

ARTICLE 3 SPECS FOR INSTALLATION OF SANITARY SEWERS

Sec. 3-301 General Requirements

Article 3 presents the specifications for the installation and related activities associated with sanitary sewers. No work shall begin on a sewer line extension before the proposed alterations, extensions, permits, etc., have been approved by the Planning Board, Sewer Committee and Road Commissioner (if applicable). The Sewer Inspector is the primary contact with the Town of Farmingdale for sewer related activities.

Sec. 3-302 Permits

A sewer permit shall be valid for eighteen (18) months. Should a project consist of several phases, the phases shall be determined by the amount of work expected to be completed within the life of the permit. A plan which may consist of several phases shall be approved for one phase at a time with possibly conceptual approval for the balance of the project. Work permitted but not completed at the termination of a Sewer Permit shall cease and shall require an additional permit prior to completion.

Sec. 3-303 Fee Schedule

The established fee schedule shall be paid in full prior to any use of the newly installed system or part of a system. The established fee shall consist of several rate schedules, reference Appendix 1, which may include, but are not limited to:

1. Any main line extension shall include three (3) or more single family homes, a business or equivalent.
2. Connection of a single (1) or two (2) family home, or equivalent, to the public sewer.
3. Connection of three (3) or more residential units or businesses with traditional sewerage.
4. Connection of a diner, restaurant or other food service facility or a facility which generates sewerage significantly different from that of a single family home as determined by the Farmingdale Sewer Committee.

Sec. 3-304 Inspections

Any sewer line on private property intended for future connection to the Farmingdale Sewer System requires appropriate permit, inspection and approval by the Sewer Inspector. Any sewer related activity within a Traveled Way shall also require the authorization, inspection and approval of the Road Commissioner for work other than sewer related activities. By virtue of an applicant requesting a sewer permit and the granting of the permit by the Sewer Inspector, the applicant grants permission of the Sewer Inspector to enter the premises for purposes to observe, evaluate, inspect, enforce or otherwise perform the duties expected of a Sewer Inspector. Should any portion of a sewer project be within a Traveled Way, the Sewer Inspector and Road Commissioner shall have full authority to observe, evaluate, inspect and enforce related activities, or to otherwise perform the duties expected of the Sewer Inspector and/or Road Commissioner for respective duties. Approval of a permit grants authority of municipal officials to observe the permitted activities. Additional technical assistance requested by the Sewer Inspector, after review with the Board of Selectmen, shall be borne by the Applicant. Any concern of who may be authorized to enter the premises shall be determined by the Board of Selectmen. Any adverse sewer impact created by a project, such as requiring an expansion of an existing sewer line, shall be borne by the applicant.

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Sec. 3-305 Work Performed

This section attempts to clarify the major phases of work associated with a project and certain stipulations.

1. Survey. The Contractor shall employ at his own expense a competent surveyor, who shall stake out the lines and grades for all pipes, structures, and other portions of the work; establish levels. All reference marks shall be verified by an instrument at frequent intervals and the Contractor shall be responsible for the accuracy of all lines and grades relative to the project. Gravity sewers shall be laid with laser beam unless by other means approved by the Sewer Inspector. Whenever the individual normally in charge is not present on any part of the work, a competent assistant shall be placed in charge with full authority to act.
2. Contractor. The Contractor shall furnish all labor, materials and equipment in order to construct gravity sewers, pressure mains, manholes, connections, and such other structures or features as may be required to complete the work in accordance with said plans and specifications. Construction work shall start on a date and place mutually agreed upon between the Sewer Inspector and the Contractor. Work shall be continued with regularity until its completion. Sufficient labor and equipment shall be supplied to maintain a rate of progress satisfactory to the Sewer Inspector. The Contractor is responsible to comply with all applicable Federal, State and Local safety and health standards.
3. Specifications. All the work shall conform to the Town's specifications and to any accompanying plans prepared by a Maine Licensed Professional Engineer submitted by the applicant. Sewers shall be installed at locations shown on the plan, and to the line and grade indicated on the plan. All piping shall be complete, including fittings, connections to existing structures and other miscellaneous items of work. The Sewer Inspector, or an authorized designee, shall inspect and authorize various stages of sewer related work during a project. The Sewer Inspector shall inspect and require compliance of work for any sewer extension or maintenance within the Town of Farmingdale; including new or expanded subdivisions. The Farmingdale Code of Ordinances, Chapter 3, "Public Property, Utilities, and Solid Waste" details the necessary requirements. Specifically referenced are Article 1, "Street Design, Construction and Related Standards" (page 3-3) and Article 3, "Specifications for Installation of Sanitary Sewers" (page 3-45).
4. Final Inspection. Any sewer line activity shall be inspected and approved by the Sewer Inspector prior to any use of the activity. Use of any sewer line which has not been approved by the Sewer Inspector shall constitute a violation of this Ordinance and be subject to established penalties. Should any sewer activity be solely on private property, the Sewer Inspector shall be responsible for inspection and approval of all related work activity. Should sewer activities be within a subdivision, Traveled Way, or partially within a Traveled Way, the Road Commissioner shall be responsible to inspect the backfilling after the sewer line has been laid or maintained and backfilled to six (6) inches above the pipe within the Town way. The Sewer Inspector shall be responsible to inspect the excavation of the trench plus the bedding and backfilling to six (6) inches above the sewer pipe.
5. Maintenance Agreement, Plans. Public sewers constructed on private land after March 22, 1997 shall not be used unless a permanent maintenance easement is conveyed to the Town that is not less than thirty (30') feet in width (15 feet from center of a pipe on

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each side) along the length of said sewer line shown on the proposed plan and filed at the Kennebec County Registry of Deeds prior to installation. As built plans shall be provided to the Town within 45 days of installation and prior to use.

