SEWER USE REGULATIONS

ACTON BOARD OF SEWER
COMMISSIONERS
TOWN OF ACTON, MASSACHUSETTS

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SEWER USE REGULATIONS

REGULATIONS GOVERNING THE USE OF PUBLIC AND PRIVATE SEWERS AND DRAINS, PRIVATE SEWAGE DISPOSAL, THE INSTALLATION AND CONNECTION OF BUILDING SEWERS, AND THE DISCHARGE OF WATERS AND WASTES INTO THE PUBLIC SEWER SYSTEM; AND PROVIDING PENALTIES FOR VIOLATIONS THEREOF; IN THE TOWN OF ACTON, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS.

Be it ordained and enacted by the Sewer Commission of the Town of Acton, Commonwealth of Massachusetts, as follows:

SECTION 1 - GENERAL

1A - APPLICABILITY & AUTHORITY

1. These specifications govern all sewer construction within dedicated public ways, "Town" easements and construction within private subdivisions, and are issued under the authority given to the "Board" under Chapter D10 Section 7 of the Town's Bylaws.

2. These specifications also apply to sewer work completed by "Town" employees, by virtue of its adoption as a standard by the "Board".

3. When so stated in the contract, these specifications shall govern the work of private contractors doing work under contract to the "Town".

4. These specifications shall govern the work of private contractors doing work within the "Town" rights-of-way and/or "easements".

5. These specifications shall govern the work of all private contractors doing work for developers, contractors, etc. in streets and easements which shall later be accepted by the "Town" as "Town" ways.

6. All sewerage system project designs shall be in accordance with MADEP and industry standards.

7. All plans for new sewerage systems, extensions and changes to existing systems must be submitted for review and approval by the Commonwealth of Massachusetts, Department of Environmental Protection and the "Town".

8. These specifications shall govern all "sewers" constructed on public or private property.

9. These specifications shall govern the installation of service connections. No service connections can be completed and approved until inspected by a duly authorized Board representative.

1B - DEFINITIONS

1. "Appendix A" shall mean Town of Acton Specifications for laying Public Sewers, Building Sewers, and Building Drains.
2. ASTM shall stand for the American Society of Testing Materials.
3. WPCF shall stand for the Water Pollution Control Federation.
4. "Board" shall mean the Sewer Commission of the Town of Acton or any agent or officer duly authorized to act in its place.
5. "Building Drain" shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from sanitary or approved waste inside the walls of the building and conveys it to the building sewer, ending ten (10') feet outside the inner face of the building wall.
    i. "Building Sewer" shall mean the extension from the building drain to the public sewer or other place of disposal, also called house connection.
6. "Contract Drawings" shall be the construction drawings which have been approved by the Town Manager's appointed representative signed "approved" and on file in his office.
7. "Contractor" shall be the party doing the construction: either a private contractor or Town of Acton Employees, as the case may be.
8. "Easement" shall mean an acquired legal right for the specific use of land owned by others.
9. "Floatable Oil" is oil, fat, or grease in a physical state such that it will separate by gravity from wastewater by treatment in an approved pre-treatment facility. A wastewater shall be considered free of floatable oil if it is properly pretreated and the wastewater does not interfere with the collection system.
10. Infiltration
11. Inflow
12. "Industrial Wastes" shall mean the wastewater from industrial processes, trade, or business as distinct from domestic or sanitary wastes.
13. "Inspector" shall be understood to be a qualified construction inspector of the Town of Acton appointed by the Town Manager.
14. "May" is permissive (See "Shall", 1.19).

15. MG/L shall stand for milligrams per liter.
16. "Person" shall mean any individual, firm, company, association, society, corporation, or group.
17. "Public Sewer" shall mean a common sewer controlled by the Town of Acton.
18. "Sanitary Sewer" shall mean a sewer that carries liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions together with minor quantities of ground, storm, and surface waters that are not admitted intentionally.
19. "Sewer" - A main, pipe, lateral, or other conduit located in a street, highway, alley, right-of-way or easement that carries waste water from residences; commercial buildings; industrial plants, and institutions; equivalent to "Sanitary Sewer".
20. "Shall" is mandatory (see "May", 1.11).
21. Slug shall mean any discharge of water, sewage, or industrial wastes which, in concentration of any given consituent or in quantity of flow, exceeds for any period a duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration of flows during normal operation.
22. "Superintendent" shall mean the Town Manager's appointed representative, deputy, or agent.
23. "Town" shall mean the Town of Acton, Massachusetts or any duly authorized officer, agent or representative of the Town of Acton.
24. Toxic Wastes
25. "Unpolluted Water" is water of quality equal to or better than the effluent criteria in effect or water that would not cause violation of receiving water quality standards and would not be benefited by discharge to the sewers and wastewater treatment facilities provided.
26. "Wastewater or Sewage" shall mean the spent or used water of the community. From the standpoint of source, it may be a combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any groundwater, surface water, and stormwater that may be present.
27. "Wastewater Facilities" shall mean the structures, equipment, and processes required to collect, transport, carry away and treat domestic and industrial wastes and dispose of the effluent.
28. "Wastewater Treatment Works" shall mean an arrangement of devices and structures for treating wastewater, industrial wastes, and sludge. Sometimes used as synonymous with

"Wastewater treatment plant" or "wastewater treatment plant" or "Water Pollution Control Plant".

1C - BUILDING SEWERS AND CONNECTIONS

PROHIBITIONS

No unauthorized person shall uncover, make any connections with or opening into, use alter or disturb any public or private sewer or appurtenance thereof without first obtaining a written permit from the board or their duly authorized representative(s). Any person proposing a new discharge into the sewage works or a substantial change in the volume or character of pollutants that are being discharged into the sewage works shall notify the Board or its duly authorized representative at least forty-five (45) days prior to the proposed change or connection in order to obtain approval.

No person shall break, cut or remove any pipe of the public/private 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 or its duly authorized representative(s).

Building sewers shall only be installed during normal working hours of the Town. Emergency working hours may be approved in writing by the Board or its duly authorized representative(s).

CONNECTION PERMITS:

There are two classes of connections permits:

(A) residential connection permits,

(B) business / commercial connection permits

Applications "shall" be made on a special form furnished by the "Superintendent". Completed applications shall be forwarded to the "Superintendent" for approval. Permit and inspection fees for connection permits "shall" be paid to the "Town" when an application is filed. The Applicant "shall" also apply for a Plumbing Inspection Permit for the purpose of having the Plumbing Inspector, or his designee, review the interior of the property to assure that all sanitary codes are in compliance, when connection to the municipal system is accomplished.

Permit Limits - For any permit, if said permit is granted, the permit shall be valid for no more than one hundred and eighty (180) calendar days from the date of issue. If the project does not commence within this time period the permit shall become invalid.

Permit Waivers – Waivers of these limits may be approved by the Board based on act of God or other hardships. These waivers will be based on a case by case basis.

CONNECTION COSTS

System Development Charge	Cost
Residential	$100.00
Multi-Family	$150.00
Business/ Commercial	$150.00
Plumbing	$10.00 per connection

A drain layer "may" not have more than three (3) connection permits outstanding without written permission from the "Superintendent". The permit "shall" be available for inspection at the site of work. Drain layers "shall" install building sewers only during normal working hours of the "Superintendent". Emergency working hours "may" be approved on a case by case basis by the "Superintendent", or the "Board".

INSTALLATION COST AND INDEMNIFICATION

Costs incidental to the connection of the "building sewer" to the "public sewer" and inspection by the "Superintendent" or "Inspector" "shall" be borne by the property owner or owner of the building. In either case, the owner "shall" indemnify the "Town" from any loss or damage that "may" directly or indirectly be caused by the installation and connection of the "building sewer".

GREASE, OIL, SAND INTERCEPTORS

Grease, oil and sand interceptors shall be provided and maintained by the Owner (not the Town) when, in the opinion of the Board, they are necessary for the proper handling of liquid wastes containing grease in

excessive amounts or any flammable wastes, sand or other harmful ingredients, except that such interceptors shall no be required for private living quarters or dwelling units. All interceptors shall be a type and capacity approved by the Board and shall be located outside the building as to be readily and easily accessible for cleaning and inpsection. Each restaurant, nursing home, school, hospital or other facility from which quantities of grease can be expected to be discharged must have an approved grease trap. Each gasoline station must have an approved gasoline trap. Each car wash must have an approved sand trap. Grease Traps shall comply with all the requirements of Title 5.

INDUSTRIAL WASTEWATER

Not Allowed.

SEPARATE BUILDING SEWERS REQUIRED

A separate and independent "building sewer" "shall" be provided for every building; unless otherwise approved by the "Board". In cases where one building stands at the rear of another on an interior lot and no private "sewer" is available or can be constructed to the rear building through an adjoining alley, courtyard, or driveway, the "building sewer" from the front building "may" be extended to the rear building and the whole considered one "building sewer", if approved by the "Board". The "Town" will not assume any responsibility for damages caused by any such connection.

CONNECTION TO THE BUILDING DRAIN

Whenever possible, the "building sewer" "shall" be brought to the building at an elevation which allows for four feet of cover to the top of pipe. In buildings in which the "building drain" is too low to permit gravity flow to the "public sewer", "wastewater" "shall" be lifted by an approved means and discharged to the "building sewer". Lifting devices "shall" be installed and maintained by the Owner with no liability assumed by the Town.

The "building sewer" "shall" be insulated appropriately for protection from frost if a four foot depth is not acheivable. The "building sewer" "shall" be laid at uniform grade and in straight alignment insofar as possible. All changes in direction shall be made with manholes or cleanouts subject to the approval of a duly authorized Board representative(s). No building sewer shall be laid parallel to and within five (5) feet of any bearing wall. Construction and materials "shall" conform to the specifications outlined in "Appendix A".

All building connections shall have the building drain exit the building through the basement floor and connect with the building sewer at an elevation below the basement floor whenever possible.

PROHIBITED CONNECTIONS

No "person" "shall" connect roof downspouts, exterior foundation drains, sump pumps, areaway drains, or other sources of surface runoff or groundwater to a "building sewer" which discharges to a "sanitary sewer". - Upon confirming the existence of a prohibited connection the owner will be notified and given ten (10) days to secure a contractor to make the necessary repairs. Should the violator fail to follow through within the given time period, a notice by Certified mail shall be sent giving the violator a final ten (10) days to repair the failure, after which a fine maybe levied for each day thereafter.

METHOD OF PIPE INSTALLATION AND BACKFILLING

General - All pipes shall be laid in accordance with "Appendix A".

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 current specifications of the A.S.T.M and WPCF Manual of Practice No. 9.

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All pipe shall be made gas tight, watertight and laid according to Division 3 of this ordinance, sanitary sewers. No blocks or stones shall be used to support the pipe. In instances where groundwater may back up into the basement, a well compacted backfill seal may be placed around the building drain at the building. In areas where the sanitary sewer surcharges, a backflow prevention device may be installed, and maintained by the owner, to the building drain to prevent backups with no liability assumed by the Town.

When water is present in a trench a sump of crushed stone shall be constructed and water shall be pumped at all times. The trench shall be kept dry at all times during construction. At all times when pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs or by other approved means.

All joints between pipes of different materials shall be made with approved pre-molded gasket joints.

The connection of the building sewer into public/private sewer shall be made at the "Y" or "T" branch if available at a suitable location. If no branch is available, a connection may be made by tapping the existing sanitary sewer by an approved method as approved by the Board. Cutting the connection in the pip by hand is prohibited.

Backfill shall be installed as outlined in Division 2 Section 2B.

Method of Construction – 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 of Acton. In the absence of code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the ASTM and WPCF Manual of Practice No. 9 shall apply, except that only the following pipe may be used.

A. Extra heavy cast-iron soil pipe
B. Cast-iron
C. Ductile Iron Pipe
D. Polyviynl chloride (PVC) sewer pipe

Note: No Bell Cast Iron Pipe is prohibited.

All joints shall be tight and waterproof. Pipes installed on fill or unusable ground shall be cast-iron or ductile iron pipe except that nonmetallic material may be accepted if laid on suitable concrete bed or cradle as approved by the Board or its duly authorized representative(s).

