporation having an address sending in an even numeral, or in the event there is no numeral, using the lot number, to use water from the distribution system of said Authority for the purpose of watering lawns or gardens, washing motor vehicles or filling swimming pools on other than an even date.

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151-5. Violations and penalties. [1977-18 Amended 10-17-83 by Ord. No. 1983-31; 10-1-34 by Ord. No. 1984-33]

Any person or corporation who violates any provis of this Article may be fined, in the discretion of the Municipal ge, up to one thousand dollars ([redacted]) or imprisoned ninety (9 days in jail, or both.

a. The first violation will be considered a warning.

b. Any subsequent violations will come with a fine of $[redacted] or higher, (see Section VII).

c. In the event a customer continues to violate the provisions of this rule, the water service to that customer's property may be discontinued by the Authority for the duration of the emergency or state of low water pressure. The customer is also subject to a $[redacted] fine and/or imprisonment for up to 90 days.

APPENDIX C

TECHNICAL SPECIFICATIONS

FOR

WATER DISTRIBUTION

AND

SANITARY SEWER SYSTEMS

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PREFACE TO SPECIFICATIONS

1.0 PURPOSE AND SCOPE

The purpose of this document is to set forth the rules, regulations and standards to guide Developers and Builders in the service area of the Mount Laurel Township Municipal Utilities Authority (hereinafter called the AUTHORITY), so as to promote the public health, safety, convenience, and general welfare of the municipality. These rules and specifications shall be administered by the AUTHORITY to insure the orderly growth, development, and construction of both the water distribution and sanitary sewer systems, in accordance with the requirements of the New Jersey Department of Environmental Protection and of the AUTHORITY.

These specifications are addenda to the regularly adopted rules and regulations of the AUTHORITY. They supersede and compliment all prior rules and regulations. Any alleged conflict between any of the articles or paragraphs or rules and regulations of the AUTHORITY will be interpreted by the AUTHORITY and the AUTHORITY'S interpretations and ruling shall be final. These regulations, administered by the AUTHORITY, are minimum requirements. They are intended to apply to the usual conditions encountered during design and construction. These specifications are subject to amendment for exceptional situations. The AUTHORITY reserves the right to specify greater or less stringent requirements in any case, in their judgment, to be in the best interest of the community.

Prior to commencement of any detailed design for any water main or sanitary sewer system, it is advisable to prepare preliminary reports and plans, and in turn schedule a meeting with the AUTHORITY and/or its ENGINEER for the purpose of review and discussion of the proposal. At this time, the AUTHORITY will make comments and/or provide pertinent data applicable to these plans. The AUTHORITY will provide the forms and information necessary to obtain approval for construction of the new facilities.

The AUTHORITY recognizes the fact that questions may arise during the planning, construction and/or testing phases of water and/or sanitary sewera development that may or may not be covered by specifications, rules or regulations. In these cases, the AUTHORITY will take whatever action is necessary to either clarify the meaning of the specifications or provide direction or information necessary for the

Developer, Builder or Contractor to understand and meet AUTHORITY requirements.

2.0 BONDING REQUIREMENTS

Prior to the onset of any construction of water systems, sewage systems or pumping stations, the developer shall submit Performance Bonds in the full amount, as calculated by the ENGINEER, for review and acceptance. At the Authority's discretion, letters of credits may be posted in lieu of Performance Bonds.

At no time shall any water, sewer or pump station construction take place without approved Performance Bonds or without expressed written approval from the AUTHORITY.

Upon completion of a substantial portion of the work, the developer may request a reduction of the performance bond.

Upon completion of all of the utility work, the developer may request a release of the performance bond. A performance bond shall not be released until all final paving is complete, manholes and valve boxes are brought to grade, and as-built drawings are approved. The AUTHORITY may release the performance bond after a two year maintenance bond is posted in its place. Typically, the two year maintenance bonds required will be for fifteen percent (15%) of the original performance bond amount. Before AUTHORITY release of the maintenance bond, a walk through will be performed and punch list generated.

All items on the punch list must be completed prior to AUTHORITY release of the maintenance bond.

3.0 WATER DISTRIBUTION SYSTEMS

Water mains are installed to provide a means for conveying water from the wells or storage tanks to some distant point where it may be used for human consumption, fire protection, watering of lawns and gardens or for many other purposes. Since this water is used for human consumption, among other things, the necessity for safe potable water is easily recognized.

In order to provide a water distribution system of high reliability, the construction of same must be inspected to insure that all rules and regulations are being met and that workmanship in general meets minimum specifications

requirements. After construction has been completed, all lines must pass a chlorine residual test, a pressure test and a bacteriological test before the line is placed in service.

It shall be the responsibility of the Developer or Owner to maintain these lines after preliminary inspection has been completed and the water mains activated. The AUTHORITY, however, reserves the right to direct the responsible party to have the water mains retested when, in the opinion of the AUTHORITY, the water mains or appurtenances have been subjected to stresses or damage to such a degree that retesting is deemed necessary.

Once all construction has been completed but prior to the AUTHORITY accepting the lines, an inspector from the AUTHORITY will perform a final inspection of all water boxes and valves to see that they are physically sound and to proper grade. All hydrants and valves will be inspected and tested to see that they operate properly and that all valves are accessible. Should any problems be encountered during this inspection, it will be the Developer's or Builder's responsibility to make the necessary repairs and/or replacements.

Hydrant Flow Tests: All hydrant flow tests must be performed by qualified persons using a hydrant wrench. (Pipe wrenches are not acceptable.) The AUTHORITY must be notified a minimum of forty-eight (48) hours in advance of any requested flow tests. Call the water foreman at 609/722-5920 to schedule flow tests. Tests shall be performed Monday to Friday from 8:00 a.m. to 4:00 p.m. The AUTHORITY reserves the right to refuse the authorization of any flow test at any time it deems necessary. The AUTHORITY's ENGINEER shall also be notified of all flow tests to be performed by a Developer or its representative.

Water Main Taps: All wet taps into AUTHORITY water mains require a minimum of forty-eight (48) hour notice to the AUTHORITY and ENGINEER. At its discretion, the AUTHORITY may authorize a main to be taken out of service and a dry tap to be utilized. In that case, it is the responsibility of the Developer or Builder to notify all affected AUTHORITY customers in writing a minimum of forty-eight (48) hours in advance of the temporary discontinuance of service. It shall be the responsibility of the Developer to rectify any and all disturbances or damages to the AUTHORITY customer's systems.

4.0 SANITARY SEWER SYSTEMS

Sanitary sewer collection systems and pumping stations are installed to provide a means of conveying wastewater from its source of origin to a wastewater treatment plant. Wastewater is essentially the water supply of the community after it has been fouled by a variety of uses. Wastewater contains organic materials and numerous pathogenic or disease-causing organisms which must be immediately and safely removed from its source of origin.

In order to provide a wastewater collection system which will function properly for many years, the design must be reviewed, evaluated and approved by the AUTHORITY prior to construction. During the period of construction, the AUTHORITY will perform inspections of all approved sewer systems.

Once all construction has been completed, but prior to the AUTHORITY accepting the lines, the lines will be air tested for infiltration and exfiltration. All lines shall be free and clear of construction debris and/or other matter. If necessary, the lines shall be mandrelled prior to placement in service. Should any problem be encountered during the tests or any other facet of the installation process, it will be the Developer's or Builder's responsibility to make the necessary repairs and/or replacements.

All taps into the AUTHORITY's existing sanitary sewer system require a minimum forty-eight (48) hour notice to the AUTHORITY and ENGINEER.

Pumping Stations: All sewage pump stations shall be tested under the direction of the AUTHORITY and its ENGINEER. All equipment will be tested for operation during low, medium and high flow situations and for operation during a power outage. All pieces of equipment must operate in a satisfactory manner before the pump station can be placed into service. The AUTHORITY, at its discretion, may authorize operation of a pump station prior to completion of the punch list items.

A licensed operator is required for the operation of all pumping stations at all times. If the AUTHORITY authorizes operation of the pump station prior to the AUTHORITY's acceptance and ownership of same, it is the responsibility of the Developer to provide a State licensed pump station operator at all times.

The AUTHORITY will be responsible for and provide operation and maintenance of the pumping station upon release of the

pumping station performance bond. At this time all utilities (electric, telephone, alarms) shall be placed in the AUTHORITY's name. In addition, it is at this time that the developer shall deed the pumping station to the AUTHORITY.

SECTION I

GENERAL SPECIFICATIONS

1.0 PURPOSE AND SCOPE

These specifications are intended as a guide for Developers and Builders within the Township. They are addenda to the regularly adopted rules and regulations of the AUTHORITY, and represent the minimum acceptable requirements. The AUTHORITY reserves the right to specify greater or less stringent requirements in any case, in their judgment, to be in the best interest of the AUTHORITY.

The AUTHORITY recognizes the fact that questions may arise during the planning, construction, and/or testing phases of a project that may or may not be covered by these specifications. In these cases, the AUTHORITY will take whatever action is necessary to either clarify the meaning of the specifications or provide the necessary information for the Builder, Contractor, or Developer to understand and meet the Authority's requirements.

Whenever and wherever the term "Standard Specifications" are used in these specifications, it shall mean the current edition of the New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction.

Whenever and wherever the term "ENGINEER" is used in these specifications, it shall mean the ENGINEER duly appointed by the AUTHORITY.

1.1 GENERAL APPROVAL REQUIREMENTS

The following steps must be completed by the APPLICANT/ DEVELOPER in order to receive water and/or sanitary sewer service from the AUTHORITY:

- Establish an escrow account with the AUTHORITY to cover review, engineering, inspection and legal costs.
- Complete S-1/W-1 forms - applications for sanitary sewer and water service.
- Complete S-2/W-2 forms - service agreements for

sanitary sewer and water service.

- o Complete S-3/W-3 forms - applications for approval of sanitary sewer and water construction plans.
- o Complete S-4/W-4 forms - request for MUA sanitary sewer and water permits.
- o Complete CID1 and CID2 forms - commercial/industrial user form.
- o Obtain NJDEP permits.
- o Provide performance bonds.
- o Pay connection fees.
- o Provide easements and deeds.
- o Submit as-built drawings.

1.2 PERMITS

It is the responsibility of the Developer or Builder to obtain all required permits before the onset of construction. The AUTHORITY will not permit construction of any sanitary sewer facilities without first obtaining a Treatment Works Approval Permit from the NJDEP.

2.0 PRODUCT DATA

2.1 GENERAL

A. Submit to the ENGINEER shop drawings, product data and samples required by the specification sections.

B. All shop drawings, product data and samples shall be reviewed and approved by the Design ENGINEER prior to submission.

C. Schedule submission for shop drawings, product data and samples at least twenty-one (21) days before dates reviewed submittals will be needed.

2.2 SHOP DRAWINGS

A. Original drawings, prepared by Contractor, subcontractor, supplier or distributor, which illustrate some portion of the work; showing fabrication, layout, setting or erection details.

B. Minimum sheet size: 8-1/2" x 11".

C. Present drawings in a clear and thorough manner: Details shall be identified by reference to sheet and detail, schedule or room numbers shown on development plans.

2.3 PRODUCT DATA

A. Preparation:

1. Clearly mark each copy to identify pertinent products or models.

2. Show performance characteristics and capacities.

3. Show dimensions and clearances required.

4. Show wiring or piping diagrams and controls.

B. Manufacturer's standard schematic drawings and diagrams:

1. Modify drawings and diagrams to delete information not applicable to the work.

2. Supplement standard information to provide information specifically applicable to the work.

C. Manufacturer's catalog sheets, brochures, diagrams, illustrations and other standard descriptive data:

1. Clearly mark each copy to identify pertinent materials, products or models.

2. Show dimensions and clearances required.

3. Show compliance with referenced standards.

2.4 SAMPLES

Office samples:

Of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of product or material with integrally related parts and attachment devices.

2. Full rage of color, texture, and pattern.

3. After review, samples will be retained by ENGINEER. Upon completion of the work, Contractor may submit written request for return of samples.

2.5 CONTRACTOR'S RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission.

B. Determine and verify:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

4. Conformance with specifications.

C. Coordinate each submittal with requirements of the work and of the AUTHORITY'S standard details.

D. Contractor's responsibility for errors and omissions in submittals is not relieved by the AUTHORITY or ENGINEER review of submittals.

E. Contractor's responsibility for deviations in submittals from requirements of AUTHORITY'S specifications is not relieved by the AUTHORITY or ENGINEER review of submittals, unless the AUTHORITY gives written acceptance of specific deviations.

F. Notify ENGINEER, in writing at time of submission, of proposed deviations in submittals from AUTHORITY requirements.

G. Begin no fabrication or work which requires submittals

until return of submittals with ENGINEER'S stamp and initials or signature indicating review.

2.6 SUBMISSION REQUIREMENTS

A. Make submittals so as to cause no delay in the work or in the work of any other Contractor.

B. Number of submittals required:

Shop drawings: Submit the number of opaque reproductions which the Contractor requires, plus eight (8) copies, two (2) of which will be retained by the ENGINEER and two (2) by the AUTHORITY.

C. Accompany submittals with transmittal letter, in duplicate, containing:

1. Date of submission and dated of any previous submissions.

2. Project title and number.

3. Contractor's name and address.

4. The number of each shop drawing, product data and sample submitted.

5. Notification of deviations from AUTHORITY requirements.

6. Other pertinent data.

D. Submittals shall include:

1. Date and revision date.

2. Project title and number.

3. The names of:

a. Design ENGINEER

b. Contractor

c. Subcontractor

d. Supplier

e. Manufacturer

f. Separate details when pertinent.

4. Identification of product or materials.

5. Field dimensions, clearly identified as such.

6. Specification section number.

7. Relation to adjacent or critical features of the work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.

9. Identification of deviations from AUTHORITY standards.

10. Identification of revisions on resubmittals.

11. An 8" by 3" blank space for Contractor and ENGINEER stamps.

12. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of the AUTHORITY'S standards.

13. Design Engineer's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of the AUTHORITY'S standards.

2.7 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the ENGINEER and resubmit until approved.

B. Shop drawings and product data:

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.

2. Indicate any changes which have been made other than

those requested by the ENGINEER.

C. Samples: Submit new samples as required for initial submittals.

2.8 DISTRIBUTION

A. Distribute reproductions of shop drawings and copies of product data which carry the ENGINEER stamp of review to:

1. Subcontractors.

2. Supplier.

3. Contractor's file.

B. Distribute samples which carry the ENGINEER stamp of review as directed by ENGINEER.

2.9 ENGINEER DUTIES

A. Review submittals with reasonable promptness.

B. Review for:

1. Design concept of project.

2. Information given in approved plans.

C. Review of separate item does not constitute review of an assembly in which item functions.

D. Affix stamp and initials or signature certifying to review of submittal.

E. Return submittals to Contractor for distribution or resubmission.

3.0 INSPECTIONS

Any work completed or proceeded without inspection and in an unacceptable manner will be considered done at the Developer's or Builder's expense since, by proceeding without inspection they have assumed the burden of proof for acceptability.

3.1 ENGINEER

The ENGINEER'S Field Services Department shall be notified at least forty-eight (48) hours in advance that field services are required. Notification may be made either in writing or verbally, but in either instance, notification must be received by the Field Services Department prior to the said forty-eight (48) hours.

A. Written notification shall be directed to:

Richard A. Alaimo Associates
Field Services Department
200 High Street
Mount Holly, New Jersey 08060

Attention: Chief Field Representative

B. Verbal notification shall be made to the above at:

(609) 267-8310

The request for field services is the direct responsibility of the Developer or Builder and should they neglect to request same (or request same less than forty-eight (48) hours prior to need, and field services cannot be scheduled), all work accomplished without field services will automatically be considered unacceptable. Extreme care should be taken to avoid this situation, since:

1. All construction not accessible for complete visual inspection must be reestablished in such a manner as to allow for same before it will be accepted.

2. All construction which is subject to curing and hardening and/or which must be compacted (e.g. Portland cement concrete, bituminous concrete, backfill, subgrade, etc.) must be tested in such a manner as to allow for complete evaluation before it will be accepted.

3. A complete schedule of the required tests, examinations, etc., required in specific instance will be provided by this office.

3.2 AUTHORITY

The AUTHORITY'S Plant Superintendent shall be notified at

least forty-eight (48) hours in advance that inspection is required. Notification may be made either in writing or verbally, but in either instance, notification must be received prior to the said forty-eight (48) hours.

A. Written notification shall be directed to:

Mount Laurel Municipal Utilities AUTHORITY
1201 South Church Street
Mount Laurel, NJ 08054

Attention: AUTHORITY Superintendent

B. Verbal notification shall be made to the above at:

(609) 234-0062 or (609) 722-5913

The request for inspection is the direct responsibility of the Developer or Builder and should they neglect to request same (or request same less than 48 hours prior to need, and inspection cannot be scheduled), all work accomplished without inspection will automatically be considered unacceptable. Extreme care should be taken to avoid this situation, since:

1. All construction not accessible for complete visual inspection must be reestablished in such a manner as to allow for same before it will be accepted.

2. All construction which is subject to curing and hardening and/or which must be compacted (e.g. portland cement concrete, bituminous concrete, backfill, subgrade, etc.) must be inspected in such a manner as to allow for complete evaluation before it will be accepted.

4.0 TRENCH EXCAVATING, BACKFILLING, AND COMPACTING

4.1 DESCRIPTIONS

A. Description of the work:

Trenching, backfilling, and compaction includes, but is not limited to:

1. Excavation for trenches and trench backfilling;

2. Rough and finish grading of the work; and

3. Furnishing and installing trench stabilization material and select backfill material.

B. Definitions:

1. Trench excavation: Removal and disposal of all material encountered when establishing required grade elevations, including pavements, concrete slabs and other obstructions.

2. Unauthorized excavation: Removal of materials beyond specified subgrade elevations without approval of the ENGINEER.

4.2 MATERIALS

A. Trench backfill material from on-site excavation:

B. All on-site backfill materials shall be subject to the approval of the ENGINEER, and to the following requirements:

1. Free from deleterious substances, stumps, brush, weeds, roots, sod, rubbish, garbage and matter that may decay.

2. Backfill to a height of two feet (2') above the top of pipes, culverts and other structures with material free from stones or rock fragments larger than two inches (2") in greatest dimension.

3. Free of large rocks or lumps that, in the opinion of the ENGINEER, may create voids or prevent proper compaction.

C. Select backfill material: Select backfill material shall be Type I-13. Soil aggregate select backfill materials, when designated, shall conform to Section 901.09 of the Standard Specifications.

D. Broken stone material:

1. Broken stone subbase material under slabs, foundations and structures shall conform to Section 901.04 of the Standard Specifications, and meeting the gradations specified in Table 901-1. Size shall be #5.

2. Trench stabilization material for bedding shall

conform to the above requirements. Size shall be #6.

E. Other materials: All other materials, not specifically described but required for a complete and proper installation shall be as selected by the Contractor and approved by the ENGINEER.

4.3 METHODS OF CONSTRUCTION

A. Requirements of regulatory agencies:

1. All excavations shall be in compliance with Federal Occupational Safety and Health Act (OSHA) and Rules and Regulations of the State of New Jersey Department of Labor and Industry, Bureau of Engineering and Safety, N.J.A.C. 12:180. Failure to comply may result in a cease and desist order for that portion of work.

2. Excavation work shall be in compliance with applicable requirements of other governing authorities having jurisdiction.

B. Reference standards included in this specification section:

1. New Jersey State Highway Department Standard Specifications for Road and Bridge Construction, 1983 (Standard Specifications).

   a. Section 901.03: Aggregate, Coarse

   b. Section 901.04: Broken Stone

   c. Section 901.09: Soil Aggregate

2. American Society for Testing and Materials (ASTM):

   a. D-1556: Density of Soil in Place by the Sand-Cone Method.

   b. D-1557: Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb. Rammer and 18-inch Drop.

   c. D-2049: Relative Density of Cohesionless Soils.

d. D-2922: Density of Soil and Soil Aggregate In-Place by Nuclear Methods (Shallow Depth).

C. Submittals: Pursuant to Section 2.0 of the General Specifications, Product Data.

D. Test reports:

When directed by the ENGINEER, submit test reports on all select backfill material in accordance with the following standards:

Particle Size Analysis of Soils: ASTM D-422.

E. Job Conditions:

1. Existing utilities: Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

2. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by the ENGINEER and then only after acceptable temporary utility services have been provided.

F. Use of explosives: The use of explosives is not permitted unless approved by the ENGINEER.

G. Protection of persons and property:

1. Barricade open excavations occurring as part of this work and post with warning lights as required to protect persons on site. Operate warning lights as recommended by authorities having jurisdiction.

2. Protect trees, shrubs, lawns and other features remaining as part of final landscaping.

3. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

4. In the event of damage, immediately make all repairs and replacements to the approval of the ENGINEER at

no cost to the Owner.

H. Dust control: Use all means necessary to control dust on and near the work if such dust is caused by the Contractor's operations during performance of the work or if resulting from the conditions in which the Contractor leave the site.

I. Weather conditions: Do not place, spread, roll or fill materials during freezing, raining or otherwise unfavorable weather conditions. Do not resume work until conditions are favorable as determined by the ENGINEER.

J. Inspection by Contractor: Examine the areas and conditions under which trenching, backfilling, compacting and grading are to be performance and notify the ENGINEER in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

K. Preparation:

1. Prior to commencement of work, forty-eight (48) hour notification shall be given to the AUTHORITY'S water and sewer department.

2. Prior to commencement of work, establish location and extent of all utilities in the work areas. Maintain, protect as required existing utilities which pass through the work area.

3. Prior to excavation in pavement areas, cut existing pavement vertically with sharp tool on a straight line to the limits of excavation shown on the Plans or as directed by the ENGINEER. Maintain cut straight and neat, or recut and dress as directed by the ENGINEER.

L. Lines and depth:

1. Trenches shall be excavated along the lines and at a depth necessary for laying the pipe to the grade given, as designated by the ENGINEER. Excavation shall not be carried below the required level except where unstable soil is encountered. Whenever excavation has been made below the required level, it shall be replaced with 3/4 inch crushed stone and shall be thoroughly tamped. The ENGINEER shall determine the depth of removal of unstable soil

encountered.

2. Excavation for manholes and other structures shall have a twelve inch (12") minimum clearance and twenty-four inch (24") maximum clearance on all sides. The width of trenches for pipe shall equal pipe outside diameter plus two feet (2') unless otherwise provided by the ENGINEER. Excavations shall be confined within the narrowest possible limit and made as nearly as possible in a vertical line, and any sheathing, shoring, bracing and timbering which is necessary to obtain this result shall be done as hereinafter specified.

3. Preliminary excavation shall be made only to a depth of three inches (3") above the final depth of any trench or other excavations. The remaining depth shall be carefully excavated, shaped, and formed with hand tools immediately preceding laying of pipe or placing concrete. Trench bottoms shall be accurately formed to receive and support the bottom of the barrel of the pipe. Additional excavation shall be made in pipe trenches at the pipe joints and to prevent any possibility of a pipe resting on the bell rather than the barrel.

4. In rock, the bottom shall be excavated six inches (6") below the normal support grade and refilled with compacted granular material.

M. Materials excavated:

1. The materials excavated shall be stored compactly on the side of the trench and kept trimmed to be of as little inconvenience as possible to travel and adjoining properties. All streets shall be kept open for travel unless otherwise directed by the ENGINEER. All bituminous gravel, stone surface, gravel base course and topsoil shall be kept separate from other excavated materials and shall be used as the final layer in the backfill operation where appropriate.

2. Before excavating any existing surface, topsoil shall be stripped to a minimum depth of six inches (6") and stored for reuse as final grade where planting is proposed.

3. The Contractor shall not remove from the site any sand, gravel or other soil excavated from the trench

which may be suitable for backfilling until backfilling is completed.

4. Surplus material remaining after the proper backfilling of trenches shall be used to fill in low areas or where shown on the profiles. Other surplus materials shall be transported and placed by the Contractor, at his expense, at a location within the Township as determined by the ENGINEER.

N. Removal of water:

1. The Contractor shall at all times provide and maintain ample means and devices to promptly remove and disperse all water or sewage entering excavations and structures dry until all work therein is completed.

2. The Contractor shall dispose of the water from the trenches and excavations in a manner satisfactory to the Owner, Developer and/or AUTHORITY inspector, without damage to adjacent property. In no case, shall water or sewage be allowed to enter new lines. Sewage shall not be discharged onto the ground, nor into the storm water system.

3. If groundwater and subsoil conditions along the line of the work are such that the Contractor cannot successfully remove water or provide a stable trench by ordinary trench pumping and bailing, or when necessary to protect the work, workmen, public, under or above ground utilities and structures, pavements and public and private property, the Contractor shall, where designed by the ENGINEER, furnish and provide the necessary equipment, power and labor to employ the well point method of trench dewatering. The well point system or portions thereof shall be removed by the Contractor upon the completion of backfill, and the holes remaining from the points shall be backfilled and thoroughly tamped.

O. Shoring and sheathing:

1. The Contractor shall be responsible for the installation of shoring and sheathing on all faces of the excavation where it is necessary: to insure a suitable, dry, and/or safe excavation, to eliminate settlement of, or damage to structures or items adjacent to the excavation, to preserve the

bearing capacity of the soil, to keep the excavation within the narrowest possible limits, to protect work from damage, and to provide conditions acceptable to the ENGINEER and all interested agencies.

2. Bracing shall be installed so that there is no stress on or displacement of any part of the completed work until the construction thereof has proceeded far enough to provide the necessary strength, as determined by the ENGINEER.

3. Any damage to pipelines, road structures, etc., occurring through settlement, soil pressure, cave-ins, shift of sheathing, or any other causes associated with the Contractor's activities, shall be repaired or the damage items replaced by the Contractor without cost thereof to the AUTHORITY.

P. Backfill and compaction:

1. After each joint has been made, inspected, and approved, backfill shall proceed immediately. The space between the pipe and the bottom sides of the trench shall be backfilled by hand and thoroughly tamped with a light tamper. Fill shall be placed uniformly on both sides of the pipe in six-inch (6") layers using the material obtained from on-site excavating, except use select backfill material where indicated on the Plans or as directed by the AUTHORITY'S inspector.

2. Backfill to a height of two feet (2') above the top of the pipe with earth free from stones, rock fragments, dirt clods or frozen material greater than two inches (2") in largest diameter, and thoroughly tamped.

3. The remainder of the trench shall be backfilled in twelve-inch (12") layers, loose measure, each layer thoroughly tamped. Dampening of the material to be tamped may be required by the ENGINEER.

4. In light soils such as sand, loam, or light gravel, the trench may be backfilled carefully with a front end loader at a maximum rate of one cubic yard per load. Each load shall be placed immediately on the previous load.

5. Backfilling prior to approvals:

a. Any of the work enclosed or covered up before it has been approved will be considered unacceptable.

b. The Contractor shall, at his own expense, uncover all such work for inspection and approval prior to backfilling.

5.0 CONCRETE ENCASEMENT

5.1 DESCRIPTION

Provide concrete encasement at locations described herein, or as directed by the ENGINEER.

5.2 MATERIALS

A. Concrete:

1. Use concrete developing a minimum compressive strength of 4,000 psi at twenty-eight (28) days.

2. Use air-entrained concrete.

B. Cement, aggregates, water and air entrainment methods and materials: Section 914 of the Standard Specifications.

5.3 METHODS OF CONSTRUCTION

A. Reference standards included in this specification section:

New Jersey State Highway Department Standard Specifications for Road and Bridge Construction, 1989 (Standard Specifications):

1. Section 914: Portland Cement, Mortar and Grout Concrete

2. Section 501: Concrete Structures

B. Submittals: Pursuant to Section 2.0 of the General Specifications, Product Data.

C. Certificates: All deliveries of concrete shall be

accompanied by delivery slips, copies of which shall be provided to ENGINEER by Contractor.

D. Location:

1. Notify the ENGINEER when the fol ving conditions are encountered. Subject to the GINEER'S approval, concrete encasement s be provided at these locations. All materials, methods and equipment shall be subject to the approval of the ENGINEER.

   a. At all locations where a proposed sanitary sewer main is located closer than ten feet (10') to a water main (measured horizontally).

   b. At all crossings of sanitary sewer lines and water lines where the vertical separation is less than eighteen inches (18").

   c. At all crossings of sanitary sewer mains and water mains where the sanitary sewer main is located above the water main.

   d. All other locations where the vertical or horizontal separation between proposed and existing utility pipes is less than twelve inches (12").

2. Concrete encasement shall conform to the standard engineering drawings. When a situation is encountered for which there is no detail, concrete encasement shall conform to the following requirements or as otherwise approved by the ENGINEER.

   a. Minimum thickness: Six inches (6")

   b. Length: At utility crossings, extend concrete encasement a minimum of ten feet (10') on both sides of the center line of the crossing. At all other locations, extend concrete encasement until the allowable vertical or horizontal separation between utility pipes is achieved.

E. Performance:

The method of construction for concrete encasement shall conform to Section 501 of the Standard Specifications except as modified by the Supplemental Requirements

below:

Earth cuts may be used as forms provided the horizontal and vertical earth surfaces can be shaped to the proper dimensions.

6.0 AS-BUILT DRAWINGS - MINIMUM REQUIREMENTS

6.1 GENERAL

A. This specification defines the minimum requirements imposed on the Contractor when submitting as-built drawings of water, sewer or force mains and pumping stations.

B. Each submittal shall be transmitted to the AUTHORITY and the ENGINEER.

C. Receipt of as-built drawings in accordance with this section is a requirement of the performance bond release.

6.2 SUBMITTAL REQUIREMENTS

A. GENERAL

1. Submittals shall consist of utilizing the approved drawing set with the design information distinguished from the corresponding as-built information. Methods such as circling or drawing a thin line through the design information shall be utilized. The design and as-built information shall be legible.

2. Each submittal shall consist of two (2) blue line copies of each drawing included in the as-built transmittal.

3. If the alignment of the water main, sewer main or force main has been revised during construction the as-built alignment shall be shown.

4. All titles to easements shall be submitted based on the as-built alignment of the piping.

B. Water Mains:

1. As-built pipe lengths between bends shall be provided.

2. As-built pipe diameter and pipe material shall be provided.

3. All bend angles shall be noted.

4. Approximate elevations of the pipe shall be provided.

5. All hydrants shall be located.

6. All valve sizes shall be shown and valves located using three (3) tie-down dimensions (i.e. measurement from a permanent object; catch basin, manhole, hydrant, road centerline, etc.).

7. All blowoffs shall be located similar to valves.

8. All valve and blowoff locations shall be determined by a licensed surveyor.

9. All curb stops for water services shall be located. Each shutoff shall be clearly identified by the townhouse, condominium, house, office, store, etc. that it services.

10. All concrete cradles and encasements shall be noted.

11. All the above information shall be shown on a plan and profile.

C. Sewer Mains:

1. As-built manhole rim elevations shall be provided.

2. As-built invert elevations of all pipes penetrating each manhole shall be provided.

3. Manhole rim and inverts shall be determined by a licensed surveyor.

4. As-built pipe lengths measured from manhole centerline to manhole centerline shall be provided.

5. As-built pipe slopes shall be calculated by the applicant.

6. As-built pipe diameter and pipe material shall be provided.

7. The as-built length from each lateral connection to

the downstream manhole shall be provided. In addition, the as-built length from the last lateral to the upstream manhole shall be provided.

8. Any lateral deviating from the standard wye connection and 1/4" per foot slope shall be noted.

9. Any lateral left for a future connection shall have the pipe cover and three (3) tie dimensions taken at the end of the lateral (i.e. measurements from a permanent object; corner of house, catch basin, manhole, hydrant road, centerline, etc.).

10. All as-built concrete encasements and concrete cradles shall be noted.

11. All the above information shall be shown on a plan drawing.

D. Force Mains:

1. Approximate elevations at each bend and high point shall be provided.

2. Manufacturer's data on air relief valves, gauges and all valves shall be provided separately.

3. As-built drawings or any air relief and blowoff chambers shall be provided.

4. The as-built pipe length between bends shall be provided.

5. As-built pipe diameter and pipe material shall be provided.

6. All bend angles shall be noted.

7. All the above information shall be shown on a Plan and profile. The profile shall show all crossing utilities location and approximate elevation.

E. Pumping Stations:

1. As-built drawings shall be submitted which indicate any changes from the original design, as approved.

2. Ten (10) copies of manufacturer's operation and maintenance information shall be submitted for all installed equipment.

SECTION II

WATER DISTRIBUTION SYSTEMS SPECIFICATIONS

1.0 GENERAL

1.1 MISCELLANEOUS CONSTRUCTION NOTES

A. Water mains shall be laid in straight lines except when otherwise specifically approved by drawings or directed by the AUTHORITY INSPECTOR. When deviation from a straight line is permitted, the deflection of each joint shall not exceed the manufacturer's recommended maximum for the type of joint and size of pipe being installed. Pipe shall be laid with at least four feet (4') of cover over the pipe to proposed finished grade or to the future finished grade when such is lower. Along extensions of roads which are unimproved, the pipe shall be laid with at least five feet (5') of cover over the top of the pipe to the existing grade. The depth of pipe may be increased locally to pass obstructions. Grade changes shall be accomplished by fittings and/or dividing the necessary deflection among several joints as approved by the inspector.

B. Special care shall be exercised to remove all dirt, stones and other materials from each pipe as it is laid, and to prevent any such materials from entering the pipeline. The Contractor shall see that the entire line is maintained absolutely clean on the inside and that all valves and hydrants are clean and in good working order when installed. Open ends shall be adequately protected at all times and shall be securely sealed with approved plugs whenever work is stopped for any reason whatsoever. After removing a plug, the interior of the pipeline shall be inspected and cleaned before resuming pipe laying operations.

C. Before placing each length of pipe, the Contractor shall carefully examine it for breaks, cracks or other defects and shall discard any section which appear in any work to be defective. All pipe and fittings shall be handled and installed with care to avoid damage.

D. Each section of pipe shall be solidly bedded in the trench bottom and shall be supported for its full length.

E. Before making a connection, the ends of the pipes and all joint members shall be thoroughly cleaned of loose excess coating and lumps. All mating shall be done in strict accordance with the manufacturer's recommendations and the requirements of the ENGINEER.

F. The Contractor shall do all necessary pipe cutting and shall locate valves, fittings and fire hydrants in the exact positions indicated on approved drawings. He shall provide and use cutting tools of an approved type and in good order, so as to insure clean, square cuts to exact measurements.

G. When and if required and/or necessary, all commercial, industrial or institutional meter pits shall be approved by the AUTHORITY. It should be noted that the AUTHORITY requires that all meters be installed inside a building; therefore this section shall apply for extenuating circumstances at the discretion of the AUTHORITY. The pits, as a minimum, shall meet the following requirements:

1. Waterproof

2. Frost proof

3. Construct with sump

4. Constructed with conduit in place for installation of sump pump is required by the AUTHORITY.

5. The minimum clearance from shutoff valves to end of pit shall be twelve inches (12").

6. The minimum sidewall clearance shall be twenty-four inches (24").

7. Hinged, locking access hatch shall be provided for the entire length and width of pit. The hatch shall be constructed of aluminum and withstand a loading of 500 lbs./S.F. The hatch shall be a minimum of thirty-two inch (32") diameter clear opening, as manufactured by Bilco or an approved equal. All hatches shall be provided with a ladder up.

H. When and if required and/or necessary, all irrigation or swimming pool meter pits shall be approved by the AUTHORITY. The pits, as a minimum, shall meet the following requirements:

1. Waterproof.

2. Frost proof.

3. Constructed with piping in place for installation of meter.

4. Piping shall be supplied with shutoff and check valves.

5. A minimum eight inch (8") of ¾" aggregate is provided for drainage.

6. Pursuant to the AUTHORITY standard details.

7. If necessary the irrigation/swimming pool meter may need to be removed by the property owner each winter to protect the meter from freezing. When reinstalling meters, check that the arrow on the meter is facing in the direction of flow of water.

I. WATER METERS AND CURB BOXES

1. All meters shall be placed indoors in a utility area with a remote readout to outside.

2. The AUTHORITY will need at least two (2) working days notice for the building to be pre-wired for meters. This will be done prior to sheet rocking.

3. The AUTHORITY must have one (1) additional day notice for setting the meter. When calling in a request for service, provide the following information:

   a. Meter location (address)

   b. Permit number

4. The plumber will have installed the required size adapters and spuds, leaving space for the meters as follows:

1/2 inch meter	7½"
5/8 x 3/4 inch meter	7½"
1 inch meter	10-3/4"
1½ inch meter	13"
2 inch meter	17"

5. The meters are to be uniformly set. Water services

will include a curb stop and box at the curb line, a valve on either side of the meter for isolating purposes and a backflow preventer.

6. When a meter is to be installed at an outside location, an approved meter pit as outlined in G. or H. above must be used. AUTHORITY personnel will set, test and calibrate meters.

7. The AUTHORITY expects all lines to be protected from inclement weather. The water valve at the curb is to be shut off until AUTHORITY personnel determine the line can become active.

8. All water meters installed inside buildings shall be located in a heated area. The meter shall be installed, with the following minimum clearances: four inches (4") free space from any wall, eight inches (8") from the floor. The meter face should be easily seen and must have eighteen inches (18") of free area above. This shall include the required isolation valves and fittings. Meter installation against outside walls shall not be permitted.

9. Curb box shall be placed in an area between customer's sidewalk and curb. Distance from curb shall be eighteen (18") inches. Box lid shall be above finished grade, chimney shall be in line with valve head. For those areas without curbing, curb boxes shall be placed eighteen (18") inches behind sidewalk. Valves will be buried at a minimum of three feet (3') and a maximum of five feet (5'). Curb stops for multiple dwelling units shall be as shown on the standard details.

10. Remote readout wiring from water meters, located in centrally located interior rooms and running to an exterior wall, shall be encased in rigid metallic or plastic conduit having an interior diameter of 1.5 times the diameter of the wire leads. The conduit shall be installed using gentle sweeps at all bends.

11. On multiple type dwelling and slab units a conduit will be installed by the builder or developer between units, from meters to outside remote read-outs. The conduit bends shall be gradual to facilitate installation.

12. Tapping inspections shall take place during normal business hours Monday thru Friday. Forty-eight

(48) hours notice shall be given.

13. No utility valves shall be installed under or in concrete or asphalt.

14. Meters are to be placed only in utility areas. The AUTHORITY shall not be responsible for damages caused by leaking meters if this requirement is not followed.

J. FIRE SERVICE METERS

1. Commercial: All commercial fire services for fire sprinklers or fire service connections require installation of a detector check meter with bypass meter. If the fire sprinkler system contains anti-freeze or some other chemical, then a reduced pressure zone (PRZ) device will be required.

   The fire service meter shall be installed inside the building and shall be provided by the building owner.

2. Residential:

   a. Condominium:

      1) Provide a two inch (2") or required size, separate fire only service.

      2) Install a buffalo-type curb box with a standard size cover marked "FIRE SERVICE".

      3) AUTHORITY will set a two inch (2") (or required size) water meter in the hot box. Hot box size shall accommodate the AUTHORITY standards for meter spacing requirements.

      4) Plumber shall supply isolation valves on either side of the meter.