6. Connection to Public Sewer. Any new connection to the public sewer shall be accomplished by the Sewer Maintenance Contractor or a designated replacement approved by the Farmingdale Sewer Committee. All fees shall be paid by the Applicant. Any new connection at a main sewer line shall be run to the property line.
7. Extension of Public Sewer. Any new extension of the public sewer shall not be connected to the pre-existing public sewer until the project has been inspected and approved plus all fees paid.

Sec. 3-306 Trench

1. Trench Width and Bottom. The width of the excavation shall be kept as small as practicable to carry on the work but not less than the diameter of the pipe plus two feet. The trench bottom referred to in the specifications is defined as being six (6) inches below the bottom of the barrel of the sewer pipe or coupling.
2. Water in Trenches. Sewer excavations are to be kept free from water. No pipe or masonry is to be laid in water and water is not to be allowed to rise on or flow over any pipe or masonry until such time as approved by the Sewer Inspector.
3. Trench and Road Subgrade. All organic materials shall be removed to subgrade if on private land or two (2') feet if below a Traveled Way. Rocks and boulders visible at subgrade and exceeding six (6) inches in size shall also be removed. Any suitable material required for filling above trench bottom, in lieu of earth from the trench excavation, shall be placed by the Contractor. Selected material shall be clean granular and free from loam, sod, roots, or other organic material and from stones.
4. Filling Below Trench Grade. The Contractor shall furnish and place selected fill material or crushed stone below trench bottom, as directed and to such depths as determined by the Sewer Inspector.

Sec. 3-307 Backfilling of Trench

1. Material. The contractor shall first place and consolidate a minimum six (6) inch layer of approved 3/4-inch crushed stone on all trench bottoms. After the pipe has been laid, additional 3/4" of screened gravel crushed stone shall be placed and compacted to the mid-point, a distance six (6") inches above the top of the pipe. Geotech filter fabric, the width of the trench, shall be placed on top of the top layer of stone so the fines do not filter into the stone. Before additional material is added the Sewer Inspector shall approve the compaction of this layer. The trench shall then be carefully backfilled with screened gravel deposited in eight (8) inch layers, thoroughly compacted by mechanical means until the pipe has at least six (6) inches of cover over the top of the pipe. Material taken from the excavation may be utilized only if approved by the Sewer Inspector or Road Commissioner; whichever is applicable. No mud, frozen earth, or stones larger than six (6) inches in diameter may be used for backfilling. The remainder of the trench shall be backfilled as noted below.
2. Layers. The distance between a line six (6) inches over the top of the pipe to the top of the trench shall be carefully backfilled in not over eight (8) inch layers using suitable material
3. Roads, Walks, Drives. Any excavating / backfilling shall be completed in compliance

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with established criteria. Both the Sewer Inspector and the Road Commissioner shall be responsible to inspect and approve pertinent construction for respective, defined responsibilities.

4. Other than In Roads, Walks, Drives. Any excavating / backfilling shall be completed in compliance with Articles I and III. The Sewer Inspector shall be responsible to inspect and approve any construction.
5. Compaction. All trench backfill shall be consolidated by a vibratory compaction system, proposed by the contractor subject to approval of the Sewer Inspector and/or the Road Commissioner. The approval of the proposed method of compaction of the backfill shall in no way be construed as relieving the Contractor of responsibility for settlement of trenches, and any settlement shall be repaired by him at his own cost and expense. This responsibility shall extend for a period of twelve months. If the pipe is displaced from alignment during backfilling, it shall be relaid at the Contractor's expense.
6. Final Grading. After the completion of all backfilling operations, the Contractor shall grade the site to the lines, grades and elevations shown on the Contract Drawings and/or existing terrain conditions in the immediate vicinity.

Sec. 3-308 Responsibilities

1. Responsibilities of the Town of Farmingdale.
 - A. Construct, maintain and repair the public sewer system located within a Town accepted right of way.
 - B. Construct, maintain and repair the public sewer system which may not be within a Town accepted right of way but shall be located within a minimum thirty (30') foot wide maintenance easement.
 - C. The Town shall pay necessary costs for any repair necessary within the Town accepted right of way provided any work is performed under the direction of the Sewer Inspector and/or the Town retained Sewer Maintenance Contractor after acceptance of any new installation.
 - D. Any new connection to the public sewer line shall be done by the Town Sewer Maintenance Contractor or a contractor previously approved by the Sewer Committee. The sewer line shall be extended to the property line but all costs paid by the Applicant. Should a chimney be required, the Sewer Maintenance Contractor shall install the device within the right of way but at the property owner's expense.
2. Responsibilities of the Applicant (Property Owner).
 - A. Construct any new sewer line from a structure to the property line in compliance with this Article. Any new construction shall be inspected and approved by the Town Sewer Inspector.
 - B. Incur all costs associated between the property line and the public sewer for any new construction.
 - C. The property owner is responsible to determine the location of any blockage or disruption of service.
 - D. The property owner shall maintain and repair the sewer line from a structure to the property line and shall pay all repair costs incurred. Any repaired construction shall be inspected and approved by the Town Sewer Inspector.

Sec. 3-309 Protection of Water Supplies

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1. Water Supply Interconnections. There shall be no physical connection between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any sewage or polluted water into the potable supply.
2. Relation To Water Works Structures. While no general statement can be made to cover all conditions, it is generally recognized the sewers shall meet the requirements of the approving agency with respect to minimum distances from public water supply wells or other water supply sources and structures.
3. Relation To Water Mains
 - A. Horizontal Separation. Whenever possible, sewers should be laid at least 10 feet, horizontally, from any existing or proposed water main. Should local conditions prevent lateral separation of 10 feet, a sewer may be laid closer than 10 feet to a water main if:
 - 1) It is laid in a separate trench.
 - 2) It is laid in the same trench with the water mains located at one side on a bench of undisturbed earth.
 - 3) In either case the elevation of the crown of the sewer is at least 18 inches below the invert of the water main.
 - B. Vertical Separation. Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirement, the water main shall be relocated to provide this separation or the sewer shall be encased in concrete for a distance of ten feet on each side of the water main.