NOTIFICATION AND INSPECTION OF WORK

The applicant for the "building sewer" permit "shall" notify the "Superintendent" at least twenty four (24) hours prior to the start of an approved installation. The applicant must notify the "Superintendent" a second time when the "building sewer" is ready for inspection and connection to the "public sewer". The applicant "shall" connect all "sanitary sewer" discharges to the "building sewer" and that the connection to the "public sewer" "shall" be made under the supervision of the "Superintendent". All connections "shall" be made in the approved manner; no caps and/or plugs are to be removed without explicit orders, and under the direct supervision, of the "Superintendent", the existing septic tanks must be pumped, crushed and filled, then inspected by the "Superintendent" before any approval can be granted. When leaching fields are encountered the Board of Health "shall" be notified. No backfilling of any trench "shall" be made without the approval of the 'Superintendent".

Changes of the "building drain" "shall" be inspected by the Plumbing Inspector or his designee, to assure compliance with all applicable plumbing code requirements.

PROTECTION OF PUBLIC AND PROPERTY

Excavations for "building sewer" installations "shall" be adequately guarded with barricades and lights, or a police detail "may" be required so by the Police Chief 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". Except in the case of an emergency, when it is necessary to close off a street, the Town's Fire Department, School Department's Transportation Office and the Police Department "shall" be notified in writing no later than twenty-four (24) hours in advance. A street opening permit "shall" be obtained from the "Town" at least 72 hours before opening the street except under emergency conditions as determined by the Town "Superintendant" and approved by the Acton Police Department.

REPORTING OF PROHIBITED SUBSTANCES FOUND IN SEWER

All representatives shall give a full written report to the Board within twenty-four (24) hours in the event that prohibited substances as defined in _____ are found in the sewer during the course of any work.

PROPER VENTING REQUIRED

No building shall be connected to a public/private sewer system unless said building has a vent line extended to a point above the roof, properly vented according to building and plumbing codes.

PERFORMANCES STANDARD FOR AGENT

All agents shall agree to perform work according to all rules, regulations and conditions of the Board prior to any work done in the Town. The agents shall be fully insured and shall indemnify the Town against any and all claims, liabilities, or actions for damages incurred in, or in any way connected with, the performance of the work on the building drain or sewer, or by reason of any acts of omission in the performance of his work. The Board reserves the right to authorize and allow only approved agents to perform work on building drains and sewers.

VARIATIONS FROM RULES AND REGULATIONS

Any variation from these rules of the Town shall receive the approval of the Board before implementation.

LICENSE FOR DRAIN LAYERS

Drain layers must obtain a license from the "Town before performing any work. Licenses shall be issued for one calendar year commencing January 1.A $200 annual fee will be required with the completed license application. The applicant will supervise and be responsible for all work performed under the license. Any blasting required, "shall" be done by a "person" licensed to perform blasting in the Commonwealth, and only after receiving a blasting permit from the Acton Fire Department (prior to receiving a blasting permit the applicant "shall" submit Certificates of

Insurance in the sum of $100,000 to cover General Liability, including bodily injury, property damage and $300,000 for XCU coverage for explosion, collapse, or underground damage). A bond, cash deposit or certified check for $1,000 and three letters of recommendation must also be submitted. No insurance policy may be canceled without thirty (30) days prior written notice by registered mail to the the Board or duly authorized representative and the Fire Department. Such insurance shall indemnify the Town against all claims, liabilities, or actions for damages incurred in, or in any connected with, the performance of work by a drain layer and for, or by reason of, any acts of omission of said darin layer in the performance of his work. If insurance or bond is canceled or expirese the drain layers license shall become void.

A drain layer "may" not have more than three (3) connection permits outstanding without written permission from the Board or their duly authorized representative ". The permit "shall" be available for inspection at the site of work. Drain layers "may" install "building sewers" only during normal working hours of the "Superintendent". Emergency working hours "may" be approved on a case by case basis by the "Superintendent".

WASTEWATER METERING

In the event a user is not connected to the public water supply, but is connected to the "public sewer", said user "shall" install and maintain a water meter, at his expense, from which the "Town" "may" monitor the use of the "sewer". The type of meter and the method of installation "shall" be acceptable to the the Board or their duly authorized representative.

USER FEE

The "Board" "may" from time to time establish just and equitable user fees for the use of "public sewers" and the "wastewater treatment works". This user fee "shall" be paid by every "person" with a connection to the "public sewer" system. The money received "may" be applied to the costs for operation and maintenance of the "wastewater facilities" or any debt contracted for sewerage purposes.

NON-SEWER USE WATER

The "Board", after receiving a written request from a user, "may" credit the user for disposal charges associated with water that is not discharged to the "wastewater" collection system from their

property (e.g. outside watering, filling swimming pools, etc.). The volume of non-sewer use water must be measured with a second water meter, or other means that is acceptable to the the Board or their duly authorized representative The user will receive a credit on their user charge bill for non-sewer use water. All water meter and plumbing costs "shall" be borne by the user. Approved abatements will be credited during the next billing cycle. The "Board" reserves the right to enter the users property to verify the meter readings.

1D - USE OF PUBLIC/PRIVATE SEWER

CONNECTION TO PUBLIC/PRIVATE SEWER

The owners of all houses, buildings, or properties used for human occupancy, employment, recreation or other purposes, situated within the Town and abbuting any street, easement, or right-of-way in which there is now located or may, in the future, be located and available may hereby be required by the Town's Board of Health (acting under Title 5, 310 CMR, SEC, 15.02) at his/her expense to connect such sanitary facilties as exist with the proper public/private sewer in accordance with the provisions of the Town of Acton.

Additionally, persons with failed cesspools or septic systems shall be required to connect to the proper public/private sewer within a period of time determined by the Board of Health.

All applicants, his heirs, devises and assignes agree to abide by all rules and regulations, present and proposed, as set forth in this ordinace and those of the Board.

APPROVAL OF DISCHARGES

No person shall discharge or casue to be discharged any wastes, sewage, or industrial wastes in any manner or method without proper treatment subject to approval by the Board or their designees.

DISPOSAL OF UNPOLLUTED WATERS PROHIBITED

No person shall discharge, or cause to be discharged any stormwater, groundwater cellar floor drainage, roof runoff, subsurface drainage, uncontaminated cooling water, unpolluted process waters, exhaust from steam engines, or blow-off from boilers to the sanitary sewer.

DISCHARGE METHOD SPECIFIED

Stormwater and all other unpolluted drainage shall be dishcarged to such sewers as are specifically designated storm sewers, or to a natural outlet approved by the Town. Industrial cooling water or unpolluted process waters may be discharged, on approval of the Town, to a storm sewer or natural outlet.

PROHIBITED WASTES

No person shall discharge or cause to be discharged any of the following described waters or wastes to any public/private sewers:

1. Any gasoline, benzene, naptha, fuel oil, crude oil, lubricating oils, flammable or explosive liquids, solids, or gasses, or any other oils or gasses of hydrocarbon or petroleum origin.
2. Any waters or wastes containing toxic or poisonous solids, liquides, or gasses in sufficient quantity, either singly or by interaction with other wastes, to injure or 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.
3. Any waters or wastes having a pH lower than 5.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment and personnel of the sewage works.
4. Solid or viscous substances in quantitie or of such a size capable of causing obstruction of the flow in public/private 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, plastices, wood, rubber, latex, underground garbage, whole blood, paunch manure, hair and fleshings, entrails, paper dishes, cups and milk containers, abrasive materials, etc., either whole or properly shredded by garbage grinders.

CONTROLLED WASTES

No person shall discharge or cause to be discharged the follwing described substances, materials, waters, or wastes if, in the opinion of the Board or a duly authorized representative, such wastes can harm either the public/private sewers, sewage treatemnt process, or equipmen; have an advers effect on the receiving stream; or can otehrwise endanger life, limb, public property, or constitute a

nuisance. In forming an opinion as to the acceptability of these wastes, the Board will give consideration to such factors as the quantities of subject wastes in relation to flow and velocities in the public/privates sewers, nature of the sewage treatment process, capacity of the sewage treatment plant, degree of treatability of wastes in the sewage treatment plant and other pertinent factors. The controlled substances are:

1. Any liquid or vapor having a temperature higher than one hundred fifty degrees (150^0F), (65^0C).
2. Any water or waste containing fats, wax, grease or oils of vegetable or animal origin, whether emulsified or not, in excess of 100 mg/l or containing other substances which may solidify or become viscous at temperatures between thirty-two degrees (32^0F), and one hudred fifty degrees (150^0F), (0^0C and 65^0C). The use of chemical or physical means (such as temperature variation, emulsifying agents, or mechanical mixers) to bypass or release fats, oils, and greases into the public/private sewer system is prohibited.
3. Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/)) horsepower (0.76 hp metric), or greater, shall be subject to the prior review and approval of the Board or their duly authorized representative.
4. Any waters or wastes containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.
5. Any waters or wastes containg iron, chromium, copper, zince, any similar objectionalbe or toxic substances, or wastes exerting an excessive chlorine requirement, to such degree that any such material received in the composit sewage at the sewage treatment plant exceeds the limits established by the Board or DEP for such materials.
6. Any waters or wastes containing phenols or other taste or odor producing substances, in such concentrations exceeding limits which may be estabilshed by the Board or the Authority, 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.
7. Any radioactive wastes or isotopes of such half-life or concentration as my exceed limits which may be established by the Board in compliance with applicable State and Federal regulations.
8. Any waters or wastes having a pH in excess of 9.5.

9. Materials which exert or cause:
    a. Unusual concentrations of inert suspended solids (such as, but not limited to, fullers earth, lime slurries, and lime residues) or of dissovled solids (such as, but not limited to, sodium chloride and sodium sulfate).
    b. Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).
    c. Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment plant.
    d. Unusual volume of flow or concentration of wastes constituting slugs, as defined in Division 1 –Section 1B.
10. 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 jurisdication over discharge of the treatment plant.

DECISIONS OF THE BOARD

If any waters or wastes are discharged or are proposed to be discharged to the public/private sewers, which contain the substances or possess the characteristics enumerated in the Section entitled "Controlled Wastes" and which, in the judgement of the Board may have deterious effect upon the sewage works, processes, equipment or receiving waters, or which otherwise create a hazard to life or or constitute a public nuisance, the authority may:

1. Reject the wastes.
2. Require pretreatment of an acceptabe condition for discharge to the public/private sewers.
3. Require control over the quantities and rates of discharge, and/or treatment of said fluids.
4. Require payment to cover the added cost of handling and treating the wastes not covered by existing taxes or sewer charges.

If the Board permits the pretreatment or equalization of waste flow, the design and installation of the plants and equipment shall be subject to the review and approval of the Board and subject to the requirements of all applicable Federal, State and local codes, ordinances and by-laws.

MAINTENANCE OF PRETREATMENT FACILITIES

When preliminary treatment of 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 expense.

CONTROL MANHOLES

When required by the Board, the Owner of any property services 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 accessible and safely located, and shall be constructed in accordance with plans approved by the Board or duly authorized representative(s). The manhole shall be installed by the Owner at his expense, and shall be maintained by him so as to be safe and accessible at all times.

WASTEWATER SAMPLING

All measurements, tests, and analysis of the characteristics of water and wastewater which reference is made in this Ordinance 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 samples taken at said control manhole. In the event that no special manhole shall be considered to be the nearest downstream manhole in the public/privates 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 the consistuents upon the sewage works and to determine the existence of hazards to life, limb and property.

MONITORING OF DISCHARGE REQUIRED

All industries discharging into a public/private sewer shall perform such monitoring of their discharges as the Board and/or other duly authorized represenatative may reasonably require, including installation and use of the maintenance monitoring equipment, keeping records and reporting the results of such monitoring to the Board. Such records shall be made available upon request by the Board and/or to other agencies having jurisdiction over discharges to the receiving waters.