      5) Plumber may utilize an anti-freeze system for the condo units as long as a level 3 backflow preventer is installed (i.e. PRZ by Watts, Model 909, 009). The AUTHORITY is not certified as an inspector for backflow preventers. The owner shall be responsible to have the backflow preventer annually certified and inspected.

6) Hot box shall be secured; the AUTHORITY shall be provided with one key (for meter servicing). A remote readout (touch pad) shall be affixed to the exterior of each hot box.

7) Maintenance of the fire service from the water main to the building shall be the responsibility of the owner (not the AUTHORITY).

8) Tests and maintenance of the entire fire service system shall be the responsibility of the OWNER.

b. Townhouse or Single Family Home:

1) Provide required size; separate fire only service for each individual unit.

2) Install a buffalo-type curb box, the cover shall be a standard size (5") water valve cover marked "FIRE".

3) AUTHORITY will set the required size water meter inside the unit (in a utility area) or in an exterior box. If a hot box is utilized, it shall be secured and the AUTHORITY shall be provided with one key (for meter servicing). A remote readout (touch pad) shall be installed on the exterior of the townhouse unit or on the outside of the hot box. (See attached standard for space around meter.)

4) Plumber shall supply a Level 2 backflow preventer (dual check valve) on the AUTHORITY's side of the fire service meter. If an anti-freeze system is used, then a Level 3 backflow preventer must be installed (i.e. PRZ by Watts, Model 909 or 009).

NOTE: The AUTHORITY is not certified as an inspector for backflow preventers. The owner shall be responsible to have the backflow preventer annually certified and inspected.

5) Plumber shall supply isolation valves on either side of the fire service meter.

6) Maintenance of the fire service from the water main to the building shall be the responsibility of the homeowner (not the AUTHORITY).

7) Tests and maintenance of the fire service system shall be the responsibility of the homeowner.

K. Water and sewer mains shall be separated a distance of at least ten feet (10') horizontally. If such lateral separation is not possible, the pipes shall be in separate trenches with the sewer at least eighteen inches (18") below the bottom of the water main; or such other separation as approved by the AUTHORITY shall be made. In general, the vertical separation at a crossing of water and sewer line shall be at least eighteen inches (18"). Where this is not possible, the sewer shall be constructed of ductile iron pipe using mechanical or slip-on joints for a distance of at least ten feet (10') on either side of the crossing or other suitable protection shall be provided, such as concrete encasement of the sanitary sewer for ten feet (10') either side of the water pipe. This encasement is to be six inches (6") thick.

L. Tapping of the main shall not be permitted until the following charges, fees and/or levies are paid:

1. Connection fees.

2. Filing and escrow fees.

3. All performance bonds in place.

4. Additional charges for oversized water meters or fire service meters, if required.

M. An approved blowoff or fire hydrant shall be installed at the end(s) of all water line dead ends. Location shall be subject to approval prior to installation.

1.2 PRIOR TO CONSTRUCTION

Prior to starting construction of any water mains within the AUTHORITY service area, the Developer or Owner must

have in his possession a set of AUTHORITY approved drawings. In addition, he must have paid all the necessary charges and fees as well as obtaining the necessary bonding. When easements are necessary, all paperwork must be in order; and if Road Opening Permits are required, these must also be obtained before work can start.

2.0 DUCTILE IRON PIPE AND FITTINGS

2.1 DESCRIPTION

A. Provide ductile iron pipe for water main.

B. Pipe sizes shall be six inch (6") or larger for residential areas and eight inch (8") or larger for any non residential area.

2.2 MATERIALS

A. Proprietary Products:

1. References to specified proprietary products are used to establish minimum standards of utility and quality.

B. Manufacturers:

1. U. S. Pipe and Foundry Company.
2. Griffin Pipe Products Company.
3. American Ductile Iron Pipe Company.
4. Tyler Pipe.
5. Atlantic States Cast Iron Pipe Company.
6. McWane Cast Iron Pipe Company.
7. Clow Water Systems Company.
8. or equal.

C. Pipe:

1. Ductile iron conforming to AWWA C151.

2. Manufactured in eighteen (18) or twenty (20) foot lengths.

3. Thickness/Pressure Class:

   a. Push-on, Push-on Restrained, or Mechanical Joint:
      4" through 12": Pressure Class 350
      14" through 24": Pressure Class 250
      30" through 64": Pressure Class 150

   b. Flanged: Thickness Class 53.

4. Coatings and Linings:

   a. All ductile iron pipe and fittings for water service shall be cement-lined in accordance with ANSI/AWWA C104/A21.4 and seal coated inside; 3" - 12" pipe minimum/⅛" thick, 16" - 18" pipe minimum 3/16" thick.

   b. All ductile iron pipe and fittings for sanitary and other services shall not be cement lined but shall be coated inside with bituminous material at least 1 mil. thick which conforms to the requirements for seal coat in accordance with ANSI/AWWA C104/A21.4 latest revision.

   c. Coatings shall be free of runs, drips, sags and excessive material.

   d. External coatings:

      (1) Piping to be buried or installed in valve pits shall be coated on the outside with bituminous material at least 1 mil thick conforming to the requirements for seal coat in accordance with ANSI/AWWA C104/A21.4, latest revision, unless otherwise shown.

      (2) Exposed piping and other piping so designated shall be provided without the external bituminous coating specified above and shall be coated in accordance with Section 09900, Painting, unless otherwise shown.

D. Pipe Fittings:

1. Ductile iron fittings shall conform to ANSI/AWWA-

C110/A21.10 or ANSI/AWWA-C153/A21.53.

E. Joints for Ductile Iron Pipe and Fittings:

1. Below Grade:

   a. Mechanical joints shall be used. Mechanical joints shall conform to the requirements of ANSI/AWWA-C111/A21.11.

   b. All valve and valve connections shall be mechanical joint.

2. Above ground or in vaults or valve pit joints shall be flanged conforming to the requirements of ANSI/AWWA-C115/A21.15 or grooved and shouldered conforming to the requirements of ANSI/AWWA-C606.

F. Gaskets:

1. Gaskets shall conform to ANSI/AWWA-C111/A21.11 for mechanical joints and ANSI/AWWA-C110/A21.10 for flanged joints.

2. Gaskets for flanged joints shall be 1/16" thick, ring gaskets, of rubber with cloth insertion.

3. Gasket lubricants shall be water soluble and not have deteriorating effects on the pipe or rubber gaskets.

4. Gasket lubricants shall be supplied by pipe manufacturer.

G. Plugs:

1. Flat plugs for mechanical and flanged joints.

H. Sleeve Couplings:

1. Except as otherwise specified or shown on the plans, all sleeve couplings for connecting ductile iron pipe shall be Smith-Blair 441 standard sleeve straight cast couplings as manufactured by Smith-Blair, Incorporated, or equivalent. Bolts and nuts shall be stainless steel.

2. Couplings shall have ductile iron sleeves and flanges. Gaskets shall be of specially compounded natural rubber, and shall have a wedge type design

and large cross sectional area. Bolts and nuts shall be stainless steel.

3. All necessary gaskets, followers, bolts and other appurtenances required for making up flexible joints shall be of the pattern and material recommended by the manufacturer for the conditions or service to be encountered.

I. Joint Harness: Studs for harnessed joints shall conform to the requirements of ASTM A193, Grade B-7, or equivalent. Plate lugs shall conform to ASTM A283, Grade B, or ASTM A285, Grade C, or equivalent.

J. Retainer Glands: Mechanical joint retainer gland shall be Model F-1058 ductile iron retainer gland as manufactured by Clow Corporation or equivalent, and shall be installed in accordance with manufacturer's printed instructions.

K. Thrust Blocks: Concrete for thrust blocks shall be 4,000 psi air entrained and conform to ASTM C-94.

L. Pipe repairs shall be accomplished utilizing stainless steel double banded repair clamps (Rockwell 226 "Super Reach" or equal), installed in accordance with the manufacturer's printed instructions. At the AUTHORITY's discretion, the length of pipe may have to be replaced.

2.3 METHODS OF CONSTRUCTION

A. Submittals:

1. All pipe and fittings shall be inspected and tested at place of manufacture as required by the AWWA standards referenced in this specification. Provide ENGINEER with two (2) copies of certifications from each manufacturer stating the product was inspected as required, and that the test results comply with the AWWA standards.

2. Submit manufacturer's product data for pipe, fittings, and gaskets as specified in section entitled, "Product Data".

3. All manufacturers shall validate other than by certification, the ductility of each length of pipe by an underwriters Laboratory approved method. All ductile iron pipe is to have Underwriters Laboratory

approval.

B. Inspection and quality of pipe:

1. Before being lowered into the trench, each pipe shall be carefully inspected by the AUTHORITY and ENGINEER, and those not meeting the specifications shall be rejected and either destroyed or removed from the work within ten (10) hours. No pipe shall be laid except in the presence of the ENGINEER or his authorized inspector. The ENGINEER or AUTHORITY may order the removal and relaying of any pipe not so laid.

2. In addition to the inspection made by the ENGINEER, the Contractor shall carefully examine all pipe and special castings before placing the same in the trench. Any pieces which are broken or show evidence of cracks or fractures shall be rejected by him. Such inspection shall carry with it the responsibility on the part of the Contractor for the removal at his own expense of all pipe, special castings, and appurtenances, incorporated in the work, and which under test are found to be cracked or otherwise defective.

3. Contractor shall also inspect all pipe and fittings for loose, excess seal coating (and lumps) which may dislodge during service and clog fixtures. All such loose material shall be removed from the pipe or fitting prior to placement into service without damaging the integrity of the coating.

C. Installation of pipe and fittings:

1. Excavation and backfill for pipes shall conform to the specification entitled, "Trench Excavating, Backfilling and Compacting".

2. All piping shall be installed in a neat and workmanlike manner. All piping shall be installed to accurate lines and grades and shall be supported as shown, specified, or necessary. Where temporary supports are used, they shall be sufficiently rigid to prevent shifting or distortion of the pipe. Suitable provision shall be made for expansion where necessary.

3. No defective pipe or fitting shall be laid or placed in the piping, and any piece discovered to be

defective after having been laid shall be removed and replaced by a sound and satisfactory piece by the Contractor at his own expense.

4. Every pipe and fitting shall be cleared of all dirt and other debris before being installed and shall be kept clean until accepted in the completed work.

5. No pipes shall be laid in fill or other unstable material, in wet trench, or in same trench with another pipe or other utility. A minimum eighteen inch (18") clearance shall be maintained between the outside surface of pipe and outside surface of other existing pipes and structures. When this clearance cannot be maintained, contact the ENGINEER for instructions prior to proceeding with the pipe installation.

6. No direct contact between pipes and structures at crossings will be permitted. Pipes in place shall not be worked over or walked on until covered by layers of earth well tamped in place to a depth of twelve inches (12") over the pipe.

7. Minimum cover over water mains shall be four feet (4').

8. The interior of all pipes shall be thoroughly cleaned of all foreign material before being lowered into trench. Pipes shall be kept clean during laying operations by means of plugs or other approved methods.

D. Piping supports: The Contractor shall furnish and install all supports necessary to hold the piping and appurtenances in firm, substantial manner at the lines and grades indicated. Where required, bends, tees, and other fittings buried in the ground shall be backed up with concrete placed against undisturbed earth where firm support can be obtained. If the soil does not provide firm support, then suitable bridle rods, clamps, and accessories to brace the fitting properly shall be provided. Such bridle rods, etc., shall be coated thoroughly with an approved bituminous paint after assembly, or, if necessary, before assembly. This work shall include bracing plugs to prevent leakage or blowout during testing.

E. Handling and cutting pipe: Every care shall be taken in the handling and laying of pipe and fittings to avoid

damage to the pipe, scratching or marring machined surfaces, and abrasion of the coating or lining. Pipe cuts shall be made using an abrasive wheel, rotary wheel cutter, guillotine pipe saw, milling wheel saw, oxyacetylene torch or other method approved by the ENGINEER. Grind cut ends and rough edges smooth. For push-on connections, bevel all cut ends.

F. Assembling pipe:

1. Mechanical Joints:

   a. Clean ring groove and bell socket prior to inserting rubber gasket seal. Properly seat gasket; make sure it faces proper direction.

   b. Clean and lubricate spigot end of pipe. Lubricate spigot end of pipe and rubber gasket.

   c. Hold pipe securely and in proper alignment when joining.

   d. Join pipe so that reference mark on spigot end, if provided by manufacturer, is flush with end of bell.

   e. Join pipe in strict accordance with manufacturer's printed installation procedures.

2. Flanged Joints:

   a. Flange faces shall be clean and free of all debris and foreign material.

   b. Flange faces shall bear uniformly on gasket, and bolts shall be tightened uniformly.

G. Protection of work:

1. Great care shall be exercised in the protection of finished work. Joints once made and disturbed shall be subjected to immediate rejection. It shall therefore be the duty of the Contractor to avoid the slightest movement in completed work, while in the act of laying the pipe, in backfilling, or in the passage of workmen up and down the trench. At all times during which pipe is not laid, the end of the pipe shall be sealed with a tight fitting plug. In no case will the drainage of trench water through a completed pipe be permitted.

2. All curves, bends, tees, hydrants or ends of pipe shall be securely blocked with socket clamps or yokes to prevent movement. At the end of line or turn, where provision has been made for future extension or connection, fittings shall be furnished with lugs and anchored by means of socket clamps or yokes.

H. Adapters: When it is necessary to join pipes of different types the Contractor shall furnish and install the necessary adapters. Adapters shall have ends conforming to the above specifications for the appropriate type of joint to receive the adjoining pipe. When adapters join two classes of pipe, the bodies may be of the lighter class.

3.0 GATE VALVES AND VALVE BOXES

3.1 DESCRIPTION

Provide gate valves for proposed water main. Valves shall be located so that no more than twenty (20) resident dwellings are affected by closing or opening of valves.

3.2 DELIVERY STORAGE AND HANDLING

A. Prepare valves and accessories for shipment according to AWWA C500, Section 31, and:

1. Seal valve ends to prevent entry of foreign matter into valve body.

2. Box, crate, completely enclose, and protect valves and accessories from accumulations of foreign matter.

B. Store valves and accessories in area protected from weather, moisture, or possible damage.

C. Do not store materials directly on ground.

D. Handle items to prevent damage to interior or exterior surfaces.

3.3 MATERIALS

A. Proprietary products:

1. References to specified proprietary products are used to establish minimum standards of utility and quality.

B. Valves:

1. Valves installed below the ground shall have mechanical joint end connections and shall be furnished and installed with a suitable valve box and ground level position indicator.

2. Valves installed above ground shall have flanged ends conforming to the 125-lb. American Standard unless otherwise indicated and have position indicators and actuators as shown or required.

3. Contact-surface-to-contact-surface dimensions shall conform to the ANSI Standard Face-to-Face dimensions of Ferrous Flanged and Welding End Valves, ANSI B16-10.

4. Valves shall have clear waterway equal to the full nominal diameter of the valve unless otherwise specified.

5. Each valve shall have maker's name, pressure rating and year in which manufactured cast on body.

6. Prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to 400 psi in sizes twelve inch (12") and smaller, and 300 psi in sizes fourteen inch (14") and larger.

7. Coatings:

   a. All valves shall be coated on the interior and exterior in accordance with AWWA C550.

   b. Products containing coal tar shall not be used.

   c. Coatings used for potable water service shall be NSF approved.

8. All valves shall open to the left or counterclockwise. Any wrong hand valves shall be removed and replaced by the contractor at his own

expense.

C. Manufacturers:

1. Clow Valve Corporation
Oskaloosa, Iowa
(515) 673-8611

2. M & H Valve Company
Anniston, Alabama
(205) 237-3521

3. American-Darling Valve
Birmingham, Alabama
(205) 325-7856

4. Milliken Valve Company, Incorporated
Bethlehem, Pennsylvania
(215) 861-8803

5. Mueller Company
Decatur, Illinois
(217) 423-4471

6. Kennedy Valve Company
Elmiree, New York
(607) 734-2211

7. Waterous Company
South St. Paul, Minnesota
(612) 450-5000

8. U. S. Pipe & Foundry
Burlington, New Jersey
(609) 387-6147

9. DeZurik
Sartell, Michigan
(612) 259-2000

10. Red Valve Company, Incorporated
700 North Bell Avenue
Pittsburgh, Pennsylvania 15106
(412) 279-0044 (telephone)
(412) 279-7878 (fax)

3.4 GATE VALVE, THREE INCH (3") AND LARGER

A. Iron body, resilient seated, NRS conforming to AWWA C509.

B. "O"-ring stem seals field replaceable under full pressure.

C. Gate valves sixteen inch (16") or larger shall be supplied with a three inch (3") bypass and bypass valve.

D. No valve shall be set under roads, pavements, or walks except where so noted on the detail drawings.

E. Acceptable Manufacturers:

1. Clow
2. M & H
3. American Darling
4. Mueller
5. Kennedy
6. Waterous
7. U. S. Pipe & Foundry
8. or equal.

3.5 VALVE BOXES

A. Buffalo type, cast iron, two (2) piece with 5¼" shaft and cover marked "WATER". (NOTE: For fire services the cover shall be marked "FIRE SERVICE".)

B. Two (2) "T" handle socket wrenches of 5/8" round stock and long enough to extend two feet (2') above ground surface from the deepest valve shall be provided for each size of buried valve furnished.

C. The valve box shall not transmit shock or stress to the valve.

D. Acceptable manufacturers:

1. Bingham & Taylor
2. Tyler
3. Clow
4. or equal.

3.6 CLEANOUTS

Large diameter gate valve shall be fitted with cleanouts on one side of the valve body. Cleanouts shall be of the hand hole type and, where required for valves with the stem in the horizontal position, shall be provided on the bottom of the valve body.

3.7 POSITION INDICATORS

A. All valves shall be equipped with position indicators.

B. Buried valves shall be equipped with ground level position indicators.

C. Acceptable manufacturers:

1. Henry Pratt (Diviner)
2. Val-Matic
3. Clow
4. M & H
5. or equal.

3.8 METHODS OF INSTALLATION

A. Submittals: Submit manufacturers' product data for valves and valve boxes as specified in General Specification Section 2.0 entitled, "Product Data".

B. Prior to installation, inspect valves for direction of opening, freedom of operation, tightness of pressure-containing bolting, cleanliness of valve ports and especially seating surfaces, handling damage and cracks. Do not install dirty or defective valves.

C. Valves shall be set and joined to the pipe in the manner specified in section entitled, "Ductile Iron Pipe and Fittings" for installing and joining ductile iron pipe.

4.0 FIRE HYDRANTS

4.1 DESCRIPTION

Provide fire hydrants for the purpose of fire protection. Hydrants must be placed within 500 feet of each other along road or street lines.

4.2 FIRE MARSHAL

The Mount Laurel Township Fire Marshal shall approve all fire hydrant locations and equipment as well as the AUTHORITY. All plans shall be submitted directly to the Fire Marshal and to the AUTHORITY for approval.

4.3 MATERIALS

Hydrants shall be U.S. Pipe Foundry Model Metropolitan 250, or approved equal, having the following characteristics:

1. Size of hydrant: 5" minimum.

2. Direction to open: Counterclockwise.

3. Size and shape of operating nut: 1½" from point to flat - pentagon.

4. Three-way hose nozzles:

   Two, 2½" ID (National Standard) with 7½ threads per inch.

   One, 5-3/4" OD, 4½" ID with 4 threads per inch.

5. Internal valve opening: 5¼".

6. Color: Red, white and reflective white.

7. Depth of bury: 4'-6".

8. Size and type of connection to main: 6" - mechanical joint.

4.4 METHOD OF INSTALLATION

A. Hydrants are to be located and installed in accordance with Fire Marshal and AUTHORITY approved drawings. The steamer connection will be turned to face the road or street to provide easy access.

B. The elevation of the hydrant will be such that the bottom of the steamer connection will not be less than eighteen inches (18") from the finished grade or top of curb.

C. A stone sump two feet (2') in length, width, and depth will be installed under each fire hydrant to permit hydrant to drain after each use. (Use 3/4" clean stone.)

D. A concrete thrust block will be poured behind the "tee" and the hydrant shall be rodded.

E. Hydrants shall not be located laterally within five (5) feet of any structure which would interfere with

connection of hoses to the hydrant.

F. Water main shall not have more than one (1) fire hydrant on a main that is not looped.

G. For fire fighting purposes, note the following comparison of pipe capacity:

Size of Pipe Inches	Relative Capacity
6	1.0
8	2.1
10	3.8
12	6.2
14	9.3
16	13.2

4.5 OPEN WATER AREAS (As required by the Mount Laurel Township Fire Marshal)

A. Drafting points: All subdivisions shall show drafting points at open water areas with dry fire hydrants.

B. Dry fire hydrants: Shall be installed at any drafting point.

5.0 WATER SERVICES

5.1 DESCRIPTION

Provide water service lines, corporation stops, curb valves and boxes, backflow prevention, meter isolation valves, and accessories.

5.2 MATERIALS

A. Proprietary Products:

1. References to specified proprietary products are used to establish minimum standards of utility and quality.

B. Acceptable Manufacturers:

1. Mueller Company
   Decatur, Illinois

2. Materials shall be the product of a single manufacturer.

C. Curb Valve: Mueller "Mark II Oriseal"; Catalog No. H-15204.

D. Curb Box: Cast iron, improved extension type, arch pattern; Mueller Catalog No. H-10336.

1. Furnish each Mueller curb box with foot piece; Catalog No. H-10394 for 1½" size valve or stop, and Catalog No. H-10395 for two inch (2") size valve or stop.

2. Box Length: Order to meet project conditions.

E. Shutoff Rods: Steel; Mueller Catalog No. H-10321.

1. Furnish a total of two (2) rods.

2. Length: Order to meet project conditions. Minimum length shall be six feet (6').

F. Pentagon Keys: Steel; Mueller Catalog No. 10325.

G. Corporation Stop: Ground key type, Mueller H15000 with flared fittings, or approved equal.

H. Service Clamps (for PVC Pipe Only)

1. Service clamps shall be extra wide strap or double strap type with stainless steel straps.

2. Approved manufacturers:

   a. Dresser Style 194.

   b. McDonald Model 3801.

   c. Rockwell #313, 342, 352.

   d. JCM #403, 404, 406.

   e. or equal.

I. Piping:

1. Copper:

a. Seamless Copper Water Tube: ASTM-B88, Type K, annealed, straight or in coils.

b. Fittings: Cast bronze fittings for flared copper tubes: ANSI-B16.26.

2. IPS to PVC adapters: Use threaded male adapter as supplied by pipe manufacturer and approved by the ENGINEER.

5.3 METHODS OF CONSTRUCTION

A. Inspection:

1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

2. Verify that the work of this section may be installed in accordance with all pertinent codes and regulations, the original design, and the referenced standards.

3. All work must be inspected by the AUTHORITY or the AUTHORITY's ENGINEER.

4. All taps must be inspected by the AUTHORITY or the AUTHORITY's ENGINEER.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the AUTHORITY or AUTHORITY's ENGINEER.

2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

C. Workmanship:

1. Examine pipe, fittings, curb boxes and valves before installation to assure no defective materials are incorporated.

2. Keep inside of pipe fittings, boxes and valves free of dirt and debris.

D. Placement:

1. Lay piping on firm bed for entire length of trench except where supports are otherwise provided.

2. Employ partial backfilling and cradling to hold pipe in secure position during backfilling operations.

3. Backfill evenly on both sides of pipe to maintain alignment.

4. Anchor piping laid on grade prior to embedment in concrete.

E. Bending Pipe:

1. Bend pipe by any method and to any radius within manufacturer's recommendation.

2. Only bend surface free of cracks and buckles.

F. Flared Joints:

1. Ream or file pipe to remove burrs.

2. Slip fitting over tube end to be flared.

3. Expand end of tube using flaring tool.

4. Tighten joint fitting.

G. Curb Valves and Boxes:

1. Install curb valves and boxes in accordance with the manufacturer's printed instructions and in a manner to allow proper operation of the valve. Assure that valves are installed in the proper direction and that boxes are installed plumb.

6.0 TAPPING SLEEVES AND CROSSES

6.1 DESCRIPTION

Provide tapping sleeves or crosses (and valves) for connections to existing water mains.

6.2 MATERIALS

A. Acceptable manufacturers:

1. The products of Mueller Company, Decatur, Illinois, as specified in the following paragraphs are used to establish standards of quality. Other manufacturers' materials may be used provided they are approved as an equivalent product.

2. Materials shall be the product of a single manufacturer.

B. Tapping sleeve: H-615, 616 or 619 as indicated on the standard details.

C. Tapping cross: H-715, 716 or 719 as indicated on the standard details.

D. Other materials: All other materials, not specifically described but required for a complete and proper installation of the work of this section, shall be new, first quality of their respective kinds, and as selected by the Contractor subject to the approval of the ENGINEER.

6.3 METHODS OF CONSTRUCTION

A. INSPECTION

1. Examine areas to receive taps for:

a. Defects that adversely affect execution and quality of work.

b. Deviations beyond allowable tolerances for correct tap seat.

2. Start work only when conditions are satisfactory.

B. INSTALLATION

1. Workmanship:

a. Examine pipe and sleeves or crosses before installation to assure no defective materials are incorporated.

b. Keep inside of pipe and tapping materials free

of dirt and debris.

c. All sleeves must be properly disinfected prior to tap.

2. Placement:

a. Lay sleeves or crosses on firm bed for entire length of fitting except where supports are otherwise provided.

b. Employ partial backfilling and cradling to hold tap in secure position during backfilling operations.

c. Backfill evenly on both sides of new tap to maintain alignment.

d. Provide thrust blocks with plastic barrier as required.

C. TAPPING SLEEVES AND CROSSES:

1. Install tapping sleeves and crosses in accordance with the manufacturer's printed instructions and in a manner to allow proper installation of the new main.

2. Install tapping sleeves or crosses where new mains are to be connected to existing mains.

D. TESTING

1. Disconnect all equipment and devices which may be damaged by test pressures.

2. Plug or cap lines.

3. Test and disinfect each piping system.

4. Repair all leaks.

7.0 DISINFECTION OF WATER SUPPLY SYSTEMS

7.1 DESCRIPTION

A. Disinfect water supply system, and test for bacteriological quality and chlorine residual.

B. Definitions:

1. Water supply system: The water main, water service pipe, water distributing pipes and the necessary connecting pipes, fittings, control valves, pumps, and all appurtenances in or adjacent to the building or premises including wells.

2. Water service pipe: The pipe from the water main or other source of potable water supply to the water distributing system of the building served.

3. Water distributing pipe: A pipe within the building or on the premises which conveys water from the water service pipe to the point of usage.

C. The existing water supply system shall not be contaminated by allowing water with a high chlorine residual to enter the existing water supply system.

7.2 MATERIALS

Chlorine: High test calcium hypochlorite conforming to AWWA B300 and AWWA C601.

7.3 METHODS OF CONSTRUCTION

A. Quality assurance: Testing laboratories shall be certified by the State of New Jersey Department of Health.

B. Requirements of regulatory agencies: Taking and analysis of water samples, and water bacteriologic quality shall conform to the requirements of the New Jersey State Department of Environmental Protection and Energy.

C. Reference standards applying to this specification section:

1. New Jersey State Department of Environmental Protection: PW-D10 - Potable Water Standards, as amended.

2. American Water Works Association:

a. AWWA B300: AWWA Standard for Hypochlorites.

b. AWWA C601: AWWA Standard for Disinfecting

Water Mains.

D. General: All disinfection procedures to include preventive measures during construction; methods of chlorine application; preliminary and final flushing; testing and procedures to following after cutting into existing water main shall conform to AWWA C601. The method of chlorine application shall be the Tablet Method, except that if trench water or foreign material has entered the main, or if the water temperature is below 41°F, the continuous Feed Method shall be used.

1. The initial chlorine concentration in the water in the pipe shall be a minimum of 50 ppm (mg/l) available chlorine.

2. The places where flushing shall be done, and the rates of preliminary flushing prior to disinfection when not using the Tablet Method, shall be approved by the AUTHORITY's ENGINEER.

3. The chlorine concentration in the water main after flushing shall be no higher than that generally found in eh system, or not exceeding 0.2 ppm (mg/l).

E. The following tests shall be made after final flushing and before the water main is placed into service:

1. Chlorine residual: Determine chlorine residual using the Drop Dilution Method as described in the Appendix of AWWA C601.

2. Bacteriologic quality:

   a. Sampling: Take samples in accordance with AWWA C601 and Potable Water Standards PW-D10.

   b. Testing: Perform testing in accordance with the rules and regulations of the New Jersey State Department of Environmental Protection.

F. Bacteriological standards: Samples tested shall conform to the bacteriological standards specified in Potable Water Standards, PW-D10.

G. If the initial disinfection fails to produce satisfactory samples, disinfection and testing shall be repeated until satisfactory samples have been obtained. The Tablet Method shall not be used in these subsequent disinfections. The water main shall not be placed into

service until satisfactory samples have been obtained.

7.4 SUBMITTALS

A. Copies of all bacteriologic tests shall be forwarded to the AUTHORITY and the AUTHORITY's ENGINEER prior to placing the water main in service.

B. The test data shall include a diagram of the areas tested and the date tested.

8.0 TESTING WATER SUPPLY SYSTEMS

8.1 DESCRIPTION

A. Test water supply system for exfiltration.

B. Definitions:

1. Water supply system: The water main, water service pipe, water distributing pipes and the necessary connecting pipes, fittings, control valves and all appurtenances in or adjacent to the building or premises.

2. Water service pipe: The pipe from the water main or other source of potable water supply to the water distribution system of the building served.

3. Water distribution pipe: A pipe within the building or on the premises which conveys water from the water service pipe to the point of usage.

8.2 MATERIALS

Furnish pumps, valves, taps, pressure gauges, water meters, and all other equipment required for testing of piping systems.

8.3 METHOD OF TESTING - EXFILTRATION TEST

A. General requirements:

1. Perform all tests in presence of the AUTHORITY's ENGINEER.

2. Conduct exfiltration test prior to backfilling trench.

3. Establish test sections between valves, or as directed by the AUTHORITY's ENGINEER.

4. All requirements of this specification shall be met prior to acceptance of water facilities by the AUTHORITY's ENGINEER.

B. Procedure for exfiltration test - on-site piping:

1. Expel air from pipe through hydrants, blow-offs, or taps required for release of air from high points. Taps for release of air and blow-offs for filling pipe and releasing air shall be provided by the Contractor.

2. Fill each pipe section slowly with water, and subject pipe to hydrostatic pressure of 150 psi for one (1) hour.

3. When test pressure is reached, measure amount of make-up water required to maintain this pressure during the one (1) hour test period.

4. Leakage shall not exceed 12 gallons per inch of diameter per mile of pipe per day. Pipelines failing to meet this requirement shall be repaired and retested as above specified.

5. Compute leakage as follows:

   a. Gallons of make-up water x 24 = gallons loss/day.

   b. Gallons loss/day x

      $$\frac{\text{feet of pipe testing}}{\text{gallons/loss/mile/day}} = 5{,}280 \text{ feet/mile}$$

   c. $$\frac{\text{Gallons/loss/mile/day}}{\text{Pipe dia. in inches}} =$$

      Gallons loss/inch diameter/mile/day.

   d. Allowable exfiltration rate is 12 gallons/inch/diameter/mile/day.

C. Procedure for exfiltration test - water distributing pipe within building: Upon completion of a section or of the entire water distributing pipe, it shall be tested and proved tight under a water pressure not less than the working pressure under which it is to be used. The water used for tests shall be obtained from a potable source of supply.

8.4 SUBMITTALS

A. Copies of all pressure tests shall be forwarded to the AUTHORITY and the AUTHORITY's ENGINEER prior to placing the main in service.

B. The test data shall include a diagram of the areas tested and the date tested.

SECTION III

SANITARY SEWER SPECIFICATIONS

1.0 GENERAL SPECIFICATIONS

1.1 SANITARY SEWER GRAVITY MAINS AND FORCE MAINS

A. No gravity sewer conveying raw sewage shall be less than eight inches (8") in diameter.

B. Sanitary sewer mains shall not be installed under either curbs or sidewalks. In addition, trays, cleanouts and force main valves shall not be installed under or in concrete cement.

C. No underdrains, conduits and/or cables of any nature will be installed in the same trench with sanitary sewer.

D. PVC or DIP gravity sewer and force mains shall be used for all sanitary sewer except the following conditions which include, but are not limited to:

1. The main is installed at a depth of less than thirty-six inches (36").

2. At all stream crossings.

3. The main is within 100' of a water supply well or below grade reservoir.

Under these conditions ductile iron pipe will be used, or as specified by the AUTHORITY's ENGINEER.

E. Sewer and water mains generally should be separated a distance of at least ten feet (10') horizontally. If such lateral separations are not possible, the pipes shall be in separate trenches with the sewer at least eighteen inches (18") below the water main; or such other separation as approved by the AUTHORITY.

F. Concrete encasement will be required for the following conditions:

1. At all locations where a proposed sanitary sewer main is located closer than ten feet (10') to a water main (measured horizontally).

2. At all crossings of sanitary sewer lines and water

lines where the vertical separation is less than eighteen inches (18").

3. At all crossings of sanitary sewer lines and water lines where the sanitary sewer is vertically above the water line.

4. All other locations where the vertical or horizontal separation between proposed and existing utility pipes is less than eighteen inches (18").

G. When a new sanitary line is constructed and tied into an active manhole, the new line will be plugged and remained plugged until all testing has been completed and approved by the AUTHORITY.

H. All sanitary sewer laterals that are scheduled for connection to a specific sewer main must be connected and extended to the curb line prior to the acceptance testing on that line.

I. Neither repair clamps nor saddles are permitted to be used on new sanitary sewers within the jurisdiction of the AUTHORITY. These are only to be used in cases of emergency, and then only with the prior written approval of the AUTHORITY. If and when saddles are approved, they will be of the strap on type with stainless steel hardware; no bolt on saddles will be permitted.

J. Force mains will not be tied directly into a gravity manhole. A collector manhole will be constructed adjacent to the gravity manhole and the force main will terminate in this collector manhole. The effluent will flow by gravity into the manhole, which is part of the gravity system.

K. Private ejector lines shall be connected directly to the sewer main.

L. Air relief valves will be required at the high points of any force main.

M. Interceptors shall be provided for commercial and industrial discharges when in the opinion of the AUTHORITY and/or ENGINEER they are necessary for the proper handling of liquid waste containing grease, oil, sand or lint to the building drainage system, the public sewer or sewage treatment plant or processes. All commercial and industrial dischargers must complete a usage questionnaire which requires submittal of plumbing

plans for each facility.

1.2 MINIMUM GRADES AND VELOCITY OF FLOW

A. All sewer shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Kutter's Formula using an "N" value of 0.013. The following are the minimum slopes which should be provided; however, slopes greater than these are desirable:

Sewer Size	Minimum Slope in Feet Per 100 Feet
8 Inch	0.40
10 Inch	0.28
12 Inch	0.22
15 Inch	0.15
18 Inch	0.12
21 Inch	0.10
24 Inch or Above	0.08

Minimum slope of mains emanating from terminal manholes shall be increased where flow conditions exist. Cul-de-sac lots shall provide minimum 0.80% slope to terminal manhole.

B. Slopes slightly less than those required for the 2.0 feet per second velocity, when flowing full, may be permitted. Such decreased slopes will only be considered where the depth of flow will be 0.3 of the diameter or greater for design average flow. Whenever such decreased slopes are selected, the design engineer must furnish with his report his computations of the anticipated flow velocities of average and daily or weekly peak flow rates. The pipe diameter and slope shall be selected to obtain the greatest practical velocities to minimize settling problems.

C. Sewers shall be laid with uniform slope between manholes.

D. Where velocities greater than fifteen feet (15') per second are attained, special provision shall be made to protect against displacement by erosion and shock.

E. The use of sewers with a slope in excess of twenty percent (20%) is prohibited. Instead, drop manholes should be considered. In any event, the AUTHORITY and

its ENGINEER will review all proposed sewers with a slope in excess of twenty percent (20%) or a case by case basis.

1.3 ALIGNMENT

A. All sewers twenty-four inches (24") or less shall be laid with straight alignment between manholes. The alignment shall be checked by either using a laser beam or lamping.

1.4 CHANGES IN PIPE SIZE

A. When a smaller sewer joins a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

1.5 MANHOLES

A. Manholes shall be installed at the end of each line; at all changes in grades, alignment or size, and at distances not greater than four hundred feet (400').

B. A drop pipe should be provided for a sewer entering a manhole at an elevation of twenty-four inches (24") or more above the manhole. Drop manholes shall be constructed with an outside drop connection. The entire outside of the drop connection shall be encased in concrete.

C. The minimum diameter of manholes shall be forty-eight inches (48"). A minimum access diameter of thirty-two inches (32") shall be provided.

D. The flow channel through manholes should be made to conform in shape and slope to that of the sewers.

E. "MLMUA" shall be cast in lids of all sanitary manholes.

F. All pipe penetrations into a manhole shall be no less than ninety degrees (90°) to the centerline of the downstream main.

G. Manhole rims shall be set at base paving elevation and adjusted at a later date prior to installing the surface course. Manholes located in grassed areas shall be

raised three inches (3") above grade with fill built-up around the cover.

1.6 INVERTED SIPHONS (IF APPROVED BY THE ENGINEER)

A. Inverted siphons should not have less than two (2) barrels, with a minimum pipe size of six inches (6") and shall be provided with the necessary appurtenances for convenient flushing and maintenance.

B. Sufficient head shall be provided and pipe sizes selected to secure velocities of at least 3.0 feet per second for average flows.

C. The inlet and outlet details shall be so arranged that the normal flow is diverted to one barrel, and that either barrel may be cut out of service for cleaning.

1.7 LATERALS

A. All laterals are to be connected to the main by means of a wye connection only. The standard lateral connection will be four inches (4") or six inches (6") in the case of PVC. All service laterals will be laid with the same care prescribed in Section 2.0 of these specifications, which includes proper trench construction and backfill, and stoning of the trench bottom when necessary to obtain a stable base under the pipe.

B. The standard sewer service lateral will be constructed of PVC, cast iron, ductile iron or a combination thereof. If the OWNER or Builder desires to use pipe of a material other than that listed above, he must obtain the prior written approval of the AUTHORITY.

C. Adapters to connect the service lateral to house service lateral must be approved by the AUTHORITY.

D. The standard gravity sewer lateral will be constructed of four inch (4") or six inch (6") diameter PVC SDR.35 pipe from the sewer main to the cleanout just behind the curb line, and four inch (4") or six inch (6") pipe from the curb line to the house.

E. All sanitary sewer laterals should be installed at a grade equal to one-quarter inch (¼") per foot, but in no case will they be installed at a grade less than one eighth inch (1/8") per foot.

F. All laterals will be installed at a constant grade and in a straight line. There will be a cleanout constructed and a plug provided just behind the curb line and at any point where it is necessary to change the direction of the lateral. Cleanouts are required every fifty feet (50') on long laterals.

G. When the sanitary sewer mains are over nine feet (9') in depth, the construction of a vertical riser is required up to a point eight feet (8') below finish grade.