Sec. 3-310 Gravity Sewers

1. Sewers shall be furnished and installed at locations shown on plan, and to the line and grade indicated on plan. All piping shall be complete, including fittings, connections to existing structures, and other miscellaneous items of work. Gravity sanitary sewers with more than twelve feet of cover shall be Blue Brute C-900 PVC.
2. Pipe.
 - A. PVC-SDR-35. Pipe shall conform to ASTM D 3034 for sizes 4" – 15" and ASTM F679 for sizes 18" – 27". PVC resin compound shall conform to ASTM D 1784 and rubber gaskets shall conform to ASTM D 3212 and F 477. Standard laying lengths shall be 13 ft. The pipe shall be colored green to identify it for sewer applications.
 - B. Ductile Iron Pipe. Pipe shall be manufactured in accordance with the requirements of ANSI / AWWA C151 / A21.51 Ductile Iron Pipe, Centrifugally Cast, for Water and Other Liquids. Pipe shall be manufactured in accordance with the requirements of ANSI / AWWA C111 / A21.11 Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings. Pipe thickness shall be designed in accordance with the requirements of ANSI / AWWA C150 / A21.50 Thickness Design of Ductile Iron Pipe and shall be based on laying conditions and internal pressure as specified in the project plans. Pipe shall have cement mortar lining and seal coating, unless otherwise specified, in accordance with the requirements of ANSI / AWWA C104 / A21.4 Cement Mortar Lining for Ductile Iron Pipe
 - C. Service Connections. Contractor shall furnish and install wyes and teewyes as required in the pipe lines. These will be used for service connections. Wyes and teewyes shall be made of the same material as the main line pipe.

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- D. Excavations. Excavations shall be made to a point at least 6-inches below the pipe to accommodate the bedding material as previously specified. All excavations shall be kept dry while pipe is being laid and until each joint and pipe has been observed by the Sewer Inspector plus approval given to commence backfilling operations.
- E. Installation. Pipe shall be laid in strict accordance with the pipe manufacturer's published recommendations. Any pipe which is not laid to grade and alignment shall be relaid to the satisfaction of the Sewer Inspector. No pipe laying will be allowed to begin at any point other than a manhole or other appurtenance without the expressed consent of the Town.
- F. Inspection. If a new sewer extension is tying into an existing system, a plug shall be kept installed in the new line until all new construction is accepted by the Town of Farmingdale and all piping and manholes have been cleaned and tested.
- G. Chimneys. Chimneys shall be located where directed by the Sewer Inspector or prepared plans and constructed in accordance with the details shown on the plans. Concrete encasement shall be 3,000-pound class. Ends of chimney shall be capped with standard caps. Reference Appendix A.

Sec. 3-311 Manholes

1. General. The Contractor shall furnish, construct and install all manholes, complete, including the excavation, precast reinforced concrete base, barrel sections, cone section at the top of the chimney, cast in place concrete slabs for drop manholes, manhole steps, frame and cover, backfill and all accessories to complete the manholes as shown on the Drawings and as specified. All holes for sewer pipes being attached to existing or new manholes shall be mechanically bored and a flexible boot shall be installed in a water tight manner. Reference Appendix B.
2. Materials.
 - A. Brick. Brick shall be Grade H (hard) brick conforming to the Federal Specifications for Building Brick (common) Designations SS-B-656 and amendments thereto, new and of first quality, whole, sound, hard burned throughout of uniform color, and equal in quality to samples which shall have been approved by the Town.
 - B. Precast Concrete. Precast Concrete manholes shall conform to the applicable provisions of ASTM Designation C478 for strength requirements and shall be as manufactured for manholes with aluminum manhole steps cast in place. Reference Appendix B.
3. Precast Concrete Chimney. The precast concrete sections shall conform to ASTM C478, Standard Specifications for "Precast Reinforced Concrete Manhole Sections".
4. Manhole Steps. Manhole steps shall be aluminum and shall conform to ASTM B221, Alloy 6061-T6 or steel reinforced polypropylene.
5. Precast Concrete Grade Rings. Precast grade rings shall be utilized in preference to bricks. Grade Rings shall be precast reinforced concrete with a minimum 4,000 psi after 28 days. Chimneys shall be of precast concrete construction except a maximum of two (2) layer of bricks may be utilized unless prior approval from the Sewer Inspector has been obtained due to extenuating circumstances
6. Frame and Cover.
 - A. Manhole covers and frames shall be Etheridge No. E265S, or equal, and interchangeable.
 - B. Set to final grade as shown on the Drawings and as specified. Provide adequate

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temporary covers to prevent accidental entry until final placement of frame and cover is made.

- C. Set manhole frames and covers to final grade only after pavement base course has been applied, or after final grading of gravel roads. A minimum of two (2") inches of asphalt shall be placed around the manhole frame.

