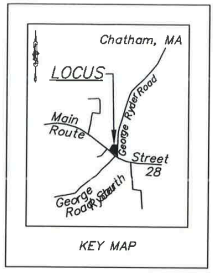




PROPERTY PLAN	
Date	Description of Revision

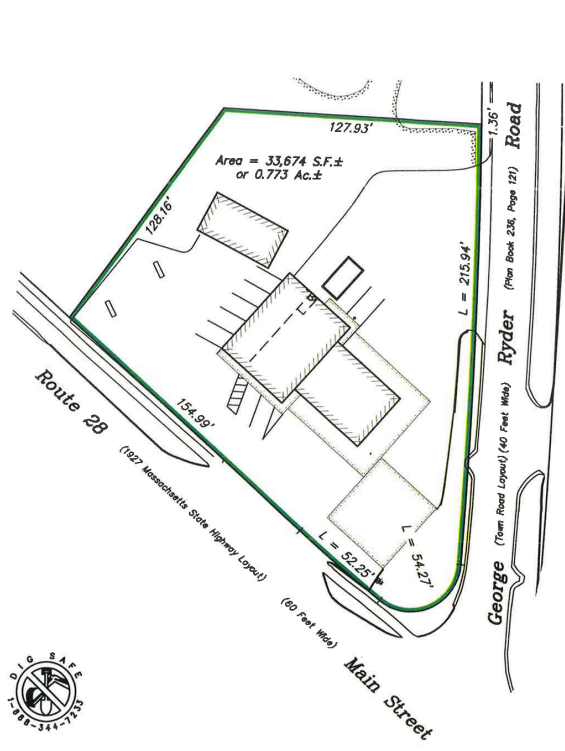
Daniel K. and Sharon F. Meservey
 ELDRIDGE SURVEYING & ENGINEERING, LLC
 1035 Main Street, Chatham, MA, 02633
 (508) 945-3895, Fax: (508) 945-5885

Date: 04-28-2016
 Scale: 1" = 40'
 Project No.: C-4439-01.0
 Sheet No.: 1 of 8



Parcel ID: BE-39-16
 OWNER OF RECORD:
 Daniel K. and Sharon F. Meservey
 Deed Book 10,738, Page 86
 First Parcel:
 Plan Book 125, Page 107
 Second Parcel:
 Portion of Plan Book 180, Page 93

- LEGEND**
- 48 --- Existing Contour
 - W --- Water Service
 - OHU --- Overhead Utility Line(s)
 - U --- Underground Utility Line(s)
 - G --- Gas Line
 - Utility Pole
 - CB Catch Basin
 - S.T. Septic Tank
 - D.B. Distribution Box
 - S.A.S. Soil Absorption System
 - G.T. Grease Trap
 - F.H. Fire Hydrant
 - W.V. Water valve
 - W.S.O. Water shut off
 - T.H. Tree or Hedge Line
 - E.L. Edge of Lawn
 - E.G. Edge of Garden
 - E.L.S. Edge of Landscaping
 - D.T. Deciduous Tree
 - C.T. Coniferous Tree
 - B. Building



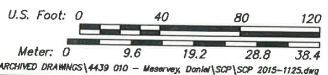
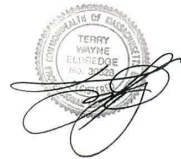
NOTE: FOR USE WITH AERIAL TOPO

1.) The topographical and planimetric information shown hereon and on the following sheets, with the exception of information located in the field, is based on digital aerial maps prepared by Chas. H. Sells, Inc., for the Town of Chatham.

The date of photography is April, 2000.