H. Minimum depth for a sanitary sewer lateral is thirty-six inches (36") at the curb line.

I. In no case shall laterals be installed under driveways. A lateral location plan shall be submitted to the AUTHORITY.

1.8 LATERAL CONNECTION TO EXISTING LINES

A. Gravity: Connections of the saddle type installed in the main sewer line shall be made in a smooth, round hole, machine-drilled into the top quarter of the main sewer pipe. The fitting should be such to insure that no protrusion of the fitting into the main sewer pipe shall result. The fitting shall conform to the contour of the sanitary sewer and is one that is specifically designed to fit the particular size main sewer pipe into which the connection is made. The machine-drilled hole shall be of such size to provide one-eighth (1/8) space between the shoulder of the fitting and the face of the main sewer pipe when installing. All voids shall be completely filled with joint material. The joint material shall be completely waterproof and capable of withstanding the stresses normally encountered in construction or maintenance. All saddles shall be a double strapped stainless steel connection. Wrap saddle in 6 mil clean polyethylene and encase in minimum six inches (6") of concrete.

B. Sewage Ejectors:

1. Sewage ejectors discharging to an existing gravity sewer shall be provided with a check valve and shutoff valve at the location of the ejector pump. The connection to the main shall be the same as in A., "Gravity Lateral Connection to Existing Lines".

2. Sewage ejectors discharging to a force main shall be

connected via a direct tap. Each connection shall be equipped with a check valve and shutoff valve in an at grade box at the property line and a second check valve and shut off valve at the location of the ejector pump.

3. All sewage ejector services shall be marked with plastic marking tape as described in Item 2.2.C. of the section entitled "PVC Gravity Sewer and Pressure Pipe".

1.9 FORCE MAIN CONNECTION TO EXISTING FORCE MAIN

A. Sewage ejectors discharging to existing force mains shall be designed to overcome the total static and dynamic head conditions in the force main when flowing full. Connections shall be done with a tapping sleeve in accordance with manufacturer's directions.

1.10 GREASE RECOVERY UNITS AND INTERCEPTORS

A. Grease recovery units (G.R.U.) shall be installed in the waste line(s) leading from sinks, drains, or other fixtures in all food service, food processing, or other commercial establishments which produce grease/oil and which are connected into the public sewer system. Greases and oils are defined as any substance(s) with physical characteristics which enable them to be quantitatively analyzed based upon their solubility in Freon, including hydrocarbons, fatty acids, soaps, fats, waxes, oils and any other substances or materials not volatilized during solubility testing. All grease recovery units must be constructed of stainless steel or reinforced concrete. The size, type, and location of each recovery unit shall be approved by the AUTHORITY. A sediment/solids removal unit must be installed before the grease removal unit. All installations must conform to the manufacturers specifications and to all applicable building codes.

For new construction, all grease interceptors shall be an exterior concrete unit.

B. Oil, sand and lint interceptors shall be installed in the waste line(s) of all commercial establishments which produce such waste and are connected into the AUTHORITY's sewer system.

C. All grease recovery units or interceptors shall be so installed as to provide ready accessibility to the cover and contents thereof, for servicing and maintaining the grease recovery units or interceptors in working operating condition. All grease recovery units or interceptors shall be maintained in an efficient operating condition by regular, periodic removal of accumulated contents.

D. The AUTHORITY, through its authorized officers, employees and agents, shall have authority to inspect, at reasonable times, those food service, food processing or other commercial establishments which produce oil, grease, sand, lint or other harmful ingredients and which are connected into the AUTHORITY's sewer system to ensure that said establishments have installed and are properly maintaining their grease recovery unit and/or interceptor on all waste line(s).

E. Failure to comply shall constitute a misdemeanor and be subject to the discontinuance of water service and/or the fine and penalties as set out in the Rules and Regulations.

F. Plumbing and floor plans shall be submitted for AUTHORITY review and approval. Finalized plans shall be forwarded by the establishment to the AUTHORITY for their records.

G. Full service restaurants, pizzerias and fast food type restaurants or other commercial establishments which produce excessive quantities of grease/oily waste shall furnish both an interior G.R.U. and an exterior grease trap.

H. Grease conveying laterals shall be separated from laterals conveying raw sewage until after interceptor connection.

1.11 PRIOR TO CONSTRUCTION

Prior to starting construction of a sewer system within the Township, the Developer or Owner must have in his possession a set of AUTHORITY approved drawings. In addition, he must have paid all the necessary charges and fees as well as obtaining the necessary bonding. When easements are necessary, all paperwork must be in order; and if road opening permits are required, these must also be obtained before work can begin.

2.0 PVC GRAVITY SEWER AND PRESSURE PIPE AND FITTINGS

2.1 DESCRIPTION

PVC gravity sewer and pressure pipe for proposed sanitary sewer system.

2.2 MATERIALS

A. PVC Gravity Sewer Pipe and Fittings:

1. ASTM D-3034; SDR 35; Sizes 4" through 15".

2. ASTM F-679; Sizes 18" through 27".

3. ASTM F-794; Sizes 18" through 48" ribbed.

   a. Joint design: ASTM D-3212, Pus-On Type Joint using an elastomeric ring gasket.

      Infiltration shall not exceed 50 gallons/inch diameter/mile/day.

   b. Joint material: Elastomeric ring rubber gasket, ASTM D-3212.

   c. Joint material Primer/Adhesive: As provided or specified by pipe manufacturer.

B. PVC Pressure Sewer Pipe and Fittings:

1. AWWA C900; Sizes four inch (4") through twelve inch (12").

   a. Coupling shall be an integral part of pipe.

   b. Pipe shall have slip-on joints with a rubber ring seal.

   c. Pipe shall be PVC "Blue Brute" Pipe with "Ring-Tite" joints as manufactured by Johns-Manville, or approved equivalent.

   d. Pipe shall be of the following pressure classes having the SDR numbers indicated.

      (1) DR-14, Pressure Class 200

(2) DR-18, Pressure Class 150
(3) DR-25, Pressure Class 100

e. Fittings and Rubber Rings shall be as supplied by the Pipe manufacturer.

C. Plastic marking tape: Provide and install plastic marking tape over force main piping. Plastic marking tape shall be of plastic material with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to 18" deep. The tape shall have the words "CAUTION SEWER LINE BELOW" in contrasting letters repeated continuously. The tape shall be of a type specifically manufactured for marking and locating underground utilities. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Tape to be minimum 6" wide and be a safety green color.

2.3 METHODS OF CONSTRUCTION

A. Reference standard used in this specification section:

1. American Society for Testing and Materials (ASTM):

a. ASTM D-3034: Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.

b. ASTM F-679: PVC Large Diameter Plastic Gravity Sewer Pipe and Fittings.

c. ASTM F-794: PVC Large diameter Ribbed Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

d. ASTM D-3212: Joint for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

e. ASTM D-2241: PVC Plastic Pipe.

2. American Association of State Highway and Transportation Officials:

M-45: Aggregate for Masonry Mortar.

3. New Jersey Department of Transportation, Standard Specifications for Road and Bridge Construction 1980 Supplement.

B. Submittals:

1. Manufacturer's literature and recommendations:

a. Submit manufacturer's descriptive literature for all materials to be used.

b. Submit pipe manufacturer's recommended method of gasket installation.

c. Submit all test results including a diagram of sections tested.

d. Submit all of the above for AUTHORITY ENGINEER'S approval.

2. Certificates:

a. Submit manufacturer's certified letter stating that pipe or joint material ordered meets requirements of this specification. Letter shall indicate compliance with appropriate ASTM designations listed.

b. Submit two (2) copies prior to installing materials.

C. Product delivery, storage and handling:

1. Storage of materials:

a. Store materials to prevent physical damage.

b. Store pipe and fittings off ground to prevent dirt and debris from entering.

c. Store flexible gasket materials and joint primer or adhesive compounds, in cool dry place. Keep rubber gaskets clean, away from oil, grease, excessive heat, and out of direct rays of sun.

2. Handling of materials:

a. Protect materials during transportation and installation to avoid physical damage.

b. Use extra care in cold weather when flexibility and impact resistance of PVC pipe is reduced.

c. Do not install out-of-round pipe.

d. Unload pipe to prevent abrasion.

e. Do not drag or push pipe when handling or distributing on project site.

D. Inspection by Contractor:

1. Check pipe for following information which shall be clearly marked on each pipe section:

a. Pipe type and SDR number.

b. Nominal pipe size.

c. The PVC cell classification, for example 12454-B.

d. Name or trademark of manufacturer.

e. The ASTM Specification designation.

2. Check fittings for the following markings:

a. The ASTM Specification designation.

b. Manufacturer's name or trademark.

c. Nominal size.

d. The material designation PVC, PSM.

3. Inspect pipe for defects prior to placement in trench. The pipe and fittings shall be free from visible cracks, holes, foreign inclusions or other injurious defects.

4. Assure that all materials are to the type specified and are not defective. Unmarked pipe; or pipe and materials not meeting specifications requirements shall be removed from the site as directed by the ENGINEER.

E. Excavation for trenches:

1. Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room.

a. Maximum trench width to a point one foot above the outside top of pipe shall be the pipe outer diameter plus sixteen inches.

b. Maximum trench width at ground surface shall be as required for depth of pipe.

2. Excavate trenches to the depth indicated or required. Carry the depth of trenches for piping to establish the indicated flow lines and invert elevations.

3. Trenches for pipes shall not be opened more than the number of linear feet of pipe that can be placed and backfilled in one day.

4. Grub roots and stumps within six inches of outside surface of pipe bottom and sides to minimum depth of six inches below bottom of trench.

5. Install pipe bedding of material approved for initial backfill in accordance with the standard details and as specified herein.

F. Installation:

1. Lay pipe only in presence of ENGINEER. ENGINEER may order removal and relaying of pipe not so laid.

2. Fine grade trench bottom so that pipe is supported for its full length.

3. Lay pipe to lines and grades required. Face socket end of pipe in direction of pipe laying.

4. Do not lay pipe on unsuitable material, in wet trench, or in same trench with another pipe or utility.

5. Lower pipe into trench with ropes, machinery, or other means approved by ENGINEER.

6. General procedure for joining pipe:

a. <u>DO NOT USE EXCAVATING EQUIPMENT TO SHOVE PIPE SECTIONS TOGETHER</u>.

b. Hold pipe securely and in proper alignment when joining.

c. Do not disturb previously made joints. Check completed piping to assure joints are intact. Insure placement of backfill over pipe is accomplished without disturbing pipe position.

d. Do not allow earth, stones, or other debris to enter pipe or fittings.

e. Method of installing joint materials and joining piping shall be in strict accordance with manufacturer's printed instructions as approved by the ENGINEER.

G. Backfill and compaction:

1. Initial backfill:

a. Initial backfill material shall be soil aggregate designation I-8 conforming to the requirements of Article 8.8.1. Table 36 of the Standard Specifications, 1980 Supplement, or stone crushing to conform with AASHTO designation M-43 (ASTM designation D448), Size No. 8, 1/8" to 3/8" (2.36 mm to 9.25 mm) clean, free flowing and shall meet all ASTM C-33 requirements for quality and soundness.

b. Install initial backfill material as shown on the standard details for the type of pipe being used.

c. When required material shall be placed under the pipe haunch to provide adequate side support. Material shall be installed entire trench width and shall be tamped and rodded to insure full contact with pipe at haunch up to the spring line.

d. Little or no tamping of the initial backfill directly over the pipe shall be done.

2. Final backfill: See General Specification Section 4.0 entitled "Trench Excavating, Backfilling and Compacting".

H. Testing:

1. Deflection testing:

a. For pipe conforming to the requirements of ASTM

D3034 Maximum allowable pipe deflection (reduction in vertical inside diameter) shall be 7-1/2%.

b. For pipe conforming to the requirements of ASTM D2241 Maximum allowable pipe deflection (reduction in vertical inside diameter) shall be 5%.

c. Deflection tests shall be successfully performed on the complete installation by means of one of the following methods prior to the acceptance of construction.

(1) "Go-No-Go" mandrel properly sized.
(2) Calibrated television.

2. Lamping:

a. ENGINEER will lamp all installed pipe between manholes. Sewer lines shall meet the following standards to pass the lamping inspection.

(1) Barrel of pipe shall have no vertical deflection (not to be confused with the deflection test), and at least seventy-five percent of barrel shall be visible in the horizontal direction.

(2) Pipe not meeting this specification shall be relaid and relamped until compliance is achieved at no cost to the AUTHORITY.

3. Air testing:

a. Air testing shall conform to the requirements of Section 7.0 "Testing of Sanitary Sewer Systems" except as herein modified.

b. The minimum time duration for a low pressure exfiltration pressure drop between two consecutive manholes shall not be less than shown in Table 1.

c. The prescribed drop shall not exceed .5 psi from 3.5 to 3.0 psi in excess of the groundwater pressure above the top of the sewer.

TABLE 1

MINIMUM DURATION FOR AIR TEST PRESSURE DROP

Pipe Size Inches	mm	Time Minutes
4	100	2½
6	150	4
8	200	5
10	225	6½
12	305	7½
15	380	9½

I. Appurtenance installation:

1. Manholes:

a. Precast manholes with connection ports shall have elastomeric seals precast into manhole walls.

b. Precast manholes with connection ports shall have flexible boot or sleeve precast into manhole walls.

2. Laterals:

a. All laterals shall be installed with the same construction procedure as the sewer main.

b. Sewer laterals in streets and rights-of-way shall be four inches (4").

3.0 DUCTILE IRON PIPE AND FITTINGS

3.1 DESCRIPTION

Provide ductile iron pipe for sanitary sewer force main or for gravity sanitary sewer main.

3.2 MATERIALS

A. Sanitary sewer force main:

1. Ductile iron pipe:

a. Shall conform to AWWA C151.

b. Manufactured in eighteen or twenty foot nominal lengths.

c. Pressure Class 150 (minimum).

2. Joints for ductile iron pipe:

Push-on-joint, conforming to AWWA C151 and AWWA C111.

3. Pipe fittings:

a. Shall be ductile iron fittings conforming to AWWA C110, with a minimum pressure rating of 250 psi.

b. Fitting shall have push-on type joints.

4. Plugs and clamps: Plugs shall be solid plugs conforming to the pipe sizes indicated on the plans, and shall be Plug No. F-1147 as manufactured by Clow Corporation or approved equal. Clamps for retaining plugs shall be Socket Clamp No. F-740, as manufactured by Clow Corporation or approved equal.

5. Gasket lubricant:

a. Water soluble and not having deteriorating effects on the pipe or rubber gaskets.

b. Shall be as supplied by pipe manufacturer or as approved by the ENGINEER.

B. Sanitary sewer gravity main:

1. Ductile iron pipe:

a. Shall conform to AWWA C151.

b. Manufactured in eighteen or twenty foot nominal lengths.

c. Pressure Class 150 (minimum).

2. Joints for ductile iron pipe: Push-on-joint, conforming to AWWA C151 and AWWA C111.

3. Pipe fittings:

a. Shall be ductile iron fittings conforming to

AWWA C110, with a minimum pressure rating of 250 psi.

b. Fittings shall have push-on type joints.

4. Plugs and clamps: Plugs shall be solid plugs conforming to the pipe sizes indicated on the Plans, and shall be Plug No. F-1147 as manufactured by Clow Corporation or approved equal. Clamps for retaining plugs shall be Socket Clamp No. F-740, as manufactured by Clow Corporation or approved equal.

5. Gasket lubricant:

a. Water soluble and not having deteriorating effects on the pipe or rubber gaskets.

b. Shall be as supplied by pipe manufacturer or as approved by the ENGINEER.

3.3 METHODS OF CONSTRUCTION

A. Submittals:

1. All pipe and fittings shall be inspected and tested at place of manufacture as required by the AWWA standards referenced in this specification. Provide ENGINEER with two copies of certifications from each manufacturer stating the product was inspected as required, and that the test results comply with the AWWA standards.

2. Submit manufacturers' product data for pipe, fittings, and gaskets as specified in General Specification Section 2.0 entitled, "Product Data".

3. All manufacturers shall validate other than by certification, the ductility of each length of pipe by an Underwriters Laboratory approved method. All ductile iron pipe is to have Underwriters Laboratory approval.

4. Submit all test results, including a diagram of sections tested.

B. Inspection and quality of pipe:

1. Before being lowered into the trench, each pipe shall be carefully inspected, and those not meeting

the specifications shall be rejected and either destroyed or removed from the work within ten (10) hours. No pipe shall be laid except in the presence of the ENGINEER or his authorized inspector. The ENGINEER may order the removal and relaying of any pipe not so laid.

2. In addition to the inspection made by the ENGINEER, the Contractor shall carefully examine all pipe and special castings before placing the same in the trench. Any pieces which are broken or show evidence of cracks or fractures shall be rejected by him. Such inspection shall carry with it the responsibility on the part of the Contractor for the removal at his own expense of all pipe, special castings, and appurtenances, incorporated in the work, and which under test are found to be cracked or otherwise defective.

C. Installation of pipe and fittings:

1. Excavation and backfill for pipes shall conform to the specification entitled, "Trench Excavating, Backfilling and Compacting".

2. All piping shall be installed in a neat and workmanlike manner. All piping shall be installed to accurate lines and grades and shall be supported as shown in the standard details, specified, or necessary. Where temporary supports are used, they shall be sufficiently rigid to prevent shifting or distortion of the pipe. Suitable provision shall be made for expansion where necessary.

3. No defective pipe or fitting shall be laid or placed in the piping, and any piece discovered to be defective after having been laid shall be removed and replaced by a sound and satisfactory piece by the Contractor.

4. Every pipe and fitting shall be cleared of all dirt and other debris before being installed and shall be kept clean until accepted in the completed work.

5. No pipes shall be laid in fill or other unstable material, in wet trench, or in same trench with another pipe or other utility. A minimum eighteen inch (18") clearance shall be maintained between the outside surface of pipe and outside surface of other existing pipes and structures. When this clearance

cannot be maintained, contact the ENGINEER for instructions prior to proceeding with the pipe installation.

6. No direct contact between pipes and structures at crossings will be permitted. Pipes in place shall not be worked over or walked on until covered by layers of earth well tamped in place to a depth of twelve inches over the pipe.

7. Minimum cover over sewer mains shall be four feet.

8. The interior of all pipes shall be thoroughly cleaned of all foreign material before being lowered into trench. Pipes shall be kept clean during laying operations by means of plugs or other approved methods.

9. Brace all plugs as required to prevent leakage or blowout during testing.

D. Piping supports for ductile iron force mains: The Contractor shall furnish and install all supports necessary to hold the piping and appurtenances in firm, substantial manner at the lines and grades required. Where required, bends, tees, and other fittings buried in the ground shall be backed up with concrete placed against undisturbed earth where firm support can be obtained. If the soil does not provide firm support, then suitable bridle rods, clamps, and accessories to brace the fitting properly shall be provided. Such bridle rods, etc., shall be coated thoroughly with an approved bituminous paint after assembly, or, if necessary, before assembly. This work shall include bracing plugs to prevent leakage or blowout during testing.

E. Handling and cutting pipe: Every care shall be taken in the handling and laying of pipe and fittings to avoid damage to the pipe, scratching or marring machined surfaces, and abrasion of the coating or lining. Pipe cuts shall be made using an abrasive wheel, rotary wheel cutter, guillotine pipe saw, milling wheel saw, oxyacetylene torch or other method approved by the ENGINEER. Ground cut ends and rough edges smooth. For push-on connections, bevel all cut ends.

F. Assembling piping:

1. Clean ring groove and bell socket prior to inserting

rubber gasket seal. Properly seat gasket; make sure it faces proper direction.

2. Clean and lubricate spigot end of pipe. Lubricate spigot end of pipe and rubber gasket.

3. Hold pipe securely and in proper alignment when joining.

4. Join pipe so that reference mark on spigot end, if provided by manufacturer, is flush with end of bell.

5. Join pipe in strict accordance with manufacturer's printed installation procedures.

G. Protection of work:

1. Great care shall be exercised in the protection of finished work. Joints once made and disturbed shall be subjected to immediate rejection. It shall therefore be the duty of the Contractor to avoid the slightest movement in completed work, while in the act of laying the pipe, in backfilling, or in the passage of workmen up and down the trench. At all times during which pipe is not laid, the end of the pipe shall be sealed with a tight fitting plug. In no case will the drainage of trench water through a complete pipe be permitted.

2. All curves, bends, tees, hydrants or ends of pipe shall be securely blocked with socket clamps or yokes to prevent movement. At the end of line or turn, where provision has been made for future extension or connection, fittings shall be furnished with lugs and anchored by means of socket clamps or yokes.

H. Adapters: When it is necessary to join pipes of different types the Contractor shall furnish and install the necessary adapters. Adapters shall have ends conforming to the above specifications for the appropriate type of joint to receive the adjoining pipe. When adapters join two classes of pipe, the bodies may be of the lighter class.

I. Pipe repairs shall be accomplished utilizing stainless steel double banded repair clamps (Rockwell 226 "Super Reach" or equal), installed in accordance with the manufacturer's printed instructions.

4.0 MANHOLES

4.1 DESCRIPTION

A. Provide precast concrete manholes for gravity sanitary sewer system.

B. Reconstruct existing manholes.

C. Provide connection to existing manholes.

4.2 MATERIALS

A. Precast concrete manholes shall conform to ASTM C 478.

B. Rubber gasket for precast manhole sections shall conform to ASTM C 361. Concrete and rubber gasket joint shall be watertight at head pressure of up to fifty feet (50').

C. Rubber gasket pipe to manhole seal for precast manholes: ASTM C 443.

1. Gasket shall be cast integrally in manhole wall.

2. Use "A-Lok" gasket as manufactured by Atlantic Concrete Products Company, Omega Concrete Products, Inc., Duncan Thecker Precast, or approved equal.

D. Ladder rungs: Shall be aluminum alloy conforming to ASTM C478.

1. Steps shall be twelve inches wide with a non-slip surface, with the ends turned up a minimum of two inches. Rungs shall be set into the wall a minimum of three inches, and extend six inches from the manhole wall.

E. Castings for Manholes: Campbell Foundry Pattern No. 1012D with lifting handles and "MLMUA" cast-in-lid, or approved equal.

4.3 METHODS OF CONSTRUCTION

A. Submittals: Submit manufacturers' product data for ladder rungs and precast manholes as specified in General Specification Section 2.0 entitled "Product Data".

B. Reference standards used in this specification:

1. New Jersey State Highway Department Standard Specifications:

   Section 603: Inlets and Manholes

2. American Society for Testing and Materials (ASTM):

   a. ASTM C361: Reinforced Concrete Low-Head Pressure Pipe.

   b. ASTM C443: Joints for Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

   c. ASTM C478: Precast Reinforced Concrete Manhole Sections.

C. The general method of construction and manhole reconstruction shall conform to Section 603 of the Standard Specifications. The manhole shall be constructed as shown on the standard details.

D. Manhole walls shall be constructed of precast concrete rings and all joints between. The outside surface shall be painted with seal coats of coal tar or asphalt. Manhole walls may be constructed of poured concrete, subject to approval by the AUTHORITY ENGINEER. Installation of rubber gaskets for precast manholes shall be in accordance with the manufacturers' recommendations.

E. Frames shall be well bedded in mortar, making a watertight joint. Cover and frame shall have a shop coat of asphaltic pitch and shall have a field coat of similar paint after the frame is set in final position. Steps shall be provided in the manhole as shown on the standard details.

F. Each manhole shall be constructed absolutely watertight. Manholes that are not watertight will not be accepted. Plastering on top of defective joints to correct leaky conditions will not be permitted.

G. The invert channels shall be smooth and semi-circular in shape conforming to the inside of the adjacent sewer section. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in size and grade of the channels shall be made gradually and evenly. The invert channels shall be formed in the concrete fill above the

manhole base, or shall be half tile laid in concrete, or shall be constructed by laying full section sewer pipe through the manhole and cutting out the top half after the surrounding concrete has hardened. The floor of the manhole outside the channels shall be smooth and shall slope toward the channels not less than one inch per foot nor more than two inches per foot.

H. Construct manholes to the lines and grades required in the system being installed.

I. A maximum of four (4) courses of brick, up to twelve inches (12") in height, shall be used on any precast manhole. When a greater number of courses is required to attain the proper grade, another precast section shall be used.

J. Provide all manhole top sections with minimum thirty-two inch (32") diameter clear opening.

5.0 PUMPS AND PUMPING STATIONS

5.1 DESCRIPTION

A. Design, furnish, install, test and monitor complete sanitary sewage pumping station if required by project conditions.

B. Sewage pumping stations shall be of the wet well/dry well type. Submersible pumps may be approved when previously arranged with AUTHORITY/ENGINEER.

5.2 SUBMITTALS

A. Prior to pump station approval, the applicant shall submit eight (8) copies of the following for approval:

1. Engineer's design report for the pump station including flow and head calculations for the pump station and common force main.

2. Design drawings and specifications.

B. Prior to construction, the Contractor shall submit shop drawings for the pump station in accordance with the General Specification Section 2.0, "Product Data".

C. Before testing and startup, ten (10) copies of complete pump station O & M manuals shall be submitted to the Authority/Engineer for review and approval.

D. As-built plans shall be submitted to the Authority/Engineer prior to the release of the performance bond.

5.3 PUMPS

A. Pumping station capacity should be compatible with the ultimate capacity of the influent sewer. At least two (2) pumps, each designed to handle peak flows for ten (10) year hence, shall be provided. If more than two (2) pumps are provided, their capacities shall be such that upon failure of the largest pump, the others will handle such peak flows. Pumps shall include run hour meters on the main electrical panels.

B. Pumps shall be installed in dry wells and preferably should operate under a positive suction head. Shutoff

valves will be provided on suction and discharge piping, which shall be flanged or otherwise removable, and check valves will be provided on discharges. Valves shall not be located in the wet well.

C. Special repair tools and accessories as well as ten (10) copies of all operation and maintenance literature required for maintenance shall be provided.

5.4 DRY WELLS AND WET WELLS

A. Dry and wet wells shall be completely separated and shall be provided with adequate ventilation, drainage and a means of entrance and exit.

B. Dry wells shall maintain a minimum eighteen inch (18") clearance near all walls to provide sufficient space and accessibility for the repair and removal of pumps.

C. The capacity of a wet well should not exceed ten (10) minutes retention when flow is at the average dry weather rate.

D. The floors of wet wells shall slope at least forty-five degrees (45°) toward pump suctions to prevent solids accumulation.

E. Dry wells are to be provided with a sump pump and flood alarm.

F. Dry wells and wet wells shall be designed and installed to comply with OSHA regulations and the requirements governing confined space entry.

5.5 ELECTRICAL EQUIPMENT

A. Electric motors shall be located so as to be protected from flooding.

B. Electric motors and electrical power equipment should not be installed in non-ventilated subsurface chambers; where installation in such location is necessary, the motors and equipment shall be of the explosion proof type.

C. The motor control center shall be located outside of the wet well in a suitable enclosure or building, approved by the AUTHORITY and Planning Board.

D. Automatic visual and audible alarm systems shall be provided for all pumping stations, operating independently of the station power. The alarm shall be activated in cases of power failure, pump failure, air compressor failure, ultrasonic level control failure, use of the lag pump (high water), or any cause of pump station malfunction. Pump station alarms shall be telemetered, including identification of the alarm condition to the sewage treatment plant or other location as designated by the AUTHORITY.

E. Ground fault interrupter (GFI) breakers shall be provided for all dry well and exterior fixtures.

F. All electrical equipment and work shall comply with Fire Underwriter's regulations for the location involved, the National Electric Code, and OSHA 1910.147.3.C.2.

5.6 EMERGENCY POWER

A. An auxiliary source of power shall be provided electrically driven pumps.

B. An emergency power source must be provided with automatic transfer capability in case of primary power failure. This unit must be sized so as to provide all power necessary to supply the electrical equipment of both the wet and dry well from the period of primary power failure.

C. An emergency 12 VDC lighting system with charger shall be provided in the dry well.

D. The AUTHORITY shall be supplied with ten (10) sets of operational instructions, including emergency procedures and maintenance schedules. Any special tools and spare parts as designated by the AUTHORITY shall also be provided.

5.7 PUMPING STATIONS - GENERAL

A. Unless otherwise approved by the Mount Laurel Municipal Utilities Authority (AUTHORITY) pump stations shall be underground concrete wet well, steel dry well type.

B. The Authority shall be contacted prior to the selection of any pump and/or pump station within the AUTHORITY's service area.

C. Pumps and pumping stations shall be provided for transfer of raw sewage when flow by gravity is not possible or impractical, as determined by the AUTHORITY/ENGINEER.

D. Raw sewage shall be screened before pumping unless special pumping equipment approved by the AUTHORITY is used. A trash basket and guide rails, constructed of either aluminum or stainless steel, must be provided in the wet well. A mechanical means, such as a winch, must be provided so this basket can be removed from the wet well for cleaning.

E. Dry and wet wells shall be completely separated and shall be provided with adequate light and ventilation and a means of entrance and exit.

F. Pumps shall be installed in dry wells and operate under a positive suction head. Submersible pumps or other pumps not requiring a positive suction head to operate are only permitted with prior AUTHORITY/ENGINEER approval.

G. At least two (2) pumps shall be provided at each pump station. All pumps shall be designed for at least 2.5 times the expected average daily flow for ten (10) years hence. Pumps shall be designed to overcome the total static and ultimate dynamic head conditions of any common force main flowing full. At the AUTHORITY's discretion, variable frequency drives (VFD) may be required for any new or rehabilitated pump station.

1. Two Pump System:

   a. One pump shall be considered a standby for the other.

   b. Both pumps shall be the same capacity.

   c. The pump considered to be the lead pump shall be alternated on each lead pump start up.

2. Three Pump System:

   a. The pumps shall be of such capacity that with any one pump out of service the remaining pumps shall have the capacity to handle the expected maximum flow.

   b. Lead pump is selected by a manual switch.

   c. Provisions shall also be included for all the

pumps to operate in parallel, should the level in the wet well continue to rise above the starting level for the lead pump.

H. Pumps shall be capacity of passing spheres of at least three inches (3") in diameter, and pump suction and discharge piping shall be at least four inches (4") in diameter. Each pump shall have an individual suction line.

I. Pump stations shall be located outside the FEMA 100 year flood area and shall not be subject to flooding. Pump stations shall be accessible by motor vehicles at all times.

J. Provide minimum 2,000 pound capacity winch with a 2.85 to 1 cranking ratio. Winch shall be the ratchet type with a disc brake. Winch shall be supported by a removable, swiveling type davit. Winch cable shall be minimum 3/16 inch diameter stainless steel and of sufficient length to reach the bottom of the dry well. The end of the cable shall be furnished with a spring loaded hook.

K. A complete telemetering system shall be provided to monitor the pumping station status, and transmit the result to the Authority's sewage treatment plant.

L. A flow meter shall be installed on the common pump discharge. The meter shall be capable of measuring flows from 0 gpm to 2.5 times the rated pump capacity.

M. The Contractor shall consult the AUTHORITY to ascertain compatibility of the proposed monitoring system with currently installed systems. Equipment shall be provided to monitor the following, and shall be MultiRanger+ as manufactured by Milltronics:

1. Emergency generator.
2. Ultrasonic level system failure.
3. High water level alarm.
4. Low water level alarm.
5. Power failure alarm.
6. Dry well high water alarm.
7. Panic switch alarm (manual).

N. Pump station design shall comply with all Occupational Safety and Health Standards (OSHA), including Section 1910.27 for minimum dimensions of access hatch openings.

O. The pump station design shall include a complete analysis of buoyant forces. In addition, structural design calculations for all concrete structures and metal support system shall be submitted.

P. Provide minimum of eight (8) copies of all shop drawings to the AUTHORITY/ENGINEER prior to manufacture for review.

Q. The pump station operation and maintenance manual shall include at a minimum, but not be limited to, the following information:

1. Certified pump curves from the actual pumps being furnished.

2. As-built reproducible Mylar drawings of the pump station (including slab thicknesses and reinforcing, piping and electrical conduits).

3. Suggested maintenance schedule.

4. Complete and detailed schematics of all electrical systems and controls, including schematic and wiring diagrams for the engine alternator set, automatic transfer switch and interconnecting diagram showing connections to individual components which constitute the standby power system.

5. Complete and detailed exploded view drawings of all equipment included with the pump station.

R. Authority's Engineer to perform on-site testing of all equipment including, but not limited to, determining pump capacity. The pump station manufacturer's representative shall be present for the testing.

S. The Applicant shall coordinate progress of the work with utilities and local authorities which require inspection and approval of the work.

T. The pump station and generator manufacturers shall each provide the services of a factory trained representative for a minimum period of eight (8) hours to perform initial start-up of the pump station and generator, and to instruct the AUTHORITY's operating personnel in the

operation and maintenance of the equipment. This instructions time is in addition to any required testing and equipment start-up preparation.

U. All aluminum materials shall be suitably protected against dissimilar materials such as concrete, steel, non-ferrous metals, etc. using neoprene washers, painting or other approved method.

V. The AUTHORITY shall be provided with special repair tools, spare parts and accessories for each pump station.

W. In addition to the above criteria, all pump stations shall meet the New Jersey Department of Environmental Protection Rules and Regulations for the Preparation and Submission of Plans for Sewer Systems and Wastewater Treatment Plants.

5.8 WET WELL

A. Minimum wet well diameter shall be seven feet (7'). Top of wet well slab shall be minimum nine inches (9") above the finished grade.

B. The concrete wet well construction shall conform to:

1. ASTM C478, Precast Reinforced Concrete Manhole Sections.

2. ASTM C890, Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.

3. ASTM C913, Precast Concrete Water and Wastewater Structures.

4. ASTM C443, Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets (for joint design only).

5. ASTM C923, Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes.

C. There shall be no joints between the base slab and first riser section as these two sections shall be monolithically constructed.

D. The floors of wet wells shall slope at least forty-five degrees (45°) toward pump suctions to prevent solids

accumulation.

E. Provide aluminum bar screen basket with aluminum guides, constructed of aluminum alloy 6061-T6 or 6063-T6. All raw sewage shall be screened before pumping unless special pumping equipment approved by the Authority is utilized. Provide removable bar screen basket with guide rails constructed of aluminum alloy 6061-T6 or 6063-T6. Minimum 3/16" by 1-1/4" aluminum flat bars shall be positioned on the bottom and all sides. Maximum clear space between bars shall be one inch (1"). All hardware shall be stainless steel.

F. Provide aluminum access ladder, integral with bar screen basket and guides, as shown in the AUTHORITY standard details. All hardware shall be stainless steel.

G. At the top of the ladder provide a minimum 3'-6" high aluminum grab bar which is secured to the wet well top slab. Vertical grab bar shall have the same spacing as the ladder side rails. All hardware shall be stainless steel.

H. Provide access hatches based on the following requirements:

1. One access hatch shall be provided to accommodate removal of the bar screen and for personnel access. Hatch size shall be as large as can be structurally accommodated in the wet well top slab. Minimum hatch width shall be thirty inches (30"). Minimum hatch length at the access ladder shall be thirty-six inches (36"). Locating the hatch door hinges on the same side of the opening as the access ladder or bar screen guides is not permitted.

2. Each hatch shall be equipped with heavy duty hinges, lifting handle, spring operators, automatic hold open arm with release handle, and a snap lock with removable handle, all of stainless steel. In addition, all hardware shall be stainless steel.

3. Two (2) heavy duty stainless steel safety chains shall be provided on each end of all double leaf doors.

4. The hatch covers shall be mill finished.

5. All metal used in fabricating the access doors shall be either aluminum or stainless steel. All aluminum

shall be alloy 6061-T6 or 6063-T6 and all stainless steel shall be Type 316.

I. Provide six inch (6") diameter opening in the top slab approximately 80° from the influent pipe for the ultrasonic level control transducer unit. Exact beam angle of throw shall be calculated so sonar will not interfere with walls or appurtenant structures.

J. Provide 1-1/2" diameter, Schedule 80, PVC sump pump discharge piping and casing. Casing shall be provided in a Thunderline Corporation "Link Seal" or equal. Primary discharge piping shall be elbowed and extended down to just above the high water level.

K. Between the dry well and wet well the sump pump piping shall be installed in a three inch (3") diameter Schedule 80 PVC casing piping. In the wet well, pipe supports on the primary discharge pipe shall be provided on four foot (4') centers. Pipe supports shall consist of aluminum angles with stainless steel hardware, connected in a triangular arrangement or approved equal.

L. Provide an air supply blower based on the following:

1. Capable of thirty (30) air change per hour.

2. Discharges air into the wet well.

3. Aluminum construction with weather cover over blower and motor.

4. Explosion proof motor and electrical connections when motor located under blower dome.

5. Discharge piping material to be PVC. Piping extends to three feet (3') above the high water level.

6. Piping to be adequately supported every four feet (4').

7. Locate blower above ground.

8. Electric motor direct drive.

9. Provisions for manual operation only shall be provided. On/off switch shall be located adjacent to the blower at least eighteen inches (18") higher than the wet well top of slab elevation.

10. Applicant's engineer to specify blower capacity and static pressure, and provide backup calculations.

M. Provide an exhaust blower utilizing the criteria in L. above, except piping shall end just below the wet well top slab.

N. On the entire interior concrete surface of the wet well provide a black coal tar epoxy-polyamide or approved equal painting system installed in accordance with the painting system manufacturer's recommendations (see Section 5.9.X.).

O. All materials inside the wet well shall be either aluminum alloy 6061-T6, 6063-T5 or 6063-T6, Type 316 stainless steel, PVC or fiberglass. This includes the fall prevention system, expansion anchors, anchor bolts, nuts and washers.

P. Minimum wet well lead pump operating volume shall be calculated by the Applicant's engineer, based on the following:

1. Lead pump operating volume, gal =

2. Pump rate, gpm @ Hazen Williams C = 150 friction factor. For pump stations connected to common force mains the pump rate utilized shall be with no other pumps on the system operating.

3. Total Cycle Time (two fill and one pump operating period):

4. Minimum fifteen (15) minutes for 75 horsepower motors and less, and any additional time as recommended by motor manufacturers.

5. Minimum twenty (20) minutes for greater than 75 horsepower motors and any additional time as recommended by motor manufacturers.

6. Wet well lead pump operating volume shall not exceed ten (10) minutes retention for one (1) fill period when flow is at the design average daily flow.

Q. Lag pump on level shall be set a minimum of six inches (6") above the lead pump on level. Ultrasonic high water alarm shall be set twelve inches (12") above the lag pump on level. The ultrasonic high water level alarm elevation shall be set below the bottom of the bar

screen. Mechanical high water float alarm shall be set a minimum of six inches (6") above the ultrasonic high water level alarm.

5.9 DRY WELL

A. Provide access ladder and entrance tube.

1. All ladder rungs shall be D-shaped with a serrated contact surface. Ladder rungs shall be minimum sixteen inches (16") long. The rungs shall be spaced on twelve inch (12") centers. Provide minimum of seven inches (7") from wall to centerline of rungs. Ladder supports shall be provided on four foot (4') centers. Entrance tube shall be designed in compliance with OSHA 1910.27.

2. Provide and install an aluminum ladder safety system consisting of sleeve assembly, rail sections extending the full length of the ladder, splice bars as necessary, rung clamps (3 for each 10 foot section), rail extension support for attachment at top of ladder, end stop assembly, belt assembly and all else necessary or required for a complete and safe installation. Ladder safety system and components shall be DBI/SALA Rail as manufactured by DB Industries, Inc., P.O. Box 46, Red Wing, MN 55066 (612) 388-8282 or approved equal.