NOTICE OF ACCIDENTAL DISCHARGE REQUIRED

Any person responsible for, or becoming aware of the discharge to public/private sewer, accidental or otherwise, of any prohibited substance or aof any sludge as defined herein, shall report same immediately by telephone to the Board or its duly authorized representative so that necessary precautions can be taken to minimize any harmful impact to the system. The event shall be followed, within 15 days of the date of occurrence, by a detailed written statement to teh Board describing the causes for the accidental discharge and the measures being taken to prevent future occurence. Such notification will not relieve users of liability for any expenses, loss or damage to the Town's sewerage system or for any fines imposed by the Town.

Users shall inform their employees of the existence of these regulations and at least one copy shall be permanently posted on the user's bulletin board. Each user shall permanently post a notice advising employees who in their organization has been designated as the responsible individual for compliance with these regulations and who should be notified of any accidental discharges in violation of these regulations.

1E – RULES AND REGULATIONS

1. Application to connect to sewer system shall be made in writing and filed at the Town Hall Board of Health, with the completed application form and support documentation.
2. All work relating to the construction and particular sewer connection shall be done by an agent approved by the Board or its duly authorized representative.
3. All particular sewer or building connections shall be of such type and size, laid at such depth and gradient, and in such location as provided by a Massachusetts Registered Professional Engineer and approved by the Board or its duly authorized representative. No particular sewer shall serve more than one (1) building without approval of the Board or their duly authorized representative.
4. All sewer connections shall be installed in separate trenches from other utilities, ten (10) feet apart and eighteen (18) inches below water pipe(s) as provided by Title V, unless submitted and approved by the Board.
5. All sewer connections shall be surrounded by six (6) inches or more of crushed stone, one (1) inch maximum diameter.

6. No trench and pipe shall be backfilled until the Board or duly authorized representative has been notified, and has inspected and approved said installation. Furthermore, only suitable backfill material shall be used in the trench as approved by the Board or their duly authorized representative.
7. Any sewer connection over one hundred (100) feet in total length shall require a clean out for individual dwellings and a manhole for multiple connections. All cleanouts or manholes must meet the Town's specifications included in this Ordinance. When cleanouts are installed, a LeBaron LA0910 or approved equal, will be used. The cover, will be brought to finished grade, will have appropriate lettering and be installed according to specifications.
8. The Board or their duly authorized representative may require, at any time, for such grease traps or ventilating pipes, to be installed as it may deem necessary for the proper maintenance of said particular sewer or common sewers. In evey case where any restaurant, hotel or business of a simialr nature is carried on, a suitable grease trap MUST be installed as approved by the Board or their duly authorized representative.
9. Garages and other establishments where gasoline is used and whihc are connected withthe common sewer shall be supplied with a suitable trap or separator satisfactory to the Board. All traps or separators shall be kept in good condition and cleabed frequently. Whereass grease, oil or any other substance cleaned from such traps or separators shall be disposed of in a safe manner and not into the sanitary system or drainage system.
10. No surface water, groundwater, cellar floor drainage, roof drainage, gasoline, explosive fluids or any substance which may be liable to injure the sewers, interfere with any of its uses, or obstruct its flow shall be discharged into the Town sewer system.
11. All necessary easements for sewer connections shall be obtained by the property owner and recorded in the Registry of Deeds or Land Court.
12. The cost of cleaning, maintaining, repairing or replacing any particular sewer connnection shall be paid by the property owners connected to said sewer system, up to the property line in a public way. The Town assumes the liability when located in the public way.
13. Whoever violates any of the provisions of these rules and regulations shall be punished according to existing Town By-Laws, State and/or Federal Laws for each offense.
14. These rules may be rescinded or modified or added to by the Board at any time when, in their opinion, such action is for the best interest of the Town of Acton.

1F - QUALITY CONTROL

INSPECTION POWERS OF THE BOARD OF SEWER COMMISSIONERS

The Board and any duly authorized representative(s) bearing proper identification, shall be permitted to enter, at reasonable times, all properties connected with the public/private sewers for the purposes of inspection, observation, measurement, sampling and testing, all in accordance with the provisions of these regulations. They may inquire into any processes, including metallurgical, chemical, oil refining, ceramic, paper, plating, or other industrial activity, that contribute waters or wastes to the public/private sewers but shall not order or demand information concerning any patented process or trade secret beyond that necessary to determine the kind, source and amount of sewage discharge from an industrial or commercial plant to the public/private sewer.

"Inspectors" "shall" be authorized by the "Representative" to inspect all construction conducted and materials furnished. Such inspection "may" extend to all or any part of the work, and to the preparation or manufacture of the materials to be used. In case of any dispute arising between the "Contractor" and the "Inspector" as to materials furnished or the manner of performing the work, the "Inspector" "shall" have the authority to reject material or suspend the work until the question at issue can be referred to and decided by the "Superintendent". The "Inspector" "shall" not be authorized to revoke, alter, enlarge, relax or release any requirements of these specifications nor to approve or accept any portion of the work, nor to issue instructions, contrary to the Plans and Specifications.

The "Inspector" "shall" in no case act as a foreman or perform other duties for the "Contractor" or interfere with the work by the "Contractor". Any advice, which the "Inspector" "may" give the "Contractor", "shall" in no circumstances be construed as binding to the "Superintendent" or the "Town" in any way.

INSPECTION OF THE WORK

The "Contractor" "shall" not bury any pipes or casings or other appurtenances except in the presence of the "Representative" or the "Inspector". To this end, proper notice "shall" be given the "Representative" by the "Contractor" of the time and place he intends to do the work. Any work which is done when the "Representative" or "Inspector" is not present or which is done contrary to the direction of the "Representative" "shall" be considered unauthorized and "shall" not be accepted.

The "Contractor" "shall" remove and replace such work to the satisfaction of the "Representative" when directed to do so. Such work satisfactorily replaced will then be accepted.

1G - SPECIAL CONTROLS

EROSION CONTROL

The "Contractor" "shall" take due precautions to minimize the run-off of pollution substances such as silt, clay, fuels, oils, bitumens, calcium chloride and any other polluting materials harmful to humans, fish or other life into the waters of the Commonwealth of Massachusetts.

DUST CONTROL

Dust control "shall" be provided when deemed necessary by the "Superintendent" so as to prevent damage and nuisance to adjacent property owners and public streets. The means of dust control "may" include the use of water, calcium chloride or other approved methods.

TRAFFIC CONTROL

When, in the opinion of the "Superintendent", public safety or convenience requires the services of the police, the "Superintendent" "may" direct the "Contractor" to request the "Town" Police Department to assign officers to direct traffic within the location of work.

Nothing contained herein "shall" be construed as relieving the "Contractor" of any of his responsibilities for protection of persons and property. Police details "shall" be paid by the "Contractor".

DIVISION 2

EARTHWORK

SECTION 2A

CLEARING AND GRUBBING

SCOPE OF WORK

Clearing and grubbing within the public way "shall" be carried out where necessary. The "Contractor" will be allowed to remove only the trees and brush that are absolutely necessary for his construction operations and the "Contractor" must abided by the Scenic Roads Bylaw. The "Contractor" "shall" be expected to save as many trees as is possible. The removal of all brush and trees, including their stumps necessary for construction purposes, "shall" be done in such a manner to meet the Tree Warden's satisfaction at the end of the work.

CLEARING

Clearing "shall" consist of felling, cutting and the satisfactory and legal disposal of trees, brush and other vegetation, down timber, and rubbish.

If landowners desire the timber or small trees, the "Contractor" "shall" cut and neatly pile it in 4-ft. lengths for removal by the landowner; otherwise, the "Contractor" "shall" dispose of it by hauling away or chipping. No burning "shall" be permitted unless the "Contractor" obtains the permission of the "Town" Fire Chief beforehand.

GRUBBING

Grubbing "shall" be carried out where trees have been felled, and "shall" consist of the removal and disposal of stumps, including all roots larger than 3-in in diameter to a depth of 18-in. below ground surface and within a 3 ft. radius of the trunk.

SECTION 2B

EARTH EXCAVATION AND BACKFILL

SCOPE OF WORK

This section includes, except as elsewhere provided, trenching for pipe laying, and appurtenances, including drainage, sheeting and bracing, backfilling, disposal of surplus material and restoration of trench surfaces in the public way or "easements".

SHEETING AND BRACING

The "Contractor" "shall" furnish, put in place, and maintain sheeting and bracing if required to support the sides of the excavation and prevent loss of ground which could damage or delay the work or endanger adjacent structures.

DRAINAGE

The "Contractor" "shall" furnish all materials and equipment and perform all incidental work required to install and maintain the drainage system he proposes for handling any ground water or surface water encountered. The "Contractor" must alter his drainage methods if, in the opinion of the "Superintendent", the trench bottom is unsatisfactory.

BACKFILLING

As soon as practicable after the pipe has been laid, jointed, properly bedded (and tested, if required) backfilling "shall" begin and thereafter be prosecuted expeditiously.

Sand or ¾ minus stone, which is free of other foreign material, "shall" be carefully placed to a depth of 1 ft. over the top of the pipe.

When the pipes are laid cross-country, the remainder of the trench "shall" be filled with approved material.

Wherever a loam or gravel surface exists prior to cross-country excavations, it "shall" be removed, conserved, and replaced to the full original depth. In some areas, it "may" be necessary to remove excess material during the cleanup process, so that the ground "may" be restored to its original level

and condition. If the "Contractor" prefers not to store loam or topsoil, he "may" replace it with loam or topsoil of equal quality and quantity.

When the pipes are laid in streets, the trench above the 1ft. of selected material above the pipe "shall" be backfilled with suitable material in layers not to exceed 3 ft. and thoroughly compacted by mechanical equipment. The last 1 ft. "shall" be backfilled with compacted bank-run gravel unless an increase is directed by the "Superintendent".

Fragments of ledge and boulders not greater than 6 inches in. diameter "may" be used in trench backfill providing that the quantity, in the opinion of the "Superintendent", is not excessive. Rock fragments "shall" not be placed until the pipe has at least 2 ft. of earth cover. Small stones and rocks "shall" be placed in thin layers alternating with earth to insure that all voids are completely filled. Large masses of filling "shall" not be dropped into the trench in a manner to endanger the pipe.

Bituminous paving "shall" not be placed in the backfill. Frozen material "shall" not be used under any circumstances.

All road surfaces "shall" be groomed immediately after backfilling. Dust control measures "shall" be employed at all times to the satisfaction of the "Superintendent".

SECTION 2C

EXCAVATION BELOW NORMAL GRADE

SCOPE OF WORK

If, in the opinion of the "Superintendent", the material at or below the normal grade of the bottom of the trench (6" below grade of pipe bottom) is unsuitable for foundation, it "shall" be removed to the depth as directed by the "Superintendent" and replaced by screened-gravel or as specified below.

EXCAVATION AND BACKFILLING

Excavation and backfilling below grade "shall" conform to all applicable provisions under Section 2B, including the requirements for sheeting and bracing and maintaining the trench.

FILL

Normally fill "shall" be screened gravel, as specified under Section 2D, however, if the material at the level of trench bottom consists of fine sand, sand and silt or soft earth which "may" work into the screened gravel notwithstanding effective drainage, the subgrade material "shall" be removed to the extend directed and the excavation refilled with coarse sand or a mixture graded from coarse sand to fine peastone, to form a filter layer preserving the voids in the gravel bed of the pipe. The "Superintendent", before placement, "shall" approve the composition and gradation of gravel. Gravel "shall" be placed in 6-in. layers thoroughly compacted.

SECTION 2D

GRAVEL FILL

Screened gravel "shall" be used for bedding pipe, as replacement material for ordered excavation below grade and as gravel cushion in ledge excavation. Bank run gravel "may" be used for the roadway sub base under the pavement, replacement of unsuitable material and for similar uses. The "Superintendent" "may" order the use of gravel for purposes other than those specified if, in his opinion, such use is advisable.

BANK-RUN GRAVEL

Bank-run gravel "shall" consist of hard, durable stone and coarse sand, essentially free from frost, frozen lumps, loam and clay, uniformly graded and containing no stone having any dimension greater than 3-in. The grading of sizes and material "shall" be such that the gravel may be thoroughly consolidated.

