

TOWN OF UXBRIDGE
DEPARTMENT OF PUBLIC WORKS
MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND
RELATED REGULATIONS

REVISED SEPTEMBER 2016



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

TABLE OF CONTENTS

<u>Section No.</u>	<u>Contents</u>	<u>Page No.</u>
Section 1	Applicable Regulations and Codes, Definitions and Terms	2
Section 2	General Provisions	5
Section 3	General Construction	10
Section 4	Design and Construction of Sewers	11
Section 5	Manholes	25
Section 6	Use of Public Sewer	28
Section 7	Pump Stations	33
Section 8	Wastewater Treatment	34
Section 9	Sewer Charges and Fees	35
Section 10	Flow Neutral Controls	36
Section 11	Septage	39
Appendix A	Insurance Requirements	42



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 1

APPLICABLE REGULATIONS AND CODES, DEFINITIONS AND TERMS

- A. These regulations represent minimum requirements. The Contractor shall adhere to all federal, state, and local laws, codes, and regulations.
- B. The Town is responsible for adhering to federal and state laws, codes and regulations and thus the Contractor will be responsible and the Town makes the Contractor responsible for any applicable laws, codes and regulations. The minimum requirements the Town is held responsible for meeting (and by extension the Contractor shall adhere to) include:
 - 1. 314 CMR 7.00: Sewer Extension and Connection Permit Program
 - 2. 314 CMR 12.00 Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Discharges
- C. Guidelines
 - 1. All work associated with the sewer collection, pumping and treatment system shall be in accordance with Guides for the Design of Wastewater Treatment Works (TR-16)
- D. Definitions and Terms

Unless the content specifically indicates otherwise, the meaning of terms used in this article shall be as follows:

Board — Shall mean the Board of Selectmen who also act as the Water and Sewer Commissioners.

BOD (denoting "biochemical oxygen demand") — Shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five days at 20° C, expressed in milligrams per liter.

Building drain — Shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer, beginning five feet (1.5 meters) outside the inner face of the building wall.

Building sewer — Shall mean the extension from the building drain to the public sewer or other place of disposal.

Combined sewer — Shall mean a sewer receiving both surface runoff and sewerage.

“Department of Environmental Protection” or “DEP” — Shall mean the Massachusetts Department of Environmental Protection, established pursuant to



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

M.G.L. Chapter 21, Section 26 or, where appropriate, the Administrator, Director or other duly authorized official of said agency.

Department of Public Works or DPW — Shall mean an authorized representative of the Town's Department of Public Works.

Depths — any depth measurement shall be as measured from the finished grade.

Director — Shall mean the Director of the Department of Public Works.

“Environmental Protection Agency”, or “EPA” — Shall mean the United States Environmental Protection Agency, or, where appropriate, the Administrator or other duly authorized official of said Agency.

Garbage — Shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage, and sale of produce.

Industrial Waste — Shall mean the liquid wastes from industrial manufacturing processes, trade, or business as distinct from sanitary sewerage.

Natural outlet — Shall mean any outlet into a watercourse, pond, ditch, lake, or other body of surface or groundwater.

Person— Shall mean any individual, firm, company, association, society, corporation, partnership, or group.

pH — Shall mean the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

Pollutant — Shall mean a substance in the liquid, solid, or gas phase that contaminates. A pollutant may be artificial or naturally occurring substances.

Properly Shredded Garbage — Shall mean the wastes from the preparation, cooking, and dispensing of food that have 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 1/2 inch (1.27 centimeters) in any dimension.

Public Sewer — Shall mean a sewer in which all owners of abutting properties have equal rights, and is controlled by public authority.

Sanitary sewer — Shall mean a sewer which carries sewage and to which storm-, surface, and ground waters are not intentionally admitted.

Septage — Shall mean material physically removed from any part of an on-site system including, but not limited to, the solids, semi-solids, scum, sludge, and liquid contents of a septic tank, privy, chemical toilet, cesspool, holding tank, or other sewage waste receptacle.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

Sewage — Shall mean a combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, together with such ground, surface, and storm waters as may be present.

Sewage treatment plant or wastewater treatment facility — Shall mean any arrangement of devices and structures used for treating sewage.

Sewage works — Shall mean all facilities for collecting, pumping, treating, and disposing of sewage.

Sewer — Shall mean a pipe or conduit for carrying sewage.

Shall; may — Shall is mandatory; may is permissive.

Slug — Shall mean any discharge of water, sewage, or industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than 15 minutes, more than five times the average twenty-four-hour concentration or flows during normal operation.

Storm drain — Shall mean a sewer which carries storm and surface waters and drainage, but excludes sewage and industrial wastes, other than unpolluted cooling water.

Suspended solids — Shall mean solids that either float on the surface of, or are in suspension of water, sewage, or other liquids, and which are removable by laboratory filtering.

Town — Shall mean the Town of Uxbridge, Massachusetts.

Watercourse — Shall mean a channel in which a flow of water occurs, either continuously or intermittently.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 2

GENERAL PROVISIONS

2.1. SURVEYS

- A. The Contractor shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the work together with a suitable number of benchmarks adjacent to the work. The Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations, and other working points, lines, elevations, and cut sheets. Plans and profiles shall be 1"=40' horizontal scale and profiles shall be 1"=4' vertical scale.
- B. The Contractor shall provide three (3) copies of design plans and documents to the Department of Public Works for approval. No changes to approved plans will be permitted without prior written approval of the Department of Public Works. Following the completion of construction and prior to acceptance by the Town, the Contractor shall furnish three (3) copies of as-built drawings to the Department of Public Works, which shall indicate any deviations from the original plans and specifications.
- C. The Contractor shall carefully preserve benchmarks, reference points, and stakes and, in case of willful or careless destruction, shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance. Contractor shall replace any damaged benchmarks, reference points, or stakes.

2.2. PERMITS

- A. The Contractor is required to obtain all necessary federal, state, and local permits.
- B. Permits and licenses necessary for the prosecution of the work shall be secured and paid for by the Contractor. Permits, licenses, and easements for facilities shall be secured and paid for by the Contractor, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations.
- C. The Contractor shall be required to obtain, for example, a trench permit and DPW Road Opening Permit prior to any excavations within a public way. All work within the public way shall be conducted in accordance with the Department of Public Works Standards for Utility Cuts which is contained within the "Town of Uxbridge Design and Construction Standards Manual".

2.3. LOCAL REGULATIONS

- A. Installations of sewers in the public way shall be prohibited between the dates of November 15th and March 15th unless extenuating circumstances exist and written approval is provided by the Department of Public Works.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

2.4. PROTECTION OF WORK, PROPERTY AND PERSONS

- A. The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Contractor will take all necessary protection to prevent damage, injury, or loss to all employees on the work and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- B. The Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction. The Contractor will erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. The Contractor will notify owners of adjacent utilities when prosecution of the work may affect them. The Contractor will remedy all damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

2.5. SUPERVISION BY CONTRACTOR

- A. The Contractor will supervise and direct the work. The Contractor will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor will employ and maintain on the work site a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The Supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.

2.6. INSURANCE

- A. The Contractor shall purchase and maintain such insurance as will protect him from claims which may arise out of or result from the Contractor's execution of the work, whether such execution be by the Contractor or by any subcontractor or by anyone for whose acts any of them may be liable.
- B. Certificates of Insurance acceptable to the Town shall be filed with the Town prior to commencement of the work. These certificates shall contain a provision that coverage afforded under the policies will not be canceled unless at least fifteen (15) days prior written notice has been given to the Town.
- C. The Contractor shall procure and maintain, at his own expense, during the contract time, liability insurance as deemed adequate by the Department of Public Works. See Appendix A.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

2.7. CONTRACT SECURITY

- A. The Contractor shall furnish the Town with a Performance Bond and a Payment Bond in penal sums equal to the project cost, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions, and agreements. The Contractor and a corporate surety company licensed to transact such business in the Commonwealth of Massachusetts shall execute such bonds. The expense of these bonds shall be borne by the Contractor. If at any time a surety on any such bond is declared bankrupt or loses its right to do business in the Commonwealth, the Contractor shall, within ten (10) days after notice from the Town to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Town. The Contractor shall pay the premiums on such bond.

