SEWER RULES AND REGULATIONS

IN

SCITUATE, MASSACHUSETTS

ORIGINALLY ORDAINED AND ENACTED

BY

THE SCITUATE SELECT BOARD

1977

AMENDED AND RESTATED

DECEMBER 2005

AUGUST 2012

MARCH 2021

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COMMONWEALTH OF MASSACHUSETTS
TOWN OF SCITUATE
SELECT BOARD

AMENDED AND RESTATED
SEWER RULES AND REGULATIONS
MARCH 2021

INTRODUCTION

In 1977, the Town of Scituate, acting through its Select Board, by authority of Chapter 636 of the Acts of 1957, and by authority of the Scituate Home Rule Charter, ordained and enacted "Sewer Rules and Regulations in Scituate, Massachusetts" governing the use of public and private sewers and drains, private wastewater disposal, the installation and connection of building sewers, and the discharge of waters and wastes into the public sewer system; and, providing penalties for violations thereof.

In December 2005, said rules and regulations were amended and restated for the purpose of modifying the approved methodology for establishing, calculating, and assessing sewer assessments and establishing related fees and charges.

The Town of Scituate, acting through its Select Board and upon approval of this Amendment, shall hereby again revise said rules and regulations, this time for the purpose of 1) making the language consistent with current best practices as well as state and federal requirements, 2) adding a fat, oil, and grease (FOG) program, and 3) formally incorporating amendments and policies adopted since the Regulations were ordained and enacted in 1977. All related actions taken by the Select Board subsequent to the approval of this Amendment shall be based upon the provisions of the 1977 Sewer Rules and Regulations, as amended, and shall be pursuant to the provisions of Massachusetts General Laws Chapter 83, Section 10.

THEREFORE, said "Sewer Rules and Regulations in Scituate, Massachusetts, 1977, Select Board" is hereby amended and restated, as follows:

DIVISION I – USE AND INSTALLATION OF SEWERS

ARTICLE I - DEFINITIONS

Unless the context specifically indicates otherwise, the meaning of terms used in these regulations shall be as follows:

1.1 "Act" shall mean the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. § 1251 et seq., and the regulations promulgated thereunder, as amended from time to time

1.2 "Biochemical Oxygen Demand" (BOD) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20 deg. C, expressed in milligrams per liter (mg/l).

1.3 "Board" shall mean the Select Board of the Town of Scituate, or any agent or officer duly authorized to act in its place.

1.4 "Building drain" shall mean that part of the lowest piping of a drainage system which receives the discharge from waste and other drainage pipes insides the walls of the building and conveys it to the building sewer, ending ten (10) feet outside the inner face of the building wall.

1.5 "Building sewer" shall mean the extension from the building drain to the public sewer or other place of disposal, also called house connection.

1.6 "Combined Sewer" shall mean a sewer intended to receive both wastewater and storm or surface water.

1.7 "Compatible pollutant" shall mean biochemical oxygen demand, suspended solids, pH, and fecal coliform bacteria.

1.8 "Developer" shall mean any individual, group of individuals, trust, corporation or builder who improves the condition of a lot or lots and/or builds on them.

1.9 "Director" shall mean Director of Public Works.

1.10 "Drainlayer" shall mean a person or corporation who has an active license to install building sewers in the Town.

1.11 "Easement" shall mean an acquired legal right for the specific use of land owned by others.

1.12 "Engineer" shall mean Supervisor of Engineering Division, Department of Public Works.

1.13 "Floatable oil" shall mean oil, fat or grease in a physical state such that it will separate by gravity from wastewater by treatment in an approved pretreatment facility. A wastewater shall be considered free of floatable oil if it is properly pretreated and the wastewater does not interfere with the collection system.

1.14 “Food Service Facility or Facility” shall mean any food service facility that prepares and/or packages food or beverages for sale or consumption, on or off site, with the exception of private residences. Food service facilities shall include, but are not limited to: food courts, food manufacturers, food packagers, restaurants, grocery stores, bakeries, lounges, hospitals, hotels, nursing homes, churches, schools and all other food service facilities not listed above.

1.15 "Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food.

1.16 “Garbage disposal” shall mean a device that shreds or grinds up food waste materials into smaller portions for discharge into the wastewater collection system.

1.17 “Grease” shall mean a material either liquid or solid, composed primarily of fat, oil, and grease from animal or vegetable sources. The terms "fats, oils, and grease (FOG), "oil and grease", or "oil and grease substances" shall all be included within this definition.

1.18 “Grease interceptor” shall mean a device located underground and outside of a food service facility designed to collect, contain, or remove food wastes and grease from the waste stream while allowing the balance of the liquid waste to discharge to the wastewater collection system by gravity. Grease Interceptors shall have a minimum of two (2) inspection hatches on the top surface to facilitate inspection, cleaning and maintenance by a grease hauler.

1.19 “Grease trap” shall mean a device located in a food service facility or under a sink designed to collect, contain, or remove food wastes and grease from the waste stream while allowing the balance of the liquid waste to discharge to the wastewater collection system by gravity. Traps shall have a removable lid on the top surface to facilitate inspection, cleaning, and maintenance.

1.20 “Incompatible pollutant” shall mean any pollutant which is not a compatible pollutant.

1.21 “Industrial wastes” shall mean the wastewater from industrial process, trade, or business as distinct from domestic or sanitary wastes.

1.22 “Major contributing industry” shall mean a user which discharge industrial wastes, which has:

a. Flow of 50,000 gallons or more per average workday;
b. Flow or pollutant loading greater than 10 percent of the flow or pollutant loading carried by the wastewater facilities;
c. In its wastes a toxic pollutant in toxic amounts, as defined by standards issued under Section 307 (a) of the Act.
d. A significant impact, either singly or in combination with other contributing industries on the wastewater treatment works.

1.23 “May” is permissive (see “Shall”).

1.24 “Medical Waste” shall mean isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, and dialysis wastes.

1.25 “Natural outlet” shall mean any outlet, including storm sewers and combined sewer overflows, into a watercourse, pond, ditch, lake, or other body of surface or groundwater.

1.26 “Person” shall mean any individual, firm, company, association, society, corporation or group.

1.27 ‘pH” shall mean the reciprocal of the logarithm of the hydrogen-ion concentration. The concentration is the weight of hydrogen ions, in grams per liter of solution. Neutral water, for example has a pH value of 7 and hydrogen-ion concentration of 10-7.

1.28 “Properly shredded garbage” shall mean the wastes from the preparation, cooking and dispensing of food that has been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than ½ inch in any dimension.

1.29 “Public sewer” shall mean a common sewer controlled by a governmental agency or public utility.

1.30 “Sanitary sewer” shall mean a sewer that carries liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions together with minor quantities of ground, storm, and surface waters that are not admitted intentionally.

1.31 “Septage” shall mean excrement and other waste materials contained in or removed from a septic tank.

1.32 “Sewage” shall mean the spent water of a community. The preferred term is “Wastewater”.

1.33 “Sewer” shall mean a pipe or conduit that carries wastewater.

1.34 “Shall” is mandatory (see “May”).

1.35 “Slug” shall mean any discharge of water or wastewater which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four-hour concentration of flows during normal operation system and/or performance of the wastewater treatment works.

1.36 “Storm drain” (sometimes termed “storm sewer”) shall mean a conduit for conveying stormwater, groundwater, subsurface water, or unpolluted water from any source.

1.37 “Supervisor” shall mean the supervisor of the sewer division, Department of Public Works.

1.38 “Suspended solids” shall mean total suspended matter that either floats on the surface of, or is in suspension in, water, wastewater, or other liquids, and that is removable by

laboratory filtering as prescribed in "Standard Methods for the Examination of Water and Wastewater" and referred to as nonfilterable residue.

1.39 "Town" shall mean the Town of Scituate, Massachusetts or any duly authorized officer, agent or representative of the Town of Scituate.

1.40 "Unpolluted water" is water of quality equal to or better than the effluent criteria in effect or water that would not cause violation of receiving water quality standards and would not be benefited by discharge to the sanitary sewers and wastewater treatment facilities provided.

1.41 "Wastewater" shall mean the spent water of a community. From the standpoint of source, it may be a combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any groundwater, surface water, and stormwater that may be present.

1.42 "Wastewater facilities" shall mean the structures, equipment, and processes required to collect, carry away, and treat domestic and industrial wastes and dispose of the effluent.

1.43 "Wastewater treatment works" shall mean an arrangement of devices and structures for treating wastewater, industrial wastes, and sludge, sometimes used as synonymous with "waste treatment plant" or "wastewater treatment plant" or "water pollution control plant".

1.44 "Watercourse" shall mean a natural or artificial channel for the passage of water either continuously or intermittently.

ARTICLE II – USE OF PUBLIC SEWERS

2.1 It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the Town of Scituate, or in any area under the jurisdiction of said Town, any human or animal excrement, garbage, or objectionable waste.

2.2 It shall be unlawful to discharge to any natural outlet within the Town of Scituate, or in any area under the jurisdiction of said town, any wastewater or other polluted waters, except where suitable treatment has been provided in accordance with subsequent provisions of these Rules and Regulations and with State and Federal laws and regulations.

2.3 Except as hereinafter provided, it shall be unlawful for property owners fronting on a public sewer to construct or repair any privy, privy vault, cesspool or other facility intended or used for the disposal of wastewater.

ARTICLE III – PRIVATE WASTEWATER DISPOSAL

3.1 Where a public sanitary sewer is not available, the building sewer shall be connected to a private wastewater disposal system complying with the requirements of either or both the Board of Health of the Town of Scituate and the Massachusetts Department of Environmental Protection.

ARTICLE IV – BUILDIING SEWERS AND CONNECTIONS

4.1 No unauthorized person(s) shall uncover (excavate), make any connections to, or opening into, use, alter or disturb any public sewer or appurtenance thereof without first obtaining a Building Sewer Connection Permit (sample application attached in Appendix A) from the Department of Public Works. The permit shall not be issued unless the work is to be done by a drainlayer licensed by the Town. The permit shall at all times be available for inspection at the site of the work.

4.2 Plumbers and drain layers of established reputation and experience will be licensed by the Select Board (sample application for licensure and Fee Schedule attached in Appendix A) as Master Drain Layers authorized to perform work, subject to compliance with the following requirements.

a. Applicants for licenses are required to pay a Filing Fee (see Appendix A, Fee Schedule) as Master Drain Layer, payable to the Town, one-half of which will be refunded to the applicant if his application is rejected.

b. If approved by the Select Board, applicants for licenses shall file with the Select Board a proper and acceptable Performance and Guarantee Bond (see Appendix A, Fee Schedule), which shall remain in force and in effect for a period of one year from the date of the application.

c. Applicants for licenses, after approval by the Select Board, shall file with the Select Board, a Certificate of Insurance to cover Public Liability and a Certificate of Insurance covering Property Damage (see Appendix A, Fee Schedule). In addition, a Certificate of Insurance covering Workmen's Compensation shall be filed, all of which shall remain in full force and effect for a period of at least one year from the date of approval. Said Insurance shall indemnify the Select Board and the Town of Scituate against any and all claims, liability or action for damages, incurred in or in any way connected with the performance of work by a Master Drain Layer in the performance of his work.

d. Applicants for licenses will be approved or disapproved within a period of thirty-one (31) days after filing the application.

e. All licenses expire on December 31st and no licenses are transferable. The fee for each renewal (see Appendix A, Fee Schedule) shall be due and payable on or before the anniversary date of issue.

f. The Select Board reserves the right to revoke any license if any provision of said license or these Rules and Regulations is Violated.

g. A one-day license may be applied for once per year at the same filing fee as a one-year license, for one sewer connection. The drain layer shall file with the Department of Public Works the same Certificate of Insurance as required for a one-year license. Applicants for a one-day license will be approved or disapproved within a period of five (5) days after filing the application.

4.3 There shall be two (2) classes of building sewer permits: (1) residential services, and (2) commercial and industrial services. For residential permits, the owner(s) or his agent shall submit the application on a form (sample attached in Appendix A) furnished by the Department of Public Works at least seven (7) days prior to said service connection. For a commercial or industrial service, the application (sample attached in Appendix A) shall be made at least forty-five (45) days prior to said service connection. The permit application shall be supplemented by any plans, specifications or other information in triplicate, considered pertinent in the judgment of the Department of Public Works. A Permit Fee (see Appendix A, Fee Schedule) shall be paid to the town at the time the application is filed.

4.4 Applications: All plans shall show the proposed building sewer, location of utilities, gas and water lines and all buildings to be sewered and be signed by a licensed drain layer. Any changes to the plan as submitted and approved by the Department of Public Works must be submitted in writing and approved by the Department of Public Works or its representative.

4.5 All costs and expenses incidental to the installation and connection of the building sewer shall be borne by the owner(s). The owner(s) shall indemnify the Town from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.

4.6 A separate and independent building sewer shall be provided for every building with the following exceptions:

a. Where one building stands at the rear of another on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard or driveway, the front building sewer may be extended to the rear building and the whole considered as one building sewer, and;

b. Two or more buildings may use the same building sewer if the combination of buildings use the same driveway (common driveway) and the distance from the public sewer to said buildings is great enough to create an unreasonable expense or hardship to the property owners.

In each exception above, each building will have an individual "Permit to connect to sewer" on file prior to the installation of sewers and each building will incur its own sewer assessment and sewer user charge as defined under Division II. In addition, the Town does not and will not assume any obligation or responsibility for damage caused by or resulting from any such single connection aforementioned.

4.7 Existing (old) building sewers may be used in reconnection with new buildings only when they are found, on examination and test by the Supervisor, to meet all requirements of these Rules and Regulations.

4.8 The Department of Public Works has established Sewer Service Connection Specifications (including typical construction details) to regulate the sizes, materials, methods and workmanship to be used in the construction of sewers, house connections and other similar work and appurtenances, thereto connected or intended to be connected or to discharge, directly or indirectly, into any public sewer of the Town of Scituate. A

copy of these specifications has been included as Appendix B and the requirements therein shall be in revision to or in addition to those of the Town Plumbing and Drainage Code and the requirements contained herein.

Any such requirements or specifications as the same may from time to time be amended, are hereby made a part of these Rules and Regulations. In the absence of code provisions or in amplification thereof, the materials and procedures as set forth in appropriate specifications of the American Society of Testing Materials (ASTM) and the Water Pollution Control Federation (WPCF) Manual of Practice No. 7 "Operation and Maintenance of Wastewater Collection Systems" shall apply.

4.9 The connection of the building sewer into the public sewer shall conform to the requirements of Scituate Sewer Service Connection Specifications and the building and plumbing code or other applicable rules and regulations of the Town, or the procedures set forth in appropriate specifications of the ASTM and the WPCF Manual of Practice No. 7. All such connections shall be made gastight and watertight and verified by proper testing. Any deviation from the prescribed procedures and materials must be approved by the Supervisor before installation.

In general, connections shall be made as follows:

a. Connections shall be made at the "Y" branch, if such branch is available at a suitable location.

b. If the public sewer is twelve (12) inches in diameter or less, and no properly located "Y" branch is available, the owner shall, at his expense, install a "Y" branch in the public sewer at the location specified by the Department of Public Works.

c. Where the public sewer is greater than twelve (12) inches in diameter, and no properly located "Y" branch is available, a neat hole may be cut into the public sewer to receive the building sewer, with entry in the downstream direction at an angle of about twenty two (22) degrees.

d. A twenty two (22) degree ell may be used to make such connection, with the spigot end cut so as not to extend past the inner surface of the public sewer.

e. The invert of the building sewer at the point of the connection shall, where possible, be at least twelve (12) inches higher than the invert of the publicsewer.

f. A smooth, neat joint shall be made, and the connection made secure and watertight by complete encasement in concrete.

g. Special fittings may be used for the connection only when approved by the Department of Public Works.

4.10 Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain

shall be pumped by an approved means and discharged to the building sewer (see Appendix C – Policy for On-Lot Individual Grinder Pump Unit Installation).

4.11. No person(s) shall make connection of sump pumps, roof downspouts, foundation drains, areaway drains or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer. Such illegal connections shall be subject to a civil penalty as defined in Section 9.3 of these Regulations.

4.12 The applicant for the building sewer permit shall notify the Department of Public Works forty-eight (48) hours prior to making the connection to the public sewer and before any portion of the work is covered. The connection shall be made during normal working hours, Monday through Friday. The connection and testing shall be made under the supervision of the Department of Public Works or their representative.

4.13 All excavations for sewer installations shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways and other public property disturbed in the course of the work shall be restored at the property owner's expense, in a manner satisfactory to the Town. Temporary bridges shall be installed over trenches when deemed necessary in the judgment of the Supervisor, to provide convenient public travel.

4.14 The requirements of the Town Plumbing and Drainage Code shall be observed with respect to piping and fixtures inside or within ten (10) feet of buildings and within the areas of jurisdiction of said Code. When it is necessary to relocate plumbing within a building in order to connect to the sewer, a permit must be obtained by a licensed plumber from the Town plumbing inspector prior to any sewer work being performed.

ARTICLE V – USE OF PUBLIC SEWERS

5.1 No person(s) shall discharge or cause to be discharged by use of sump pumps or any other means, any unpolluted waters such as stormwater, groundwater, roof runoffs, subsurface drainage, or cooling water to any sanitary sewer. Any such illegal discharge shall be subject to a civil penalty as defined in Section 9.3 of these Regulations.

5.2 Stormwater and all other unpolluted drainage shall be discharged to such sewers as are specifically designated as storm sewers or to a natural outlet. Unpolluted Industrial cooling water or process waters may be discharged to a storm sewer on approval of the Department of Public Works or to a natural outlet. Natural outlet discharges shall be as approved by the Department of Public Works and/or other state or local regulatory agencies. A discharge to a natural outlet may require a National Pollutant and Discharge Elimination System (NPDES) permit.

5.3 No person(s) shall discharge or cause to be discharged any of the following described waters or wastes to any public sewers.

a. Any gasoline, benzene, naptha, paint, dye, oil or other flammable or explosive liquid, solid or gas.

b. Any waters containing a toxic pollutant in toxic amounts as defined in standards or guidelines issued pursuant to Section 307 (a) of the Act.

c. Any waters containing toxic or poisonous solids, liquids or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any waste treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the wastewater treatment plant.

d. Any waters or wastes having a pH lower than 5.5 or higher than 9.5, or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the wastewater works.

e. Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the wastewater facilities such as, but not limited to, ashes, bones, cinders, sand, mud, straw, shavings, metal, glass rags, feathers, tar, plastics, wood, underground garbage, whole blood paunch manure, hair and fleshings, entrails and paper dishes, cups, milk containers, etc., either whole or ground by garbage grinders.

f. Any waters from major contributing industry containing an incompatible pollutant in excess of concentrations or amounts allowed under standards or guidelines issued pursuant to Sections 304, 306 and/or 307 of the Act.

g. Medical wastes, except as specifically authorized by the Department of Public Works.

h. Any substance containing pathogenic organisms in such quantities as determined by local, state, or federal law as hazardous to the public health of the environment, including but not limited to any "Infectious or Physically Dangerous Medical or Biological Waste", as defined and identified by the Massachusetts Department of Public Health (MDPH) in its regulations entitled "Storage and Disposal of Infectious or Physically Dangerous Medical or Biological Waste, State Sanitary Code Chapter VIII," at 105 CMR 480.010.

In the case of any violation of items a, b, and c above, the Sewer Division Wastewater Treatment Plant personnel and Fire Department shall be notified <u>immediately</u>.

5.4 The following described substances, materials, waters or waste shall be limited in discharges to municipal systems to concentrations or quantities which will not harm either the sewers, wastewater treatment process or equipment, will not have an adverse effect on the receiving stream, or will not otherwise endanger lives, limb, public property, or constitute a nuisance. The Department of Public Works may set limitations lower than the limitations established in the regulations below if in its opinion much more severe limitations are necessary to meet the above limitations are necessary to meet the above objectives. In forming its opinion as to the acceptability, the Department of Public Works will give consideration to such factors as the quantity of subject waste in relation to flows and velocities in the sewers, materials of construction of the sewers, the wastewater treatment process employed, capacity of the wastewater treatment plant, degree of treatability of the waste in the wastewater treatment plant, and other pertinent

factors. The limitations or restrictions on materials or characteristics of waste or wastewaters discharged to the sanitary sewer which shall not be violated without approval of the Department of Public Works are as follows:

a. Wastewater having a temperature higher than 150 deg F.

b. Wastewater containing more than 25 milligrams per liter of petroleum oil, nonbiodegradable cutting oils, or product or mineral oil origin.

c. Industrial wastes containing floatable oils, fat, or grease (see Article VI for Grease Management Program).

d. Any garbage that has not been properly shredded (See Article I, Section 1.28). Garbage grinders may be connected to sanitary sewers from homes, hotels, institutions, restaurants, hospitals, catering establishments, or similar places where garbage originates from the preparation of food in kitchens for the purpose of consumption on the premises or when served by caterers.

e. Any waters or wastes containing iron, chromium, copper, zinc and similar objectionable or toxic substances exceeding limits which may be established by the Department of Public Works for such materials.

f. Any waters or wastes containing odor producing substances exceeding limits which may be established by the Department of Public Works.

g. Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Department of Public Works in compliance with applicable State or Federal regulations.

h. Quantities of flow, concentrations, or both which constitute a "slug" as defined herein.

i. Waters or wastes containing substances which are not amenable to treatment or reduction by the wastewater treatment processes employed, or are amendable to treatment only to such degree that the wastewater treatment plant effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving waters.

j. Any water or wastes which, by interaction with other water or wastes in the public sewer system, release obnoxious gases, form suspended solids which interface with the collection system, or create a condition deleterious to structures and treatment processes.

k. Contents of septic tanks or equivalent facility, except at locations designated by the Department of Public Works. Applications for a permit to use the Septage Handling Facility at the wastewater treatment plant for septic tank waste may be obtained at the office of the Select Board. Each licensed septage pumper is required to record and submit any such data requested by the Supervisor.

5.5 Any person substantially changing their discharge in terms of volume or character of pollutants shall notify the Department of Public Works in writing forty-five (45) days prior to such change.

5.6 All commercial and industrial establishments shall submit in writing to the Department of Public Works any information which the Department of Public Works may request concerning discharge to the wastewater facilities. This information shall be submitted to the Department of Public Works no later than thirty (30) days after so requested and every one hundred-eighty (180) days thereafter.

5.7 If any waters or wastes are discharged or are proposed to be discharged to the public sewers, which waters contain the substances or possess the characteristics enumerated in Section 4 of this Article, and which in the judgment of the Department of Public Works may have a deleterious effect upon the wastewater facilities, processes, equipment, or receiving waters, or which otherwise create a hazard to life or constitute a public nuisance, the Department of Public Works may:

a. Reject the wastes,

b. Require pretreatment to an acceptable condition for discharge to the public sewers,

c. Require control over the quantities and rates of discharge, and/or

d. Require payment to cover added cost of handling and treating the wastes.

If the Department of Public Works permits the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the Department of Public Works.

5.8 Grease, oil and sand interceptors shall be provided when, in the opinion of the Department of Public Works, they are necessary for the proper handling of liquid wastes containing floatable grease in excessive amounts, or any flammable wastes, sand, or other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the Department of Public Works, and shall be located as to be readily and easily accessible for cleaning and inspection. In the maintaining of these interceptors, the owner(s) shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates, and means of disposal which are subject to review by the Department of Public Works. Any removal and hauling of the collected materials not performed by owner(s)' personnel must be performed by currently licensed disposal firms. For more detail on fat, oil, and grease (FOG) see Appendix D – Scituate Board of Health, Regulation #28 Fats, Oil, & Grease (FOG) Pretreatment System, which shall be considered a part of these Regulations.

5.9 Where pretreatment or flow equalizing facilities are provided or required for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner(s) at his expense.

5.10. When required by the Department of Public Works, the owner of any property serviced by a building sewer carrying industrial wastes shall install a suitable structure together with such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling and measurement of the wastes. Such structures, when required, shall be accessibly and safely located and shall be constructed in accordance with plans approved by the Department of Public Works. The structure 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.

5.11 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 procedures approved by EPA and specified in 40 CFR Part 136 and amendments thereto, unless otherwise specified in a Pretreatment Standard. If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, or where the EPA determines that the Part 136 sampling and analytical techniques are inappropriate for the pollutant in question, sampling and analyses shall be performed by using validated analytical methods, subject to approval by the Department of Public Works. Records of all measurements, tests, and analyses shall be maintained by the owner and supplied to the Department of Public Works when requested.

5.12 No statement contained in this article shall be construed as preventing any special agreement or arrangement between the Town and any industrial concern whereby an industrial waste of unusual strength of character may be accepted by the Town for treatment, subject to payment therefore by the industrial concern, and subject to compliance with applicable Federal and/or State discharge standards and limitations.

ARTICLE VI – DESTRUCTION OF PROPERTY

6.1 No person(s) shall maliciously, willfully or negligently break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment which is a part of the wastewater facilities. Any person(s) violating this provision shall be subject to immediate arrest under charge of disorderly conduct.

ARTICLE VII – POWERS AND AUTHORITY OF INSPECTORS

7.1 The Department of Public Works and other duly authorized employees of the Town bearing proper credentials and identification shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling and testing pertinent to discharge to the community system in accordance with the provisions of these Rules and Regulations.

7.2 The Department of Public Works or other duly authorized employees are authorized to obtain information concerning industrial processes which have a direct bearing on the kind and source of discharge to the wastewater collection system. The industry may withhold information considered confidential, if the industry establishes that the revelation to the public of the information in question might result in an advantage to competitors.

7.3 While performing the necessary work on private properties referred to in Article VI above, the Department of Public Works or duly authorized employees of the Town shall

observe all safety rules applicable to the premises established by the company, and the company shall be held harmless for injury or death to the Town employees, and the Town shall indemnify the company against loss or damage to its property by Town employees and against liability claims and demands for personal injury or property damage asserted against the company and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the company to maintain safe conditions as required in Article V, Section 10.

7.4 The Department of Public Works and other duly authorized employees of the Town bearing proper credentials and identification shall be permitted to enter all private properties through which the Town holds a duly negotiated easement for the purposes of, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance of any portion of the wastewater facilities lying within said easement. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

7.5 The Department of Public Works has the authority to:

a. inspect all public and private residences for violations of the regulations;
b. require owners to repair or disconnect services which violate the regulations;
c. require owners to pay for all work in connection with repairs or disconnections on their service connection; and
d. assess civil penalties if owners remain non-compliant with these regulations

7.6 No owner, occupant, or other person shall refuse, impede, inhibit, interfere with, restrict or obstruct entry and free access to properties by the Department of Public Works where inspection is sought in order to assure compliance with applicable ordinances, statutes, codes and/or regulations.

7.7 While performing the necessary work on private properties referred to in Section 7.5 above, the Department of Public Works or duly authorized employees of the Town shall observe all safety rules applicable to the premises established by the occupant and the town shall indemnify the occupant against loss or damage to its property by town employees, except as such may be caused by negligence or failure of the occupant to maintain safe conditions.

7.8 An owner's refusal to grant permission of access will be presumed to be a violation and will constitute a civil penalty, as outlined in Section 9.3 of these Regulations.

ARTICLE VIII - ENFORCEMENT

8.1 Each user shall provide protection from accidental discharge in violation of these Rules and Regulations.

For countermeasures to be taken by the Department of Public Works to minimize damage to the sewerage system and receiving waters, users shall notify the Department of Public Works immediately upon accidentally discharging wastes in violation of these Rules and Regulations. This notification shall be followed, within five (5) days of the date of

occurrence, by a detailed written statement describing the causes of the accidental discharge and the measures being taken to prevent future occurrence.

Such notification will not relieve users of liability for any expense, loss or damage to the system, or for any fines imposed on the Town on account thereof.

In order that employees of commercial and industrial users be more fully informed, copies of these Rules and Regulations shall be made available to all employees of these users. A notice shall be furnished and permanently posted on the user's bulletin board advising employees whom to call in case of an accidental discharge in violation of these Rules and Regulations.

8.2 When the Department of Public Works finds that a discharge of wastes has been taking place, or threatens to take place, in violation of prohibitions or limitations of these Rules and Regulations, the Department of Public Works my issue an order to cease and desist, and direct that those persons not complying with such prohibitions, limits, requirements, or provisions:

a. Comply forthwith;

b. Comply in accordance with a time schedule set forth by the Department of Public Works, or

c. Take appropriate or remedial preventative action in the event of a threatened violation.