B. Provide twin minimum 40 watt X2 fluorescent vapor tight lamp fixtures with wraparound safety cover. Protective light tubes are not permitted.

C. Provide an automatically operated dehumidifier. List the dehumidifier rating on the drawings (40 pints per hour at 80°F and 68% relative humidity). Condensate from the dehumidifier shall drain to the sump.

D. Provide an automatically operated sump pump with double check valves and discharge gate valve. List the sump pump rating on the drawings (___ gpm at ___ TDH). Provide backup calculations.

E. Provide dry well high water level alarm using mercury float or mechanical switch. See general requirements for additional information.

F. Provide an automatically operated heater. List the heater rating on the drawings.

G. Provide rechargeable, minimum five (5) pound capacity fire extinguisher (Class ABC) mounted on a wall bracket.

H. Provide a fully supplied first aid kit mounted on a wall bracket. Provide Johnson & Johnson No. 8161 or approved equal.

I. Provide one year's supply of manufacturer's suggested spare parts in a wall mounted cabinet. Minimum spare parts provided shall be as follows:

1. Two volute gaskets.

2. Two mechanical seals.

3. One wrench to take off pump impeller. In addition, provide any other specialty tools required.

4. One filter cone for each mechanical seal lubrication system.

5. One (1) full quart of each color paint utilized shall be provided.

6. Installation instructions will be provided with each spare part. Spare parts shall be packed in separate sturdy containers with indelible identification markings.

J. Provide air supply and exhaust blowers based on the following:

1. Capable of 30 air changes per hour.

2. Discharges air into the dry well.

3. Aluminum construction.

4. Electric motor direct drive.

5. Blower shall be activated by a manual switch located just below the entrance tube cover.

6. Applicant's engineer to specify blower capacity, static pressure and vent piping diameter. Provide backup calculations.

K. All equipment (compressors, heaters, blowers, regulators, air tanks) shall be located a minimum of 18-24" off the floor. In addition, they shall not be located under the

entrance tube opening. Steel floors shall have a blue removable polyvinyl chloride mat (Dri-Dek) as manufactured by Kendall U.S.A. or approved equal installed on the floor surface. All sharp corners within the dry well shall be rounded.

L. Provide cathodic protection system. Provide a milliamp meter system to measure effectiveness of the anode. Provide as a minimum, four (4) minimum seventeen (17) pound magnesium anodes. All anode wires shall enter the entrance tube 3'-0" below grade and run to the meter located in the dry well chamber.

M. Provide discharge and suction pipe gauge ports for each pump. For each port provide a ball valve followed by a diaphragm seal protector and a gauge (two per pump). In addition for drainage purposes provide a tee at the low point in the connection between the ball valve and diaphragm seal with a ball valve after the tee. Through the use of this ball valve any liquid in the connection shall drain onto the floor. Each gauge shall be 4-1/2" in diameter with 270 degree scale and a phenolic case. All gauges shall have 1/2 inch NPT connection.

1. Suction gauges: Provide stainless steel diaphragm gauges with the same total graduation and graduating marks as the wet well level gauge.

2. Discharge gauges: All gauges shall contain a stainless steel bourdon tube. Each gauge shall be provided with one of the following ranges:

	Pressure, psi
Total Graduation	30/60/100
Figure Intervals	5/10/20
Graduating Marks	1/2/2

3. The range selected shall be the first one shown which exceeds the ultimate pump shutoff head.

N. Sight tube shall be installed to indicate wet well level. This system shall include a shutoff ball valve on each pump suction line and one piece of clear polybutylene tubing extending to above ground level. The sight tube shall be located on the pump side of the raw sewage pump suction valve. For drainage purposes, provide a tee immediately after the shutoff ball valve with a ball valve after the tee. From the ball valve after the tee install a clear hose which extends to the sump.

O. Provide one lifting hook above each pump.

P. Electrical control steel panels shall be in accordance with NEMA 1 and shall be located across from the entrance tube. Each pump shall have a hand, off, auto switch and a push to test run light. Each pump shall have a minimum six digit hour run meter mounted on the face of the control panel.

Q. An ultrasonic wet well level control system, manufactured by Milltronics (MultiRanger+), or approved equal, shall be supplied and installed.

R. All pump motors shall be high efficiency, 230/460 volts, 3 phase, 60 hertz, 1,800 rpm maximum. The motor shall have grease lubricated anti-friction bearings of sufficient size to carry all pump thrust loads and have a minimum B-10 lift of 100,000 hours at the first pump design point. Motor shall be non-overloading for the entire pump operating curve. Motors shall be fitted with lifting eyes, each capable of supporting the entire weight of the pump and motor.

1. Each motor shall have a stainless steel nameplate attached to its frame with stainless steel screws.

2. The following information shall be displayed on the nameplate:

   Manufacturer's name
   Model number
   Serial number
   Frame description
   Service factor
   Motor speed
   Motor voltage
   Insulation class
   Bearing information
   Motor horsepower
   Motor amps

3. Motor wiring diagram shall be located either on the nameplate or in the conduit box.

S. All pump motor assemblies shall be pre-balanced in their entirety as a complete unit at the production factory. Certification of same shall be provided to the AUTHORITY in triplicate.

T. In order to prevent simultaneous starting of all pump

motors, provide a delay timer for the lag pump. Applicant's engineer to provide delay timer range and initial setting.

U. The raw sewage pumps shall be vertical, non-clog of heavy cast iron construction designed for use with double mechanical seals. Specify pump total capacity, total dynamic head and minimum efficiency. Provide backup calculations. Design pump friction losses shall be based on a Hazen Williams C value of 100. The required submergence over the suction piping shall be based on the flow possible in a new system with minimal pipe friction. The flow shall be the point where the Hazen-Williams C value of 150 system head curve intersects the selected design impeller. The pump net positive suction head (NPSH) required shall never exceed the NPSH available in the system at the eye of the impeller.

1. Provide hand hole on the suction piping 90 degree elbow. If available from the pump manufacturer, provide two volute cleanouts on each pump.

2. Each pump shall have a stainless steel nameplate attached to its frame with stainless steel screws. As a minimum the following information shall be displaced on the nameplate:

   Manufacturer's name
   Model number
   Serial number
   Rated capacity in gpm
   Rated total dynamic head in feet
   Pump speed
   Bearing information
   Impeller diameter

V. Dry wells shall provide sufficient space for accessibility for the repair and removal of pumps. A minimum of two feet (2') vertical clearance shall be provided between the top of each pump motor and the ceiling of the dry well chamber to allow for removal of the pump. Minimum dry well diameter shall be eight feet (8').

W. Raw sewage pump valves and piping:

1. Piping to be minimum Class 53 ductile iron conforming to AWWA C-151.

2. All pipe interiors to be lined with minimum 1 mil

bituminous coating. Cement lined ductile iron pipe is not permitted.

3. Provide a plug or resilient sealed gate valve on the suction side of each pump, and both a check and plug or resilient sealed gate valve on the discharge side.

4. All check, gate and plug valves shall conform to AWWA standards.

5. All check valves shall be the spring and lever type. All piping and valves shall be capable of withstanding minimum 150 psi pressure.

6. All piping and valves shall be flanged.

7. Unless otherwise approved, the pump station raw sewage piping arrangement shall be the flow through type, that is, the discharge piping shall exit on the opposite side of the station from the suction piping wall penetrations.

X. A spare quart of each paint color utilized in the dry well shall be supplied to the AUTHORITY. Also provide material safety data sheets for each type of paint supplied. The pump station appurtenances shall be painted based on the following color code:

1. Wet well:

   a. Interior:

      Two (2) coats Conlux Epolon #22, 8-10 mils, DFT/coat.

   b. Exterior:

      Below grade: Two (2) coats Conlux Epolon #22, 8-10 mils DFT/coat.

2. Dry well:

   a. Interior:

      One (1) coat Conlux "Rust Barrier #23", 1½-2 mils DFT.

      One (1) coat Conlux "Epolon Series", 2-2½ mils DFT.

Finish color: Conlux #7 white.

b. Exterior:

Below grade: Two (2) coats Conlux "Epolon #22", 8-10 mils DFT/coat.

Above grade:

One (1) coat Conlux "Epolon Mastic 36", 5-7 mils DFT.

One (1) coat Conlux "Epolon Series", 5-7 mils DFT,

Finish Color: Conlux #8 "Delta Green".

3. Interior raw sewage piping, valves, pumps and motors:

a. Ferrous metal:

One (1) coat Conlux "Rust Barrier #23", 2 mils DFT.

Two (2) coats Conlux "Enanclite 500 Series", 2 mils DFT.

Finish color: Conlux #532, "French Gray".

b. Galvanized, non-ferrous or plastic:

Two (2) coats Conlux "Steel Guard 8500 Series", 2 mils DFT/coat.

Finish color: Conlux #8532, "Blue Steel".

c. NOTE: Aluminum or pretreated galvanized metal may require vinyl-phosphoric wash primer before prime coating.

Y. The entrance tube shall extend a maximum of two feet (2') above the finished grade. Minimum entrance tube diameter for dry wells with fall prevention systems shall be forty-two inches (42"). The station entry hatch shall lock and three (3) sets of identical keys shall be provided with the station. The lock shall have an inside keyless release.

5.10 STANDBY EMERGENCY POWER ENGINE/GENERATOR

A. General:

The Contractor shall furnish and install a complete diesel engine/generator set, complete, at the job site. The complete standby system shall consist of:

1. A diesel engine/generator set to provide standby electric power during periods of failure of normal utility power supply. The engine/generator capacity shall be selected on the following basis:

   a. Engine/generator set capacity shall be sized assuming raw sewage pumps operating with motors sized to drive pumps installed with largest pump impeller required for all future flows and all future total dynamic head conditions.

   b. Starting: Unit shall be capable of simultaneously starting all raw sewage pumps required to handle the average daily flow, and a minimum accessory load of 6.5 KW due to equipment in the dry well, and the wet well light and blower. Any additional loads for items such as exterior lights shall also be included. A time delay device shall be used to sequentially start the remaining raw sewage pumps.

   c. Operation: Unit shall be capable of continuously running all raw sewage pumps, the minimum 6.5 KW accessory load, exterior lights and any other items requiring electricity to operate at the site.

   d. Unit shall be 3 phase, 60 hertz and capable of delivering the required power as described above at 0.80 power factor.

   e. Frequency regulation shall not exceed 3 hertz from no load to rated load. Frequency variation shall not exceed plus or minus 0.3 hertz for constant loads from no load to rated load.

   f. Voltage regulation from no load to rated load shall be within plus or minus 2 percent of rated voltage for any size unit.

g. Instantaneous voltage dip for all possible sequences of load application and motor starting for loads described in conditions of service shall not exceed twenty percent (20%) of nominal voltage.

h. Sound attenuation: The unit shall be designed so that the maximum sound level generated shall not exceed 90 DB at a distance of fifty feet (50') from the intake or the exhaust system. Sound readings shall be taken with generator operating under a full load condition. Applicant to provide certification from manufacturer.

2. Engine generator control console mounted on the generating set.

3. An automatic load transfer control to provide automatic starting and stopping of the plant and switching of the load.

4. Mounted accessories and other equipment as specified.

5. Weatherproof, heavy gauge painted steel or aluminum housing with removable side panels insulated as necessary.

6. A rechargeable, minimum five (5) pound capacity fire extinguisher (Class ABC) mounted near the generator in a weatherproof enclosure.

B. Diesel Engine:

1. Engine shall be heavy-duty compression ignition, cold starting diesel type arranged for direct connection to an alternating current diesel generator. Engine shall have a published brake horsepower rating capable of operating the generator at speed required during full load output. Engine shall not exceed 1,800 RPM under full load conditions.

2. Engine shall be capable of operating satisfactorily on No. 2 fuel oil.

3. Fuel supply pump with replaceable fuel filter shall be supplied.

4. The engine shall be cooled by a unit-mounted radiator with integral jacket, water circulating pump, and fan. Thermostatically controlled water jacket heater shall be minimum 1,000 watt unless otherwise approved. Radiator shall be of sufficient capacity to operate engine at full rated generator load at 120°F ambient temperature.

5. Oil lubrication shall be supplied by a positive displacement, lube oil pump. The engine shall have a replaceable, full-flow, oil filter located ahead of the lube oil pump. An oil cooler shall be supplied if recommended by generator manufacturer.

6. Performance and materials shall be in accordance with Diesel Engine Manufacturer's Association standard practices.

7. If approved by the AUTHORITY, a natural gas powered engine may be provided.

C. Generator:

1. Generator shall be rated for continuous duty; shall be rotating field, engine-driven, direct-connected, synchronous type with amortisseur winding. Generator frame shall be drip-proof with all openings guarded.

2. Generator insulation shall be Class B or F in accordance with NEMA Standards. Temperature rise shall be in accordance with NEMA Standards for continuous duty at all output ratings.

3. Voltage regulator shall be an automatic, temperature compensated, solid-state type with a manual adjustment range of plus or minus five percent (5%) of rated voltage.

4. Exciter shall be solid-state, brushless rotating type.

5. Fast acting fuses or other protective devices shall be incorporated where failure of regulator or exciter components could result in damage to the generator field or exciter windings.

6. Voltage regulator and exciter shall be mounted in generator control panel or elsewhere so as to protect from and isolate from vibration.

7. Generator and exciter shall conform to all applicable requirements of NEMA Standards.

8. Generator lead terminal box shall be of ample size to accept and terminate connecting cables. Generator leads shall be furnished with terminal connectors suitable for connecting cables.

9. Provide thermal-magnetic type main circuit breaker in generator cabinet for protecting of generator set, testing and maintenance.

D. Engine Electrical System:

1. Electrical system shall include a manufacturer's recommended lead acid heavy-duty battery, starting motor, voltage and current-regulated charging generator or alternator, and a separate battery charger. Battery shall be of suitable capacity to start engine at all load conditions and shall be mounted in an accessible location in the enclosure. Provide battery cables and battery rack.

2. Provide outside electrical outlet for 120 volt power.

E. Control Panels:

1. Engine and generator control panels may be separate panels, or a combined panel, and mounted with vibration isolators on the unit in a NEMA 4 enclosure. Control module shall be located on the generator end of the set. Instruments shall be of direct-reading type, factory mounted and factory connected. Instruments shall be accurate within three percent (3%).

2. Provide engine panel with following features and instruments:

   a. Three position run-stop-remote switch.

   b. Manual starting switch.

   c. Full automatic starting from pilot device initiating start when normal power fails. Automatic cranking shall be interrupted cycle type not affected by ambient temperature with overall time limit. A total of three (3) cranking cycles (approximately 10 seconds each)

shall automatically shut down engine.

d. Automatic engine shutdown for the following fault conditions:

(1) Over crank

(2) Over speed

(3) Low lube oil pressure

(4) High engine temperature

e. Indicator lamps shall be provided to signal the following functions:

(1) RUN - indicates start disconnect.

(2) OVER CRANK - indicates the starter has been locked out because cranking time was excessive.

(3) OVER SPEED - indicates engine has shut down because of excessive rev/min.

(4) HIGH ENGINE TEMPERATURE - indicates engine has shut down because of critically high temperature.

(5) LOW OIL PRESSURE - indicates engine has shut down because of critically low oil pressure.

(6) PRE-HIGH ENGINE TEMPERATURE - indicates engine temperature is marginally high.

(7) PRE-LOW OIL PRESSURE - indicates oil pressure is marginally low.

(8) LOW ENGINE TEMPERATURE - indicate engine temperature is marginally low for starting.

(9) SWITCH OFF (FLASHING) - indicates control switch is in the "STOP" position.

(10) LOW FUEL - indicated fuel supply is marginally low.

(11) Two spare faults (red), for future

Authority use.

f. A fault reset switch shall be provided to clear fault indications and allow restarting of the engine after shutdown faults. The control design shall be such that the fault indication shall remain until reset. The fault indicator memory shall not be dependent on the presence of either A-C or D-C voltage and shall retain the fault status memory even through complete removal and replacement of the starting batteries. The fault reset function shall operate only when the RUN-STOP REMOTE switch is in the STOP position.

g. A locking screwdriver type potentiometer shall be provided to adjust the voltage ±5% from rated value.

h. Manual reset exciter field circuit breaker.

i. AC voltmeter, 90 degree scale, 2½" (61.25mm) flange, 2% switchboard meter.

j. AC ammeter, 90 degree scale, 2½" (61.25mm) flange, 2% switchboard meter.

k. Frequency meter 45-65 Hz., 90 degree scale, 1½" (61.25mm) flange, ±0.6 Hz. panel meter.

l. Four position Ac meters phase selector switch to read line current and voltage in each phase with off position.

m. Water temperature gauge.

n. Ammeter charging circuit.

o. Lubricating oil pressure gauge.

p. Running time meter.

q. Light with on/off switch for panel illumination.

F. Generator weatherproof enclosure:

1. Enclosure shall consist of a roof, two side walls and two end walls of prepainted steel or aluminum construction. Doors and removable panels shall be

provided for access to the generator.

2. Steel shall be minimum 16 gauge thickness and aluminum shall be Alloy 6061-T6 with a minimum thickness of 0.04 inches. Provide sound attenuated walls and roof to reduce generator noise as required to meet the requirements in these Rules and Regulations.

G. Appurtenances:

1. All accessories needed for the proper operation of the pump station and generator shall be furnished. These shall include, but be limited to, the following:

   a. A painted critical type exhaust muffler, and stainless steel flexible exhaust connection. Muffler shall be factory mounted on the housing with the condensate drain located at the bottom. To prevent birds from entering the muffler a threaded exhaust piping extension shall be installed with the end of the piping cut at a 45° angle. The shortest end of the pipe shall be on the bottom.

   b. Above ground fuel tank shall be the double walled skid type mounted directly below the generator. Tank capacity shall be either seventy-five (75) gallons or sufficient capacity to operate the generator at full load for twelve (12) consecutive hours, whichever is greater. Above ground storage tanks shall not exceed 660 gallons unless they conform to NFPA 30 and the Uniform Construction Code. Fuel system shall include fuel gauge, fuel lift pump (if recommended by generator manufacturer), and all necessary fuel piping. Fuel piping shall be Type K soft temper copper tubing, or as recommended, and installed by the manufacturer. All above ground fuel storage tanks shall be designed and installed in conformance with NJDEP requirements.

   c. A mechanical governor capable of maintaining engine speed within five percent (5%) of synchronous speed from no load to full load shall be furnished.

d. Control wires running between generator and transfer switch shall have termination identification on both ends. Identification shall be provided for each device or function and shall be silkscreened white on a black background.

H. Paint:

1. Unless otherwise noted, paint for exterior surfaces of equipment (including skids) shall be two (2) coats of acceptable oil and heat-resistant paint, applied after surfaces have been thoroughly cleaned and prepared with suitable priming coat. Color for weatherproof housing and automatic transfer switch shall be green, unless otherwise approved.

2. The generator muffler shall be protected with two (2) coats of high heat aluminum paint. The paint system shall be primed in accordance with the manufacturer's recommendations.

3. All painted surfaces damaged during installation shall be restored by the applicant/developer.

I. Spare parts:

Provide spare parts as recommended by manufacturer for six (6) months of operation for each engine-generator set in addition to the following:

1. One filter for each type of service.

2. One fuse for each rating.

J. Automatic load transfer control:

1. The complete automatic load transfer control shall include the necessary relays and components parts, together with U.L. listed and tested interlocked contactor, and shall provide the following functions:

a. Upon normal power line outage, automatically start the pump station, and when the pump station comes up to voltage, disconnect the normal circuits from the main line and transfer them to the emergency pump station's output.

b. Upon power line return, transfer the load back to the line and stop the pump station.

2. Each contact pole of the main transfer device shall be double break design, with solid silver cadmium contacts, capable of handling both non-inductive and inductive loads and allow for inrush currents of twenty (20) times the continuous rating. Contact pressure shall be maintained by a coil spring, not a part of the current carrying path. The ampere rating of the transfer switch shall be sufficient to handle the capacity of the pump station and loads being transferred.

3. The control shall contain either a 12 or 24 volt, fused, battery trickle charging circuit, with a rheostat and ammeter, to maintain starting batteries fully charged.

4. The automatic transfer switch shall be provided with terminal lugs for copper wire and shall have individual, heat resistant chambers to protect against arcing. The transfer switch shall be provided with mechanical and electrical interlocks to prevent simultaneously energizing both normal and emergency service.

5. The transfer switch shall be located in a NEMA 1 enclosure which is contained in a separate NEMA 4 enclosure, if skid mounted for outdoor use.

6. Control accessories in the NEMA 1 enclosure shall mount on a dead front, swing out control accessory panel to avoid shock hazard while adjusting control functions, but will swing out exposing the wiring to facilitate servicing. Indicating lamps and meters shall be set in a front mounted panel to be visible with only opening the NEMA 4 enclosure door.

7. Solid-state voltage sensors shall simultaneously monitor all phases of the normal source and all phases of the emergency source to provide adjustable range sensors for field adjustment for specific application needs. Voltage sensors shall be temperature compensated type, for maximum deviation over the temperature range of -20°F to +175°F. Voltage sensors shall allow for adjustment to sense partial loss of voltage on any phase or normal or emergency source, even where motor feedback voltages exist.

8. Controls shall signal the emergency power system to start upon signal from normal source voltage sensors. Solid-state time delay start, adjustable from 0 to 5 seconds shall avoid nuisance start-ups on momentary voltage dips or momentary interruptions.

9. Switch shall transfer the load to the emergency power system after the generator set reaches proper voltage and frequency. Solid-state timer delay transfer, adjustable from 2 to 120 seconds shall allow the engine-generator set to stabilize before application of load.

10. The transfer switch shall control the generator set to allow generator set to start and transfer load within ten (10) seconds after normal source power failure.

11. Switch shall retransfer the load to the normal source after normal power restoration. Solid-state time delay retransfer, adjustable from 0 to 30 minutes, shall allow;

    a. Normal power to stabilize before retransfer.

    b. Staggered retransfer.

    c. Engine to run unloaded for cool down before shutdown.

    d. Cool down period shall be adjustable from 0 to 10 minutes.

12. The operating power for transfer and retransfer shall be obtained from the source to which the load is being transferred. Controls shall provide an automatic retransfer of the load from emergency source to normal source if emergency source fails when normal source is available.

13. Transfer switches shall have the "Programmed Transition" feature available by plugging the proper Program Timer into the factory installed timing receptacle. This provides the capability of either factory or field installation of this feature. This feature shall incorporate a field adjustable time delay of 1.5 to 15 seconds. The time delay shall occur during switching in both directions, during which time the load is isolated from both normal and

emergency sources. This will allow residual voltage components of motors or other inductive loads (such as transformers) to decay before completing the switching cycle. The Program Timer shall be connected in a manner that will not cause the time delay in switching, where the time delay as already been established by the loss of voltage to the load during normal source power interruptions. Transfer methods that use the phase relationships between the two power sources to control initiation time are not acceptable. Provide program timer.

14. Controls shall provide built-in "control mode status indicators", consisting of LED's to indicate a sequence of functions such as the following:

    a. Source 1 OK

    b. 2-wire run

    c. Source 2 OK

    d. Timing for Transfer

    e. Transfer Command

    f. Timing for Retransfer

    g. Retransfer Command

    h. Timing for Stop

    These indicators shall allow the operator to determine that the controls are properly sequencing and shall assist in determining sequence of any malfunctions that might occur.

15. Provide position indicator lamps (green "NORMAL" and red "EMERGENCY") and a key operated selector switch to provide the following positions and functions:

    a. TEST - simulated normal power loss to control unit for testing of generator set, including transfer to load. Control system shall provide for "system test without load transfer" for use in that manner when desired.

    b. NORMAL - this is normal operating position and it restores the load to the normal source after test and after time delays.

c. RETRANSFER - momentary position to override retransfer time delay and cause immediate return to normal source after test or actual outage.

16. Provide exerciser clock to set the day, time and duration of generator set period; also include "with/without load" selector switch. Clock shall have a one (1) week dial minimum. If normal power is interrupted while the generator is exercising at no load, the load is immediately transferred to the set.

17. Provide battery charger, SCR voltage regulated type, with float and taper features; 12 or 24 V.D.C. as required for generator set. Charger shall have charging ammeter and fuse protection. Charger shall not be damaged during engine cranking.

18. Transfer switch capacity shall be no smaller than the disconnect switch capacity.

19. Provide contacts to operate an alarm light in the dry well and a remote alarm indicating the generator is supplying power to the dry well. Upon automatic shutdown the signal will be deactivated.

K. Products:

1. Single manufacturer: This equipment shall be manufactured by a single source manufacturer who has been regularly engaged in the production of engine-generator sets. The emergency electric generating system described herein, including these components shall be factory built, factory tested, and shipped by one source of supply and responsibility for warranty, parts and service. This manufacturer shall have a local representative who can provide factory trained servicemen, required stock of replacement parts, and technical assistance.

2. Safety standards: The electric generating system must meet all requirements of NFPA 110 (latest edition) including design specifications, prototype tests, one-step full-load pickup, and installation acceptance. Automatic transfer switch shall conform to U.L. 1008.

3. The responsibility for performance to this specification includes the entire system and cannot

be split up among individual suppliers of components comprising the system, but must be assumed solely by the supplier of the system.

4. All controls shall be the standard of the manufacturer, who is engaged in the manufacture of engine-generator sets, transfer switches, and accessories and has then available for sale on the open market. Control parts shall be identified by part numbers of this manufacturer and shall have second source listing where applicable.

L. Field quality control:

1. Provide full load test utilizing portable test bank for four (4) hours minimum. Simulate power failure including operator of transfer switch, automatic starting cycle, automatic shutdown and return to normal. All testing procedures shall be as described in NFPA 110 under Installation Acceptance.

M. Personnel training:

1. The generator manufacturer shall provide the services of a factory trained representative for a minimum period of eight (8) hours to perform initial start-up of the generator, and to instruct the MLMUA'S personnel in the operation and maintenance of the equipment. Initial start-up of generator shall conform to NFPA 110.

N. Shop drawings and O & M Manuals:

1. Applicant's engineer to specify generator capacity and shall provide AUTHORITY with backup information justifying the capacity selection. As a minimum, backup information shall identify motor horsepower and accessory load, motor voltage, motor code letter, starting sequence, and full or reduced voltage starting requirements. Manufacturer's load calculation sheets for both the specified generator and the furnished generator shall be submitted to the AUTHORITY.

2. Applicant shall provide eight (8) copies of manufacturer's shop drawings for approval prior to fabrication. All eight (8) copies will be utilized by the AUTHORITY and the applicant shall furnish additional copies for his use. As a minimum shop drawings shall contain:

a. Plan and elevation views with both overall and interconnection point dimensions, fuel consumption rate curves at various loads, ventilation and combustion air requirements, and electrical diagrams including schematic and interconnection diagrams.

b. Product data showing dimensions, weights, ratings, interconnection points, and internal wiring diagrams for engine, generator, control panel, transfer switch, battery, battery rack, battery charger, exhaust silencer, vibration isolators and skid tank.

c. Warranty data.

d. Generator capacity with backup information justifying the capacity selection. As a minimum, backup information shall identify motor horsepower and accessory load, motor voltage, motor code letter, starting sequence, and full or reduced voltage starting requirements. Manufacturer's load calculation sheets for the furnished generator shall be submitted for approval.

3. Provide ten (10) copies of the generator operations and maintenance manual including, but not limited to:

a. As-built plans of the concrete support pad and conduit locations.

b. Suggested maintenance schedule and step by step maintenance procedures.

c. Complete and detailed schematics of all electrical system and controls, including schematic and wiring diagrams for the engine alternator set, automatic transfer switch and an interconnecting diagram showing connections to individual components which constitute the standby power system.

d. Complete and detailed exploded view drawings of all equipment. Include description of all parts.

e. Copy of all approved shop drawings.

4. All operation and maintenance and warranty materials shall be submitted before testing of the generator takes place.

O. Warranty:

The complete standby electric power system, including engine-generator set and transfer switch equipped with set exerciser, and running time meter, shall be warranted for a period of five (5) years or fifteen hundred (1,500) operating hours, whichever occurs first, from the date of initial start-up. During the warranty period manufacturer shall promptly furnish the MLMUA with replacement parts for all items deemed defective. Multiple warranties for individual components (engine, generator, controls, etc.) will not be acceptable. Satisfactory warranty documents must be provided. This warranty shall be detailed in available written documents. In the judgment of the MLMUA, the manufacturer supplying the warranty for the complete system must have necessary financial strength and technical expertise with all components supplied to provide adequate warranty support.

5.11 PUMP STATION SITE

A. Provide minimum seven foot (7') high fence along the pump station area perimeter. All fence shall be located a minimum of ten feet (10') behind the present or future public right-of-way line or privately owned curbing and sidewalk. All slabs, equipment and utilities shall be located within the fenced area at least three feet (3') from the fence.

B. Fence shall be vinyl coated and provided as follows:

1. Fabric: Material shall be thermally fused vinyl coated steel chain link fabric conforming to ASTM F-668, Type 2B with a two inch (2") mesh. Vinyl coating thickness shall be minimum 0.006 inches. Vinyl color shall be green. Galvanized core wire shall be 0.148 inch diameter with a break load of 1,290 pounds. Galvanizing shall be in accordance with ASTM A-641.

2. Framing: Materials shall be vinyl coated Schedule 40 galvanized pipe conforming to ASTM A-120. Vinyl coating shall be 10-14 mils thick and applied by the fusion bonding process. The inside surface shall be

given corrosion protection. The internal coating shall be applied before or after welding and shall protect the metal from corrosion when subjected to the salt spray test of ASTM B-117 for three hundred (300) hours with the end point of five percent (5%) Red Rust.

3. Accessories:

   a. Post and line caps, rail and brace ends, sleeves, tension bars, tension and brace bands, truss' rods, and other accessories shall conform to ASTM F626 and be vinyl coated.

   b. Tie wire shall be 13 gauge vinyl coated.

   c. Tension wire shall be 6 gauge vinyl coated wire fastened with vinyl coated hog rings.

4. Wire:

   a. Wire shall be vinyl coated 12½ gauge line wires.

5. Cantilevered Sliding Gates:

   a. Gate frames shall be made of two inch (2") square aluminum tubing, alloy 6063-T6, weighing .94 pounds per lineal foot and shall be welded at all corners so as to form a rigid one-piece unit. Fabric shall be securely stretched and held on all four sides in the two inch (2") square tubing by use of hook bolts and tensions rods. Fabric filler shall match fence.

   b. Gate leaf sizes from 15'0" to 22'0" shall have a cantilever overhand of 10'0".

   c. All cantilever overhand frames shall have 3/8" galvanized steel bracket rods.

   d. The enclosed track shall be a combined track and rail aluminum extrusion having a total weight of 3.72 pounds per foot and designed to withstand a reaction load of 2,000 pounds.

   e. Two (2) swivel type zinc die cast trucks having four (4) sealed lubricate ball-bearing wheels, two inch (2") in diameter by 9/16" in width, with two (2) side rolling wheels to insure

alignment of truck in track shall be provided for each gate leaf. Trucks shall be held to post brackets by 7/8" diameter ball bolts with ½" shank. Truck assembly shall be designed to take the same reaction load as the track.

f. All gate hangers, latches, brackets, guide assemblies and stops shall be galvanized after fabrication, malleable iron or steel. A positive latch shall be provided with provisions for padlocking.

g. Gates and gate posts shall be coated by the thermally fusion process with PVC, 10 to 15 mils thick, to match the fence.

h. Gates shall be installed on four inch (4") O.D., Schedule 40 galvanized posts weighing 9.11 pounds per foot. Three (3) posts are to be used for single slide gate and four (4) posts for double slide gate.

i. Guide wheel assemblies shall be provided for each supporting post. Each assembly shall consist of two (2) rubber wheels four inch (4") in diameter and shall be attached to post so that the bottom horizontal member will roll between the wheels which can be adjusted to maintain plumb gate frames and proper alignment.

6. Hardware:

a. Hinges: Hinges shall be structurally capable of supporting the gate leaf and allow the gate to open and close without binding. The hinges shall be so designed to permit the gate to swing a full 180° outward.

b. Double Gate Latch: This latch shall be a drop rod or plunger bar arranged to engage the gate stop. Locking devices shall be constructed so that the center drop rod or plunger bar cannot be raised when the gate is locked. This latching devices shall have provision for a padlock.

c. Gate Stops: Gate stops shall be provided for all double gates and shall be suitable for setting in concrete for the center drop rod or

plunger.

d. Keepers: Keepers shall be provided for each gate leaf over five foot (5') (1.5 m) wide. Gate keepers shall consist of a mechanical device for securing the free end of the gate when in full open position.

e. All hardware shall be galvanized and vinyl coated.

7. Wood or masonry type fencing may be utilized at the discretion of the AUTHORITY/ENGINEER.

C. Adequate light and ventilation shall be provided at all pumping stations. Where operation or maintenance duties are required in enclosed areas or pits, forced ventilation by suitable means shall be provided with sufficient capacity to induce at least thirty (30) air changes per hour. Explosion-proof equipment shall be utilized.

D. Adequate fresh water facilities shall be provided to permit routine wash down and cleaning operations at all pumping stations. Where a domestic service connection is provided to a pumping station, the water supply shall be properly protected with an appropriate backflow prevention device. No cross connections between fresh water and sewage pumps or pipes shall be permitted.

E. Sewage pumping station structures and electrical and mechanical equipment shall be protected from physical damage by the 100-year flood. Sewage pumping stations shall remain fully operational and accessible during the twenty-five (25) year flood.

F. The pumping station shall be readily accessible by maintenance vehicles during all weather conditions.

G. A paved access road shall be provided for ingress and egress to the pump station. The access drive shall include a turn-around area.

H. The entire site shall be fenced, and all appurtenances located within minimum 50' x 50' parcel.

I. Site area lighting shall be provided and shall be shielded as necessary to protect adjacent uses from nuisance lighting.

J. Provide external lighting with protective covering. Means of controlling light and type of light shall be dependent on pump station location and subject to AUTHORITY approval. Provide minimum one foot (1') candle illumination at generator, electrical control pad, dry well and wet well.

K. Sheared white pine screening, or approved substitution, shall be provided around the outside perimeter of the station fence. Provide a eight foot (8') wide stone mulch area (6" thick) with polyethylene weed barrier below starting out from the edge of the pump station pavement.

L. Provide gravity sewer manhole within the pump station's fence.

M. Provide a source of potable water with a frost proof post hydrant and one inch (1") hose bib connection.

N. Within the pump station fenced-in area, provide a Josam 71400-4-81 or approved equal freeze-proof post hydrant with one inch (1") inlet, one inch (1") threaded brass hose nozzle, one inch (1") galvanized steel pipe outer casing, 1/8" drain hole and furnished for four foot (4') depth of bury. Provide Nidel Model 34HD vacuum breaker-backflow preventer. Provide minimum one (1) cubic yard of 3/4" washed gravel below hydrant for drainage purposes.

O. Provide fifty feet (50') of one inch (1") heavy duty, double layer nylon reinforced rubber water hose. Provide a high pressure adjustable brass nozzle with adjustable spray pattern and removable barrel to fit the hose. Provide a galvanized steel hose rack on a stand located adjacent to the post hydrant. Stand shall be five feet (5') high by two inch (2") diameter Schedule 40 galvanized pipe with pipe cap. Set pipe two feet (2') deep with twelve inch (12") diameter by two feet (2') deep concrete footing. Bolt rack to pipe with 2-1/4-20 by three inch (3") stainless steel carriage bolts with self-locking nuts. Post hydrant, hose rack and stand shall all be painted green. Hydrant and stand to be located out of the motor vehicle traffic area. No connections between fresh water and sewage pumps or pipes shall be permitted.

P. Pavement to extend six inches (6") beyond fence perimeter. Apply tack coat conforming to NJDOT Standard Specifications Grade RC-70 or RC-T cutback asphalt or

Grade SS-1 emulsified asphalt, Section 904.02 or 904.03 over entire stabilized base course.

Q. Extending from the dry well/wet well area pavement shall have minimum 0.75% slope towards fence. Finished surfaces shall be free from all roller marks, ridges and voids. Surfaces will not be acceptable if any puddling is possible or if slope is off more than ¼ inch in ten feet (10') when tested in any direction.

R. Provide a fifteen foot (15') wide driveway up to the pump station gate. Cantilevered slide gate shall be minimum twelve feet (12') wide. A motor vehicle entering the site shall have the ability to drive to both the wet well and dry well. The access drive shall include a turnaround area.

S. The generator shall be mounted on a concrete pad at least five feet (5') away from the dry well and wet well perimeter. All electrical controls shall be mounted on a support system anchored by a concrete pad. The concrete pads shall extend minimum nine inches (9") above final grade.

T. All bolts, nuts, and washers whether buried, embedded in concrete or exposed above grade shall be stainless steel. All nuts and rods for harnessing shall be bituminous coated.

U. The pump station property line shall extend to at least ten feet (10') outside the pump station fence and shall include the access road and turnaround area.

V. In the event the dry well is inoperable in the future, provide a dry well bypass piping system with tees and valving. In addition, provide a gate valve before the force main tee connection to isolate the dry well. The system shall be located within the pump station fenced-in area. All gate valves shall meet the applicable requirements of AWWA and be iron body, resilient sealed, with a non-rising stem. All valves shall be opened by turning to left, or counterclockwise. In addition, valves shall be supplied with mechanical joint ends. Valve boxes shall be constructed of cast iron with a round base. Valve box covers to read "MLMUA". Inside diameter of valve box column shall be 5¼ inches. A "T" handle steel socket wrench of 5/8 inch round stock and long enough to extend two feet (2') above the ground shall be furnished. One wrench shall be provided for operating each size of buried valve.

W. The following safety signs shall be provided as follows as manufactured by Safety Sign Company, Cleveland, Ohio:

(2) Danger Confined Space #07-01-384 (7"x10")
(1) Danger Diesel Fuel #93-95-242 (3"x5")
(2) Danger Equipment Starts Automatically #93-95-386 (3"x5")
(1) Danger 480 (or 240) Volts (as appropriate) #93-95-233 (3"x5")

X. Sump Pump Piping Sleeves and Wet Well Joint Leakage Test: Before putting the pump station into operation the contractor shall fill the wet well to the top with clean water to demonstrate both the sleeves connecting the wet well and dry well and all the wet well joints are watertight. Water level shall be maintained at top of the wet well slab for one (1) hour by the contractor without the addition of water. Before the test commences the contractor shall position a sufficient number of pumps to dewater the dry well in the event of a leak. If the test is unsuccessful, the contractor shall make repairs and retest sleeves as many times as is necessary.

Y. All tests shall be conducted in the presence of the ENGINEER.

Z. All pumping station sites must be provided with a street address on a separate parcel with a distinct lot and block number.

6.0 TESTING SANITARY SEWER SYSTEMS

6.1 DESCRIPTION

A. Test gravity sanitary sewer for exfiltration and infiltration.

B. Lamp all gravity sanitary sewer lines.

C. Remote television inspection.

6.2 MATERIALS

Furnish pumps, valves, plugs, taps, pressure gauges, air compressor, and all other equipment required for testing of piping system.

6.3 METHOD OF TESTING - EXFILTRATION TEST FOR GRAVITY SANITARY SEWER LINES

A. General requirements:

1. Perform all tests in presence of the ENGINEER.

2. Conduct exfiltration test when all utilities (including gas, water, telephone, sewers), manholes, laterals have been installed.

