RULES & REGULATIONS OF

BOARD OF SURVEY

BELMONT, MASSACHUSETTS

Office of Community Development
Engineering Division
Town Hall
Belmont, MA 02178

January 23, 1989

TOWN OF BELMONT
TOWN HALL
455 CONCORD AVENUE
BELMONT, MA 02178

ADOPTION OF NEW RULES & REGULATIONS GOVERNING THE LAYOUT OF STREETS IN BELMONT, MASSACHUSETTS

The Belmont Board of Survey hereby adopts, as amended, the new Rules and Regulations Governing the Layout of Streets in Belmont, Massachusetts. Such adoption has taken place at a properly noticed Public Hearing and public meeting of said Board of Survey.

Approved by the Board of Survey

Date: _____

_____
Walter A. Flewelling, Jr.
Chairman

_____
Anne M. Paulsen

_____
William P. Monahan

Attested: _____
Belmont Town Clerk

REVBDSUR

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SECTION I. GENERAL

1. The Board may upon an express finding that such action is in the public interest and is not inconsistent with the intent of these rules waive strict compliance with any provision contained herein.

2. Applications for approval of plans showing proposed lay outs must be made on forms to be obtained at the Office of the Town Engineer, and must be accompanied by plans and profiles. Other data, if ordered by the Board of Survey or the Town Engineer, shall be furnished by the applicant.

3. If the proposed development contains any wetlands or extends into the wetland buffer zone, Conservation Commission approval must be obtained prior to submitting plans to the Board of Survey.

4. All plans and profiles submitted to the Board shall be on mylar. If the property is Registered Land, plans must be on tracing cloth, and drawn with waterproof drawing ink. Size of sheets to be 20 x 30 inches. The scale of all plans must be forty (40') feet to an inch, the horizontal scale of all profiles forty (40') feet to an inch and the vertical scale four (4') feet to an inch, unless otherwise directed by the Town Engineer.

5. Plot plans showing complete lay outs shall have no profiles with them. Separate plans shall be furnished showing each street with its profile. Only one street plan and profile shall be drawn on a sheet. Streets too long to be shown without a break on one sheet will require additional sheets.

6. The title of plot plans must state the location, owner's name and address, scale, date, and name and address of surveyor. The plot must show north point, areas of all lots, length and bearing of all lot lines, their angles of intersection, and the distance on the street line from stone bounds set or to be set, to the nearest lot line, radius and length of curves, ownership and location of abutting property or passageways, street lines, fences, walls, buildings, boundary monuments, natural monuments, waterways and natural drainage courses. If the topography is such that it will be necessary to locate certain sewers or drains outside the street location, a right of way shall be reserved for their location and referred to and described upon the plot plan.

7. Boundary and street line distances and angles, the length, radii and tangents of all curves, the width of all streets and the distances across streets at street intersections must be shown on the plot plan. An outline plan of the property, made from a survey, a copy of the traverse calculations, the error of closure, the method of adjustment, and a copy of the field notes shall be filed with the Town Engineer when requested. Error of closure must not exceed 1-5000.

8. Street plans, unless otherwise ordered, must be drawn on mylar. The plan of the street shall be drawn on the plan part of the sheet and the profile on the engraved part of the sheet which shall be the top of the plan. The profile shall show the ground elevations of the center and each side line of the street, the

station of each side, and the elevation of the bottom of sills of all structures, and the proposed grade of the center of the street, and the grade of the curb on each side of the street.

Station "0" shall be the intersection of the center line of the proposed street and the side line of the street at which it starts, and, unless otherwise ordered, shall be the low end of the street. The center line of the proposed street shall be extended without change of direction to the center line of the street at which it starts and also at which it ends. At the "0" end of the street the station of this intersection shall be given as (0-the correct distance) and the grade of the connecting street at this point shall be given on the profile. The same method of intersection shall be used at all cross streets and the street at which the proposed street ends. Levels shall be taken every fifty feet, in the center and each side and more often when necessary to show abrupt changes, water courses or drainage ditches. The station of all center line intersections shall be given and the stations of all angle points, the beginning and ending of all curves shall be given both on the plan and the profile. Streets shall be continuous and, where possible, in alignment with existing streets. All proposed streets shall compose a convenient system with adequate connections to ensure full movement of vehicular travel. All proposed streets with a dead end are to have a cul-de-sac. All angles in street lines shall be eased with curves. Center lines of opposing streets shall be spaced a minimum of one hundred fifty (150') feet apart unless otherwise approved by the Town Engineer. There shall be a minimum sight distance of one hundred fifty (150') feet for all local streets. Minimum sight distances for other than local streets shall be designed in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Standards for design speeds of roads. Grades shall be given on the profile at each of these points, at all changes in the grade line, at each twenty-five feet on vertical curves, and at even stations. The rate of fall shall be indicated as 0.5%, 1.0%, 1.5% etc. Maximum slope shall be seven (7%) percent and the minimum slope shall be 0.5%. There shall be a minimum distance of fifty (50') feet at all intersections that have a slope no greater than 0.5%. All elevations shall refer to the Belmont Town Base. The benches used with their elevations shall be indicated on the street profile plan in such a way that they can be found for future use. The proposed grade should not be shown in ink until it has been approved by the Town Engineer. Each street plan must show the north point.

9. The width of all proposed streets and the width of connecting streets shall be given. Intersecting streets shall be connected by curves of a radius of a minimum of twenty (20') feet at the street line. All intersections of streets shall be at an angle of ninety (90) degrees if possible, but otherwise at an angle approved by the Board. In no case shall angles at intersections be less than sixty (60) degrees. Boundary street line distances and angles and the length, radius, tangent and internal angle of all curves must be shown on the street plan. Street widths shall be forty (40') feet, but the Board may in its discretion require widths of up to sixty (60') feet when it deems such greater width necessary for present or future vehicular travel. Upon a finding that lesser width will provide adequate access for traffic and emergency vehicles, the Board may in its discretion allow widths of less than

forty (40') feet, but in no case shall the paved roadway be less than sixteen (16') feet, nor shall the right of way be less than thirty (30') feet. Dead end streets and streets ending in cul-de-sacs must have a minimum turnaround radius of forty-two (42') feet. The Board may in its discretion require such wider turnaround radius as it deems necessary to accomodate the largest fire or emergency vehicle owned by the Town. Dead end streets shall not exceed six hundred (600') feet in length. Streets of less than three hundred fifty (350') feet in length will not be accepted, unless the size of the lot makes alternative street layout physically impossible. No street shall be closer than fifteen (15') feet to the nearest lot line of any abutting property not in the development. All existing trees are to be retained whenever possible. In no case shall the Board approve a plan unless it finds that all proposed streets and adjacent public ways provide adequate access for present and future traffic and emergency vehicles.