8.3 When the Department of Public Works finds that a discharge of wastes has been taking place, or threatens to take place, in violation of prohibitions or limitations prescribed in these Rules and Regulations, the Department of Public Works may require the user to submit for approval with such modifications as it deems necessary, a detailed time schedule of specific actions that the user shall take in order to prevent or correct a violation of requirements.

8.4 Any user affected by any decision, action, or determination, including Cease and Desist Orders, made by the Department of Public Works interpreting or implementing the provisions of these Rules and Regulations may file with the Department of Public Works a written request for reconsideration within ten (10) days of such decision, action, or determination, setting forth in detail the facts supporting the user's reconsideration.

If the ruling made by the Department of Public Works is unsatisfactory to the person requesting reconsideration, he may within ten (10) days after notification of the Department of Public Works action, file a written appeal to the Select Board. The written appeal shall be heard by the body within thirty (30) days from the date of filing. The Select Board shall make a final ruling on the appeal within ten (10) days of the close of the meeting. The Department of Public Works decision, action or determination shall remain in effect during such period of reconsideration.

ARTICLE IX - PENALTIES

9.1 Any person found to be violating any provision of these Rules and Regulations, except Article VI, shall be served by the Town with written notice stating the nature of the violation and providing a reasonable time limit, as determined by the Department of Public Works, for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations.

9.2 When a discharge of wastes causes an obstruction, damage, or any other impairment to the sewerage system, the Department of Public Works may assess a charge against the discharger for the work required to repair the wastewater facility.

Any person who shall continue any violation beyond the time limit provided for in Section 9.1 shall be subject to a Sewer Obstruction Penalty (see Appendix A, Fee Schedule) for each violation. Each day in which any such violation shall continue shall be deemed as a separate offense.

Whenever a discharge of wastes is in violation of the provisions of these Rules and Regulations or otherwise causes or threatens to cause a condition of contamination, pollution or nuisance, the Town of Scituate may petition the Court for the issuance of a preliminary or permanent injunction or both, as may be appropriate in restraining the continuance of such discharge.

The Department of Public Works may terminate or cause to be terminated wastewater service to any person if a violation of any provision of these Rules and Regulations is found to exist or if a discharge of wastes causes or threatens to cause a condition of contamination, pollution or nuisance.

9.3 Failure to disconnect or redirect illegal connections shall result in a Sewer Inflow Penalty (see Appendix A, Fee Schedule) until the violation has been removed and verified by the Department of Public Works. This penalty shall be reflected as a separate line item on the owner's sewer bill.

ARTICLE X – SEWERS IN NEW SUBDIVISIONS

10.1 Sewers in new subdivisions shall be installed in accordance with the provisions of the Rules and Regulations Governing the Subdivision of Land in Scituate, Massachusetts, of the Scituate Planning Board, latest edition (Section V, Design Standards, C. Utilities, 1. Storm Damage, and 2. Water and Sanitary Sewer Facilities), as well as the Section 30640 of the Town of Scituate Code of General Bylaws, "Wastewater Growth and Connection Control Plan".

ARTICLE XI – SEWERS IN FLOOD PRONE AREAS

11.1 New or replacement sanitary sewers within flood-prone areas shall be designed, located, elevated and constructed as to minimize or eliminate flood damage and to minimize or eliminate infiltration of flood water into the systems and discharge from the systems into flood waters.

11.2 All joints in sewer mains, sewer services, and sewer infrastructure shall be double- wrapped with a self-adhesive external PVC (10 Mil minimum) or EDPM rubber wrap (30 Mil minimum) tape, with a minimum wrap width of 6-inches.

ARTICLE XII – VALIDITY

12.1 All regulations or parts of regulations of the Town of Scituate, Massachusetts in conflict herewith are hereby repealed.

12.2 The invalidity of any section, clause, sentence, or provisions of these regulations shall not affect the validity of any other part of these regulations which can be given effect without such invalid part or parts.

ARTICLE XIII – APPEALS

13.1 The Scituate Select Board shall receive appeals for arbitration of differences between the Director and sewer users on matters concerning interpretation and execution of the provisions of these regulations by the Director.

13.2 A drainlayer who has been penalized or fined has ten working days to request an appeal, in writing, to the Scituate Select Board. Upon receipt of an appeal a hearing date will be set in a timely manner. Any penalties or fines accorded will be enforced following the outcome of the hearing, or in the case of no appeal, on the eleventh working day after written notification.

ARTICLE XIV – ASSESSMENTS

14.1 The Scituate Select Board shall determine the method of assessment of the cost of public sewers to sewer users (see Division II).

ARTICLE XV – CHANGES IN THESE REGULATIONS

15.1 These regulations may be rescinded or modified or added to by the Scituate Select Board at any time where, in their opinion, such action is for the best interests of the Town of Scituate.

ARTICLE XVI – REGULATIONS IN FORCE

16.1 These regulations shall be in full force and effect from and after its passage, approval, recording, and publication as provided by law.

16.2 Passed and adopted by the Select Board of the Town of Scituate, Commonwealth of Massachusetts, as revised through March 23, 2021.

DIVISION II – SEWER ASSESSMENTS AND USER CHARGES

ARTICLE I – SEWER ASSESSMENTS AND SEWER PRIVILEGE FEES

Section 1 - General

1.1 The Town of Scituate, acting through its Select Board, shall assess the owners of land abutting a public sanitary sewer installed by the Town by a rate based upon the uniform unit method, as approved by vote of the Town of Scituate under Article 16 at the October 17, 2005 Special Town Meeting. Sewer assessments shall be determined utilizing sewer unit values and shall be levied as sewer assessments or sewer privilege fees, as described herein.

1.2 The authority to levy assessments, as well as the permitted methodologies for doing so, are described under Chapter 83 Sewers, Drains, and Sidewalks, Sections 14 through 24 of the General Laws of the Commonwealth of Massachusetts and Section 8 of Chapter 636 of the Acts of 1957.

1.3 If any provisions of these rules and regulations, or the application thereof to any person or circumstance, are held invalid, such invalidity shall not affect other provisions or applications of these Rules and Regulations which can be given effect without such invalid provisions or applications.

Section 2 - Method of Sewer Assessments

2.1 The Town of Scituate shall levy sewer betterment assessments and privilege fees based upon the uniform unit method. Sewer users shall be assessed by a rate proportional to the value assigned to the sewer unit at the time of the assessment or privilege fee. Said rate shall be determined by user class and shall apply to all lands developed and undeveloped abutting the public sanitary sewer. Sewer unit values are calculated by dividing the applicable local project costs by the total number of sewer units. The total assessments and privilege fees shall cover, and not exceed, 100% of the local share of the total sewer project cost which shall include total costs of engineering survey and design, construction, land acquisitions, construction engineering services, legal services, and all related costs less all state and federal aid received.

The Select Board shall levy betterment assessments against all properties abutting a sewer that is installed by the Town. In the Order of Assessment, they shall designate the owner of each parcel as of the preceding January 1st as liable to assessment as stipulated under the provisions of the Massachusetts General Laws.

2.2 Time of Assessment

Final betterments for lands abutting the public sanitary sewer shall be assessed following project completion and when the final sewer project costs, including all phases, are known or can be determined with reasonable accuracy.

As provided in MGL Chapter 83, Section 15B, the Select Board shall have the right to make partial or estimated assessments before the completion of construction and approval for use of the wastewater facilities. Said estimated assessment shall be not more

than one-half of the total anticipated project cost, as the Town's liability under all contracts it has entered into for the construction of such facilities.

2.3 Sewer Unit Value Determination

The basis for determining the sewer unit value shall be in accordance with votes of the Town of Scituate and any Select Board actions taken relative thereto. Sewer unit values shall be equivalent to the local share of the sewer project costs less the amount reserved for assessment as privilege fees, as described under Section 5, divided by the total number of sewer units designated within the public sewer project area.

Sewer unit value determinations for public sewer projects shall be calculated on a project by project basis, unless otherwise enacted by the Select Board.

For recent projects, the town has voted to assess 100 percent of the project costs through sewer assessments. Recognizing that public (i.e. federal, state, and town) properties benefiting from the improvement cannot be so assessed, the calculated number of sewer units for such public properties shall be determined as if they could be assessed. The cost per sewer unit will be calculated using the total number of possible sewer units, including the calculated number of, so called, public sewer units.

Section 3 - Sewer Unit Designation

3.1 Sewer units shall be designated based upon the user class of those properties to be assessed. Said classes shall include residential and non-residential properties. The non- residential class shall include commercial, industrial, municipal and any or all other non- residential properties. Developed and undeveloped properties receiving direct benefit from the public sewer system shall be designated a number of sewer units in accordance with procedures described within this Section. Sewer unit designations are assigned to these properties based upon the user class defined at the time of assessment. Any future change in use within an assessed property may result in an increase in the number of sewer units allocable under these Rules and Regulations. To equitably reflect said change in use, the Select Board may levy a compensatory sewer privilege fee as provided for under Section 5. Sewer Privilege Fees.

3.2 Sewer Unit Determinations

3.2.1 Residential, Developed Properties

Single family dwellings shall comprise one sewer unit;

Duplex dwellings shall comprise two sewer units;

Three-family dwellings shall comprise three sewer units;

Four-Family dwellings shall comprise four sewer units; and,

Multiple family dwellings (in excess of four dwelling units) shall comprise number of sewer units based on the following methodology:

(a.) rental properties shall be assessed one sewer unit for each apartment with more than one bedroom and one half of one sewer unit for each one bedroom or studio apartment, and

(b.) condominium complexes shall be assessed one sewer unit for each dwelling unit, regardless of the number of bedrooms.

3.2.2 Non-Residential, Developed Properties

Non-residential buildings shall include all industrial, commercial and municipal properties.

Non-residential buildings which are metered for water use shall be designated an equivalent number of sewer units based upon water consumption using the following formula:

$$\frac{\text{Non-residential water usage in gallons per day (gpd)}}{\text{240 gpd/sewer unit}} = \text{equivalent number of sewer units}$$

(All decimals shall be rounded up to the nearest half (0.5) number of units with a minimum of one unit.)

Non-residential water usage in the above formula shall be based upon an average of the past two years water use. If less than two years of metered water consumption records are available or if the available data is determined to be inappropriate for estimating wastewater flows, the number of sewer units shall be determined on the same basis as non-residential buildings not metered for water use, as further described below.

Non-residential buildings not metered for water use shall be assigned an estimated sewage volume based on Title 5 of the State Environmental Code, 310 CMR 15.203, System Sewage Flow Design Criteria. An equivalent number of sewer units shall then be designated by using the following formula:

$$\frac{\text{Non-residential sewage in gallons per day (gpd)}}{\text{330 gpd/sewer unit}} = \text{equivalent number of sewer units}$$

(All decimals shall be rounded up to the nearest half (0.5) number of units with a minimum of one unit.)

3.2.3 Residential, Undeveloped Properties

Undeveloped lots shall be converted into dwelling units on the basis of the maximum number of buildable residential lots using the applicable minimum frontage and area requirements as indicated within the Zoning By-Laws in effect at the time of assessment. Each potential dwelling unit shall then comprise one sewer unit.

3.2.4 Non-residential, Undeveloped Properties

Undeveloped lots shall be converted into a maximum anticipated use on the basis of the Zoning By-Laws. An equivalent number of sewer units shall then be determined utilizing the formula described for non-residential, developed properties not metered for water use as described under Section 3.2.2 Non-Residential, Developed Properties.

3.2.5 Dual Use Properties

Properties having both residential and non-residential uses shall be assessed based on a total number of sewer units, as calculated under the provisions of Section

3.2.1 Residential, Developed Properties and Section 3.2.2 Non-Residential, Developed Properties, respectively. If dual-use areas are not separately metered for water, a deduction shall be made for an estimated residential water use in determining non-residential water use for the calculation of non-residential sewer units. Dual use properties shall have a minimum assessment of two sewer units.

Section 4 - Sewer Assessment Payments

4.1 Except as herein provided, the provisions of the Massachusetts General Laws relative to the assessment, apportionment, division, re-assessment, abatement, and collection of sewer assessments, to liens therefore, and to interest thereon shall apply to assessments made under these regulations, and the Tax Assessor of the Town of Scituate shall have all of the powers conveyed by the Massachusetts General Laws.

4.2 Lump Sum Assessment Payment

The lump sum assessment payment for an assessed property shall be equivalent to the product of the total number of sewer units designated upon said property and the appropriate dollar value for one sewer unit at the time of assessment. Said values shall be determined as described in Section 2. Method of Sewer Assessments and Section 3. Sewer Unit Designation of these regulations. Full payment shall be made within thirty (30) days upon written notice of assessment.

4.3 Apportionment of Assessment Payment

Property owners shall have the option to finance betterment assessment payments through apportionment, in which case, the assessments shall bear interest at the rate set by the Town in accordance with Massachusetts General Laws, Chapter 83, Section 28 and Section 8 of Chapter 636 of the Acts of 1957. The time period for payments to be apportioned under this Section shall be 20 years. The betterment assessment shall constitute a municipal lien on said property until the sewer assessment is paid in full. Any assessment may be paid in full at any time within the apportionment period.

4.4 Assessment Deferral

Any owner of a bettered property who is deemed eligible for an exemption under the provisions of Massachusetts General Laws, Chapter 59, Section 5, may, upon notice of sewer assessment, enter into a deferral and recovery agreement with the Town of Scituate, if the Town votes at a future Town Meeting to adopt the provisions of Chapter 80, Section 13B. The limits and conditions of this agreement as they relate to the deferral of sewer assessments are further described in said Chapter 80, Section 13B of the Massachusetts General Laws. The Select Board will consider including an Article to adopt these provisions at a future Town Meeting.

4.5 Assessment Payment for Vacant Lots

The Select Board may, upon written request of the property owner, extend the time of payment of the sewer assessment for vacant lots in accordance with the

provisions of Chapter 83, Section 19 of the Massachusetts General Laws. The request must be made to the Town of Scituate within six months of the notice of assessment. Upon approval, the payment shall be extended for 1) a maximum period of five years, or 2) within three months after the property is built upon, whichever occurs first. The assessment payment shall be made in full at the conclusion of the extension period. During the extension period the property owner shall pay annually at the interest rate of 4% upon the outstanding assessment from the date of the original notice of assessment.

Section 5 - Sewer Privilege Fees

5.1 The Select Board shall assess a sewer privilege fee under those circumstances, as defined herein, where a sewer betterment assessment may not be levied in accordance with the aforementioned General Laws of the Commonwealth of Massachusetts or these regulations. These circumstances may include:

- properties abutting an easement within which a public sanitary sewer has been installed (paragraph 5.2);
- properties abutting the newly installed public sanitary sewer where said property has been previously connected elsewhere to the Town of Scituate sewer system and the owner has been charged a connection fee (paragraph 5.3);
- private properties extending the sanitary sewer for their use (paragraph 5.4);
- properties where a betterment assessment or privilege fee has been previously assessed and a change in use of the property is not consistent with assessment parameters utilized at the time of the original assessment (paragraph 5.5);
- and, other properties abutting a public sanitary sewer where said property cannot be assessed a sewer betterment assessment.

For those properties that meet the above criteria (excepting properties with a change in use), the timing of the privilege fee assessment shall be as described in Section 2.2, Time of Assessment.

5.2 Privilege Fee for Public Sewers on Easements

If a property abuts an easement within which a public sewer has been installed and connects to that sewer, the Town shall assess a sewer privilege fee in lieu of a sewer betterment assessment against said property. The sewer privilege fee shall be equivalent to the sewer betterment assessment value pertinent to said property as determined following procedures outlined in Section 2. Method of Sewer Assessments and Section 3. Sewer Unit Designation of these regulations and shall be treated in the same fashion as other sewer betterment assessments, in accordance with Section 2.2, Time of Assessment. Section 4.2 Lump Sum Assessment Payment and Section 4.3 Apportionment of Assessment Payment of these regulations shall govern the method of payment.

5.3 Privilege Fee for Properties Previously Connected to Public Sewer, with said Properties having paid a Sewer Connection Fee

The Select Board may levy a privilege fee to a property abutting the newly installed public sewer, which property was previously connected to the public sewer

system at a separate and remote location. The properties to be assessed a privilege fee under this paragraph were previously assessed a connection fee, to be credited against any future betterment assessment. The existing private sewer connection shall be replaced by the respective property owner, with a new connection to the public sewer now abutting the property. The sewer privilege fee shall be equivalent to the sewer assessment value pertinent to said property as determined following procedures outlined in Section 2. Method of Sewer Assessments and Section 3. Sewer Unit Designation of these regulations and shall be levied at the time the public sewer fronts the property. Section 4.2 Lump Sum Assessment Payment and Section 4.3 Apportionment of Assessment Payment of these regulations shall govern the method of payment. Any property owner having previously paid a sewer connection charge for the existing sewer connection shall be credited that amount towards the payment of the current sewer privilege fee, so assessed. This credit shall be considered transferable to any subsequent property owner(s).

5.4 Privilege Fee for Private Sewer Extensions

If a private developer or a person other than the Town of Scituate or duly authorized representative of same constructs a sewer extension to the public sewer system, the Town shall assess a sewer privilege fee in lieu of betterment assessment against each property tying into said sewer extension. Sewer privilege fees shall be levied at the time of connection to the public sewer system. Section 4.2 of these regulations shall govern a property owner's method of payment.

In addition, property owners connecting to a private sewer extension shall bear the burden of all costs, including costs of legal services, related to the following:

a. Review of design plans and specifications for the private sewer extensions to be accepted as part of the municipal sewer system conducted by a Registered Professional Engineer as authorized by the Town of Scituate.

b. Inspection fees related to the installation of the private sewer line tying into the public sewer system.

c. Application fees for a building sewer permit, which shall include costs related to installation inspection performed by an inspector for the Town of Scituate.

Costs associated with the design and construction of a private sewer extension shall be considered separate to the sewer privilege fee. Payments or method of payment related to these costs shall not be reflected within the sewer privilege fee.

5.5 Compensatory Sewer Privilege Fee

In situations where either, (1) a sewer betterment assessment or privilege fee has been assessed to an undeveloped property based upon the estimated number of developable sewer units as required by these regulations and said property is ultimately developed to accommodate a number of sewer units in excess of the number estimated for determining the sewer assessment or, (2) a sewer betterment assessment or privilege fee has been assessed to a developed parcel and later in time the use of that parcel is increased to accommodate a number of sewer units in excess of the number estimated for determining the sewer assessment, the Town shall assess a compensatory sewer privilege fee to reflect the increased use. The compensatory sewer privilege fee shall be levied either at the time of connection of additional flow to the public sewer or upon Town of Scituate approval

of the change in use. Section 4.2 Lump Sum Assessment Payment of these regulations shall govern the method of payment.

5.6 Abatements

In all disputes regarding betterment assessments, the property owner shall obtain an application for abatement (sample attached in Appendix A) from the Department of Public Works and after completion of the form, file it with the Select Board within six (6) months from the date of Notice. The Select Board shall make a final ruling on the application within forty-five (45) days from the date of the filing. The filing of the application does not stay the payment of the benefit assessment. It should be paid as assessed and a refund will follow if abatement is allowed.

ARTICLE II – BUILDING CONNECTIONS

Section 1 - General

1.1 The owner of a property connecting to the Town of Scituate public sanitary sewer system shall be levied a sewer betterment assessment or sewer privilege fee, as defined within these Rules and Regulations, regardless of the type (gravity or pressure) of building connection installed. The property owner shall be responsible for the installation, operation and maintenance of the building connection as described under these Rules and Regulations. In addition, property owners are responsible for the maintenance and use of all works connecting to the building connection, including the building drain and all internal plumbing. All work related to the installation of the building connection shall be performed by a drain layer licensed with the Town of Scituate in accordance with these Rules and Regulations. Connections to the public sewer shall be allowed only upon formal notice issued by the Town of Scituate.

Section 2 - Gravity Building Connection

2.1 The property owner shall be responsible for the arrangements and costs for the installation and maintenance of the gravity building connection to the limits as defined herein. These limits shall be defined along the length of the building connection, extending from the building drain to the sewer main. In cases where the public sewer has been installed within an easement or private way, the property owner's responsibilities, as defined herein, shall extend to the limits of said easement or private way, as indicated on the plan of sewers. All installation and maintenance work shall be performed in accordance with the Sewer Service Connection Specifications attached as Appendix B.

Section 3 - Pressure (Grinder Pump) Building Connection

3.1 Grinder pumps are required for the connection of certain properties due to the elevation of the building drain relative to the public sanitary sewer. The Town of Scituate shall be responsible for the one-time initial acquisition cost of the grinder pump unit for residential properties, as provided for under the construction contract for the public sanitary sewer construction and as outlined in the Policy for On-Lot Individual Grinder Pump Unit Installation (see Appendix C). The property owner shall be responsible for the installation (complete) of the pressure (grinder pump) building connection to the limits defined herein, including the grinder pump unit and pressure sewer. These limits shall be defined along the length of the pressure (grinder pump) building connection extending

from the building drain to the property line abutting the public right-of-way within which the public sewer is located. In cases where the public sewer has been installed within an easement or private way, the property owner's responsibilities, as defined herein, shall extend to the limits of said easement or private way, as indicated on the plan of sewers. The property owner shall also be responsible for the operation and maintenance of the pressure (grinder pump) building connection to the sewer main, including electrical costs and replacement costs. Owners of developed (change in use) or undeveloped properties, not initially connecting to the public sanitary sewer and therefore not provided with a grinder pump unit under the scope of the public sanitary sewer contract, shall be responsible for the acquisition cost for the grinder pump unit at the time of the future installation of the pressure (grinder pump) building connection. All installation and maintenance work shall be performed in accordance with the Sewer Service Connection Specifications attached as Appendix B.

Section 4 - Building Connection Inspections

4.1 Any properties connected to the Town sewer and preparing for transfer or sale of the property shall contact the Sewer Division for a review of the existing building connection. If the private building connection is made of clay, asbestos cement, cast iron, or unknown material, the property owner shall inspect the building connection prior to the sale of the property.

Building inspections may be performed by Town of Scituate personnel at the time of sale or transfer of a property connected to the public sanitary sewer system, for the purpose of identifying connections in violation of these Rules and Regulations. Building inspections shall also be performed with the installation of a new connection to the public sanitary sewer system to confirm that the new connection does not result in a violation of these Rules and Regulations. Building inspections may include any of the following procedures, as required, to verify an illegal connection to the sewer system: visual inspection of exposed piping and drainage systems inside and outside the building, smoke testing, and/or dye testing. Enforcement action taken by the Board on the basis of these inspections shall be in accordance with the provisions described under **Division I - Use and Installation of Sewers**.

4.2 The Sewer Division shall review the inspection and at its sole discretion may require the connection to be repaired or replaced to correct defects prior to sale or transfer of the property. All work related to the installation of the building connection shall be performed by a drainlayer licensed with the Town of Scituate in accordance with these Rules and Regulations.

ARTICLE III – USER CHARGES

1.1 For all properties connected to the Scituate sanitary sewer system, an annual sewer user charge will be levied. The Select Board are empowered to set this rate annually or as otherwise necessary to recover all costs of operation and maintenance of the wastewater facilities. The costs will be proportioned to all users on the basis of the annual volume of waste treated, which will be computed from the property owners' metered water billing. The sewer user charge may be adjusted each year, as necessary to reflect the annual operation and maintenance costs of the Town wastewater facilities.

12 The Select Board are empowered to make appropriate adjustments in the sewer user charge in cases where significant quantities of water do not reach the sanitary sewer system.

13 The Select Board are empowered to establish a flat rate that would be equitable with other similar users in cases where properties do not have metered water records available.

14 If any sewer user discharges waste to the public sewer system in excess of normal strength domestic wastes, the Select Board are empowered to assess a surcharge for the additional costs for treating such wastes.

15 Any marina, boat yard, shipyard, docking or mooring facilities or establishments that shall pump wastewater from any boat, cruiser, yacht or seagoing vessel must discharge this wastewater to the sewage collection system and shall be required to obtain a permit from the Town of Scituate Select Board. At the time of approval, said permit will have a flat fee assessed against said owner governed by gallons of wastewater discharged to the collection system. The granting of this permit does not relieve said owners of such establishments of their obligations to recognize and obey all rules and regulations as set forth by the Town of Scituate, especially all sections of Division I, Article IV, Use of Public Sewers.

16 User charges shall be payable by the property owner on a quarterly basis, commencing from the time of connection to the Town sanitary sewer system. This quarterly billing shall be assessed against the property owner of record that was connected to the sewerage system on the last assessment date after the passage of these Rules and Regulations.

TOWN OF SCITUATE
COMMONWEALTH OF MASSACHUSETTS
APPLICATION FOR DRAINLAYER'S LICENSE – NEW LICENSE APPLICANT

The undersigned hereby applies for a license as a Master Drainlayer as per the Rules and Regulations amended in 2021 by the Select Board.

Name: _____

Address: _____
(Street) (City) (Zip)

Telephone: _____
(Office) (Cell) (E-mail)

And in consideration of such license the Town of Scituate is exonerated from all liability growing out of this license, and hereby agrees to save the Town harmless from any damage upon doing any work under this license, and, further, that I will in all respects conform to the Rules & Regulations established by the Select Board.

License Application: _____ _____
Date Signature of Applicant

JOB LOCATION: _____

LICENSE REQUIREMENTS

Please include copies of the insurance certificates listed below, complete the Worker's Compensation Affidavit and submit three (3) references.

☐	**General Liability**	**$1,000,000 Each Occurrence**	**Expiration Date**_____
☐	**Fire Damage**	**$ 100,000**	**Expiration Date**_____
☐	**Auto Combined Single**	**$ 500,000**	**Expiration Date**_____
☐	**Worker's Comp**	**$ 100,000**	**Expiration Date**_____
☐	**Workers Comp Affidavit**		**Date Signed:**_____
☐	**Performance & Guarantee Bond**	**$ 10,000.00**	**Expiration Date**_____
☐	**3 WRITTEN REFERENCES**		

LICENSE FEE

Please enclose a check in the appropriate amount payable to the Town of Scituate along with this application.

☐ New Application Fee: $200.00 ☐ Renewal Application Fee: $200.00

*NEW APPLICANTS MUST PROVIDE THREE WORK REFERENCES WITH THIS APPLICATION (SEE PART TWO FOR NEW APPLICANTS – PAGE ONE)

RECOMMENDED APPROVALS

_____ _____
Date Supervisor-Sewer Division

_____ _____
Date Director - DPW

LICENSE ISSUED BY SELECT BOARD **LICENSE #**

_____ _____
CHAIRMAN **DATE**

_____ _____

_____ _____

RETURN APPLICATION AND APPROPRIATE FEES AND PAPERWORK TO:

TOWN OF SCITUATE – SEWER DIVISION
161 DRIFTWAY

FOR QUESTIONS, CALL: 781-545-8736

SCITUATE, MA 02066

TOWN OF SCITUATE
COMMONWEALTH OF MASSACHUSETTS
APPLICATION FOR DRAINLAYER'S LICENSE – PART 2

1. **NO. OF YEARS IN BUSINESS:** _____

2. **PLEASE INDICATE TOWNS AND CITIES YOU CURRENTLY HOLD A DRAINLAYER'S LICENSE IN:**

TOWN/CITY	LICENSE NUMBER
TOWN/CITY	LICENSE NUMBER
TOWN/CITY	LICENSE NUMBER

3. **LIST ADDITIONAL TYPES OF LICENSES HELD (Driver's License, Hoisting License, etc.) ALONG WITH THE LICENSE NUMBER:**

LICENSE TYPE	LICENSE NUMBER
LICENSE TYPE	LICENSE NUMBER
LICENSE TYPE	LICENSE NUMBER

4. **PLEASE PROVIDE THREE WRITTEN LETTERS OF RECOMMENDATION FROM BUSINESSES OR TOWNS YOU HAVE RECENTLY COMPLETED WORK FOR AND INCLUDE CONTACT INFORMATION BELOW:**
5.