25 to 70% "shall" pass the No. 4 sieve and not more than 12% of the material passing the No. 4 sieve "shall" pass the No. 200 sieve.

SCREENED GRAVEL

Screened gravel conforming to ASTM C33 stone size No. 67 "shall" consist of hard, durable, round particles of proper size and gradation, and it "shall" be free from sand, loam, clay excess fines, and deleterious materials. The size of the particles "shall" be uniformly graded gravel such that not less than 100 per cent of the particles will pass a 3/4-in sieve and not more than 5 percent will pass a No. 4 sieve. Quality and gradation "shall" be acceptable to the "Superintendent".

SECTION 2E

ROCK AND BOULDER EXCAVATION

SCOPE OF WORK

This section includes the excavation, disposal and replacement of rock and boulders.

DEFINITIONS

Rock excavation "shall" mean rock which, in the opinion of the "Superintendent", requires for its removal drilling and blasting.

Boulder excavation "shall" mean boulders exceeding 1/2 cu. yd. in volume, which can be excavated without resorting to blasting.

BLASTING

All blasting operations "shall" be conducted in full compliance with all laws of the State, local ordinances, and regulations and with all possible care to avoid injury to persons and property.

DISPOSAL AND REPLACEMENT OF ROCK

Rock and boulders exceeding 6 inches in diameter "shall" not be used for backfilling. Rock disposed of "shall" be replaced by surplus excavation or borrow.

DIVISION 3

SANITARY SEWERS

SECTION 3A

P.V.C. SEWER PIPE

POLY VINYL CHLORIDE PIPE (P.V.C.)

All P.V.C. pipe and fittings "shall" conform to the most recent requirements of ASTM Specifications for Type PSM Poly Vinyl Chloride (P.V.C.) Sewer Pipe and Fittings.

P.V.C. Pipe conforming to Designation D-3034 "shall" be SDR-35 or greater.

P.V.C. Pipe conforming to Designation F-789 "shall" be PS-46 or greater. All P.V.C. Pipe "shall" have elastomeric gasket Joints and which Joints "shall" conform to ASTM Specifications for sewer pipe Joints using Elastomeric Seals Designation D-3212. Manufacturer's certificate of compliance "shall" be furnished to the "Superintendent", prior to installation. Methods of shipping and storage on site "shall" be such as to avoid injury to the pipe. Damaged pipe "shall" be rejected and removed from the job. Solvent cement joints "shall" not be allowed.

Minimum "pipe stiffness" (F/y) at 5% deflection "shall" be 46 psi for all sizes when tested in accordance with ASTM Method of Test D-2412, "External Loading Properties of Plastic Pipe by Parallel Plate Loading".

Each length of pipe in compliance with this specification "shall" be clearly marked at intervals of 5 feet or less. Pipe conforming to designation D3034 "shall" be marked with the manufacturer's name or trademark, nominal pipe size, the P.V.C. cell classification (i.e. 12454-\B), the legend "Type PSM SDR-35 P.V.C. Sewer Pipe," and "ASTM D-3034". Pipe conforming to Designation F-789 "shall" be marked with the manufacturer's name or trademark, the P.V.C. cell classification (i.e. 12164-B), Modulus Indicator (i.e. T-1, T-2, or T-3), the legend "PS-46 P.V.C. Gravity Sewer Pipe," and "ASTM F-789'.

P.V.C. pipe used for force main "shall" conform to ASTM D-2241 and D-1784 (Class 12454-B) and safety factor of 2.5 "shall" be used for pressure rating determination with a standard dimension ratio (SDR) no higher than 26.

P.V.C. FITTINGS

Wye branches and bends "shall" have elastomeric gasket joints, and conform to "ASTM D-3034" (SDR-35 only) or ASTM F-789. They "shall" be manufactured and furnished by the pipe supplier (or approved equal) and have bell and spigot Joints compatible with that of the pipe.

Each fitting in compliance with this specification "shall" be clearly marked with manufacturer's name or trademark, nominal size, material designation "P.V.C.", "PSM" (for SDR-35 only), and "ASTM D-3034" or "ASTM F-789". All fittings "shall" be either SDR-35 or PS-46 and "shall" be the same as the pipe being used.

JOINTS FOR P.V.C. PIPE

Joints "shall" be of the bell and spigot type with a gasket as previously specified. No solvent joints are permissible. Manufacturer's instructions "shall" be followed.

ALLOWABLE DEFLECTION

A maximum of 7 1/2% deflection in the pipe diameter will be allowed. Deflection "shall" be measured as the reduction in the vertical diameter of the pipe.

DOUG we do not typically see communities allow reinforced concrete pipe for sewer use.

SECTION 3C

CEMENT LINED DUCTILE IRON SEWER PIPE

CEMENT LINED DUCTILE IRON PIPE

Cement lined ductile iron pipe and fittings "shall" conform to ANSI Standards A21.50 and A21.51. Cement-mortar lining "shall" be double thickness and conform to ANSI A21.4. Manufacturer's certificate of compliance "shall" be furnished to the "Superintendent", prior to installation. Methods of shipping and storage on site "shall" be such as to avoid injury to the pipe. Damaged pipe "shall" be rejected and removed from the job site.

Cement lined ductile iron pipe and fittings "shall" be Class 50, unless otherwise noted on the plans.

Each length of pipe "shall" be marked with the manufacturer, trade name, and class.

CEMENT LINED DUCTILE IRON FITTINGS

Fittings "shall" conform, to ANSI A21.11 and "shall" be of the same class and type as the pipe on which they are used.

JOINTS FOR CEMENT LINED DUCTILE IRON PIPE

Joints "shall" be rubber gasket oil resistant joints of the push-on type in conformance with ANSI AWWA C-111 (A21.11). Manufacturer's instructions "shall" be followed.

SECTION 3D

INSTALLATION OF SEWER PIPE

PIPE HANDLING

The "Contractor" "shall" arrange for the delivery of the pipe sections at approved locations in the vicinity of that portion of the "sewer" line in which the pipe sections are to be laid. To this end, he "shall" do such work as is necessary for access and for delivery of the pipe. Pipes "shall" be stored in an approved, orderly manner so that there will be a minimum of re-handling from the storage area to the final position in the trench and so that there is a minimum of obstruction and inconvenience to any kind of traffic.

Deliveries "shall" be scheduled so that the progress of the work is at no time delayed and also so that large quantities of pipe "shall" not be stored for excessive lengths of time in crowded locations or in locations where large storage areas might be considered objectionable. Storage of pipe will be restricted to approved or permitted areas.

The spigot end of all pipes "shall" be stored on a block to prevent damage. The bell or groove end of each length of R.C. pipe "shall" be placed in storage on a block to prevent damage. Care "shall" be taken that the lengths do not roll together.

Each pipe section "shall" be handled into its position in the trench in such manner and by such means as the "Superintendent" approves as satisfactory, and these operations will be restricted to those considered safe for the workmen and such as to cause no injury to the pipe or to any property.

The "Contractor" will be required to furnish slings, straps and/or approved devices to provide satisfactory support of the pipe when it is lifted from delivery areas to the trench "shall" be restricted to operations which can cause no injury to the pipe units.

The pipe "shall" not be dropped from trucks or into the trench.

The "Contractor" "shall" have on the Job-site with each pipe-laying crew all the proper tools to handle and cut the pipe. The use of hammer and chisel, or any other method, which results in rough edges, chips and damaged pipe, "shall" be prohibited.

Damaged pipe coating and/or lining "shall" be restored before installation is approved or directed by the "Superintendent".

CONTROL OF ALIGNMENT AND GRADE

The location of the pipe, manholes, and other appurtenances "shall" be established in accordance with the contract drawings. Benchmarks "shall" be established along the route of the pipeline at convenient intervals for use in checking the pipe and manhole invert and other elevations throughout the project.

The "Contractor" "may" use a laser beam to assist in setting the pipe provided he can demonstrate satisfactory skill in its use.

The use of string levels, hand levels, carpenters levels or other relatively crude devices for transferring grade or setting pipe will not be permitted.

PREPARATION OF BED

As soon as excavation has been completed to proper depth, as shown on the Standard Trench Section ' a layer of bedding material "shall" be placed to the elevation necessary to bring the pipe to grade and compacted. It shall be the "Contractor's" responsibility to control any water in the trench below the pipe invert. If directed by the "Superintendent", the "Contractor" "shall" place concrete, clay or other impermeable material in the bedding at intervals to prevent horizontal movement of the groundwater which might induce settling of the bed, or make it difficult to handle water in the trench.

LAYING PIPE

Each pipe length "shall" be inspected for cracks, defects in coating or lining, and any other evidence of unsuitability.

Pipe "shall" be laid in the road and at no time shall water in the trench be permitted to flow into the "sewer".

The pipe "shall" then be laid on the trench bedding as shown on the Standard-Trench Section, and the spigot pushed home. Jointing "shall" be in accordance with the manufacturer's instructions and

appropriate ASTM Standards, and the "Contractor" "shall" have on hand for each pipe-laying crew, the necessary tools, gauges, pipe cutters, etc., necessary to install the pipe in a workmanlike manner. Pipe lying "shall" proceed upgrade with spigot ends pointing in the direction of flow, unless otherwise approved by the "Superintendent".

Blocking under the pipe will not be permitted except where a concrete cradle is proposed, in which case pre-cast concrete blocks "shall" be used.

After the pipe has been set to grade, additional bedding material "shall" be placed in 6-inch layers up to the spring line of the pipe. Tamping bars "shall" be carefully employed to assure compaction of the bedding under the lower quadrants of the pipe.

After this, the bedding material "shall" be carefully placed in 6-inch layers to a depth of 12 inches over the crown of the pipe. Each layer "shall" be thoroughly compacted with mechanical equipment. Care "shall" be taken that the equipment does not damage the pipe.

At this point, the pipe "shall" be checked for line and grade and any debris, tools, etc., "shall" be removed.

If inspection of the pipe is satisfactory, the "Contractor" "may" then refill or backfill the remainder of the trench in accordance with the Standard Trench Section.

At any time that work is not in progress, the end of the pipe "shall" be suitably closed to prevent the entry of animals, earth, etc.

At the end of each day's work or at intervals of no more than 200 feet of pipe, the "Superintendent", with the "Contractor", will inspect the pipe for alignment with lamps or mirrors. Unsatisfactory work "shall" be dug up and re-installed to the satisfaction of the "Superintendent".

SECTION 3E

SEWER SERVICE CONNECTIONS

MATERIALS

Materials for private house services, wye branches, and chimneys "shall" be of the same material and quality as that for the public "sewer". Concrete for encasement "shall" be Class A (3000 psi) concrete.

INSTALLATION

Installation "shall" be as shown on the "House Sewer Details." House services "shall" not be connected directly to manholes, unless otherwise approved by the "Superintendent". The opening of the house service, wye branch, or chimney "shall" be plugged with a suitable watertight cap or plug.

The minimum size for the "building sewer" "shall" be 6".

The minimum slope for the "building sewer" shall be 1/4" per foot, unless otherwise approved by the "Superintendent".

Before backfilling, the "Contractor" "shall" notify the "Inspector" so that he may make the necessary measurements to locate the opening later. In addition, an approved ferrous rod or pipe "shall" be placed over the plugged opening at the property line, extending to within 2 inches of the final ground surface.

SADDLE CONNECTIONS

On reinforced concrete, and cement lined ductile iron sewers, saddle connections "may" be installed in lieu of wye branches using cast iron branch connections conforming to ASTM A-48, Class 50. These connections "shall" be fastened by a stainless steel strap, stainless steel nuts and bolts, and watertight gasket between the main pipe and the fitting, and "shall" have a rubber gasket providing a watertight seal with the service pipe. Holes "shall" be made only in a manner recommended by the pipe manufacturer and approved by the "Superintendent". The hole in the main must be the full diameter of the inside of the fitting to prevent obstructing the flow. The entire connection must be watertight.