10. Names of proposed streets must be satisfactory to the Board and shall not be placed on the plans in ink until they have been submitted and approved by the Board.

11. If a street, the plans of which are submitted for approval, does not extend through to another street, practicable extension thereof, if any, must be shown to the nearest proposed or constructed street.

12. The petitioner agrees to install or have installed at his/her own expense sanitary sewers, storm drains, water mains, stone bounds, sidewalks, curbing, including power, telephone, fire alarm and cable TV, and all connections of the above utilities to the sideline of the street if a house is not proposed. For a house constructed before the street is accepted, connections shall be made to the actual house.

13. Where in the opinion of the Board, reasonably accessible public sewers are not available and will not become available within a reasonable time, the Board may waive the requirements of the construction of sewers, provided proof of passing percolation tests are filed with the Town Engineer.

14. The petitioner further agrees to complete all said required improvements up to binder course within one year from the date of approval of the development plan by the Board of Survey and wearing course within two years, unless the Board approves a different period of time.

15. The petitioner further agrees that before the final approval of the development plan, that he will cause to be filed with the Board a bond in form satisfactory to the Board, conditioned on the completion of all required improvements in the time and manner prescribed, to cover the cost of such work, and executed by the petitioner as principal and a surety company authorized to do business in the Commonwealth. In lieu of a bond, the above to be secured by the deposit with the Town Treasurer of cash or negotiable securities in an amount equal to the penal sum of the bond.

16. Upon receipt of said plans, with a petition for their approval, or for approval of a modification to a previously approved plan, a copy of which, endorsed by the Board, has been recorded or

filed with the Middlesex South District Registry of Deeds, the Board shall notify abutting property owners and conduct a public hearing thereon, after advertising such hearing once a week for two successive weeks, in a newspaper published in Belmont, the last advertisement to be at least two days before such hearing.

17. Any work done on connecting streets will require full repaving of the entire width of the street. A trench patch will not be accepted.

18. All expenses for advertising and notifications to abutting owners shall be paid for by the petitioner.

19. All highway work shall be performed by the developer in accordance with the approved plan, "Commonwealth of Massachusetts Standard Specifications for Highways and Bridges," latest edition, and these Special Provisions. In case of conflict between these Special Provisions and the aforesaid Standard Specifications, Amendments and Addenda, these Special Provisions shall take precedence and shall govern.

20. The Town Engineer requires notices of at least three (3) days prior to commencement or completion of any items of work, and also requires setting of grades for and inspection of work which must be certified as meeting the requirements of the Town by an independent Registered Professional Engineer and/or Registered Professional Land Surveyor, employed at the developer's expense.

21. The developer shall facilitate inspection of the work by the Town Engineer or his representative, and provide for tests of materials by independent laboratories when requested.

22. An "as built plan" showing location and grades of all sewers, water mains and drains including sewer and water stub connections as well as any and all other buried utilities shall be prepared before application of binder coat of bituminous concrete is acceptable by the Town.

23. No utility work shall be backfilled until the Town Engineer has inspected and approved the work; and the contractor's engineer has obtained the necessary information to properly prepare certified "as built plans."

SECTION II. CONSTRUCTION METHODS & MATERIALS

A. Street Construction

1. All streets shown on the plan shall be graded to their full width, so that roadways and sidewalks can be constructed at the same level plane and to the finished grades herein specified. Any deviation necessitated by unusual topographic conditions must have the specific approval of the Town Engineer.

2. The entire area within the exterior street lines shall be cleared except for the trees to be retained as street trees, excavated or filled as necessary and graded in

accordance with cross sections hereinafter shown. All areas beyond the exterior street lines shall be graded in accordance with said standard cross sections.

3. The entire area of each street or way shall be cleared and cleaned of all stumps, brush, roots, boulders, like material and all trees not intended for preservation. It should be noted that all existing trees that can be saved must be retained as street trees.

4. All loam and other yielding material shall be removed or stripped from the roadway area of each street or way and replaced with suitable material as defined in the "Massachusetts Standard Specifications for Highways and Bridges," latest edition, in layers of not more than six (6") inches in depth. No soft or inferior material shall be used below subgrade, and the subgrade shall be thoroughly compacted to ninety-five (95%) percent compaction before applying the gravel base.

5. Excavate or fill and fine grade the subgrade to conform to the approved cross section on the approved plan. The subgrade shall be fifteen (15") inches below finished grade after rolling for roadway and six (6") inches for shoulders. The roadway and particularly all trenches shall be thoroughly compacted to ninety-five (95%) percent compaction by rolling and puddling to the satisfaction of the Town Engineer or his representative before any gravel base is applied.

6. Roadways shall be provided with a foundation or base consisting of at least twelve (12") inches of good binding gravel, rolled in six (6") inch layers and thoroughly compacted to a grade three (3") inches below finish grade, in accordance with the approved profile and cross section, and to a width of the traveled way as shown on said cross section. See Figures 1 and 2. If in the opinion of the Town Engineer or his authorized agent, the gravel is not stable enough after rolling and/or compacting, an eight (8) day waiting period must be observed for weather and equipment traffic to allow gravel to set up. If at that time it is still considered too loose, chemicals may be added for treatment if approved by the Town Engineer.

7. Roadways shall be paved with three (3") inches of compacted bituminous concrete, placed in two layers, the first layer consisting of two (2") inches of base or binder, and the second layer of one (1") inch of top. Bituminous concrete shall meet with "Massachusetts Standard Specifications for Highways & Bridges." latest edition.