NAME	COMPANY	TELEPHONE
NAME	COMPANY	TELEPHONE
NAME	COMPANY	TELEPHONE

6. PLEASE LIST OWNED EQUIPMENT SUCH AS TRUCKS, BACKHOES, EXCAVATORS, ETC.

7. LIST MAJOR JOBS YOU HAVE COMPLETED:

The Commonwealth of Massachusetts
Department of Industrial Accidents
Office of Investigations
Lafayette City Center
2 Avenue de Lafayette, Boston, MA 02111-1750
www.mass.gov/dia

Workers' Compensation Insurance Affidavit: Builders/Contractors/Electricians/Plumbers

Applicant Information **Please Print Legibly**

Name (Business/Organization/Individual):_____

Address:_____

City/State/Zip:_____ Phone #:

Are you an employer? Check the appropriate box:

1. ☐ I am a employer with_____ employees (full and/or part-time).*
2. ☐ I am a sole proprietor or partner-ship and have no employees working for me in any capacity. [No workers' comp. insurance required.]
3. ☐ I am a homeowner doing all work myself. [No workers' comp. insurance required.] †
4. ☐ I am a general contractor and I have hired the sub-contractors listed on the attached sheet. These sub-contractors have employees and have workers' comp. iinsurance.‡
5. ☐ We are a corporation and its officers have exercised their right of exemption per MGL c. 152, §1(4), and we have no employees. [No workers' comp. insurance required.]

Type of project (required):

6. ☐ New construction
7. ☐ Remodeling
8. ☐ Demolition
9. ☐ Building addition
10. ☐ Electrical repairs or additions
11. ☐ Plumbing repairs or additions
12. ☐ Roof repairs
13. Other_____

*Any applicant that checks box #1 must also fill out the section below showing their workers' n policy information.

† Homeowners who submit this affidavit indicating they are doing all work and then hire outside contractors must submit a new affidavit indicating such.

‡Contractors that check this box must attached an additional sheet showing the name of the sub-contractors and state whether or not those entities have employees. If the sub-contractors have employees, they must provide their workers' comp. policy number.

I am an employer that is providing workers' compensation insurance for my employees. Below is the policy and job site information.

Insurance Company Name:_____

Policy # or Self-ins. Lic. #:_____ Expiration Date:_____

Job Site Address:_____ City/State/Zip:_____

Attach a copy of the workers' compensation policy declaration page (showing the policy number and expiration date). Failure to secure coverage as required under Section 25A of MGL c. 152 can lead to the imposition of criminal penalties of a fine up to $1,500.00 and/or one-year imprisonment, as well as civil penalties in the form of a STOP WORK ORDER and a fine of up to $250.00 a day against the violator. Be advised that a copy of this statement may be forwarded to the Office of Investigations of the DIA for insurance coverage verification.

I do hereby certify under the pains and penalties of perjury that the information provided above is true and correct.

Signature:_____ Date:_____

Phone #:_____

Official use only. Do not write in this area, to be completed by city or town official.

City or Town:_____ **Permit/License #**_____

Issuing Authority (check one):

1.☐ Board of Health 2.☐ Building Department 3.☐ City/Town Clerk 4.☐ Electrical Inspector 5.☐ Plumbing Inspector 6.☐ Other _____

Contact Person:_____ **Phone #:**_____

Information and Instructions

Massachusetts General Laws chapter 152 requires all employers to provide workers' compensation for their employees. Pursuant to this statute, an ***employee*** is defined as "...every person in the service of another under any contract of hire, express or implied, oral or written."

An ***employer*** is defined as "an individual, partnership, association, corporation or other legal entity, or any two or more of the foregoing engaged in a joint enterprise, and including the legal representatives of a deceased employer, or the receiver or trustee of an individual, partnership, association or other legal entity, employing employees. However, the owner of a dwelling house having not more than three apartments and who resides therein, or the occupant of the dwelling house of another who employs persons to do maintenance, construction or repair work on such dwelling house or on the grounds or building appurtenant thereto shall not because of such employment be deemed to be an employer."

MGL chapter 152, §25C(6) also states that "**every state or local licensing agency shall withhold the issuance or renewal of a license or permit to operate a business or to construct buildings in the commonwealth for any applicant who has not produced acceptable evidence of compliance with the insurance coverage required**." Additionally, MGL chapter 152, §25C(7) states "Neither the commonwealth nor any of its political subdivisions shall enter into any contract for the performance of public work until acceptable evidence of compliance with the insurance requirements of this chapter have been presented to the contracting authority."

Applicants

Please fill out the workers' compensation affidavit completely, by checking the boxes that apply to your situation and, if necessary, supply sub-contractor(s) name(s), address(es) and phone number(s) along with their certificate(s) of insurance. Limited Liability Companies (LLC) or Limited Liability Partnerships (LLP) with no employees other than the members or partners, are not required to carry workers' compensation insurance. If an LLC or LLP does have employees, a policy is required. Be advised that this affidavit may be submitted to the Department of Industrial Accidents for confirmation of insurance coverage. **Also be sure to sign and date the affidavit.** The affidavit should be returned to the city or town that the application for the permit or license is being requested, **not** the Department of Industrial Accidents. Should you have any questions regarding the law or if you are required to obtain a workers' compensation policy, please call the Department at the number listed below. Self-insured companies should enter their self-insurance license number on the appropriate line.

City or Town Officials

Please be sure that the affidavit is complete and printed legibly. The Department has provided a space at the bottom of the affidavit for you to fill out in the event the Office of Investigations has to contact you regarding the applicant. Please be sure to fill in the permit/license number which will be used as a reference number. In addition, an applicant that must submit multiple permit/license applications in any given year, need only submit one affidavit indicating current policy information (if necessary) and under "Job Site Address" the applicant should write "all locations in_____(city or town)." A copy of the affidavit that has been officially stamped or marked by the city or town may be provided to the applicant as proof that a valid affidavit is on file for future permits or licenses. A new affidavit must be filled out each year. Where a home owner or citizen is obtaining a license or permit not related to any business or commercial venture (i.e. a dog license or permit to burn leaves etc.) said person is NOT required to complete this affidavit.

The Office of Investigations would like to thank you in advance for your cooperation and should you have any questions, please do not hesitate to give us a call.

The Department's address, telephone and fax number:

The Commonwealth of Massachusetts
Department of Industrial Accidents
Office of Investigations
Lafayette City Center, 2 Avenue de Lafayette
Boston, MA 02111-1750

Tel. (617) 727-4900 or 1-877-MASSAFE
Fax (617) 727-7749
www.mass.gov/dia

Revised 7-2019

TOWN OF SCITUATE

COMMONWEALTH OF MASSACHUSETTS - DEPARTMENT OF PUBLIC WORKS

APPLICATION FORM FOR RESIDENTIAL SEWER PERMITS

To the DEPARTMENT OF PUBLIC WORKS:

Connection Type: □ New □ Reconnection □ Additional Bedrooms □ Disconnection □ Other_____

The undersigned, being the_____ of the property
(OWNER) (OWNER'S AGENT)

located at_____ hereby requests a permit to install and connect a building sewer.
(NUMBER) (STREET)

1. If the residence is not a single-family dwelling, indicate number of Family Living Units who will be using this sewer connection: _____
2. If a residence, ***INDICATE NUMBER OF BEDROOMS***: _____
3. The name and address of the Drainlayer who will perform the proposed work is:

_____
NAME ADDRESS

4. Plans and specifications for the proposed building sewer are attached hereto as Exhibit "A."

- **In consideration of the granting of this permit, the undersigned agrees:**
- To accept and abide by all provisions of the Rules and Regulations of the Department of Public Works of the Town of Scituate and all other pertinent ordinances or regulations that may be adopted in the future.
- To maintain the building sewer at no expense to the Town.
- To notify the Department of Public Works and the Board of Health when the building sewer is ready for inspection and connection to the public sewer, **but before any portion of the work is covered**.
- **To certify (by signing below) that no sump pump is connected to the sanitary plumbing of this building.**

Date:_____ Signed_____

_____ _____
PROPERTY OWNER (ADDRESS OF PROPERTY OWNER)

Building has existing sump pump: YES □ NO □ _____
(TELEPHONE NUMBER OF PROPERTY OWNER)

DIG SAFE NO:_____

DO NOT WRITE BELOW LINE

Permit No:_____ Date:_____

- Application Fee Paid:_____
- Connection Fee Paid:_____

□ Applicant Notified of Status

□ Sump Pump Inspection Complete

_____
(Date)

□ Application approved and permit issued

By:_____
Department of Public Works

□ Engineering Drawings Required

□ Trench Permit

SCITUATE SEWER RULES AND REGULATIONS

TOWN OF SCITUATE

COMMONWEALTH OF MASSACHUSETTS - DEPARTMENT OF PUBLIC WORKS

APPLICATION FORM FOR COMMERCIAL SEWER PERMITS

To the DEPARTMENT OF PUBLIC WORKS:

Connection Type: □ New □ Reconnection □ Additional Bedrooms □ Disconnection □ Other_____

The undersigned, being the_____ of the property
(OWNER) (OWNER'S AGENT)

located at_____ hereby requests a permit to install and connect a building sewer.
(NUMBER) (STREET)

1. Name of commercial or industrial establishment to be connected:_____.
2. Type of business:_____. Number of employees:_____.
3. A complete schedule of all process waters ad commercial or industrial wastes produced or expected to be produced at said property. Including a description of the character of each waste, daily volume and maximum rates and durations of discharge and representative analysis is attached hereto.
4. The name and address of the Drainlayer who will perform the proposed work is:

NAME ADDRESS

5. Plans and specifications for the proposed building sewer are attached hereto as Exhibit "A."

- **In consideration of the granting of this permit, the undersigned agrees:**
- To accept and abide by all provisions of the Rules and Regulations of the Department of Public Works of the Town of Scituate and all other pertinent ordinances or regulations that may be adopted in the future.
- To maintain the building sewer at no expense to the Town.
- To notify the Department of Public Works and the Board of Health when the building sewer is ready for inspection and connection to the public sewer, **but before any portion of the work is covered**.
- **To certify (by signing below) that no sump pump is connected to the sanitary plumbing of this building.**

Date:_____ Signed_____

_____ _____

PROPERTY OWNER (ADDRESS OF PROPERTY OWNER)

Building has existing sump pump: YES □ NO □ _____
(TELEPHONE NUMBER OF PROPERTY OWNER)

DIG SAFE NO:_____

DO NOT WRITE BELOW LINE

Permit No:_____Date:_____

- Application Fee Paid:_____
- Connection Fee Paid:_____

□ Application approved and permit issued

By:_____
Department of Public Works

□ Engineering Drawings Required

□ Applicant Notified of Status

□ Sump Pump Inspection Complete
(Date) _____

□ Trench Permit

SCITUATE SEWER RULES AND REGULATIONS

APPENDIX A

STANDARD APPLICATIONS, PERMITS, AND FEE SCHEDULE

FEE SCHEDULE

Effective January 2024

This Fee Schedule shall be a part of the town of Scituate Sewer Rules and Regulations. The Fee Schedule shall be adjusted periodically by the town of Scituate.

The purpose of this Fee Schedule is to establish the costs associated with services necessary to govern the use of public and private sewers, and all related apertures, related to the disposal of sewage, installation and connection of building sewers, and the discharge of waters and wastes into the town's sewage collection system; and provide penalties for violations thereof.

This schedule is not a substitute for the Rules and Regulations, but is rather a supplement to them establishing fees for permits and use. For clarification on any fee subject please refer to the Sewer Rules and Regulations. The town of Scituate reserves the right to amend or waive this Fee Schedule in any manner and to establish more stringent fees or requirements as are deemed necessary or appropriate.

The town of Scituate has established the following Fee Schedule associated with the regulations governing the use of public and private sewers:

PERMIT FEES

Application for Residential Building Sewer Permit:	$50.00
Application for Disconnect:	$50.00
Application for Reconnect:	$50.00
Application for Commercial or Industrial Building Sewer Permit:	$125.00

CONTRACTOR LICENSE AND BONDING FEES

Master Drain Layer License Filing Fee:	$200.00
Master Drain Layer License Renewal Fee:	$200.00

Master Drain Layer Bonds and Insurance:

Performance and Guarantee Bond:	$10,000
Certificate of Insurance to cover Public Liability:	$1,000,000
Certificate of Insurance to cover Property Damage:	$5,000.00

VIOLATIONS

Sewer Obstruction Penalty:	$100.00/day
Sewer Inflow Penalty:	$1,000.00/month

PRIVILEGE FEES

Privilege Fee for Private Sewer Extension:	$16,000/unit
Compensatory Sewer Privilege Fee:	$16,000/unit
Accessory Dwelling Fee:	$8,000/unit

APPENDIX B

SEWER SERVICE CONNECTION SPECIFICATIONS

(Including Standard Details)

Town of Scituate, Massachusetts

Department of Public Works

Sewer Division

Sewer Service Connection Specifications

(Issued November 2005)

TABLE OF CONTENTS

SEWER SERVICE CONNECTION REQUIREMENTS

General Requirements

All work must be completed by a Drainlayer (hereinafter referred to as "Contractor") licensed in the Town of Scituate. If the sewer service connection will require a grinder pump, the licensed Contractor must also be certified by the Town to install the pump. The Town will offer training sessions through the pump manufacturer's representative to acquire this certification.

It shall be the responsibility of the Contractor making the building sewer service connection to contact Dig Safe, 1-888-DIGSAFE (344-7233) a minimum of 72 hours before the commencement of work. No building sewer connection permit will be issued without a Dig Safe number.

At the time that the permit is issued it will be determined if the property requires a grinder pump. If the property requires a grinder pump and the Contractor is certified to install the pump, the Sewer Division will issue the Contractor a voucher to pick up the pump at the Manufacturer's Representative's warehouse in Rockland, MA.

The Sewer Division of the Town of Scituate Department of Public Works shall be given a minimum of three (3) working day's notice prior to installation of the sewer service. The Sewer Division can be reached at (781) 545-8736. The Sewer Division will schedule a time for inspection upon completion of the work but prior to backfilling. As part of the inspection, the Town will confirm that no sump pumps or other illegal connections are connected to the sewer service connection. If any illegal connection exists, the sewer service will not be approved for final connection to the municipal sewer. For grinder pump installations, the Manufacturer's Representative will inspect the startup and provide a startup report to the Sewer Division.

After connection to the public sewer is completed, all existing septic systems must be abandoned and disposed of safely and properly. First, all septic tanks, cesspools, leaching pits and drywells shall be pumped out. All pumping and disposal shall be performed in accordance with State and Local Codes and Regulations. After pumping is completed, all non-concrete type tanks (i.e. steel), shall be collapsed and backfilled. All concrete type tanks shall be completely filled with sand and covers replaced. The Contractor shall certify all work related to the abandonment of existing septic systems. Certification forms are available through the Scituate Board of Health.

Technical Requirements

1. All sewer connection piping shall be a minimum of 6-inches in diameter. All pipe and fittings shall be SDR 35 PVC with gaskets. The Sewer Division may require special materials under special conditions.
2. The minimum allowable pipe slope for gravity sewer connections shall be 2% (1/4" per foot) unless otherwise approved.
3. Minimum depth of cover shall be 4 feet for gravity connections and 5 feet for pressure connections, as measured from finished grade to top of pipe, unless otherwise approved.
4. Connections made to building plumbing systems shall be made upstream of any septic tanks or cesspools, as these facilities are to be abandoned.
5. All existing building sewers of non-PVC material(s) shall be removed and replaced with specified PVC pipe, unless otherwise approved.

6. Sewer services will not be allowed to have more than two (2) angle points, or a total of 180-degree change in direction. Unless otherwise approved, 90-degree bends will not be allowed.
7. A straight length of pipe (minimum 3-feet) shall be installed between all bends.
8. Cleanouts (6-inch x 4-inch wye) shall be installed at each change in direction totaling greater than 22-degrees, and at 100-foot intervals (minimum) along the building connection. Cleanouts in paved areas shall have a cast iron valve box, labeled "Sewer", at grade. Cleanouts outside of paved areas shall have detectable threaded caps at 6-inches below finished grade.
9. Building sewers shall be installed with a minimum ten (10) foot horizontal separation from existing domestic water services. Where building sewer and water service crossings are required, the building sewer shall be installed with a minimum 18-inch vertical separation from the water service.
10. If not previously installed, each building connection shall include the installation of a viewing port for future inspection purposes, to be located at the property line. The viewing port shall be as detailed in the Service Connection Specifications.
11. PVC-to-PVC connections shall be made with solid sleeve couplings. FERNCO style couplings will only be allowed at connections to existing soil pipe.
12. Stormwater, surface water, groundwater, roof water runoff, basement sump pumps and/or submerged drainage shall **not** be discharged to the sewer system. If any of these conditions are witnessed to exist, the connection will not be approved until such conditions are removed.
13. Grease traps will be required on any commercial/industrial property that has the potential to discharge fats, oils and/or grease (FOG) to the sewer system. The location of grease traps and/or pre-treatment devices shall be as shown on the design drawings stamped by a professional engineer, prepared on behalf of the Owner.
14. Backfill material shall not include rocks or stones larger than 2-inches in diameter. For gravity connections, compacted crushed stone shall be installed a minimum of 6-inches below the pipe and up to the spring line of the pipe. For pressure connections, a compacted sand bedding shall be required a minimum of 6-inches above and below the pipe.
15. Detectable tracer tape shall be installed along the installed pipe approximately 12-inches below finished grade.
16. The Contractor shall be required to pump and crush existing septic systems or cesspools immediately following sewer service installation, per MA-DEP regulations.
17. Where public sewers are installed at an elevation below the maximum annual high tide, all joints in sewer mains, sewer services and sewer infrastructure shall be double wrapped with a self-adhesive external PVC (10 Mil minimum) or EDPM rubber wrap (30 Mil minimum) tape, with a minimum wrap width of 6 inches.

INSPECTION CHECKLIST

Date:_____ Permit Number: _____

Property Address: _____

1. All pipe and fittings are SDR 35 PVC with gaskets, 6-inch diameter (min.) ☐
2. Minimum pipe slope of 2% (1/4" per foot) ☐
3. Minimum cover depth of 4 feet for gravity connections and 5 feet for pressure connections (finish grade to top of pipe) ☐
4. Connections made to building plumbing system upstream of SDS components ☐
5. Non-PVC building sewers removed and replaced ☐
6. No more than two (2) angle points, or a total of 180-degree direction change and no 90-degree bends ☐
7. Cleanouts at changes in direction greater than 22-degrees or 100-foot intervals (min.) ☐
8. Minimum building sewer/water service separations provided ☐
9. PVC to PVC connections made with solid sleeve couplings ☐
10. No stormwater, surface water, groundwater, roof water runoff, basement sump pumps and/or submerged drainage discharges to the sewer system ☐
11. Grease trap installed (properties with potential to discharge FOG to system) ☐
    Not Applicable ☐
12. Compacted crushed stone installed 6-inches (min.) below pipe and up to the spring line of pipe for gravity connections and compacted sand bedding 6-inches (min.) above and below pressure pipe ☐
13. Backfill material does not include rocks/stones larger than 2-inch diameter ☐
14. Minimum 3-foot straight length of pipe installed between all bends ☐
15. Detectable tracer tape installed, approx. 12-inches below finished grade ☐
16. Existing SDS pumped and crushed following sewer service installation ☐
17. Viewing port installed at the property line (Optional) ☐
18. As-built drawing prepared ☐
19. Pipe Wrap ☐

Inspected By:_____ Date: _____

INTRODUCTION

The intention of these Specifications is to set quality standards for the installation of service connection pipelines within the Town of Scituate, Massachusetts. These Specifications are directed toward connections for Residential and Commercial properties and should be used in conjunction with the "Sewer Rules and Regulations in Scituate, Massachusetts" and all other State and Local permits. This is not intended to serve as a contract document or agreement between the said "OWNER" (individual property owner of the connecting lot) and the "CONTRACTOR" (person/company installing the service connection for the connecting lot).

The Specifications and attached details pertaining to the actual pipe installation (i.e. Earthwork, Rock Excavation and Disposal, Precast Manholes, PVC pipe, Tracer Tape) shall act as minimum standards set forth by the Town of Scituate Department of Public Works. These sections must be complied with in order for the service connection to be approved by the Department of Public Works, Sewer Division Supervisor (herein referred to as "SUPERVISOR"). It should be noted that in some instances it may be necessary to use higher standards or stronger materials based on existing conditions. As mentioned in the Specifications, all State standards and requirements, as amended, shall be adhered to.

The Specifications contain sections indirectly related to the pipeline installation (i.e. Paving, Walkway Replacement). These are intended as suggested guidelines. The OWNER and the CONTRACTOR should address these issues in an agreement to clearly define the scope and extent of work to be completed by the CONTRACTOR.

SECTION 02085

POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section covers the furnishing and installation of Polyvinyl Chloride (PVC) pipe and fittings, as indicated on the drawings and as specified herein.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02518, TRACER TAPE

1.03 REFERENCES:

A. The following standards form a part of these specifications as referenced:

American Society for Testing and Materials (ASTM)

ASTM	D2321	Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe
ASTM	D3034	Specification for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings
ASTM	D3212	Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

PART 2 - PRODUCTS

2.01 MATERIALS:

A. PVC nonpressure sewer pipe 4-inches through 15-inches diameter shall conform to ASTM D3034, with SDR of 35 unless noted, and shall meet the specific requirements and exceptions to the aforementioned specifications which follow.

B. PVC nonpressure sewer pipe shall be furnished in standard lengths.

C. One pipe bell consisting of an integral wall section with a solid cross section rubber ring, factory assembled, shall be furnished with each standard, random and short length of pipe. Rubber rings shall be provided to the requirements of ASTM D32l2.

D. The rubber ring shall be retained within the bell of the pipe by a precision formed groove or recess designed to resist fishmouthing or creeping during assembly of joints.

E. Spigot pipe ends shall be supplied with bevels from the manufacturer to ensure proper insertion. Each spigot end shall have an "assembly stripe" imprinted thereon to which the bell end of the mated pipe will extend upon proper jointing of the two pipes.

F. PVC fittings shall be provided with bell and/or spigot configurations with rubber gasketed joints compatible with that of the pipe. Bend fittings with spigot ends shorter than the pipe recess bells will not be allowed. The shorter spigot end would not allow proper seating of the spigot in the mating bell and would permit undesired contact between the mating bell and the outside of the fitting bell.

G. All pipe delivered to the job site shall be accompanied by independent testing laboratory reports certifying that the pipe and fittings conform to the above-mentioned specifications.

H. All cutting of pipe shall be done with a machine suitable for cutting PVC pipe. Cut ends shall be beveled when recommended by the pipe manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Except as modified herein, installation of the PVC pipe shall be in accordance with ASTM D232l.

B. Each pipe length shall be inspected before being laid to verify that it is not cracked. Pipe shall be laid to conform to the lines and grades indicated on the drawings or given by the Engineer. Each pipe shall be so laid as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.

C. The pipe shall be supported by compacted crushed stone. Crushed stone shall be as specified under Section 02300, EARTHWORK.

D. The pipe shall not be driven down to grade by striking it with a shovel handle, timber, rammer, or other unyielding object. When each pipe has been properly bedded, enough of the backfill material shall be placed and compacted between the pipe and the sides of the trench to hold the pipe in correct alignment.

E. Before a joint is made, the pipe shall be checked to assure that a close joint with the next adjoining pipe has been maintained and that inverts are matched and conform to the required line and grade.

F. For pipe placed on crushed stone, immediately after the joint is made, the jointing area shall be filled with suitable materials so placed and compacted that the ends of either pipe will not settle under backfill load.

G. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.

H. Branches and fittings shall be laid by the CONTRACTOR as necessary. Open ends of pipe and branches shall be closed with PVC caps secured in place with premolded gasket joints.

I. All pipe joints shall be made as nearly watertight as practicable. There shall be no visible leakage at the joints and there shall be no sand, silt, clay, or soil of any description entering the pipeline at the joints. Where there is evidence of water or soil entering the pipeline, connecting pipes, or structures, the defects shall be repaired.

J. Care shall be taken to prevent earth, water, and other materials from entering the pipe, and when pipe laying operations are suspended, the CONTRACTOR shall maintain a suitable stopper in the end of the pipe and also at openings for manholes.

K. All connections made between PVC and pipe of any different material shall be made using a suitable connector.

L. The minimum cover distance (from the top of the pipe to the finished grade) shall be maintained at 4 feet for frost protection.

M. The minimum slope allowable for the service connection pipe is 1/4-inch per foot unless otherwise approved by the SUPERVISOR.

N. The sum of the bends shall not exceed 180º. Refer to attached detail for installation standards.

O. Any work that must be performed to the mainline public sewer shall be done under the direction and supervision of the SUPERVISOR. The CONTRACTOR shall submit a description of work to be performed in writing to the SUPERVISOR for review and approval.

END OF SECTION

SECTION 02088

POLYVINYL CHLORIDE PRESSUREPIPE

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section covers the furnishing, handling, hauling, laying, jointing, testing, and disinfecting of all polyvinyl chloride (PVC) pressure pipe, fittings, and appurtenant work as indicated on the drawings and as specified herein.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02518, TRACER TAPE

1.03 QUALITY ASSURANCE:

A. All pipe and fittings shall be inspected and tested at the factory as required by the standard specifications to which the material is manufactured.

1.04 REFERENCES:

A. The following standards form a part of this specification as referenced:

American Society for Testing and Materials (ASTM)

ASTM	D1784	Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds
ASTM	D2241	Specification for Polyvinyl Chloride (PVC) Pressure-Rated Pipe (SDR-Series)
ASTM	D2321	Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe
ASTM	D3139	Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM	F477	Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

PART 2 - PRODUCTS

2.01 PIPE:

A. PVC pressure pipe from 1 1/2-inch through 3-inch shall be designed and manufactured in accordance with ASTM D2241.

B. Unless otherwise indicated or specified, PVC pressure pipe from 1 1/2-inch through 3-inch shall be pressure class 200 (SDR 21).

C. Pipe shall be homogeneous throughout; free from voids, cracks, inclusions, and other defects; as uniform as commercially practicable in color, density, and other physical properties.

D. Pipe surfaces shall be free from nicks, scratches, and other blemishes. The joining surfaces of pipe spigots and of integral-bell and sleeve-reinforced bell sockets shall be free from gouges and other imperfections that might cause leakage at joints.

2.02 JOINTS:

A. Push-on joints for PVC pressure pipe shall conform to ASTM D3139 and F477.

B. Where so indicated, pipe and fittings shall be furnished with approved thrust restraining appurtenances to keep the piping from pulling apart under pressure.

2.03 FITTINGS:

A. PVC fittings shall be used for pipe sizes 1-1/2-inch through 3-inch.

B. Pressure classification of fittings shall be at least equal to that of the pipe with which they are used.

C. Gaskets shall be of a composition suitable for exposure to the liquid within the pipe.

D. Unless otherwise indicated PVC fittings shall have all bell ends conforming to ASTM D3139.

2.04 FLEXIBLE COUPLINGS:

A. To ensure correct fitting of pipe and couplings, all sleeve-type couplings and accessories shall be furnished by the supplier of the pipe and shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed. Sleeve-type couplings shall be made by Dresser Mfg. Div., Bradford, PA; Rockwell International, Pittsburgh, PA; Clow Corporation, Rochester, NY; or be an approved equal.

B. Couplings for buried pipe shall be of cast iron and shall be Dresser Style 38 or 153, Rockwell Type 441, Clow Type F-1208, or approved equal products. Couplings shall be provided with galvanized steel bolts and nuts.

C. All couplings shall be furnished with the pipe stop removed.

D. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

PART 3 - EXECUTION

3.01 INSPECTION BEFORE INSTALLATION:

Pipes and fittings shall be subjected to a careful inspection and a hammer test just before being laid or installed.

3.02 HANDLING AND CUTTING:

A. Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe, and scratching or marring surfaces.

B. Any fitting or pipe showing a crack or which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work site.

C. In any pipe showing a distinct crack and in which it is believed there is no incipient fracture beyond the limits of the visible crack, the cracked portions, if so approved, may be cut off by and at the expense of the CONTRACTOR before the pipe is laid so that the pipe used will be perfectly sound. The cut shall be made in the sound barrel at a point at least 12 inches from the visible limits of the crack.

D. All cutting of pipe shall be done with a machine suitable for cutting PVC pipes. Cut ends shall be beveled when recommended by the pipe manufacturer.

3.03 INSTALLATION:

A. PIPE AND FITTINGS:

1. No defective pipe or fittings shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.

2. Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.

3. Pipe and fittings shall be laid accurately to the lines and grades indicated on the drawings or as required. Care shall be taken to ensure good alignment both horizontally and vertically.