Sec. 3-312 Manhole Installation

1. General. Manholes of precast reinforced concrete sections and bases shall be furnished with aluminum or steel reinforced polypropylene steps cast in place; with a 5-inch wall thickness of all barrel sections; and with a wall thickness varying from 5-inches at the bottom to 8-inches at the top of all cone sections. All joints shall be grooved type with rubber gaskets and joints shall be fully bedded with mortar after setting pipe sections. Lifting holes in all pipe sections shall be filled solid with mortar both inside and out. Exterior surfaces of all concrete manholes shall be painted with two coats of Bituplastic No. 28, or an approved equal, and wrapped in plastic to below the frost line.
2. Bricks. The top uppermost reinforced concrete sections shall be set at a grade that will allow a minimum of one (1) course and a maximum of two (2) courses of brick and mortar before setting the cast iron frame and cover. Mortar for brick masonry shall be made of Portland Cement mixed in the proportions of one part cement to two parts of sand, worked to the proper consistency.
3. Proper Handling. The Contractor shall furnish and faithfully use suitable slings, hooks, cable, or such other means as he may elect, for proper handling of reinforced pipe sections and bases. No cracked, damaged or defective sections will be allowed in the work. Each pipe section must be inspected and approved by the Town immediately prior to final placement. Any sections not approved for use in this work shall be removed from the site and satisfactorily disposed.
4. Tables and Inverts. Tables and inverts shall be as shown on plans and shall be constructed of brick, concrete or fiberglass. Inverts shall have the exact shape of the sewers which are connected, and any change in size or direction shall be gradual and even.
5. Protection of the Work. Adequate precautions shall be taken during freezing weather to protect the masonry from damage by frost. No water shall be allowed to rise in excavations for manholes until all mortar and cement has set sufficiently. Upon completion, all debris shall be removed from each manhole.
6. Watertight Work Required. The entire work of constructing manholes must be carried on in a manner to insure watertight work. Any leak in manholes shall be caulked and completely repaired from the exterior of the manhole or the entire work shall be removed and rebuilt. All pipe openings shall have an approved neoprene boot meeting ASTM C-443 to insure a watertight seal between the pipe and manhole.
7. Manholes Testing. All manholes shall be tested by the contractor and the testing equipment provided by the contractor as to water tightness as follows:
8. Vacuum Testing of Manholes.
 - A. Each manhole shall be tested immediately after assembly and prior to backfilling.
 - B. All lift holes shall be plugged with an approved non-shrink grout.
 - C. All pipes entering the manhole shall be plugged, taking care to securely brace the plug from being drawn into the manhole.

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- D. The test head shall be placed at the inside of the top of the cone section and the seal inflated in accordance with the manufacturers recommendations.
- E. A vacuum of 10 inches of Hg shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches. The manhole shall be considered to have passed the test if the time for the loss of 1 inch Hg vacuum is as follows:

Depth of Manhole (feet)	Time (min)
0 – 10	3.0
10 – 15	3.5
15 – 20	4.0
20 – 25	4.5
> 25	5.0

- F. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout (Water Plug) while the vacuum is still being drawn. Retesting shall proceed until a satisfactory test is obtained.

Sec. 3-313 Service Connections, Gravity

1. General. Service connection pipe shall be furnished and installed as required. Connections shall be complete including excavation and backfill, pipe, fittings, connections and other miscellaneous items of work.
2. Materials. Pipe shall be a minimum of four (4") inches in diameter as approved by the Sewer Inspector, and the same material as the main sewer. Pipe shall be manufactured and tested in the United States. All pipe and fittings shall be connected by standard couplings and gaskets furnished by the manufacturer. All elbows used for service connections shall be bends or sweeps.
3. Installation. All work in regard to joints, laying, etc. shall be as specified. Pipe shall be installed at a slope of at least ¼ inch per foot unless otherwise approved by the Sewer Inspector. The end of each service lead shall be properly capped to prevent any objectionable material from entering the pipe. Contractor shall furnish and install a 2" x 4" wood strip at the end of the connection, extending from the pipe to a point 2 feet above the finish surface of the ground. All sewer service lines shall be buried with a metallic "tracer" tape acceptable to the Sewer Inspector to aid in their future location. The tracer tape shall be labeled "sewer" and be located approximately three (3) feet above the service line and shall extend from the connection of the service to the main to the foundation wall.
4. Swing Ties. The Contractor shall keep an accurate log containing at least two swing ties to the end cap of each service lead. The Contractor shall also keep an accurate log containing the distance to each service fitting, ahead or behind the nearest manhole, to the nearest tenth of a foot. Copies of the swing tie measurements shall be given to the Sewer Inspector on a daily basis. Swing tie measurements shall also be shown on the "As Built" plan.

Sec. 3-314 Catch Basins

1. Reference Opening Permit Ordinance.
2. Reference Street Design Ordinance.

Sec. 3-315 Pump Stations, Traditional

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1. Pump Station. All municipal sewerage pumping facilities shall be adequately designed to handle raw sewage. All pumping facilities shall be properly sized to prevent sewage from becoming septic before discharge sewage is received by the gravity system. An alarm device shall be provided on all pumping facilities which shall be located at a site determined by the Farmingdale Sewer Committee. This alarm device shall be adjusted to detect, but not limited to, high water in the receiving chamber and a power failure. Private, or individual, pumping stations do not require an alarm connected to the municipal system and is not allowed. However, it is advisory that a private, or individual, pumping station should have an alarm system installed for personal knowledge of any problem.
 - A. Contractor. The contractor shall fully coordinate all related field operations with the Pump Station Manufacturer. Coordination shall include: verifying dimensions of equipment furnished, interfacing with and connection of all exterior piping and utilities in the field, connecting external power to the pump station, and all other miscellaneous components as required for a complete, properly operating pumping facility. The pumping station manufacturer shall provide factory trained qualified personnel to assemble the pumping station in the field as the Contractor is placing it in the excavation. The work of this section includes furnishing all labor, materials and equipment required to furnish and install one submersible pump station with all equipment as indicated on the drawings and specified herein.
 - B. Manufacturer's Qualifications. One (1) Manufacturer shall furnish the pumping station and all equipment contained within them as a complete packaged system. Alternate systems based on a built-in-place, field erected pumping station utilizing precast or cast-in-place concrete shall not be accepted. The factory built pumping station shall be a standard product in regular production by the Manufacturer who shall have five years minimum, successful experience in the design and assembly of products similar to that specified herein.
 - C. Shop Drawings. Shop drawings for all products and equipment specified and/or referred to herein shall be submitted to the Owner's Engineer and the Town Sewer Committee for review prior to their manufacture and/or shipment. Also to be included:
 - 1) Structural design calculations and floatation calculations.
 - 2) Schematic electrical wiring diagrams, piping layouts and descriptive literature on each item of equipment to be furnished.
 - D. Guarantee. All products and/or equipment incorporated into the precast pump station and valve pit shall be guaranteed for a minimum period of one (1) year from startup or eighteen (18) months after installation, whichever occurs first.
2. Pump Station Pumps. Furnish and install two (2) submersible non-clog wastewater pumps. Each pump shall be equipped with a submersible electric motor, connected for operation based on existing available power and as designed by a Maine Licensed Professional Engineer. The power cable shall be sized according to NEC and ICEA standards and also meet with P-MSHA Approval. The pump shall be supplied with a mating ductile iron discharge connection. Each pump shall be fitted with adequate feet of stainless steel cable. The working load of the lifting system shall be a minimum of 50% greater than the pump unit weight.
3. Pump Design. The pumps shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter

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the wet-well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal-to-metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor.