In all cases, the installation of the bituminous concrete shall be done with a self-propelled mechanical spreader and 10 to 14 ton roller acceptable to the Town Engineer.

Prior to installation of binder course, all manholes, catch basins and water gate boxes shall be set to binder grade. Upon completion of binder, a 12-month period shall elapse before final coat can be installed. Prior to final coat of

Portland cement concrete, all manholes shall be raised and set in bituminous concrete; all catch basins to be left at binder grade and keyed to accept final coat.

All disturbed curbing shall be reset, and in areas where bituminous concrete binder has been disturbed, there shall be appropriate repairs as deemed necessary by the Town Engineer. Trenches to be compacted and patched with six (6") inches bituminous concrete binder.

8. Ledge occurring anywhere in the full cross section of the roadway must be cleared to a minimum of eighteen (18") inches below the finished surface. Ledge occurring in pipe trenches must be cleared so as to have a gravel cushion of at least six (6") inches below and on both sides of the pipe.

B. Curbs

Granite curb is to be installed at the appropriate line and grade on all streets for their entire length according to the following specifications:

1. All granite curbing shall be a minimum of five (5") inches in thickness, and shall not be less than sixteen (16") inches in depth. No cracked or chipped pieces allowed. All curbing shall comply to the Massachusetts State Standard as specified in "Massachusetts Standard Specifications for Highways and Bridges."

2. Radii and arcs of all radius curbing shall be computed by developer's engineer.

3. The trench for setting of curbing shall be excavated so that it shall be at least eighteen (18") inches wide and its subgrade at least twenty-two (22") inches below the finished curbing grade.

4. Upon this subgrade, a foundation shall be made consisting of clean coarse gravel thoroughly rammed so that it shall be at least four (4") inches in depth when compacted. Upon this foundation other gravel of the same quality shall be spread to make proper bed for the curbing. The joints of the curbing laid thereon shall be dry, laid as close as possible, and mortared. All the spaces under the stone shall be filled with gravel and tamped, so that the curbing will bear throughout its entire length and be at the line and grade required. Return stones (R = 2 feet) shall be installed at driveway openings.

5. The trench on each side of the curbing shall then be filled to the subgrade for the roadway and sidewalk respectively with clean, coarse gravel laid in four (4") inch layers, each layer thoroughly rammed and tamped under and around the curbing.

6. All curbing shall be installed prior to installation of the pavement. All curbing must be completely backfilled to top of curbing in order to prevent movement of curbing.

7. Appropriate handicap access ramps shall be provided at all intersections and shall conform to Figures 3 and 4.

C. Sidewalks

1. Sidewalks shall be constructed when the right of way is forty (40') feet or greater, as shown on typical cross section. See Figures 1 and 2.

2. In constructing all sidewalks, the material shall be removed for the full width of the sidewalk to a subgrade at least eleven (11") inches below the approved finished grade. The foundation shall consist of at least eight (8") inches of good binding gravel or crushed stone, thoroughly rolled and compacted to the satisfaction of the Town Engineer or his representative, and shall be brought to a grade three (3") inches below the approved finished grade. Bituminous concrete, meeting "Massachusetts Standard Specifications for Highways and Bridges," latest edition, shall be laid in two courses, namely base or binder course and top course.

Base course shall be two (2") inches in thickness after rolling, and top course shall be one (1") inch in thickness after rolling.

In areas of fill, the final coat shall not be installed for ninety (90) days unless waived by the Town Engineer.

3. At all intersections the sidewalks shall be constructed to the edge of the curb or traveled way with curb cuts where applicable. See Figures 3 and 4.

4. When Portland cement concrete sidewalks are required by the Town Engineer, based on the existing sidewalks in the surrounding neighborhood, there shall be a minimum thickness of four (4") inches of 4000# concrete, mixed in a 1-2-3 proportion, with pea stone. Minimum thickness through driveway openings shall be six (6") inches. Blocks will consist of four (4') foot sections, with a bituminous membrane expansion joint every twenty (20') feet. Wood float and broom finishing shall be required.

D. Grass Plots and Slopes

1. All areas between the exterior street lines and the edges of roadways, except where there are sidewalks, shall be loamed, fertilized and sodded as shown on the Typical Cross Section.

2. All areas beyond the exterior street shall be sloped as shown on the Typical Cross Section.

3. All existing lawn areas within or beyond the limits of the work, damaged or disturbed during the course of construction, shall be regraded, loamed, limed, fertilized, seeded/sodded and restored to their approximate original condition.

4. Loam shall be placed on the subgrade shown on the Typical Cross Section in a layer that when compacted shall not be less than six (6") inches in depth. After spreading, loam shall be raked and rolled repeatedly with a 200-pound roller, and hand raked to eliminate debris and stones over one (1") inch. A compact seed bed shall be produced at the required finished grade. The surface shall be smooth, without water pockets.

5. Lime shall be spread evenly over all grass areas at the rate required by acidity tests and watered into the soil. After applying lime, spread evenly over entire loam area organic fertilizer at the rate of two (2) pounds per ten (10) square yards. Spread fertilizer by means of approved spreaders and lightly rake into the soil.

6. All loam areas shall be sown with grass seed at the minimum rate of approximately 1/2 pound per eight (8) square yards, and rolled with a light roller or sodded as specified by the Town Engineer.

7. The quality of the loam, lime, fertilizer, lawn seed and sod shall meet with the "Massachusetts Standard Specifications for Highways and Bridges," latest edition.

8. Slopes over ten (10') feet in vertical height shall, when deemed necessary by the Town Engineer, have guard rail, fencing or appropriate safety barriers with landscaping as determined by the Town Engineer.

E. Street Signs

Street signs, which in the opinion of the Town Engineer, are of the type commonly used on public ways in the Town, and bearing the names of the streets as indicated on the plan, shall be erected at all intersections of streets in the development, with dual signs installed where required. Poles shall be two (2") inch galvanized iron pipe, fourteen (14) feet in length, and set three (3') feet deep in one (1') square foot of concrete. There shall also be erected at all points within the development at which a private street enters into or unites with an existing public way a sign indicating that the former is a private way. See Figure 12.