4. In buried pipelines, each pipe shall have firm bearing along its entire length.

5. Alignment deflection at each joint shall not exceed the permissible deflection specified in the following table measured at 20-foot pipe lengths. Maximum permissible deflections for other pipe lengths shall be in proportion to such lengths.

Pipe Deflection Allowances

(From Tables 33 and 34 of UNI-BELL Handbook of PVC Pipe Design and Construction)

Maximum permissible deflection, inches

Size of Pipe (inches)	Push-on-Joint
1-1/2	73
2	56
2 ½	50
3	42
4	24
6	17
8	12
10	11
12	9

Permissible alignment deflection shall not be achieved by using mechanical means, but shall be accomplished manually by application of uniform forces along the pipe length.

6. Pipe shall be installed underground in a manner that will ensure that external loads will not subsequently cause a decrease of more than 5 percent in the vertical cross-section dimension (deflection). When installing the pipes, they shall be rotated 180 degrees so that the upper quadrant of the pipe, which was exposed to direct sunlight, will not be backfilled upon.

7. At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary water-tight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

8. The minimum cover distance (from the top of the pipe to finished grade) shall be maintained at 5 feet for frost protection.

END OF SECTION

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SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.01 WORK INCLUDED:

The CONTRACTOR shall make excavations of normal depth in earth for trenches and structures, shall backfill such excavations to the extent necessary, and shall make miscellaneous earth excavations and do miscellaneous grading.

1.02 RELATED WORK:

A. Section 02230, CLEARING AND GRUBBING

B. Section 02324, ROCK EXCAVATION AND DISPOSAL

C. Section 02745, PAVING

1.03 SYSTEM DESCRIPTION:

A. The program of excavation shall be carried out in such manner as to prevent undermining or disturbing the foundations or floors of existing structures.

B. The CONTRACTOR shall make excavations in such manner and to such width as will give suitable room for laying and jointing the piping and shall render the bottoms of the excavations firm and dry and acceptable in all respects.

C. If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled with thoroughly compacted gravel borrow.

1.04 REFERENCES:

American Society for Testing and Materials (ASTM)

ASTM D1556 Test Method for Density of Soil in Place by the Sand Cone Method.

ASTM D1557 Test Methods for Moisture-density Relations of Soils and Soil Aggregate Mixtures Using Ten-pound (10 Lb.) Hammer and Eighteen-inch (18") Drop.

ASTM D2922 Test Methods for Density of Soil and Soil-aggregate in Place by Nuclear Methods (Shallow Depth).

Commonwealth of Massachusetts Highway Department Standard Specification for Highways and Bridges.

1.05 PROTECTION OF EXISTING PROPERTY:

A. The work shall be executed in such manner as to prevent any damage to facilities at the site and adjacent property and existing improvements, such as but not limited to streets, curbs, paving, service utility lines, structures, monuments, bench marks, observation wells, and other public or private property. Protect existing improvements from damage caused by settlement, lateral movements, undermining, washout and other hazards created by earthwork operations.

B. In case of any damage or injury caused in the performance of the work, the CONTRACTOR shall, at its own expense, make good such damage or injury to the satisfaction of, and without cost to, the OWNER. Existing roads, sidewalks, and curbs damaged during the project work shall be repaired or replaced to at least the condition that existed at the start of operations. The CONTRACTOR shall replace, at his own cost, existing benchmarks, observation wells, monuments, and other reference points, which are disturbed or destroyed.

C. Buried drainage structures and pipes, observation wells and piezometers, including those which project less than eighteen inches (18") above grade, which are subject to damage from construction equipment shall be clearly marked to indicate the hazard. Markers shall indicate limits of danger areas, by means which will be clearly visible to operators of trucks and other construction equipment, and shall be maintained at all times until completion of project.

1.06 DRAINAGE:

A. The CONTRACTOR shall provide, at its own expense, adequate drainage facilities to complete all work items in an acceptable manner. Drainage shall be done in a manner so that runoff will not adversely affect construction procedures nor cause excessive disturbance of underlying natural ground or abutting properties.

1.07 FROST PROTECTION AND SNOW REMOVAL:

A. The CONTRACTOR shall, at its own expense, keep earthwork operations clear and free of accumulations of snow as required to carry out the work.

B. The CONTRACTOR shall protect the subgrade beneath new structures and pipes from frost penetration when freezing temperatures are expected.

PART 2 - PRODUCTS

2.01 MATERIAL:

A. GRAVEL BORROW:

Gravel borrow shall consist of sound, durable sand and gravel, essentially free of organic matter, plastic fines (clay), and debris, and shall meet the gradation requirements below:

Sieve Opening	Percent Passing (weight)
3 inches	100
1/2 inch	50-85
No. 4	40-75
No. 40	10-45
No. 200	0-8

B. CRUSHED STONE:

Crushed stone shall consist of sound, hard, durable, angular fragments of crushed rock. Crushed stone shall not contain vegetation, masses of roots, loam and other organic matter, clay, and other fine or harmful substances. It shall be well graded and shall meet the gradation requirements listed below:

Sieve Opening	Percent Passing (weight)
1 inch	100
3/4 inch	90-100
3/8 inch	20-55
No. 4	0-10
No. 8	0-5

C. BACKFILL MATERIALS:

Backfill materials shall consist of granular soil. Materials shall be of such a nature that they will form a stable, dense fill. Materials shall not contain vegetation, masses of roots, individual roots more than 12-inches long or more than ½-inch in diameter, trash, clays, or plastic fines. Organic matter shall not exceed two percent (2%). Nonplastic fines(silts)

shall not exceed 20 percent (20%). Backfill materials are subdivided according to the maximum allowable size of stone or blacktop piece as follows:

Type	Largest Stone Diameter
1. Select Backfill	3-inches
2. Class B Backfill	6-inches
3. Class C Backfill	12 inches

PART 3 - EXECUTION

301 PROTECTION AND RESTORATION OF PROPERTY:

A. All existing buildings, utilities, pipes, poles, wires, fences, curbings, property line markers and other structures which the OWNER decides must be preserved in place without being temporarily or permanently relocated shall be carefully supported and protected from injury by the CONTRACTOR. Should such items be injured, they shall be restored by the CONTRACTOR to at least as good condition as that in which they were found immediately before the work was begun.

B. The CONTRACTOR shall enclose the trunks of trees, which are adjacent to this work and not to be removed, with substantial wooden boxes of such height as may be necessary to protect them from injury from piled material, from equipment, from his operations, or otherwise due to his work. Excavating machinery shall be of suitable type and be operated with care to prevent injury to trees not to be removed and particularly to overhanging branches and limbs.

C. Branches, limbs, and roots shall not be cut except by permission of the OWNER. All cutting shall be smoothly and neatly done without splitting or crushing. When there is cutting or unavoidable injury to branches, limbs, and trunks of trees, the cut or injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.

D. Cultivating hedges, shrubs, and plants which might be injured by the CONTRACTOR's operations shall be protected by suitable means or dug up if necessary. After the construction operations have been substantially completed, they shall be replanted.

E. No significant plantings or permanent structures shall be placed within 10 feet of either side of the pipeline.

F. On paved surfaces the CONTRACTOR shall not use or operate tractors, bulldozers, or other power-operated equipment the treads or wheels of which are so shaped as to cut or otherwise injure such surfaces.

G. All property injured by the CONTRACTOR's operations shall be restored to a condition at least equal to that in which it was found immediately before work was begun. Suitable materials and methods shall be used for such restoration.

H. Restoration of existing property and structures shall be done as promptly as practicable.

3.02 EXCAVATION:

A. TRENCH EXCAVATION:

1. Trenches in pavement shall have the surface cut in a straight line by a concrete saw or equivalent method to the full depth of pavement. Excavation shall only be between these lines. Cutting operations shall not be done by backhoe, gradall, or other ripping equipment.

2. Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes, or depths of cover necessary.

3. Where pipe is to be laid in crushed stone bedding, the trench may be excavated by machinery to, or to just below the designated depth, provided that the material remaining at the bottom of the trench remains undisturbed.

4. Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

5. Trenches shall be excavated with vertical sides between the elevation of the center of the pipe and elevation one foot above the top of the pipe.

3.03 BACKFILLING AND COMPACTION:

A. GENERAL:

1. In general, material removed in the course of making the construction excavation shall be suitable material for backfilling trenches.

2. Class C Backfill available from the excavations may be used for filling and building embankments.

3. If the material removed from the excavation is suitable for backfill with the exception that is contains stone or pavement sections having a maximum allowable size larger than that specified, the CONTRACTOR has the option to remove the oversized materials from the backfill or provide replacement backfill.

4. Frozen material shall not be placed in the backfill nor shall backfill be placed upon frozen material. Frozen material shall be removed or shall be otherwise treated as required, before backfill is placed.

5. After the subgrade has been prepared as specified, the fill material shall be placed and built up in successive layers until the required elevation is reached.

6. Layers of fill shall not exceed 12 inches in thickness (loose). Thinner layers shall be used if necessary to achieve the required compaction.

7. Each layer of material shall be compacted by the use of vibratory compaction equipment or rollers or other means to achieve the required compaction. At such points as cannot be reached by mobile mechanical equipment, the materials shall be thoroughly compacted by the use of suitable power-driven tampers.

8. All backfill shall be compacted to at least the specified percent of maximum density as determined by ASTM D1557, Method C.

9. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when too great an application of water, to compact it properly; at such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction. The CONTRACTOR shall provide all labor and equipment to adjust the water content of the soil by wetting or drying as may be necessary to obtain proper compaction.

10. WATER JETTING:

    a. If the backfill is to be compacted by water jetting, the entire layer shall be thoroughly saturated throughout its full depth across and along the trench until all slumping ceases. To accomplish this the CONTRACTOR shall furnish one or more jet pipes, each of sufficient length to reach to the specified depth and of sufficient diameter (not less than 2 inches) to supply an adequate flow of water to compact the material. The jet pipe shall be equipped with a quick-acting valve and be supplied through a fire hose or a pump having adequate pressure and capacity.

    b. In general, water jetting may be used whenever the backfill material does not contain more than 10 percent passing the 200 sieve.

    c. If water jetting does not adequately compact the backfill, mechanical compaction shall be used.

11. COMPACTION REQUIREMENTS:

a. The requirements for compaction of backfill shall conform to the following guidelines based on ASTM D1557 Method C:

Location	Percent Maximum Density
Below pipe centerline	95
Above pipe centerline	92
Below pavement (upper 3 ft.)	95
Below pipe in embankments	95
Adjacent to structure	92

B. PIPE TRENCHES:

1. No backfilling of excavation shall take place until the SUPERVISOR has inspected and approved the service connection pipe.

2. Select backfill shall be placed with hand shovels in 6-inch lifts up to a level of 12-inches above the top of pipe. This area of backfill is considered the zone around pipe and shall be thoroughly compacted before the remainder of the trench is backfilled. Compaction of each lift in the zone around pipe shall be done by use of power-driven tampers weighting at least 20 pounds or by vibratory compactors. Care shall be taken that material close to the bank, as well as in all other portions of the trench, is thoroughly compacted to densities required.

3. Class B backfill shall be placed from the top of the select backfill to grade. Compaction of backfill in the remainder of the trench shall be done in layers not exceeding 12 inches in depth and by use of power-driven tampers weighing at least 20 pounds or by vibratory plate compactors weighing at least 200 pounds and imparting a dynamic force of at least 2000 pounds.

4. If settlement takes place, the CONTRACTOR shall immediately deposit additional material to restore the level of the ground.

5. If existing material below trench grade is unsuitable for properly laying pipe, the CONTRACTOR shall excavate, remove and dispose of the unsuitable material to the required width and depth and replace it with gravel borrow.

END OF SECTION

SECTION 02324

ROCK EXCAVATION AND DISPOSAL

PART 1 - GENERAL

1.01 WORK INCLUDED:

The CONTRACTOR shall excavate rock, if encountered, to the lines and grades indicated on the drawings or as directed, shall dispose of the excavated material, and shall furnish the required material as specified in Section 02300 EARTHWORK for backfill in place of the excavated rock.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

1.03 DEFINITIONS:

A. The word "rock," wherever used as the name of the excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding one cubic yard* in volume, or solid ledge rock which, requires for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed by normal earth excavation methods, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed as “rock."

B. The word "earth," wherever used as the name of an excavated material, or material to be excavated shall mean all kinds of material other than rock as above defined.

1.04 QUALITY ASSURANCE:

A. The CONTRACTOR shall conform to all municipal ordinances and state and federal laws relating to the transportation, storage, handling, and use of explosives. In the event that any of the above-mentioned laws, ordinances, or regulations require a licensed blaster to perform or supervise the work of blasting, said licensed blaster shall, at all times, have his license on the work site and shall permit examination thereof by other officials having jurisdiction.

B. The CONTRACTOR shall procure all permits required for blasting.

1.05 DELIVERY/STORAGE AND HANDLING:

Delivery, storage and handling of explosives shall conform to all federal, state and local regulations and permits.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.01 EXCAVATION:

A. The CONTRACTOR shall excavate rock to the lines and grades required to lay the pipe. The excavated rock shall be removed and disposed of by the CONTRACTOR as specified for surplus excavated materials under Section 02300, EARTHWORK.

This specification does not relieve the CONTRACTOR, his consultant, or his blasting subcontractor, of the responsibility to conduct the blasting activities in a safe and prudent manner, nor of the responsibility to perform the blasting activity in a timely and efficient manner.

The CONTRACTOR shall be held liable for all claims resulting from personal injury or damage to property or equipment that may result from his or his subcontractor's blasting operations. Work damaged by blasting shall be repaired and replaced by the CONTRACTOR.

B. All operations involving explosives shall be conducted with all possible care to avoid injury to persons and property. Blasting shall be done only with such quantities and strengths of explosives and in such a manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an unshattered condition. Care shall be taken to avoid excessive cracking of the rock upon or against which any structure will be built, and to prevent injury to existing pipes or other structures and property above or below ground. The CONTRACTOR shall use blasting mats for all blasts unless at least 5 feet of soil covers all sections of rock involved in the blast, including the relieved face. Sufficient warning shall be given to all persons in the vicinity of the work before a charge is exploded.

C. All state and local regulations governing air blast levels and monitoring shall be complied with.

D. If rock is excavated beyond the limits of necessary trench excavation, the excess excavation, whether resulting from over breakage or other causes, shall be backfilled, by the CONTRACTOR, as specified below in this section.

E. In pipe trenches, excess excavation shall be filled with the required material and compacted in the same manner as specified for the material in the zone around the pipe under Section 02300 EARTHWORK.

F. Rock in pipe trenches shall be excavated so as to be not less than 6 inches from the pipe after it has been laid. Before the pipe is laid, the trench shall be backfilled to the subgrade with thoroughly compacted suitable material, furnished and placed by the CONTRACTOR.

G. For all excavations in rock, the CONTRACTOR shall thoroughly inspect all excavation faces and remove loose or unstable pieces of rock before workers enter the excavation for construction. The CONTRACTOR shall also examine the excavation faces to identify potentially unstable blocks of rock. Such potentially unstable blocks which cannot be reasonably removed shall be temporarily supported.

END OF SECTION

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SECTION 02518
TRACER TAPE

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section covers the furnishing, handling and installation of tracer tape to be installed on all service connections.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

Tracer tape shall be by Lineguard, Inc., Wheaton, IL; Empire Level, Waukesha, WI; Pro-Line Safety Products Co., W. Chicago, IL; or approved equal.

2.02 TRACER TAPE:

A. Tracer tape shall be at least 3-inches wide.

B. Tracer tape for non-ferrous pipe or conduit shall be constructed of a metallic core bonded to plastic layers. The metallic tracer tape shall be a minimum 5-mil thick and must be locatable at a depth of 18 inches with ordinary pipe locaters.

C. Tracer tape for ferrous pipe or conduit shall consist of multiple bonded plastic layers. The non-metallic tracer tape shall elongate at least 500% before breaking.

D. The tape shall bear the wording: "BURIED SEWER LINE BELOW", continuously repeated every 30 inches to identify the pipe.

E. Tape color shall be green, as recommended by the American Public Works Association (APWA).

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Tracer tape shall be installed directly above the pipe or conduit it is to identify, approximately 12 inches below the proposed ground surface.

B. The CONTRACTOR shall follow the manufacturer's recommendations for installation of the tape.

END OF SECTION

SECTION 02530

BUILDING CONNECTIONS

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers furnishing of all materials and labor to construct building sewer connections and drop connections as herein specified.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02324, ROCK EXCAVATION AND DISPOSAL

C. Section 02085, POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS

D. Section 02088, POLYVINYL CHLORIDE PRESSURE PIPE

E. Section 02518, TRACER TAPE

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Pipe and fittings for gravity building connections shall be as specified under Section 02085 POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS. Pipe and fittings for pressure building connections shall be as specified under Section 02088 POLYVINYL CHOLORIDE PRESSURE PIPE. Adaptors shall be as recommended by the pipe manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Building connections shall be installed using the same construction and pipe joining techniques as specified in Section 02085 POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS and in Section 02088 POLYVINYL CHLORIDE PRESSURE PIPE.

B. The minimum cover over gravity building connections shall be four (4) feet and over pressure building connections shall be 5 feet, however, more cover may be necessary where building sewers cross beneath water mains or other pipes and to ensure that buildings can receive full basement service.

C. Each gravity building connection shall include the installation of a viewing port for future inspection purposes, to be located at the property line.

END OF SECTION

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SECTION 02631

PRECASTMANHOLES

PART 1 - GENERAL

1.01 WORK INCLUDED:

This Section covers all precast manholes complete, including, but not limited to, bases, walls, cones, mortar, inverts, frames and covers.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02745, PAVING

1.03 SYSTEM DESCRIPTION:

A. Precast sections shall conform in shape, size, dimensions, materials, and other respects to the attached details.

B. All manholes shall have concrete bases. Concrete bases shall be precast unless otherwise specified. Invert channels shall be formed of brick and mortar upon the base.

C. Riser and cone sections shall be precast concrete.

1.04 REFERENCES:

A. The following standards form a part of this specification as referenced:

American Society for Testing and Materials (ASTM)

ASTM A48	Gray Iron Castings
ASTM C32	Sewer and Manhole Brick
ASTM C144	Aggregate for Masonry Mortar
ASTM C207	Hydrated Lime for Masonry Purposes
ASTM C478	Precast Reinforced Concrete Manhole Sections
ASTM C923	Specification for Resilient Connectors Between Reinforced

Concrete Manhole Structures and Pipes

ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M198 Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets

Occupational Safety and Health Administration

OSHA 29 CFR 1910.27 Fall Prevention Protection

PART 2 - PRODUCTS

2.01 PRECAST CONCRETESECTIONS:

A. All precast concrete sections shall conform to ASTM C478 with the following exceptions and additional requirements:

1. The wall thickness of precast sections shall be as designated on the enclosed detail, meeting the following minimum requirements:

Section Diameter (Inches)	Minimum Wall Thickness (Inches)
48	5

2. Type II cement shall be used except as otherwise approved.

3. Sections shall be steam cured and shall not be shipped until at least five days after having been cast.

4. Minimum compressive strength of concrete shall be 4000 psi at 28 days.

5. No more than two lift holes may be cast or drilled in each section.

6. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each precast section.

7. Acceptance of the sections will be on the basis of material tests and inspection of the completed product.

8. Circumferential steel reinforcement in walls and bases shall be a minimum of 0.12 sq. in./lin. ft. for 4-foot diameter sections and 0.15 sq. in./lin. ft. for 5- and 6-foot diameter sections. Reinforcing shall extend into tongue and groove.

B. Conical reducing sections, if required, shall have a wall thickness not less than 5-inches at the bottom and wall thickness of 8-inches at the top. Conical sections shall taper from a minimum of 48-inches diameter to 24 or 30-inches diameter at the top.

C. Except where insufficient depth of cover dictates the use of a shorter base, bases shall be a minimum of 4 feet in height.

D. The tops of the bases shall be suitably shaped by means of accurate ring forms to receive the riser sections.

E. Precast sections shall be manufactured to contain wall openings of the minimum size to receive the ends of the pipes, such openings being accurately set to conform with line and grade of the sewer. Subsequent cutting or tampering in the field, for the purpose of creating new openings or altering existing openings, will not be permitted except as directed by the Engineer.

F. The exterior surfaces of all precast manhole bases, walls, and cones shall be given a minimum of one shop coat of bituminous damp proofing.

2.02 BRICK MATERIALS:

A. Brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture. Bricks shall comply with ASTM C32, for Grade SS, hard brick, except that the mean of five tests for absorption shall not exceed 8 percent by weight.

B. Mortar shall be composed of Portland cement, hydrated lime, and sand in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime. The proportions of cement and lime shall be as directed and may vary from l:l/4 for dense hard-burned brick to l:3/4 for softer brick. In general, mortar for Grade SS Brick shall be mixed in the volume proportions of 1:1/2:4-1/2; Portland cement to hydrated lime to sand.

C. Cement shall be Type II Portland cement as specified for concrete masonry.

D. Hydrated lime shall be Type S conforming to ASTM C207.

E. The sand shall comply with ASTM C144 specifications for "Fine Aggregate," except that all of the sand shall pass a No. 8 sieve.

2.03 FRAMES, COVERS AND STEPS:

A. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sand holes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of covers and frame seats shall be machined to prevent rocking of covers.

B. All castings shall be thoroughly cleaned and may be subject to a careful hammer inspection.

C. Castings shall be ASTM A48 Class 30B or better.

D. The surface of the manhole covers shall have a diamond pattern with the cast word "SEWER".

E. Manhole frames with 26-inch covers for 24-inch openings shall be 475 pounds minimum by E.L. LeBaron Foundry Co., No. LKll0; Neenah Foundry Co. R1720; Quality Water Products, Style 40; or approved equal.

F. Watertight type manhole frames with 26-inch diameter covers (bolted and gasketed) shall be 4 bolt, 475 pounds minimum, and shall be E.L. LeBaron Foundry Co. No. LBB268; Mechanics Iron Foundry Type A2073; Quality Water Products, Style 40WT; or approved equal.

G. Frostproof manhole frames, with covers and inner lids shall be R-1758 series by Neenah Foundry Co., Neenah, WI; LBF series by E.L. LeBaron Foundry Co., Brockton, MA; B-3045 (or similar) by Mechanics Iron Foundry, Boston, MA; or approved equal.

H. 2-inch thick polystyrene insulation shall be firmly adhered to all frost proof inner lids.

I. Manhole steps shall conform to ASTM C478 requirements and shall be fabricated of either extruded aluminum or steel reinforced plastic. Steps shall be uniformly spaced at a maximum of 12-inches unless otherwise shown on the drawings.

2.04 SEWER MANHOLE ACCESSORIES:

A. Gasket materials shall be top grade (100% solids, vulcanized) butyl rubber and shall meet or exceed AASHTO M-198.

B. Couplings at the manhole-pipe interface shall be made with a rubber seal system (with or without stainless steel straps) meeting the requirements of ASTM C923 and recommended for this type of connection.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. PRECAST SECTIONS:

1. Precast bases shall be supported on a compacted level foundation of crushed stone, as specified in Section 02300 EARTHWORK, at least 6-inches thick, but shall vary to the depth necessary to reach sound undisturbed earth.

2. Precast reinforced concrete sections shall be set vertical and with sections in true alignment.

3. Butyl rubber joint sealant shall be installed between each concrete section.

4. All holes in sections used for handling the sections shall be thoroughly plugged with mortar. Mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

B. BRICK WORK:

1. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

2. Each brick shall be laid as a header in a full bed and joint of mortar without requiring subsequent grouting, flushing or filling, and shall be thoroughly bonded.

3. The brick inverts shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent to the centerlines of adjoining pipe.

C. CASTINGS:

1. Cast iron frames and covers shall be as specified. The frames and covers shall be set by the CONTRACTOR to conform accurately to the grade of the finished grade or existing ground surface.

2. Cast iron manhole frames and covers not located in paved areas shall be set 6-inches above finished grade. The top of the cone shall be built up with a minimum of 1 course and a maximum of 5 courses of brick and mortar used as headers for adjustment to final grade.

3. Frames shall be set concentric with the top of the concrete section and in a full bed of mortar so that the space between the top of the concrete section or brick headers and

the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the concrete shall be placed all around the bottom flange. The mortar shall be smoothly finished to be flush with the top of the flange and have a slight slope to shed water away from the frame.

4. Covers shall be left in place in the frames, for safety reasons, except while work is being performed.

D. ACCESSORIES:

1. Accessories shall be installed in accordance with manufacturer's instructions.

3.02 LEAKAGE TESTS:

A. Leakage tests shall be made by the CONTRACTOR and observed by the SUPERVISOR on each manhole. The test shall be by vacuum or by water exfiltration as described below:

B. VACUUM TEST:

1. The vacuum test shall be conducted in accordance with ASTM C1244. Test results will be judged by the length of time it takes for the applied vacuum to drop from 10 inches of mercury to 9 inches. If the time is less than that listed in Table 1 of ASTM C1244, the manhole will have failed the test. Test times from Table 1 are excerpted below.

TABLE 1

Minimum Test Times for Various Manhole Diameters

	Diameter (Inches)		
Depth (Feet)	48	60	72
		Times (Seconds)	
0-12	30	39	49
12-16	40	52	67
16-20	50	65	81

2. If the manhole fails the initial test, the CONTRACTOR shall locate the leaks and make proper repairs. Leaks may be filled with a wet slurry of accepted quick setting material. If the manhole should again fail the vacuum test, additional repairs shall be made, and the manhole water tested as specified below.

C. WATER EXFILTRATION TEST:

1. After the manhole has been assembled in place, all lifting holes shall be filled and pointed with an approved non-shrinking mortar. All pipes and other openings into the manhole shall be suitably plugged and the plugs braced to prevent blow out. The test shall be made prior to placing the shelf and invert. If the groundwater table has been allowed to rise above the bottom of the manhole, it shall be lowered for the duration of the test.

2. The manhole shall be filled with water to the top of the cone section. If the excavation has not been backfilled and observation indicates no visible leakage, that is, no water visibly moving down the surface of the manhole, the manhole may be considered to be satisfactorily water-tight. If the test, as described above, is unsatisfactory or if the manhole excavation has been backfilled, the test shall be continued. A period of time may be permitted if the CONTRACTOR so wishes, to allow for absorption by the manhole. At the end of this period, the manhole shall be refilled to the top of the cone, if necessary, and a measuring time of at least 8 hours begun. At the end of the test period, the manhole shall be refilled to the top of the cone, measuring the volume of water added. This amount shall be extrapolated to a 24-hour loss rate and the leakage determined on the basis of depth. The leakage for each manhole shall not exceed one gallon per vertical foot for a 24-hour period. If the manhole fails this requirement, but the leakage does not exceed 3 gallons per vertical foot per day, repairs by approved methods may be made to bring the leakage within the allowable rate of one gallon per foot per day. Leakage due to a defective section or joint or exceeding the 3-gallon per vertical foot per day, shall be cause for rejection of the manhole. It shall be the CONTRACTOR's responsibility to uncover the rejected manhole as necessary and to disassemble, reconstruct or replace it. The manhole shall then be retested and, if satisfactory, interior joints shall be filled and pointed.

3. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorption, etc. It shall be assumed that all loss of water during the test is a result of leaks through joints or through the concrete. Furthermore, the CONTRACTOR shall take any steps necessary to assure that the water table is below the bottom of the manhole throughout the test.

4. If the groundwater table is above the highest joint in the manhole, and there is no leakage into the manhole, such a test can serve to evaluate water-tightness of the manhole. However, if the SUPERVISOR is not satisfied with the results, the CONTRACTOR shall lower the water table and carry out the test as described hereinbefore.

3.03 CLEANING:

All new manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION

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SECTION 02745

PAVING

PART 1 - GENERAL

1.01 WORK INCLUDED:

The CONTRACTOR shall furnish all labor, materials and equipment and shall replace the pavements "in kind" or as herein specified.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

1.03 REFERENCES

The following standards form a part of these specifications and indicate the minimum standards required:

American Society for Testing and Materials (ASTM)

ASTM D1557	Test for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 Pound Rammer and 18-Inch Drop

Commonwealth of Massachusetts Highway Department
Standard Specification for Highway and Bridges (MHD)

MHD 405	Gravel Base Course
MHD 420	Class I Bituminous Concrete Base Course, Type I-1
MHD 460	Class I Bituminous Concrete Pavement
MHD 476	Cement Concrete Pavement
MHD 860	Reflectorized Pavement Markings

Federal Specifications

SS-S-164	Sealing Compound, Hot Poured Type, for Joints in Concrete
SS-S-1401C	Sealants, Joint, Non-Jet-Fuel-Resistant, Hot Applied, for Portland Cement and Asphalt Concrete Pavement

PART 2 - PRODUCTS

2.01 GRAVEL SUBBASE:

A. Gravel sub base shall consist of inert material that is hard durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials.