On P.V.C. sewer, saddles "may" be used in lieu of wye branches using injection-molded rubber-gasketed wye saddles conforming to ASTM D-3034 and 3212. Saddles "shall" be cut into the pipe according to manufacturer's details and procedures. Connections "shall" be fastened by (2) stainless steel clamps tightened to a minimum torque of 5 ft.-lbs. The use of solvent weld sewer saddle connections is prohibited. The entire connection must be watertight.

PROXIMITY TO WATER MAINS

The "Town" requires a 10-foot horizontal separation between water and sewers lines and an 18" vertical separation wherever water and sewer lines cross.

However, should construction operations reveal or expose a waterline main or service running approximately parallel and less than 10 feet horizontally from the proposed "sewer" installation and where it is not practicable to relocate the "sewer", the following methods of protection must be employed:

If the above separation cannot be achieved, the "sewer" "shall" be encased in concrete, as shown on these drawings; or else, ductile iron pipe of the same size "shall" be utilized. Appropriate manufactured fittings shall be employed to adapt the iron pipe to the contract "sewer" pipe.

Whenever the waterline crosses over the new "sewer" with less than 18 inches of separation, the "sewer" pipe for a distance of 9 feet on each side of the waterline "shall" be class 52 ductile iron pipe. Appropriate manufactured fittings "shall" be employed to adapt the iron pipe to the contract "sewer" pipe. As an alternative, the waterline "may "be raised, if feasible, to achieve the required separation.

Should the waterline in either situation be at or below the sewer elevation, the waterline or the "sewer" must be relocated to achieve 10-ft. separation or the waterline raised.

SECTION 3G

MANHOLES

GENERAL

The work covered by this section includes the furnishing of all plant, labor, equipment, appliances, and materials, and performing all operations in connection with the satisfactory installation of manholes, and all incidental work, complete, in strict accordance with the specifications and applicable drawings-and standard details.

The "Contractor" shall provide the "Superintendent" with shop drawings of all precast material and a description of all methods of jointing he proposes to use on this portion of the contract.

It is the intention of these specifications that the manhole, including all component parts, have adequate space, strength and leakproof qualities considered necessary for the intended service. Space requirements and configurations "shall" be as shown on the drawing. Manholes may be an assembly of pre-cast sections with or without steel reinforcement, with approved jointing, or concrete cast monolithically in place with or without reinforcement.

In any approved manhole, the complete structure "shall" be of such material and quality as to withstand loads of 8 tons without failure and prevent leakage in excess of one gallon per day per vertical foot of manhole, continuously for the life of the structure. A period generally in excess of 25 years is to be understood in both cases. It is further intended that any pointing of joints "shall" be accomplished after leakage tests have been satisfactorily completed.

DESCRIPTION

Manholes "shall" be constructed at the locations, to the elevations, and in accordance with notes and details show on the drawings as well as the standard details, Appendix A.

Manholes "shall" be as shown on the standard details and "shall" conform to the following:

1. Barrels and cone sections "shall" be pre-cast reinforced or nonreinforced concrete, or cast-in-place reinforced or non-reinforced concrete.

2. Base sections "shall" be monolithic to a point 6" above the crown of the incoming pipe, and "shall" be pre-cast reinforced concrete or precast non-reinforced concrete or cast-in-place concrete.
3. Horizontal Joints between sections of pre-cast concrete barrels "shall" be of an overlapping type and, "shall", in general, depend for watertightness upon an elastomeric or mastic-like sealant.
4. Pipe to manhole joints "shall" depend for water-tightness upon either an approved non-shrinking mortar, elastomeric sealant, or elastomeric, rubber, sleeve with watertight Joints at the manhole opening and pipe surfaces.
5. Cone sections "shall" be eccentric - see standard detail.
6. There "shall" be no manhole steps.
7. All pre-cast sections and bases "shall" have the date of manufacture and the name or trademark of the manufacturer impressed or indelibly marked on the inside wall.

MATERIALS

Pre-cast concrete barrel sections, cones, and bases "shall" conform to ASTM C-478 except as may be otherwise shown on the Standard Details.

Manhole frame and cover "shall" provide a 30" diameter clear opening. The cover "shall" have the letter "S" or the word "SEWER" in 3" letters cast into the top surface. Covers "shall" have two lift holes, 180 degrees apart, on the perimeter.

The castings "shall" be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sandholes, and defects of every nature, which would render them unfit for the service for which they are intended. Contact surfaces of covers and frame seats "shall" be machined at the foundry, before shipment to prevent rocking of covers in any orientation.

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

Castings "shall" be at least Class 30 conforming to the ASTM Standard Specification for Gray Iron Castings, Designation A48.

Before being shipped from the foundry, castings "shall" be sandblasted and given two coats of coal-tar-pitch varnish, applied in a satisfactory manner so as to make a smooth coating, tough, tenacious, and not brittle or with any tendency to scale off.

INSTALLATION OF MANHOLE BASES AND SECTION

Pre-cast bases "shall" be placed on a 6" layer of compacted bedding material as described below. The excavation "shall" be properly de-watered while placing bedding material and setting the base or pouring concrete. Waterstops "shall" be used at the horizontal Joint of cast-in-place manholes.

Inlet and outlet stubs "shall" be connected and sealed in accordance with the manufacturers recommended procedure, and as shown on the Standard Details, or cast integrally with the cast base.

Barrel sections and cones of the appropriate combination of heights "shall" then be placed, using manufacturers recommended procedure for sealing the horizontal Joints, and as shown on the Standard Details or the remaining barrel of the manhole "shall" be cast above the base.

A leakage test "shall" then be made.

Following satisfactory completion of the leakage test, the frame and cover "shall" be placed on the top or some other means of preventing accidental entry by unauthorized persons, children, animals, etc., until the "Contractor" is ready to make final adjustment to grade.

Bedding Material "shall" consist of crushed stone and/or natural stone graded to the following specifications:

100% passing	1"	screen
90-100% passing	3/4"	screen
20- 55% passing	3/8"	screen
0-10% passing	#4	sieve
0- 5% passing	#8	sieve

BRICK MASONRY

This section applies to brick masonry, for the shelf, invert, and grade' adjustment.

Brick: The brick "shall" be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the "Superintendant". Brick "shall" comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick.

Rejected brick "shall" be immediately removed from the work.

Mortar: The mortar "shall" be composed of Portland cement, hydrated lime, and sand, in the proportions of 1 part cement to 1/2 part lime to 4 1/2 parts sand, (by volume). The proportion of cement to lime may vary from 3-:1/4 for hard brick to 1:3/4 for softer brick, but in no case "shall" the volume of sand exceed three times the sum of the volume of cement and lime.

Cement "shall" be Type II Portland cement conforming to ASTM C-150, Standard specifications for Portland Cement.

Hydrated lime "shall" be Type S conforming to the ASTM Standard Specification for Hydrated Lime for Masonry Purposes, Designation C207.

Sand "shall" consist of inert natural sand conforming to the ASTM Standard Specifications for Concrete (Fine) Aggregates, Designation C33 as follows:

GRADING:

Sieve	Percent Passing
3/8	100 %
4	95-100%
8	80-100%
16	50-85%
50	10-30%
100	2 -10%
Fineness Modulus	2.3 -3.1

Laying Brick: Only clean bricks "shall" be used in brickwork for manholes. The brick "shall" be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

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

Curing: Brick masonry "shall" be protected from too rapid drying by the use of burlaps kept most or by other approved means, and "shall" be protected from the weather and frost, all as required.

SETTING MANHOLE FRAMES AND COVERS

Manhole frames "shall" be set with the tops conforming accurately to the grade of the pavement or finished ground surface or as indicated on the drawings. Frames "shall" be set concentric with the

top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry "shall" be placed all around and on the top of the bottom flange. The mortar "shall" be smoothly finished and have a slight slope to shed water away from the frame.

A minimum of 8" and a maximum of 12" of brick and mortar "shall" be allowed for grade adjustment.

SECTION 3H

FINAL SEWER TESTS

GENERAL

A. Work Included:
   1. Final "sewer" testing work includes the performance of testing and inspecting each and every length of "sewer" pipe and each Item of appurtenant construction.
   2. Perform testing at a time approved by the "Superintendent", which "may" be during the construction operations, after completion of a substantial and convenient section of the work, or after the completion of all pipe-laying operations.
   3. Provide all labor, pumps, pipe, connections, gauges, measuring devices and all other necessary apparatus to conduct tests.

PERFORMANCE

A. General
   1. All "sewers", manholes, appurtenant work, in order to be eligible for approval by the "Superintendent", "shall" be subjected to tests that will determine the degree of watertightness, horizontal and vertical alignment, and deflection (P.V.C. sewers only).
   2. Thoroughly clean and/or flush all "sewer" lines to be tested, in a manner and to the extent acceptable to the "Superintendent", prior to initiating test procedures.

3. Perform all tests and inspections only under the direct supervision of the "Superintendent".

4. Perform Testing by test patterns determined or approved by the "Superintendent".

5. Remedial Work:

   a. Perform all work necessary to correct deficiencies discovered as a result of testing and/or inspections.

   b. Completely re-test all portions of the original construction on which remedial work has been performed.

   c. Perform all remedial work and re-testing in a manner and at a time approved by the "Superintendent".

B. Leakage Tests (Gravity Sewers):

1. Test all gravity "sewer" lines for leakage by conducting low pressure air tests conforming to ASTM C828 after the installation of house service fittings and leads and after completely backfilling the "sewer" line trench.

2. Equipment:

   a. Pneumatic plugs "shall" have a sealing length equal to or greater than the diameter of the pipe to be inspected.

   b. Pneumatic plugs "shall" resist internal test pressures without requiring external bracing or blocking.

   c. All air used "shall" pass through a single central panel.

   d. Connect 3 individual hoses:

      (1) From the control panel to the pneumatic plugs for inflation.

      (2) From the control panel to the sealed sewer line for introducing the low pressure air.

      (3) From the sealed sewer line to the control panel for continually monitoring air pressure rise in the sealed line.

3. Groundwater Conditions:

   a. In areas where groundwater exists, and at the time of installing the sewer line, install a 1/2 inch diameter capped pipe nipple, approximately 10 inches

long, through the manhole wall on top of one of the "sewer" lines entering the manhole.

b. Immediately prior to performing the line acceptance test, determine the groundwater by removing the pipe cap, blowing air through the pipe nipple into the ground to clear it, and then connecting a clear plastic tube to the nipple.

c. Hold the tube vertically and measure the height in feet. Divide this height by 2.3 to establish the pounds of groundwater pressure to be added to the air pressure test readings. (Example: Height of water is 11 1/2 feet, added groundwater pressure is 5 psig, minimum air pressure is 2.5 psig; therefore, the total minimum acceptable pressure is 7.5 psig).

4. Testing Pneumatic Plugs:

a. Seal test all pneumatic plugs prior to using them in the actual test.

b. Lay one length of pipe on the ground and seal both ends with the pneumatic plugs to be tested.

c. Pressurize the sealed pipe to 5 psig.

d. The pneumatic plugs are acceptable if they remain in place without bracing.

5. Testing Sewer Pipeline:

a. After the trench has been backfilled, the sewer pipe cleaned and the pneumatic plugs checked, place the plugs in the sewer line at each manhole and inflate them.

b. Introduce low-pressure air into the sealed sewer pipeline until the air pressure reaches 4 psig greater than the average groundwater pressure.

c. Allow a minimum of 2 minutes for the air pressure to stabilize to a minimum of 3.-5 psig greater than the ground-water pressure.

d. After the stabilization period, disconnect the air hose from the control panel to the air supply.

e. The pipeline will be acceptable If the pressure decrease is not greater than 1/2 psig in the time stated in the following table:

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
14	6.5
15	7.0
16	7.5
18	8.5
20	9.5
21	10.0
24	11.5
27	12.5
30	14.0
36	17.0

6. Testing Force Mains:

   a. Force mains "shall" be tested in accordance with Section 4 of American Water Works Association Standard C600 "Installation of Cast Iron Water Mains", at a pressure equal to 150% of the design operating total dynamic head.