F. Street Trees

Street trees, of a size and species approved by the Tree Warden, shall be planted on each side of every street in the development wherever existing wood lands or suitable individual trees are not retained. Trees shall be located in the grass belt between the street pavement and sidewalk at spacing determined by the Town Engineer, approximately every fifty (50') feet. Types of trees that are acceptable are as follows. Low Growing: Pyrus 'Chanticlaire' (Gallery Pear), Cornus Kousa (Korean Dogwood), Crataegus (Hawthorn), Mauls Sp. (Flowering Crabs), and Tall Growing: Gleditsia Trianthos Inermis (Skyline), Tillia Cardata (Greenspire),

Quercus Pahlstris (Pinoak), Quercus Rubra (Read Oak), Ostarya Virginiana Hop (Hornbeam), Sophora Japonica Regent (Regent Scholar Tree), and other species approved by the Tree Warden. Trees shall be a minimum of two and one-half (2 1/2") inches in diameter and a minimum of seven (7') feet in height.

G. Stone Monuments

1. Granite bounds 6" x 6" x 4' with a 1/2 inch drill hole in the center shall be furnished and set on the exterior street lines at all angle points, at the beginning and end of all curves, and at all intersections. Such monuments shall be set with their tops at the finished grade, unless the Town Engineer directs otherwise, and the elevation of each stone shall be established. All stone bounds shall be set and certified by a Registered Land Surveyor and then rechecked and recertified when all construction is completed just prior to final approval and acceptance.

2. The developer shall excavate holes sufficiently large to properly place the bounds and thoroughly tamp around them sufficient excavated material to hold them securely in position. If the excavated material is not satisfactory for back fill, in the opinion of the Town Engineer, then said holes shall be filled with clean gravel.

H. Fencing

Chain link fences shall meet with the "Commonwealth of Massachusetts Standard Specifications for Highways and Bridges," latest edition. See Figure 13.

I. Cleaning Up

Upon completion of all work on the ground, the developer shall remove from the streets and adjoining property all temporary structures and all surplus material and rubbish which may have accumulated during the prosecution of the work, and shall leave the work in a neat and orderly condition to the satisfaction of the Town Engineer.

SECTION III. STORM DRAINAGE

A. General

1. Storm drains, culverts and related installations, including catch basins and manholes, shall be installed within the development as necessary:

(a) to permit unimpeded flow of all natural water courses;

(b) to insure adequate drainage of all low points along all streets;

(c) to intercept storm water run off along all streets at intervals reasonably related to the extent and grade of the area drained;

(d) to permit connection of individual homes in the development to the storm drainage system.

2. Proper connections shall be made with any existing drains in adjacent streets or easements. Where adjacent property is not developed, provision shall be made for proper projection of the drainage system by continuing appropriate drains to the exterior boundaries of the development at such size and grade as will allow for such projection. If any areas within or adjacent to the development become wetlands because of final roadway or lot grading, appropriate drainage systems acceptable to the Town Engineer shall be designed and constructed.

3. The drainage system shall be laid out based on a ten (10) year storm to the satisfaction of the Town Engineer, who will require provision of such facilities and arrangement thereof as in his opinion are necessary to carry out the intent of subparagraphs 1 and 2 above. The installation of the drainage system, including the methods of construction and the quality of materials used, shall conform to special provisions of the Town Engineer as follows:

B. Drain Pipes

1. In no case shall less than ten (10") inch reinforced concrete pipe be used for surface drainage. Minimum cover shall be no less than thirty (30") inches.

2. All drain pipes shall be laid on a firm base in a straight line and at plan grades shown, using batter boards, laser beam or individual pipe with transit, set by a Registered Professional Engineer and/or a Registered Professional Land Surveyor.

3. All pipes are to have joints cemented or be "ringtite" type except where, in the opinion of the Town Engineer, subsurface drainage is necessary. Tops shall be cemented to spring line in all cases.

4. Drain pipe shall not be backfilled or covered until inspected and approved by the Town Engineer or his representative.

5. The quality of all materials, the process of manufacture and the finished pipe shall be subject to inspection and approval by the Town Engineer or his authorized agents. The pipe shall be subject to rejection at any time on account of failure to meet any of the specifications. Pipe rejected after delivery to the job shall be marked for identification and shall be removed from the job at once.

6. Bedding of Pipe: The pipe shall be laid true to the specified lines and grades. Each section of pipe shall have a firm bearing throughout its length. Nothing but selected fine material or gravel free from large stones shall be placed around and under the pipe.

The pipe shall be bedded in gravel foundation of uniform density carefully shaped to fit the lower part of the pipe exterior for at least ten (10%) percent of its overall height.

When subsurface water is encountered for excavation of pipe, a six (6") inch bed of crushed stone shall be installed prior to placement of pipe. Width of stone to be determined by diameter of pipe plus one (1') foot, and free of sand and foreign material.

In all cases the Town Engineer is to determine what materials are suitable for proper bedding of pipe.

C. Catch Basins and Manholes

1. Catch basins and manholes shall be constructed of clay brick, concrete block masonry or precast concrete; with conical top sections. Flat tops are not acceptable for manholes. See Figures 5, 6, and 9.

2. Catch basins and manholes shall not be backfilled or covered until inspected and approved by the Town Engineer or his representative.

3. Clay Brick: Catch basins and manholes constructed of brick shall be free from cracks or irregularities and laid in a bed of mortar.

Exterior of structure shall be thoroughly plastered with Portland cement (not mortar). Interior of structure shall have all joints flush with brick. Aluminum steps twelve (12") inches O.C. shall be installed.

4. Precast Reinforced Concrete Sections: The precast barrel and conical sections shall conform to A.S.T.M. Standard Specifications for Reinforced Concrete Culvert Pipe, Designation C478. See Figures 9 and 10.

5. Concrete Block: Cement concrete block shall be free from cracks or irregularities. Block when tested shall be at least 28 days old. Cement, water and aggregate shall conform to the regulations as specified in the latest edition of the Commonwealth of Massachusetts Department of Public Works, Standard Specifications for Highways and Bridges. Design and construction shall be as shown on Figure 5.

6. Manholes shall be installed in locations as shown on the plans, however, an excessive number of pipes entering the manhole that would diminish the structural integrity will not be permitted.