B. Gradation requirements for gravel sub base shall be as specified in Section 02300, EARTHWORK for Gravel Borrow.

2.02 BITUMINOUS CONCRETE PAVEMENT:

A. Bituminous concrete pavements shall consist of Class I Bituminous Concrete, Type I-1.

B. Bituminous concrete mixtures shall be within the composition limits of base courses, binder courses, top courses and surface treatment, in accordance with MHD M3.11.03.

C. The joint sealant shall be a hot poured rubberized emulsified asphalt sealant meeting the requirements of Federal Specifications SS-S-1401 or SS-S-164.

D. The tack coat shall be an asphalt emulsion, RS-1 if required, conforming to MHD Section M3.03.0.

2.03 SEAL COAT:

A. Seal coats shall be within the composition limits for protective seal coat emulsion in accordance with MHD M3.03.3.

B. Silica sand when blended with seal coat emulsion shall be No. 30 silica sand.

PART 3 - EXECUTION

3.01 GENERAL:

A. Paving of parking lots and driveways shall consist of installation of the gravel subbase, the binder course, and the top course.

3.02 GRAVEL SUBBASE:

A. The gravel sub base to be placed under pavement shall consist of 12-inches of gravel evenly spread and thoroughly compacted.

B. The gravel shall be spread in layers not more than 4-inches thick, compacted measure. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by ASTM D1557 Method C at optimum moisture content.

3.03 BINDER COURSE PAVEMENT:

A. Immediately prior to installing the binder course, the trimmed edges shall be made stable and unyielding, free of loose or broken pieces and all edges shall be thoroughly broomed clean. Contact surfaces of trench sides, curbings, manholes, catch basins, or other appurtenant structures in the pavement shall be painted thoroughly with a uniform coating of asphalt emulsion (tack coat), just before any mixture is placed against them.

B. The binder course bituminous concrete mixtures shall be within the composition limits of binder courses in accordance with MDPW M3.11.03. The binder course shall be placed only between edges of the existing pavement.

C. The binder course pavement shall be 2 compacted inches thick.

D. The binder course shall be repaired as necessary to maintain the surface of the pavement until placement of the permanent overlay. If required, the CONTRACTOR shall place a leveling course before placing the permanent overlay.

3.04. TOP COURSE OR SURFACE TREATMENT PAVEMENT:

A. The top course or surface treatment shall be placed over the trench as specified.

B. The top course pavement shall be 1-1/2 compacted inches thick.

C. Prior to placement of the top course, the entire surface over which the top course is to be placed shall be broom cleaned and tack coated.

E. D. Top course pavement placed over trenches shall be feathered to meet existing paved surfaces.

3.05 GENERAL:

A. Adjacent concrete work, slate work, sidewalks, structures, etc., shall be protected from stain and damage during the entire operation. Damaged or stained areas shall be replaced or repaired to equal their original condition.

B. All joints between binder and top course or surface treatment shall be staggered a minimum of 6-inches.

C. After final rolling, no vehicular traffic of any kind shall be permitted on the pavement until it has cooled and hardened, and in no case in less than 6 hours.

D. Smoothness of all areas of the finished surface shall not vary more than ¼-inch when tested with a 16 foot straight-edge, applied both parallel to and at right angles to the centerline of the paved area. At building entrances, curbs, and other locations where an essentially flush transition is required, pavement elevation tolerance shall not exceed plus or minus 1/8-

inch. Irregularities exceeding these amounts, or which retain water on the surface, shall be corrected by removing the defective work and replacing or repairingit.

E. When seal coating is required, the surface area to be seal coated shall be swept and air cleaned. The first coat shall be applied with eight (8) pounds of #30 silica sand blended with each gallon of emulsion applied at a rate of 0.15 gallons per square yard. The second coat shall be a straight sealer applied at the rate of 0.1 gallons per square yard.

END OF SECTION

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SECTION 02775

WALKWAY REPLACEMENT

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. Where replacement of concrete walks is required, the CONTRACTOR shall construct either bituminous concrete walks or cement concrete walks, as determined in the field, to the required lines and grades and in accordance with these specifications.

B. If applicable, the CONTRACTOR shall restore gravel walks to a condition at least equal to that existing immediately before the work was started.

C. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals required to construct new walks where existing walks are disturbed by the CONTRACTOR. This work shall include placement of all concrete, reinforcing steel, forms, and joint filler required to replace existing concrete walks and ramps.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. For driveways, see Section 02575, PAVING

PART 2 – PRODUCTS (see Part 3 – Execution)

PART 3 – EXECUTION:

3.01 BITUMINOUS CONCRETE WALKS:

A. Except as otherwise specified, construction of the bituminous concrete walks shall be in accordance with the Standard Specifications for Highways and Bridges of the Department of Public Works of the Commonwealth of Massachusetts, dated 1973, and all amendments thereto.

B. The subgrade for the bituminous concrete walks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly rolled and tamped. All depressions occurring shall be filled with suitable material and again rolled or tamped until the surface is smooth and hard in order for a gravel foundation to be placed upon it.

C. The CONTRACTOR shall use a 1-1/2-inch thick binder course with 3/4–inch maximum size stone and a 1-inch thick wearing course with 3/8-inch maximum size stone.

3.02 CEMENT CONCRETE WALKS:

A. In general, concrete for one-course walks shall be 4 inches thick.

B. The subgrade for the walk or driveway shall be shaped to a true surface conforming to the proposed slope of the walk, thoroughly rolled at optimum moisture content, and tamped with a power roller weighing not less than one ton and not more than 5 tons. All depressions occurring shall be filled with suitable material and again rolled or tamped until the surface is smooth and hard.

C. After the subgrade has been prepared as hereinbefore specified, a subbase of gravel at optimum moisture content shall be placed, thoroughly rolled by a power roller, and tamped. For walks, the gravel shall be a minimum of 8 inches in thickness and 4 inches below and parallel to the proposed finished surface.

D. The forms for one-course walks shall be smooth, free from warp, strong enough to resist springing out of shape, and deep enough to conform to the thickness of the proposed walk. All mortar or dirt shall be completely removed from forms that have been previously used. The forms shall be well staked, thoroughly braced, and set to the established lines with their upper edge conforming to the grade of the finished walk. The finished walk shall have sufficient pitch from the outside to the edge of the walk to provide for surface drainage. This pitch shall be 3/8 of an inch per foot. Before the concrete is placed, the subbase for one-course walks shall be thoroughly dampened until it is moist throughout but without puddles of water.

E. The concrete shall be conveyed from the place of mixing to the place of deposit in such a manner that no mortar will be lost, the composition of the mix shall be uniform, showing neither excess nor lack of mortar in any one place. The consistency shall be such that water will float to the surface under heavy tamping. The concrete shall be placed as close to its final position as practicable and thoroughly consolidated, with precautions taken not to overwork it while it is still plastic. The concrete shall be thoroughly spaded along the forms or screeds to eliminate voids and honeycombs at the edges. Retempering of concrete will not be permitted.

F. Finishing of the concrete surface shall be done by experienced and competent cement finishers as soon as is practicable. Finishing shall not be delayed until all bled water and water sheen has left the surface and the concrete has begun to stiffen. The concrete surface shall be finished as directed with a steel trowel or wood float to give a smooth, uniform and attractive surface finish and uniformly scored into block units or areas of not more than 36 square feet. Following this, the CONTRACTOR shall draw a fine nylon push broom lightly over the surface to produce a non-slip surface. Application of neat cement to the surface to hasten hardening is prohibited.

G. The CONTRACTOR shall make every effort to protect the newly placed concrete surface against vandalism and marking or defacing and must stand ready to replace any blocks which are defaced.

H. Adequate protection shall be provided where temperatures of 40ºF or lower occur during placing of concrete and during the early curing period. The minimum temperature of fresh concrete after placing and for the first 3 days shall be maintained above 55ºF. In addition to the above requirements, an additional 3 days of protection from freezing shall be maintained.

I. Except as otherwise specified, the construction of the concrete walks shall be in accordance with the Standard Specifications for Highways and Bridges of the Department of Public Works of the Commonwealth of Massachusetts, dated 1973, and all amendments thereto.

END OF SECTION

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SECTION 11305

SEMI-POSITIVE DISPLACEMENT RESIDENTIAL
GRINDER PUMP UNITS

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers the furnishing and installation of factory-built, semi-positive displacement residential grinder pump units. All components, except as otherwise noted, shall be provided by one supplier.

B. Upon issuance of a building sewer connection permit, the Department of Public Works, Sewer Division, will determine if the property is intended to receive a grinder pump unit. If so determined, the OWNER shall receive from the Sewer Division a voucher for one (1) grinder pump unit from the manufacturer's Representative. Upon providing a voucher to the Representative, the unit, including all equipment and materials specified in this section, shall be picked up at the Representative's warehouse in Rockland, MA, to be installed by the CONTRACTOR. If it is determined by the Sewer Division that the property was not intended to receive a grinder pump unit, it shall be the responsibility of the OWNER to contact the manufacturer's Representative for purchase and pick up information.

1.02 SYSTEM DESCRIPTION:

A. The system shall consist of complete factory-built and tested grinder pump units, each consisting of grinder pumps suitably mounted in a basin constructed of high density polyethylene (HDPE) with an integral access way, electrical quick disconnect (NEMA 4X), remote electrical alarm/disconnect panel, electric motor, all necessary internal wiring and controls, pump installation and removal systems, fittings, valves and all associated equipment and accessories required to make a complete system.

B. Equipment and accessories not specifically described herein shall be the manufacturer's standard catalog products.

1.03 QUALITY ASSURANCE:

A. All equipment shall conform to the following criteria:

1. The grinder pump shall be free from electrical and fire hazards as required in a residential environment. As evidence of compliance with this requirement, the completely assembled and wired grinder pump station in its tank shall be listed by Underwriter's Laboratories, Inc., to be safe and appropriate for the intended use.

The grinder pump shall conform to the Department of Environmental Protection Division of Air Quality Control regulations governed by the following policy:

"A source of sound will be considered to be violating the Department's noise regulation (310 CMR 7.10) if the source:

a. Increases the broadband sound level by more than 10 dB(A) above ambient, or

b. Produces a "pure tone" condition - when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.

The grinder pump shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low-pressure sewer system applications. As evidence of compliance with this requirement, the grinder pumps shall bear the National Sanitation Foundation seal.

2. Equipment shall be manufacturer's standard products presently in commercial production.

3. Conform to Hydraulic Institute Standards.

4. All the equipment specified under this Section shall be furnished by a single supplier and shall be products of manufacturers regularly engaged in the production of said equipment. The supplier shall have the sole responsibility for proper functioning of the complete grinder pump package.

5. The grinder pump stations shall conform to requirements for materials, installation, and equipment approvals of state, local, Underwriters Laboratories, Inc., NEC, NEMA, ASTM, NSF, and other applicable codes whether or not called for on the drawings or the specification.

6. Base the use of unspecified materials on their continuous and successful employment under similar conditions, as called for in this section.

B. MANUFACTURER'S QUALIFICATIONS:

1. The manufacturer shall provide the supervisory service of a factory trained engineer, who is specifically trained on the type of equipment supplied, for a period of not less than two 8-hour days to assist in installation of the pumping equipment and related appurtenances, to provide initial startup of each grinder pump, and to instruct the OWNER in the operation and maintenance of the equipment provided.

C. FACTORY TESTS:

1. Each grinder pump shall be submerged and operated for 5 minutes (minimum). Included in this procedure will be the testing of all ancillary components such as the anti-siphon valve, check valve, discharge line, level sensors and each unit's dedicated controls. All factory tests shall incorporate each of the above-listed items. Actual appurtenances and controls, which will be installed in the field, shall be particular to the tested pump only. A common set of appurtenances and controls for all pumps will not be acceptable. Certified test results shall be available upon request showing the operation of each grinder pump at two (2) different points on its curve, with the maximum pressure no less than 60 psi.

2. All completed stations shall be factory leak tested to assure the integrity of all joints, seams and penetrations. All necessary penetrations such as inlets, discharge fittings and cable connectors shall be included in this test along with their respective sealing means.

D. Field acceptance tests shall be performed as specified in Part 3 Execution.

1.04 REFERENCES:

The latest editions of the following standards form a part of this specification as referenced:

American Society for Testing and Materials (ASTM)

ASTM A48	Specifications for Gray-Iron Castings.
ASTM A53	Specifications for Pipe, Steel, Black and Hot-dipped, Zinc Coated, Welded and Seamless.
ASTM D1785	Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
ASTM D2464	Threaded Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80.
ASTM D2467	Socket-Type Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80.
ASTM D2564	Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings.

National Electric Code (NEC)

NEC Code	National Electrical Code.

National Electric Manufacturers Association (NEMA)

NEMA	Standard as Specified.

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. OPERATION AND MAINTENANCE INSTRUCTIONS:

The grinder pump manufacturer shall be responsible for supplying one (1) set of written instructions, which shall be sufficiently comprehensive to enable the OWNER to operate and maintain the pump and all associated equipment supplied by the station manufacturer. Said instructions shall assume that the operator is familiar with pumps, motors, piping, and valves but that he has not previously operated and/or maintained the exact equipment supplied.

The instructions shall include, but not be limited to, the following:

1. Descriptions of, and operating instructions for each major component of the grinder pump as supplied.

2. Instructions for operation of the grinder pump in all intended modes of operation.

3. Instructions for all adjustments, which must be performed at initial startup of the grinder pump, adjustment which must be performed after the replacement of level control system components, and adjustments which must be performed in the course of preventive maintenance as specified by the manufacturer.

4. Instructions for the adjustment, calibration, and testing of selected electronic components or assemblies, normally considered replaceable by the manufacturer, whose performance is not ascertainable by visual inspection.

5. Service instructions for major components not manufactured by the grinder pump manufacturer but which are supplied by him in accordance with these specifications. Incorporation of literature produced by the actual component manufacturer shall be acceptable.

6. Electric schematic diagram of the grinder pump unit as supplied, prepared in accordance with NMTBA and JIC standards. Schematics shall show, to the extent of authorized repair, pump motor branch, control, and alarm system circuits and interconnections among these circuits. Wire numbers shall be shown on the schematic. Schematic diagrams for electronic equipment, the detail parts of which are normally repairable by the owner-town-servicer, need to be included and shall not be substituted for an overall schematic diagram. Partial schematics, block diagrams, and simplified schematics shall not be provided in lieu of an overall schematic diagram.

7. At the time of delivery, each set of instructions shall be clearly visible, attached to or inside each unit provided.

1.06 DELIVERY:

A. SHIPPING:

The CONTRACTOR shall pick up the pump at the Manufacturer's Representative's warehouse in Rockland, MA.

1.07 WARRANTY:

The manufacturer shall offer a limited parts and labor warranty guaranteeing its product to be free from defects in material and factory workmanship for no less than twenty four (24) months from the date installation. The Warrantee shall be a 100% on-site warrantee. Repair will be made free of charge and be made on-site by an authorized service provider within 24-hours of notice given to the manufacturer by the OWNER.

PART 2 - PRODUCTS

2.01 EQUIPMENT - SEMI-POSITIVE DISPLACEMENT GRINDER PUMPS:

A. GENERAL:

The semi-positive displacement type grinder pump shall be a removable core type unit rated at one horsepower, operating on a 240 volt, single phase, 60 Hertz electrical system.

B. CORE UNIT:

1. Each grinder pump unit shall have a cartridge type easily removable core assembly containing pump, motor, grinder, controls, check valve, stainless steel discharge piping, anti-siphon valve, electrical quick disconnect, and wiring.

2. The watertight integrity of the core unit, including wiring and access cover, shall be established by 100% factory test at a minimum of 5 psig.

3. The controls included in the core unit shall provide for fully automatic operation of the grinder pump assembly, and no external control panel shall be required for normal operation of the grinder pump unit.

4. Core unit shall have two (2) lifting hooks with nylon lift-out harness in the top housing to facilitate removal of the core unit from the tank when necessary.

C. PUMPS:

1. Pumps shall be custom designed, integral, vertical rotor, motor driven, solids handling pumps of the progressing cavity type with mechanical seal.

2. Rotor: Through-hardened, highly polished, precipitation hardened stainless steel.

3. Stator: Specifically compounded ethylene propylene synthetic elastometer suitable for domestic wastewater service. Physical properties: High tear abrasion resistance, grease resistance, water and detergent resistance, temperature stability, good aging properties, and outstanding wear resistance. The stator shall be designed and mounted in such a way as to accommodate rotor run-out and permit direct connection of the rotor to the motor shaft with no intermediate flexible coupling.

4. The pumps shall be capable of delivering 15 gpm against a rated total dynamic head of 0 feet (0 psig) and 9 gpm against a rated total dynamic head of 138 feet (60 psig). The pump(s) shall also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in- line piping or valving be allowed to create a false apparent head.

D. GRINDERS:

1. Rotating type with a stationary hardened and ground chrome steel shredding ring spaced in close annular alignment to the driven impeller assembly positioned immediately below the pump elements; direct-driven by a single, one-piece motor shaft.

2. Grinder Impeller Assembly: Securely fastened to pump motor shaft; carry two hardened type 400 series stainless steel cutter bars; dynamically balanced to operate without objectionable noise or vibration over the entire range of recommended operating pressures.

3. Constructed to eliminate clogging and jamming under all normal starting and operating conditions with sufficient vortex action to scour tank free of deposits or sludge banks, which would impair the operation of the pump.

4. To meet the above requirements, the following shall be accomplished in conjunction with the grinder pump tank:

   a. Grinder shall be positioned in such a way that solids are fed in an up-flow direction.

   b. Diameter of inlet shroud opening shall be no less than 5 inches (127 mm).

   c. Average inlet velocity, at maximum flow, shall not exceed 0.2 feet per second.

   d. Cutter bars shall extend above the impeller disc 0.20 to 0.25 inches (5.1 to 6.4 mm).

   e. Nominal speed of impeller disc to be 1725 RPM.

5. The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable quantity of "foreign objects," such as paper, wood, plastic, glass, rubber and the like, to finely-divided particles which will pass freely through the pump and the 1-1/4 inch diameter stainless steel discharge piping.

E. ELECTRIC MOTOR:

1. One HP (746 watts), 1725 RPM, capacitor start, ball bearing, squirrel cage induction type with a low starting current not to exceed 30 amperes and high starting torque of at least 8.4 foot pounds.

2. Inherent protection against running overloads or locked rotor condition shall be provided for the pump motor by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. The motor protector combination to

be investigated and listed by Underwriters' Laboratories, Inc., for the specific application.

F. MECHANICAL SEAL:

1. Core: Provided with a mechanical shaft seal to prevent leakage between the motor and pump.

2. Seal: Stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.

G. DISCHARGE HOSE AND SLIDEFACE DISCONNECT/VALVE:

All discharge fittings and piping shall be constructed of 304 Series stainless steel, polypropylene or PVC. The discharge hose assembly shall include a shut-off valve rated for 200 psi WOG and a quick disconnect feature to simplify installation and removal.

H. ELECTRICAL QUICKDISCONNECT:

The grinder pump unit shall include a single NEMA 4X electrical quick disconnect for all power and control functions. An integral tube shall allow venting of the control compartment to assure proper operation of the pressure switch level system.

I. CHECK VALVE:

1. Pump to be equipped with factory installed, gravity operated, flapper type integral check valve built into the discharge pipe, providing full-ported passageway when open and introducing friction loss of less than 6 inches of water at maximum rated flow.

2. Valve Body: High gloss injection molded PVC Type I-II.

3. Working Parts: Series 300 stainless steel and fabric reinforced synthetic elastometer to ensure corrosion resistance, dimensional stability and fatigue strength.

4. A non-metallic hinge: Integral part of flapper assembly providing maximum degrees of freedom for assured seating at a low back pressure.

J. ANTI-SIPHON VALVE:

1. Pump shall be constructed with a positively-primed flooded suction configuration.

2. Pump shall be equipped with integral anti-siphoning, air relief valve in the discharge piping just below the main check valve to provide added assurance that the pump cannot lose prime even under negative pressure conditions in the discharge piping

system. This valve shall automatically close when the pump is running and open to atmosphere when the pump is off.

K. CONTROLS:

1. The primary on/off and alarm functions are to run on independent circuits. The alarm circuit shall also function as a redundant on/off switch in case of on/off switch failure. Control components shall be located inside the top housing of the core unit. The top housing shall be attached with stainless steel tamper proof fasteners. Non-fouling wastewater level detection for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air-bell level sensor connected to a pressure switch. Other types of level detection devices prone to fouling and need periodic maintenance such as mercury floats or conductance probes shall not be acceptable. The level detection device shall have no moving parts in direct contact with the wastewater. High-level sensing will be accomplished in the manner detailed above by a separate air-bell sensor and pressure switch of the same type.

2. Refer to Paragraph 2.01-H for electrical quick disconnect for controls.

3. Each level control to have its own built in fail safe design to prevent the entrance of moisture into the controls in case of switch diaphragm failure.

4. To assure reliable operation of pressure sensitive switches, each core to be equipped with a quick disconnect breather assembly, complete with check valve to prevent accidental entry of water into motor compartment in the event of accessway flooding.

5. The grinder pump shall be furnished with a length of 6 conductor, gauge to meet Massachusetts electric code, length to be site specific, type SJOW cable, pre- wired and watertight with NEMA 6 electrical disconnect to meet UL requirements. There shall be no junction box required in the station.

L. CORROSION PROTECTION:

All materials exposed to wastewater shall have inherent corrosion protection; i.e., HDPE cast iron, stainless steel, or PVC. Any exterior steel surfaces are to be suitably protected against corrosion.

M. SERVICEABILITY:

All mechanical and electrical connections shall provide easy disconnect accessibility for core unit removal and installation. All maintenance tasks for the grinder pump station shall be possible without entry of the grinder pump station (as required by OSHA Permit for required confined spaces). "Entry means the action by which a person passes through an opening into a permit-required confined space. Entry

includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space."

2.02 TANK AND INTEGRAL ACCESSWAY:

A. The tank shall be made of high-density polyethylene of a grade selected for environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. Corrugations of outside wall are to be of a minimum amplitude of 1½-inch to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be a minimum .250-inch thick. All seams created during tank construction are to be thermally welded and factory tested for leak tightness. Tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to maximum external soil and hydrostatic pressure.

B. The access way shall be an integral extension of the tank assembly and include a lockable cover assembly providing low profile mounting and watertight capability. Access way design and construction shall facilitate field adjustment of station height in increments of 4-inches or less without the use of any adhesives or sealants requiring cure time before installation can be completed.

C. The station shall have all necessary penetrations molded in and factory sealed. No field penetrations shall be acceptable.

D. All discharged piping shall be constructed of 304 Series Stainless Steel and terminate outside the access way bulkhead with a stainless steel, 1¼-inch female NPT fitting. The discharge piping shall include a stainless steel ball valve rated for 200 psi WOG. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.

E. The access way shall also include a 2-inch PVC vent to prevent sewage gases from accumulating in the tank.

F. Each unit shall be furnished with one EPDM Grommet to accept a 4.50" outside diameter DMV pipe.

2.03 CONTROL PANELS:

A. The electrical control panels shall be furnished by the grinder pump manufacturer.

B. Each Grinder pump station control panel shall be U.L. listed and shall include a NEMA 3R Thermoplastic enclosure. It shall include circuit breaker(s) and all necessary components to accomplish proper pump and control operation including the following alarm capabilities:

1. When liquid level in sewage tank rises above the alarm level, visual and audio alarms will be activated.

2. Audio alarm may be silenced by means of the externally mounted, push-to-silence button.

3. Visual alarm remains illuminated until sewage in tank returns to normal operating level.

The visual alarm shall be a red fluted lens mounted to the top of the enclosure in such a manner as to maintain rainproof integrity.

The audio alarm shall be capable of being de-activated by depressing a weather proof, push-type switch mounted on the exterior of the enclosure.

C. Control panels shall be furnished with an inner, hinged, dead front panel containing all operator control devices and mechanisms, such as circuit breaker operating handles, manual transfer switch operating handle, push buttons, selector switches, indicating lights, etc. Locks shall be provided for the control panels by the CONTRACTOR.

2.04 REDUNDANT CHECK VALVE:

A. Each grinder pump unit shall include one separate check valve per unit for installation in the discharge line between the grinder pump and the sewer main to ensure maximum protection against backflow in the event of sewer service line break.

B. The valve shall be 1-1/4-inch, gravity operated, flapper- type. The check valve shall provide full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Working parts shall be made of a 300 series stainless steel and fabric reinforced synthetic elastometer to ensure corrosion resistance, dimensional stability and fatigue strength. A non-metallic hinge shall be an integral part of the flapper assembly, providing maximum degrees of freedom for assured seating at a very low backpressure.

C. The valve body shall be a high gloss, injection molded part made of PVC type I-II with hub and socket compatible with 1-1/4-inch PVC solvent weld system. Dimensions for hub and socket shall be in accordance with Commercial Standards C5-272-65.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Installation of the grinder pump and related appurtenances shall be performed in accordance with all written instructions furnished by the manufacturer.

B. After installation, CONTRACTOR shall clean all surfaces damaged in shipment or installation and shall touch-up in the field with the same materials as original coatings.

3.02 INTERFERENCE WITH EXISTINGWORKS:

The CONTRACTOR shall at all times conduct his operations so as to interfere as little as possible with existing works.

3.03 HYDRAULIC UPLIFTS OF STRUCTURES:

The CONTRACTOR shall be responsible for the protection of all structures against hydraulic uplift.

3.04 FIELD ACCEPTANCE TESTS:

A. After installation of the equipment and after completion of the services of the manufacturer's representative, the CONTRACTOR shall operate each unit to demonstrate its ability to pump without excessive vibration, motor overloading, or overheating. Each pump shall be operated for a sufficient period of time to permit thorough observation of all pump components.

B. The Manufacturer's Representative shall be notified in advance of the tests.

C. All defects or defective equipment shall be corrected or replaced promptly at the CONTRACTOR's expense.

D. All final adjustments necessary to place the equipment in satisfactory working order shall be made at the time of the above tests.

E. The CONTRACTOR shall provide water for testing. All labor and materials necessary for the test shall be furnished by the CONTRACTOR.

F. All piping shall be tested for tightness. Should leaks be found, faulty joints shall be repaired, and all defective pipe and fittings shall be removed and replaced in a satisfactory manner.

END OF SECTION

Appendix B.docx

INTRODUCTION

The intention of these Specifications is to set quality standards for the installation of service connection pipelines within the Town of Scituate, Massachusetts. These Specifications are directed toward connections for Residential and Commercial properties and should be used in conjunction with the "Sewer Rules and Regulations in Scituate, Massachusetts" and all other State and Local permits. This is not intended to serve as a contract document or agreement between the said "OWNER" (individual property owner of the connecting lot) and the "CONTRACTOR" (person/company installing the service connection for the connecting lot).

The Specifications and attached details pertaining to the actual pipe installation (i.e. Earthwork, Rock Excavation and Disposal, Precast Manholes, PVC pipe, Tracer Tape) shall act as minimum standards set forth by the Town of Scituate Department of Public Works. These sections must be complied with in order for the service connection to be approved by the Department of Public Works, Sewer Division Supervisor (herein referred to as "SUPERVISOR"). It should be noted that in some instances it may be necessary to use higher standards or stronger materials based on existing conditions. As mentioned in the Specifications, all State standards and requirements, as amended, shall be adhered to.

The Specifications contain sections indirectly related to the pipeline installation (i.e. Paving, Walkway Replacement). These are intended as suggested guidelines. The OWNER and the CONTRACTOR should address these issues in an agreement to clearly define the scope and extent of work to be completed by the CONTRACTOR.

SECTION 02085

POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section covers the furnishing and installation of Polyvinyl Chloride (PVC) pipe and fittings, as indicated on the drawings and as specified herein.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02518, TRACER TAPE

1.03 REFERENCES:

A. The following standards form a part of these specifications as referenced:

American Society for Testing and Materials (ASTM)

ASTM	D2321	Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe
ASTM	D3034	Specification for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings
ASTM	D3212	Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

PART 2 - PRODUCTS

2.01 MATERIALS:

A. PVC nonpressure sewer pipe 4-inches through 15-inches diameter shall conform to ASTM D3034, with SDR of 35 unless noted, and shall meet the specific requirements and exceptions to the aforementioned specifications which follow.