2.8. INDEMNIFICATION

- A. The Contractor will indemnify and hold harmless the Town, its agents, and employees from and against all claims, damages, losses, and expenses including attorney's fees provided that any such claims, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including or in part by any negligent or willful act or omission of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.
- B. In any and all claims against the Town or its agents or employees, by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any subcontractor under Workmen's Compensation Acts, disability benefit acts, or other employee benefits acts.

2.9. GUARANTEE

- A. The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one (1) year from the date of substantial completion (date of substantial completion shall be defined as the date of acceptance by the Town). The Contractor shall warrant and guarantee for a period of one (1) year from the date of substantial completion of the system that the completed system is free from all defects due to faulty materials or workmanship, and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The Town will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Town may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

2.10. INSPECTIONS AND TESTING

- A. All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with generally accepted standards and as specified herein. The Department of Public Works or their agent will provide an inspector on the job at all times. All costs associated with the inspection will be billed to the Contractor and shall be paid by the Contractor within thirty (30) days.
- B. The Town will at all times have access to the work. In addition, authorized representatives and agents of any participating agencies shall be permitted to inspect all work.
- C. If any work is covered prior to inspection by the Town or contrary to the written instructions of the Town it must, if requested by the Town, be uncovered for observation and restored at the Contractor's expense.

2.11. EXTENSIONS

- A. Whenever a sewer extension has been constructed in a public or private way, upon satisfactory completion of inspection and testing, said extension shall be available for use or further extension by the public.

2.12. NEW SERVICES

- A. When property is developed on streets where there are existing sewer lines but no service connection to the property, the person developing the property is responsible for all costs for sewer installation from the new building to the existing sewer main, including the actual tap and saddle. Requirements for the tap and saddle may be obtained from the Sewer Division of the DPW.

2.13. RECORD DRAWINGS (AS-BUILTS)

- A. The Contractor shall be responsible for obtaining all data for the Record Drawings. The Contractor shall submit Record Drawings of all sewer main construction. Record Drawings shall show 40 scale plan views and shall be prepared on standard size Mylar sheets, 24 x 36 inches in size. Record Drawings shall be prepared by a registered professional engineer and, at a minimum, shall show a plan view, with accurate locations of public sewer main, lateral connections and manholes, including all invert elevations. A minimum of three (3) ties shall be provided to all sewer laterals at the property line, taken to permanent existing features, and including the depth to the top of the pipe.

2.14. SEPTIC SYSTEMS AND SEPTIC SYSTEM WASTE

- A. Septic systems must be abandoned in accordance with the Title V Sanitary Code.
- B. Discharge of septage or holding tank waste into the Town sewer system is prohibited.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

2.15. EASEMENTS

- A. Easements for municipal sewers outside of the street layout shall be at least 20 feet wide.

2.16. RIGHT OF ENTRY; PROTECTION FROM DAMAGE

- A. 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 in accordance with the provisions of this article. The Department of Public Works shall have no authority to inquire into any processes including metallurgical, chemical, oil, refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the sewers or waterways or facilities for wastes treatment.
- B. While performing the necessary work on private properties referred to in Subsection A above, the Department of Public Works or duly authorized employee 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 § 289-12H.
- C. 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 sewage works 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.

2.17. INDEPENDENT CONSULTANT

- A. In order to protect the interests of the Town, the Town reserves the right to hire independent consultants or attorneys as required. The Town may require a Contractor to pay for these services. Town shall notify Contractor of this need prior to engaging an independent consultant. Services may include, but are not limited to, the following:
1. Review and/or verification of design, especially if Contractor does not meet referenced standards.
 2. Updating of a model (for example SEWER CADD or similar model).



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 3

GENERAL CONSTRUCTION

3.1 PROTECTION OF UNDERGROUND STRUCTURES

- A. All existing gas pipes, conduits, water pipes, sewers, drains or other structures, which are uncovered by the excavation, shall be carefully supported and protected from injury by the Contractor, and if injured or removed, the Contractor shall restore them with identical material.
- B. The Contractor shall provide suitable temporary channels for the flow of all water courses and shall hold the Town harmless against all claims for damages growing out of obstruction to the flow in sewers, drains or gutters, or because of injury to gas, water or other pipes or conduits to the proprietors of such pipes or fixtures in time to permit them to cooperate in protecting their property. Whenever it becomes necessary to change the location of any water pipe, sewer, drain or other structure uncovered by the excavation, the Contractor shall do the whole or such portions by making such changes as the Town may direct at the Contractor's expense.

3.2 CONSTRUCTION STANDARDS MANUAL

- A. The Contractor shall adhere to all applicable details contained within the "Town of Uxbridge Design and Construction Standards Manual". Contractor may obtain a copy of the manual from the Department of Public Works.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 4

DESIGN AND CONSTRUCTION OF SEWERS

4.1. DESIGN OF SEWERS - GENERAL

Sewage collection systems shall be designed separately from stormwater systems. Sewage collection systems shall not allow for the introduction of rain water, noncontact cooling water, and groundwater from foundation drains, sump pumps, surface drainage or any other source of inflow. Overflows from wastewater collection systems shall also not be permitted.

New sanitary sewers and all extensions to sanitary sewers owned and operated by the Town of Uxbridge shall be either gravity sewers or low pressure sewers in accordance with the Town's approved comprehensive wastewater management plan or wastewater treatment facility plan, and shall be designed by a professional engineer licensed to practice in the Commonwealth of Massachusetts, in accordance with the Guides for the Design of Wastewater Treatment Works (TR-16), and in strict accordance with appropriate Massachusetts codes and the Town of Uxbridge regulations. Plans and specifications shall be submitted to and approved by the Director before initiating any construction. The design shall anticipate and allow for flows from all possible future extensions or development within the immediate drainage area in conformance with Town planning documents.

A. ALTERNATIVE SEWER COLLECTION SYSTEMS:

Sewer collection systems not stated in these Rules and Regulations of the Sewer Department shall only be permitted with the Director's conditional approval.

B. COLLECTION SYSTEM IMPACT STUDY

Each new sewer extension is subject to a collection system impact study to be performed by the Director who may hire an independent consultant. Any negative impacts found as a result of the impact study may be the responsibility of the Contractor to address as part of any approved sewer extension.

4.2. DESIGN CAPACITY AND DESIGN FLOW

A. DESIGN FACTORS:

- Peak hourly sewage flow
- Additional peak flows of industrial and commercial wastes
- Maximum groundwater infiltration
- Topography of the immediate area
- Difficulty of installation



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

B. DESIGN PERIOD:

Sewage collection systems shall be designed for a life span of 50 years; and interceptor sewers shall be designed to handle the maximum capacity of uses in the drainage area as determined by the Director.

C. DESIGN FLOW:

Submit a detailed description of the procedures used for calculating sewer design flow to the Director.

The Massachusetts 310 CMR 15.000, the State Environmental Code, Title 5, shall be used for calculating the design flow for sewers. If the Massachusetts 310 CMR 15.000, the State Environmental Code, Title 5, does not have a flow rate for the proposed use, the following methods may be used with the approval of the Director:

- Flow Related to Water Consumption. When available, use existing sewage flow and/or consumption data as a basis for sewer design. If such data are not available, using flow data from a similar community or users.
- Per Capita Flow. Where actual flow data cannot be obtained, base residential flows from new collection systems on an average daily per capita flow of not less than 70 gallons per day (0.27 m³/day). Add an appropriate allowance for infiltration to this flow. In all cases, add a minimum allowance of 250-500 gpd/in. diameter/mile of sewer (0.24-0.48 m³/cm of pipe diameter/km/day) for infiltration to the water consumption, per capita flow or any other calculation method required by the Director.

4.3. PIPE SIZE

- A. Minimum pipe shall be not less than 8" diameter for sewer main construction and, outside of ten feet from the house, minimum 6" diameter for house or, if a pipe larger than 6" is called for in the Plumbing Code for the house connection, that pipe size shall be matched, or unless otherwise approved by the Department of Public Works. The Town may require larger diameter pipe when conditions or location require it.
- B. Should the Town master sewerage plan show larger mains to be installed in the future than are required to serve the extensions within the limits of the subdivision not required to service said subdivision, then the Town of Uxbridge may enter into an agreement whereby the developer shall install such mains or other improvements according to such plan and that he may be compensated by the Town for differential in cost incurred beyond that necessary to service the subdivision.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

4.4. PIPE MATERIAL

- A. PVC pipe manufactured to meet ASTM specification D-3034-SDR 35 shall be acceptable to depths of 13 feet (including laterals). Ductile iron pipe will be required for depths over 13 feet.
- B. The use of existing previously abandoned or unused sewer pipes is prohibited.