2.) Horizontal Datum: NAD83

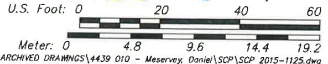
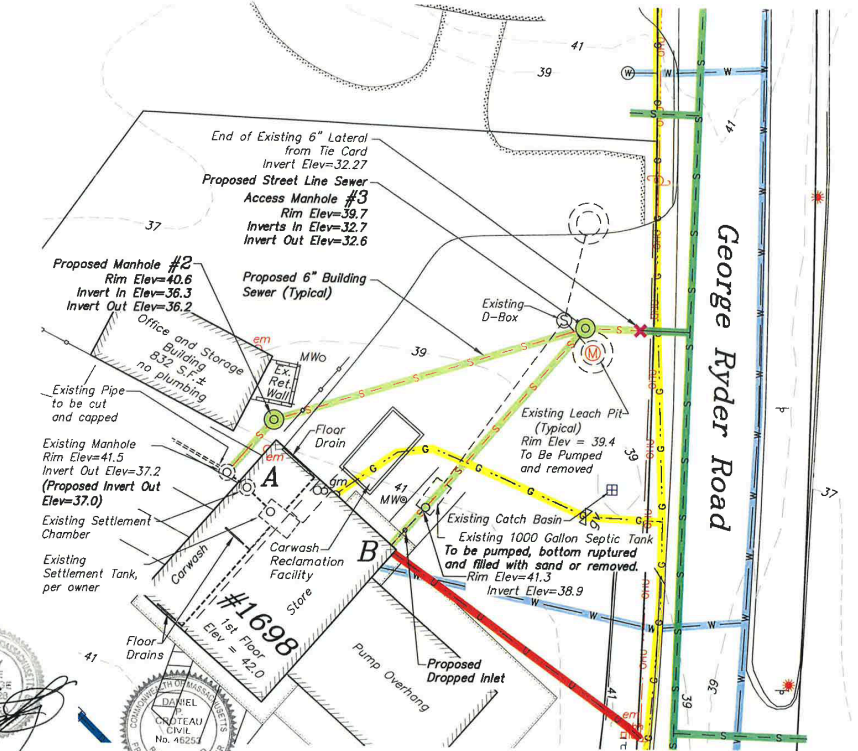
3.) Vertical Datum: NAVD83 Based on NGS Disc Tidal BM No. 844 7435 B located at the Chatham Fish Pier, Elev. = 12.57



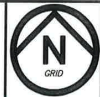
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- SEWER NOTES:**
- Contractor shall be responsible for verifying the location of all underground and overhead utilities prior to the commencement of work.
 - Sewer lateral information is based on record information from the card on file with the Chatham Water and Sewer Department.
 - The building sewer pipe exiting the building is existing.
 - Contractor shall be responsible for verifying the elevation of the invert of the end of the existing sewer service lateral and the elevations of the invert of the sewer pipe exiting the building prior to the commencement of the installation of the sewer service. If there is significant discrepancy in elevation or location, the contractor shall inform Eldredge Surveying & Engineering, LLC (ESE-LLC) prior to the installation of any component of the sewer service.
 - Piping shall be SDR 35 with push-on type connections laid in a bed of crushed stone. The trench shall be backfilled with clean material free of stones.
 - Benchmark is first floor elevation.

- LEGEND**
- Existing Sewer Pipe
 - Proposed Sewer Pipe
 - W --- Existing Water Line
 - CO --- Sewer Cleanout
 - em --- Electric Meter
 - gm --- Gas Meter
 - MW --- Existing Monitor Well



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SEWER CONNECTION PLAN	
Date	Description of Revision

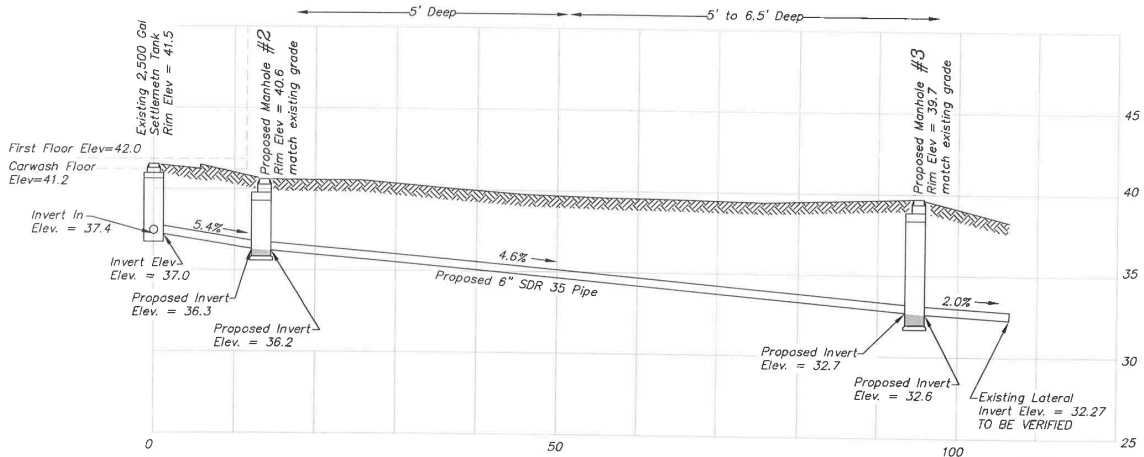
Daniel K. and Sharon F. Meservey
 ELDRIDGE SURVEYING & ENGINEERING, LLC
 1035 Main Street, Chatham, MA, 02633
 (508) 945-3895, Fax: (508) 945-5885