Sec. 3-316 Force Main, Traditional

1. General. The work of this section includes furnishing all labor, materials and equipment required to furnish and install the pipe specified herein for a force main from the pumping station(s) to the gravity sewer. All force mains throughout the entire length of lines shall be tested for water tightness. Testing shall be by internal pressure tests. Any testing shall be conducted in the presence of the Sewer Inspector at the contractor's expense.
2. Pressurized Systems. The traditional method of wastewater disposal via a pressurized system entails a method where the wastewater flows by gravity to a pump station which, in turn, pumps the sewerage to its destination to enter the gravity system via a manhole. The pump station and the pressurized pipe are located within the Town Right of Way (ROW) and the entire system located within the ROW, is maintained by the Town. Individual property owners are responsible for any maintenance outside the Town ROW.

Sec. 3-317 Pump Stations and Force Main, Non-traditional

1. A non-traditional system requires extensive review plus approval from the Sewer Committee and the Planning Board of a comprehensive engineered plan by a Maine Licensed Professional Engineer. A system shall not be approved for economical rationale unless the cost of a typical pressurized or gravity flow system shall cost a minimum of three (3) times the cost of the non-traditional system. Based on the financial assessment requirement, the review process shall include a cost assessment of alternative systems to include a minimum of a typical pressurized system plus a gravity system. This alternative is intended for those circumstances where limitations exist to prevent a typical pressurized system or gravity flow system.
2. A non-traditional system normally consists of a pressurized line within the ROW, as previously described, for the use of several clients. However, each client has a private, individual pumping station which is utilized to pump private sewerage to the common pressurized common line and ultimately to the gravity line. The pressurized common line shall connect to the gravity sewer via an appropriate manhole. Cleanouts in the pressurized line shall be provided a maximum of one hundred (100') feet between cleanouts the length of the common line or a change of direction in excess of 450.
3. A force main manhole chimney shall be installed on each individual line connecting with the common line on private property but near the property line. The chimney shall include, but not be limited to, a check valve and a gate valve, or an approved substitute valve, suitable to shut any service off. The Town of Farmingdale shall be responsible for maintenance of the sewer system from and including the chimney.

Sec. 3-318 Force Main Pipe

1. Pipe.
 - A. PVC Pipe. PVC Ring-tite shall be minimum of 200 psi pressure pipe meeting the requirements of ASTM Designation D22341, D1784 and D1869. Provisions must be made for contraction and expansion at each joint with a rubber ring and integral bell as part of each joint. Pipe and fittings must be assembled with a nontoxic lubricant, manufactured by the pipe manufacturer.

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- B. Ductile Iron Pipe. Pipe shall be manufactured in accordance with the requirements of ANSI / AWWA C151 / A21.51 Ductile Iron Pipe, Centrifugally Cast, for Water and Other Liquids. Pipe shall be manufactured in accordance with the requirements of ANSI / AWWA C111 / A21.11 Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings. Pipe thickness shall be designed in accordance with the requirements of ANSI / AWWA C150 / A21.50 Thickness Design of Ductile Iron Pipe and shall be based on laying conditions and internal pressure as specified in the project plans. Pipe shall have cement mortar lining and seal coating, unless otherwise specified, in accordance with the requirements of ANSI / AWWA C104 / A21.4 Cement Mortar Lining for Ductile Iron Pipe.
- C. HDPE Pipe. Polyethylene pipe shall be made from high density, extra high molecular weight compound equaling a PE 3408 designation and shall conform to ASTM-1248 and ASTM-3350; with a cell classification of 3454C and a minimum SDR of 9.0.
- D. Tracer Wire. All non-conductive pipe materials used for force sewer mains shall be provided with a minimum No. 6 AWG insulated copper or approved equal tracer wire laid along the top of the pipe and secured by means acceptable to the Sewer Inspector. Tracer wire must be continuous as to not break conductivity. If wire must be cut and/or reconnected, splice wires with a minimum 6" overlap and use 2 u-bolt cable connectors that will not degrade conductivity. Tracer wire must be brought up to within 3" of ground surface and secured at all manholes or other access points for connection to an electronic pipe locator.
- E. Bracing and Blocking. All bends, 22-1/2 or greater, tees, plugs, etc., shall be blocked and anchored with concrete so that there will be no movement of the pipe in the joints due to internal or external pressures. The concrete shall be placed around the fittings and the walls of the trench. The anchor concrete shall be so placed that joints may be caulked or tightened if necessary. Backfilling shall not be done until the anchor blocks have gained their initial set.
- F. Swing Ties. The Contractor shall keep an accurate log containing at least two swing ties to the end cap of each service lead. The Contractor shall also keep an accurate log containing the distance to each service fitting, ahead or behind the nearest manhole, to the nearest tenth of a foot. Copies of the swing tie measurements shall be given to the Sewer Inspector on a daily basis. Swing tie measurements shall also be shown the "As Built" plan.