D. Curb Inlets

Standard granite curb inlets shall be installed at the back gutter line of all catch basins.

E. Frames, Covers & Grates

Grating, covers and frames shall be eight (8") inches deep, heavy traffic weight cast iron, and conform to Massachusetts State Standards. All castings shall be free of flaws, pits or cracks. Manhole covers shall have the word "drain" cast upon them. Manhole and catch basin castings shall be set in concrete and be brought to binder grade. Manhole steps shall be of aluminum and as shown on the drawings. Steps shall be placed twelve (12") inches on center and shall not be subjected to any load for a period of at least seven (7) days.

F. Mortar

Mortar shall be composed by volume of one (1) part of Portland cement and two (2) parts of mortar sand, with sufficient water to form a workable mixture.

G. Head Walls

Head walls shall be constructed at the open ends of any drain pipes where the same serve as outlets to the drainage system. Head walls shall be of concrete or mortared stone as approved by the Town Engineer. See Figure 7.

H. Trench Excavation

Drain trenches shall be excavated as shown on Typical Trench Excavation diagram. See Figure 8.

The trench for the pipe shall be excavated to the required line and grade and of sufficient width to permit thorough tamping of the fill under the haunches and around the pipe. The bottom of the trench shall be shaped or channeled to conform to the curvature of the pipe.

If any cross pipes, conduits, drains or other unforeseen obstacles are encountered in the excavation, the grade of the bottom of the trench may only be raised or lowered during the excavation operation as directed by the Town Engineer.

Trenches shall not be allowed to remain open overnight unless, in the opinion of the Town Engineer, they are protected by suitable coverings to insure safety, i.e., steel plates, not plywood. Unless properly protected, all trench work must be immediately back filled.

I. Trench Back Filling

Trench back filling shall be done by hand for at least one (1') foot over the pipe, and no stones over three (3") inches in diameter shall be used in the operation. No stones of over one (1) cubic foot shall be allowed in any of the backfill. The entire back fill shall be placed in one (1') foot layers, compacted thoroughly and puddled to the satisfaction of the Town Engineer or his representative.

SECTION IV. SEWER

A. Sewer Pipe

(a) Sewer pipe shall consist of sections of pipe of the kinds, sizes and classes shown on the plans and as directed [minimum size shall be eight (8") inch], laid on a firm foundation with tight joints, in a trench in accordance with these specifications

(b) Pipe for the construction of sewer mains and lines shall be PVC or vitrified clay and conform to the Commonwealth of Massachusetts Standard Specifications for Highways and Bridges, latest edition.

B. Branch Connections

(a) Sewer pipe branch connections shall consist of pipe branches of the kinds, sizes and classes as shown on the plans at the locations and set into the pipeline, with tight joints, at the locations and places shown on the plans [at least one (1) branch connection (wye) per lot] as directed, and of the strength class of the sewer pipe to which it is connected.

(b) Kinds of Branch Connections: Branches for use in sewer mains and lines shall be PVC or vitrified clay and conform to the Commonwealth of Massachusetts Standard Specifications for Highways and Bridges, latest edition.

C. Chimney Connections

(a) Chimney connections shall consist of the pipe, pipe bends and encasement in concrete or brick masonry as shown on the plans or as directed. The strength class for each connection shall be that of the greatest strength class of the sewer branch to which it is connected.

(b) Kinds of Chimney Connections: The chimney connections shall be of the same kind of material as that used in the main sewer line unless otherwise shown on the plans or as directed.

(c) Concrete or brick masonry used for encasement of chimney connections shall comply fully with the requirements for concrete and for brick. See Figure 11.

(d) Construction: Chimney connections shall be constructed in accordance with plans, and to the elevation determined by the Town Engineer. In the event that the Contractor elects to use brick encasement, the minimum thickness shall be eight (8") inches as measured from the outside wall of the pipe. The brick encasement shall be square in form and all voids between the pipe and brick shall be filled with mortar as succeeding courses are laid. Backfill around chimneys shall consist of selected materials placed and tamped in one

(1') foot increments. The utmost care shall be exercised by the contractor to avoid strains on the chimney caused by uneven or unbalanced backfilling.

(e) All chimneys shall be extended to finish grades with heavy duty gate box or manhole frame and cover where deemed appropriate by the Town Engineer.

D. Service Connections

(a) Where service connections are required, they shall extend from and be connected to the wye branch connection or the chimney connection, whichever the case may be, and shall terminate at the actual sideline of the street if a house is not immediately planned for the lot. If a house is planned, the connection shall proceed to the actual foundation where it shall continue through the foundation with four (4") inch heavy weight cast iron pipe. They shall run straight with no bends and be capped with suitable plugs or stoppers.

(b) Service connections shall be inserted into the wye branch connections or the chimney connections as the case may be, according to the plans or as directed.

(c) Connections shall be constructed in accordance with said plan and shall have a minimum slope of 2% or 1/4 inch per foot. Laying of pipe and backfilling shall follow the requirements set forth in these specifications.

E. Construction Methods

(a) Excavation: The trench for the pipe shall be excavated to the required line and grade and of sufficient width to permit thorough tamping of the fill under the haunches and around the pipe. The bottom of the trench shall be shaped or channeled to conform to the curvature of the pipe. See Figure 11.

If any cross pipes, conduits, drains or other unforeseen obstacles are encountered in the excavation, the grade of the bottom of the trench may only be raised or lowered during the excavation operation as directed by the Town Engineer or his representative.

In all instances, a profile of any change from the original plans shall be provided by the contractor.

(b) Bedding of Pipe: The pipe shall be laid true to the specified lines and grades when and as directed. Each section of pipe shall have a firm bearing throughout its length. Nothing but selected fine material or sand shall be placed around and under the pipe.

The pipe shall be bedded in sand foundation of uniform density carefully shaped to fit the lower part of the pipe exterior for at least ten (10%) percent of its overall

height. When subsurface water is encountered, pipe shall be laid on crushed stone gravel base free of sand and foreign material as required by the Town Engineer. Depth of stone to be determined by the Town Engineer. Width of stone to be determined by diameter of pipe plus one (1') foot.