B. PVC nonpressure sewer pipe shall be furnished in standard lengths.

C. One pipe bell consisting of an integral wall section with a solid cross section rubber ring, factory assembled, shall be furnished with each standard, random and short length of pipe. Rubber rings shall be provided to the requirements of ASTM D32l2.

D. The rubber ring shall be retained within the bell of the pipe by a precision formed groove or recess designed to resist fishmouthing or creeping during assembly of joints.

E. Spigot pipe ends shall be supplied with bevels from the manufacturer to ensure proper insertion. Each spigot end shall have an "assembly stripe" imprinted thereon to which the bell end of the mated pipe will extend upon proper jointing of the two pipes.

F. PVC fittings shall be provided with bell and/or spigot configurations with rubber gasketed joints compatible with that of the pipe. Bend fittings with spigot ends shorter than the pipe recess bells will not be allowed. The shorter spigot end would not allow proper seating of the spigot in the mating bell and would permit undesired contact between the mating bell and the outside of the fitting bell.

G. All pipe delivered to the job site shall be accompanied by independent testing laboratory reports certifying that the pipe and fittings conform to the above-mentioned specifications.

H. All cutting of pipe shall be done with a machine suitable for cutting PVC pipe. Cut ends shall be beveled when recommended by the pipe manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Except as modified herein, installation of the PVC pipe shall be in accordance with ASTM D232l.

B. Each pipe length shall be inspected before being laid to verify that it is not cracked. Pipe shall be laid to conform to the lines and grades indicated on the drawings or given by the Engineer. Each pipe shall be so laid as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.

C. The pipe shall be supported by compacted crushed stone. Crushed stone shall be as specified under Section 02300, EARTHWORK.

D. The pipe shall not be driven down to grade by striking it with a shovel handle, timber, rammer, or other unyielding object. When each pipe has been properly bedded, enough of the backfill material shall be placed and compacted between the pipe and the sides of the trench to hold the pipe in correct alignment.

E. Before a joint is made, the pipe shall be checked to assure that a close joint with the next adjoining pipe has been maintained and that inverts are matched and conform to the required line and grade.

F. For pipe placed on crushed stone, immediately after the joint is made, the jointing area shall be filled with suitable materials so placed and compacted that the ends of either pipe will not settle under backfill load.

G. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.

H. Branches and fittings shall be laid by the CONTRACTOR as necessary. Open ends of pipe and branches shall be closed with PVC caps secured in place with premolded gasket joints.

I. All pipe joints shall be made as nearly watertight as practicable. There shall be no visible leakage at the joints and there shall be no sand, silt, clay, or soil of any description entering the pipeline at the joints. Where there is evidence of water or soil entering the pipeline, connecting pipes, or structures, the defects shall be repaired.

J. Care shall be taken to prevent earth, water, and other materials from entering the pipe, and when pipe laying operations are suspended, the CONTRACTOR shall maintain a suitable stopper in the end of the pipe and also at openings for manholes.

K. All connections made between PVC and pipe of any different material shall be made using a suitable connector.

L. The minimum cover distance (from the top of the pipe to the finished grade) shall be maintained at 4 feet for frost protection.

M. The minimum slope allowable for the service connection pipe is 1/4-inch per foot unless otherwise approved by the SUPERVISOR.

N. The sum of the bends shall not exceed 180º. Refer to attached detail for installation standards.

O. Any work that must be performed to the mainline public sewer shall be done under the direction and supervision of the SUPERVISOR. The CONTRACTOR shall submit a description of work to be performed in writing to the SUPERVISOR for review and approval.

END OF SECTION

SECTION 02088

POLYVINYL CHLORIDE PRESSUREPIPE

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section covers the furnishing, handling, hauling, laying, jointing, testing, and disinfecting of all polyvinyl chloride (PVC) pressure pipe, fittings, and appurtenant work as indicated on the drawings and as specified herein.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02518, TRACER TAPE

1.03 QUALITY ASSURANCE:

A. All pipe and fittings shall be inspected and tested at the factory as required by the standard specifications to which the material is manufactured.

1.04 REFERENCES:

A. The following standards form a part of this specification as referenced:

American Society for Testing and Materials (ASTM)

ASTM	D1784	Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds
ASTM	D2241	Specification for Polyvinyl Chloride (PVC) Pressure-Rated Pipe (SDR-Series)
ASTM	D2321	Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe
ASTM	D3139	Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM	F477	Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

PART 2 - PRODUCTS

2.01 PIPE:

A. PVC pressure pipe from 1 1/2-inch through 3-inch shall be designed and manufactured in accordance with ASTM D2241.

B. Unless otherwise indicated or specified, PVC pressure pipe from 1 1/2-inch through 3-inch shall be pressure class 200 (SDR 21).

C. Pipe shall be homogeneous throughout; free from voids, cracks, inclusions, and other defects; as uniform as commercially practicable in color, density, and other physical properties.

D. Pipe surfaces shall be free from nicks, scratches, and other blemishes. The joining surfaces of pipe spigots and of integral-bell and sleeve-reinforced bell sockets shall be free from gouges and other imperfections that might cause leakage at joints.

2.02 JOINTS:

A. Push-on joints for PVC pressure pipe shall conform to ASTM D3139 and F477.

B. Where so indicated, pipe and fittings shall be furnished with approved thrust restraining appurtenances to keep the piping from pulling apart under pressure.

2.03 FITTINGS:

A. PVC fittings shall be used for pipe sizes 1-1/2-inch through 3-inch.

B. Pressure classification of fittings shall be at least equal to that of the pipe with which they are used.

C. Gaskets shall be of a composition suitable for exposure to the liquid within the pipe.

D. Unless otherwise indicated PVC fittings shall have all bell ends conforming to ASTM D3139.

2.04 FLEXIBLE COUPLINGS:

A. To ensure correct fitting of pipe and couplings, all sleeve-type couplings and accessories shall be furnished by the supplier of the pipe and shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed. Sleeve-type couplings shall be made by Dresser Mfg. Div., Bradford, PA; Rockwell International, Pittsburgh, PA; Clow Corporation, Rochester, NY; or be an approved equal.

B. Couplings for buried pipe shall be of cast iron and shall be Dresser Style 38 or 153, Rockwell Type 441, Clow Type F-1208, or approved equal products. Couplings shall be provided with galvanized steel bolts and nuts.

C. All couplings shall be furnished with the pipe stop removed.

D. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

PART 3 - EXECUTION

3.01 INSPECTION BEFORE INSTALLATION:

Pipes and fittings shall be subjected to a careful inspection and a hammer test just before being laid or installed.

3.02 HANDLING AND CUTTING:

A. Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe, and scratching or marring surfaces.

B. Any fitting or pipe showing a crack or which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work site.

C. In any pipe showing a distinct crack and in which it is believed there is no incipient fracture beyond the limits of the visible crack, the cracked portions, if so approved, may be cut off by and at the expense of the CONTRACTOR before the pipe is laid so that the pipe used will be perfectly sound. The cut shall be made in the sound barrel at a point at least 12 inches from the visible limits of the crack.

D. All cutting of pipe shall be done with a machine suitable for cutting PVC pipes. Cut ends shall be beveled when recommended by the pipe manufacturer.

3.03 INSTALLATION:

A. PIPE AND FITTINGS:

1. No defective pipe or fittings shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.

2. Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.

3. Pipe and fittings shall be laid accurately to the lines and grades indicated on the drawings or as required. Care shall be taken to ensure good alignment both horizontally and vertically.

4. In buried pipelines, each pipe shall have firm bearing along its entire length.

5. Alignment deflection at each joint shall not exceed the permissible deflection specified in the following table measured at 20 foot pipe lengths. Maximum permissible deflections for other pipe lengths shall be in proportion to such lengths.

Pipe Deflection Allowances

(From Tables 33 and 34 of UNI-BELL Handbook of PVC Pipe Design and Construction)

Maximum permissible deflection, inches

Size of Pipe (inches)	Push-on-Joint
1-1/2	73
2	56
2 ½	50
3	42
4	24
6	17
8	12
10	11
12	9

Permissible alignment deflection shall not be achieved by using mechanical means, but shall be accomplished manually by application of uniform forces along the pipe length.

6. Pipe shall be installed underground in a manner that will ensure that external loads will not subsequently cause a decrease of more than 5 percent in the vertical cross-section dimension (deflection). When installing the pipes, they shall be rotated 180 degrees so that the upper quadrant of the pipe, which was exposed to direct sunlight, will not be backfilled upon.

7. At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary water-tight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

8. The minimum cover distance (from the top of the pipe to finished grade) shall be maintained at 5 feet for frost protection.

END OF SECTION

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SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.01 WORK INCLUDED:

The CONTRACTOR shall make excavations of normal depth in earth for trenches and structures, shall backfill such excavations to the extent necessary, and shall make miscellaneous earth excavations and do miscellaneous grading.

1.02 RELATED WORK:

A. Section 02230, CLEARING AND GRUBBING

B. Section 02324, ROCK EXCAVATION AND DISPOSAL

C. Section 02745, PAVING

1.03 SYSTEM DESCRIPTION:

A. The program of excavation shall be carried out in such manner as to prevent undermining or disturbing the foundations or floors of existing structures.

B. The CONTRACTOR shall make excavations in such manner and to such width as will give suitable room for laying and jointing the piping and shall render the bottoms of the excavations firm and dry and acceptable in all respects.

C. If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled with thoroughly compacted gravel borrow.

1.04 REFERENCES:

American Society for Testing and Materials (ASTM)

ASTM D1556 Test Method for Density of Soil in Place by the Sand Cone Method.

ASTM D1557 Test Methods for Moisture-density Relations of Soils and Soil Aggregate Mixtures Using Ten-pound (10 Lb.) Hammer and Eighteen-inch (18") Drop.

ASTM D2922 Test Methods for Density of Soil and Soil-aggregate in Place by Nuclear Methods (Shallow Depth).

Commonwealth of Massachusetts Highway Department Standard Specification for Highways and Bridges.

1.05 PROTECTION OF EXISTING PROPERTY:

A. The work shall be executed in such manner as to prevent any damage to facilities at the site and adjacent property and existing improvements, such as but not limited to streets, curbs, paving, service utility lines, structures, monuments, bench marks, observation wells, and other public or private property. Protect existing improvements from damage caused by settlement, lateral movements, undermining, washout and other hazards created by earthwork operations.

B. In case of any damage or injury caused in the performance of the work, the CONTRACTOR shall, at its own expense, make good such damage or injury to the satisfaction of, and without cost to, the OWNER. Existing roads, sidewalks, and curbs damaged during the project work shall be repaired or replaced to at least the condition that existed at the start of operations. The CONTRACTOR shall replace, at his own cost, existing benchmarks, observation wells, monuments, and other reference points, which are disturbed or destroyed.

C. Buried drainage structures and pipes, observation wells and piezometers, including those which project less than eighteen inches (18") above grade, which are subject to damage from construction equipment shall be clearly marked to indicate the hazard. Markers shall indicate limits of danger areas, by means which will be clearly visible to operators of trucks and other construction equipment, and shall be maintained at all times until completion of project.

1.06 DRAINAGE:

A. The CONTRACTOR shall provide, at its own expense, adequate drainage facilities to complete all work items in an acceptable manner. Drainage shall be done in a manner so that runoff will not adversely affect construction procedures nor cause excessive disturbance of underlying natural ground or abutting properties.

1.07 FROST PROTECTION AND SNOW REMOVAL:

A. The CONTRACTOR shall, at its own expense, keep earthwork operations clear and free of accumulations of snow as required to carry out the work.

B. The CONTRACTOR shall protect the subgrade beneath new structures and pipes from frost penetration when freezing temperatures are expected.

PART 2 - PRODUCTS

2.01 MATERIAL:

A. GRAVEL BORROW:

Gravel borrow shall consist of sound, durable sand and gravel, essentially free of organic matter, plastic fines (clay), and debris, and shall meet the gradation requirements below:

Sieve Opening	Percent Passing (weight)
3 inches	100
1/2 inch	50-85
No. 4	40-75
No. 40	10-45
No. 200	0-8

B. CRUSHED STONE:

Crushed stone shall consist of sound, hard, durable, angular fragments of crushed rock. Crushed stone shall not contain vegetation, masses of roots, loam and other organic matter, clay, and other fine or harmful substances. It shall be well graded and shall meet the gradation requirements listed below:

Sieve Opening	Percent Passing (weight)
1 inch	100
3/4 inch	90-100
3/8 inch	20-55
No. 4	0-10
No. 8	0-5

C. BACKFILL MATERIALS:

Backfill materials shall consist of granular soil. Materials shall be of such a nature that they will form a stable, dense fill. Materials shall not contain vegetation, masses of roots, individual roots more than 12-inches long or more than ½-inch in diameter, trash, clays, or plastic fines. Organic matter shall not exceed two percent (2%). Nonplastic fines(silts)

shall not exceed 20 percent (20%). Backfill materials are subdivided according to the maximum allowable size of stone or blacktop piece as follows:

Type	Largest Stone Diameter
1. Select Backfill	3-inches
2. Class B Backfill	6-inches
3. Class C Backfill	12 inches

PART 3 - EXECUTION

3.01 PROTECTION AND RESTORATION OF PROPERTY:

A. All existing buildings, utilities, pipes, poles, wires, fences, curbings, property line markers and other structures which the OWNER decides must be preserved in place without being temporarily or permanently relocated shall be carefully supported and protected from injury by the CONTRACTOR. Should such items be injured, they shall be restored by the CONTRACTOR to at least as good condition as that in which they were found immediately before the work was begun.

B. The CONTRACTOR shall enclose the trunks of trees, which are adjacent to this work and not to be removed, with substantial wooden boxes of such height as may be necessary to protect them from injury from piled material, from equipment, from his operations, or otherwise due to his work. Excavating machinery shall be of suitable type and be operated with care to prevent injury to trees not to be removed and particularly to overhanging branches and limbs.

C. Branches, limbs, and roots shall not be cut except by permission of the OWNER. All cutting shall be smoothly and neatly done without splitting or crushing. When there is cutting or unavoidable injury to branches, limbs, and trunks of trees, the cut or injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.

D. Cultivating hedges, shrubs, and plants which might be injured by the CONTRACTOR's operations shall be protected by suitable means or dug up if necessary. After the construction operations have been substantially completed, they shall be replanted.

E. No significant plantings or permanent structures shall be placed within 10 feet of either side of the pipeline.

F. On paved surfaces the CONTRACTOR shall not use or operate tractors, bulldozers, or other power-operated equipment the treads or wheels of which are so shaped as to cut or otherwise injure such surfaces.

G. All property injured by the CONTRACTOR's operations shall be restored to a condition at least equal to that in which it was found immediately before work was begun. Suitable materials and methods shall be used for such restoration.

H. Restoration of existing property and structures shall be done as promptly as practicable.

3.02 EXCAVATION:

A. TRENCH EXCAVATION:

1. Trenches in pavement shall have the surface cut in a straight line by a concrete saw or equivalent method to the full depth of pavement. Excavation shall only be between these lines. Cutting operations shall not be done by backhoe, gradall, or other ripping equipment.

2. Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes, or depths of cover necessary.

3. Where pipe is to be laid in crushed stone bedding, the trench may be excavated by machinery to, or to just below the designated depth, provided that the material remaining at the bottom of the trench remains undisturbed.

4. Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

5. Trenches shall be excavated with vertical sides between the elevation of the center of the pipe and elevation one foot above the top of the pipe.

3.03 BACKFILLING AND COMPACTION:

A. GENERAL:

1. In general, material removed in the course of making the construction excavation shall be suitable material for backfilling trenches.

2. Class C Backfill available from the excavations may be used for filling and building embankments.

3. If the material removed from the excavation is suitable for backfill with the exception that is contains stone or pavement sections having a maximum allowable size larger than that specified, the CONTRACTOR has the option to remove the oversized materials from the backfill or provide replacement backfill.

4. Frozen material shall not be placed in the backfill nor shall backfill be placed upon frozen material. Frozen material shall be removed or shall be otherwise treated as required, before backfill is placed.

5. After the subgrade has been prepared as specified, the fill material shall be placed and built up in successive layers until the required elevation is reached.

6. Layers of fill shall not exceed 12 inches in thickness (loose). Thinner layers shall be used if necessary to achieve the required compaction.

7. Each layer of material shall be compacted by the use of vibratory compaction equipment or rollers or other means to achieve the required compaction. At such points as cannot be reached by mobile mechanical equipment, the materials shall be thoroughly compacted by the use of suitable power-driven tampers.

8. All backfill shall be compacted to at least the specified percent of maximum density as determined by ASTM D1557, Method C.

9. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when too great an application of water, to compact it properly; at such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction. The CONTRACTOR shall provide all labor and equipment to adjust the water content of the soil by wetting or drying as may be necessary to obtain proper compaction.

10. WATER JETTING:

    a. If the backfill is to be compacted by water jetting, the entire layer shall be thoroughly saturated throughout its full depth across and along the trench until all slumping ceases. To accomplish this the CONTRACTOR shall furnish one or more jet pipes, each of sufficient length to reach to the specified depth and of sufficient diameter (not less than 2 inches) to supply an adequate flow of water to compact the material. The jet pipe shall be equipped with a quick-acting valve and be supplied through a fire hose or a pump having adequate pressure and capacity.

    b. In general, water jetting may be used whenever the backfill material does not contain more than 10 percent passing the 200 sieve.

    c. If water jetting does not adequately compact the backfill, mechanical compaction shall be used.

11. COMPACTION REQUIREMENTS:

a. The requirements for compaction of backfill shall conform to the following guidelines based on ASTM D1557 Method C:

Location	Percent Maximum Density
Below pipe centerline	95
Above pipe centerline	92
Below pavement (upper 3 ft.)	95
Below pipe in embankments	95
Adjacent to structure	92

B. PIPE TRENCHES:

1. No backfilling of excavation shall take place until the SUPERVISOR has inspected and approved the service connection pipe.

2. Select backfill shall be placed with hand shovels in 6-inch lifts up to a level of 12-inches above the top of pipe. This area of backfill is considered the zone around pipe and shall be thoroughly compacted before the remainder of the trench is backfilled. Compaction of each lift in the zone around pipe shall be done by use of power-driven tampers weighting at least 20 pounds or by vibratory compactors. Care shall be taken that material close to the bank, as well as in all other portions of the trench, is thoroughly compacted to densities required.

3. Class B backfill shall be placed from the top of the select backfill to grade. Compaction of backfill in the remainder of the trench shall be done in layers not exceeding 12 inches in depth and by use of power driven tampers weighing at least 20 pounds or by vibratory plate compactors weighing at least 200 pounds and imparting a dynamic force of at least 2000 pounds.

4. If settlement takes place, the CONTRACTOR shall immediately deposit additional material to restore the level of the ground.

5. If existing material below trench grade is unsuitable for properly laying pipe, the CONTRACTOR shall excavate, remove and dispose of the unsuitable material to the required width and depth and replace it with gravel borrow.

END OF SECTION

SECTION 02324

ROCK EXCAVATION AND DISPOSAL

PART 1 - GENERAL

1.01 WORK INCLUDED:

The CONTRACTOR shall excavate rock, if encountered, to the lines and grades indicated on the drawings or as directed, shall dispose of the excavated material, and shall furnish the required material as specified in Section 02300 EARTHWORK for backfill in place of the excavated rock.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

1.03 DEFINITIONS:

A. The word "rock," wherever used as the name of the excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding one cubic yard* in volume, or solid ledge rock which, requires for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed by normal earth excavation methods, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed as "rock."

B. The word "earth," wherever used as the name of an excavated material, or material to be excavated shall mean all kinds of material other than rock as above defined.

1.04 QUALITY ASSURANCE:

A. The CONTRACTOR shall conform to all municipal ordinances and state and federal laws relating to the transportation, storage, handling, and use of explosives. In the event that any of the above mentioned laws, ordinances, or regulations require a licensed blaster to perform or supervise the work of blasting, said licensed blaster shall, at all times, have his license on the work site and shall permit examination thereof by other officials having jurisdiction.

B. The CONTRACTOR shall procure all permits required for blasting.

1.05 DELIVERY/STORAGE AND HANDLING:

Delivery, storage and handling of explosives shall conform to all federal, state and local regulations and permits.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.01 EXCAVATION:

A. The CONTRACTOR shall excavate rock to the lines and grades required to lay the pipe. The excavated rock shall be removed and disposed of by the CONTRACTOR as specified for surplus excavated materials under Section 02300, EARTHWORK.

This specification does not relieve the CONTRACTOR, his consultant, or his blasting subcontractor, of the responsibility to conduct the blasting activities in a safe and prudent manner, nor of the responsibility to perform the blasting activity in a timely and efficient manner.

The CONTRACTOR shall be held liable for all claims resulting from personal injury or damage to property or equipment that may result from his or his subcontractor's blasting operations. Work damaged by blasting shall be repaired and replaced by the CONTRACTOR.

B. All operations involving explosives shall be conducted with all possible care to avoid injury to persons and property. Blasting shall be done only with such quantities and strengths of explosives and in such a manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an unshattered condition. Care shall be taken to avoid excessive cracking of the rock upon or against which any structure will be built, and to prevent injury to existing pipes or other structures and property above or below ground. The CONTRACTOR shall use blasting mats for all blasts unless at least 5 feet of soil covers all sections of rock involved in the blast, including the relieved face. Sufficient warning shall be given to all persons in the vicinity of the work before a charge is exploded.

C. All state and local regulations governing air blast levels and monitoring shall be complied with.

D. If rock is excavated beyond the limits of necessary trench excavation, the excess excavation, whether resulting from over breakage or other causes, shall be backfilled, by the CONTRACTOR, as specified below in this section.

E. In pipe trenches, excess excavation shall be filled with the required material and compacted in the same manner as specified for the material in the zone around the pipe under Section 02300 EARTHWORK.

F. Rock in pipe trenches shall be excavated so as to be not less than 6 inches from the pipe after it has been laid. Before the pipe is laid, the trench shall be backfilled to the subgrade with thoroughly compacted suitable material, furnished and placed by the CONTRACTOR.

G. For all excavations in rock, the CONTRACTOR shall thoroughly inspect all excavation faces and remove loose or unstable pieces of rock before workers enter the excavation for construction. The CONTRACTOR shall also examine the excavation faces to identify potentially unstable blocks of rock. Such potentially unstable blocks which cannot be reasonably removed shall be temporarily supported.

END OF SECTION

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SECTION 02518
TRACER TAPE

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section covers the furnishing, handling and installation of tracer tape to be installed on all service connections.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

Tracer tape shall be by Lineguard, Inc., Wheaton, IL; Empire Level, Waukesha, WI; Pro-Line Safety Products Co., W. Chicago, IL; or approved equal.

2.02 TRACER TAPE:

A. Tracer tape shall be at least 3-inches wide.

B. Tracer tape for non-ferrous pipe or conduit shall be constructed of a metallic core bonded to plastic layers. The metallic tracer tape shall be a minimum 5-mil thick and must be locatable at a depth of 18 inches with ordinary pipe locaters.

C. Tracer tape for ferrous pipe or conduit shall consist of multiple bonded plastic layers. The non-metallic tracer tape shall elongate at least 500% before breaking.

D. The tape shall bear the wording: "BURIED SEWER LINE BELOW", continuously repeated every 30 inches to identify the pipe.

E. Tape color shall be green, as recommended by the American Public Works Association (APWA).

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Tracer tape shall be installed directly above the pipe or conduit it is to identify, approximately 12 inches below the proposed ground surface.

B. The CONTRACTOR shall follow the manufacturer's recommendations for installation of the tape.

END OF SECTION

SECTION 02530

BUILDING CONNECTIONS

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers furnishing of all materials and labor to construct building sewer connections and drop connections as herein specified.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02324, ROCK EXCAVATION AND DISPOSAL

C. Section 02085, POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS

D. Section 02088, POLYVINYL CHLORIDE PRESSURE PIPE

E. Section 02518, TRACER TAPE

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Pipe and fittings for gravity building connections shall be as specified under Section 02085 POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS. Pipe and fittings for pressure building connections shall be as specified under Section 02088 POLYVINYL CHOLORIDE PRESSURE PIPE. Adaptors shall be as recommended by the pipe manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Building connections shall be installed using the same construction and pipe joining techniques as specified in Section 02085 POLYVINYL CHLORIDE GRAVITY PIPE AND FITTINGS and in Section 02088 POLYVINYL CHLORIDE PRESSURE PIPE.

B. The minimum cover over gravity building connections shall be four (4) feet and over pressure building connections shall be 5 feet, however, more cover may be necessary where building sewers cross beneath water mains or other pipes and to ensure that buildings can receive full basement service.

C. Each gravity building connection shall include the installation of a viewing port for future inspection purposes, to be located at the property line.

END OF SECTION

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SECTION 02631

PRECAST MANHOLES

PART 1 - GENERAL

1.01 WORK INCLUDED:

This Section covers all precast manholes complete, including, but not limited to, bases, walls, cones, mortar, inverts, frames and covers.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. Section 02745, PAVING

1.03 SYSTEM DESCRIPTION:

A. Precast sections shall conform in shape, size, dimensions, materials, and other respects to the attached details.

B. All manholes shall have concrete bases. Concrete bases shall be precast unless otherwise specified. Invert channels shall be formed of brick and mortar upon the base.

C. Riser and cone sections shall be precast concrete.

1.04 REFERENCES:

A. The following standards form a part of this specification as referenced:

American Society for Testing and Materials (ASTM)

ASTM A48	Gray Iron Castings
ASTM C32	Sewer and Manhole Brick
ASTM C144	Aggregate for Masonry Mortar
ASTM C207	Hydrated Lime for Masonry Purposes
ASTM C478	Precast Reinforced Concrete Manhole Sections
ASTM C923	Specification for Resilient Connectors Between Reinforced

Concrete Manhole Structures and Pipes

ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M198Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets

Occupational Safety and Health Administration

OSHA 29 CFR 1910.27 Fall Prevention Protection

PART 2 - PRODUCTS

2.01 PRECAST CONCRETE SECTIONS:

A. All precast concrete sections shall conform to ASTM C478 with the following exceptions and additional requirements:

1. The wall thickness of precast sections shall be as designated on the enclosed detail, meeting the following minimum requirements:

Section Diameter (Inches)	Minimum Wall Thickness (Inches)
48	5

2. Type II cement shall be used except as otherwise approved.

3. Sections shall be steam cured and shall not be shipped until at least five days after having been cast.

4. Minimum compressive strength of concrete shall be 4000 psi at 28 days.

5. No more than two lift holes may be cast or drilled in each section.

6. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each precast section.

7. Acceptance of the sections will be on the basis of material tests and inspection of the completed product.

8. Circumferential steel reinforcement in walls and bases shall be a minimum of 0.12 sq. in./lin. ft. for 4-foot diameter sections and 0.15 sq. in./lin. ft. for 5- and 6-foot diameter sections. Reinforcing shall extend into tongue and groove.

B. Conical reducing sections, if required, shall have a wall thickness not less than 5-inches at the bottom and wall thickness of 8-inches at the top. Conical sections shall taper from a minimum of 48-inches diameter to 24 or 30-inches diameter at the top.

C. Except where insufficient depth of cover dictates the use of a shorter base, bases shall be a minimum of 4 feet in height.

D. The tops of the bases shall be suitably shaped by means of accurate ring forms to receive the riser sections.

E. Precast sections shall be manufactured to contain wall openings of the minimum size to receive the ends of the pipes, such openings being accurately set to conform with line and grade of the sewer. Subsequent cutting or tampering in the field, for the purpose of creating new openings or altering existing openings, will not be permitted except as directed by the Engineer.

F. The exterior surfaces of all precast manhole bases, walls, and cones shall be given a minimum of one shop coat of bituminous damp proofing.

2.02 BRICK MATERIALS:

A. Brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture. Bricks shall comply with ASTM C32, for Grade SS, hard brick, except that the mean of five tests for absorption shall not exceed 8 percent by weight.