7. Test Results:

   a. If the installation fails the low pressure air test, determine the source of leakage..

   b. Repair or replace all defective materials and/or workmanship and repeat low pressure air test.

C. Deflection Tests (P.V.C. Sewers Only)

1. Test all P.V.C. Sewer lines for deflection by conducting deflection tests using a rigid "Go-No Go" deflection gauge made as recommended by Johns-Manville or by an approved deflectometer.

2. The acceptance limit for deflection tests of installed PVC Pipe Designation D-3034 and F-789, 4"-15" diameters, shall be 7 1/2% of the average inside diameter of the pipe. A test shall be conducted after a minimum of 30 days following their installation.

3. Go-No Go Device

   a. Pull a line through the pipe with which to pull the Go-No Go device using one of the following methods.

      (1) Attach the pull line to the nozzle end of a hydro cleaner before the cleaning cycle starts. As the hose is pulled through the line, it will carry the pull line to the next manhole where it can be tied off.

      (2) A parachute device can be blown through the line with a lightweight string attached. The pull line can then be attached to the string and pulled manually through the line.

      (3) If water is available, a lightweight string can be floated through the pipe. The pull line can then be attached to the string and pulled manually through the line.

   b. Attach a pull line to each end of the device to facilitate removal if an obstruction is encountered.

   c. Pull the gauge through the line by hand using a smooth and easy motion.

   d. If an obstruction is encountered, pull lightly to see if the gauge will clear the obstruction.

   e. If the gauge will not clear the obstruction, record the distance from the manhole and pull the gauge back out.

4. Repair or replace all defective materials and/or workmanship and repeat the deflection test on the repaired line.

D. Alignment Tests (Gravity Sewers):

1. Perform tests for the correctness of horizontal and vertical alignment on each and every length of gravity sewer pipeline between manholes.

2. Beam a source of light, acceptable to the "Superintendant", through the pipeline and directly observe the light in the manhole at the opposite end of each test section.

E. Inspection of Appurtenant Installations:

1. Completely inspect, at a time determined by the "Superintendant" all manholes and inlets to ascertain their compliance with the Drawings and Specifications.

2. Provide access to each manhole and inlet and check the following characteristics:

   a. Shape and finish of invert channels,

   b. Watertightness and finish of masonry structures,

   c. Location, type, and attachment of stops,

   d. Elevation and attachment of frames, covers, and openings

   e. Pattern and machining of covers, and

   f. Drop connection arrangements.

F. Manhole Leakage Tests

1. Observation:

   a. Test manholes prior to backfilling, mortaring joints, and installing the bench and inverts.

   b. When the groundwater is below the bottom of the manhole, perform an exfiltration test by plugging all pipes and-other openings and filling the manhole with water to the top of the cone section. After 15 minutes, if there is no visible leakage (no water visibly moving down the surface of the manhole) the manhole shall be considered watertight and backfilling may proceed.

   c. When the groundwater is above the bottom of the manhole, perform an infiltration test on that portion of the manhole below the groundwater level. After 15 minutes, if there is no visible leakage into ' the manhole, that portion of the manhole below the groundwater shall be considered watertight. After the infiltration test has been completed, fill the manhole with water and perform an exfiltration test on that portion of the manhole above the groundwater.

   d. Any visible leakage into and out of manholes shall be considered unsatisfactory.

2. Drop In Water Level:
   a. Under certain circumstances such as an area with a heavy flow of traffic, and with approval by the "Superintendant", a manhole may be tested by measuring the drop in water level after backfilling.
   b. Prior to mortaring Joints and installing the bench and invert, fill the manhole to the top of the cone and compute the leakage by measuring the drop in water level over a period of not less than 8 hours.
   c. Leakage shall not exceed 1 gallon per vertical foot for a 24-hour period.
3. As an alternative to the above tests, a vacuum pressure test may be carried out to the following criteria:
   1. Initial vacuum gage test pressure shall be 10" Hg. Test hold time for a 1" Hg. pressure drop to 9" Hg shall be:
      a. At least 2 minutes for 10 feet deep manholes;
      b. At least 2-1/2 minutes7for 10-15 feet deep manholes; and
      c. At least 3 minutes for 15-25 feet deep manholes.
   2. If the pressure drop exceeds the above limits the unit shall be repaired and re-tested and if a unit fails to meet a 1" pressure drop in 1 minute, the unit shall be water tested per (1) or (2) above.
   3. Correct all leakage by reconstruction using new materials. Using leadwool, expanding mortar and other repair methods shall not be permitted.

G. Re-testing Approved Lines
   1. Prior to the final acceptance of any sewer lines, the "Superintendant" may require re-testing of up to 10% of all lines installed when more than 30 days have lapsed from the time of initial testing or, if in the opinion of the "Superintendant", sufficient reason exists to suspect settling has occurred.
   2. If, during such re-testing, any lines are found to exceed the 7.5% maximum deflection, the "Superintendant" may require all lines to be re-tested.

DIVISION 4

STREETS

SECTION 4A

PAVEMENT

In General all work should be off the existing roadway. However, should a situation occur where a "sewer" service requires work within the paved public road then the Town of Acton Specifications for Regulating Construction Within a Public Way shall be followed. Enclosed in "Appendix B" is a copy of this specification.

RIPRAP

The stone used for riprap "shall" be sound, free from structural defects and "shall" consist of a durable field or quarry stone roughly as rectangular block. At least 50% of the stones "shall" weigh in excess of 150 lbs. each, and the remainder "shall" weigh from 50-150 lbs. each. One dimension of each exposed stone "shall" not be less than 12 inches.

Riprap "shall" be bedded in bank run gravel. The stones "shall" be placed by mechanical equipment immediately after preparation of the gravel bed, with the stones laid so that the 12-inch dimension is perpendicular to the prepared bed. Stones "shall" be placed so that the weight of the stone is carried by the underlying material and not-by the adjacent stones, with the larger stones placed at the bottom of the slope. Spaces between stones "shall" be filled with spalls of suitable size to construct a solid, stable slope, free from large voids that might not protect the earth slopes against erosion.

CUTTING AND REMOVING PAVEMENT

The "Contractor" "shall" remove only as much existing pavement as necessary to do the work. Where excavations are to be made in paved surfaces, he "shall" cut the pavement ahead of the excavation by sawing before breaking the pavement within the excavated limits for removal. All pavement "shall" be cut by sawing. Sawing and removal "shall" be done so as to produce clean, uniform, vertical edges without damage to the remaining pavement. Pavement removed "shall" not be mixed with other excavated material, but "shall" be disposed of away from the site of the work before the remainder of the excavation is made. The "contractor" is responsible for the removal and disposal of the old pavement.

GRAVEL SUB-BASE

Backfilling of trenches in streets "shall" be as specified in Section 2B. The top of the trench "shall" be backfilled with 1 ft. Of bank-run gravel as specified in Section 2D. The gravel "shall be thoroughly compacted to the satisfaction of the "Superintendent".

DIVISION 5

OPERATION OF LAW

PROTECT FROM DAMAGE

Prohibited Acts – No unauthorized person shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the sewer works. Any person violating this provision shall be subject to charges of disorderly conduct.

Trespass – No unauthorized person shall enter or remain in or upon any land or structure of the sewer works. Any person violating this provision shall be subject to charges of trespass.

POWERS AND AUTHORITY OF INSPECTORS

Permission for Inspection – Duly authorized employees of the Town bearing proper credentials and identification shall be permitted to enter, at reasonable times, all properties for the purposes of inspection, observation, measurement, repair, maintenance, sampling, and testing in accordance with the provisions of this ordinance. Authorized representatives shall have no authority to inquire into any metallurgical, chemical, oil, refining, ceramic, paper or other industrial activity beyond that having direct bearing on the kind and source of discharge to the public/private sewers, watercourses, natural outlets or facilities for sewage treatment.

Requirements to Observe Safety Rules – While performing the necessary work on private properties referred to as under the powers and authority of inspectors in "Permission for Inspection", the duly authorized representatives shall observe all safety rules applicable to the premises established by the person , and the person shall be held harmless for injury or death to the Town employees, and the Town shall indemnify the person 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 person and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the person to maintain safe conditions as required herein.

Authority in Easements Acquired by the Town – The members of the Board, the Superintendent and other duly authorized representatives of the Town bearing proper credentials and identification shall be permitted to enter upon all private properties through which the Town holds a duly acquired easement for the purposes of, but not limited to, inspection, observation, measurement, sampling, repair maintenance, and testing or any portion of the sewage works lying within said easement. All

entries and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the duly acquired easement pertaining to the property involved.

PENALTIES

Written Notice of Violation – Any person found to be violating any provision of this Ordinance shall be served by the Town with written notice stating the nature of the violation and providing time limits as stated herein for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations.

Penalty for Continued Violation – Any person who shall continue any violation beyond the time limit provided for penalties in the "Written Notice of Violation", shall be charged with a misdemeanor and on conviction thereof shall be fined in the amount specified under the _____ (typically this says Enabling Act it may have to be specified here). Each day in which any such violation shall continue shall be deemed a separate offense. If the violation continues, the Board shall direct Town Counsel to seek an injunction in the Superior Court of the Commonwealth of Massachusetts requiring the offender to cease all violations.

Liability – Any person violating any of the provisions of this ordinance shall become liable to the Town for any expense, loss or damage occasioned by the Town by reason of such offense.

Repeal of Conflicting Ordinances – All ordinances or parts of ordinances in conflict herewith are hereby repealed.

Invalidation of Section – The invalidity of any section, clause, sentence, or provision of this ordinance shall not affect the validity of any other part of this ordinance which can be given effect without such invalid part or parts.

Changes in Rules and Regulations – The Board may from time to time, add to, delete from, change or clarify any of these rules and regulations. Any request for amendment of these rules and regulations must be submitted in writing, with the reasons therefor, to the Board for its approval. Said amendment shall be in force only after its passage, approval, recording and publication as provided by the law.

Ordinance in Force – These rules and regulations shall be in full force and effect from and after its approval and recording with the Town Clerk.

PASSAGE

Passed and adopted by the Board of Sewer Commissioners of the Town of Acton, Commonwealth of Massachusetts on the day of _____, 2002 by the following vote:

Board of Sewer Commissioners

_____

_____

_____

_____

_____

(Duly advertised on _____, 2002, Legal Notice)