3. Establish test sections between consecutive manholes as directed by the ENGINEER.

4. All requirements of this specification shall be met prior to acceptance of sewer facilities by the ENGINEER.

B. Procedure for exfiltration test (low pressure air test, 3.5 lbs.):

1. Plug test section of sewer line at each end. Tap one (1) plug and provide air inlet connection for filling pipe from air compressor.

2. Cap or plug all service laterals, stubs and fittings connecting to sewer test section, brace same against internal pressure to prevent air leakage by slippage and blowouts.

3. Connect air hose to tapped plug selected for air inlet. Connect other end of air hose to portable air control equipment used for controlling air entry rate to sewer test section and monitoring air pressure in pipeline.

4. Air control equipment shall include shut-off valve, pressure regulating valve, pressure reduction valve and monitoring pressure gauge having pressure range from 0 to 5 psi and an accuracy of +0.04 psi.

5. Connect another air hose between air compressor (or other source of compressed air) and air control equipment. This completes test equipment set up.

6. Supply air to test section slowly, filling pipeline until constant pressure of 3.5 psig is maintained. Air pressure must be regulated to prevent pressure inside the pipe from exceeding 5.0 psig.

7. When constant pressure of 3.5 psig is reached, throttle air supply to maintain internal pressure above 3.0 psig for at least five (5) minutes, permitting temperature of entering air to equalize with temperature of pipe wall. During this stabilization period, check all capped and plugged fittings with a soap solution to detect leakage at connections.

8. If leakage is detected, release pressure in line and tighten all leaky caps and plugs. Start test operation again by supplying air. When necessary to bleed off air to tighten or repair faulty connection, a new five-minute interval shall be allowed after pipeline has been refilled.

9. After stabilization period, adjust air pressure to 3.5 psig and shut off or disconnect air supply. Observe gauge until air pressure reaches 3.0 psig. At 3.0 psig commence timing with a stop watch which is allowed to run until the line pressure drops to 2.5 psig. The time required, as shown on the stop watch, for a pressure loss of 0.5 psig is used to compute air loss.

10. If the time, in minutes and seconds, for the air pressure to drop from 3.0 to 2.5 psig is GREATER than that shown in Table 1 for designated pipe size, the section undergoing test shall have passed.

11. If the time, in minutes and seconds, for 0.5 psig drop is LESS than shown in Table 1 for designated pipe size, the section of pipe shall have failed the test. Necessary repairs shall be made by the Contractor and the line retested.

*TABLE 1
TIME REQUIREMENTS FOR AIR TESTING
FOR SEWER LINE OF UNIFORM PIPE SIZE

PIPE SIZE (IN INCHES)	TIME MINUTES	TIME SECONDS
** 4	2	32
** 6	3	50
** 8	5	6
10	6	22
12	7	39
14	8	56
15	9	35
16	10	12
18	11	34
20	12	45
21	13	30

* Multi Pipe Sizes: When sewer line undergoing test is 8 inch or larger diameter pipe and includes different sized laterals, the figure in Table 1 for uniform sewer main sizes WILL NOT give reliable or accurate criteria for the test. Where multi-pipe sizes are to undergo air testing, the ENGINEER will compute "average" size in inches which is multiplied by 38.2 seconds. The results give minimum time in seconds acceptable for pressure drop of 0.5 psig for "average" diameter pipe.

** For 8 inch and smaller pipe only, if during the five (5) minute stabilization period, pressure drops less than 0.5 psig after initial pressurization and air is NOT added, pipe section undergoing test shall have passed.

C. Procedure for air pressure correction due to groundwater:

1. Air pressure correction is required when prevailing groundwater is above sewer line being tested. Under this condition, air test pressure shall be increased 0.433 psi for each foot groundwater level is above invert of pipe.

2. Establish height of groundwater (in feet) above pipe invert:

   a. DURING SEWER AND MANHOLE CONSTRUCTION, install one-half inch diameter pipe nipple (threaded one or both ends, approximately ten (10") inches long) through manhole wall directly on top of one of sewer pipes entering manhole, with threaded end of nipple extending inside the manhole.

   b. Seal pipe nipple with a threaded one-half inch cap.

   c. Immediately before air testing, determine groundwater level by removing the threaded cap from nipple, blowing air through the pipe nipple to remove any obstructions, and connecting clear plastic tube to pipe nipple.

   d. Hold plastic tube vertically permitting water to rise to groundwater level.

   e. After water level has stabilized in plastic tube, measure vertical height of water, in feet, above invert of sewer pipe.

3. Determine air pressure correction, which is added to 3.0 psig normal starting pressure of test, by dividing the vertical height in feet by 2.31. The result gives air pressure correction in pounds per square inch to be added:

   Example: If the vertical height of water from the sewer invert to the top of the water column measures 11.55 feet, the additional air pressure required would be

$$\frac{(11.55)}{2.31} = 5 \text{ psig}$$

   Starting pressure of the test would be 3.0 plus 5 or 8.0 psig, and the one-half pound drop becomes 7.5 psig. There is not change in the allowable drop (0.5 psig) or in the time requirements established for the basic air test.

6.4 METHODS OF TESTING - INFILTRATION TEST

A. General:

1. All work relating to infiltration testing shall be performed in the presence of the ENGINEER. The weir will be provided by the ENGINEER.

2. All requirements of this specification shall be met prior to acceptance of sewer facilities by the ENGINEER.

B. Procedure for infiltration test:

1. Examine the sanitary sewer system for infiltration at the downstream end of the system after construction has been completed.

2. In the event that there is infiltration and water is flowing at the downstream end of the system, then the source and volume of flow shall be determined by an infiltration test.

3. The test shall consist of isolating the source of infiltration by plugging the first upstream manhole and observing to see if the flow stops. This procedure is repeated one manhole at a time until each source has been isolated.

4. When the infiltration has been isolated to a section or area, the volume of flow shall be determined using a 90 degree V-notch weir inserted into the pipe.

5. The actual infiltration rate will be determined by the ENGINEER based on the weir measurements. This rate will be compared with the allowable infiltration rate of 50 gallons/inch diameter/mile of pipe/per day (24 hours).

6. If the allowable infiltration rate is greater than the actual infiltration rate, the infiltration test passes. If the actual infiltration is greater than the allowable infiltration, the infiltration test fails.

7. In the event the infiltration test fails, the section of the pipe involved shall be repaired as necessary and the test repeated.

6.5 METHOD OF TESTING - LAMPING

A. General:

1. Lamping shall be performed on all gravity sanitary sewer lines.

2. Lamping will be performed by the ENGINEER. The Contractor shall provide all necessary labor to assist the ENGINEER during the lamping inspection.

B. Procedure for lamping:

1. Lamping consists of visually examining the inside of the pipe between two consecutive manhole using a light and mirror.

2. The light is shown from one manhole towards the other manhole.

3. A mirror is held at the invert of pipe and adjusted so that light and barrel of pipe can be seen.

4. The barrel of the pipe shall have no vertical deflection and at least seventy-five (75%) percent of the barrel shall be visible in the horizontal direction.

5. In the event that lamping shows the pipe not laid to line and grade within the acceptance limits specified above, then it shall be repaired and relamped as necessary until the lamping complies with the acceptance limits.

6.6 Remote Television Inspection

A. General:

1. The Contractor/Developer shall perform a remote television inspection of the sanitary sewer system prior to the release of the performance bond. Construction or material deficiencies revealed during the inspection will be promptly repaired by the Contractor. The Contractor may, at his discretion, have the sewer mains remotely televised by an independent contractor.

7.0 TESTING SANITARY SEWER GRAVITY AND FORCE MAINS

7.1 DESCRIPTION

Test sanitary sewer gravity and force mains for exfiltration.

7.2 MATERIALS

Furnish pumps, valves, taps, pressure gauges, meter, and all other equipment required for testing of piping systems.

7.3 METHOD OF TESTING - EXFILTRATION TEST

A. General requirements:

1. Perform all tests in presence of the ENGINEER.
2. Conduct exfiltration test prior to backfilling trench.
3. Establish test sections between valves, or as directed by the ENGINEER.
4. All requirements of this specification shall be met prior to acceptance of force main by the ENGINEER.

B. Procedure for exfiltration test:

1. Expel air from pipe through blow-offs, or taps required for release of air from high points. Taps for release of air and blow-offs for filling pipe and releasing air shall be provided by the Contractor.
2. Fill each pipe section slowly with water, and subject pipe to hydrostatic pressure of 150 psi for one (1) hour.
3. When test pressure is reached, measure amount of make-up water required to maintain this pressure during the one (1) hour test period.
4. Leakage shall not exceed 12 gallons per inch of diameter per mile of pipe per day. Pipelines failing to meet this requirement shall be repaired and retested as above specified.

5. Compute leakage as follows:

   a. Gallons of make-up water x 24 = gallons loss/day.

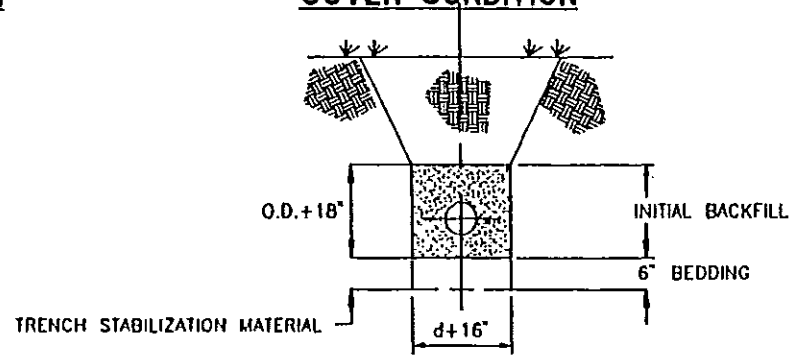
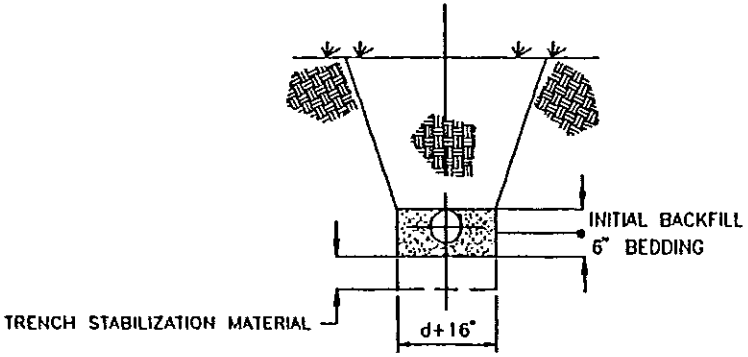
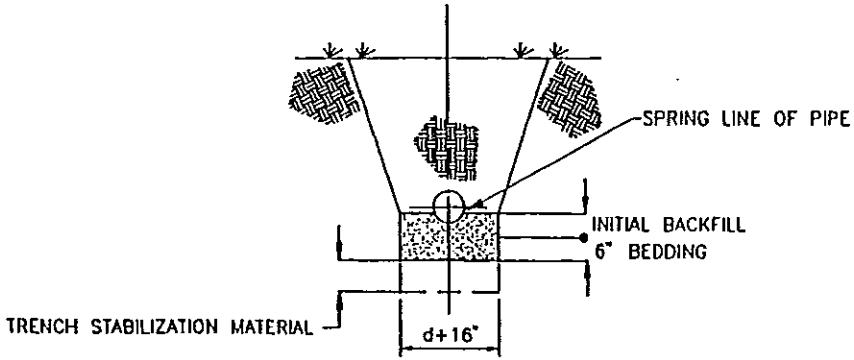
   b. Gallons loss/day x

      $\frac{\text{feet of pipe testing}}{\text{gallons/loss/mile/day.}} = 5{,}280 \text{ feet/mile}$

   c. $\frac{\text{Gallons/loss/mile/day}}{\text{Pipe dia. in inches}} =$

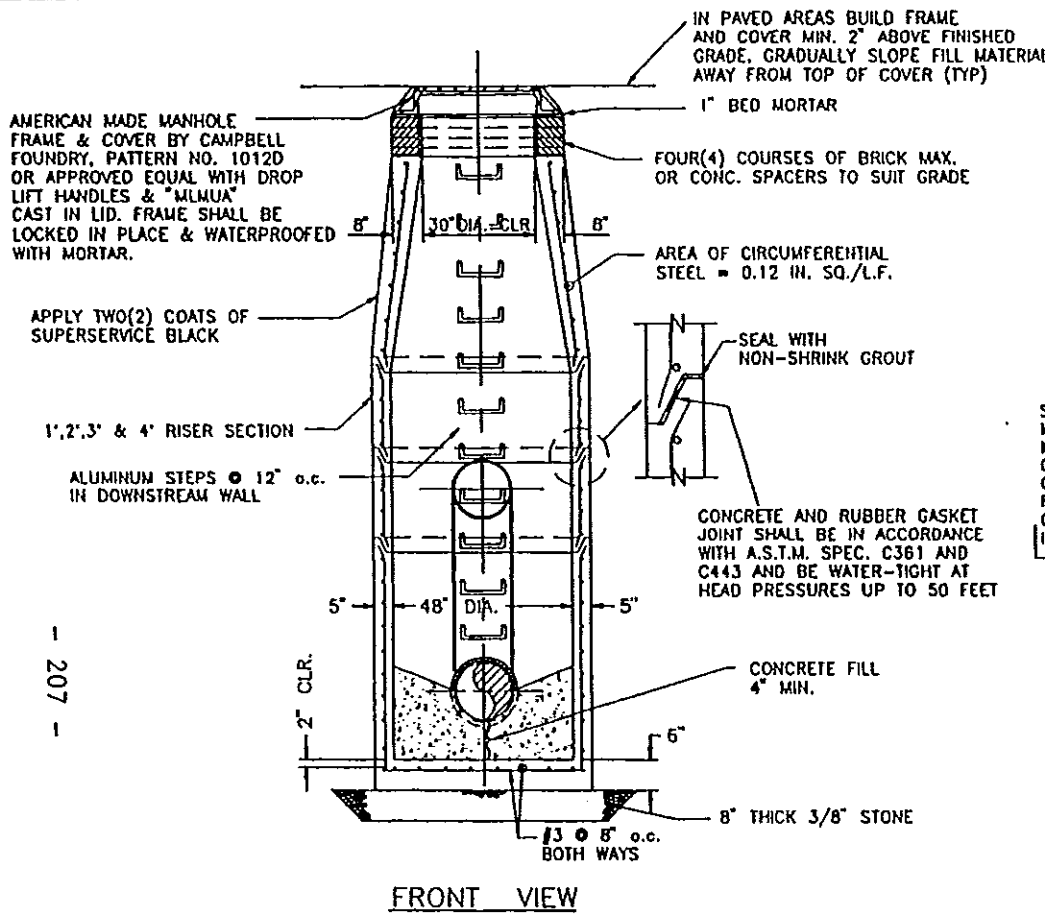
      Gallons loss/inch diameter/mile/day.

   d. Allowable exfiltration rate is 12 gallons/inch/diameter/mile/day.

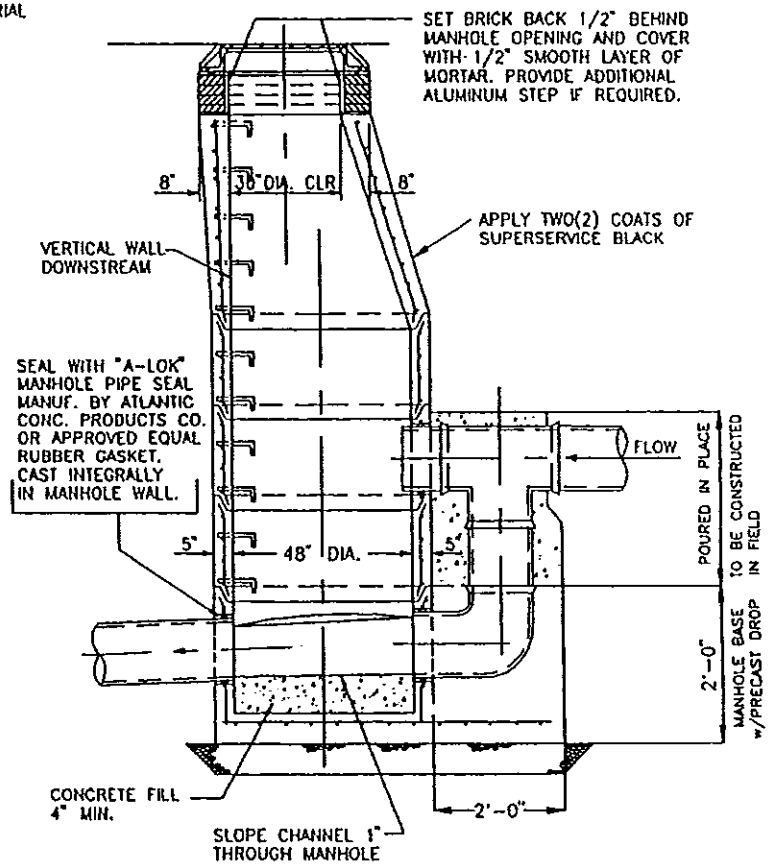
SPECIFIED CLASS OF PVC PIPE WITH 3-12' OF COVER	BEDDING AND INITIAL BACKFILL REQUIREMENTS FOR SPECIFIED PIPE CLASS & COVER CONDITION	SPECIFIED CLASS OF PVC PIPE WITH 12-20' OF COVER
SDR-35		SDR-35
N/A		CLASS 100 SDR-25
CLASS 100 SDR-25		CLASS 150 SDR-18

PVC GRAVITY SANITARY SEWER AND LATERAL INSTALLATION

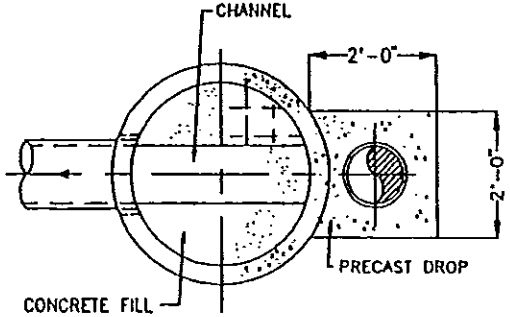
BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	PVC GRAVITY SEWER INSTALLATION	DATE : 4/95 DWN BY :	SHT. NO. 1



FRONT VIEW



SIDE VIEW



BASE P L A N

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING ADEQUATE BALLAST TO OFFSET FLOTATION FORCES ACTING ON MANHOLES.
2. ALL REINFORCEMENT IS SUBJECT TO ENGINEER'S APPROVAL BEFORE CONSTRUCTION.
3. ALL MANHOLES SHALL CONFORM TO ASTM SPEC C478

- 207 -

BY	DATE	REVISIONS

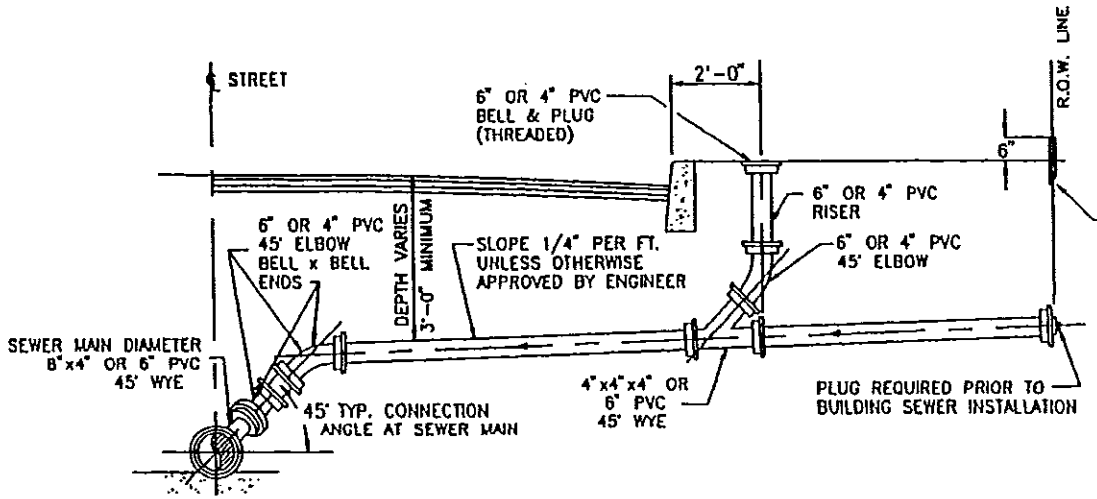
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

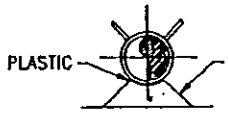
SANITARY SEWER PRECAST CONCRETE DROP MANHOLE DETAIL

DATE : 4/95

DWN BY :

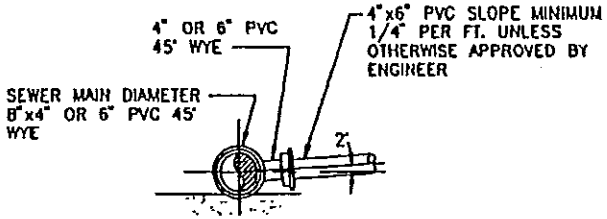
SHT. NO. 2





TAP EXISTING MAIN AT 11:00 OR 2:00 LOCATION. USE DOUBLE STRAP STAIN. STL. SADDLE.

EXISTING MAIN CONNECTION



ALTERNATE CONNECTION AT SEWER MAIN
(ONLY PERMITTED WHERE APPROVED BY ENGINEER)

NOTES:

1. WHERE PLUG IS PROVIDED ON RISER CLEANOUT, IT SHALL CONTAIN MAGNETIC MATERIAL SO THAT IT MAY BE LOCATED WITH A METAL DETECTOR.
2. CLEANOUTS SHALL NOT BE LOCATED IN SIDEWALKS OR DRIVEWAYS.
3. CLEANOUTS REQUIRED EVERY 50' OR AT CHANGE IN DIRECTION

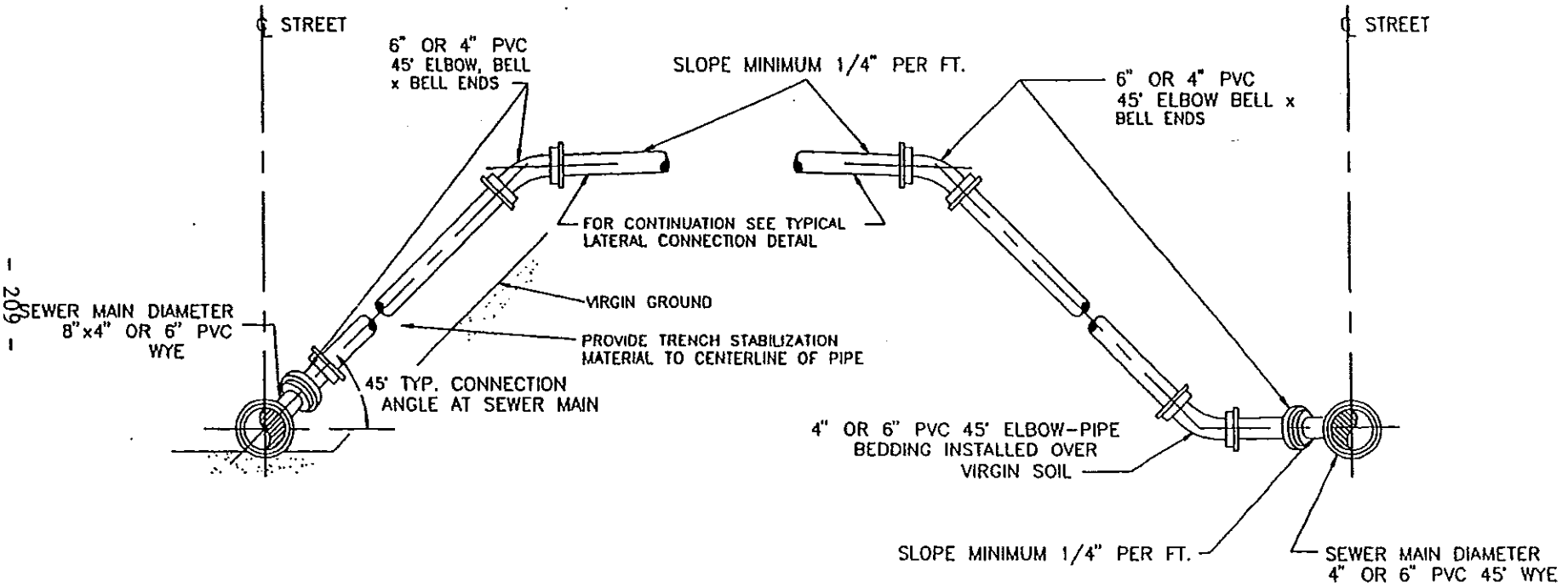
BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

SANITARY SEWER TYPICAL LATERAL CONNECTION DETAIL

DATE : 4/96
DWN BY :

SHT. NO. 3



ALTERNATE DETAIL

ALTERNATE DETAIL

BY	DATE	REVISIONS

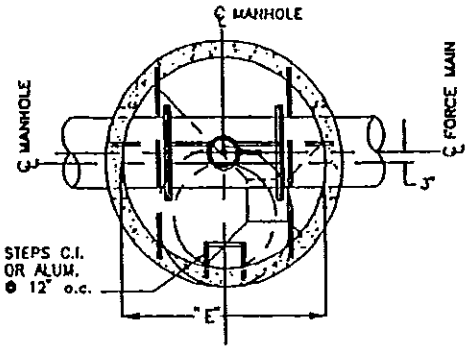
MOUNT LAUREL
MUNICIPAL UTILITIES AUTHORITY

SANITARY SEWER TYPICAL DEEP CUT LATERAL CONNECTION DETAIL

DATE : 4/95
DWN BY :

SHT. NO. 4

ALL GALV. STEEL PIPE SHALL BE HOT DIPPED IN CONFORMANCE WITH ASTM A123

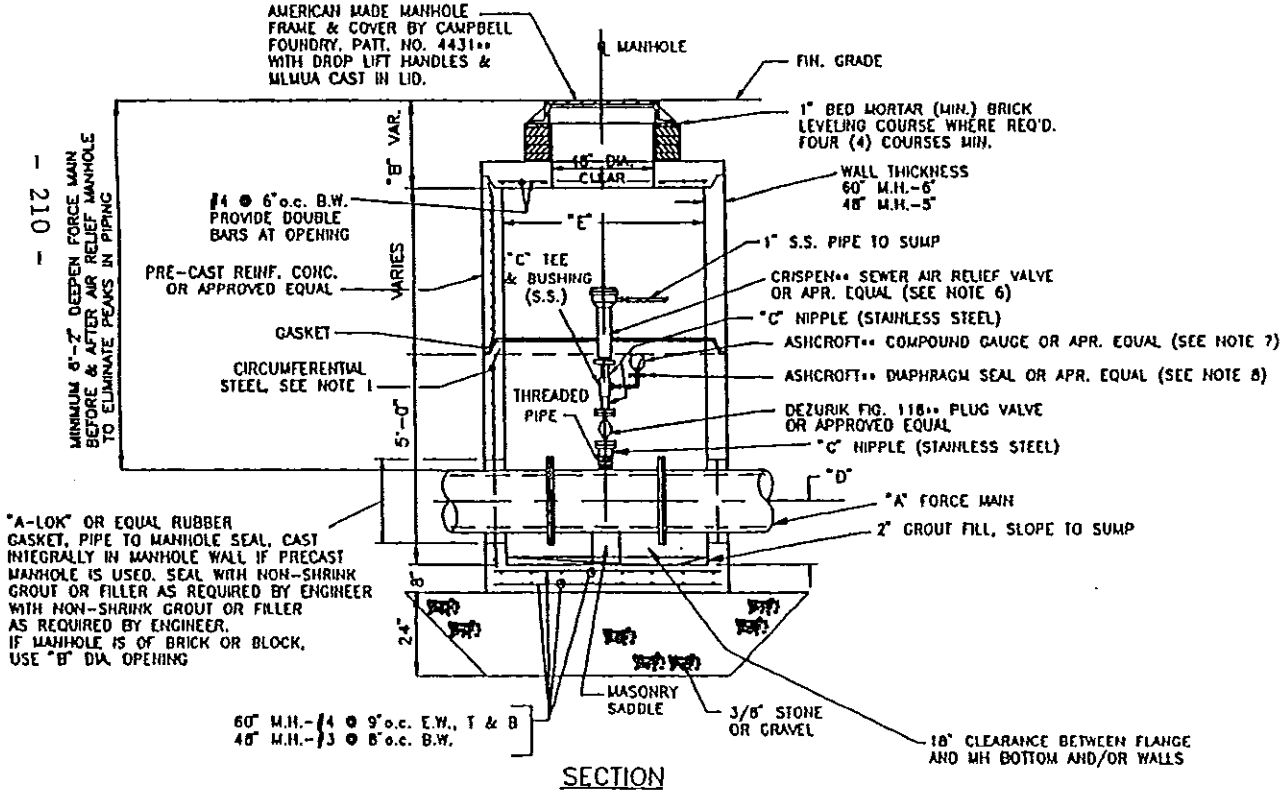


PLAN

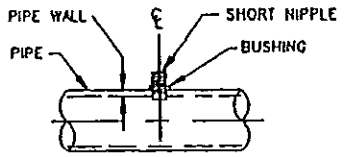
AIR RELEASE MANHOLE SCHEDULE

"A" FORCE MAIN SIZE inches	"B" * OPNG. FOR F.M. inches	"C" FITTING SIZE inches	"D" FORCE MAIN ℄ inches	"E" M.H. DIA. (I.D.) inches
4	10	2	11	72
6	12	2	12	72
8	15	2	13	72
10	18	2	14	72
12	20	2	15	72
16	25	3	17	72
18	27	3	18	72
20	29	3	19	72
24	33	3	21	72

* BLOCK MANHOLE ONLY



SECTION



DETAIL FOR 10" MAIN OR ABOVE

NOTES(AIR RELEASE MANHOLE):

1. CIRCUMFERENTIAL STEEL
   48" DIA. M.H. - 0.12 SQ. IN. / VERT. FT.
   60" DIA. M.H. - 0.15 SQ. IN. / VERT. FT.
2. 4000 PSI CONCRETE - PRECAST MANHOLE SECTIONS
3. ALL VALVES SHALL CLOSE IN CLOCKWISE DIRECTION
4. PRECAST REINFORCED MANHOLE SECTIONS TO COMPLY WITH ASTM SPECIFICATION C478.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING ADEQUATE BALLAST TO OFFSET FLOTATION FORCES ACTING ON MANHOLES.
6. CRISPEN AIR RELIEF VALVE TO BE MODEL SL-20A WITH BACKFLUSH OPTION TO SUMP OR PVC.
7. COMPOUND GAUGE SHALL BE 4 1/2" DIAL, 30" VAC., SAME PRESSURE RANGE AS PUMP DISCHARGE GUAGE, STAINLESS STEEL BOURDON TUBE TYPE, 1/2" BOTTOM CONNECTION WITH A PHENOLIC CASE.
8. DIAPHRAGM SEAL SHALL HAVE 1" THREADED PROCESS CONNECTION, FLUSHING CONNECTION, 1/2" INSTRUMENT CONNECTION, AISI TYPE 316 STAINLESS STEEL BOTTOM HOUSING & HALOCARBON FILLING FLUID. PROVIDE VITON DIAPHRAGM MATERIAL. SEAL SHALL WORK UNDER VACUUM CONDITIONS.
9. ALL GALV. STEEL PIPE SHALL BE HOT DIPPED IN ACCORDANCE WITH ASTM A123.

BY	DATE	REVISIONS

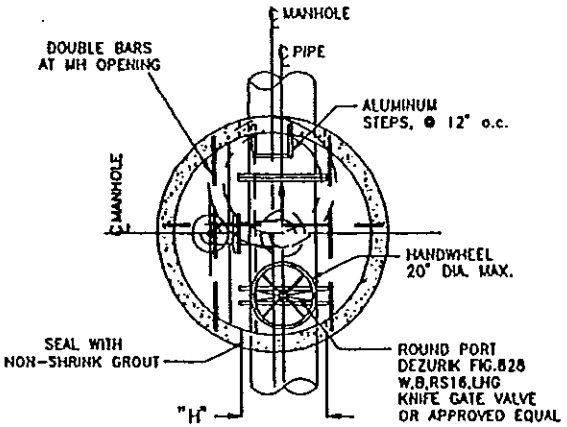
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

FORCE MAIN AIR RELIEF MANHOLE DETAIL

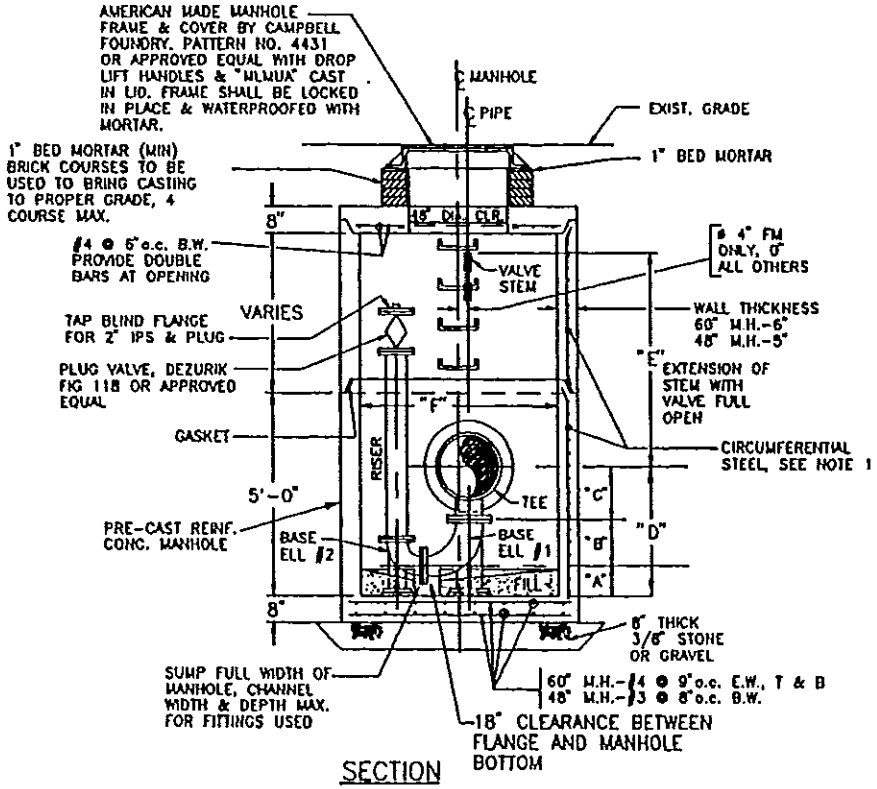
DATE : 4/95

DWN BY :

SHT. NO. 5



PLAN



SECTION

SANITARY SEWER BLOWOFF MANHOLE SCHEDULE

FORCE MAIN SIZE Inches	DIMENSIONS A Inches	B Inches	C Inches	D Approx. Inches	E Approx. Inches	F MIN.O.D. Inches	TEE Inches	BASE ELL #1 Inches	BASE ELL #2 Inches	RISER Inches
4	7	9	6.5	22.5	21	72	4/4	4	4	4
6	7	9	8	24	27	72	6/4	4	4	4
8	8	11.5	9	28.5	33	72	8/6	6	6	6
10	8	11.5	11	30.5	37	72	10/6	6	6	6
12	8	11.5	12	31.5	44	72	12/6	6	6	6
16	8	11.5	15	34.5	54	72	16/6	6	6	6
18	9	14	15.5	38.5	61	72	18/8	8red6	6	6
20	9	14	17	40	69	72	20/8	8red6	6	6
24	9	14	19	42	81	72	24/8	8red6	6	6

NOTES:

1. CIRCUMFERENTIAL STEEL
   48" DIA. M.H. - 0.12 SQ. IN./LIN. FT.
   60" DIA. M.H. - 0.15 SQ. IN./LIN. FT.
2. 4000 psi CONCRETE PRECAST MANHOLE SECTIONS.
3. ALL VALVES SHALL CLOSE IN CLOCKWISE DIRECTION.
4. ALL MANHOLES SHALL BE PRECAST CONCRETE CONFORMING TO ASTM SPEC. C478
5. IN PAVED AREAS BUILD FRAME AND COVER MINIMUM 2" ABOVE FINISHED GRADE. GRADUALLY SLOPE FILL MATERIAL AWAY FROM COVER. (TYP)

BY	DATE	REVISIONS

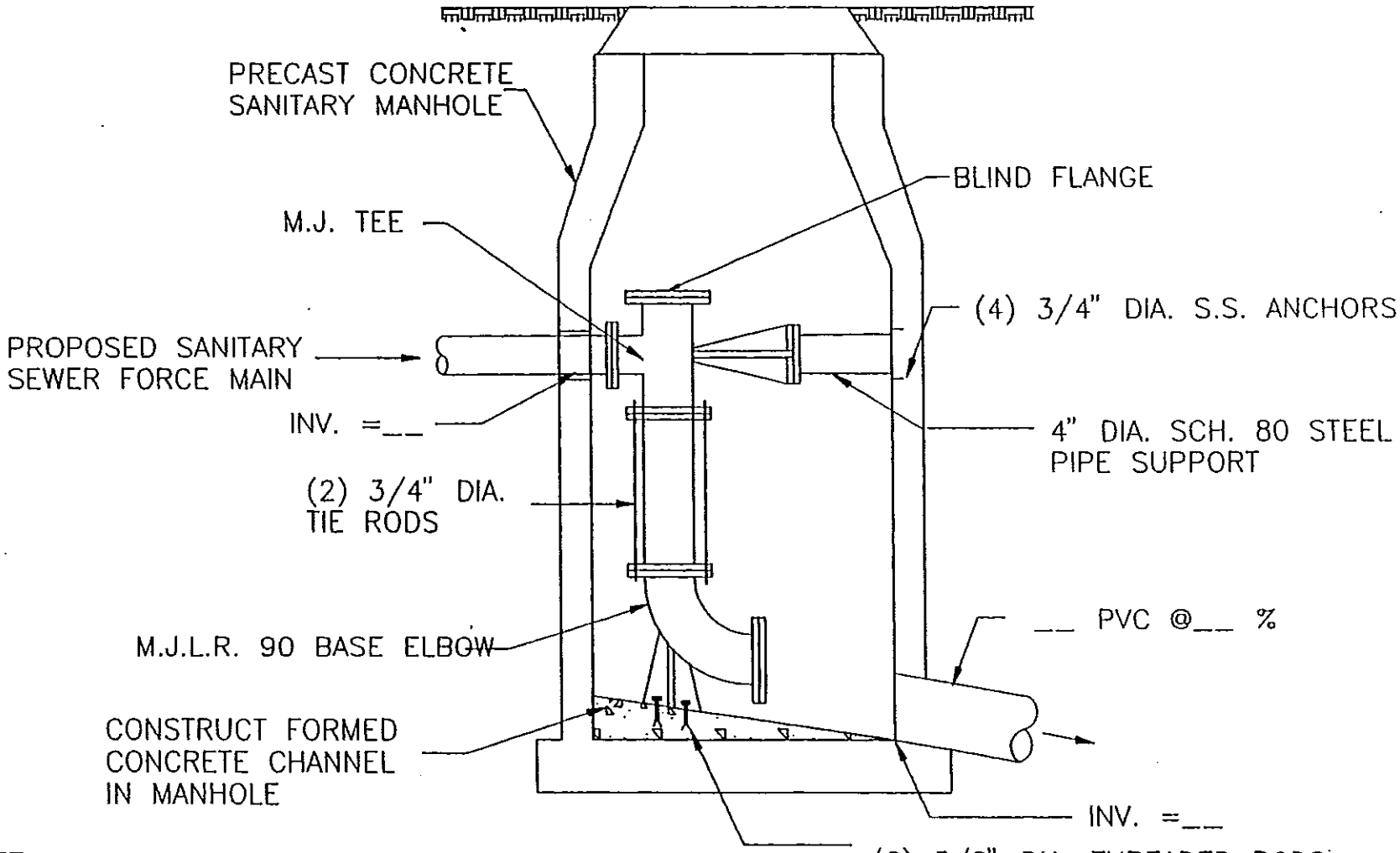
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