B. Mortar shall be composed of Portland cement, hydrated lime, and sand in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime. The proportions of cement and lime shall be as directed and may vary from l:l/4 for dense hard-burned brick to l:3/4 for softer brick. In general, mortar for Grade SS Brick shall be mixed in the volume proportions of 1:1/2:4-1/2; Portland cement to hydrated lime to sand.

C. Cement shall be Type II Portland cement as specified for concrete masonry.

D. Hydrated lime shall be Type S conforming to ASTM C207.

E. The sand shall comply with ASTM C144 specifications for "Fine Aggregate," except that all of the sand shall pass a No. 8 sieve.

2.03 FRAMES, COVERS AND STEPS:

A. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sand holes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of covers and frame seats shall be machined to prevent rocking of covers.

B. All castings shall be thoroughly cleaned and may be subject to a careful hammer inspection.

C. Castings shall be ASTM A48 Class 30B or better.

D. The surface of the manhole covers shall have a diamond pattern with the cast word "SEWER".

E. Manhole frames with 26-inch covers for 24-inch openings shall be 475 pounds minimum by E.L. LeBaron Foundry Co., No. LKll0; Neenah Foundry Co. R1720; Quality Water Products, Style 40; or approved equal.

F. Watertight type manhole frames with 26-inch diameter covers (bolted and gasketed) shall be 4 bolt, 475 pounds minimum, and shall be E.L. LeBaron Foundry Co. No. LBB268; Mechanics Iron Foundry Type A2073; Quality Water Products, Style 40WT; or approved equal.

G. Frostproof manhole frames, with covers and inner lids shall be R-1758 series by Neenah Foundry Co., Neenah, WI; LBF series by E.L. LeBaron Foundry Co., Brockton, MA; B-3045 (or similar) by Mechanics Iron Foundry, Boston, MA; or approved equal.

H. 2-inch thick polystyrene insulation shall be firmly adhered to all frost proof inner lids.

I. Manhole steps shall conform to ASTM C478 requirements and shall be fabricated of either extruded aluminum or steel reinforced plastic. Steps shall be uniformly spaced at a maximum of 12-inches unless otherwise shown on the drawings.

2.04 SEWER MANHOLE ACCESSORIES:

A. Gasket materials shall be top grade (100% solids, vulcanized) butyl rubber and shall meet or exceed AASHTO M-198.

B. Couplings at the manhole-pipe interface shall be made with a rubber seal system (with or without stainless steel straps) meeting the requirements of ASTM C923 and recommended for this type of connection.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. PRECAST SECTIONS:

1. Precast bases shall be supported on a compacted level foundation of crushed stone, as specified in Section 02300 EARTHWORK, at least 6-inches thick, but shall vary to the depth necessary to reach sound undisturbed earth.

2. Precast reinforced concrete sections shall be set vertical and with sections in true alignment.

3. Butyl rubber joint sealant shall be installed between each concrete section.

4. All holes in sections used for handling the sections shall be thoroughly plugged with mortar. Mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

B. BRICK WORK:

1. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

2. Each brick shall be laid as a header in a full bed and joint of mortar without requiring subsequent grouting, flushing or filling, and shall be thoroughly bonded.

3. The brick inverts shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent to the centerlines of adjoining pipe.

C. CASTINGS:

1. Cast iron frames and covers shall be as specified. The frames and covers shall be set by the CONTRACTOR to conform accurately to the grade of the finished grade or existing ground surface.

2. Cast iron manhole frames and covers not located in paved areas shall be set 6-inches above finished grade. The top of the cone shall be built up with a minimum of 1 course and a maximum of 5 courses of brick and mortar used as headers for adjustment to final grade.

3. Frames shall be set concentric with the top of the concrete section and in a full bed of mortar so that the space between the top of the concrete section or brick headers and

the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the concrete shall be placed all around the bottom flange. The mortar shall be smoothly finished to be flush with the top of the flange and have a slight slope to shed water away from the frame.

4. Covers shall be left in place in the frames, for safety reasons, except while work is being performed.

D. ACCESSORIES:

1. Accessories shall be installed in accordance with manufacturer's instructions.

3.02 LEAKAGE TESTS:

A. Leakage tests shall be made by the CONTRACTOR and observed by the SUPERVISOR on each manhole. The test shall be by vacuum or by water exfiltration as described below:

B. VACUUM TEST:

1. The vacuum test shall be conducted in accordance with ASTM C1244. Test results will be judged by the length of time it takes for the applied vacuum to drop from 10 inches of mercury to 9 inches. If the time is less than that listed in Table 1 of ASTM C1244, the manhole will have failed the test. Test times from Table 1 are excerpted below.

TABLE 1

Minimum Test Times for Various Manhole Diameters

	Diameter (Inches)		
Depth (Feet)	48	60	72
		Times (Seconds)	
0-12	30	39	49
12-16	40	52	67
16-20	50	65	81

2. If the manhole fails the initial test, the CONTRACTOR shall locate the leaks and make proper repairs. Leaks may be filled with a wet slurry of accepted quick setting material. If the manhole should again fail the vacuum test, additional repairs shall be made, and the manhole water tested as specified below.

C. WATER EXFILTRATION TEST:

1. After the manhole has been assembled in place, all lifting holes shall be filled and pointed with an approved non-shrinking mortar. All pipes and other openings into the manhole shall be suitably plugged and the plugs braced to prevent blow out. The test shall be made prior to placing the shelf and invert. If the groundwater table has been allowed to rise above the bottom of the manhole, it shall be lowered for the duration of the test.

2. The manhole shall be filled with water to the top of the cone section. If the excavation has not been backfilled and observation indicates no visible leakage, that is, no water visibly moving down the surface of the manhole, the manhole may be considered to be satisfactorily water-tight. If the test, as described above, is unsatisfactory or if the manhole excavation has been backfilled, the test shall be continued. A period of time may be permitted if the CONTRACTOR so wishes, to allow for absorption by the manhole. At the end of this period, the manhole shall be refilled to the top of the cone, if necessary, and a measuring time of at least 8 hours begun. At the end of the test period, the manhole shall be refilled to the top of the cone, measuring the volume of water added. This amount shall be extrapolated to a 24-hour loss rate and the leakage determined on the basis of depth. The leakage for each manhole shall not exceed one gallon per vertical foot for a 24-hour period. If the manhole fails this requirement, but the leakage does not exceed 3 gallons per vertical foot per day, repairs by approved methods may be made to bring the leakage within the allowable rate of one gallon per foot per day. Leakage due to a defective section or joint or exceeding the 3-gallon per vertical foot per day, shall be cause for rejection of the manhole. It shall be the CONTRACTOR's responsibility to uncover the rejected manhole as necessary and to disassemble, reconstruct or replace it. The manhole shall then be retested and, if satisfactory, interior joints shall be filled and pointed.

3. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorption, etc. It shall be assumed that all loss of water during the test is a result of leaks through joints or through the concrete. Furthermore, the CONTRACTOR shall take any steps necessary to assure that the water table is below the bottom of the manhole throughout the test.

4. If the groundwater table is above the highest joint in the manhole, and there is no leakage into the manhole, such a test can serve to evaluate water-tightness of the manhole. However, if the SUPERVISOR is not satisfied with the results, the CONTRACTOR shall lower the water table and carry out the test as described hereinbefore.

3.03 CLEANING:

All new manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION

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SECTION 02745

PAVING

PART 1 - GENERAL

1.01 WORK INCLUDED:

The CONTRACTOR shall furnish all labor, materials and equipment and shall replace the pavements "in kind" or as herein specified.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

1.03 REFERENCES

The following standards form a part of these specifications and indicate the minimum standards required:

American Society for Testing and Materials (ASTM)

ASTM D1557	Test for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 Pound Rammer and 18-Inch Drop

Commonwealth of Massachusetts Highway Department
Standard Specification for Highway and Bridges (MHD)

MHD 405	Gravel Base Course
MHD 420	Class I Bituminous Concrete Base Course, Type I-1
MHD 460	Class I Bituminous Concrete Pavement
MHD 476	Cement Concrete Pavement
MHD 860	Reflectorized Pavement Markings

Federal Specifications

SS-S-164	Sealing Compound, Hot Poured Type, for Joints in Concrete
SS-S-1401C	Sealants, Joint, Non-Jet-Fuel-Resistant, Hot Applied, for Portland Cement and Asphalt Concrete Pavement

PART 2 - PRODUCTS

2.01 GRAVEL SUBBASE:

A. Gravel sub base shall consist of inert material that is hard durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials.

B. Gradation requirements for gravel sub base shall be as specified in Section 02300, EARTHWORK for Gravel Borrow.

2.02 BITUMINOUS CONCRETE PAVEMENT:

A. Bituminous concrete pavements shall consist of Class I Bituminous Concrete, Type I-1.

B. Bituminous concrete mixtures shall be within the composition limits of base courses, binder courses, top courses and surface treatment, in accordance with MHD M3.11.03.

C. The joint sealant shall be a hot poured rubberized emulsified asphalt sealant meeting the requirements of Federal Specifications SS-S-1401 or SS-S-164.

D. The tack coat shall be an asphalt emulsion, RS-1 if required, conforming to MHD Section M3.03.0.

2.03 SEAL COAT:

A. Seal coats shall be within the composition limits for protective seal coat emulsion in accordance with MHD M3.03.3.

B. Silica sand when blended with seal coat emulsion shall be No. 30 silica sand.

PART 3 - EXECUTION

3.01 GENERAL:

A. Paving of parking lots and driveways shall consist of installation of the gravel subbase, the binder course, and the top course.

3.02 GRAVEL SUBBASE:

A. The gravel sub base to be placed under pavement shall consist of 12-inches of gravel evenly spread and thoroughly compacted.

B. The gravel shall be spread in layers not more than 4-inches thick, compacted measure. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by ASTM D1557 Method C at optimum moisture content.

3.03 BINDER COURSE PAVEMENT:

A. Immediately prior to installing the binder course, the trimmed edges shall be made stable and unyielding, free of loose or broken pieces and all edges shall be thoroughly broomed clean. Contact surfaces of trench sides, curbings, manholes, catch basins, or other appurtenant structures in the pavement shall be painted thoroughly with a uniform coating of asphalt emulsion (tack coat), just before any mixture is placed against them.

B. The binder course bituminous concrete mixtures shall be within the composition limits of binder courses in accordance with MDPW M3.11.03. The binder course shall be placed only between edges of the existing pavement.

C. The binder course pavement shall be 2 compacted inches thick.

D. The binder course shall be repaired as necessary to maintain the surface of the pavement until placement of the permanent overlay. If required, the CONTRACTOR shall place a leveling course before placing the permanent overlay.

3.04. TOP COURSE OR SURFACE TREATMENT PAVEMENT:

A. The top course or surface treatment shall be placed over the trench as specified.

B. The top course pavement shall be 1-1/2 compacted inches thick.

C. Prior to placement of the top course, the entire surface over which the top course is to be placed shall be broom cleaned and tack coated.

E. D. Top course pavement placed over trenches shall be feathered to meet existing paved surfaces.

3.05 GENERAL:

A. Adjacent concrete work, slate work, sidewalks, structures, etc., shall be protected from stain and damage during the entire operation. Damaged or stained areas shall be replaced or repaired to equal their original condition.

B. All joints between binder and top course or surface treatment shall be staggered a minimum of 6-inches.

C. After final rolling, no vehicular traffic of any kind shall be permitted on the pavement until it has cooled and hardened, and in no case in less than 6 hours.

D. Smoothness of all areas of the finished surface shall not vary more than ¼-inch when tested with a 16 foot straight-edge, applied both parallel to and at right angles to the centerline of the paved area. At building entrances, curbs, and other locations where an essentially flush transition is required, pavement elevation tolerance shall not exceed plus or minus 1/8-

inch. Irregularities exceeding these amounts, or which retain water on the surface, shall be corrected by removing the defective work and replacing or repairing it.

E. When seal coating is required, the surface area to be seal coated shall be swept and air cleaned. The first coat shall be applied with eight (8) pounds of #30 silica sand blended with each gallon of emulsion applied at a rate of 0.15 gallons per square yard. The second coat shall be a straight sealer applied at the rate of 0.1 gallons per square yard.

END OF SECTION

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SECTION 02775

WALKWAY REPLACEMENT

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. Where replacement of concrete walks is required, the CONTRACTOR shall construct either bituminous concrete walks or cement concrete walks, as determined in the field, to the required lines and grades and in accordance with these specifications.

B. If applicable, the CONTRACTOR shall restore gravel walks to a condition at least equal to that existing immediately before the work was started.

C. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals required to construct new walks where existing walks are disturbed by the CONTRACTOR. This work shall include placement of all concrete, reinforcing steel, forms, and joint filler required to replace existing concrete walks and ramps.

1.02 RELATED WORK:

A. Section 02300, EARTHWORK

B. For driveways, see Section 02575, PAVING

PART 2 – PRODUCTS (see Part 3 – Execution)

PART 3 – EXECUTION:

3.01 BITUMINOUS CONCRETE WALKS:

A. Except as otherwise specified, construction of the bituminous concrete walks shall be in accordance with the Standard Specifications for Highways and Bridges of the Department of Public Works of the Commonwealth of Massachusetts, dated 1973, and all amendments thereto.

B. The subgrade for the bituminous concrete walks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly rolled and tamped. All depressions occurring shall be filled with suitable material and again rolled or tamped until the surface is smooth and hard in order for a gravel foundation to be placed upon it.

C. The CONTRACTOR shall use a 1-1/2-inch thick binder course with 3/4–inch maximum size stone and a 1-inch thick wearing course with 3/8-inch maximum size stone.

3.02 CEMENT CONCRETE WALKS:

A. In general, concrete for one-course walks shall be 4 inches thick.

B. The subgrade for the walk or driveway shall be shaped to a true surface conforming to the proposed slope of the walk, thoroughly rolled at optimum moisture content, and tamped with a power roller weighing not less than one ton and not more than 5 tons. All depressions occurring shall be filled with suitable material and again rolled or tamped until the surface is smooth and hard.

C. After the subgrade has been prepared as hereinbefore specified, a subbase of gravel at optimum moisture content shall be placed, thoroughly rolled by a power roller, and tamped. For walks, the gravel shall be a minimum of 8 inches in thickness and 4 inches below and parallel to the proposed finished surface.

D. The forms for one-course walks shall be smooth, free from warp, strong enough to resist springing out of shape, and deep enough to conform to the thickness of the proposed walk. All mortar or dirt shall be completely removed from forms that have been previously used. The forms shall be well staked, thoroughly braced, and set to the established lines with their upper edge conforming to the grade of the finished walk. The finished walk shall have sufficient pitch from the outside to the edge of the walk to provide for surface drainage. This pitch shall be 3/8 of an inch per foot. Before the concrete is placed, the subbase for one-course walks shall be thoroughly dampened until it is moist throughout but without puddles of water.

E. The concrete shall be conveyed from the place of mixing to the place of deposit in such a manner that no mortar will be lost, the composition of the mix shall be uniform, showing neither excess nor lack of mortar in any one place. The consistency shall be such that water will float to the surface under heavy tamping. The concrete shall be placed as close to its final position as practicable and thoroughly consolidated, with precautions taken not to overwork it while it is still plastic. The concrete shall be thoroughly spaded along the forms or screeds to eliminate voids and honeycombs at the edges. Retempering of concrete will not be permitted.

F. Finishing of the concrete surface shall be done by experienced and competent cement finishers as soon as is practicable. Finishing shall not be delayed until all bled water and water sheen has left the surface and the concrete has begun to stiffen. The concrete surface shall be finished as directed with a steel trowel or wood float to give a smooth, uniform and attractive surface finish and uniformly scored into block units or areas of not more than 36 square feet. Following this, the CONTRACTOR shall draw a fine nylon push broom lightly over the surface to produce a non-slip surface. Application of neat cement to the surface to hasten hardening is prohibited.

G. The CONTRACTOR shall make every effort to protect the newly placed concrete surface against vandalism and marking or defacing and must stand ready to replace any blocks which are defaced.

H. Adequate protection shall be provided where temperatures of 40ºF or lower occur during placing of concrete and during the early curing period. The minimum temperature of fresh concrete after placing and for the first 3 days shall be maintained above 55ºF. In addition to the above requirements, an additional 3 days of protection from freezing shall be maintained.

I. Except as otherwise specified, the construction of the concrete walks shall be in accordance with the Standard Specifications for Highways and Bridges of the Department of Public Works of the Commonwealth of Massachusetts, dated 1973, and all amendments thereto.

END OF SECTION

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SECTION 11305

SEMI-POSITIVE DISPLACEMENT RESIDENTIAL
GRINDER PUMP UNITS

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers the furnishing and installation of factory-built, semi-positive displacement residential grinder pump units. All components, except as otherwise noted, shall be provided by one supplier.

B. Upon issuance of a building sewer connection permit, the Department of Public Works, Sewer Division, will determine if the property is intended to receive a grinder pump unit. If so determined, the OWNER shall receive from the Sewer Division a voucher for one (1) grinder pump unit from the manufacturer's Representative. Upon providing a voucher to the Representative, the unit, including all equipment and materials specified in this section, shall be picked up at the Representative's warehouse in Rockland, MA, to be installed by the CONTRACTOR. If it is determined by the Sewer Division that the property was not intended to receive a grinder pump unit, it shall be the responsibility of the OWNER to contact the manufacturer's Representative for purchase and pick up information.

1.02 SYSTEM DESCRIPTION:

A. The system shall consist of complete factory-built and tested grinder pump units, each consisting of grinder pumps suitably mounted in a basin constructed of high density polyethylene (HDPE) with an integral access way, electrical quick disconnect (NEMA 4X), remote electrical alarm/disconnect panel, electric motor, all necessary internal wiring and controls, pump installation and removal systems, fittings, valves and all associated equipment and accessories required to make a complete system.

B. Equipment and accessories not specifically described herein shall be the manufacturer's standard catalog products.

1.03 QUALITY ASSURANCE:

A. All equipment shall conform to the following criteria:

1. The grinder pump shall be free from electrical and fire hazards as required in a residential environment. As evidence of compliance with this requirement, the completely assembled and wired grinder pump station in its tank shall be listed by Underwriter's Laboratories, Inc., to be safe and appropriate for the intended use.

The grinder pump shall conform to the Department of Environmental Protection Division of Air Quality Control regulations governed by the following policy:

"A source of sound will be considered to be violating the Department's noise regulation (310 CMR 7.10) if the source:

a. Increases the broadband sound level by more than 10 dB(A) above ambient, or

b. Produces a "pure tone" condition - when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.

The grinder pump shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low-pressure sewer system applications. As evidence of compliance with this requirement, the grinder pumps shall bear the National Sanitation Foundation seal.

2. Equipment shall be manufacturer's standard products presently in commercial production.

3. Conform to Hydraulic Institute Standards.

4. All the equipment specified under this Section shall be furnished by a single supplier and shall be products of manufacturers regularly engaged in the production of said equipment. The supplier shall have the sole responsibility for proper functioning of the complete grinder pumppackage.

5. The grinder pump stations shall conform to requirements for materials, installation, and equipment approvals of state, local, Underwriters Laboratories, Inc., NEC, NEMA, ASTM, NSF, and other applicable codes whether or not called for on the drawings or the specification.

6. Base the use of unspecified materials on their continuous and successful employment under similar conditions, as called for in this section.

B. MANUFACTURER'S QUALIFICATIONS:

1. The manufacturer shall provide the supervisory service of a factory trained engineer, who is specifically trained on the type of equipment supplied, for a period of not less than two 8-hour days to assist in installation of the pumping equipment and related appurtenances, to provide initial startup of each grinder pump, and to instruct the OWNER in the operation and maintenance of the equipment provided.

C. FACTORY TESTS:

1. Each grinder pump shall be submerged and operated for 5 minutes (minimum). Included in this procedure will be the testing of all ancillary components such as the anti-siphon valve, check valve, discharge line, level sensors and each unit's dedicated controls. All factory tests shall incorporate each of the above-listed items. Actual appurtenances and controls, which will be installed in the field, shall be particular to the tested pump only. A common set of appurtenances and controls for all pumps will not be acceptable. Certified test results shall be available upon request showing the operation of each grinder pump at two (2) different points on its curve, with the maximum pressure no less than 60 psi.

2. All completed stations shall be factory leak tested to assure the integrity of all joints, seams and penetrations. All necessary penetrations such as inlets, discharge fittings and cable connectors shall be included in this test along with their respective sealing means.

D. Field acceptance tests shall be performed as specified in Part 3 Execution.

1.04 REFERENCES:

The latest editions of the following standards form a part of this specification as referenced:

American Society for Testing and Materials (ASTM)

ASTM A48	Specifications for Gray-Iron Castings.
ASTM A53	Specifications for Pipe, Steel, Black and Hot-dipped, Zinc Coated, Welded and Seamless.
ASTM D1785	Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
ASTM D2464	Threaded Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80.
ASTM D2467	Socket-Type Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80.
ASTM D2564	Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings.

National Electric Code (NEC)

NEC Code	National Electrical Code.

National Electric Manufacturers Association (NEMA)

NEMA	Standard as Specified.

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. OPERATION AND MAINTENANCE INSTRUCTIONS:

The grinder pump manufacturer shall be responsible for supplying one (1) set of written instructions, which shall be sufficiently comprehensive to enable the OWNER to operate and maintain the pump and all associated equipment supplied by the station manufacturer. Said instructions shall assume that the operator is familiar with pumps, motors, piping, and valves but that he has not previously operated and/or maintained the exact equipment supplied.

The instructions shall include, but not be limited to, the following:

1. Descriptions of, and operating instructions for each major component of the grinder pump as supplied.

2. Instructions for operation of the grinder pump in all intended modes of operation.

3. Instructions for all adjustments, which must be performed at initial startup of the grinder pump, adjustment which must be performed after the replacement of level control system components, and adjustments which must be performed in the course of preventive maintenance as specified by the manufacturer.

4. Instructions for the adjustment, calibration, and testing of selected electronic components or assemblies, normally considered replaceable by the manufacturer, whose performance is not ascertainable by visual inspection.

5. Service instructions for major components not manufactured by the grinder pump manufacturer but which are supplied by him in accordance with these specifications. Incorporation of literature produced by the actual component manufacturer shall be acceptable.

6. Electric schematic diagram of the grinder pump unit as supplied, prepared in accordance with NMTBA and JIC standards. Schematics shall show, to the extent of authorized repair, pump motor branch, control, and alarm system circuits and interconnections among these circuits. Wire numbers shall be shown on the schematic. Schematic diagrams for electronic equipment, the detail parts of which are normally repairable by the owner-town-servicer, need to be included and shall not be substituted for an overall schematic diagram. Partial schematics, block diagrams, and simplified schematics shall not be provided in lieu of an overall schematic diagram.

7. At the time of delivery, each set of instructions shall be clearly visible, attached to or inside each unit provided.

1.06 DELIVERY:

A. SHIPPING:

The CONTRACTOR shall pick up the pump at the Manufacturer's Representative's warehouse in Rockland, MA.

1.07 WARRANTY:

The manufacturer shall offer a limited parts and labor warranty guaranteeing its product to be free from defects in material and factory workmanship for no less than twenty four (24) months from the date installation. The Warrantee shall be a 100% on-site warrantee. Repair will be made free of charge and be made on-site by an authorized service provider within 24-hours of notice given to the manufacturer by the OWNER.

PART 2 - PRODUCTS

2.01 EQUIPMENT - SEMI-POSITIVE DISPLACEMENT GRINDERPUMPS:

A. GENERAL:

The semi-positive displacement type grinder pump shall be a removable core type unit rated at one horsepower, operating on a 240 volt, single phase, 60 Hertz electrical system.

B. CORE UNIT:

1. Each grinder pump unit shall have a cartridge type easily removable core assembly containing pump, motor, grinder, controls, check valve, stainless steel discharge piping, anti-siphon valve, electrical quick disconnect, and wiring.

2. The watertight integrity of the core unit, including wiring and access cover, shall be established by 100% factory test at a minimum of 5 psig.

3. The controls included in the core unit shall provide for fully automatic operation of the grinder pump assembly, and no external control panel shall be required for normal operation of the grinder pump unit.

4. Core unit shall have two (2) lifting hooks with nylon lift-out harness in the top housing to facilitate removal of the core unit from the tank when necessary.

C. PUMPS:

1. Pumps shall be custom designed, integral, vertical rotor, motor driven, solids handling pumps of the progressing cavity type with mechanical seal.

2. Rotor: Through-hardened, highly polished, precipitation hardened stainless steel.

3. Stator: Specifically compounded ethylene propylene synthetic elastometer suitable for domestic wastewater service. Physical properties: High tear abrasion resistance, grease resistance, water and detergent resistance, temperature stability, good aging properties, and outstanding wear resistance. The stator shall be designed and mounted in such a way as to accommodate rotor run-out and permit direct connection of the rotor to the motor shaft with no intermediate flexible coupling.

4. The pumps shall be capable of delivering 15 gpm against a rated total dynamic head of 0 feet (0 psig) and 9 gpm against a rated total dynamic head of 138 feet (60 psig). The pump(s) shall also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in- line piping or valving be allowed to create a false apparent head.

D. GRINDERS:

1. Rotating type with a stationary hardened and ground chrome steel shredding ring spaced in close annular alignment to the driven impeller assembly positioned immediately below the pump elements; direct-driven by a single, one-piece motor shaft.

2. Grinder Impeller Assembly: Securely fastened to pump motor shaft; carry two hardened type 400 series stainless steel cutter bars; dynamically balanced to operate without objectionable noise or vibration over the entire range of recommended operating pressures.

3. Constructed to eliminate clogging and jamming under all normal starting and operating conditions with sufficient vortex action to scour tank free of deposits or sludge banks, which would impair the operation of the pump.

4. To meet the above requirements, the following shall be accomplished in conjunction with the grinder pump tank:

   a. Grinder shall be positioned in such a way that solids are fed in an up-flow direction.

   b. Diameter of inlet shroud opening shall be no less than 5 inches (127 mm).

   c. Average inlet velocity, at maximum flow, shall not exceed 0.2 feet per second.

   d. Cutter bars shall extend above the impeller disc 0.20 to 0.25 inches (5.1 to 6.4 mm).

   e. Nominal speed of impeller disc to be 1725 RPM.

5. The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable quantity of "foreign objects," such as paper, wood, plastic, glass, rubber and the like, to finely-divided particles which will pass freely through the pump and the 1-1/4 inch diameter stainless steel discharge piping.

E. ELECTRIC MOTOR:

1. One HP (746 watts), 1725 RPM, capacitor start, ball bearing, squirrel cage induction type with a low starting current not to exceed 30 amperes and high starting torque of at least 8.4 foot pounds.

2. Inherent protection against running overloads or locked rotor condition shall be provided for the pump motor by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. The motor protector combination to

be investigated and listed by Underwriters' Laboratories, Inc., for the specific application.

F. MECHANICAL SEAL:

1. Core: Provided with a mechanical shaft seal to prevent leakage between the motor and pump.

2. Seal: Stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.

G. DISCHARGE HOSE AND SLIDEFACEDISCONNECT/VALVE:

All discharge fittings and piping shall be constructed of 304 Series stainless steel, polypropylene or PVC. The discharge hose assembly shall include a shut-off valve rated for 200 psi WOG and a quick disconnect feature to simplify installation and removal.

H. ELECTRICAL QUICK DISCONNECT:

The grinder pump unit shall include a single NEMA 4X electrical quick disconnect for all power and control functions. An integral tube shall allow venting of the control compartment to assure proper operation of the pressure switch level system.

I. CHECK VALVE:

1. Pump to be equipped with factory installed, gravity operated, flapper type integral check valve built into the discharge pipe, providing full-ported passageway when open and introducing friction loss of less than 6 inches of water at maximum rated flow.

2. Valve Body: High gloss injection molded PVC Type I-II.

3. Working Parts: Series 300 stainless steel and fabric reinforced synthetic elastometer to ensure corrosion resistance, dimensional stability and fatigue strength.

4. A non-metallic hinge: Integral part of flapper assembly providing maximum degrees of freedom for assured seating at a low back pressure.

J. ANTI-SIPHON VALVE:

1. Pump shall be constructed with a positively-primed floodedsuction configuration.

2. Pump shall be equipped with integral anti-siphoning, air relief valve in the discharge piping just below the main check valve to provide added assurance that the pump cannot lose prime even under negative pressure conditions in the discharge piping

system. This valve shall automatically close when the pump is running and open to atmosphere when the pump is off.