4.5. PIPE INSTALLATION

- A. Specifications for installation shall be those of the manufacturer in accordance with ASTM D2321, "Standard Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe."
- B. Where high groundwater conditions are anticipated, the buoyancy of sewers shall be considered, and the floatation of pipe shall be prevented with appropriate design and construction of the sewer.

C. SLOPE:

All sewers shall be designed and constructed to give a velocity (when flowing full) of not less than 2.0 feet per second (0.61 m/s) based on Manning's formula using an "n" value of 0.013. The Director may permit the use of other "n" values if deemed justified on the basis of research or field data.

- D. Velocities greater than 12 feet per second (3.7 m/s) shall not be permitted under any flow conditions, unless the Director approves special provisions that will protect against pipe erosion and impact.

E. STEEP SLOPE PROTECTION:

Securely anchor sewers on 15 percent slopes, or greater, to prevent displacement.

F. IMPERVIOUS DAMS:

Impervious dams shall be installed every 300 feet to control the flow of groundwater within the pipe bedding material, when:

- The surrounding native material is considerably less impervious than the pipe bedding material;
- The pipe bedding could produce a hydraulic head of 25 feet on the pipe gaskets and joints during periods of high groundwater flow; and/or
- The sewer is constructed downstream of a waterway or wetland crossings.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

G. ALIGNMENT:

Sewers shall be laid out in a straight line and alignment, and shall be checked with a laser beam.

H. Laterals shall be provided for each buildable lot that is passed by the new sewer. Buildable lots shall be as defined by the Town. Each lateral shall be provided up to the property line that the lateral shall serve.

4.6. PIPE LAYING

- A. Pipe shall be carefully laid to the lines and grades as shown on the plans submitted. The Contractor shall provide laser beam aligning equipment for use in pipe laying.
- B. All pipe is to be laid on a good foundation and first class construction methods must be followed by the Contractor to prevent settlement. Should the material at grade prove unsatisfactory for a suitable foundation, additional depth must be excavated and refilled with acceptable material.
- C. In general, the bottom of the trench shall be excavated to a flat grade, 4 inches below the pipe invert for trenches in earth and 6 inches below the pipe invert for trenches in rock. Crushed stone or pea gravel bedding shall be placed and compacted to form a stable base for pipe. Pipe shall be laid to grade and bedding carried half way up pipe barrel, to the full width of the trench. Bedding material shall be carefully laid to grade and bedding carried half way up pipe barrel, to the full width of the trench. Bedding material shall be carefully and lightly tamped under pipe to provide uniform support. The granular bedding material shall be crushed stone which will pass 3/4 inch sieve but will be retained on #4, or equal material approved by the Town. Bedding material shall extend 4 to 6 inches above the pipe. The remainder of the backfill up to a minimum depth of 12 inches over the top of the pipe shall be made of processed gravel material carefully compacted in layers as placed.
- D. When a sewer pipe joins another pipe of a larger diameter, the invert of the larger sewer shall be lowered sufficiently to maintain the same energy gradient.
- E. When pipe laying is not actively in progress, the open ends of the pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work resumes, the plug shall not be removed until the trench has been properly dewatered. Groundwater shall not be permitted to enter the pipeline.
- F. All sewer pipes shall be deep enough to drain basement fixtures and shall have a minimum vertical depth of four (4) feet as measured from grade to the crown of the pipe to prevent freezing. If the pipe cannot be four feet or more in depth, insulation shall be provided around the pipe and if this pipe is in a roadway or any other areas where vehicles travel or park, the pipe shall be made of ductile iron.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

4.7. BACKFILLING

- A. The trenches and other excavations shall be backfilled, unless otherwise directed by the Town, as soon as the laying of the pipe or the completion of other structures will permit. The area below the pipe and extending half way up the pipe barrel or both sides shall be backfilled with crushed stone as specified and thoroughly tamped by light tampers as placed. The remainder of the side fill to a minimum depth of twelve (12) inches over the top of the pipe shall be of selected material approved by the Town, carefully compacted in layers as placed, and, if necessary, suitable material shall be moved from other sections of the work for this purpose. The remainder of the trench above an elevation twelve (12) inches higher than the top of the pipes shall be backfilled with selected material, thoroughly tamped with mechanical rammers or vibrators in layers not exceeding one (1) foot in depth. No rock will be permitted in backfilling until there is at least two (2) feet of suitable earth fill over the sewer, and no rock fragment weighing more than 100 pounds will be used for refilling trenches. In depositing rock, care shall be taken that no injury is caused to the sewer or other structures. All voids in rock backfill must be completely filled with earth.
- B. When, in the opinion of the Town, the backfilling at elevations higher than one (1) foot above crown of pipe can be compacted in a suitable manner by flooding, jetting, or puddling with water, the Contractor will be permitted to do so.
- C. In trenches within street surfaces, the top 18 inches of trench backfill shall be a road-base quality gravel, approved by the Town, placed during backfilling operation, and obtained from trench excavated material if possible. Bank gravel shall consist of inert material that is hard durable stone and coarse sand, free from loam, clay or surface coatings. The trench backfill shall be thoroughly compacted, carried to about 18 inches below the surface, and the trench puddled to induce settlement with jet pipes or as otherwise approved by the Town. Gravel then shall be placed, compacted, graded, and treated with calcium chloride to maintain the surface until the resurfacing is placed.
- D. Specifications for resurfacing shall conform to the "Town of Uxbridge Design and Construction Standards Manual".

4.8. BUILDING/HOUSE SERVICE CONNECTIONS

A. GENERAL REQUIREMENTS

1. No authorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Department of Public Works. Any person proposing a new discharge into the system or a substantial change in the volume or character of pollutants that are being discharged into the system shall notify the Department of Public Works at least 45 days prior to the proposed change or connection. No person shall break, cut, or remove any pipe of the public sanitary sewer, or make or cause to be made any connection to said sewer except through the connection branches provided for that purpose, unless in another manner approved by the Board.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

2. There shall be two classes of building sewer permits: a) for residential and commercial service, and b) for service to establishments producing industrial wastes. In either case, the owner or his/her agent shall make application on a special form furnished by the Town. The permit application shall be supplemented by any plans, specifications, or other information considered to be pertinent in the judgement of the Department of Public Works. The permit and inspection fee for a residential or commercial building sewer permit or for an industrial building sewer permit shall be paid to the Town at the time the application is filed.
3. All costs and expenses incidental to the installation and connections of the building sewer shall be borne by the owner. The owner shall indemnify the Town from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.
4. Old building sewers may not be used in connection with new buildings.
5. The size, slope, alignment, materials of construction of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench, shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the Town. In the absence of code provisions or in amplification thereof the materials and procedures set forth in appropriate specifications of the American Society for Testing Materials and Water Pollution Control Federation Manual of Practice No. 9 shall apply.
6. 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 lifted by an approved means and discharged to the building sewer.
7. No person shall make connection of roof downspouts, exterior 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.
8. The connection of the building sewer into the public sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the Town, or the procedures set forth in appropriate specifications of the American Society for Testing of Materials and Water Pollution Control Federation Manual of Practice No. 9. All such connections shall be made gastight and watertight. Any deviation from the prescribed procedures and materials must be approved by the Department of Public Works before installation.
9. The applicant for the building sewer permit shall notify the Department of Public Works when the building sewer is ready for inspection and connection to the public sewer. The connection shall be made under the supervision of the Department of Public Works.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

10. All excavations for building sewer installation 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 in a manner satisfactory to the Town.