Sec. 3-319 Leakage and Leakage Tests

1. General. All gravity sewers and force mains throughout the entire length of lines shall be tested for water tightness. Testing shall be by internal pressure tests.
2. Testing. The Contractor shall furnish, at his own expense, the necessary facilities for making the tests including the furnishing and placing of bulkheads, furnishing and placing of water and other necessary materials, labor and equipment.
3. Pipe Section. A section under these specifications shall mean a length of sewer between any two manholes. The force mains shall be tested after the lines are completed.
4. Internal Pressure Test for Force Mains. All pipe lines shall be tested hydrostatically for 15 minutes at a pressure 50 percent in excess of the pressures to which the pipe will normally be subjected, unless different test pressures are required by the Town but in no case less than 50 pounds per square inch (psi). Any obvious leaks or ruptured

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pipng disclosed by the tests shall be repaired or replaced and the test repeated to the Town's satisfaction.

5. Hydrostatic Test. In addition, all pipe lines shall then be tested hydrostatically for leakage for one hour at a pressure equal to the maximum rated pressure of the section of line under test. The rate of leakage shall not exceed 100 gallons per mile of pipe per 24 hours per inch of nominal pipe diameter. Any leaks or defective pipe disclosed by the leakage test shall be repaired or replaced and aforementioned leakage test repeated as often as necessary until the leakage requirement is met.

Sec. 3-320 Low Pressure Air Test For Gravity Sewers

1. The Contractor shall test the gravity sewers with a low pressure air test. It shall be conducted in compliance with the following: After completing backfill of a section of wastewater line, the Contractor shall, at his own expense, conduct a Line Acceptance Test using low pressure air. The test shall be performed using the below stated equipment, according to stated procedures and under the supervision of the Sewer Inspector.
2. Equipment. Cherne Air-Loc Equipment, as manufactured by Cherne Industrial, Inc. of Edina, Minnesota or approved equal. Equipment used shall meet the following minimum requirements:
 - A. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
 - B. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
 - C. Three individual hoses shall be used for the following connections:
 - 1) From control panel to pneumatic plugs for inflation.
 - 2) From control panel to sealed line for introducing the low pressure air.
 - 3) From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.
 - D. Procedure. All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psig. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.
 - E. After a manhole to manhole reach of pipe has been backfilled and cleaned, and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25 psig. Low pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any ground water that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize.
 - F. After the stabilization period (4.0 psig minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "Acceptable" if the time required in minutes for the pressure to decrease from 4.0 to 3.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

Pipe Dia. In Inches	Minutes
4	2.0

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6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

In areas where ground water is known to exist, the Contractor shall install a one-half inch diameter capped pipe nipple, approximately 10-inches long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the Line Acceptance Test, the ground water shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The hose shall be held vertically and a measurement of the height in feet of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11.5 feet, then the added pressure will be 5 psig. This increases the 4.0 psig to 9.0 psig and the 3.0 psig to 8.0 psig. The allowable drop of one pound and the timing remain the same.)

The Contractor shall furnish all labor, material and equipment for making infiltration and leakage tests. The attention of the contractor is directed to the strict requirements relative to maximum rates of the infiltration and to the importance of these specifications relative to tight joints required. Sewers not meeting the above requirements shall be repaired as necessary at the contractor's expense.

Sec. 3-321 Final Location Drawing

Prior to final acceptance of all new sewer work, within the Town right of way, three (3) copies of an As-Built drawing on 24" x 36" plat showing the final location of all new sewer work and any appropriate easement shall be submitted to the Town. The drawing shall show complete plan and profile of all new sewer work at a scale of 1" = 40' Horizontally and 1" = 4' Vertically.

Sec. 3-322 Interceptors

1. Grease Traps.
 - A. External traps shall be designed by a Maine Licensed Professional Engineer and be in compliance with appropriate State and Local standards. External grease traps shall be installed for all restaurants or other establishments involved in food preparation.
 - B. The inlet invert shall be at least three (3) inches above the outlet invert.
 - C. The inlet baffle or sanitary tee shall extend at least 24 inches below the liquid level.
 - D. The outlet baffle or sanitary tee shall extend to within 8 inches of the tank's bottom.
 - E. The grease trap shall be provided with an inspection or cleanout cover over the inlet and outlet.

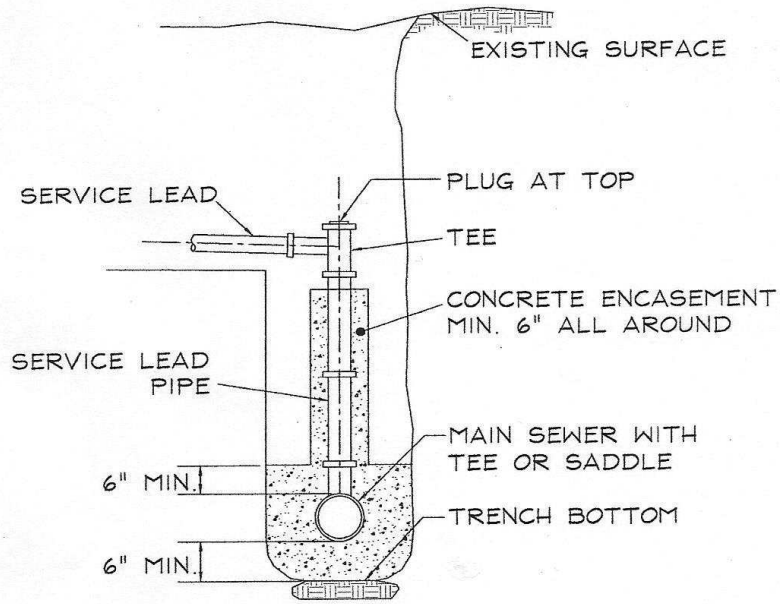
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- F. Black waste shall not be connected to a grease trap.
- G. All wastewater from the kitchen operation shall be connected to the external grease trap. The effluent from the grease trap shall connect to the inlet of the treatment tank.
- H. Flow control fittings should be installed on the inlet side of smaller traps to protect against overloading.
- I. The grease-retaining capacity in pounds should equal at least twice the peak flow rating in gallons per minute.
- J. For restaurants, a working capacity of three (3) gallons per person/day should provide adequate grease retaining capacity.
- K. Single compartment traps are acceptable but double compartment traps are recommended for larger flows. Reference Appendix C.