Date: 04-28-2016
 Scale: 1" = 20'
 Project No.: C-4439-01.0
 Sheet No.: 2 of 8

SEWER NOTES:

- 1.) Sewer lateral information is based on record information from tie card on file with the Chatham Water and Sewer Department.
- 2.) The building drain exiting the building is existing.

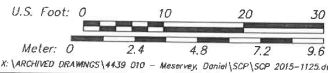
Note:
The components in the profile have been exaggerated for clarity. The bottom of the pipe is at the proposed elevation.



PROFILE OF BUILDING SEWER A to SMH #3

Horizontal Scale 1"=10'
Vertical Scale 1"=5'

NOTE: Invert elevation of lateral is based on a depth of 6.0' below grade.



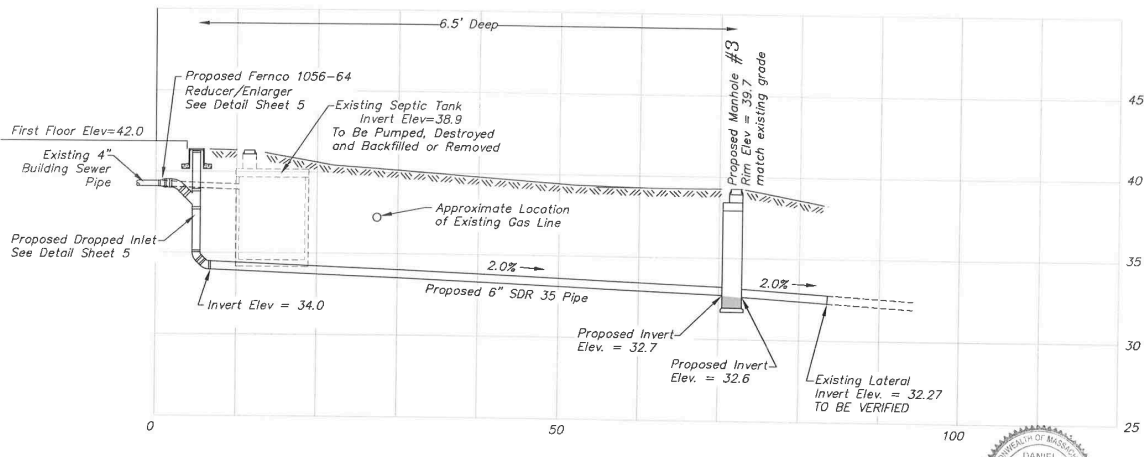
SEWER PROFILE	
1688 Main Street, Chatham, Massachusetts	
Date	Description of Revision

Daniel K. and Sharon F. Meservey
ELDRIDGE SURVEYING & ENGINEERING, LLC
1038 Main Street, Chatham, MA 02633
(508) 945-3905 Fax: (508) 945-3905

SEWER NOTES:

- 1.) Sewer lateral information is based on record information from tie card on file with the Chatham Water and Sewer Department.
- 2.) The building drain exiting the building is existing.

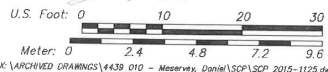
Note:
The components in the profile have been exaggerated for clarity. The bottom of the pipe is at the proposed elevation.



PROFILE OF BUILDING SEWER B

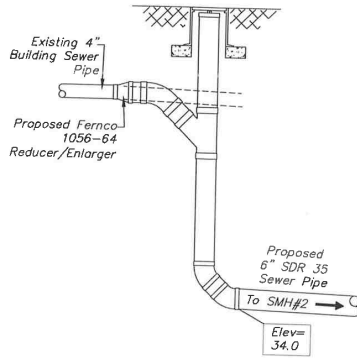
Horizontal Scale 1"=10'
Vertical Scale 1"=5'

NOTE: Invert elevation of lateral is based on a depth of 6.0' below grade.