B. SPECIFIC REQUIREMENTS

1. House service connections shall be constructed from the main sewer to the sideline of the street layout, generally one connection for each dwelling unit or vacant lot, as directed by the Town. Connection to main sewer pipe shall be made with a PVC wye, made by the same manufacturer as the main pipe, and of the same class.
2. One or more separate and independent building sewer(s) shall be provided for every building, except 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 of the building through an adjoining alley, court, yard, or driveway, in which instance the building sewer from the front of the building may be extended to the rear building and considered as one (1) building sewer. This common building sewer shall be considered as two sewer connections. The arrangements for the construction of the sewer(s) shall be provided for by an easement between the property owners. The technical requirements of the sewers shall be subject to review and approval of the department. It is recommended that each building sewer contain a backwater valve to prevent backups. In addition, the Town does not and will not assume any obligation or responsibility for damage caused by or resulting from any shared connection.
3. Cleanouts
 - a. House service connections that exceed 100 feet in length shall include a cleanout extended to grade with a removable end cap.
 - b. All sewer service lines shall have a six (6) inch cleanout at a minimum distance of ten (10) feet from the outside of the foundation wall, facing in the direction of the sewer main, unless there is a cleanout immediately inside the building. Sewer service lines that change direction more than 45 degrees in addition to the above cleanout shall have six (6) inch cleanout installed, facing the direction of flow at each change of direction.
 - c. All sewer service lines that are one hundred (100) feet or longer shall have a six (6) inch cleanout installed, facing in the direction of flow, at a fifty (50) foot point for one hundred (100) foot services, or every one hundred (100) feet for longer services, in addition to any cleanouts designated above or elsewhere. A sewer manhole shall be required in place of a cleanout when two (2) or more services join together. The pipe size from this manhole to the sewer main shall be increased to a minimum of eight (8) inches.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

- d. All sewer cleanouts shall be brought up to one (1) foot below finished grade and equipped with a watertight removable cap. Any sewer service cleanouts that are in a driveway, walkway, or roadway shall be furnished with a metal cover providing access at grade to the sewer service cleanout.
4. End caps shall be PVC and sized to match the lateral. All service pipes and fittings shall be installed in accordance with manufacturer's instructions, or as directed by the Town and left uncovered for inspection and measurement. A 2-inch x 2-inch marker shall be placed at the property line of every connection, extending to six (6) inches above the ground service. Contractor shall take care with installation of end caps to prevent blow-offs during air testing. All house laterals will be brought to the inside of the sidewalk or to the property line, whichever is applicable.

4.9. CLEANING

- A. After laying of the pipe is completed between manhole sections, the interior of the sewer pipeline shall be thoroughly cleaned from construction debris or other foreign matter and the section closed off by bulkheads at the outlet side of the manholes sufficient to prevent the wash of mud or dirt into the completed section of pipeline, and upon completion of the entire line, it shall be left free and clean of such debris and the bulkheads removed. Once cleaned, all lines shall be mandrelled to ensure roundness.

4.10. TESTING

- A. An air test shall be conducted by the Contractor at his expense and witnessed by the Town or their agent on all sewer pipes installed. The test shall be conducted only after the backfilling and compaction operation has been completed, and the test shall be made under the observation of the Town. The Contractor may, at his/her option, run an air test on a line before it is completely backfilled for his own information and requirements, but the official testing shall be done after the backfilling and compaction have been completed.
- B. The testing equipment shall meet the following requirements:
 1. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
 2. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
 3. All air used shall pass through a single control panel.
 4. Three individual hoses shall be used for the following connections:
 - a. From panel to pneumatic plugs for inflation.
 - b. From panel to sealed line for introducing the low air pressure.
 - c. From sealed line to panel for continually monitoring the air pressure rise in the sealed line.
- C. The Town will permit other types of air testing equipment subject to approval, and upon demonstration by the Contractor that such method can be employed safely and without damage to pipe or fittings.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

- D. Pipe shall be tested between manholes by installing pneumatic plugs in each end and inflating plugs to 25 psig. Low air pressure shall be introduced into this sealed line until the internal air pressure reaches 5 psig greater than the average backpressure of the ground water. A period of two minutes shall be required for stabilization (3.5 psig minimum pressure in the pipe), at which time the air supply shall be disconnected. The portion of line being tested shall be termed acceptable if the time required, in minutes, for the pressure to decrease from 4.5 psig to 3.5 psig (greater than the average backpressure of any ground water that may be over the pipe) shall not be less than one (1) minute per inch of diameter.
- E. The Contractor shall determine the average height of the ground water above the invert of the main pipe at the time of testing.

4.11. CHIMNEYS

- A. Chimneys shall be installed when sewer mains exceed 12' in depth and as ordered by the Town, encased in reinforced concrete or pea stone and carefully backfilled. Pipe bedding shall be extended to provide a base for chimney and concrete encasement shall encompass the main tee, leaving the joints exposed for flexibility. The riser pipe encasement may be formed using a Sonotube which may be left in place. A vertical hardwood 2" x 2" stake shall be placed next to the chimney, extending to within one (1) foot of the ground surface, to be used as a marker.

4.12. PROTECTION OF WATER SUPPLIES

- A. CROSS CONNECTIONS:

No physical connection shall exist between a public or private potable water supply system and a sewer or any appurtenance that would permit the passage of wastewater or polluted water into the potable supply. No sewer shall come into contact with a water pipe and no water pipe shall pass through any part of a sewer manhole or any part of the sewer system.

- B. RELATION TO WATER WORKS STRUCTURES:

Sewers shall be located as far as possible from public water supply wells or other potable water supply sources and structures.

Engineering plans shall show all existing waterworks units, such as treatment facilities, basins, pipes, wells, or other waterworks units that are within 50 feet of the proposed sewer or to within the minimum distances required by the Director.

- C. WATER MAINS' RELATION:

1. Horizontal Separation: Lay out sewers at least 10 feet (3.0 m) from any existing or proposed water main. If local conditions prevent a lateral Separation of 10 feet, the issue will need to be reviewed with the Director.
2. Vertical Separation: Whenever sewers must cross water mains, lay out the sewer so that the top of the sewer is at least 18 inches (46 cm) below the bottom of the water



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

main. The sewer joints should be equidistant and located as far away as possible from the water main joints. When the sewer cannot meet the above requirements, relocate the water main to provide for this separation or reconstruct it with mechanical-joint pipe for a distance of 10 feet (3.0 m) on each side of the sewer. One full-length (20 feet) water main pipe shall be centered over the sewer so that both joints will be as far from the sewer as possible.

When it is impossible to achieve horizontal and/or vertical separation as stipulated above, review with the Director.

4.13. LOW PRESSURE SEWER DESIGN AND CONSTRUCTION

A. LAYOUT:

The branched configuration of a pressure sewer is required. Looped piping shall not be permitted. Pipe routing shall include long radius sweeps no less than those recommended by the pipe manufacturer.

Pressure pipes shall be designed and installed so that a minimum of five (5) feet of cover material exists over the crown of the pipe at all times. Appurtenances such as isolation valves, air release valves, and clean-outs shall be provided as required by the Director.

Pipe Size: The diameter of the pressure sewer shall be calculated so that it provides a cleansing velocity based on the average daily flow of the system. Force Mains shall have a minimum velocity of three feet per second, 3ft/sec.

Minimum low pressure sewer pipe sizes shall be as follows (unless there is a significant change in grade):

NUMBER OF HOMES OR EQUIVALENT	MINIMUM PIPE SIZE
1-3	1.5
4-9	2
10-18	2.5
19-30	3 (model recommended)
>30	Must be modeled

B. ISOLATION VALVES:

Isolation valves shall be required to allow isolation of individual grinder units, system expansion, and at key locations such as at the property line.

Ball valves for low pressure sewer manholes shall be true union type constructed from PVC Type I cell classification with EPDM O-rings. All valve components shall be replaceable. Ball valves 2 inches and smaller shall be pressure rated to 235 psi, while valves larger than 2 inches shall be rated to 150 psi. Ball valves shall have a Safe-T-Block seal carrier to stop flow in either direction, allowing safe removal of the downstream union nut for system



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

service or modification. Ball valve ends shall be as needed to connect to Schedule 430 PVC pipe in low pressure sewer manholes. Ball valves shall be true union ball valves as manufactured by Spears Manufacturing.