(c) Installing Pipe: Pipe shall be installed as provided in the manufacturer's specifications for installation. All sewer pipes shall be laid on a firm base in a straight line at plan grades shown using batter boards, laser beam, transit, or individual pipe with transit set by a Registered Professional Engineer and/or Registered Professional Land Surveyor.

(d) Faulty Construction: Any pipe showing settlement after laying or which is not in true alignment, before final acceptance of the work, shall be taken up and relaid by the Contractor.

F. Testing

After the pipe has been laid and completely backfilled, an infiltration test or exfiltration test shall be made on all sections of pipeline between and including manholes by an independent tester. The Town Engineer shall designate which type of test is to be performed and the manner in which it shall be conducted. The contractor shall furnish and install suitable plugs as directed.

(a) Gravity Sewer Testing

(1) Low pressure air tests shall be used to test gravity sewers, unless otherwise specified by the Town Engineer. Leakage shall be measured in terms of time for the pressure to drop from 3.5 p.s.i. gauge to 2.5 p.s.i. gauge. Allowable time for the pressure drop to occur shall be in accordance with ASTM C828 and as designated in WPCF, Volume 44, No. 4, April, 1972. Page 557, taking into account the different sizes, and tests shall be made in the following manner:

(2) At the time of the test, the Contractor shall determine the ground water level.

(3) Pipe to be tested shall be cleaned and all pipe outlets plugged.

(4) The contractor shall use equipment specifically designed for the purpose of testing sewer pipe lines using low pressure air. The equipment shall be provided with an air safety valve so set that the internal air pressure in the sewer cannot exceed 8 p.s.i.

(5) If the pipe to be tested is submerged in ground water, the back pressure at center of pipe due to ground water submergence shall be determined and all gauge pressures in the test shall be increased by this amount.

(6) Air shall be added slowly to the section of pipe under test until the internal air pressure reaches 4 p.s.i.g. greater than the maximum pressure exerted by the ground water above the invert of the pipe. However, the internal air pressure in the sealed line shall not exceed 8 p.s.i.g. When the maximum pressure exerted by the ground water exceeds 4 p.s.i. the contractor shall conduct only an infiltration test using a weir or other suitable measuring device.

(7) At least two (2) minutes shall be allowed for the air temperature to stabilize, adding only air required to maintain pressure. After the stabilization period, the air supply hose shall be disconnected from the control panel. The time required in minutes for the air pressure in the section of pipe under test to decrease from 3.5 to 2.5 p.s.i.g. greater than the maximum pressure exerted by the ground water that may be above the centerline of the pipe shall be in accordance with current accepted standards corresponding to the sizes and lengths of pipe in the section tested.

Table I - Specification Time Required for Loss of Pressure from 3.5 psig to 2.5 psig for Size & Length of Pipe Indicated for Q = 0.003

PIPE DIAMETER (in.)	MINIMUM TIME (min:sec.)	LENGTH FOR MINIMUM TIME (ft)	TIME FOR LONGER LENGTH (sec.)	SPECIFICATION TIME FOR LENGTH (L) SHOWN (min:sec)							
				100ft	150ft	200ft	250ft	300ft	350ft	400ft	450ft
4	1:53	597	.190L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	.427L	2:50	2:50	2:50	2:50	2:50	2:50	2:50	2:50
8	3:47	298	.760L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42
10	4:43	239	1.187L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40	199	1.709L	5:40	5:40	5:42	7:08	8:33	9:48	11:24	12:50
15	7:05	159	2.671L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	133	3.846L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51
21	9:55	114	5.235L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16
24	11:20	99	6.837L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17
27	12:45	88	8.653L	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54
30	14:10	80	10.683L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07
33	15:35	72	12.926L	21:33	32:19	43:56	53:52	64:38	75:24	86:10	96:57
36	17:00	66	15.384L	25:39	38:28	51:17	64:06	76:55	89:44	102:34	115:23
39	18:25	61	18.054L	30:57	45:09	60:11	75:14	90:16	105:19	120:22	135:24
42	19:50	57	20.939L	34:54	52:21	69:48	87:15	104:42	122:09	139:36	157:03

NOTE: in.x 2.54 = cm; ft x 0.3 = m.

WPCF, Vol.44, No. April 1972, pg.557

G. Sewer Manholes

(a) Sewer manholes shall be built of precast reinforced concrete or brick to the lines, grades, dimensions and designs as shown on the plans and in accordance with the specifications for materials and construction as described and referred to herein. The utmost care and caution shall be exercised by the Contractor in all types of sewer manhole construction to ensure watertight structures. See Figure 9.

(b) Precast Reinforced Concrete Sections: The precast barrel and conical sections shall conform to state standards and A.S.T.M. Standard Specifications for Reinforced Concrete Culvert Pipe, Designation C-478 as amended, with the following exceptions and additional requirements:

1. A brick invert shall be constructed in accordance with that shown on the plans. Minimum thickness of brick inverts shall be four (4") inches.

Clay sewer brick shall conform to the requirements of Designation C-32 of the A.S.T.M. with the following exceptions:

(a) That the mean of five (5) tests for absorption shall not exceed eight (8%) percent and no individual brick exceed eleven (11%).

(b) Underburned or salmon brick will not be acceptable, and only whole brick shall be used unless otherwise permitted.

(c) Bricks that are rejected by the Town Engineer shall be removed immediately from the site of work.

2. Backfilling shall be done in a careful manner, bringing the fill up evenly all around. If any leaks appear, they shall be caulked to the satisfaction of the Town Engineer.

(c) Vertical Drops at Manholes

(1) Where a drop manhole is indicated on the plans or as directed, a vertical drop shall be constructed at the inlet and as shown on the plans or as directed. Every vertical drop shall consist of a drop and a cleanout, and constructed outside of the manhole structure, firmly secured from movement by encasing in concrete or brick masonry. See Figure 10.

(2) Vertical drops shall be built in concurrence with the manhole to which it is attached and shall conform to the designs, dimensions, sizes and materials as shown on the plans or as directed. Where vertical drops are to be constructed at existing sewer manholes, they shall be built as directed by the Town Engineer. In either case, they shall be firmly secured from movement by encasing in concrete or brick masonry outside the structure.