FORCE MAIN BLOW OFF MANHOLE DETAIL

DATE : 4/95

DWN BY :

SHT. NO. 6



NOTE

FOR EJECTOR STATION TIE IN TO EXIST. M.H. PROVIDE 4" PVC TEE w/ACCESS PLATE AND SWEEP INTO CHANNEL

BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	FORCE MAIN DISCHARGE MANHOLE	DATE : 4/95 DWN BY :	SHT. NO. 7

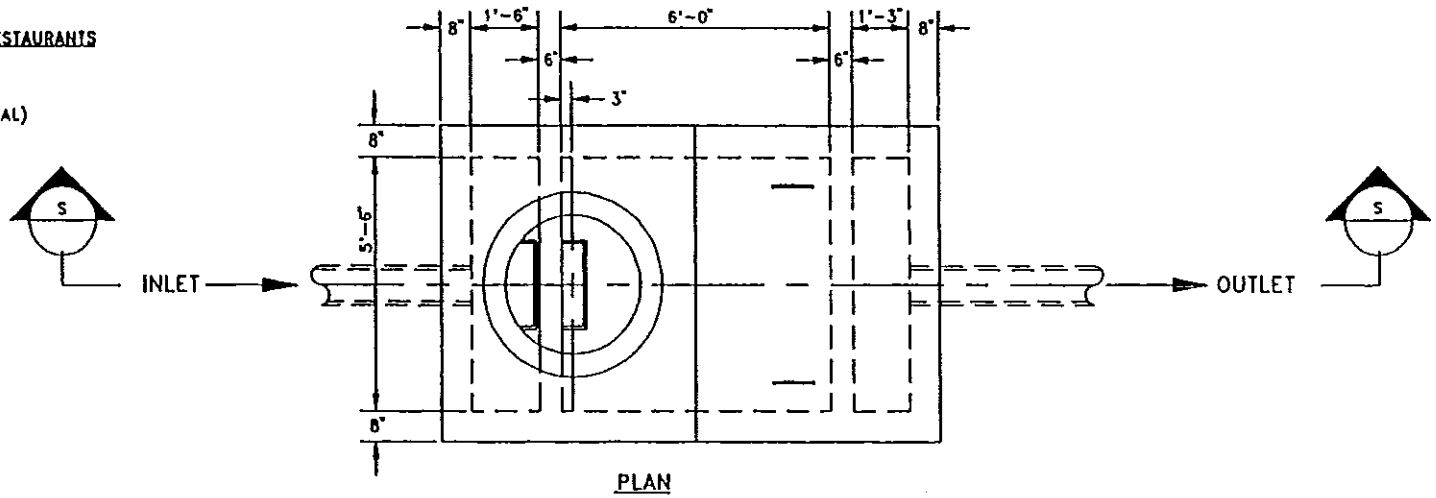
FORMULAS FOR GREASE TRAP SIZING FOR RESTAURANTS

SIZE IN VOL. = D x G x $(ST \frac{HR}{8})$ x LF

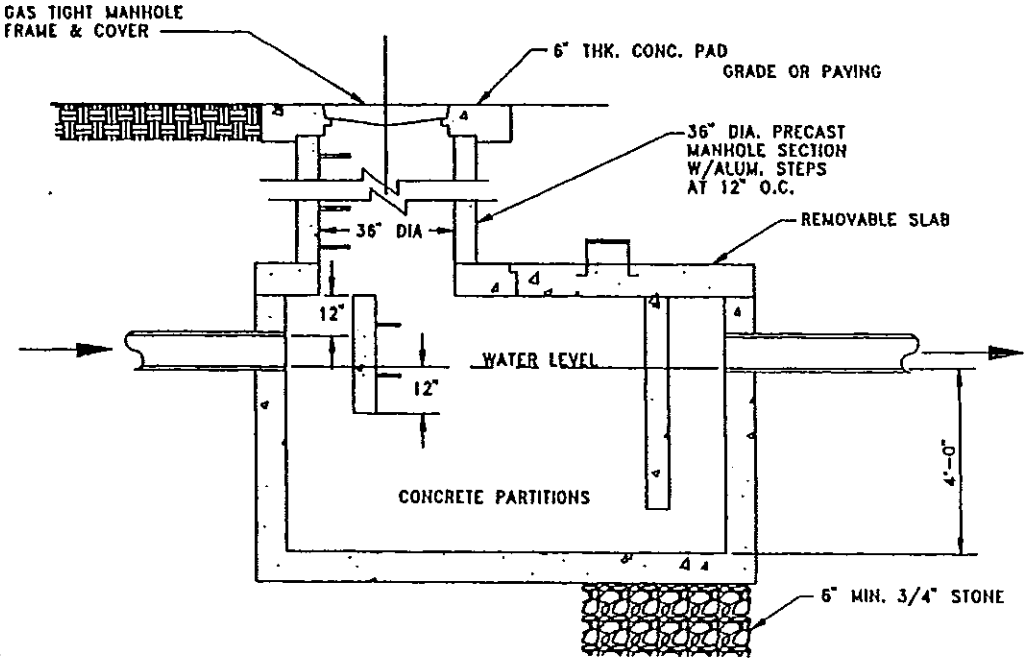
D = NO. OF SEATS
G = GAL. OF WASTE WATER PER MEAL (5 GAL)
ST = STORAGE CAPACITY = 2.5
LF = LOADING FACTOR 1.25 AVE
HR = NO. OF HOURS OPEN

MIN SIZE 750 GAL

ALL GREASE TRAPS MUST BE CLEANED PRIOR TO 75% OF THE UNIT GREASE RETENTION CAPACITY.
MIN % REMOVAL OF GREASE IS 90%



PLAN



SECTION (S)

MUST BE A.P.I. APPROVED
(AMERICAN PETROLEUM INSTITUTE)

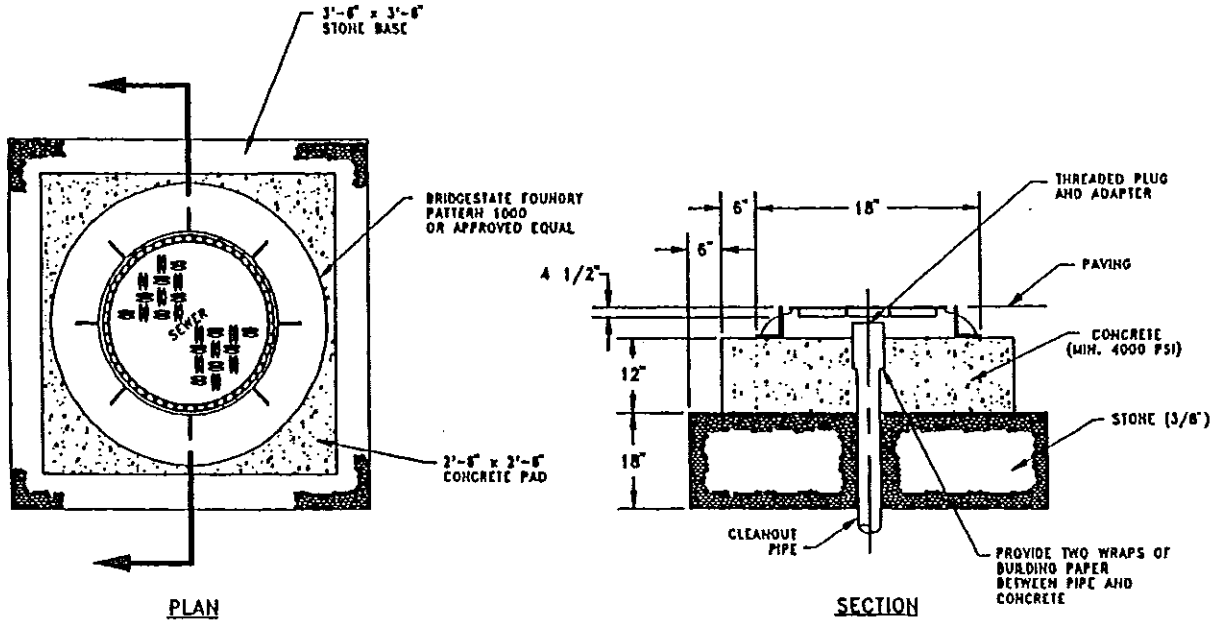
BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

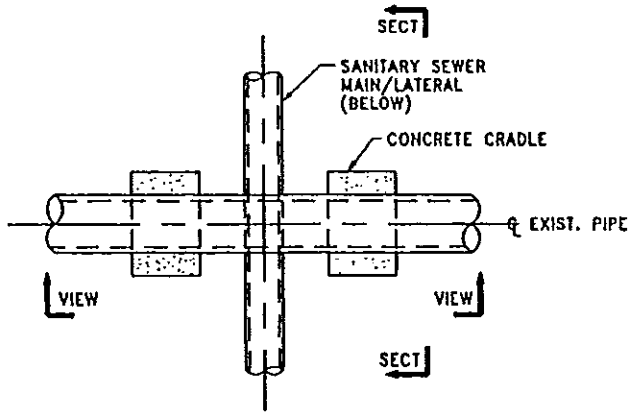
EXTERIOR GREASE/WATER SEPARATOR 2,000 GALLON CAPACITY

DATE : 4/95
DWN BY :

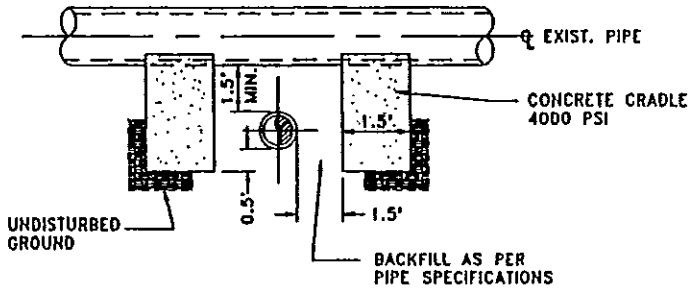
SHT. NO. 8



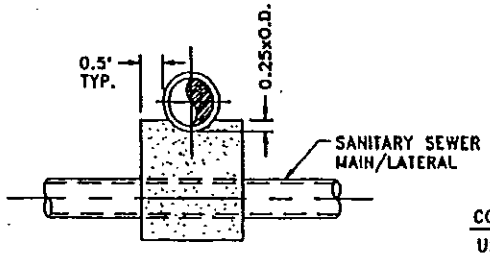
BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	DETAIL LATERAL CLEANOUT IN PAVED AREAS	DATE : 4/95 DWN BY :	SHT. NO. 9



PLAN



SIDE VIEW

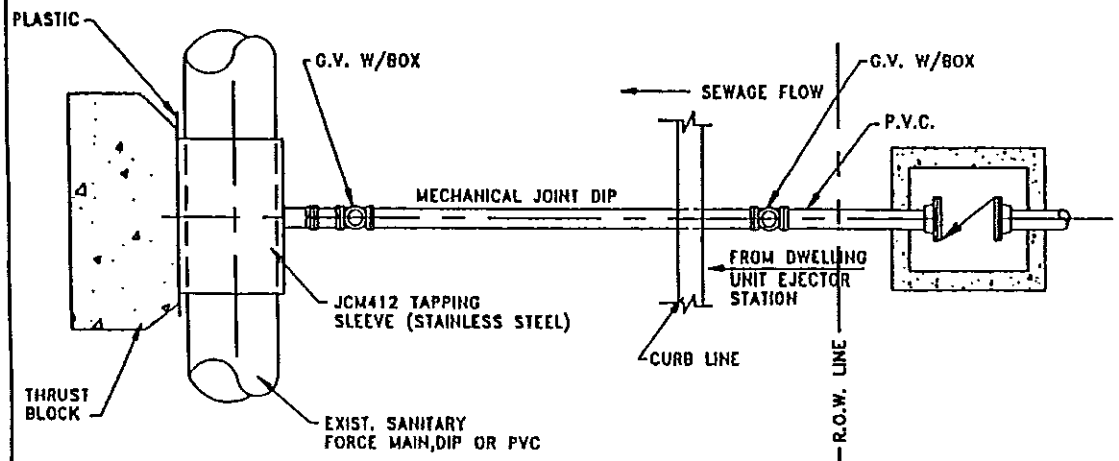


SECTION

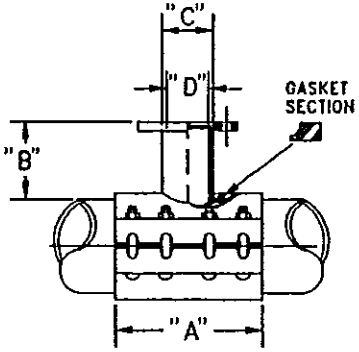
CONC. CRADLE NOTE:

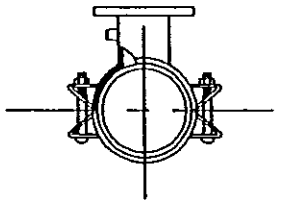
USE CONC. CRADLES WHERE LESS THAN 18" VERTICAL SEPERATION IS PROVIDED BETWEEN THE OUTSIDE WALLS OF THE SANITARY SEWER/LATERAL AND ANY PIPE CROSSING ABOVE.

BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	CONCRETE CRADLE DETAIL	DATE : 4/95 DWN BY :	SHT. NO. 10



PLAN





MATERIAL SPECIFICATIONS

BODY - ASTM 285 GRADE C

BOLTS - ANSI A21.11 STAINLESS STEEL 18-8 TYPE 304

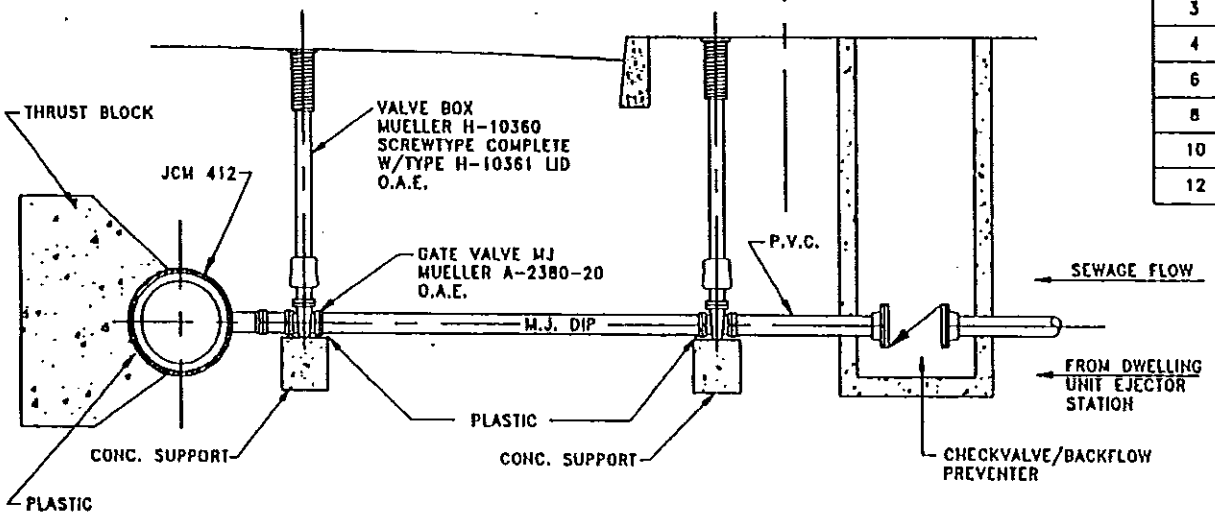
FLANGE - AWWA C207 CLASS D, ANSI 150 LB. DRILLING, RECESSED FOR TAPPING VALVE MSS-SP 60

GASKET - COMPOUNDED FOR USE WITH WATER, SALT SOLUTIONS, MILD ACIDS, BASES AND NATURAL GAS.

FINISH - FUSION APPLIED EPOXY COATING

SERVICE RATING:
4" TO 12" OUTLETS: 175 PSI
14" & LARGER OUTLETS: 150 PSI. SPECIAL & HIGHER RATED FITTINGS AVAILABLE

FLANGE SIZE	A	B	C	D	NUMBER OF BOLTS	SIZE OF BOLTS
3	12	5	4-1/32	3	6	3/4
4	12	5	5-1/32	4	6	3/4
6	12	5	7-1/32	6	6	3/4
8	16	5-1/8	9-1/32	8	8	3/4
10	20	5-1/2	11-1/16	10	10	3/4
12	20	5-3/4	13-1/16	12	10	3/4



SECTION

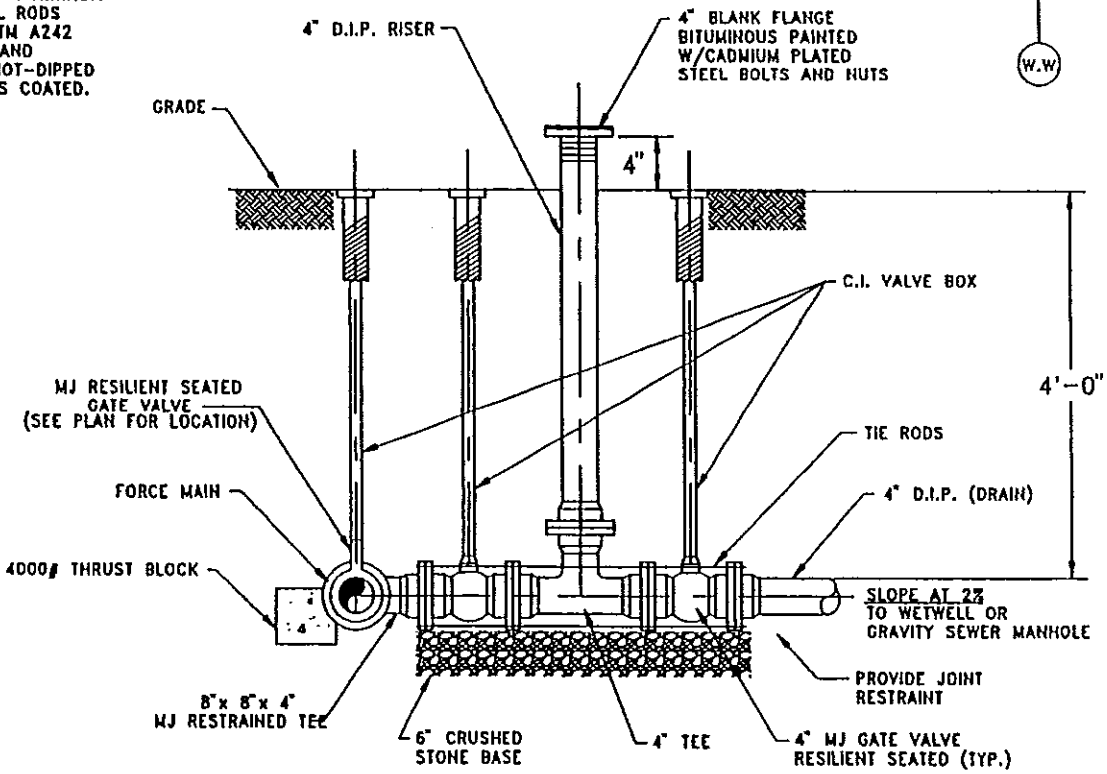
NOTE:

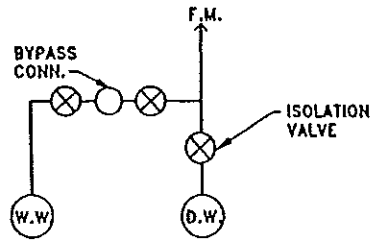
1. ALL UNIT EJECTOR STATIONS ARE TO BE EQUIPPED WITH BACKFLOW PREVENTOR.
2. FOR TAPPING OF PVC FORCEMAINS OR FLANGE SIZES LESS THAN 3" USE JCM 432 TAPPING SLEEVE

BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	EJECTOR STATION CONNECTION TO FORCEMAIN	DATE : 4/95 DWN BY :	SHT. NO. 11

NOTES:

1. ALL BY- PASS PIPING TO BE LOCATED WITHIN FENCED AREA.
2. ALL VALVE BOXES TO BE CAST W/ "SEWER" IN RAISED LETTERS.
3. TIE RODS SHALL BE A MINIMUM OF TWO 3/4" STEEL RODS CONFORMING TO ASTM A242 TYPE 2. ALL RODS AND HARDWARE TO BE HOT-DIPPED GALV. & BITUMINOUS COATED.





PLAN

BYPASS CONNECTION

NOTE: NEW P.S. CONSTRUCTION

1. ALL BYPASS VALVES SHALL BE IN A CONCRETE VALVE VAULT W/ 18" CLEARANCE AROUND VALVES
2. FOR FORCEMAINS GREATER THAN 8" CONSULT ENGINEER FOR BYPASS CONN. SIZE

BY	DATE	REVISIONS

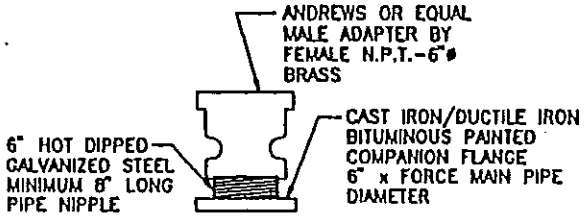
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

DRY WELL BYPASS PIPING DETAILS

DATE : 4/95

DWN BY :

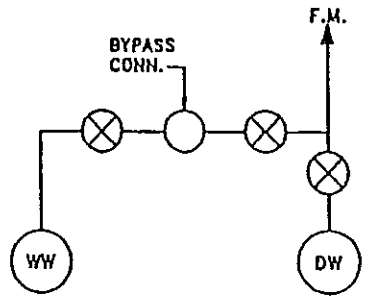
SHT. NO. 12



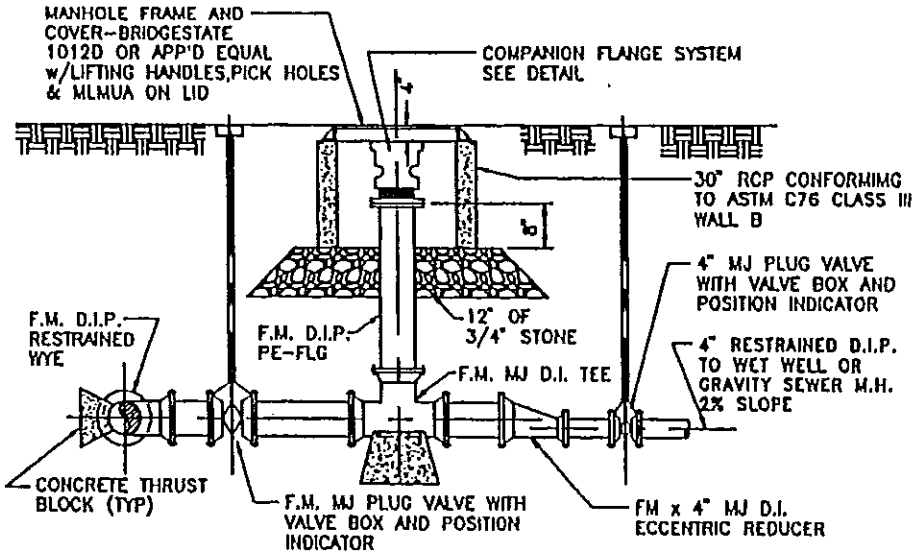
DETAIL–COMPANION FLANGE PIPING SYSTEM

NOTES:

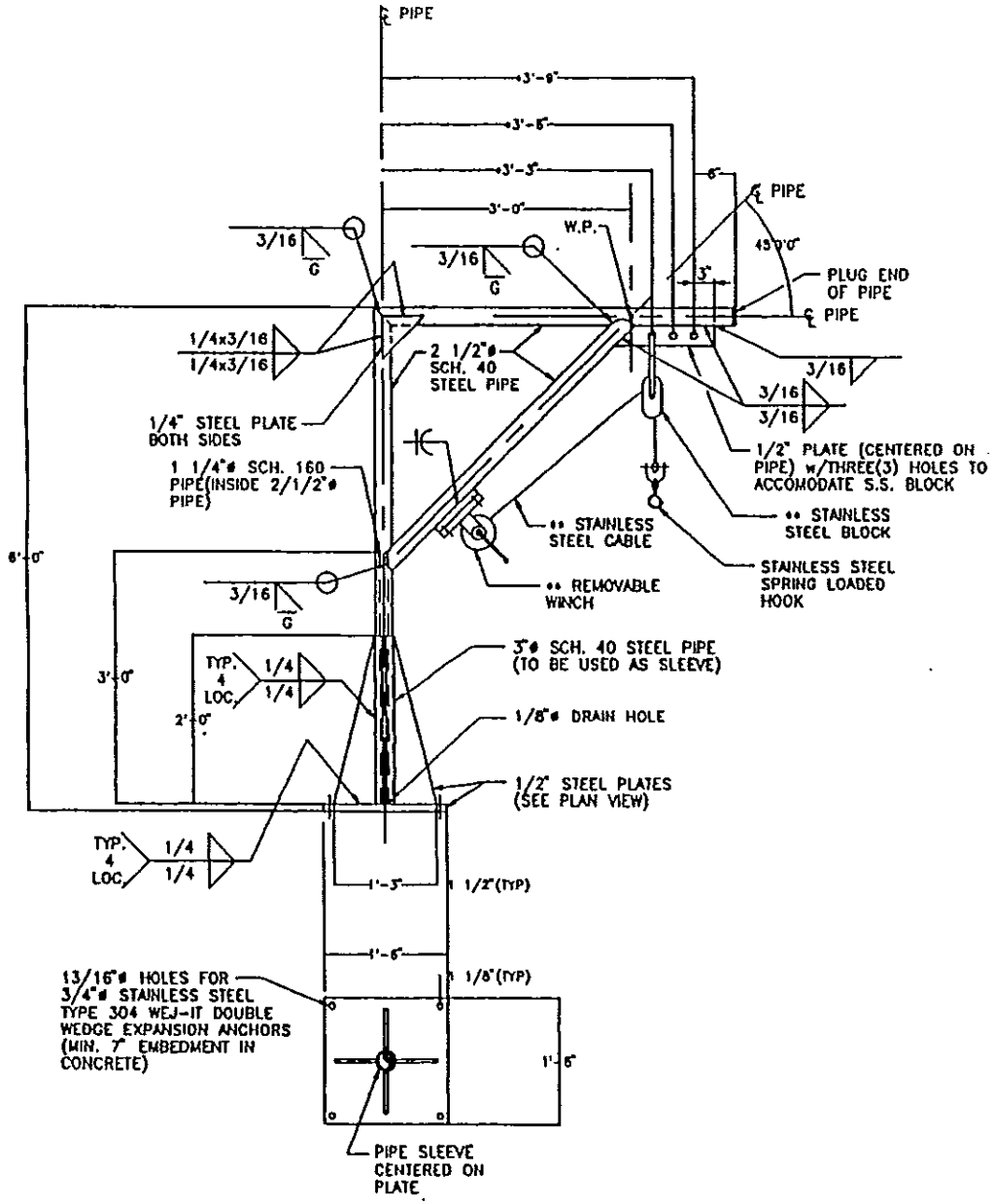
1. ALL VALVE BOXES SHALL BE FURNISHED WITH COVERS WITH THE WORD "SEWER" IN RAISED LETTERS.
2. RESTRAIN ALL PIPE JOINTS. IF TIE RODS ARE UTILIZED FOR JOINT RESTRAINT, EACH JOINT SHALL BE HELD IN PLACE BY A MINIMUM OF TWO(2) 3/4" STEEL RODS CONFORMING TO ASTM A242 TYPE 2. ALL RODS, PLATES AND HARDWARE SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A124 AND ASTM A153 AND PROVIDED WITH TWO(2) COATS OF BITUMASTIC PAINT.
3. FOR FORCEMAIN'S GREATER THAN 8" CONSULT ENGINEER FOR BYPASS CONN. SIZE.



PLAN



	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	DETAIL W[illegible] BYPASS	DATE : 4/95 BY :	SHT. NO. 1[illegible]



N O T E S

1. THIS DETAIL IS FOR REFERENCE ONLY, AS THE DAVIT SHALL BE STRUCTURALLY DESIGNED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW.
2. ••
   WINCH MODE OF OPERATION: _____
   WINCH CAPACITY, LBS: _____
   BLOCK LOADING, LBS: _____
   CABLE DIA., INCHES: _____
3. SEE SPECIFICATIONS FOR PAINTING REQUIREMENTS.
4. DAVIT SHALL ALSO BE PROVIDED FOR SUBMERSIBLE PUMP REMOVAL. DAVIT SHALL BE SUPPLIED WITH ELECTRIC WINCH, SIZED IN ACCORDANCE WITH WEIGHT OF PUMPS.

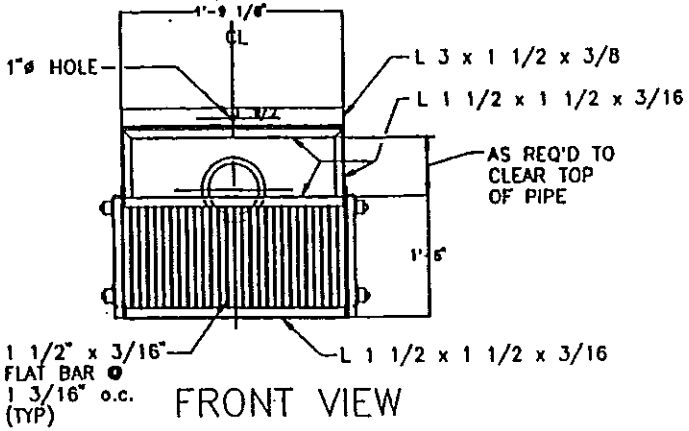
BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

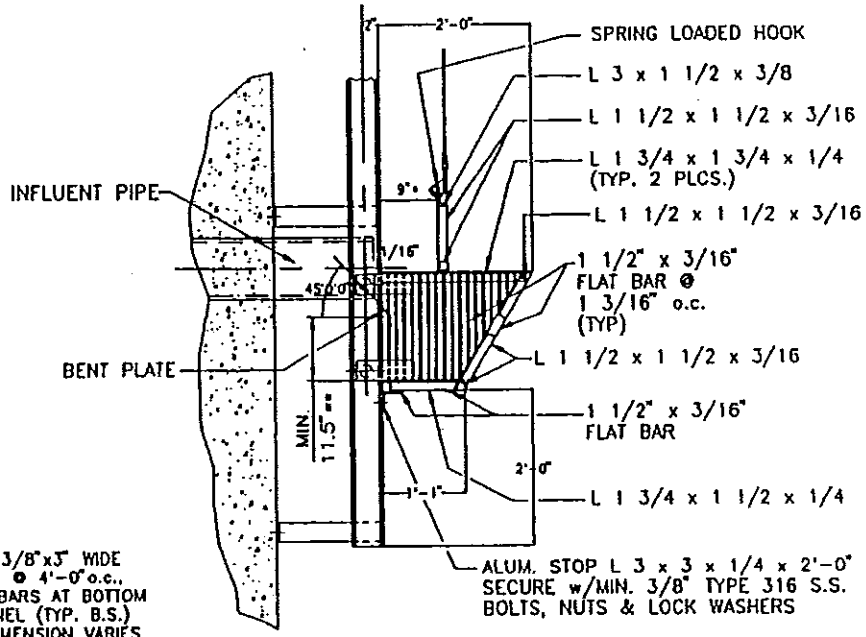
REMOVABLE DAVIT & MOUNTING BASE FOR BARSCREEN BASKET

DATE : 4/95
DWN BY :

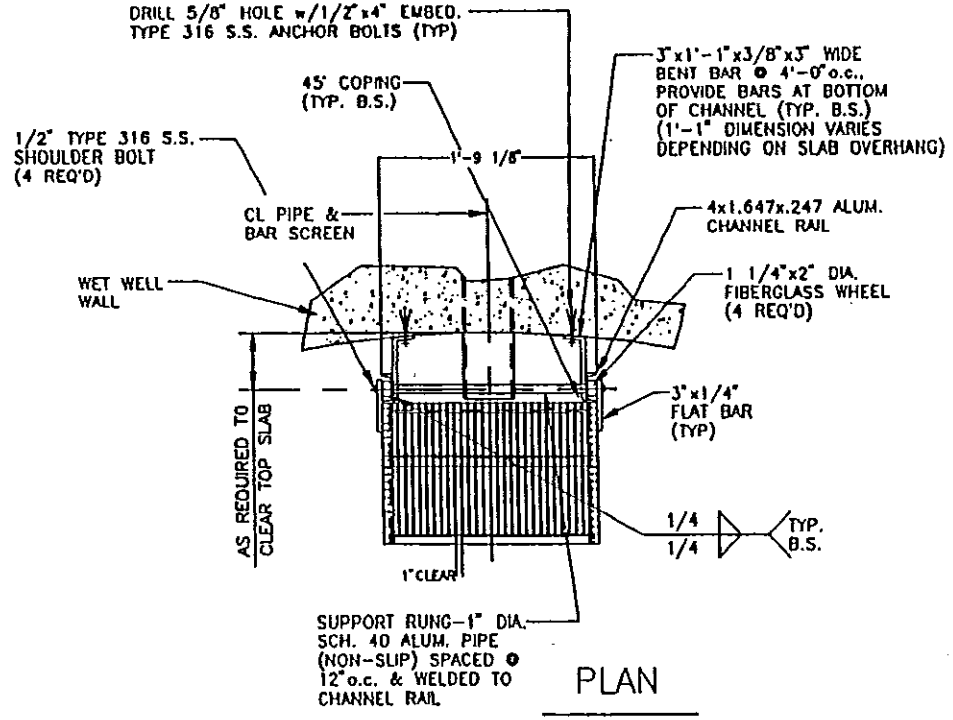
SHT. NO. 14



FRONT VIEW



SIDE VIEW



PLAN

NOTES(BAR SCREEN)

1. * CONTRACTOR TO COORDINATE DIMENSION IN ORDER TO PROVIDE A DIRECTLY VERTICAL ALIGNMENT FOR THE BAR SCREEN CABLE.
2. ** PROVIDE 1 1/2" x 3/16" @ 1 3/16" CENTER TO CENTER FLAT BARS ON BACK SIDE OF BAR SCREEN FOR ENTIRE 11 1/2" DEPTH.
3. BAR SCREEN WIDTH SHOWN IS FOR EIGHT INCH (8") SANITARY SEWER PIPE. BAR SCREEN WIDTH SHALL BE INCREASED WITH CORRESPONDING INCREASE IN SANITARY SEWER PIPE DIAMETER.
4. ALL MATERIALS UTILIZED TO FABRICATE AND INSTALL THE BAR SCREEN SYSTEM SHALL BE EITHER ALUMINUM ALLOY 6061-T6 OR 6063-T6, TYPE 316 STAINLESS STEEL (S.S.) OR FIBERGLASS.
5. BASKET SIZES SHALL BE BASED ON FLOW AND P.S. CONDITIONS.