C. CURB STOP VALVE:

Curb stop valves shall be located at the property line of the street or easement of the sewer main. Curb stop valves shall be of brass or bronze construction and two rubberized O-ring seals to provide pressure-tight seal. Curb stop valves shall be figure H-15204 as manufactured by Mueller-Oriseal, B22 as manufactured by Ford Meter Box Company, Hayes, Nuseal, or equal. Curb boxes shall be 2-1/2-inch shaft size two-piece screw type. They shall be adjustable from 48-inch to 72-inch. Curb boxes shall be constructed of cast iron and thoroughly coated with two coats of asphaltum varnish. Curb box rods shall be stainless steel supplied with a hole in the "U" portion for the insertion of a stainless steel pin. Pins shall be supplied and shall be made of stainless steel. Curb boxes shall be labeled with an "S" for sewer. Curb boxes shall be as manufactured by Ford Meter Box Company, Mueller Company, or equal.

D. AIR RELEASE VALVES:

Air and vacuum valves shall be installed on low pressure mains. The air and vacuum valves shall be designed to release air from the main when the main is being filled and/or air becomes entrapped in the main, and to admit air into the sewer main when pumps are stopped and the main is being drained by gravity. The body and cover of air and vacuum valve shall be cast iron, floats of stainless steel, protective hood of steel, seats of Buna-N, and miscellaneous internal parts of stainless steel, Manufacturer-Crispin, or equal. Air and vacuum valves shall be located in a manhole or structure with a diameter of 60 inches to allow access for repairs and maintenance.

E. CLEANOUT CONNECTIONS:

Cleanouts shall be installed on the pressure mains at sags and other locations where debris can accumulate and clog the lines, and proper valving to conduct required maintenance shall be provided.

F. MISCELLANEOUS

Magnetic marking tape two (2) inches wide with the words "SANITARY SEWER BELOW," shall be installed not more than 2 feet below finished grade on all mainline and service laterals.

4.14. FORCE MAINS

A. MINIMUM SIZE:

Force mains shall have a minimum velocity per Section 4.13 A.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

Force Main Pipe Material: Force main pipe material shall as specified in Article IV, Construction Technical Specification, Section 14:

B. VELOCITY:

At design average flow, velocity in excess of that indicated in Section 4.13 A shall be maintained.

When the daily average design detention time, in the force main, exceeds 20 minutes, the manhole and sewer line receiving the force main discharge or the sewage shall be treated so that corrosion of the manhole and the exiting line are prevented. The corrosion is caused by sulfuric acid biochemically produced from hydrogen sulfide anaerobically produced in the force main.

C. VARIABLE TERRAIN:

As far as possible, the alignment and depth of a force main should provide a constant upgrade profile. All force mains shall be designed and installed so that a minimum of five (5') feet of cover material is over the crown (top) of the pipe at all times.

D. AIR RELIEF VALVE:

An automatic air relief valve shall be placed at all relative high points in the force main and at 400 feet intervals on level force main runs. All air relief valves shall be protected from freezing.

E. DRAIN VALVES:

Drain valves at all relative low points in the force main shall be provided. These valves shall be connected to gravity sewers or provided with connections for vacuum pumper trucks. All drain valves shall be protected from freezing.

F. TERMINATION:

Force mains shall enter the gravity sewer at a point not more than 2 feet (0.61 m) above the exit line of the receiving manhole. The receiving manhole shall be dedicated to receiving the force main and shall have no other flows entering.

G. TESTING:

Leakage Testing shall be conducted.

4.15. GRINDER PUMP SYSTEMS:

Pumping equipment shall include an integral grinder capable of handling a reasonable quantity of foreign objects that may find their way into a building's sewerage system. The grinder pump shall be capable of processing foreign objects without jamming, stalling, or



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

overloading, and without making undue noise. The grinder shall provide a positive flow of solids into the grinding zone. Grinder pump stations shall be of the wet well type.

4.16. DESIGN OF PUMP STATION:

A. ACCESS:

Outside installation shall be designed with the service manhole constructed of the same material, and at least as thick as the tank. The manhole shall have an opening at the surface with a minimum inside diameter of 30 inches (76 cm); its cover shall be securely lockable. The size of the manhole shall allow for the performance of maintenance and repair functions.

B. TANK:

Construct each tank of concrete or custom-molded, fiberglass reinforced polyester resin using a filament wound process, layup and spray technique, or other approved process that will ensure a smooth and resin rich interior surface that is designed for two times the maximum loading.

The basin shall be concrete, fiberglass-reinforced polyester resin, or other material meeting the minimum strength specifications herein. The basin shall be furnished with one PVC closet flange or one flexible inlet flange suitable for connection to the household gravity line. At a minimum, the basin wall and bottom shall withstand two times the anticipated maximum pressure exerted on the basin, either from soil loadings or buoyancy forces. All station components must function normally when exposed to these loadings. All seals and joints shall pass factory tests to ensure that they are water tight.

C. ELECTRICAL EQUIPMENT:

Wiring and electrical connections shall be NEMA rated for the environment in which they are to be placed. System shall include an emergency generator plugin connection.

D. PUMPS:

1. **Pump Removal:** The grinder pump shall be readily removable without the need for manual disconnection of piping.
2. **Grinder:** The grinder shall be positioned immediately below the pumping elements, securely fastened to the pump motor shaft, and driven directly by the same motor. The grinder shall be a rotating type with a stationary hardened and ground stainless steel shredding ring that carries stainless steel cutter bars. This assembly shall be dynamically balanced and run without objectionable noises or vibrations over the entire range of recommended operating pressures.
3. **Pump Opening:** The grinder shall be capable of reducing all components in normal domestic sewage or the sewage to be discharged from the building drain, including a reasonable amount of foreign objects (e.g., paper, wood, plastic, glass, and rubber).



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

Objects shall be reduced to finely divided particles that will pass through the passages of the pump and a minimum 1.25 inch (3.2 cm) diameter discharging pipe.

4. Intake: The grinder shall be positioned so that solids are fed into it from the bottom in an upward flow, reducing the possibility of overloading or jamming. In addition, sufficient turbulence shall be created to keep the tank bottom free of permanent deposits or sludge banks.

E. CHECK VALVE:

The grinder pump shall be equipped with a check valve that is installed in a horizontal position on the discharge pipe. This valve shall provide a full-ported passageway when open.

F. VENTILATION:

Adequate ventilation shall be provided in accordance with local and national codes.

G. CONTROLS:

Sensing devices to detect wastewater levels for initiating pump operation and to detect high water levels shall be installed. Level sensing devices shall only be used and shall not be located near flows entering the well.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 5

MANHOLES

5.1. SIZE

- A. Manholes shall be 48" I.D. for sewer mains up to 24" diameter and 60" I.D. for sewer mains 24" and larger. Transition rings may be used to reduce to 48" six (6) feet above invert.
- B. Manholes shall be located at all angles, all termination points and no greater distance than 300'.
- C. Frame and covers will be 24" for 48" manholes and 30" for 60" manholes.

5.2. MATERIALS

- A. Manholes shall be constructed of reinforced precast concrete monolithic base section, barrel sections and dome section, meeting the latest applicable requirements of A.S.T.M. Spec. C478-70T, or latest revision thereto. Pipe to manhole connection shall be made with a flexible rubber boot and stainless steel type connector. Joint between manhole sections shall be made with a butyl rubber compound. Red clay brick for table and invert shall be hard burned, of uniform Grade B, and subject to approval by the Department of Public Works. Manhole steps shall be either aluminum alloy 6-61 T6, extruded, safety type or polypropylene coated grade 60 reinforcing bar, per ASTM C-478 and OSHA (STD 1-1.9). Frame and cover shall be cast iron meeting the requirements of ASTM specifications for gray iron castings, class 20.