SEWER PROFILE	
1688 Main Street, Chatham, Massachusetts	
Date	Description of Revision

Daniel K. and Sharon F. Meservey
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1038 Main Street, Chatham, MA 02633
(508) 945-3905 Fax: (508) 945-3905



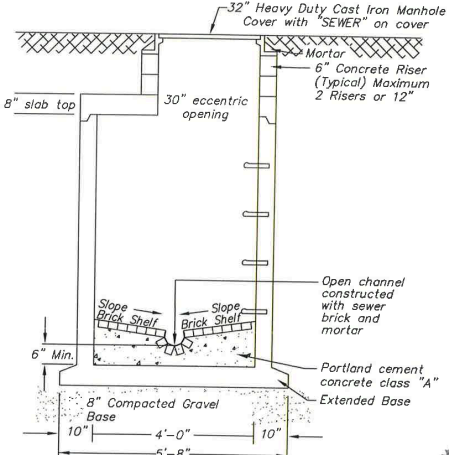
DETAIL OF 4" TO 6" CONNECTION AND DROP INLET
(Not to Scale)



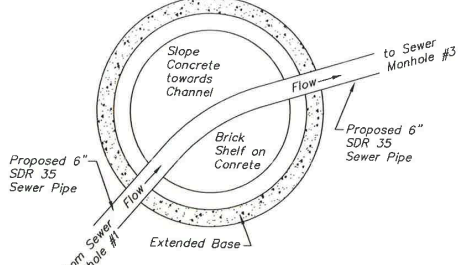
SEWER DETAILS	
1688 Main Street, Chatham, Massachusetts	Date
Description of Revision	
1	

Daniel K. and Sharon F. Meservey
ELDRIDGE SURVEYING & ENGINEERING LLC
 1039 Main Street, Chatham, MA 02633
 (508) 945-3965; Fax: (508) 945-5985

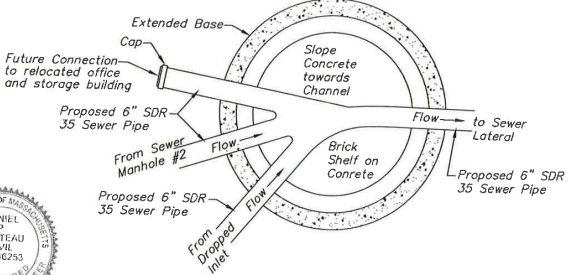
Date: 04-28-2016
 Scale: As Noted
 Project No.: C-4439-01.0
 Sheet No.: 5 of 8



SEWER ACCESS MANHOLE #2 AND STREET LINE SEWER ACCESS MANHOLE #3
(Not to Scale)
 Shorey 4'-0" Diameter Sewer Manhole (H-20)



PLAN VIEW SEWER ACCESS MANHOLE #2
(Not to Scale)



PLAN VIEW STREET LINE SEWER ACCESS MANHOLE #3
(Not to Scale)



SEWER DETAILS	
1688 Main Street, Chatham, Massachusetts	Date
Description of Revision	
1	

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 1039 Main Street, Chatham, MA 02633
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Date: 04-28-2016
 Scale: As Noted
 Project No.: C-4439-01.0
 Sheet No.: 6 of 8

**PERTINENT EXCERPTS FROM THE
Town of Chatham Sewer Regulations.**
Articles and Sections shall be cited as Art #, Sec #.

**ARTICLE I
DEFINITIONS**

Art I, Sec 4. "Building Drain" . . . ends at the building sewer, which begins five (5) feet outside the inner face of the building's wall.

Art I, Sec 5. "Building Sewer" shall mean the extension from the building drain, five feet (5') . . . outside the inner face of the building's wall, to the public sewer . . .

Art I, Sec 20. "Public Sewer" shall mean a sewer in which all owners of abutting properties have equal rights and is controlled by the Town of Chatham Sewer Department.

Art I, Sec 21. "Sanitary Sewer" shall mean a sewer, which carries sewage from residential dwellings or commercial facilities . . .

Art I, Sec 25. "Sewer" shall mean a pipe or conduit for carrying sewage.

**ARTICLE III
BUILDING SEWERS AND CONNECTIONS**

Art III, Sec 1.