BY	DATE	REVISIONS

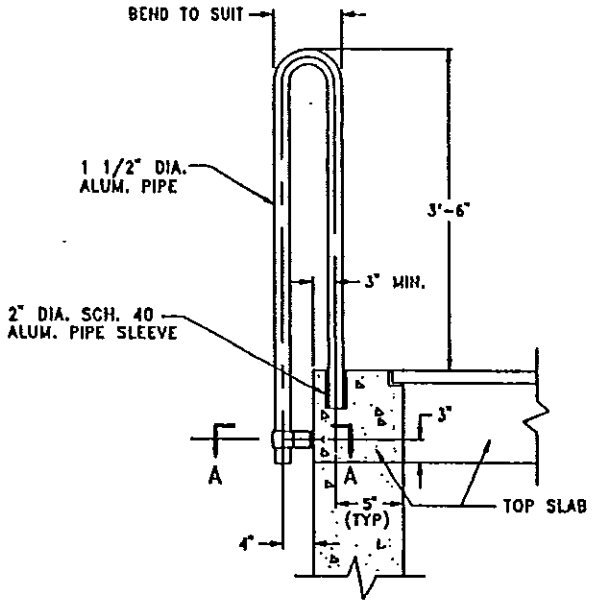
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

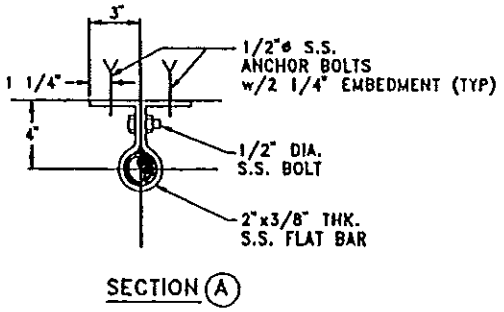
REMOVABLE BAR SCREEN AND LADDER

DATE : 4/95

DWN BY :

SHT. NO. 15





SECTION (A)

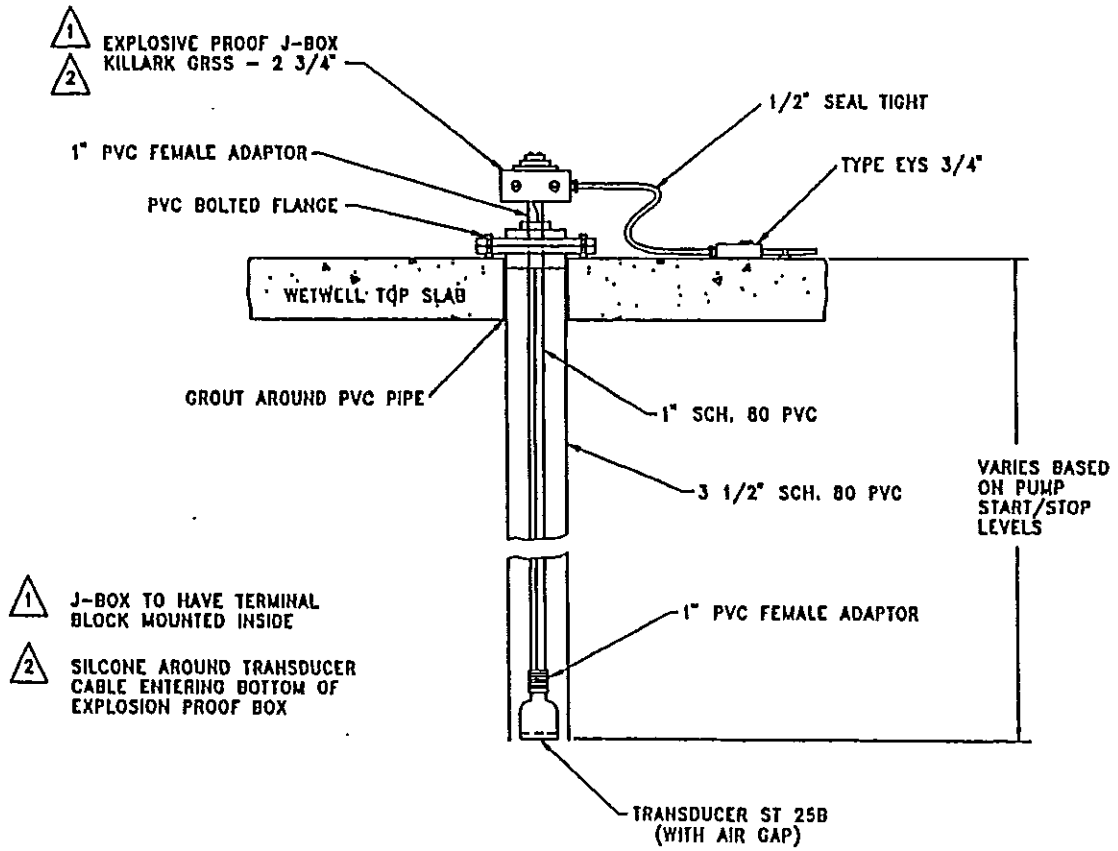
BY	DATE	REVISIONS

MOUNT LAUREL
MUNICIPAL UTILITIES AUTHORITY

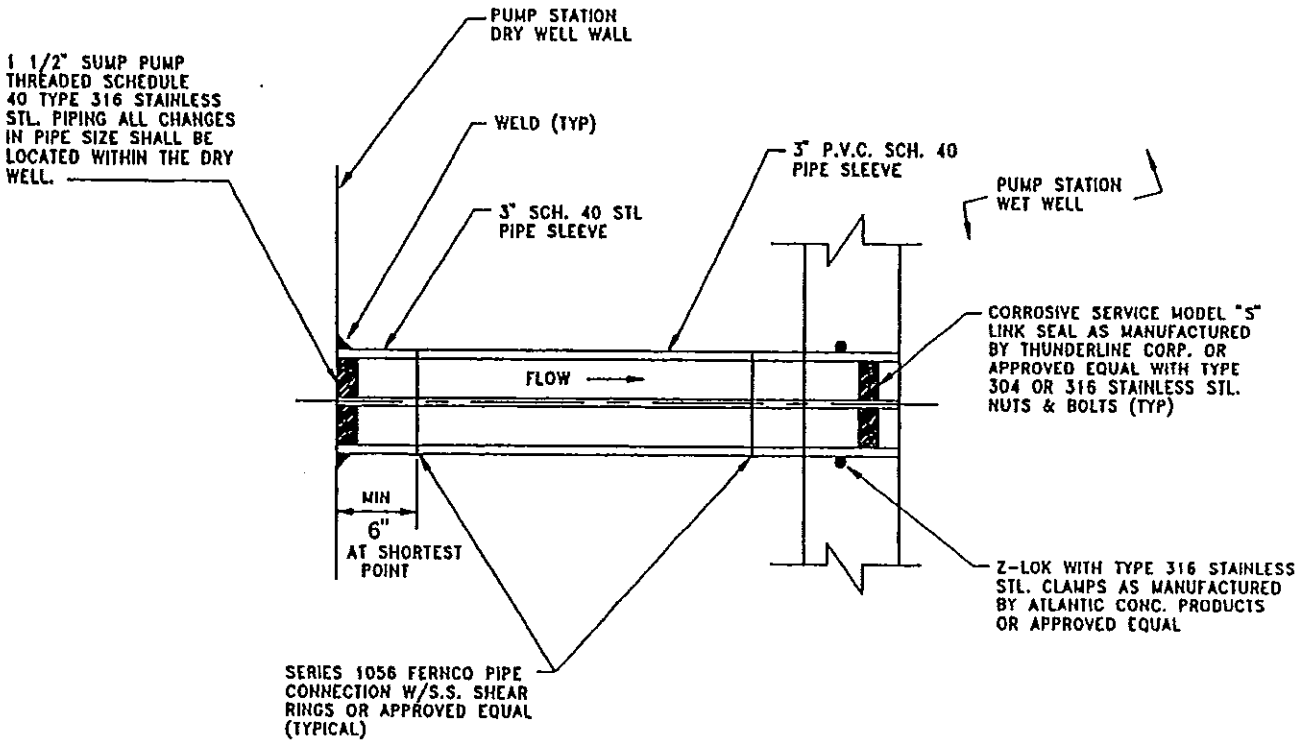
WET WELL
GRAB BAR
DETAIL

DATE : 4/95
DWN BY :

SHT. NO. 16



Y	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	ULTRA-SONIC LEVEL SENSOR	DATE : 4/96	SHT. NO. 17
					DWN BY :	



SUMP PUMP NOTES:

AT THE THREADED CONNECTION TO STAINLESS STEEL, INCREASE SUMP PUMP DIA. 1 1/2" TO ACCOMODATE LINK SEALS.

AT A MINIMUM THIS CONNECTION MUST BE LOCATED ABOVE THE TOP OF THE INFLUENT LINE (BETWEEN LID & INFLUENT LINE)

BY	DATE	REVISIONS

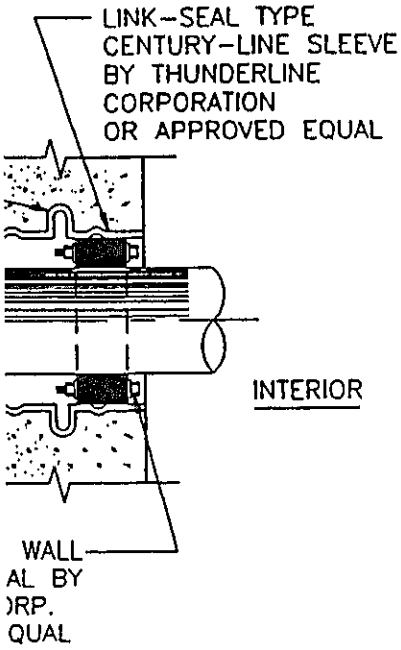
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

SUMP PUMP PIPING DETAIL

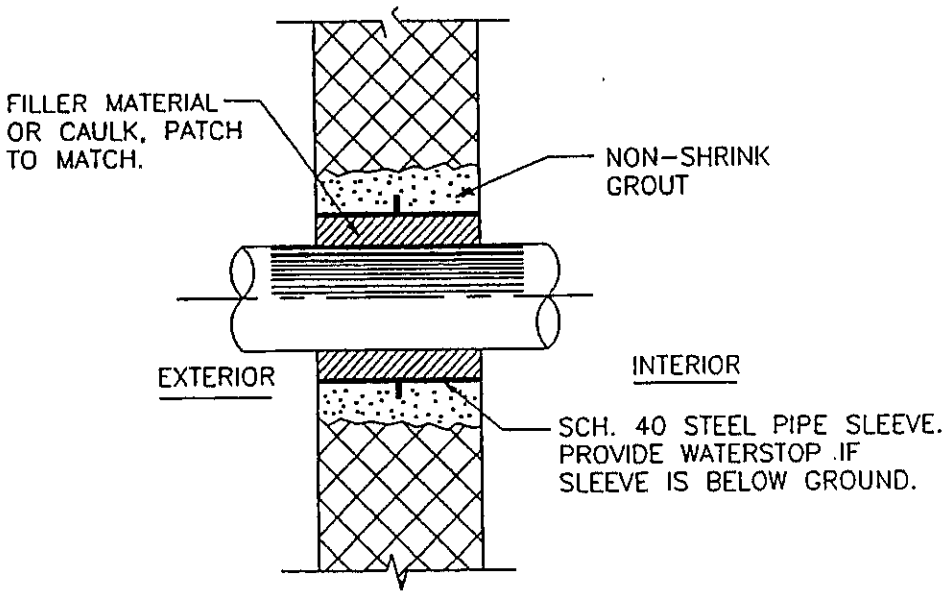
DATE : 4/95

DWN BY :

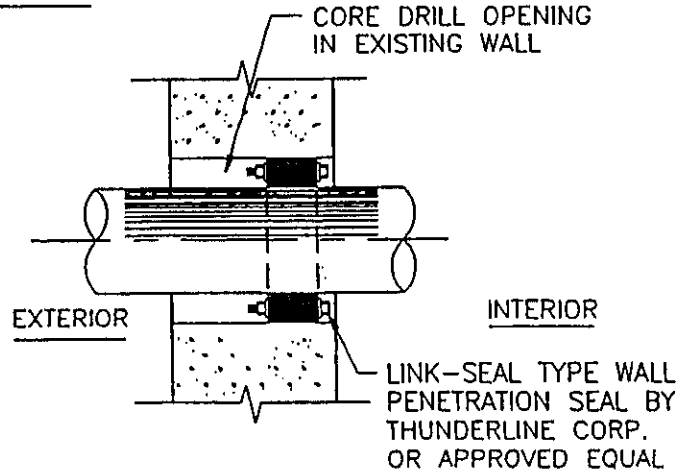
SHT. NO. 18



NCRETE WALLS



EXISTING CONCRETE BLOCK WALLS



EXISTING REINFORCED CONCRETE WALLS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	WALL PENETRATIONS	DATE : 4/95 DWN BY :	SHT. NO. 19

STANDARDIZED COLOR PAINT SCHEDULE

1.	AIR	DARK GREEN 8528
2.	AIR COMPRESSOR	LIGHT GREEN 8516
3.	CAUSTIC	LIGHT GRAY/RED STRIPE 8536/8508
4.	CHLORINE	PALE GREEN/YELLOW STRIPE 8516/8547
5.	DOORS	GREEN 220
6.	DRINKING WATER	LIGHT BLUE 8556
7.	EXTERIOR WALLS	GREEN 727
8.	FLOORS	TILE GREEN 120
9.	FLUORIDE	MOCHA TAN /RED STRIPE 8515/8508
10.	GENERATOR STACKS/MUFFLERS	1200 ALUMINUM 57
11.	HAND RAIL	YELLOW 8504
12.	INTERIOR WALLS	WHITE 735
13.	KLENSPHOS	IVORY /RED STRIPE 8506/8508
14.	NATURAL GAS	BLACK
15.	PLANT EFFLUENT/SEWER	DARK BLUE/YELLOW STRIPE 8513/8547
16.	POLYMER	WHITE/RED STRIPE 8535/8508
17.	POTASSIUM PERMANGANATE	PURPLE
18.	RAW SEWAGE	GRAY 8532
19.	RETURN SLUDGE	TAN 8544
20.	SAFETY EQUIPMENT	GREEN & WHITE 8535/8526
21.	SHAFT, PULLEY, GEARS, GUARDS	ORANGE 8500
22.	SUPPORTS	YELLOW 8504
23.	TRIM-EXTERIOR	GREEN 709
24.	UTILITY WATER	DARK BLUE/YELLOW STRIPE
25.	VALVE HANDLES	RED 8508
26.	WASTE SLUDGE	BROWN 8534
27.	WATER - RAW	DARK BLUE 8513
28.	WINDOW SILLS-EXTERIOR	GREEN 709

*NOTE : SIGNS AND MARKERS

1. DOORS MUST BE POSTED WITH EXIT SIGNS.
2. FIRE EXTINGUISHER MUST BE IDENTIFIED WITH PAINT AND SIGNS.
3. ALL LINES WILL BE STENCILED WHITE WITH DIRECTION OF FLOW, CONTENTS AND CAS # WITH HIGH GLOSS WHITE PAINT. (8535)
4. ELECTRIC POWER INDICATORS - ORANGE AND WHITE. (8500/8535)
5. SAFETY AREA & EQUIPMENT CLEARLY OUTLINED.

*NOTE : 1. ALL COLORS ARE HIGH GLOSS AND COLOR NUMBERS REFER TO PRODUCTS OF :
CONLUX COATINGS INC.
EDISON, NEW JERSEY 08818
(201) 287 - 4000

2. NO USE OF LEAD BASE PAINT

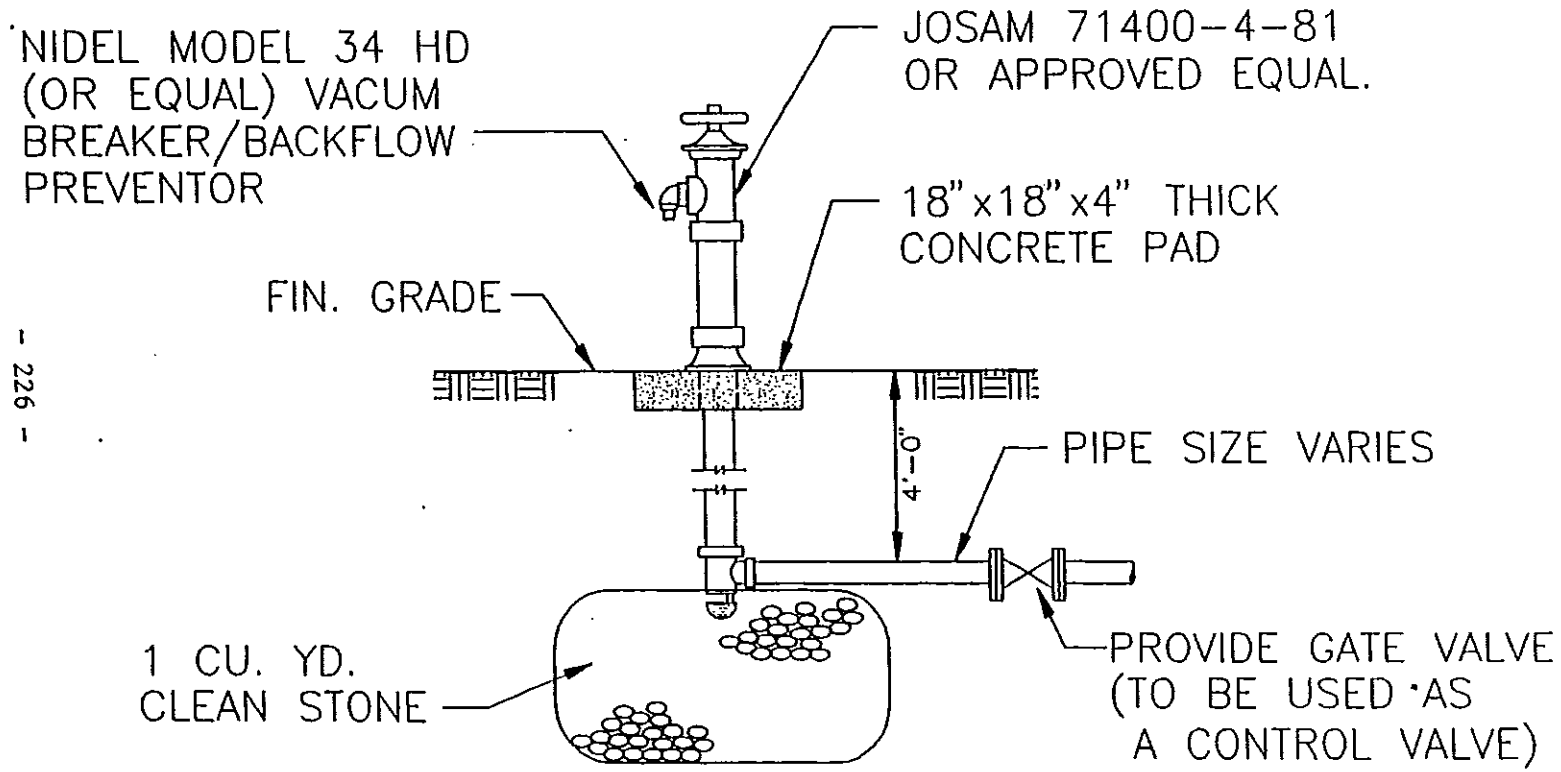
BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

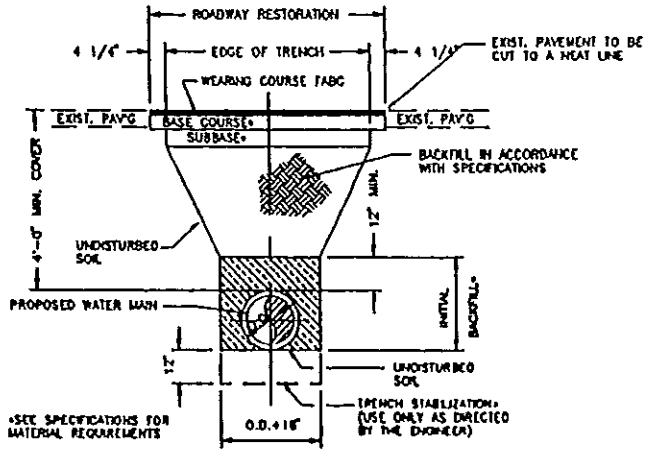
STANDARDIZED COLOR PAINT SCHEDULE

DATE : 4/95
DWN BY :

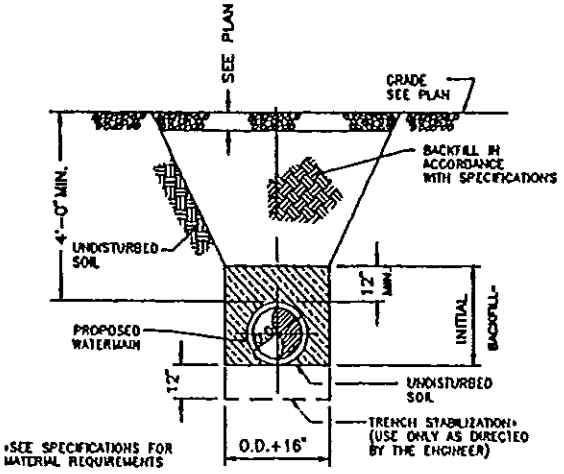
SHT. NO. 20



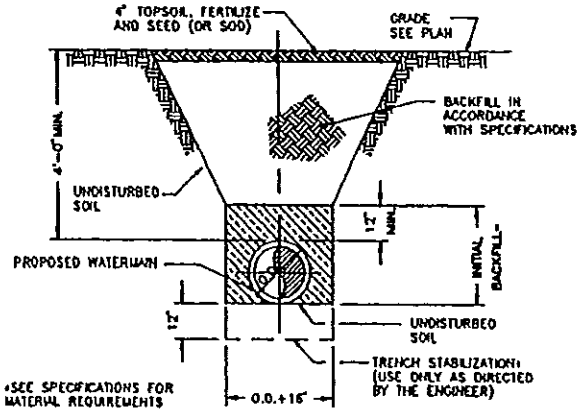
BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	YARD HYDRANT	DATE : 4/95 DWN BY :	SHT. NO. 21



PAVED ROADWAY



GRAVEL OR STONE AREAS



TURF AREAS

BY	DATE	REVISIONS

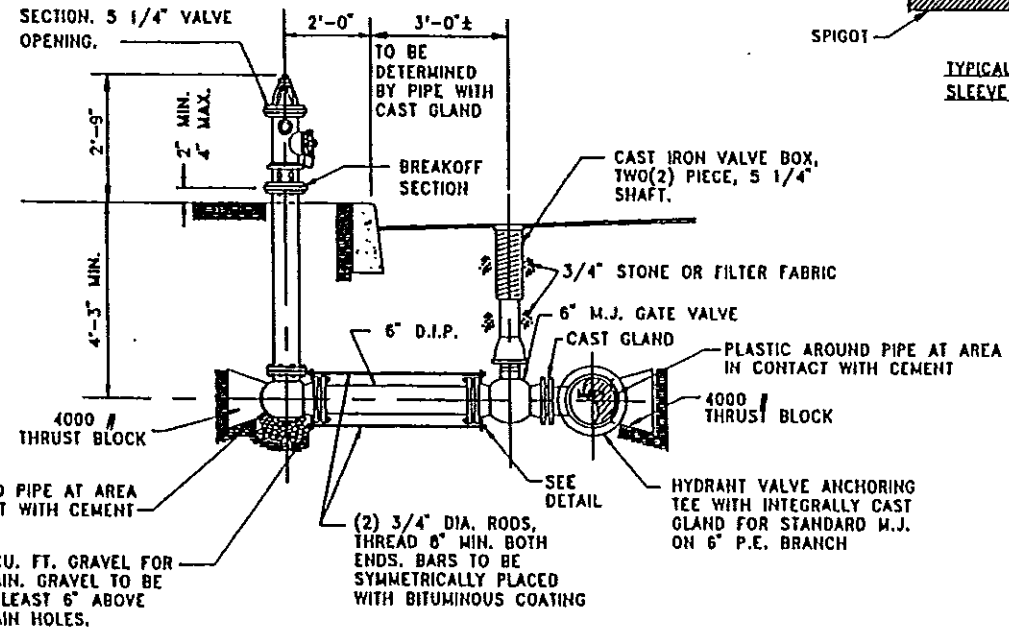
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

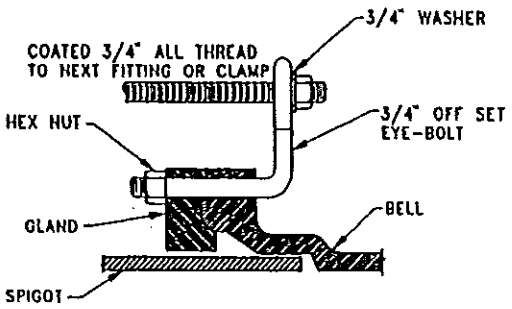
TRENCH CONSTRUCTION & WATERMAIN PIPE INSTALLATION

DATE : 4/95

DWN BY :

SHT. NO. 22





TYPICAL CROSS SECTION
SLEEVE & BAR ASSEMBLY

PUBLIC HYDRANTS:
RED GLOSS HYDRANT BODY,
WHITE ENAMEL HOSE
AND STEAMER CONNECTIONS,
REFLECTIVE WHITE BONNET

PRIVATE HYDRANTS
ALL RED GLOSS

CONSULT M.U.A. FOR HYDRANT
DESIGNATION

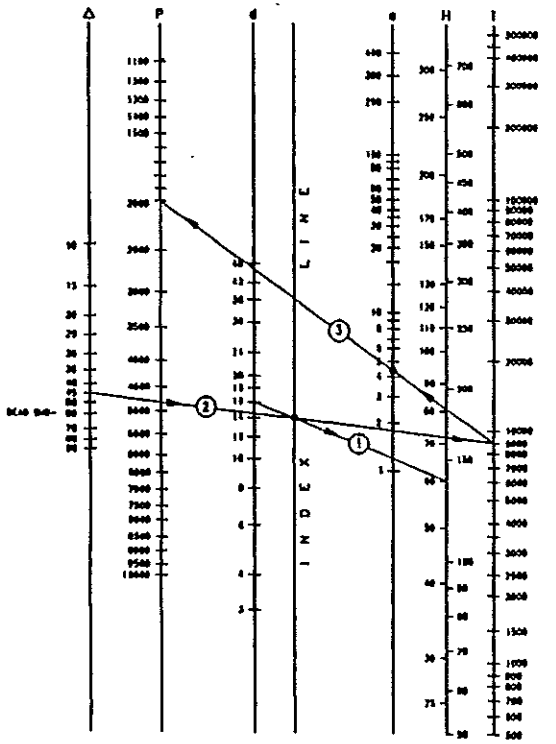
BY	DATE	REVISIONS

MOUNT LAUREL
MUNICIPAL UTILITIES AUTHORITY

FIRE HYDRANT CONNECTION DETAIL

DATE : 4/95
DWN BY :

SHT. NO. 23



PROCEDURE FOR CALCULATING REQUIRED AREA OF THRUST BLOCK

LEGEND

H = HYDRAULIC HEAD/WATER PRESSURE, FT.
d = DIAMETER OF PIPE, IN.
Δ = PIPE BEND, DEGREE
T = TOTAL RADIAL THRUST, LBS.
P = SOIL BEARING PRESSURE, PSI
e = AREA OF THRUST BLOCK, SQ. FT. (LxW)

STEP (1)

CONSTRUCT LINE FROM "DIAMETER OF PIPE" (d) TO "WATER PRESSURE/HYDRAULIC HEAD (H) TO ESTABLISH POINT ON "INDEX LINE".

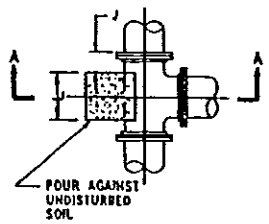
STEP (2)

CONSTRUCT LINE FROM "PIPE BEND" (Δ) THROUGH ESTABLISHED POINT ON "INDEX LINE" TO INTERSECT "TOTAL RADIAL THRUST" (T) LINE.

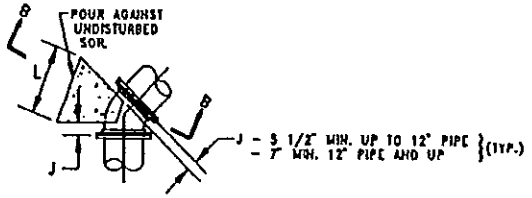
STEP (3)

CONSTRUCT LINE FROM POINT ON "TOTAL RADIAL THRUST" (T) LINE TO KNOWN POINT ON "SOIL BEARING PRESSURE" (P) LINE WHICH DETERMINES REQUIRED "AREA OF THRUST BLOCK" (e).

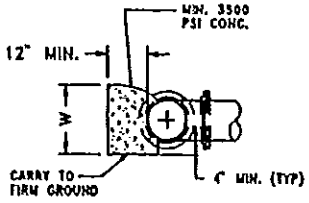
EXAMPLE: GIVEN (A) 16" DIAMETER PIPE - 45° ELBOW
(B) WATER PRESSURE 80 PSI
(C) SOIL BEARING PRESSURE 2000 PSI
(1) LINE d-H-INDEX POINT
(2) LINE Δ - INDEX POINT-T (8000 LBS)
(3) LINE T-P-e
REQUIRED THRUST BLOCK BEARING AREA = 4.5 S.F.



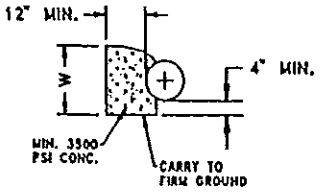
PLAN AT TEE



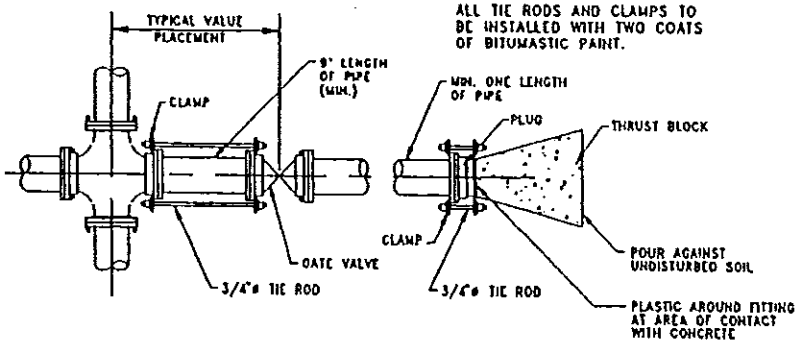
PLAN AT BEND



SECTION A-A



SECTION B-B



TYPICAL STUB FOR FUTURE CONNECTION

NOTES:

1. NOMOGRAPH DOES NOT APPLY FOR VERTICAL DOWN BENDS.
2. INTERNAL WATER PRESSURE TO BE 150 PSI
3. SOIL BEARING PRESSURE TO BE 2000 PSI
4. ALL FITTINGS SHALL BE WRAPPED IN VISQUENE AT THRUST BLOCKS

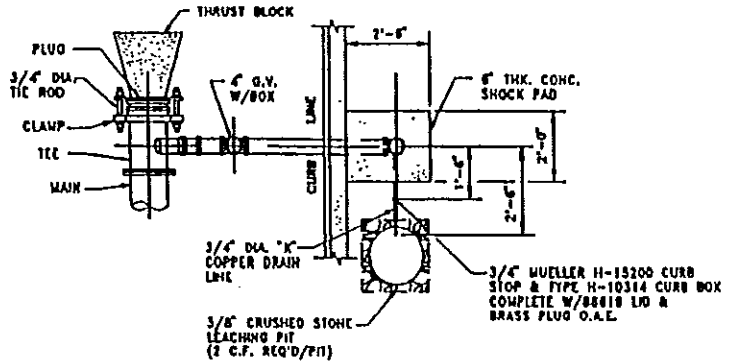
BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

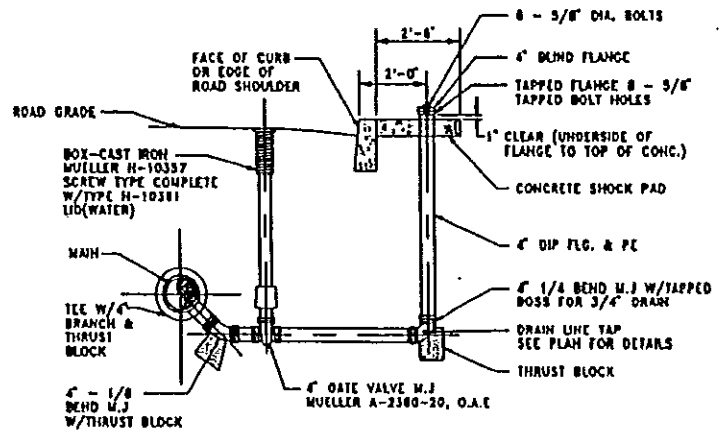
THRUST BLOCK DETAIL

DATE : 4/95
DWN BY :

SHT. NO. 24

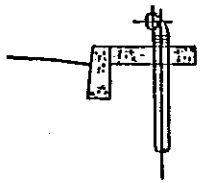


PLAN



NOTE: ITEM TO INCLUDE TEE, 4"-1/8 BEND 4" GATE VALVE & BOX, 4" D.I.P. 4"-1/4 BEND M.J. W/TAPPED BOSS, 4" FL & PE. D.I.P., 4" BLIND FLANGE, CONC. SHOCK PAD, 3/4" COPPER DRAIN LINE W/GATE VALVE & CRUSHED STONE LEACHING PIT, ALL THRUST BLOCKS.

SECTION

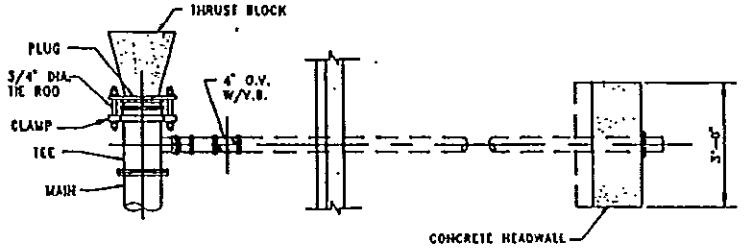


PRIOR TO BLOWING OFF OF MAIN, REMOVE 4" BLIND FLG. & INSTALL 90° FLANGE. ELBOW BOLTS PROVIDED FOR BLIND FLANGE. IT IS RECOMMENDED THAT THE ELBOW BE BISFALLED TO DIRECT THE WATER INTO THE ROADWAY AT A 45° ANGLE FROM THE CENTERLINE OF BLOW-OFF LINE.

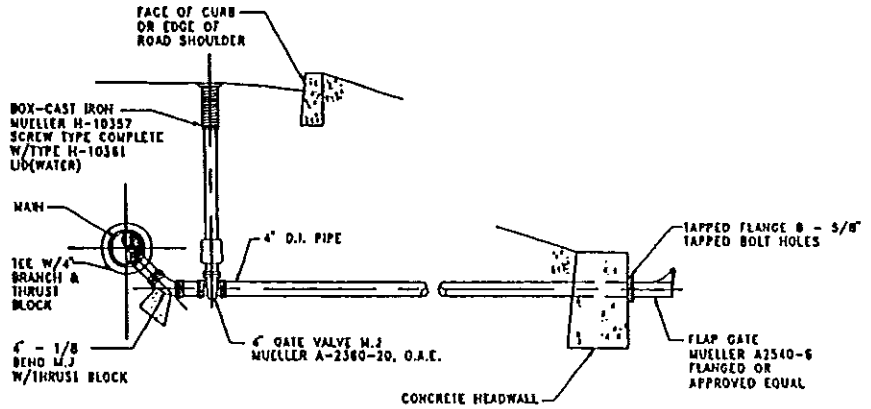
OPERATING INSTRUCTIONS

TYPICAL BLOW-OFF DETAIL

NOT TO SCALE



PLAN



SECTION

ALTERNATE BLOW-OFF DETAIL

BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

WATER MAIN BLOW OFF DETAILS

DATE : 4/96

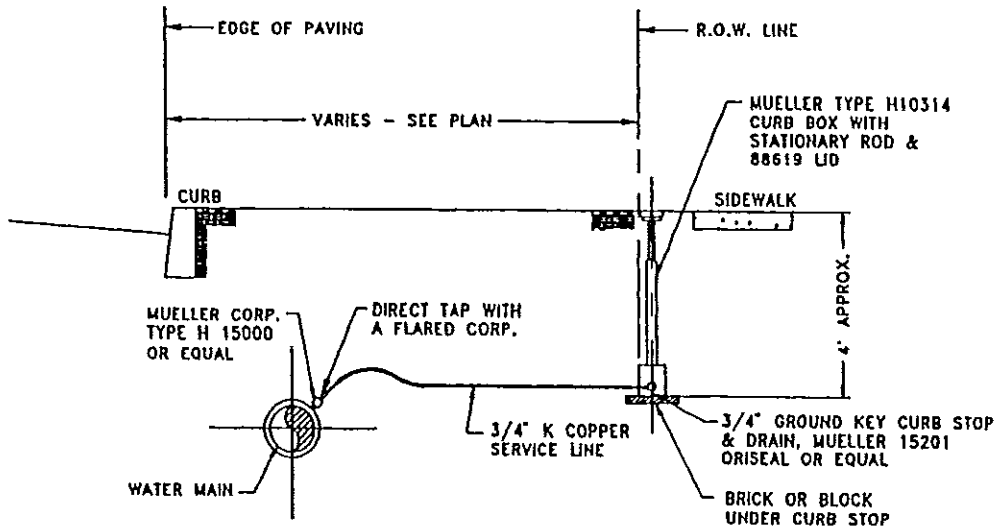
DWN BY :

SHT. NO. 25

MAXIMUM TAP SIZES

MAIN SIZE	LARGEST TAP
6",8"	1"
10"	1 1/2"
12"	2"

CURB BOX TO BE BETWEEN CURB AND SIDEWALK UNLESS APPROVED OTHERWISE



NOTE:

1. PVC PIPE ONLY PERMISSIBLE ON SERVICE SIDE OF CURB STOP BUT IN NO CASE SHALL THERE BE PVC PIPE IN THE ROADWAY
2. STAINLESS STEEL TAPPING SADDLES ONLY APPROVED FOR ACP OR PVC PIPE

BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

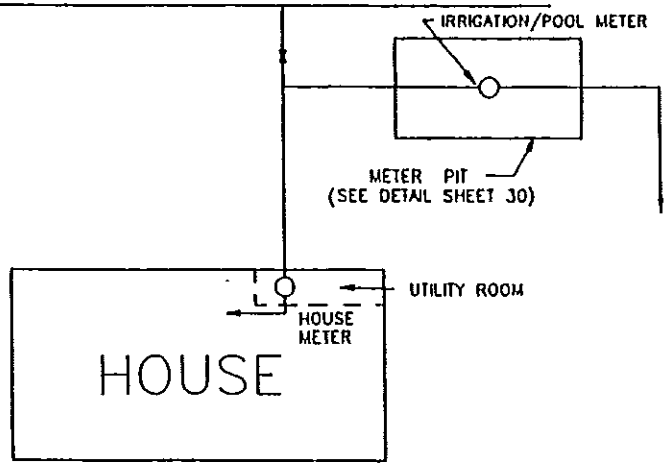
WATER MAIN TYPICAL SERVICE CONNECTION

DATE : 4/95

DWN BY :

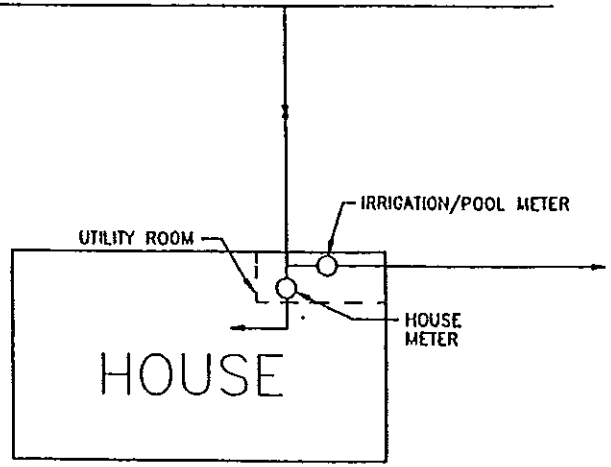
SHT. NO. 26

WATER MAIN IN STREET



OPTION 1

WATER MAIN IN STREET



OPTION 2

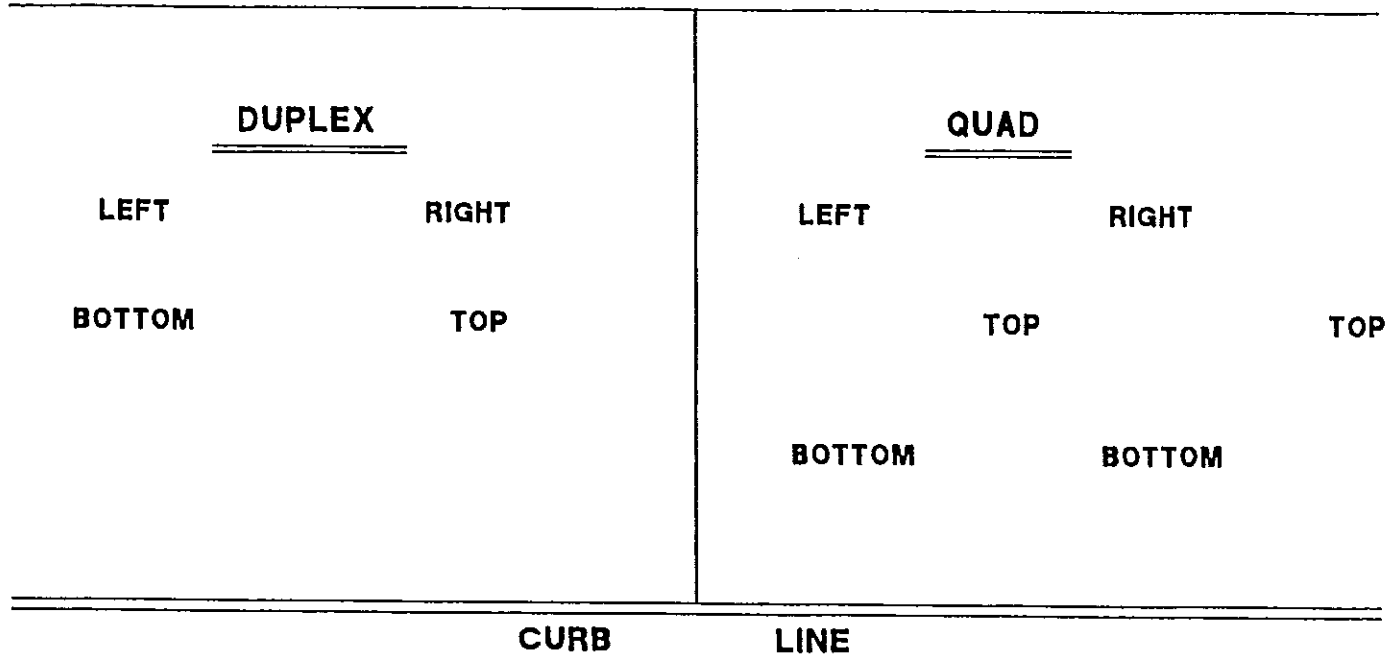
BY	DATE	REVISIONS

MOUNT LAUREL
MUNICIPAL UTILITIES AUTHORITY

IRRIGATION/POOL METER LOCATIONS

DATE : 4/95
DWN BY :