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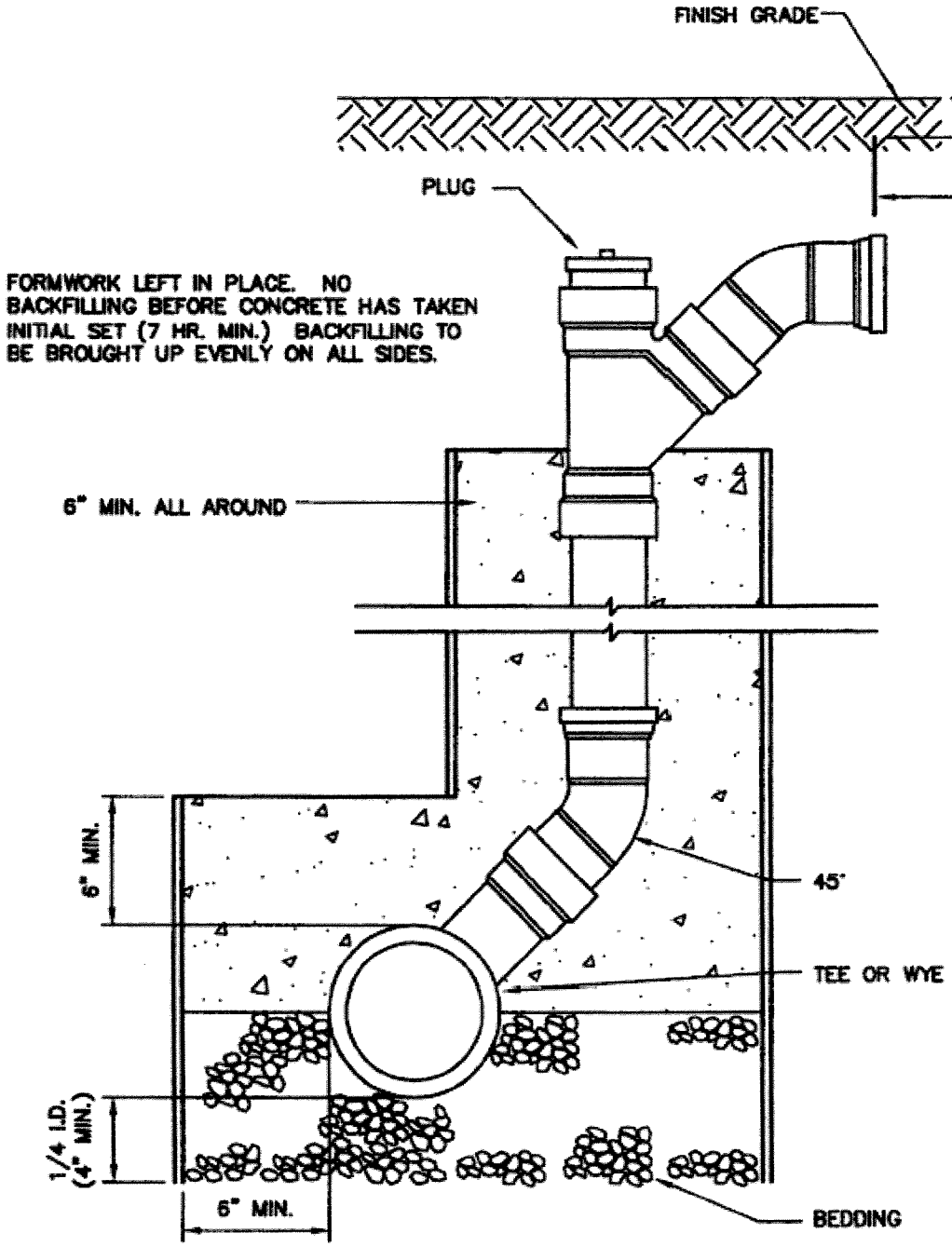
APPENDIX A

STANDARD SEWER DETAILS

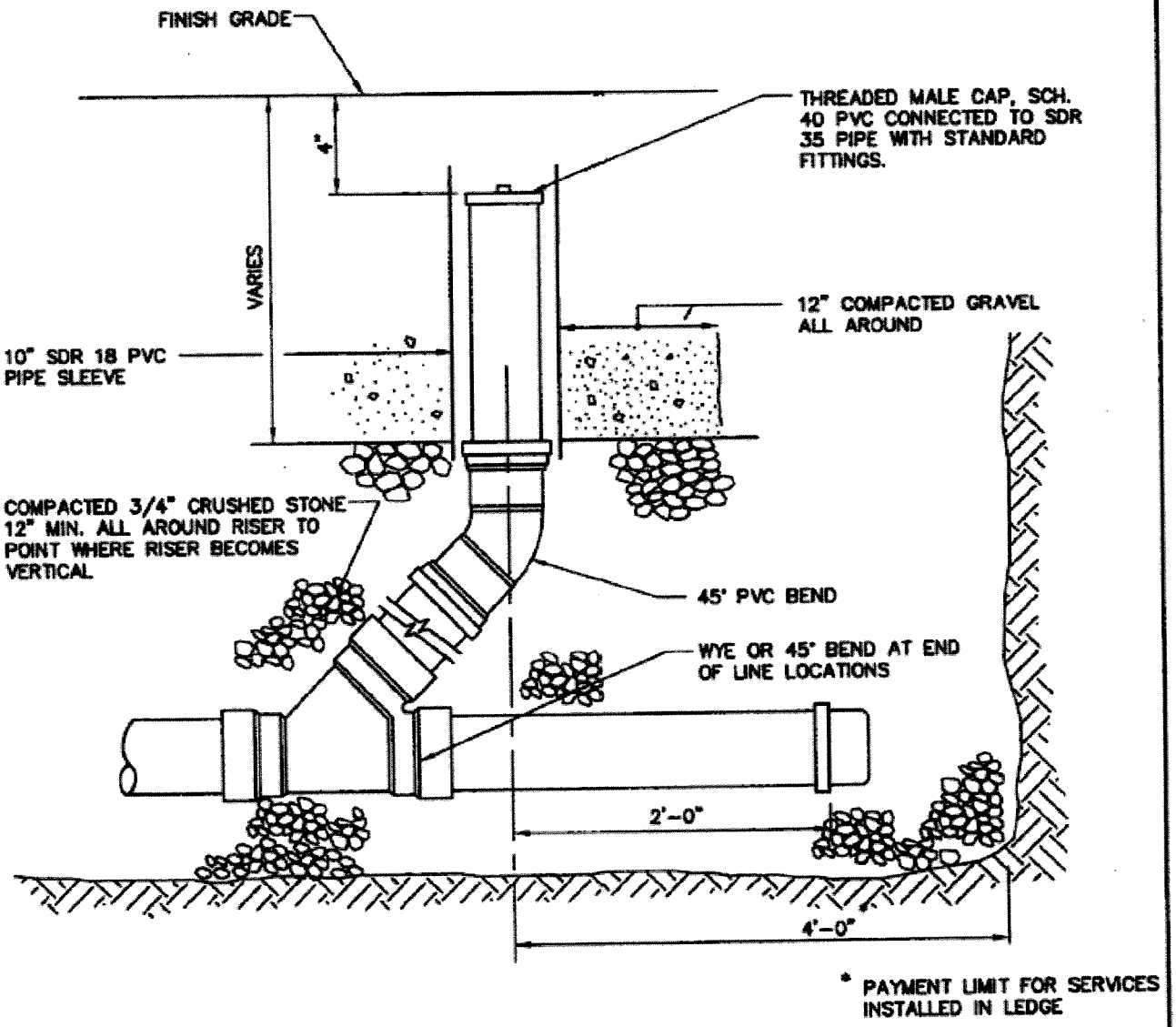


CHIMNEY DETAIL

N.T.S.

CHIMNEY DETAIL

JUNE 2001

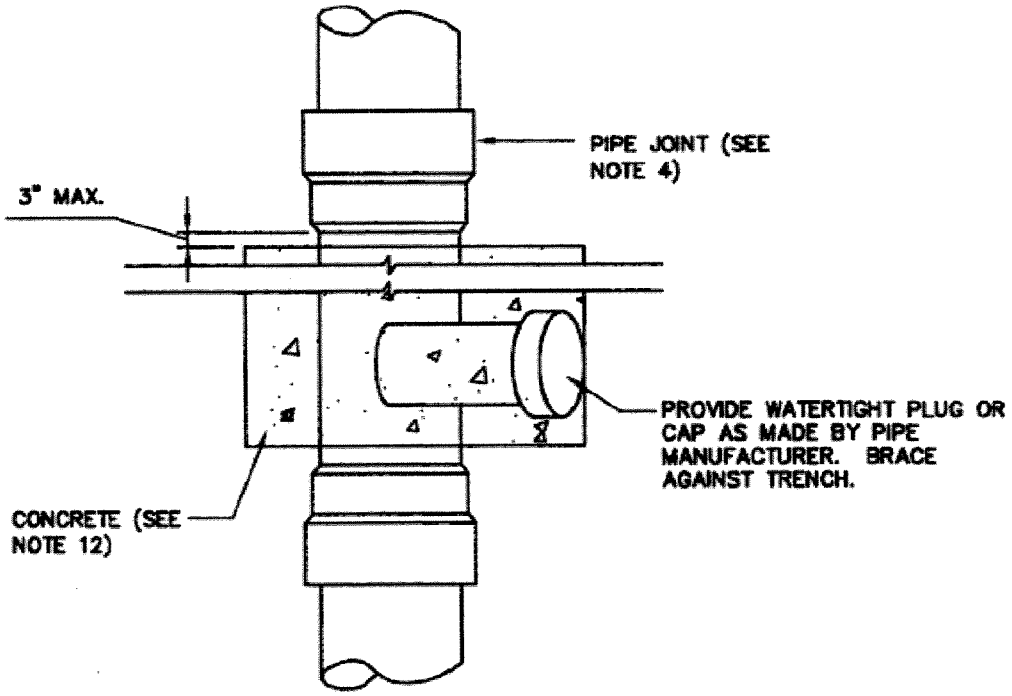


CLEANOUT DETAIL

N.T.S.

CLEANOUT DETAIL

JUNE 2001



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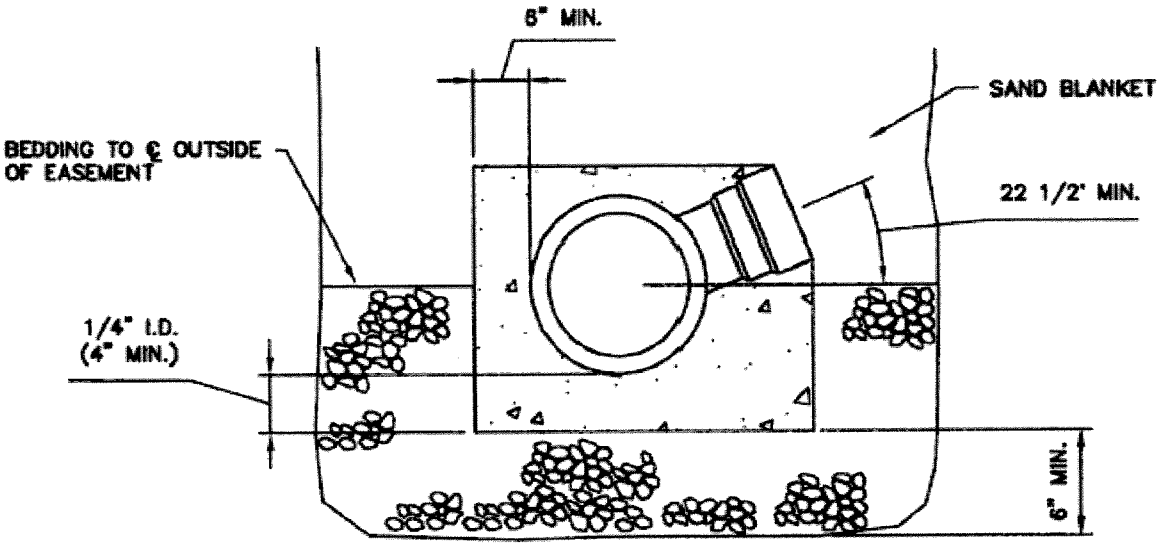


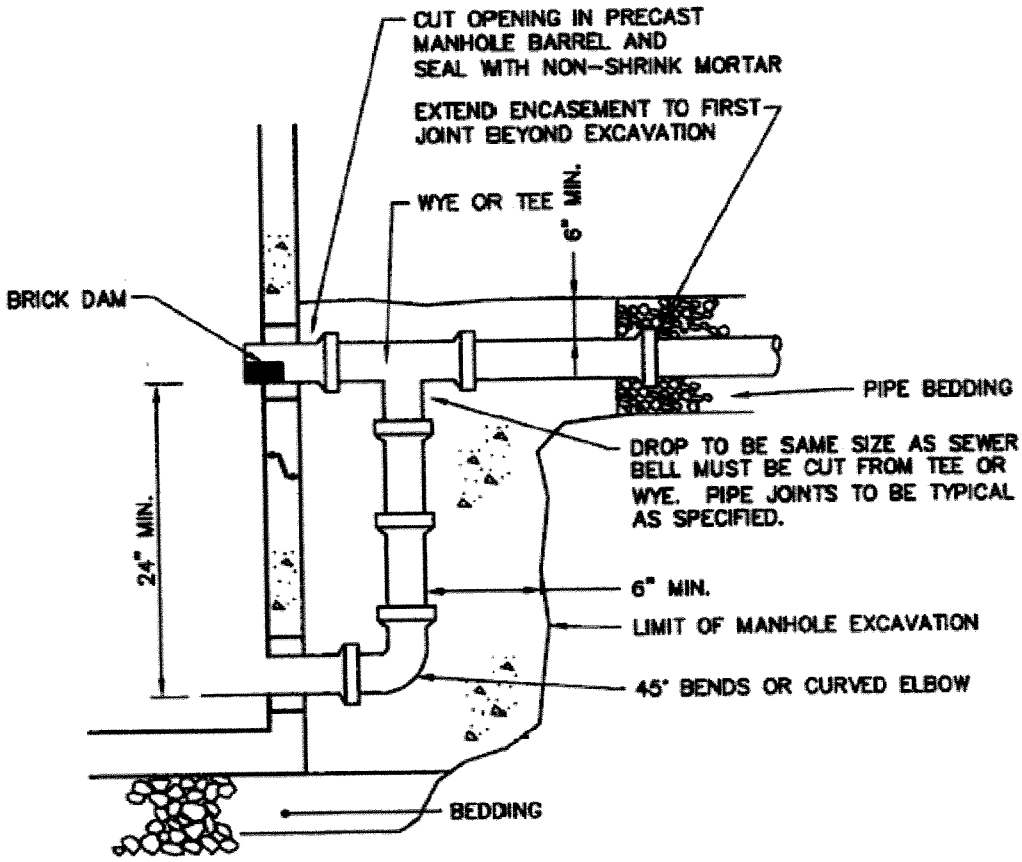
SECTION

CONCRETE FULL ENCASEMENT DETAILS

N.T.S.