5.3. CONSTRUCTION

- A. Manhole base sections shall be installed upon a compacted crushed stone sub-base, 6 inches in depth, leveled and secured. The Department of Public Works may order an additional depth of sub-base. Barrel and dome section shall be carefully placed upon base section, with a butyl rubber strip used as a jointing compound.
- B. Red clay brick shall be used for frame grade adjustment and frames shall be set upon a full bed of mortar. Mortar shall also be placed around manhole flange. Completed frames and covers shall be kept 1/4 inch below finished roadway surface.
- C. For straight-line manholes, the pipe shall be laid through the manhole the bottom half of the pipe forming the invert and the top half being removed. Angle or junction manholes shall have the inverts formed with red clay brick, set on edge and smoothly rounded in the direction of flow. A red clay brick table shall be constructed in all manholes, sloping toward the channel.
- D. Manhole manufacturer shall install aluminum or polypropylene steps.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

- E. All manholes shall be waterproofed at the construction site, to allow inspection of concrete, prior to installation of waterproofing compound. Any damage to the waterproofing caused by construction activities shall be repaired prior to backfilling.
- F. Flat top slabs are permitted only where shallow manhole depths prohibit use of dome section.
- G. Basis for entire manhole structure design shall be H-20 loading.
- H. All drop manholes shall be of the internal type. Drop manholes shall be a minimum 60" diameter.

5.4. JOINTING

- A. The joints between the precast sections of the manholes shall be made using a flexible type sealing gasket such as Ram-neck or Kent-Seal No. 2 applied in accordance with manufacturer's instructions.
- B. The joint between the manhole base and the sewer pipe shall be of flexible sleeve type for pipe size 12 inches and smaller, and shall be of the press wedge 11 gasket type for pipe sizes larger than 12-inch diameter. The gasket or sleeve shall be cast in the manhole base sections at the time of manufacture. Sleeve type shall be provided with stainless steel strap to clamp the sleeve to the pipe.
- C. A pipe joint shall be installed within 24 inches of exterior wall of manhole. Other flexible types of wall to pipe joints will be permitted subject to approval by the Department of Public Works.

5.5. STEPS

- A. Aluminum or polypropylene steps shall be cast in place, 12 inch on center. For aluminum steps, the portion of step embedded in concrete, plus 2 inches, shall be coated with aluminum oxide.

5.6. FRAMES AND COVERS

- A. Frames shall be set on full bed of cement mortar and adapter rings of brick shall be used for grade adjustment. Cast iron covers shall be marked with an "S" and frame and covers shall meet the requirements of ASTM. Specification for gray iron castings, Cast Iron Class 20.
- B. Maximum grade adjustment for frame and cover shall be one foot (1'). Frames shall be fully encased in concrete within 2" of finish grade.
- C. All Covers are to be non-vented type.
- D. Frames and covers shall be manufactured in the United States of America by EJ (formerly East Jordan Iron Works) Catalog #1258Z 1258A1 Assembly to match existing. Any frames



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

and covers manufactured outside of the United States that are provided by a Contractor shall be removed and replaced at the Contractor's expense.

5.7. FIELD CORING

- A. Field coring of manholes shall not be permitted unless approved by the Town. Any approved field coring shall be completed with an appropriate coring machine. Patching of holes cast by the manufacturer or holes cored in the field that are in error and will not be used, shall be plugged solid with brick and mortar and parged with hydraulic cement.

5.8. CONCRETE REPAIRS

- A. Field repairs of minor concrete cracks, spalls or minor concrete defects shall be completed using hydraulic cement, such as Water Plug by Thoro or Equal. Any defects considered by the Town to be major will require replacement of the entire manhole section.

5.9. TESTING

- A. A leakage test shall be conducted on each manhole constructed prior to use, by the Contractor, at his expense and under the observation of the Department of Public Works. The test shall be either an exfiltration or an infiltration test as determined by applicable conditions and as directed by the Department of Public Works.
- B. If the ground water elevation is higher than 30" above pipe invert grade, the test will be an exfiltration test. The Contractor shall install water tight plugs in all pipe openings in the manhole, then fill the manhole with water to the top of the manhole dome section, and the drop in water level observed over 4-hour period, or less. If the quantity lost is less than a rate of 1/4 gallon per foot of depth the test will be deemed acceptable. If this rate is exceeded, the Contractor shall make all necessary repairs to reduce the rate of exfiltration to the specified rate. All visible points of leakage shall be repaired in any case.
- C. An infiltration test will be conducted by vacuum testing of manholes. The Contractor shall install water tight plugs in all pipe openings in the manhole and install a manhole vacuum test plug in the opening of the top section of the manhole. The manhole vacuum test plug shall include an inflatable bladder and pressure gauge, a vacuum gauge and a frame to restrain the plug to the manhole. The bladder shall be inflated to 25 psi. A vacuum pump shall be used to create a vacuum of 10 inches of mercury (Hg) in the manhole, within a period of five minutes. The vacuum pump will be disconnected when a vacuum of 10 inches of mercury is obtained within the manhole. The vacuum gauge will be observed for one minute and the test will be considered acceptable if the vacuum, after one minute, is not less than 9 inches of mercury. If more than one inch of mercury vacuum is lost, the Contractor shall make all necessary repairs to reduce the rate of vacuum loss to within acceptable limits. Vacuum testing will be repeated after any required repairs are completed.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 6

USE OF PUBLIC SEWERS

- A. No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer.
- B. Stormwater and all other unpolluted drainage shall be discharged to such sewers as are specifically designated as combined sewers or storm sewers, or to a natural outlet approved by the Department of Public Works. Industrial cooling water or unpolluted process waters may be discharged, on approval of the Department of Public Works, to a storm sewer, combined sewer, or natural outlet.
- C. Prohibitions and Standards for Discharge to sanitary waste streams
1. General Prohibitions. No person shall discharge or cause to be discharged to a POTW or septic system any substances, materials, or wastewaters that can: harm the sewers, wastewater treatment process, or equipment; have an adverse effect on the receiving waters; or otherwise endanger life, limb, public property, or constitute a nuisance. In determining the acceptability of these wastewaters, consideration shall be given to such factors as the quantities of such wastewaters in relation to flows and velocities in the sewers, construction of or materials comprising sewers, nature of the wastewater treatment process, capacity of the wastewater treatment process, degree of treatability of such wastewaters in the wastewater treatment plant, and other pertinent factors. Pollutants introduced into POTW's by a non-domestic source shall not pass through the POTW or interfere with the operation or performance of the treatment works. These general prohibitions and the specific prohibitions in 314 CMR apply to all non-domestic sources introducing pollutants into a POTW whether or not the source is subject to other pretreatment standards or any other federal, state, or local pretreatment requirements.
 2. Specific Prohibitions. In addition, the following pollutants shall not be introduced into a waste stream:
 - a. Pollutants which create a fire or explosion hazard in the POTW.
 - b. Pollutants which will cause corrosive structural damage to the POTW, and in no case discharges with pH lower than 5.5, unless the works is specifically designed to accommodate such discharges.
 - c. Solid or viscous pollutants, including fats, oils and grease in amounts which will cause obstruction to the flow in the POTW resulting in interference.
 - d. Any pollutant, including oxygen demanding pollutants released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

- e. Heat in amounts which will inhibit biological activity in the POTW resulting in interference, and in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 40°C (104 F), unless the Department of Environmental Protection, upon request of the POTW, approves alternate temperature limits.
- f. More than one part per billion (ppb) of mercury. In the event a local mercury limit established under 314 CMR 12.09(1) is applicable to an indirect discharge to a POTW, the most stringent mercury standard shall apply.
- g. Any waters or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure to interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the sewage treatment plant.
- h. Any water or waste containing fats, wax, grease, or oils, whether emulsified or not, in excess of 100 mg/l or containing substances which may solidify or become viscous at temperatures between 32° and 150° F. (0° and 65° C.).
- i. Any waters or wastes containing iron, chromium, copper, zinc, and similar objectionable or toxic substances; or wastes exerting an excessive chlorine requirement, to such degree that any such material received in the composite sewage at the sewage treatment works exceeds the typical concentrations found in municipal wastewater or the typical concentrations seen at the existing wastewater treatment facility or the limits established by the Department of Public Works for such materials, whichever is lower.
- j. Any waters or wastes containing phenols or other taste or odor producing substances, in such concentrations exceeding the typical concentrations found in municipal wastewater or the typical concentrations seen at the existing wastewater treatment facility or limits which may be established by the Department of Public Works as necessary, after treatment of the composite sewage to meet the requirements of the state, federal, or other public agencies or jurisdiction for such discharge to the receiving waters.
- k. Materials which exert or cause:
 - i. Unusual concentrations of inert suspended solids (such as, but not limited to, fuller's earth, lime slurries, and lime residues) or of dissolved solids (such as, but not limited to, sodium chloride and sodium sulfate).
 - ii. Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).
 - iii. Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment works.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