SHT. NO. 27



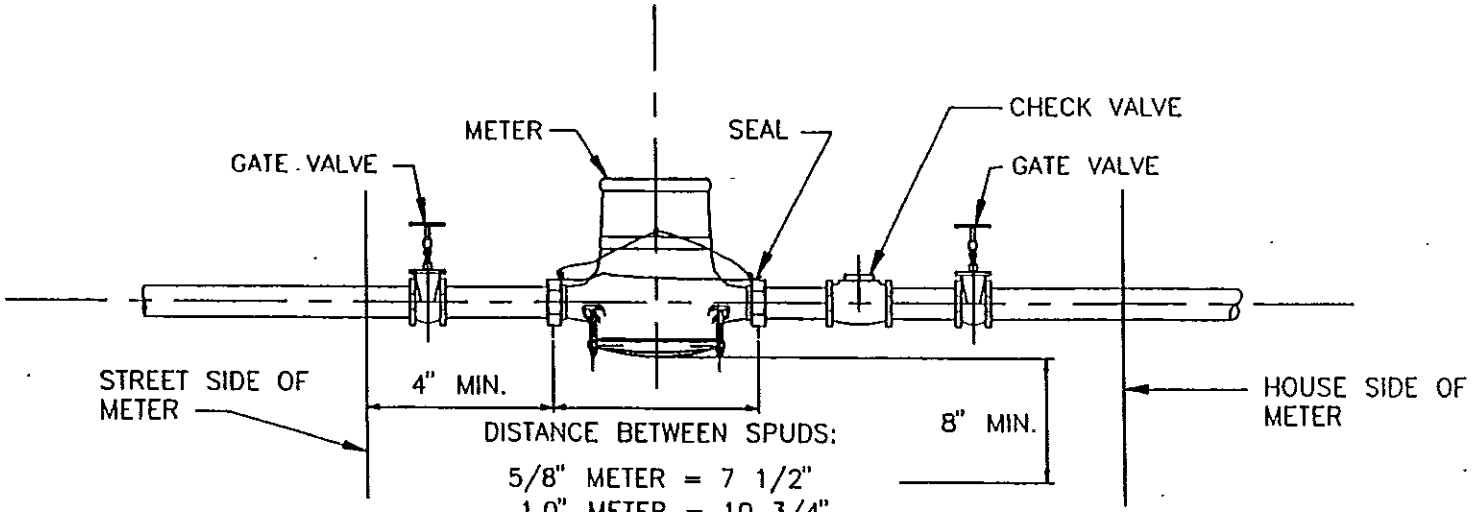
BY	DATE	REVISIONS

MOUNT LAUREL
MUNICIPAL UTILITIES AUTHORITY

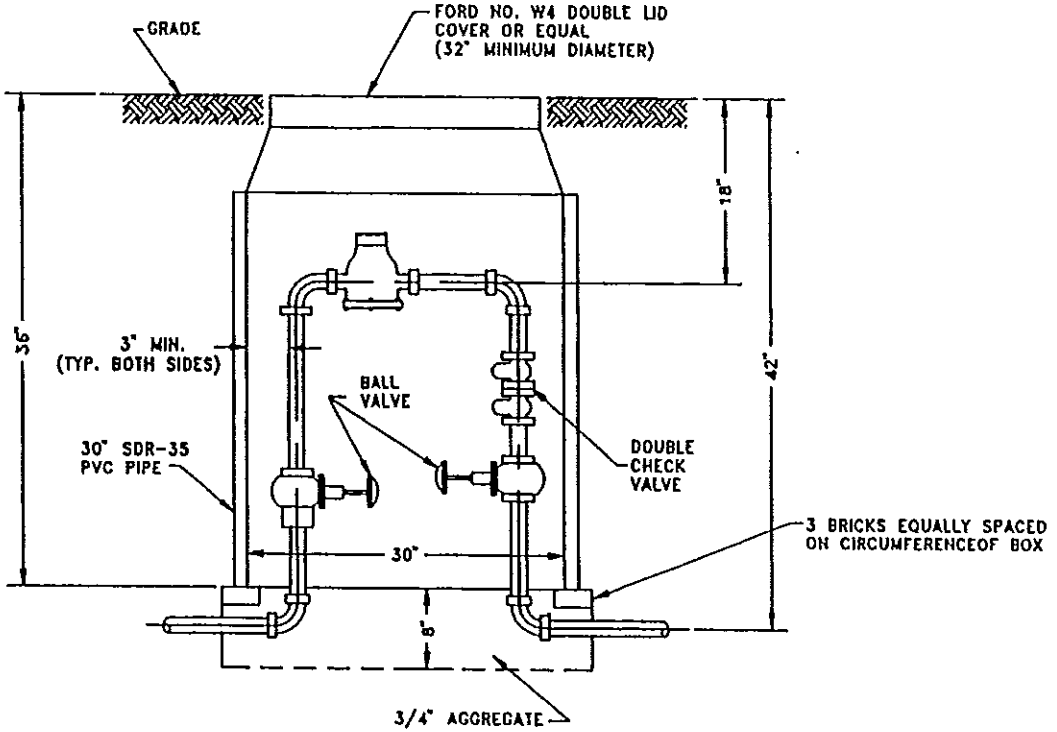
CURB STOP LOCATIONS
MULTIPLE DWELLING UNITS

DATE : 4/95
DWN BY :

SHT. NO. 28



BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	INSIDE METER INSTALLATION	DATE : 4/95 DWN BY :	SHT. NO. 29



NOTE:

1. METER AND METER COUPLINGS ONLY TO BE SUPPLIED MOUNT LAUREL M.U.A.
2. ELECTRIC LINES ARE NOT TO BE GROUNDED TO WATER PIPING
3. METER DIAMETER TO BE 5/8" OR 1"
4. ALL PIPING TO BE 3/4" DIAMETER (TYPE K) COPPER.
5. METERS SHALL BE REMOVED THE WINTER BY THE PROPERTY OWNER. METERS SHALL BE REINSTALLED IN THE SPRING (BEFORE USAGE) BY THE PROPERTY OWNER.

PIT USE

1" MAX. SERVICE (HOUSE & COMMERCIAL IRRIGATION SERVICE).
2" SERVICES OR GREATER SHALL BE IN A METER VAULT.

METER PITS TO BE USED BY SPECICAL PERMISSION OF MUA ONLY.

METER PITS SHALL NOT BE UTILIZED FOR ANY DOMESTIC WATER SERVICES. ALL DOMESTIC (RESIDENTIAL OR COMMERCIAL) METERS SHALL BE LOCATED INSIDE THE BUILDING STRUCTURE.

BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

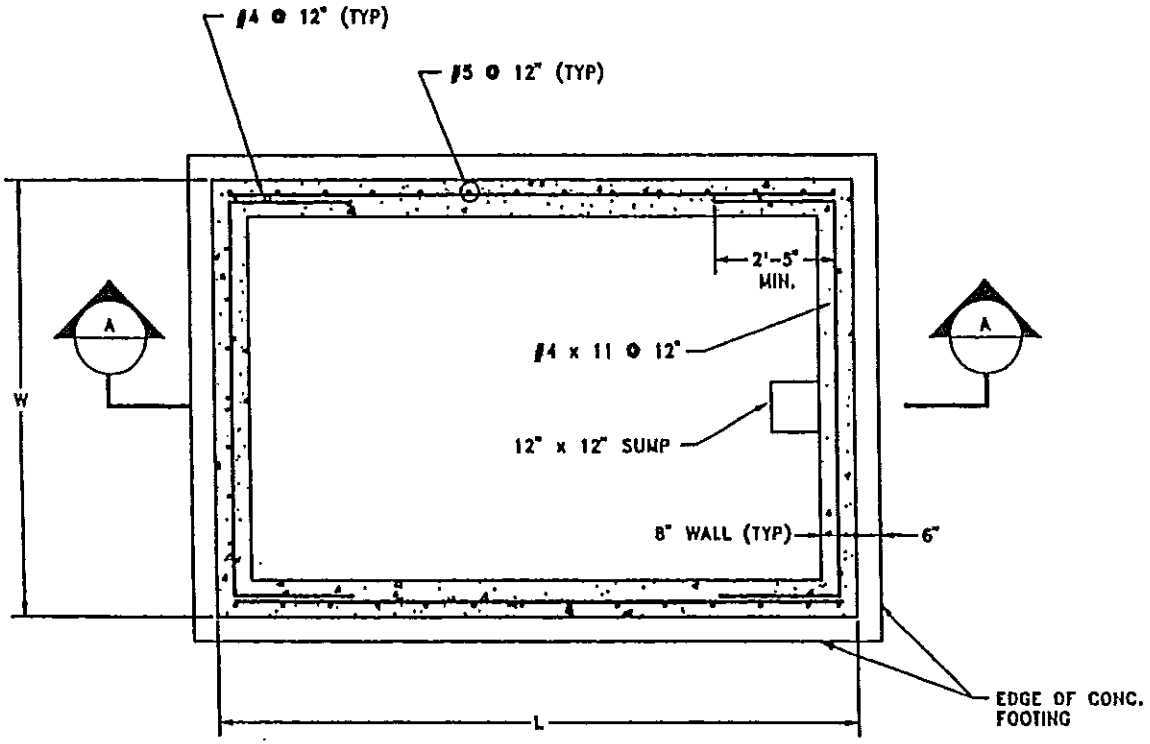
WATER METER PIT DETAIL

DATE : 4/95
DWN BY :

SHT. NO. 30

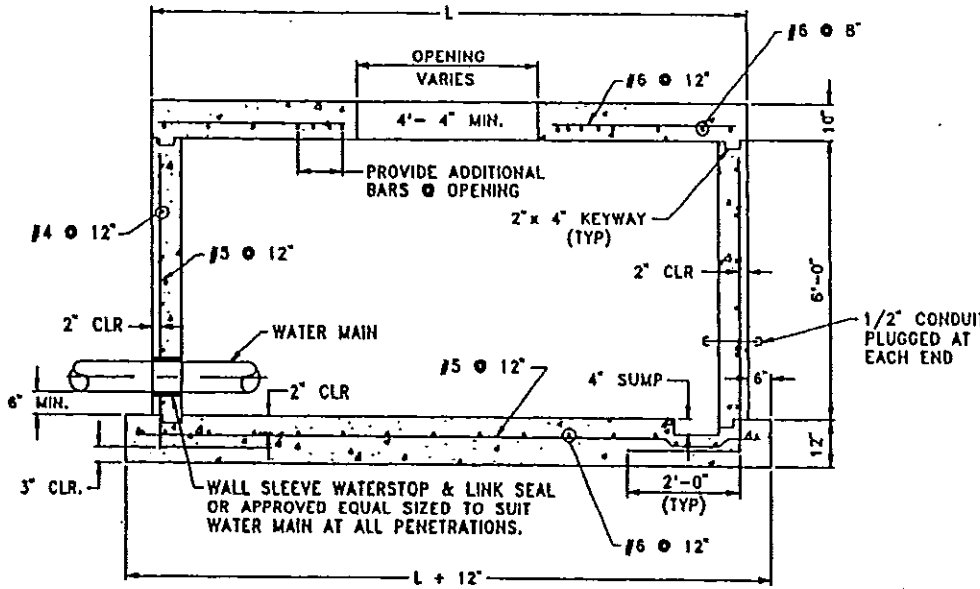
NOTES:

1. CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4000 P.S.I. @ 28 DAYS
2. REINFORCING STEEL SHALL BE GRADE 60



PLAN

BY	DATE	REVISIONS	MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY	METER PIT (ONLY FOR USE WITH SPEC[illegible] PE[illegible]SS[illegible])	DATE : 4/95	SHT. NO. 31
					DWN BY :	



SECTION (A)

BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

METER PIT (ONLY FOR USE WITH SPECIAL PERMISSION)

DATE : 4/95

DWN BY :

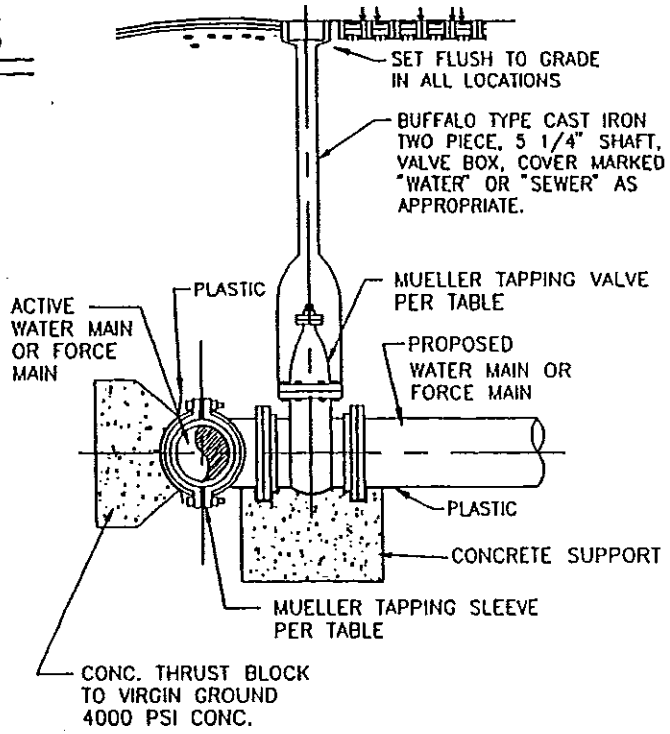
SHT. NO. 32

TAPPING SLEEVES, CROSSES AND VALVES

TYPE OF PIPE	MODEL NUMBERS			SIZE RANGE
	SLEEVE	CROSS	VALVE	
CAST IRON	H-615 or 616	H-715 or 716	H-667	2" - 24"
DUCTILE IRON	H-615	H-715	H-667	4" - 24"
ASBESTOS CEMENT	H-619	H-719	H-642	4" - 12"
AWWA C900 PVC	H-615	H-715	H-696	4" - 12"

NOTES :

1. ALL PART NUMBERS REFER TO PRODUCTS OF THE MUELLER CO. DECATUR, ILL. OR APPROVED EQUAL.
2. ALL OUTLET FLANGES ARE CLASS 125, ANSI B.16.1. MECHANICAL JOINTED.
3. PROVIDE THRUST BLOCKS AND VISQUENCE WRAPPING IN CONFORMANCE WITH STANDARD DETAILS.
4. ALL VALVES SHALL OPEN IN THE COUNTERCLOCKWISE DIRECTION.
5. ALL TAPPING EQUIPMENT MUST BE DISINFESTED (CHLORINE MAY BE SWABBED ON INTERIOR OF ALL FITTINGS).
6. LINE MUST BE SUBSEQUENTLY BLOWN OFF.



INSTALLATION DETAIL

N.T.S.

BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

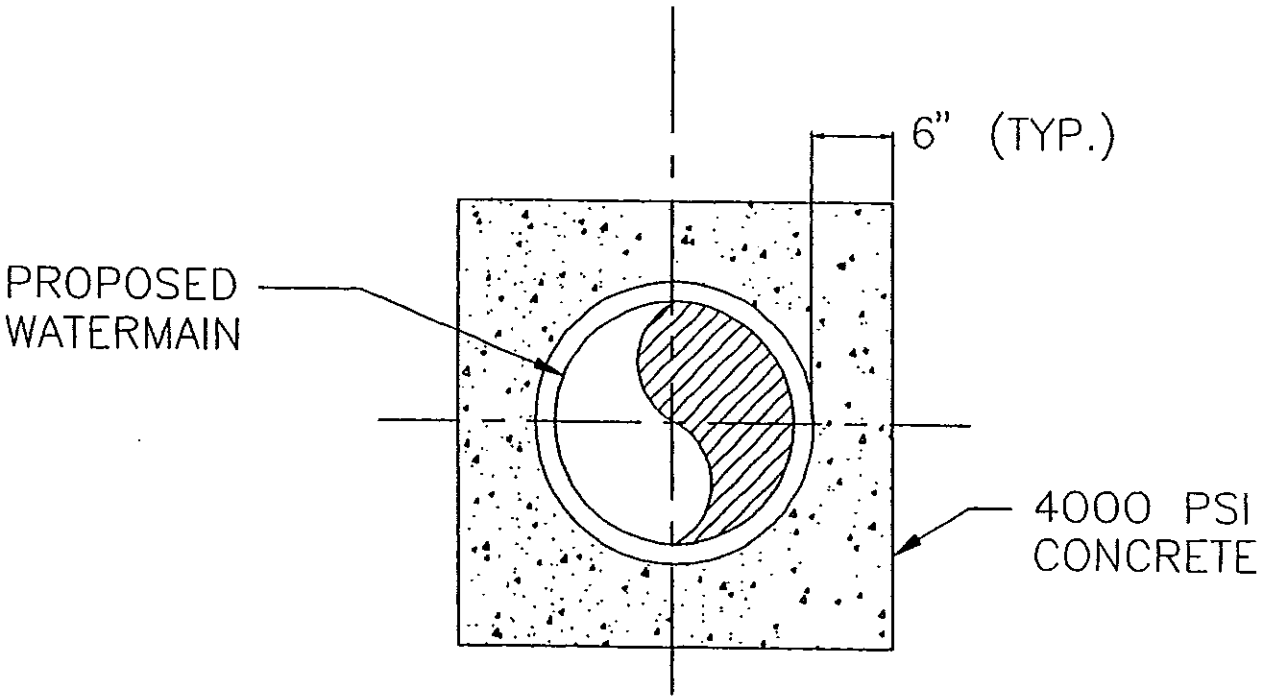
WET TAP CONNECTION WITH TAPPING SLEEVES, CROSSES AND VALVES

DATE : 4/95

DWN BY :

SHT. NO. 33

M180007\MTLMUA



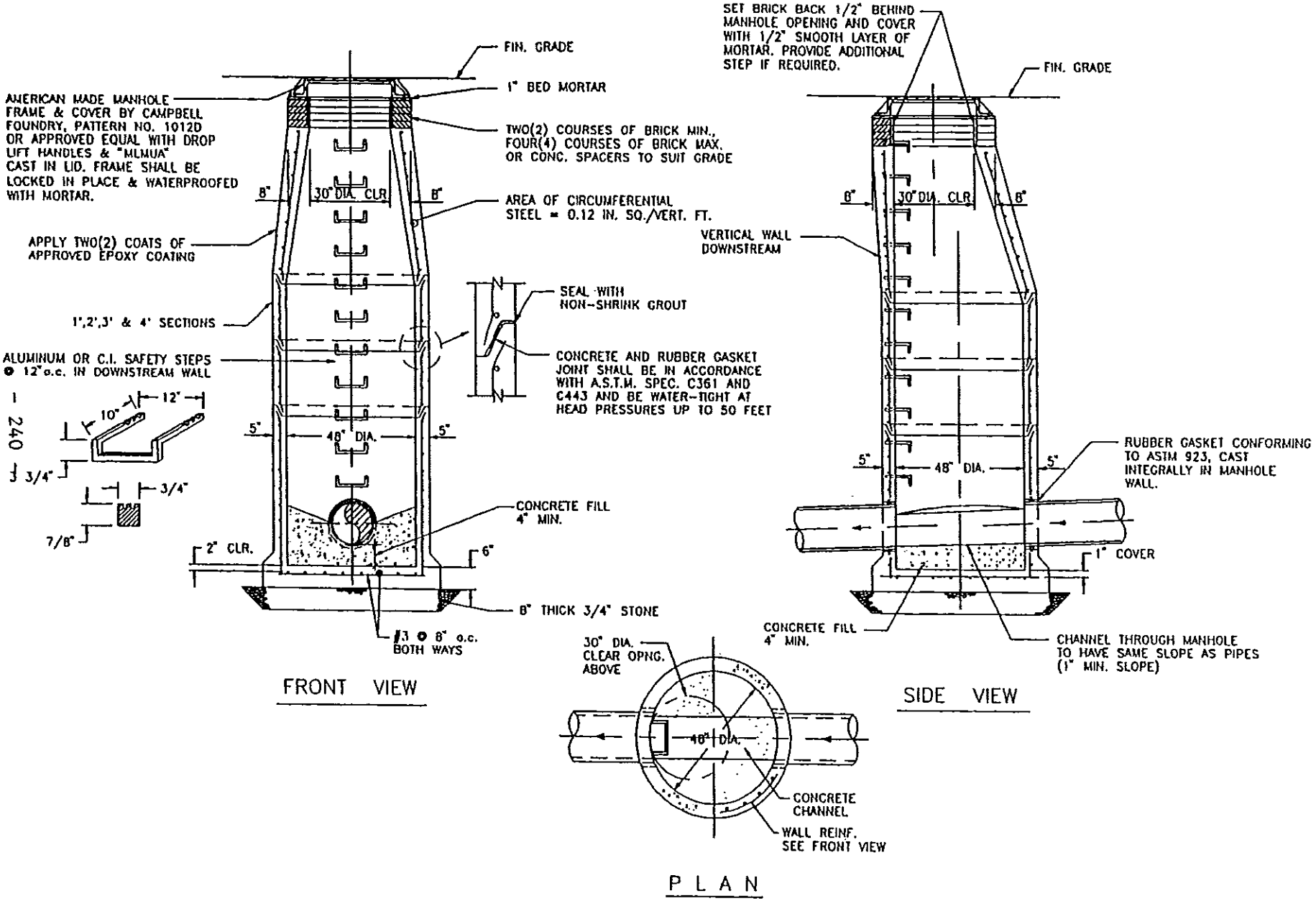
BY	DATE	REVISIONS

MOUNT LAUREL
MUNICIPAL UTILITIES AUTHORITY

CONCRETE ENCASEMENT DETAIL

DATE : 4/95
DWN BY :

SHT. NO. 34



BY	DATE	REVISIONS

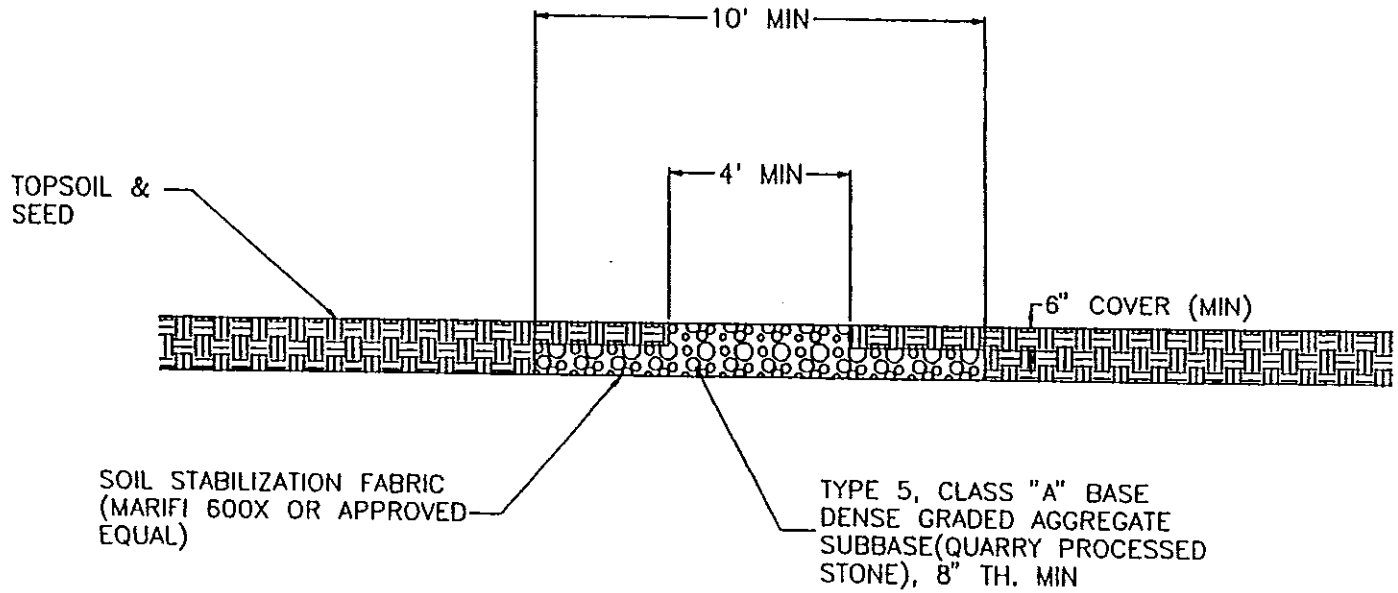
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

SANITARY SEWER PRECAST CONCRETE 4'-0" DIA. MANHOLE DETAIL

DATE : 3/96

DWN BY :

SHT. NO. 35



ACCESS DRIVE WITHIN UTILITY EASEMENTS

N.T.S.

BY	DATE	REVISIONS

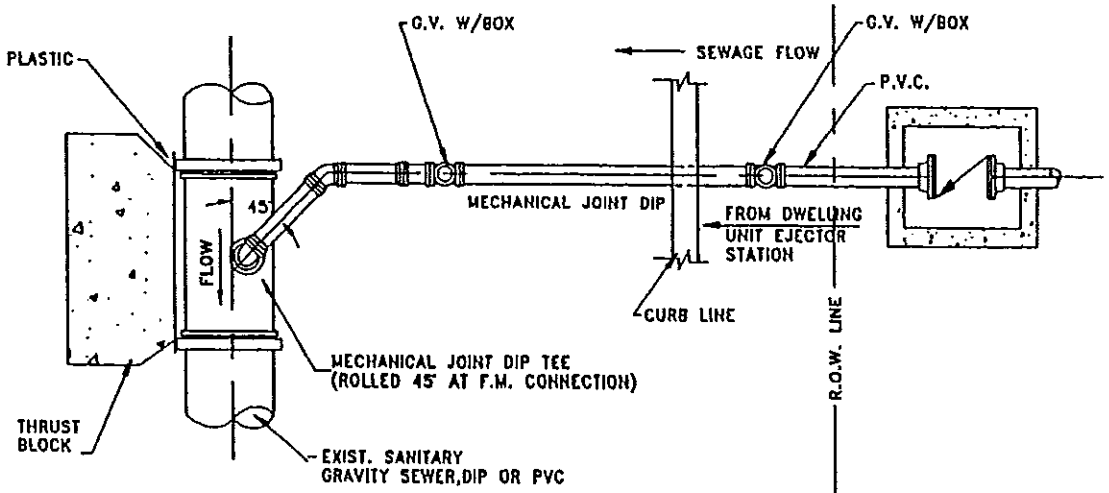
MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

ACCESS DRIVE WITHIN UTILITY EASEMENTS

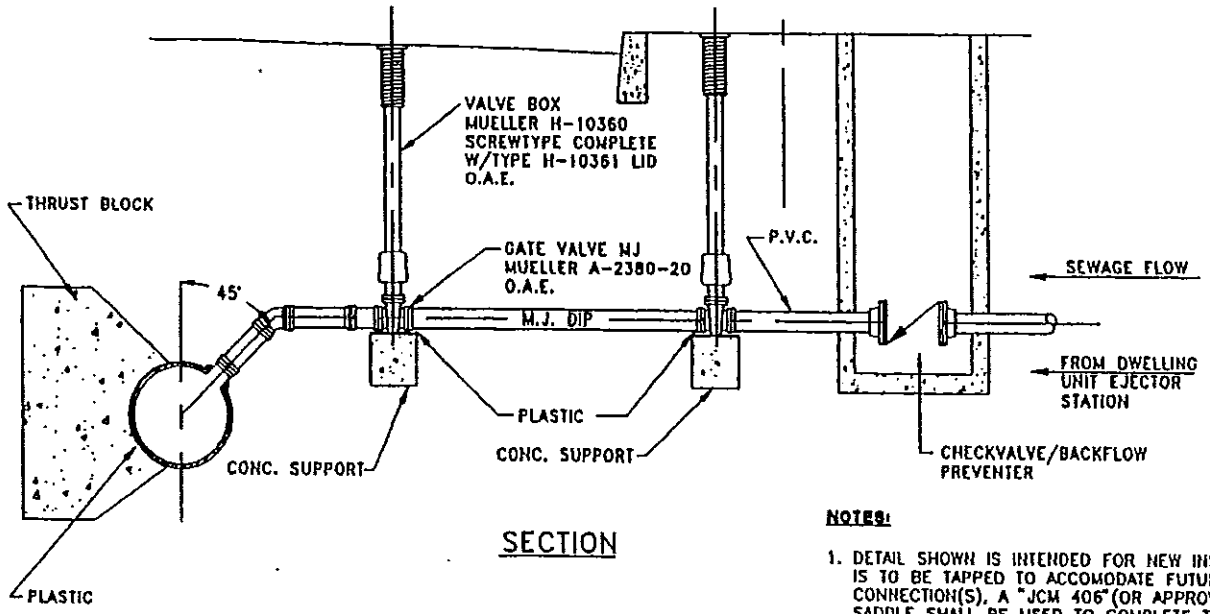
DATE : 3/96

DWN BY :

SHT. NO. 36



PLAN



SECTION

NOTES:

1. DETAIL SHOWN IS INTENDED FOR NEW INSTALLATIONS. IF LINE IS TO BE TAPPED TO ACCOMODATE FUTURE EJECTOR PUMP CONNECTION(S), A "JCM 406"(OR APPROVED EQUAL) SERVICE SADDLE SHALL BE USED TO COMPLETE THE CONNECTION BETWEEN THE EXISTING GRAVITY SEWER MAIN AND EJECTOR FORCE MAIN.

BY	DATE	REVISIONS

MOUNT LAUREL MUNICIPAL UTILITIES AUTHORITY

EJECTOR STATION CONNECTION TO GRAVITY SEWER

DATE : 3/96

DWN BY :

SHT. NO. 37

APPENDIX D

COST REIMBURSEMENT FOR WATER AND SEWER MAIN EXTENSIONS
(Resolution No. 1988-23)

A. Purpose

The purpose of the provisions of this section is to provide a procedure and formula to determine the pro rata reimbursement between or among private parties of the costs of water and sewer extensions where such construction benefits extensions with private funds.

B. General

The provisions of this section shall apply to all applicants for water and sewer service for new construction (single family dwelling, subdivisions, housing projects, industrial or commercial development, etc.) who seek to connect to water and sewer main extensions constructed by private parties.

C. Costs Entitled to Pro Rata Reimbursement

The private party who constructs water and sewer main line extensions with private funds shall be entitled to a pro rata reimbursement of the following costs of construction.

1. Actual cost of labor and materials.
2. Costs of bond required by MLTMUA.
3. Engineering fees paid by private party in connection with design and construction of main line extensions.
4. Interest which shall be at a rate equal to the applicable Federal rates published annually by the Internal Revenue or the rates actually paid by the private party, whichever is greater.

E. Proof of Costs

The private party who constructs the water and sewer main line extensions shall be required to produce documentary proof in a form satisfactory to the MLTMUA of all costs for which pro rata reimbursement is sought. This documentary proof shall be in the form of paid invoices or receipts, cancelled checks or some similar evidence certifying the costs which were expended. In the event that sufficient documentary evidence cannot be produced as set forth above, the MLTMUA engineers shall prepare cost estimates of the extensions in question which shall constitute the basis for the reimbursements request.

F. Calculation of Pro Rata Reimbursement

The pro rata costs reimbursement to be paid to the private party constructing the water and sewer main line extensions by another private who benefits by the said extensions shall be calculated on the

basis of equivalent dwelling units of all of the properties benefitted by the line extensions. The specific formula is attached hereto and made a part hereof.

G. Procedure for Cost Reimbursement

1. Upon submission of the S-W/-1 application, the applicant shall certify whether the requested water/sewer service will require connection to water/sewer main extensions that were constructed by other private parties or that the applicant will make a good faith effort to ascertain same.

2. In the event the applicant does require connection to water/sewer main line extensions that were constructed by other private parties, you shall be required to provide to the MLTMUA upon submission of the S-3/W-3 application proof of the satisfaction of one of the following conditions:

   a. Affidavit from applicant that he has made a good faith effort to ascertain and locate the private party who constructed the water/sewer main line extensions but was unable to do so, which affidavit shall include full and complete information on the efforts that were so made.

   b. Release from private party that constructed the water/sewer main line extensions reflecting that any and all claims that said private party may have had for cost reimbursement have been satisfied by the applicant.

   c. Agreement between private party who constructed the water/sewer main line extensions and the applicant to submit any disputes on the pro rata cost reimbursement, based upon the formulas set forth in this rule, to a hearing examiner appointed by the MLTMUA with the right of appeal to the MLTMUA members.

3. In the event that the applicant does not comply with the requirements as set forth in paragraphs 1 or 2 above, there shall be no review of his/her application for water or sewer services by the MLTMUA.

H. Responsibility for MLTMUA Costs

The applicant shall be required to reimburse the MLTMUA for any legal, engineering or administrative fees or costs that it may incur in connection with the implementation, interpretation, enforcement or any disputes arising therefrom, in the pro rata cost reimbursement procedures.

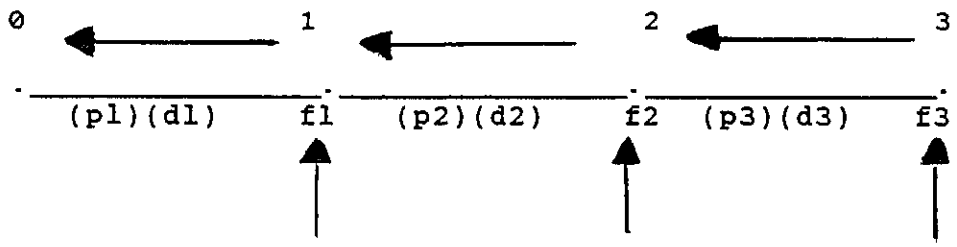
I. Exceptions

The provisions of this section shall not be applicable in those situations where private parties have received monetary credits from the MLTMUA in the form of reduced connection fees, etc. Attendant upon the private party constructing water/sewer main line extensions with private funds.

MOUNT LAUREL TOWNSHIP MUNICIPAL UTILITIES AUTHORITY
COST ALLOCATION FORMULA FOR WATER AND SEWER MAIN EXTENSIONS

The following formula was developed to establish a fair cost sharing for off-site water and sewer main extensions accomplished by parties other than MLTMUA. The formula's primary ingredients are flow from each participate as a portion of the total flow of the pipeline and the extension distance which ultimately equates to cost.

WATER/SEWER EXTENSION



Given

fT
f1 - flow from pickup point 1
f2 - flow from pickup point 2
f3 - flow from pickup point 3

pT
p1 - unit ft. price point 0 - 1
p2 - unit ft. price point 1 - 2
p3 - unit ft. price point 2 - 3

dT
d1 - distance point 0 - 1
d2 - distance point 1 - 2
d3 - distance point 2 - 3

flow
fT (total) = f1 + f2 + f3

distance
dT (total) = d1 + d2 + d3

C1 - cost related to pickup point 1 - 0
C2 - cost related to pickup point 2 - 0
C3 - cost related to pickup point 3 - 0

Cost
CT (total) = C1 + C2 + C3

$$C1 = p1 \times d1 \frac{(f1)}{fT}$$

$$C2 = p2 \times d2 \left(\frac{f2}{ff3} \right) + p1 \times d1 \frac{(f2)}{fT}$$

$$C3 = p3 \times d3 + p2 \times d2 \frac{(f3)}{f2+f3}$$

$$+ p1 \times d1 \frac{(f3)}{fT}$$

APPENDIX E- IRRIGATION

COMMERCIAL IRRIGATION

1. New irrigation customers have to irrigate grass areas with a well. The MLTMUA water can be used to irrigate areas near the sidewalk and building. A drawing must be submitted at the time application is filed.

2. Existing commercial customers wishing to use a separate irrigation meter that are currently running their irrigation system off a domestic meter, will be permitted to do so without drilling a well. A release form and application must be completed as well as payment of meter fee.

3. The MLTMUA recommends that outside irrigation meters be removed and the system winterized when service is being terminated for the winter.

4. Meters should be tagged indicating reinstallation location and stored by the customer.

5. Irrigation meters are to be reinstalled by the customer. Make sure that the correct meter is put at the correct location. Customer should open or close water valves, as appropriate.

6. Care should be taken to make sure that the meter is installed in the proper direction. An arrow on the meter indicates water flow direction.

7. Irrigation customers are responsible to report damaged, frozen and stopped meters. Frozen meters will be replaced at the customer's expense. If a meter is not registering, an average will be taken from previous usage and the customer will be charged accordingly.

8. Irrigation customers are responsible to repair all leaks. If leaks are not fixed within two weeks, the MUA will either: 1.) repair the leak and bill the customer according to our current hourly billing rates or: 2.) shut off the irrigation service until the leak is repaired by the customer.

9. Irrigation meters are only read in June and September, and billed in July and October.

10. The irrigation customer will be fined (according to the MUA's schedule) for all meters that have stopped registering and are not reported to the MUA.

11. Rain detectors must be installed for all irrigation systems.

12. Jumpers are strictly forbidden. Use of jumpers are subject to fines.

13. Sprinkler heads must be adjusted so that water is not being wasted on paved areas.

RESIDENTIAL IRRIGATION

1. The MLTMUA recommends that any outside irrigation be removed fo the winter and the system winterized by their irrigation company.

2. Customers who have inside irrigation meters should also have their systems winterized by their irrigation company

3. Meters are stored by the customer.

4. Irrigation meters of existing accounts are to be installed an removed by the customer/irrigation company. Customer shoul open or close water valves, as appropriate.

5. Meters should be installed in the proper direction. An arrow o the meter indicates water flow direction.

6. Irrigation customers are responsible to report damaged, froze and stopped meters. Frozen meters will be replaced at th customer's expense. If a meter is not registering, an average will be taken from previous usage and the customer will b charged accordingly.

7. Irrigation customers are responsible to repair all leaks. If leaks are not fixed within two weeks, the MUA will either: 1 repair the leak and bill the customer according to our curren hourly billing rates or: 2. shut off the irrigation service until the leak is repaired by the customer.

8. The irrigation customer will be fined (according to the MUA's schedule) for all meters that have stopped registering and are not reported to the MUA.

9. Irrigation meters are read in June and September, and billed in July and October.

10. Customers who now use a separate irrigation meter and wish to irrigate with their domestic meter, must call the MUA to pick up the old irrigation meter. There will be no refunds on returne meters.

11. Customers who wish to irrigate with a separate meter must:

    a. Fill out an application
    b. Fill out a Release Form
    c. Pay meter charges

12. Rain detectors must be installed for all irrigation systems.

13. Jumpers are strictly forbidden. Use of jumpers are subject to fines.

14. Sprinkler heads must be adjusted so that water is not being wasted on paved areas.