K. CONTROLS:

1. The primary on/off and alarm functions are to run on independent circuits. The alarm circuit shall also function as a redundant on/off switch in case of on/off switch failure. Control components shall be located inside the top housing of the core unit. The top housing shall be attached with stainless steel tamper proof fasteners. Non-fouling wastewater level detection for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air-bell level sensor connected to a pressure switch. Other types of level detection devices prone to fouling and need periodic maintenance such as mercury floats or conductance probes shall not be acceptable. The level detection device shall have no moving parts in direct contact with the wastewater. High-level sensing will be accomplished in the manner detailed above by a separate air-bell sensor and pressure switch of the same type.

2. Refer to Paragraph 2.01-H for electrical quick disconnect for controls.

3. Each level control to have its own built in fail safe design to prevent the entrance of moisture into the controls in case of switchdiaphragm failure.

4. To assure reliable operation of pressure sensitive switches, each core to be equipped with a quick disconnect breather assembly, complete with check valve to prevent accidental entry of water into motor compartment in the event of accessway flooding.

5. The grinder pump shall be furnished with a length of 6 conductor, gauge to meet Massachusetts electric code, length to be site specific, type SJOW cable, pre- wired and watertight with NEMA 6 electrical disconnect to meet UL requirements. There shall be no junction box required in the station.

L. CORROSION PROTECTION:

All materials exposed to wastewater shall have inherent corrosion protection; i.e., HDPE cast iron, stainless steel, or PVC. Any exterior steel surfaces are to be suitably protected against corrosion.

M. SERVICEABILITY:

All mechanical and electrical connections shall provide easy disconnect accessibility for core unit removal and installation. All maintenance tasks for the grinder pump station shall be possible without entry of the grinder pump station (as required by OSHA Permit for required confined spaces). "Entry means the action by which a person passes through an opening into a permit-required confined space. Entry

includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space."

2.02 TANK AND INTEGRAL ACCESSWAY:

A. The tank shall be made of high-density polyethylene of a grade selected for environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. Corrugations of outside wall are to be of a minimum amplitude of 1½-inch to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be a minimum .250-inch thick. All seams created during tank construction are to be thermally welded and factory tested for leak tightness. Tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to maximum external soil and hydrostatic pressure.

B. The access way shall be an integral extension of the tank assembly and include a lockable cover assembly providing low profile mounting and watertight capability. Access way design and construction shall facilitate field adjustment of station height in increments of 4-inches or less without the use of any adhesives or sealants requiring cure time before installation can be completed.

C. The station shall have all necessary penetrations molded in and factory sealed. No field penetrations shall be acceptable.

D. All discharged piping shall be constructed of 304 Series Stainless Steel and terminate outside the access way bulkhead with a stainless steel, 1¼-inch female NPT fitting. The discharge piping shall include a stainless steel ball valve rated for 200 psi WOG. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.

E. The access way shall also include a 2-inch PVC vent to prevent sewage gases from accumulating in the tank.

F. Each unit shall be furnished with one EPDM Grommet to accept a 4.50" outside diameter DMV pipe.

2.03 CONTROL PANELS:

A. The electrical control panels shall be furnished by the grinder pump manufacturer.

B. Each Grinder pump station control panel shall be U.L. listed and shall include a NEMA 3R Thermoplastic enclosure. It shall include circuit breaker(s) and all necessary components to accomplish proper pump and control operation including the following alarm capabilities:

1. When liquid level in sewage tank rises above the alarm level, visual and audio alarms will be activated.

2. Audio alarm may be silenced by means of the externally mounted, push-to-silence button.

3. Visual alarm remains illuminated until sewage in tank returns to normal operating level.

The visual alarm shall be a red fluted lens mounted to the top of the enclosure in such a manner as to maintain rainproof integrity.

The audio alarm shall be capable of being de-activated by depressing a weather proof, push-type switch mounted on the exterior of the enclosure.

C. Control panels shall be furnished with an inner, hinged, dead front panel containing all operator control devices and mechanisms, such as circuit breaker operating handles, manual transfer switch operating handle, push buttons, selector switches, indicating lights, etc. Locks shall be provided for the control panels by the CONTRACTOR.

2.04 REDUNDANT CHECK VALVE:

A. Each grinder pump unit shall include one separate check valve per unit for installation in the discharge line between the grinder pump and the sewer main to ensure maximum protection against backflow in the event of sewer service line break.

B. The valve shall be 1-1/4-inch, gravity operated, flapper- type. The check valve shall provide full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Working parts shall be made of a 300 series stainless steel and fabric reinforced synthetic elastometer to ensure corrosion resistance, dimensional stability and fatigue strength. A non-metallic hinge shall be an integral part of the flapper assembly, providing maximum degrees of freedom for assured seating at a very low backpressure.

C. The valve body shall be a high gloss, injection molded part made of PVC type I-II with hub and socket compatible with 1-1/4-inch PVC solvent weld system. Dimensions for hub and socket shall be in accordance with Commercial Standards C5-272-65.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Installation of the grinder pump and related appurtenances shall be performed in accordance with all written instructions furnished by the manufacturer.

B. After installation, CONTRACTOR shall clean all surfaces damaged in shipment or installation and shall touch-up in the field with the same materials as original coatings.

3.02 INTERFERENCE WITH EXISTINGWORKS:

The CONTRACTOR shall at all times conduct his operations so as to interfere as little as possible with existing works.

3.03 HYDRAULIC UPLIFTS OF STRUCTURES:

The CONTRACTOR shall be responsible for the protection of all structures against hydraulic uplift.

3.04 FIELD ACCEPTANCE TESTS:

A. After installation of the equipment and after completion of the services of the manufacturer's representative, the CONTRACTOR shall operate each unit to demonstrate its ability to pump without excessive vibration, motor overloading, or overheating. Each pump shall be operated for a sufficient period of time to permit thorough observation of all pump components.

B. The Manufacturer's Representative shall be notified in advance of the tests.

C. All defects or defective equipment shall be corrected or replaced promptly at the CONTRACTOR's expense.

D. All final adjustments necessary to place the equipment in satisfactory working order shall be made at the time of the above tests.

E. The CONTRACTOR shall provide water for testing. All labor and materials necessary for the test shall be furnished by the CONTRACTOR.

F. All piping shall be tested for tightness. Should leaks be found, faulty joints shall be repaired, and all defective pipe and fittings shall be removed and replaced in a satisfactory manner.

END OF SECTION

APPENDIX C

POLICY FOR ON-LOT INDIVIDUAL GRINDER PUMP UNIT INSTALLATION

POLICY FOR ON-LOT INDIVIDUAL
GRINDER PUMP UNIT INSTALLATION

1. The Town will consider low-pressure sewers and grinder pumps as the method for wastewater collection in areas where conventional gravity sewers are not physically possible or economically feasible. This policy only applies to lots developed prior to the commencement of construction of the sewer contract fronting the property.

2. The Town's consultant will document such areas and identify alternatives and costs in the preliminary design report prepared prior to each phase of construction. The Town will review the consultant's recommendations for grinder pumps (if any) contained in each preliminary design report and the Town will authorize final design of grinder pumps only if they concur with the consultant's recommendations. Where grinder pumps are approved for final design, the contract documents will be prepared such that the building lateral extended to the property line shall be designed to accommodate a grinder pump unit.

3. The Town will offer to impacted residents the option to purchase a grinder pump and associated electrical control panel unit from the Town for the cost of One Dollar ($1.00). The Town will prepare and distribute documentation for the homeowner to either accept or reject this offer. Acceptance of the offer by a homeowner must be completed within sixty (60) days of receiving said documentation. Failure by the homeowner to respond within 60 days of receipt shall constitute a rejection of the Town's offer. Any future connection to the public sewer would then be totally at the homeowner's expense.

4. Homeowners accepting the offer have one year from the time of receiving notification that the sewer line is approved for use to have the grinder pump installed. The Town of Scituate will deliver the grinder pump to the homeowner upon proof of completion of plumbing inspection and approval of the sewer connection permit. Homeowners failing to have the grinder pump installed within the one year time frame will forfeit their right to the above mentioned offer.

5. Homeowners accepting the offer will still be responsible for the following:

    a. installation of the grinder pump, including electrical work, inspection, associated fee, and connection to the town sewer;
    b. pumping and filling of the existing septic tank;
    c. upgrade of the home's electric service to 100 amps (if required);
    d. any interior plumbing modifications;
    e. plumbing inspection and associated fee;
    f. and sewer connection permit fee.

Please sign and return

AGREEMENT OF LICENSE/EASEMENT FOR GRINDER PUMP

I accept the Town of Scituate's offer to purchase a grinder pump and its associated electrical control panel unit for the cost of One dollar ($1.00). Failure to accept this offer within sixty (60) days of receiving this agreement will void this offer. I agree to the terms as outlined in the *Policy for On-lot Individual Grinder Pump Unit Installation*, effective June 2003.

_____	_____
Signature	**Date**
_____	_____
Print Name	Address

APPENDIX D

SCITUATE BOARD OF HEALTH, REGULATION #28 FATS, OIL, & GREASE (FOG) PRETREATMENT SYSTEM

SCITUATE BOARD OF HEALTH
REGULATION #28 Fats, Oil & Grease (FOG) Pretreatment Systems

In accordance with 40 Code of Federal Regulations (CFR) Part 403; Massachusetts General Laws Chapter 111, section 31; and Title 5 of the State Environmental Code (310 CMR 15.), the Scituate Board of Health adopts the following regulation. The purpose of this regulation is to protect residents, businesses, public health, and the environment within the Town of Scituate from blockages of the Town's sanitary sewer system caused by grease, kitchen oils, and other substances discharged from food service facilities.

All references to 248 CMR shall **mean** the Code of Massachusetts Regulation for the Massachusetts State Plumbing Code.

PURPOSE

The purpose of this Regulation is to protect residents, businesses and the environment within the Town of Scituate from blockages of the Town's Sanitary Sewer caused by Fats, Oils, and Grease (FOG) discharged from food service establishments located in town. All new and existing facilities that generate and discharge FOG in the wastewater flow shall install, operate, **and maintain** a FOG pretreatment system, as further defined herein. The requirements of this Regulation shall supplement and be in addition to the requirements of the Town of Scituate's Sewer Use Rules and Regulations.

1. Definitions

Agent - means any duly authorized agent of the Scituate Health Department as specified under MGL C. 111 Sec 30.

Board - The Scituate Board of Health

Building Sewer - A pipe or pipes maintained and controlled by private persons for the purpose of conveying wastewater from the waste producing location to the sanitary sewer collection system.

Director - means the Director of the Scituate Board of Health.

Discharge Limit - one hundred (100) milligrams of Fats, Oils, and Grease per liter of wastewater, or a concentration, which will cause blockage to the municipal sewer system.

DPW - Town of Scituate Department of Public Works.

FOG - Fats, Oils and Grease

FOG Pretreatment System - refers to one of the following grease removal systems:

1. Indoor Passive Grease Traps
2. Indoor Automatic Grease Traps
3. Outdoor/Underground Grease Interceptors

Food Establishment-is defined as any establishment issued a Permit to operate a food establishment by the Scituate Health Department under FC 1-201.l0(B) (31) any facility that prepares or sells food and as a byproduct discharges Fat, Oil, or Grease into the Municipal Sewer system.

Food Service Facility - Any facility which prepares, serves, cuts, cooks, or bakes food, or which disposes of food-related wastes, including mobile food units, catering kitchens, residential kitchens that operate a food service business, food service facilities where the consumption of food prepared therein is intended to occur off-

premises, and any establishment issued a permit to operate a food service by the Board under 105 CMR 590.000.

Garbage Grinder - A device, which shreds or grinds up solid or semisolid waste materials into small particles for discharge into the sanitary sewer collection system.

Generator - A user of any food service facility who produces wastes from the user's process operations.

Grease - A material composed of fatty matter from animal or vegetable sources or hydrocarbons of petroleum origins. The terms "oil and grease", "fat oil and grease" or "oil and grease substances" shall be deemed grease by definition.

Grease Interceptor - A water-tight device constructed to separate and trap or hold oil and grease substances from the wastewater discharged from a facility in order to prevent oil and grease substances from entering the sanitary sewer system, also referred to as a "grease trap" or "grease recovery device." The grease interceptor may be may be an internal grease interceptor located within the facility, an external grease interceptor located outside the facility, or both, depending on sizing requirements of the food service facility.

Grease Trap - also referred to, as a grease interceptor by the State Plumbing Code, is a device designed to remove undissolved and/or suspended waste grease and oil from wastewater.

Indoor Automatic Grease Trap - an active automatic grease trap, which separates and removes fats, oils, and grease from effluent discharge, and cleans itself of accumulated grease, fats and oils at least once every twenty-four (24) hours, utilizing electromechanical apparatus to accomplish removal.

Indoor Passive Grease Trap - a passive grease trap installed inside a building and designed to remove fats, oils and grease from flowing wastewater while allowing wastewater to flow through it. Also known as an indoor grease trap.

Outdoor/Underground Grease Interceptor - a passive grease trap installed outside a building (having a capacity of 1500 gallons or more) and designed to remove fats, oils and grease from flowing wastewater while allowing wastewater to flow through it. Also known as an outside grease trap.

PDI - Plumbing and Drainage Institute

Scituate Officials - any representative from the Scituate Health Department, Building Department or the Water and Sewer Division.

Sewage - Liquids and solids discharged from toilets, urinals, and other plumbing fixtures that are not intended for the disposal of grease and oil.

Sewer Pipe - means any building or town sanitary sewer piping including but not limited to interior and exterior building sanitary sewer piping, any main, or lateral sanitary sewer piping regardless whether it is located on private or municipal land.

Solids Interceptor

- A water-tight device constructed to collect and hold solid substances, such as waste from a garbage grinder, apart from the wastewater discharged from a food service facility in order to prevent solids from entering the grease interceptor and from entering the sanitary sewer system, also referred to as a "solids trap."

- The solids interceptor may be located internally or externally to the facility, or both depending on the sizing required capturing solid discharging fixtures from the

food service facility. The solids interceptor is installed in the wastewater flow preceding the grease interceptor.

Substantial Renovations - means any renovation to a food service establishment that would increase the number of existing permitted seats or would alter in any way the kitchen facility.

User - The owner or operator of a food service facility.

Waste Grease or Oil-means waste grease or oil generated by a food establishment during the cooking process.

Wastewater - The liquid and water carrying domestic or industrial wastes from dwellings, commercial establishments, industrial facilities, institutions, restaurants, or any other facility which is deemed to produce liquid and water waste.

- Wastes may include, but are not limited to, discharges from scullery sinks, pots and pan sinks, ware wash sinks, compartment sinks, food prep sinks, cooking apparatus, dishwashing machines, soup kettles, floor drains located in areas where grease-containing materials may exist.

- By definition, the terms "sewage" and "wastewater" refer to different discharges.

Warewash Sink- Any sink, compartment sinks, containers, buckets, or other device or vessel in a food services facility where utensils, dishware equipment and other items coming into contact with food are cleaned.

IV. GENERAL PROVISIONS

A. In every case where a food establishment is preparing or selling food, or other business in which FOG is a byproduct, a suitable FOG Pretreatment System that conforms to the Massachusetts State Plumbing Code 248 CMR 10.09(2), must be installed according to this Regulation.

B. Waste grease and oil shall not be disposed by the sanitary sewer. All waste grease and oil must be collected in an appropriate container provided by an approved vendor and stored in an approved location on the premise.

• The container must be stored on an impervious surface such as concrete or pavement. Containers must be capable of being sealed or be stored in a sheltered area to prevent entry of precipitation and vermin.

• All waste grease and oil shall be removed by a permitted offal/septage hauler, said material should be removed from the premises as needed. While being stored, all grease containers and surrounding areas must be kept in sanitary condition at all times.

2. Wastewater Discharge Requirements

A. Waste, which contains grease, may be discharged from food service facilities only subject to the provisions and requirements of this article.

• The Board at any time may require a user to install, upgrade and/or relocate an indoor automatic grease trap, internal or external grease interceptor or indoor automatic grease trap, as it may deem necessary, to maintain any particular building sewer, any lateral sewer pipe, or sewer

main pipe free from obstructions caused by grease or oil discharged from a food service facility.

B. When grease containing materials are processed through garbage grinders, the waste shall be directed first to a solids interceptor and then to a grease interceptor before any discharge to a wastewater drainage system.

• Wok lines, deep fryers, and other cooking equipment that use and discharge grease and/or oil shall have all drain lines, collection pans, and other grease-and-oil conveying systems directed through a grease interceptor before entering the wastewater drainage system, unless all grease and/or oil substances are fully contained and not connected to or conveyed to the drainage system. All waste shall enter the grease interceptor through the inlet pipe only.

• Toilets, urinals, and other plumbing fixtures shall not discharge sewage through the grease interceptor unless approval is granted in writing by the Board or its agent, and Massachusetts State Plumbing Board.

C. All automatic electrical/mechanical grease removal units shall be sized in accordance with the manufacturers written recommendations and to be in compliance with 248 CMR.

D. Dishwasher wastewater must discharge into the grease trap per 248 CMR 10.09 (2)©(5). Food waste grinders must comply with the requirements of 248 CMR 10.09(2)(f)(3).

3. Facilities Requiring Grease Interceptors

A. New Facilities - Users of all new proposed or constructed food service facilities and existing food service facilities where expansion of service capacity or renovation is proposed, shall install one or more grease interceptors conforming to applicable building, plumbing and health codes.

B. Existing Facilities - All existing food service facilities shall be required to install, modify or upgrade, as directed by the Board or its agent, an approved grease interceptor when any of the following occur:

1. When the Board or its agent, the Director of DPW, or the Town of Scituate Plumbing Inspector determines that an existing grease trap is undersized, nonfunctional, or not properly plumbed to all internal fixtures that generate grease or oil; or

2. When food preparation or wastewater plumbing is repaired, replaced or redesigned, requiring a plumbing permit from the Scituate Building Department.

3. Design, Installation and Upgrade of Grease Interceptors

A. For internal grease interceptor(s), the Board requires that food service facilities install PDI-certified and Massachusetts State Plumbing Board approved automatic grease and oil removal units or grease recovery units.

B. Newly installed, upgraded, modified or repaired grease interceptors shall conform to the specifications, design and sizing approved by the Director and the Town of Scituate Plumbing Inspector.

• In addition, if a grease interceptor is required to be installed external to the facility, approval of specifications, design and sizing by the Scituate Department of Public Works is required if it is connected to the public sewer.

• Sizing of the grease interceptor shall conform to the PDI Standard, PDI-GlOl, with sizing requirements based on wastewater flow rates from the facility.

C. External grease interceptor(s) shall be designed and properly located on the facility(s) property by a registered Massachusetts professional engineer, and a certified as-built drawing shall be submitted to the Board.

• In addition, a certified as-built drawing shall also be submitted to the DPW if a new connection to the sewer system has occurred.

D. Common grease interceptors, internal or external, shall be sized to accommodate all the wastewater flows of the facility that are directed to the interceptor(s).

4. Location of Grease Interceptors

• The location where grease interceptor(s) shall be installed, including whether it shall be installed external to the food service facility, will depend upon building, site, environmental and interceptor sizing parameters.

• Each grease interceptor shall be installed and connected in a manner that makes it easily accessible for purposes of inspection, removal of the intercepted grease, cleaning and maintenance.

- Grease interceptor(s) shall be installed as far as possible from any part of the building where food is handled, prepared, and/or stored.

- Location of the grease interceptor(s) shall be approved by the Board or its agent, and the Town of Scituate Plumbing Inspector, and if external to the facility, the DPW.

5. Maintenance of Grease Interceptors

- All grease interceptors shall be maintained by the user at the user's expense.

The user shall conduct initial monitoring sufficient to identify the interceptor maintenance and cleaning requirements and to develop a written cleaning and maintenance plan that the user, his/her agents and employees shall thereafter comply with.

- At a minimum, the user or his/her designee shall inspect the grease interceptor(s) monthly; and, shall have all interceptors cleaned before the amount of grease exceeds 25% of the grease capacity of the interceptor or once every month for internal grease traps and once every three months for external grease traps, whichever comes first.

- Written logs of inspections, cleaning and pumping shall document data with respect to each internal and external grease interceptor, including the date of grease interceptor opening, an estimate of the amount of grease removed, the name of the person who inspected the interceptor or removed grease, and such person's signed initials or signature.

6. Integration of Best Management Practices

A. Food service facilities shall integrate best management practices to reduce grease discharged to the sewer system supplementary to grease trap(s) installation and maintenance.

B. Best management practices include, but are not limited to:

(1) Use liquid oil instead of solid grease or lard,

(2) Dry wiping pots, pans, and dishes before putting them in the dishwasher or ware wash sink,

(3) Collecting and disposing of used grease and oil through a licensed grease hauler instead of pouring it down the drain,

(4) Capturing the grease and oil in ventilation and exhaust hoods.

7. Storage of Waste Grease and Oil from Food Preparation

All waste grease and oil and other related wastes requiring storage at the food service facility as a result of removal from grease interceptors or otherwise shall be collected and stored in appropriate container(s) in an approved location at the food service facility.

• Container(s) shall be stored on an impervious surface such as concrete or pavement. Containers shall be either sealed or stored in a sheltered area, and maintained to prevent entry of precipitation and animals. All grease containers and surrounding areas must be kept in a sanitary condition at all times.

8. Disposal of Waste Grease and Oil

- All waste grease and oil shall be removed from the facility by a permitted waste hauler. All material removed from grease interceptors, and hauling and disposal of grease and other related waste, shall be documented in a written manifest, which includes the identities and contact information of the generator, transporter and disposal facility.

- The generator is responsible for assuring that all waste grease and related wastes are disposed of in accordance with all federal, state and local disposal regulations.

9. Record Keeping

A. All records pertaining to grease interceptor inspection, maintenance, cleaning, removing, transporting and disposing of waste grease and related wastes shall be retained by the food service user on the site for no less than two years, and shall be available upon request for review by the Board or its agent, the DPW or a Town of Scituate Plumbing Inspector.

B. Upon request by an agent of the Board, a food service facility owner or operator shall furnish all information required to enforce and monitor compliance with this regulation.

10. Inspections of Interceptors

Authorized agents and employees of the Board, Scituate Plumbing Inspector, and/or DPW shall have the right to inspect, observe, measure, sample, test, photograph, and/or review documents with respect to the grease interceptor(s) and solid interceptor(s) within a food service facility, at any reasonable time and without prior notification.

Timeline for Regulation Compliance

All food service establishments with 100 or more seats or more than 1,000 square feet shall to be in compliance with this regulation by December 31, 2013.

All food establishments with 50-99 seats or 500 to 1,000 square feet shall be in compliance with this regulation by December 31, 2014.

All other food establishments shall be in compliance by December 31, 2015.

Failure to comply by these deadlines will affect the issuance of the Board of Health food establishment permit.

All food establishments shall submit a completed Board of Health form and project plan with a list of all contacts, no later than six months prior to deadline.

11. Request for a Hearing

Any user or other person who has received an order or notice issued pursuant to this regulation may request a hearing before the Board. Such request shall be in writing and shall be submitted to the office of the Board within 10 days after receipt of the order or notice.

12. Variances

A. The Board may grant a variance or exemption from any provision of these regulations when, in its opinion, the applicant for the variance has established that:

(1) Enforcement of the provision of this regulation from which a variance is sought would be manifestly unjust, considering all the relevant facts and circumstances; and

(2) A level of protection to the Town of Scituate sanitary sewer system at least equivalent to that provided under this regulation can be achieved without strict application of the provision from which a variance is sought.

B. Requests for variances from this regulation must be submitted in writing to the Board. Applicants for variances shall be afforded the opportunity to appear in person, including any representatives and experts, at a duly noticed public hearing held by the Board to consider the variance request. Information on food preparation, fats, oil and grease, and related waste produced by or discharged from the food service facility, size of the proposed grease interceptors, facility use, facility layout, plumbing plans and other relevant documents must be presented for review. Wastewater calculations, prepared by a Massachusetts licensed plumber, architect or engineer, may be presented to establish grounds for a variance.

13. Violations and Penalties; Enforcement; Time Frames for Compliance; Termination of Operations

A. It shall be unlawful for any user to discharge grease, oil, or any other substance into the sanitary sewer system in any manner, which is **in** violation of this regulation or any order or notice issued with respect thereto.

1. Any user who violates any provision of this regulation may be fined not more than $100 for each violation under Chapter 40, Section 21D, of the Massachusetts General Laws and/or may be subject to injunction or other judicial order.

2. Each provision of this regulation that is violated, if more than one, shall constitute a separate offense, and each day that the violation continues shall constitute a separate offense.

3. The Board or its agent may serve upon any user a written notice stating the substance of the violation. Within 60 days of the date of such notice, a plan for correction of the violation shall be submitted to the Board by the user. The plan shall include a proposed date, subject to the approval of the Board or its agent, by which time the user shall achieve compliance with the regulation.

4. In the event that compliance is not achieved within such proposed and approved time, a monetary fine, as described herein, may be imposed or reinstated.

B. The Board may, after providing opportunity for a bearing, order the termination of one or more particular operations at a food service facility for:

(1) Serious or repeated violations of the regulation,

(2) Substantial interference with the Board or other Town of Scituate officials in the performance of their duties,

(3) Knowingly keeping or submitting to Town of Scituate officials any false records or documents required to be maintained accurately by this regulation.

14. Severability

Each provision of this regulation shall be construed as separate to the end that if any part of it shall be held invalid for any reason, the remainder shall continue in full force and effect.

By Order of the Board of Health

Drew Scheele, Director

Joan Schmid

APPENDIX E

SCITUATE BOARD OF HEALTH EMERGENCY SEWER CONNECTIONS PROCEDURE

SCITUATE BOARD OF HEALTH
EMERGENCY SEWER CONNECTION PROCEDURE

An emergency sewer connection is only an option for homes on property that does not abut a town sewer line. The process for obtaining approval, described below, involves the Scituate Select Board, who are the Sewer Commissioners, the Scituate Board of Health and the Department of Public Works. Emergency sewer connections will only be permitted where the existing sewage disposal system constitutes a threat to human health, a Title 5 system with permitted state and town variances is not possible, the only alternative is a tight tank, and a DPW approved connection is feasible.

An application for an emergency sewer connection shall first be presented to the Scituate Board of Health and scheduled for hearing by the Board at its next regularly scheduled meeting or as agreed by the applicant and the Director of Public Health. The Board will not consider such applications unless the following is provided with the application:

1. A written request for an emergency sewer connection by the owner of the property or the owner's representative. Where an owner cannot be present for hearings before the BOH and the Commissioners, written documentation showing authorization to act on behalf of the owner must be presented with an explanation as to the owner's inability to appear.
2. A Title 5 inspection report showing that the existing system is in failure.
3. Documentation that a Title 5 system cannot be construction on the site even with all available town and state variances.
4. Pumping records for the property.
5. Water records for the property for at least 2 prior years.
6. Photographs, if available, of system failure or back-ups.
7. Lot plan showing house, property lines, test pit locations, pertinent setbacks (including wetlands, if applicable), nearest town sewer lines and other area homes that are connected (specifying whether emergency or town connection).
8. Conceptual plan for proposed connection, with pipe and equipment specifications, and statement showing that DPW has reviewed and approved the conceptual plan.
9. Written evidence from neighbors of agreement to grant any necessary easements for connection.
10. Any other pertinent information documenting system failure, health threats and feasibility of connection.

The Scituate Board of Health may request additional information from the owner. Once all necessary information is received, the Board will vote on the application. If the application is approved, the Board of Health will notify the Select Board and transmit a copy of all of the materials presented by the applicant to the Select Board.

The Select Board/Sewer Commissioners will notify the Board of Health and the applicant of the date for hearing on the application. A representative of the Board of Health shall make a presentation to the Commissioners outlining the need for an emergency connection. The Commissioners may request additional information from the owner. Once all necessary information is received, the Select Board/Sewer Commissioners will vote on the application.

If the application is approved by the Select Board/Sewer Commissioners, the applicant must:

1. Pay the Privilege Fee for Private Sewer Connections.
2. Register all necessary easements.
3. Submit engineering/construction plans for approval by DPW.

The owner is responsible for all engineering, construction and other costs associated with the emergency sewer connection. The owner is responsible for all costs associated with maintaining the emergency connection, including removal when the connection is discontinued. The owner shall receive a credit for the amount of the Privilege Fee paid in connection with the emergency sewer connection towards any betterment assessed in the future if town sewer is installed in the district wherein the property resides.