(3) The contractor shall also install in each Vertical Drop Manhole aluminum steps as shown on the detail in Figure 14. Steps are to be placed twelve (12") inches o.c. in concrete walls and shall not be subjected to any load for a period of at least seven (7) days.

H. Mortar

Mortar used in brick work shall be composed of one part Type II Portland Cement and two parts sand to which hydrated lime (not to exceed ten (10) pounds per bag of cement) shall be added.

A sufficient quantity of water shall be added to attain a degree of workability acceptable to the Town Engineer.

Mortar shall be mixed only in such quantity as may be required of immediate use and shall be used before the initial set has taken place.

I. Manhole Rungs

The Contractor shall furnish and install in each manhole rungs as shown on the plans. Rungs shall be placed twelve (12") inches on centers for the entire depth of the manhole and shall not be subjected to any load for a period of at least seven (7) days.

Rungs for manholes shall be of the safety type extruded aluminum, Alcoa 60-61T or approved equal and the portion embedded in the masonry shall be coated with bituminous material.

J. Frames and Covers

The contractor shall furnish and set cast iron frames and covers on manholes as shown on the plans or as directed. Cast iron frames and covers shall be the Massachusetts State Standard as specified in the "Massachusetts Standard Specifications for Highways and Bridges", latest edition.

The castings shall be of good quality, strong, tough, even grained cast iron, smooth, free from scale, lumps, blisters, sand holes and defects of any kind which render castings unfit for the service for which they are intended.

The manhole frame shall be minimum eight (8") inches deep and be watertight. The top shall be checkered with three (3") inch letters saying, "SEWER" recessed in the cover. Castings shall be thoroughly cleaned and subjected to a hammer inspection. Manhole covers and frame seats shall be machined to a true plane surface. Before shipment from the factory, castings shall be given one coat of coal-tar pitch varnish which shall present a coating which is smooth and tough, but not brittle.

SECTION V. WATER

Rules & Regulations

The following rules and regulations of the Town of Belmont Water Department are included herein by reference and may be amended from

time to time. The customer will be considered to express his consent to be bound thereby, to take water only for purposes stated in the application and at the established rates. Violation of any of these rules or regulations shall be deemed sufficient cause for shutting off the water supply of the offender.

Definitions

The term "Town" shall mean the Board of Water Commissioners of the Town of Belmont, and/or the authorized agent thereof.

The term "applicant" shall mean any person or persons, trust, firm, corporation, government, or governmental division who has applied for water main pipe extensions or service pipe connections and who agrees to pay for such extensions or connections in accordance with the provisions of the rules and/or regulations of the Board of Water Commissioners in relation thereto.

The term "main" shall mean a water pipe, owned, operated and maintained by the Belmont Water Department, which is used for the purpose of transmission or distribution of water but is not a water service pipe.

The term "water main pipe extension" shall mean the water pipes as described above proposed to be installed in streets, lands or other locations, including all appurtenances and connections to such main pipes, which the Board of Water Commissioners may deem essential and necessary in connection therewith from the standpoint of good water works engineering and practice.

The term "service pipe" shall mean the pipe running from the main to the premises of the applicant or customer.

The term "customer" shall refer to any person or persons, trust, firm, corporation, government, or governmental division who has applied for and is granted water service.

Water Main Pipe Extensions

All applications for water main pipe extensions shall be submitted to the Board of Water Commissioners in writing on forms which accompany these specifications, duly signed by person or persons, trust, firm or corporation desiring such extensions. The application shall be accompanied by a plan showing the approximate length of the extension, based on measurements taken from the point necessary to connect the same with an existing water main pipe, to include the entire frontage of the applicant's lot or lots, and subject to further determination by the Board of Water Commissioners as to whatsoever additional extensions may be deemed necessary in the interest of the Town, to be considered as part of the extension which the applicant shall be required to bear the expense of in accordance with the provisions of these regulations.

Upon receipt of application for water main pipe extensions, the Town will have an estimate prepared showing the cost of the work to be performed by the Town, a copy of which estimate is to be furnished for his information in the matter.

Applicants desiring the water main pipe extension, the length, limits and extent of which shall have been determined upon and approved by the Town, shall be required to pay to the Town a sum equivalent to the cost of the work to be performed by the Town in constructing such extensions which cost shall include all labor and material, together with all incidental expense in connection therewith, on a basis that all such main pipes were eight (8") inches in diameter, the Town to assume the additional cost of such larger pipes as the latter may deem it necessary to have installed. The applicant shall be required to deposit with the Town in advance of the undertaking of the work to be performed by the Town, a sum equivalent to the estimated cost of such work on a basis that all such main pipes were eight (8") inches in diameter as before mentioned.

The Town may consent to the work of excavating and backfilling of the trenches for the main pipes, except as hereinafter stated, being performed by a contractor or laborers engaged by the applicant, provided that such contractor or laborers shall conform to all reasonable standards for such work, and further, that the work shall proceed subject at all times to the inspection and approval of the Town. The Town will supervise backfill of that portion of the trench in order that the pipe be given proper support and cover, the cost of such work shall be included in the estimate and final accounting of the actual cost in connection with the main pipe extension when completed.

Upon completion of the work a final accounting of the cost of that portion thereof performed by the Town shall be made, which shall be based upon the added cost involved, including any and all extra expense involved which may not have been anticipated in the estimate as originally submitted, and such final accounting as is determined by the Town shall be binding upon the applicant. The final cost of the work performed by the Town will be used in the adjustment and settlement of whatever refund or added charges are due either the applicant or the Town.

In real estate developments, the water main pipes must be provided in all streets and must be extended to the limits of the development, including connections in boundary streets if such exist. Owners of such developments will not be permitted to limit the main pipes to such amounts as will allow domestic supplies to all lots, but must accept the decision of the Town as to the size and amount of main pipe necessary to properly serve the development, including fire protection service, and to allow reasonable facilities for extensions in the development of adjoining lands.

In the case of any and all water main pipe extensions in private and public ways, or both, or otherwise, the Town shall pursue the same policy as outlined in the preceding paragraph, in deciding the limits of any such extensions, and the decision of the Town shall be final and binding upon the applicant in all matters thereupon determined and decided by the Town in relation thereto.