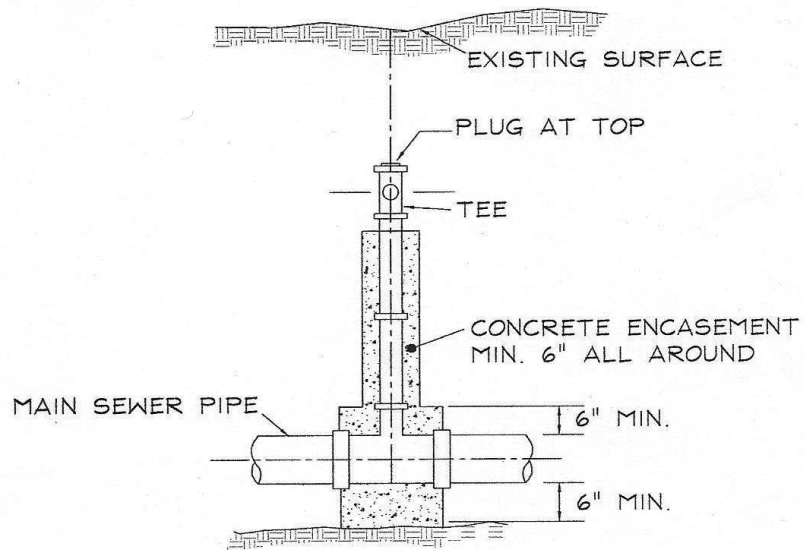
2. Sand and Oil/Grease Traps.

- A. Every private or public wash rack and/or floor slab used for cleaning machinery or machine parts shall be adequately protected against storm or surface water and shall drain or discharge into a sand and grease interceptor or an approved exterior tank design. Reference Appendix D.
- B. Interceptors shall have a capacity of six (6) cubic feet where not more than three (3) vehicles are serviced and one (1) cubic foot in net capacity shall be added for each additional vehicle up to ten (10) vehicles. Where more than ten (10) vehicles are serviced and stored, the Sewer Committee shall determine the size of separator required.
- C. Where storage facilities are not maintained, as in repair shops, the capacity of the separator shall be based on a net capacity of one (1) cubic foot for each one hundred (100) square feet of surface to be drained into the interceptor with a minimum capacity of six (6) cubic feet.