No person shall construct, uncover, make any connections with or opening into, use, alter or disturb any public wastewater collection, treatment, and disposal facilities or appurtenance thereof without first obtaining a written permit from the Director.

Art III, Sec 5. Old building sewers may be used to connect new buildings . . . approved by the Director.

Properties with building sewers that will be connected to the sewer system from a septic system; a portion of the existing pipe may be used as part of the building lateral to a public sewer . . . if it meets the requirements in the previous paragraph.

Art III, Sec 6. Building sewers shall be constructed of such materials and shall be a minimum four (4") inch diameter pipe for single family residential connections and six (6") inch diameter pipe for multifamily, commercial or industrial connections . . .

Sewer pipe shall be made from ductile iron with the outside coated with extra heavy bituminous coating approved for buried utilities and the inside cement lined, minimum schedule 35 [40] PVC, or acceptable substitute approved by the Director. The building sewer shall be laid straight in line and grade.

Single family residential building sewers must have watertight wye cleanouts, with H=20 rated (Heavy Duty) valve frame and cover box, with the word "SEWER" in raised lettering, at all locations where pipe size, slope or direction changes and at the property line. Additional cleanouts may be required for runs of 100 feet or more . . . The cleanout shall be brought to within four (4") inches below final grade, except for paved surfaces. (bituminous concrete, concrete, paving blocks, etc.) the cover shall be flush with the finished surface . . .

Gravily or low pressure pipe shall have magnetic marking tape 2 inches wide with the words "SANITARY SEWER BELOW," installed not more than two (2) feet below finished grade on all manholes and service laterals [building sewers].

Art III, Sec 9.

At the time a connection is made to the Town's sanitary sewer system, the interior plumbing shall be inspected to ensure that no connections to roof drains, yard drains, foundation drains, sump pumps, or other sources of drainage water are connected to the sanitary sewer.

Art III, Sec 11. The Licensed Utility Installer (L.U.I.), listed on the approved sewer connection permit, shall notify the Water and Sewer Departments, a minimum of 72 hours before the building sewer will be ready for connection to the public sewer. The Director will schedule the time and date when he or his representative will be available to perform an inspection of the building sewer's connection to the public sewer, connection shall be made only under the supervision of the Director or his representative.

Art III, Sec 12. 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 and/or private property disturbed in the course of the work shall be restored in a manner satisfactory to the Director.

Art III, Sec 14. All sanitary sewer extensions shall require inspection by a qualified inspector or the Director may determine that a building sewer installation or repair will require full time inspection by a qualified inspector. In either case the Director will designate a private inspector as Town Inspector, who shall represent the interest of the Town of Chatham during construction of any sanitary sewer extension or building sewer installation or repair, and will monitor and inspect the on going progress of the work, full-time observation is required . . . Flows will not be permitted to be discharged from any service connection until a Certificate of Compliance is submitted by the Town Inspector and the report is approved by the Director.

Art III, Sec 15. After the completion of any building sewer's repairs or connection to the municipal sewer, the L.U.I. shall fill out a **sewer connection tie-card** on the forms provided at the Water and Sewer Departments' office for each building sewer the L.U.I. has performed work on. The tie-card shall be completed before the inspection of the L.U.I.'s work, and before the L.U.I. backfills the building sewer and connection to the municipal sewer.

**ARTICLE IV
DESIGN OF SEWERS**

Art IV, Sec 8. Protection of Water Supplies

Horizontal Separation:

Whenever possible, lay out sewers at least 10 feet . . . from any existing or proposed water main. If local conditions prevent a lateral separation of 10 feet, the Director may make an exception on a case-by-case basis when supported by data from the design engineer. Such an exception may allow the sewer to be installed closer than 10 feet to a water main, provided that it is laid out in a separate trench with the top (crown) of the sewer at least 18 inches . . . below the bottom (invert) of the water main or is encased in a watertight sleeve.

Vertical Separation:

Whenever sewers must cross water mains, lay out the sewer so that the top of the sewer is at least 18 inches . . . below the bottom of the water 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 . . . on each side of the sewer. One full-length (twenty feet) water main pipe shall be centered over the sewer so that both joints will be as far from the sewer as possible.

Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

**ARTICLE V
CONSTRUCTION TECHNICAL SPECIFICATIONS**

Art V, Sec 1. The owner, developer, or L.U.I. shall submit to the Director (for his approval) plans and profiles of the proposed public sewer extensions and/or building sewer connections.

Art V, Sec 4. All materials, including pipe and manhole structures, shall be of the same make and quality used by the Chatham Sewer Department and approved by the Director.

Art V, Sec 5. Public sewers and building sewers shall be laid using a transit or laser level. All sewer pipes shall be laid on a bed of **roughed stone** of at least six inches (6") in depth under the pipe and crushed stone shall extend at least halfway up the side of the pipe. Approved gravel, with no stones larger than two inches (2") in any dimension, shall be used to cover pipe to one foot above pipe. The rest of the backfill material must be approved by the Director, Massachusetts Highway Department or Town of Chatham Surveyor of Highways. The approved backfill material shall be placed in mechanically compacted lifts of no more than six inches (6") deep in any dimension, and other specifications more stringent than the above. The approved backfill material above the gravel shall contain no stones greater than 8 inches in any dimension.

Art V, Sec 6. Impervious dams shall be considered every 300 feet to control the flow of groundwater with 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 being constructed is downstream of any waterway and wetland crossings.

Art V, Sec 7. Sewers may be deep enough to drain basement fixtures, and shall be deep enough to prevent freezing. Watertight insulation shall be provided for sewers that cannot be placed deep enough to prevent freezing.

Art V, Sec 8. Where high groundwater conditions are anticipated, the buoyancy of sewers shall be considered, and the flotation of pipe shall be prevented with appropriate design and construction of the sewer.

Art V, Sec 9. No mud, gravel or debris shall be allowed to enter the sewer pipes at any time. All pipes shall be capped at end of day's laying and water shall be pumped out of excavation prior to removing the cap.

Art V, Sec 11. Minimum size of gravity public sewer pipe diameter shall be eight (8") inches and **building sewer pipes shall not be less than four (4") inches in diameter.** Minimum sizes of low-pressure sewer mains shall be in accordance with Article IV-Design of Sewers, Section 9. Details of Low Pressure Sewer Design and Construction.

SEWER REGULATIONS
1039 Main Street, Chatham, Massachusetts

Daniel K. and Sharon F. Meservey
ELDRIDGE SURVEYING & ENGINEERING, LLC
1039 Main Street, Chatham, MA 02633
(508) 945-3985; Fax: (508) 945-5885

Date: 03-09-2016
Scale: None
Project No.: C-4439-01.0
Sheet No.: 7 of 8

Art V, Sec 12. Sewer pipe and building sewer pipe material shall be:

- Reinforced Concrete Pipe;
- Extra Heavy Cast Iron Pipes;
- Heavy Wall Polyvinyl Chloride (PVC) Pipe;
- Ductile Iron Pipe;
- Extra Strength Vitrited Clay Pipe;
- Acrylonitrile - Butadiene - Styrene (ABS) Pipe;
- Plastic Pipe, sizes 4 inches through 12 inches, SDR=35 Type PSM Poly (Vinyl Chloride) (PVC) material;

Where necessary, special bedding, haunching and initial backfill, concrete cradles, or other special construction elements shall be used.

Bedding, Haunching, and Initial Backfill:
Based on the bedding support of the type of soil and potential groundwater conditions, use the following for the anticipated loads:

- Bedding classes A, B, and C, or crushed stone as described in the American Society of Testing Materials standard ASTM C 12, should be used for all rigid pipe, or
- Materials for bedding, haunching, and initial backfill, or classes I, II, or III as described in ASTM D 2321, should be used for all flexible pipe.

Art V, Sec 13. Manholes and Cleanouts:

Manhole and Cleanout Size:

Cleanouts. Cleanouts shall be constructed of the same material as the building sewer. The size of the cleanout shall be the same size as the building sewer up to six (6") inches in diameter, for building sewers larger than six (6") inches in diameter manholes shall be used. Cleanouts shall be sealed with removable, reusable threaded screw-in plug or screw-on cap.

Location:

Manhole and Cleanout Covers:
The elevation of the top section shall be such that the cover frame top elevation is one (1) foot above the 100-year flood elevation (in a field), 0.5 foot above a low elevation, or at finished road or sidewalk grade.