- iv. Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.
- l. Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment process employed, or are amenable to treatment only to such degree that the sewage treatment plant effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving waters.
- m. Any radioactive wastes or isotopes of such half-life or concentration as may exceed the typical concentrations found in municipal wastewater or the typical concentrations seen at the existing wastewater treatment facility or limits established by the Department of Public Works in compliance with applicable state or federal regulations.
- n. Any waters or wastes having a pH in excess of 9.5.
3. Solid materials discharged to the waste stream:
 - a. Unless otherwise noted, only properly shredded garbage is allowed to be discharged to the waste stream. Exceptions to this include: Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow of sewers, or other interference with the proper operation of the sewage works such as, but not limited to, ash, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, underground garbage, whole blood, paunch manure, hair and fleshing's, entrails and paper dishes, cups, milk containers, etc., either whole or ground by garbage grinders.
 - b. Any other products added to the waste stream must be dispersible. Outside of human generated materials, the only product that is dispersible is two-ply toilet paper.
 - c. Non dispersible items are strictly prohibited. Non-dispersible items that are prohibited from being disposed of into the waste stream include, but are not limited to, the following:
 - i. diapers,
 - ii. baby wipes,
 - iii. cotton swabs,
 - iv. household cleaning wipes,
 - v. floss, and
 - vi. other similar non dispersible products.
- D. 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 Subsection D of this section, and which, in the judgment of the Department of Public Works, may have a deleterious effect upon the sewage works, 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



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

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 the added cost of handling and treating the wastes not covered by existing taxes or sewer charges under the provisions of Subsection J of this section. 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, and subject to the requirements of all applicable codes, ordinances, and laws.

- E. 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 grease in excess 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.
- F. Where preliminary treatment or flow-equalizing facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at his/her expense.
- G. 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 control manhole together with such necessary meters, and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of the wastes. Such manhole, when required, shall be accessibly and safely located, and shall be constructed in accordance with plans approved by the Department of Public Works. The manhole shall be installed by the owner at his/her expense, and shall be maintained by him/her so as to be safe and accessible at all times. These manholes shall receive flow from no other location than the force main.
- H. All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this article shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association, and shall be determined at the control manhole provided, or upon suitable examples taken at said control manhole. In the event that no special manhole has been required, the control manhole shall be considered to be the nearest downstream manhole in the public sewer to the point at which the building sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb, and property. The particular analyses involved will determine whether a twenty-four-hour composite of all outfalls of a premise is appropriate or whether a grab sample or samples should be taken. Normally, but not always, BOD and suspended solids analyses are obtained from twenty-four-hour composites of all outfalls whereas pHs are determined from periodic grab samples.
1. All industries discharging into a public sewer shall perform such monitoring of their discharges as the Department of Public Works and/or duly authorized employees of the Town may reasonably require, including installation, use, and maintenance of



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

monitoring equipment, keeping records and reporting the results of such monitoring to the Department of Public Works. Such records shall be made available upon request by the Department of Public Works to other agencies having jurisdiction over discharges to the receiving waters.

- I. 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 or character may be accepted by the Town for treatment, subject to payment therefor, by the industrial concern.
- J. Pretreatment or Surcharge Requirements
 1. Any non-residential applicant who connects to the sewer is subject to providing the Town with specific details of the quantity and quality of wastewater they are or plan to discharge.
 2. A discharger who conveys or proposes to convey any waste product that contains contaminant loads that are higher than residential contaminant loads (as defined by TR-16), is subject to pretreatment requirements and/or surcharges for the high loads. These loads may include, but are not limited to, BOD, TSS, Nitrogen (total nitrogen, TKN, nitrate, nitrite), Phosphorus and pH. In addition, the Town reserves the right to receive a characterization of the waste and/or to request specific data on characteristics including, but not limited to, COD, dissolved solids, aluminum, concentrations of known chemicals, etc.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 7

PUMP STATIONS

7.1 GENERAL

- A. The Contractor shall adhere to all applicable standards contained with the “Town of Uxbridge Design and Construction Standards Manual”
- B. The design of all pump stations shall conform to the requirements set forth in “**TR-16 Guides for the Design of Wastewater Treatment Works**”



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 8

WASTEWATER TREATMENT

8.1 GENERAL

- A. The Contractor shall adhere to all applicable standards contained with the “Town of Uxbridge Design and Construction Standards Manual”
- B. The design of all pump stations shall conform to the requirements set forth in “**TR-16 Guides for the Design of Wastewater Treatment Works**”



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 9

SEWER CHARGES AND FEES

- A. The Town may, at its discretion, charge a fee for each connection to the Town sewer.
- B. If a residential, commercial or industrial customer has a drinking water well instead of potable water supplied by the Town and that residence is connected to the Town sewer, the residence is required to install and maintain a water meter on the well water supply pipe. The DPW shall determine the water meter size and there will be no charge for one standard 1" meter. The cost of larger meters (meter and its installation) shall be borne by the resident. The meter shall be provided at the owner's expense. The Department shall record water usage from this meter as a basis for billing sewer use fees to the property owner. The cost of any replacement meter, its installation, and its reinstallation shall be borne by the resident.
- C. If a house has no water meter and chooses not to have one installed, the resident shall pay the "Sewer Flat Rate" established by the Water and Sewer Commissioners. This only applies to residential customers. The flat rate does not apply to commercial or industrial customers.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 10

FLOW NEUTRAL CONTROLS

10.1. BACKGROUND

The Town of Uxbridge completed a Comprehensive Wastewater Management Plan (CWMP) that was approved by the Secretary of the Executive Office of Energy and Environmental Affairs (EEA). The CWMP outlines the existing and future wastewater needs of the Town and identifies three (3) Sewer Service Areas (SSAs) with apportioned wastewater flow. Figure 6-1 in the CWMP shows the three SSAs and is attached and made part of this sewer use regulation.

Existing and future wastewater flows were calculated for each of the three Study Areas. 'Table 1 - Sewer Service Areas Approved Wastewater Flow Allocations' outlines approved wastewater flow allocations outlined in the CWMP. Existing and future wastewater needs for the Town of Uxbridge are 1.5 million gallons per day (MGD), as indicated in the Town's National Pollutant Discharge Elimination System (NPDES) permit issued by the United States Environmental Protection Agency (USEPA) for the wastewater treatment facility. The NPDES permit includes approved water quality and volume discharge limits.

10.2. WASTEWATER FLOW ALLOCATIONS

Existing and future wastewater allocations, outlined in the approved 2016 CWMP are listed below:

Table 1 – Sewer Service Areas Approved Wastewater Flow Allocations

Sewer Service Area	Existing Allocated Flow (MGD)	New Allocated Flow (MGD)	Total Allocated Flow (MGD)
1	0.00	0.02	0.02
2	0.47	0.24	0.71
3	0.53	0.24	0.77
Total	1.00	0.5	1.5

10.3. SMART GROWTH CONTROLS

The SSA wastewater flow allocations have been reserved as outlined in the approved CWMP. In no case shall flow be allocated in excess of the Total Allocated Flow. This regulation effectively establishes flow neutral growth controls and allows the Board of Sewer Commissioners to provide definite limits to uses of the wastewater system.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

The Board of Selectmen, acting as Sewer Commissioners shall reserve the right to reallocate the flows within the SSAs provided that the following provisions are met:

- Reallocation of flow occurs within the Table 1 Sewer Service Areas Approved Wastewater Flow Allocations.
- Reallocation of flow does not result in an exceedance of the Total Allocated Flow outlined in the CWMP approved by the Secretary of EEA.

10.4. CONNECTIONS AND EXTENSIONS FOR THE WASTEWATER SYSTEM

The Town of Uxbridge Director of Public Works (Director) and the Board of Sewer Commissioners will use information and recommendations included in the CWMP as a guide when considering applications for new connection and extension permits and thereby manage the capacity within the SSAs to serve the needs of the Town for the 20 year planning period (2015 – 2035).