Revised: June 28, 2014



SEWER CONNECTION

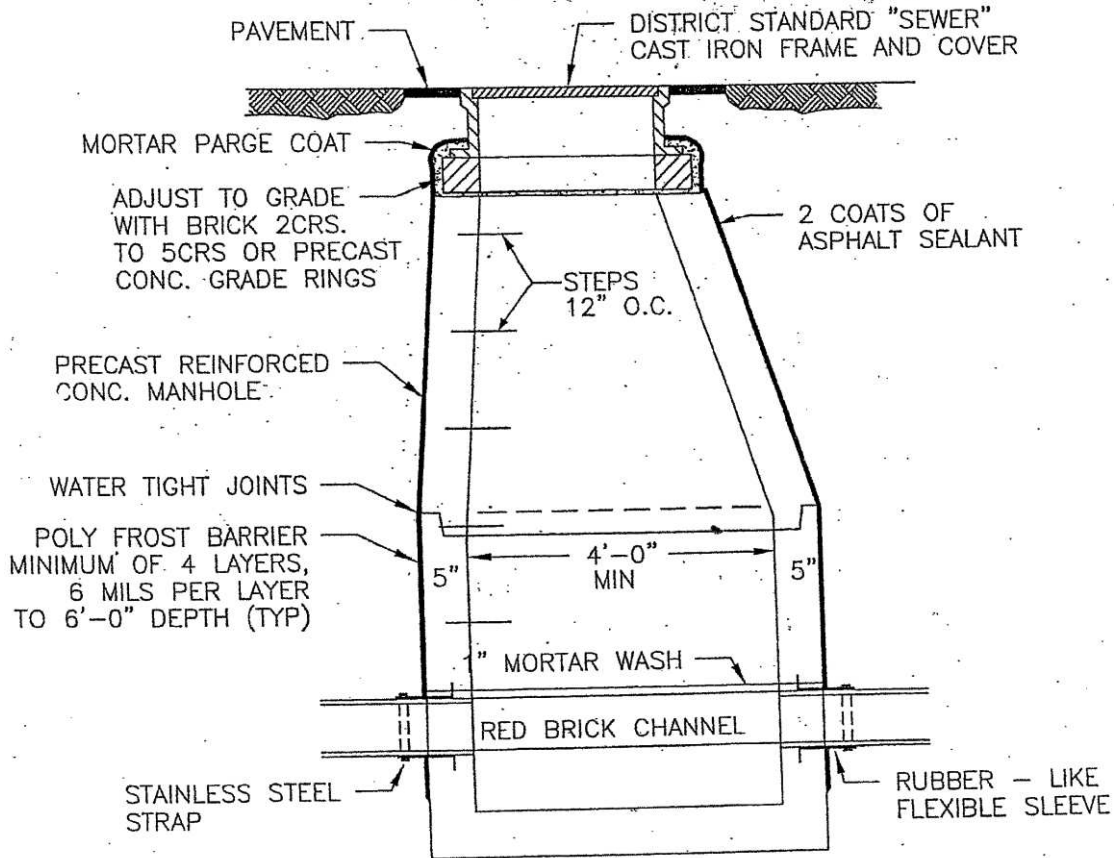


CHIMNEYS
NEW SEWER CONNECTIONS

NOT TO SCALE

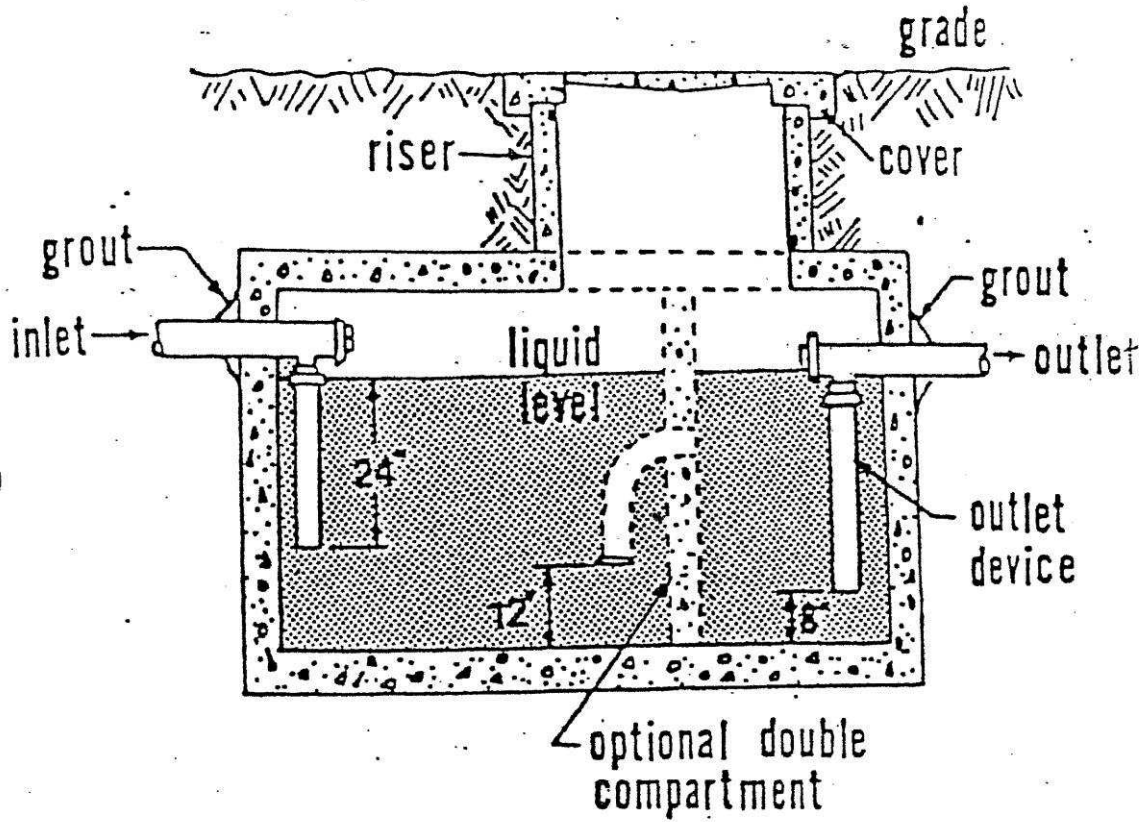
APPENDIX A

STANDARD PRECAST MANHOLE



APPENDIX B

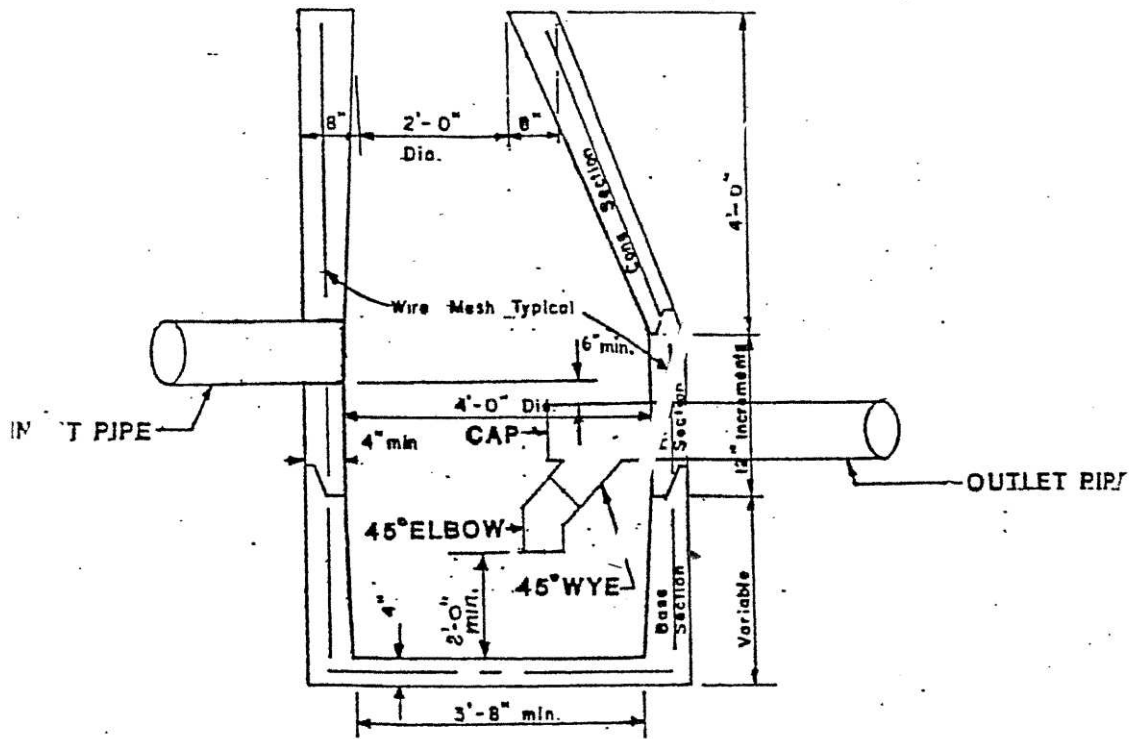
CONSTRUCTION DETAIL



GREASE TRAP SPECIFICATIONS

APPENDIX C

CONSTRUCTION DETAIL



SAND AND OIL TRAP

(STANDARD PRECAST MANHOLE)

APPENDIX D