When located in a traveled area (road or sidewalk), the manhole frame and cover shall be heavy-duty cast iron. When located in a lawn or in a field, the manhole frame and cover may be light duty cast iron. Infiltration between the cover and frame shall be prevented by proper design and construction. Covers shall have "SEWER" cast into them. Covers shall have to be designed so that infiltration is prevented.

Watertightness:

The Contractor shall furnish manholes waterproofed over the entire exterior surface that will be below finished grade. The water proofing shall not mar or interfere with the specified exterior finish for these structures. Waterproofing shall be accomplished prior to structure installation for precast sections, and shall be applied to dry surfaces under proper weather conditions.

Pipe Connections:

Art V, Sec 15. No sanitary sewer pipe shall be left open into an unfinished house or cellar hole. All pipes must be capped to prevent the flow of surface water or debris from entering the sanitary sewer.

Art V, Sec 16. All sewer works located in the flood plain district area, established under the Floodplain Management Ordinance, shall require that new and replacement sewer works be designed and constructed to minimize or eliminate infiltration of flood waters into the system or discharge sewerage from the system into the floodwater.

Art V, Sec 17. Sewer Pipe Testing:

A. General

The L.U.I. shall test the first section of pipeline as soon as it is installed to demonstrate that the work conforms to these specifications.

The scheduling of deflection and pressure and leakage tests shall be as approved and attended by the Town of Chatham's Sewer Department or Town Inspector.

B. Deflection

Deflection tests shall be performed on all flexible pipes. No pipe shall exceed a deflection of 5 percent. If deflection exceeds 5 percent, the pipe shall be replaced.

C. Air Testing:

The Town requires air testing in lieu of the infiltration or infiltration tests. The L.U.I. shall submit his proposed method of air testing to the Director for approval.

Exfiltration Test:

If for any reason, approved by the Director, air testing cannot be performed, the Director shall require exfiltration testing.

Infiltration Test:

If for any reason, approved by the Director, air testing and exfiltration testing cannot be performed, the Director shall require infiltration testing be performed.

Art V, Sec 20. Cleaning Sewer Lines:

At the conclusion of the work, the L.U.I. shall thoroughly clean all pipelines by washing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered the pipes during the construction period. Debris cleaned from the pipes shall be removed from the low end of the pipeline by installing a screening device that will prevent any debris from entering the public sewer system or a section of the sewer works already approved. If after this cleaning, obstructions remain, they shall be removed. After the pipelines are cleaned and if the groundwater level is above the pipe or following a heavy rain, the Town Inspector will examine the pipes for leaks. If any defective pipes or joints are discovered, they shall be repaired or replaced as directed by the Town Inspector.

**ARTICLE VI
USE OF THE PUBLIC SEWER**

Art VI, Sec 3. Cleaning, maintaining, and repairing of building sewers, from the building to the property line at the street, shall be done at the expense of the owner, provided there is a manhole or cleanout at the property line. If there is no manhole or cleanout at the property line, the owner shall be responsible for the building sewer from the building to the public sewer.

Art VI, Sec 5.

Any garbage that has not been properly shredded to a maximum of one half of an inch (1/2"), 1.27 centimeters, in any dimension. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/4) horsepower (0.76 hp metric) or greater shall be subject to the review and approval of the Director.

Title 5

Septic Tank Abandonment
Pursuant to the State Environmental Code, Title 5, 310 CMR 15.354(3)(c) . . . the bottom of the existing septic tank shall be . . . ruptured after being pumped of its contents so as to prevent retainage of water and the tank shall be completely filled with clean sand or suitable material approved in writing by the local Approving Authority.

Grass Trap Tests

15.230 (5). The inlet tee shall extend to the mid depth of the tank. The outlet tee shall extend to within 12 inches of the bottom of the tank. Tees shall be Schedule 40 PVC and properly supported by a hanger, strap or other device.

Piping Connections

Use Fernco 1056-44 or equivalent coupling for connections between 4" Schedule 40 PVC pipe and 4" SDR-35 pipe.

Use Fernco 1056-64 or equivalent coupling for connections between 4" Schedule 40 PVC pipe and 6" SDR-35 pipe.

Use Fernco 1056-66 or equivalent coupling for connections between 6" Schedule 40 PVC pipe and 6" SDR-35 pipe.

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Sheet No.: 8 of 8