10.5. PLAN OF TOWN AND SEWER AREAS

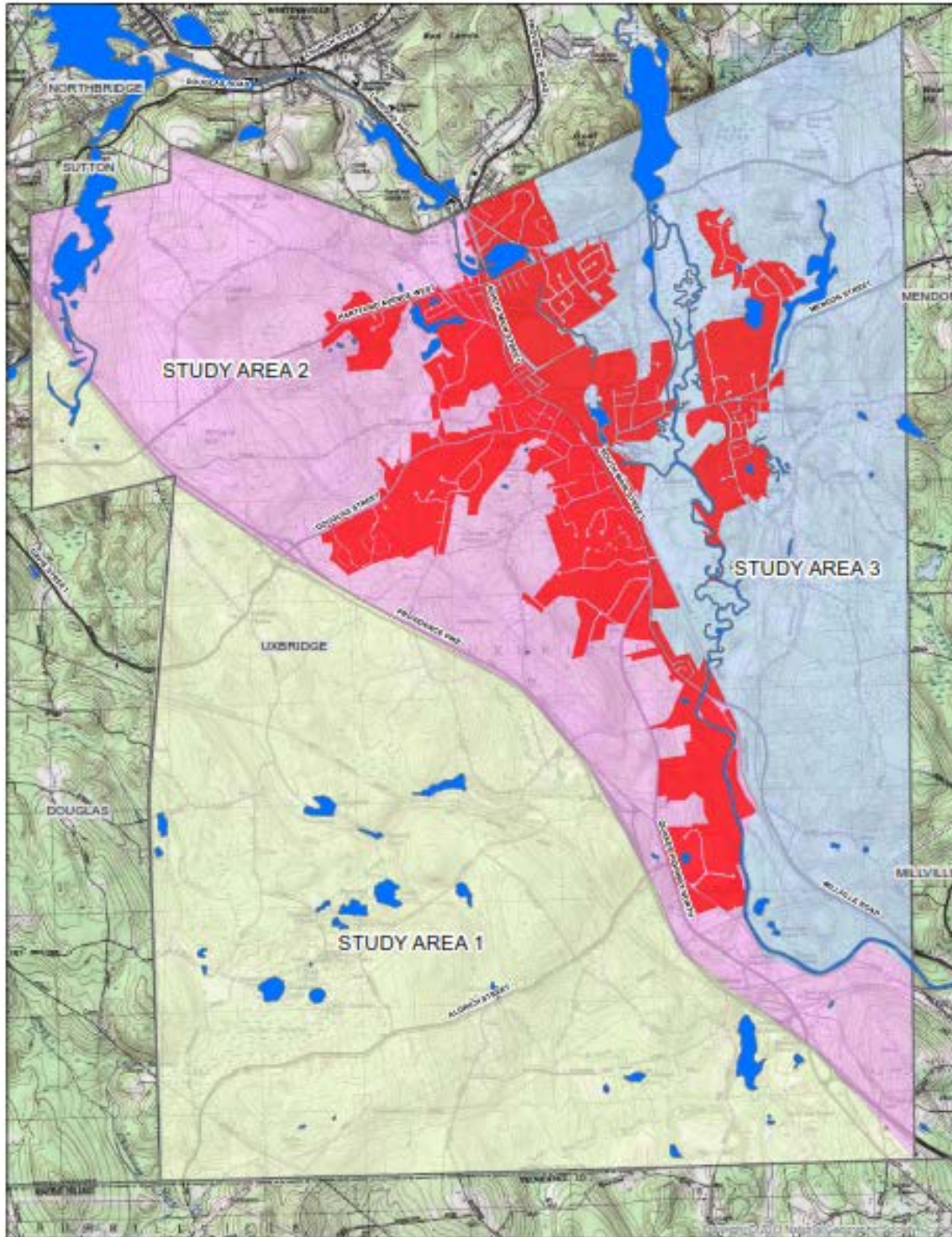
Figure 6-1 illustrates the SSAs outlined in the CWMP.

10.6. ABANDONMENT OF SYSTEMS

Existing on-site septic systems that are connected to the Town's sewer system shall comply with Commonwealth of Massachusetts – Department of Environmental Protection Regulations 310 CMR 15.354 – Abandonment of Systems.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS



Legend

- Surface Waters
- Parcels within the existing collection system area
- Major Roadways

Study Area

- STUDY AREA 1
- STUDY AREA 2
- STUDY AREA 3

Figure 6-1

Town of Uxbridge, Massachusetts
Comprehensive Wastewater Management Plan

Job Number: 05-14914
Revision: A
Date: 10 Dec 2015

STUDY AREAS

Figure 6-1

Scale: 1" = 1,000 Feet
North Arrow
Logo: Uxbridge Sewer District

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Vertical Datum: Mean Sea Level 1988
Scale: NAD 1983 StatePlane Massachusetts Metric (1983) Feet

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MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

SECTION 11

SEPTAGE

- A. The Town of Uxbridge Wastewater Treatment Facility (WWTF), under normal operating conditions, will accept all domestic septage generated in the Town of Uxbridge. Domestic septage generated outside of the Town of Uxbridge will be on a first-come first-served basis.
- B. All haulers must apply for and be granted from the Uxbridge Board of Health a permit to carry septage in the Town of Uxbridge before being allowed to dispose at the Uxbridge WWTF.
- C. Unless a functional automated measuring system is in place, all trucks disposing of liquid waste at the Uxbridge WWTF will be considered full.
- D. Septage and non-hazardous industrial waste may be introduced into the treatment plant at a designated receiving area within the treatment plant. Such wastes shall not violate Section 6 of these regulations or any other requirements established by the Town
- E. All non-domestic hauled wastes must have prior consent from the Town for disposal at the treatment plant. The Town may collect samples of each load to ensure compliance with applicable standards. The Town may require the hauler to provide a waste analysis of any load prior to discharge. The driver will collect a sample from each load
- F. Waste haulers must provide all required information on an official Town of Uxbridge Septage Receiving Form for every load. This form shall include, at a minimum, the name and address of the waste hauler, truck and trailer identification, source(s) of waste, owner, address, contact info e.g., phone number and/or email address, volume and characteristic of waste. In addition, for hauled non-hazardous industrial or commercial wastes, the form shall identify the sources of waste, and known or suspected waste constituents. RCRA hazardous wastes, as defined in MassDEP Hazardous Waste Regulations, are prohibited discharges. Septage forms must be filled out completely with all required addresses and phone numbers, as the Uxbridge WWTF reserves the right to verify any and all loads brought to the facility. If the vehicle registration number is not provided the hauler will be billed for the truck in their fleet with the largest capacity. Septage forms can be obtained at the Wastewater Treatment Facility. Any load containing grease, industrial or commercial byproducts originating in the Town of Uxbridge will only be accepted with prior knowledge and approval. Additionally, non-residential loads will only be accepted Monday thru Thursday before 12:00 Noon, Fridays before 9:00 A.M. Any load containing grease or industrial or commercial byproducts originating outside of the Town of Uxbridge will not be accepted
- G. In all cases, the Town reserves the right to accept or reject any waste as it deems necessary. The Town may stop a discharge operation from a truck in progress at any time.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS

- H. A hauled waste hauler's ability to discharge hauled waste may be suspended or revoked immediately for any violations of these regulations.
- I. The Town shall have authority to prohibit the disposal of hauled wastes.
- J. Any hauler found to be bringing improper loads to the Uxbridge WWTF will be subject to reduction or termination of dumping privileges.
- K. The volume of each truck will be determined by the data plate on each tank. If no data plate is available, the Town of Uxbridge will determine the tank capacity. The Wastewater Treatment Facility will keep a daily log of all disposals by hauler and will bill monthly per the disposal log. The fee will be based on measured flows, if a flow meter is present, or 80% of the capacity of the truck, if the flow meter is not present or not functional. Payment will be due within 20 days of billing. Any hauler with an outstanding balance will not be allowed to discharge septage until payment is made in full.
- L. The Uxbridge WWTF reserves the right, at times it deems necessary, to temporarily rescind any or all portions of this policy.



MINIMUM STANDARDS FOR SEWER CONSTRUCTION AND RELATED REGULATIONS


Approved by:

Board of Selectmen/Water and Sewer Commissioners

Chairman Jennifer Modica



Vice Chair Jeff Shaw



Clerk Jim Hogan



Selectman Peter Baghdasarian

Selectman

Date

10/11/16

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