CONCRETE FULL ENCASEMENT DETAILS	JUNE 2001

NOTE:
DIMENSIONS AND CONSTRUCTION OF DROP MANHOLE TO BE SIMILAR TO TYPICAL MANHOLE EXCEPT AS SHOWN.

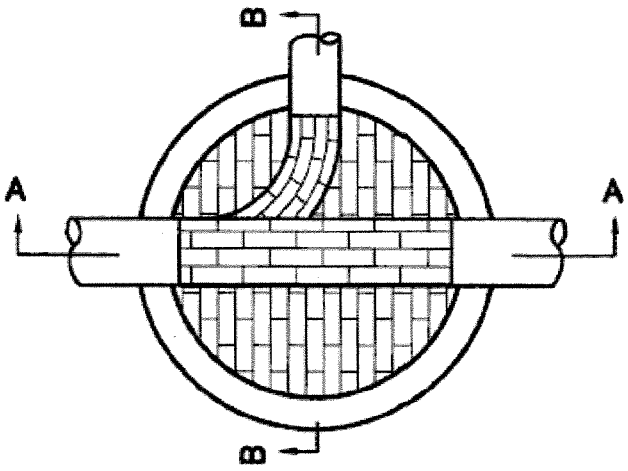


DROP MANHOLE DETAIL

N.T.S.

DROP MANHOLE DETAIL

JUNE 2001



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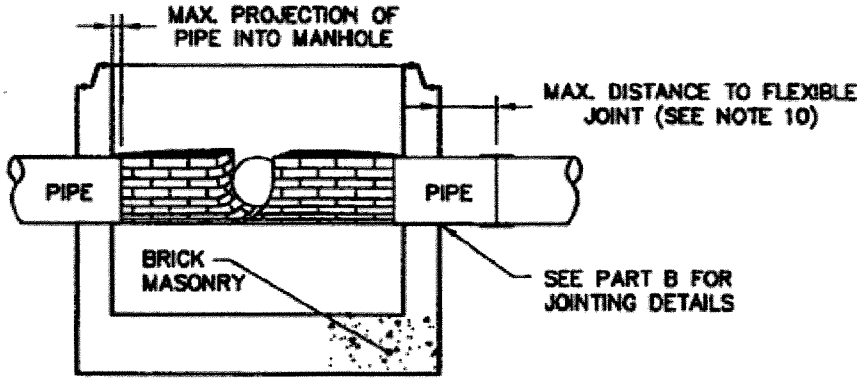
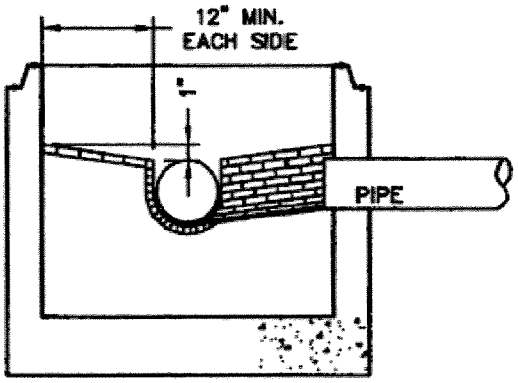


SECTION A–A



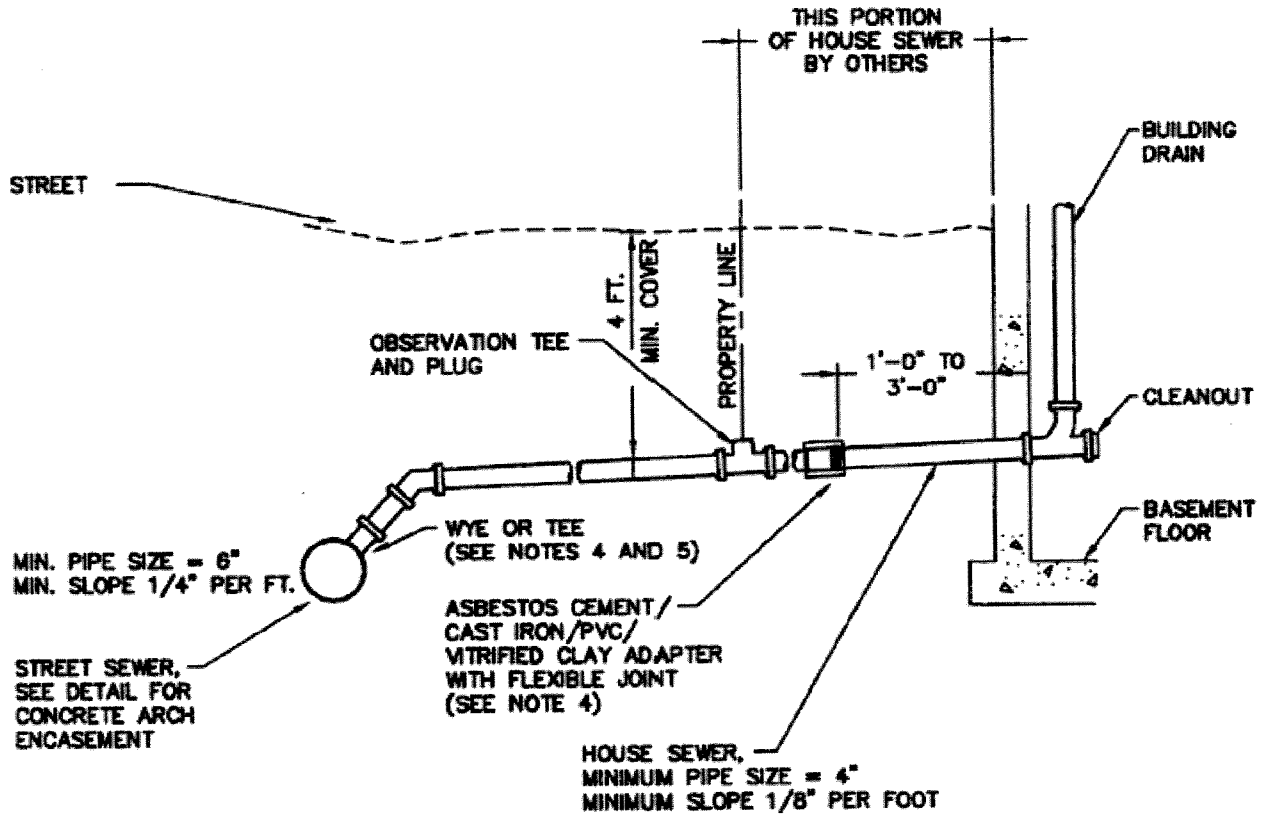
SECTION B–B

NOTES:

- TOP OF SHELF SHALL BE 1" ABOVE CROWN OF HIGHEST PIPE
- CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
- INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.

STANDARD MANHOLE INVERT

JUNE 2001



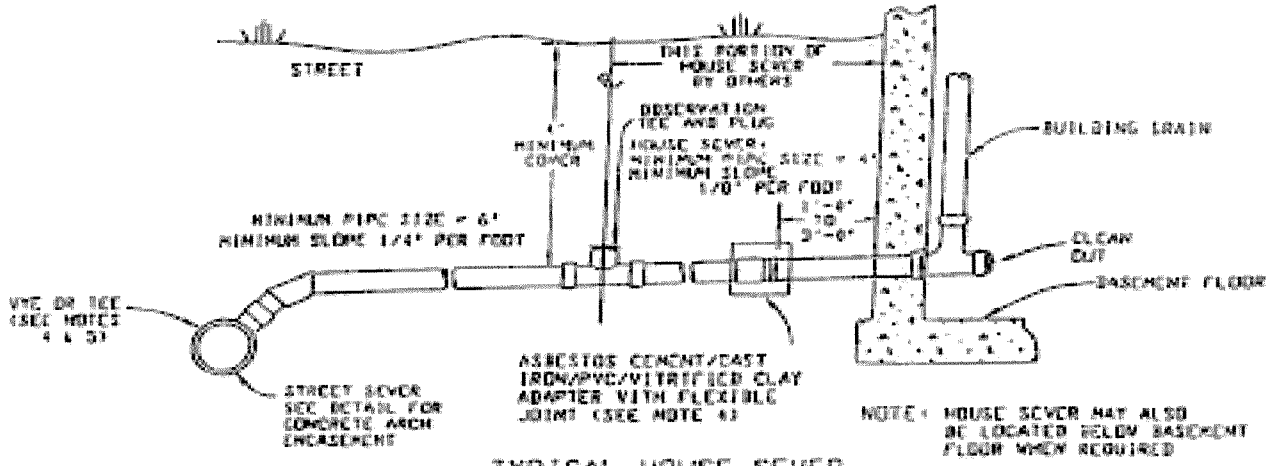
NOTE:
HOUSE SEWER MAY ALSO BE LOCATED
BELOW BASEMENT FLOOR WHEN REQUIRED.

TYPICAL HOUSE SERVICE DETAIL

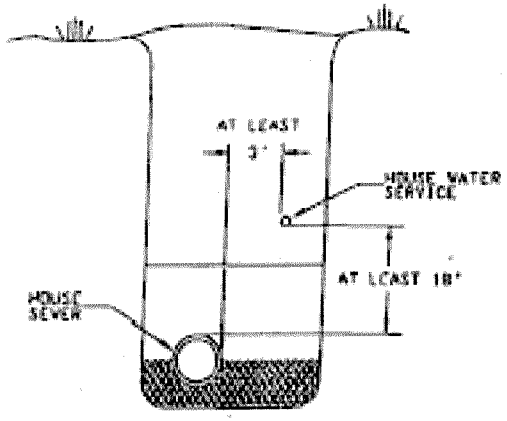
N.T.S.

TYPICAL HOUSE SEWER DETAIL

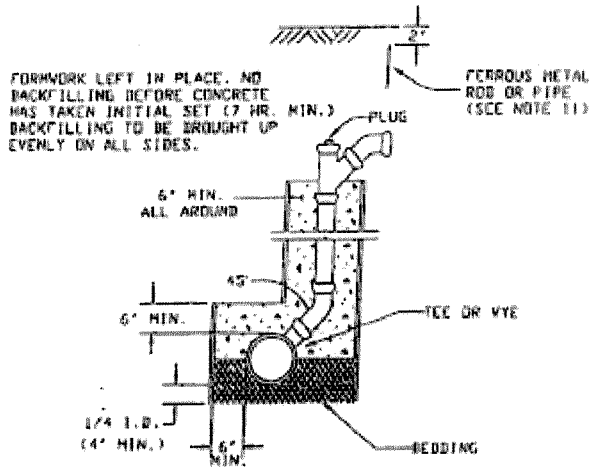
JUNE 2001



TYPICAL HOUSE SEWER



WATER AND SEWER IN SAME TRENCH
(SEE NOTE 9)



CHIMNEY

HOUSE SEWER DETAILS