In adopting these regulations the Town does not agree to make extensions of the water main pipes in accordance with applications, but reserves to itself the power to refuse any such application, if it deems it for the interest of the Town to do so, or if the funds are insufficient.

Applications for Service

Applications for service are to be made at the Office of the Belmont Water Department on forms which accompany these Specifications. Such applications shall be made by the owner of the property or an authorized agent of the owner.

The Belmont Water Department will install and maintain at the customers expense all service pipes and provide for a meter setting on the end of each service from the water main to inside the building where the service entrance is located, or else into an outside meter pit if this is more practical. The water service pipe will not be installed in the same trench with any other utility.

The customer must sign an application for new or renewal service pipes and the requested deposit made with the Belmont Water Department, before the work will be performed.

A temporary service is one installed to any building or trailer not placed on a permanent foundation, or to a garden, or for other temporary uses. The whole cost of installation from the nearest available main and maintenance shall be at the customer's expense.

It is the customers responsibility to protect all water piping and the meter from freezing. Any damage to piping or the meter will be charged to the customers account.

When a customer requests the Water Department to thaw a frozen service pipe, and it cannot be determined where it is frozen, one-half of the cost of thawing the pipe shall be paid by the customer.

All customers shall maintain the plumbing and fixtures within their own premises in good repair, at their own expense. They shall make any repairs which may be necessary to prevent leaks and damage.

No cross connection between the public water supply system and any non-potable supply will be allowed. No connection capable of causing back flow between the public water supply system and any plumbing fixture, device or appliance, or between any waste outlet or pipe having direct connection to waste drains will be permitted. If the Belmont Water Department discovers such a connection, the Water Department will discontinue the service immediately.

All customers having direct pressure water devices, including but not limited to hot water tanks, or secondary systems supplied by automatic feed valves, should have installed and maintained in operating condition appropriate vacuum, temperature, and pressure relief valves or cutouts in the water system and/or secondary system to prevent damage to the water device or secondary system or their appurtenances should it become necessary to shut-off the water main or service or should a pressure failure occur for any other reason.

Water service supplied to any customer not providing such protective device will be strictly at the risk of the customer, and the Belmont Water Department will not be held liable for damage resulting from the lack of or failure of such protective devices.

No customer shall install or use water consumption apparatus which will affect the utility's pressure or operating conditions or so as to interfere with the service of another customer. Where a customer has or proposes to install apparatus which requires water in sudden and material quantities, impairing the pressure to the detriment, damage or disadvantage of other customers, the Belmont Water Department reserves the right to require such customers to install devices or apparatus which will confine such fluctuation of demand and pressure within reasonable limits determined by the Belmont Water Department. If the customer, after receiving written notice from the Belmont Water Department, fails to present an acceptable remedial plan within a time limit set by the Belmont Water Department, service will be discontinued.

Employees of the Belmont Water Department having proper identification shall have free access to all premises supplied with water, at all reasonable hours, to permit the inspection of plumbing and fixtures, to set, remove or read meters, to ascertain the amount of water used, manner of use, and to enforce these Rules & Regulations.

Bills for water service are due and payable when issued. Unpaid bills will constitute a lien against the property. Service may be discontinued by reason of nonpayment of Water Department bills, or for violation of any rule or regulation contained herein. Service discontinuance for a rule violation shall not be made without forty-eight (48) hours written notice except for emergencies, fraudulent use of water, or violation of cross connection rule. Service, once discontinued, may not be restored until the cause of discontinuance of service has been removed and until arrearages and penalty charges, if any, have been paid.

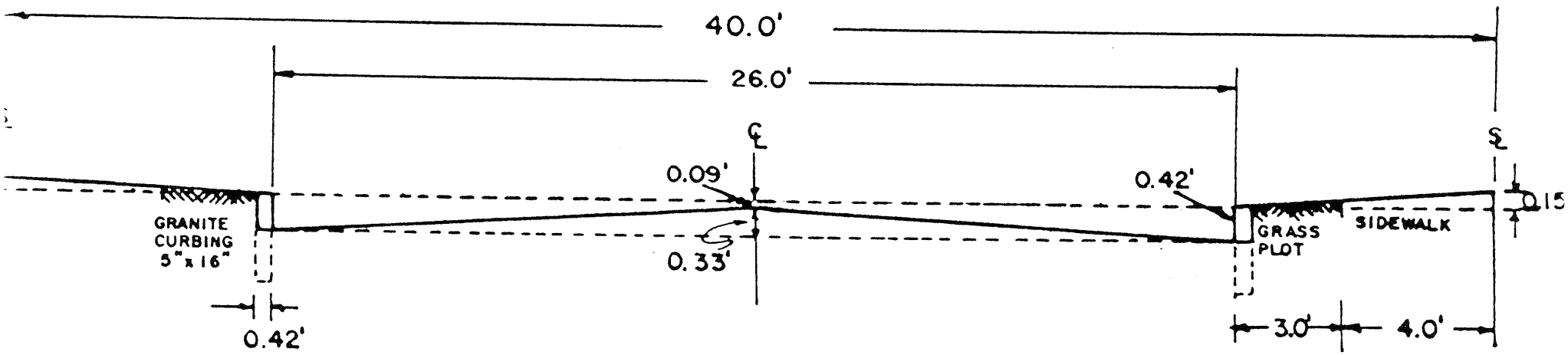
SECTION VI. WIRES

All trenches for placement of electric power lines shall be done by the contractor. Actual placement of main ducts and wires to be done by the Belmont Electric Light Department. All service connections to be done by the contractor in accordance with all specifications of the Belmont Wiring Inspector or his authorized representative.

SECTION VII. FIRE HYDRANTS/ALARM SYSTEM

The placement of fire hydrants will be subject to the approval of the Fire Chief or his authorized representative. Fire hydrants will be provided in all developments spaced not more than five hundred (500') feet apart. Hydrants shall also be placed within all cul-de-sac areas.

Fire alarm signal equipment shall be installed within developments when deemed advisable by the Fire Chief. Such equipment will be dedicated to the Town along with other utilities.



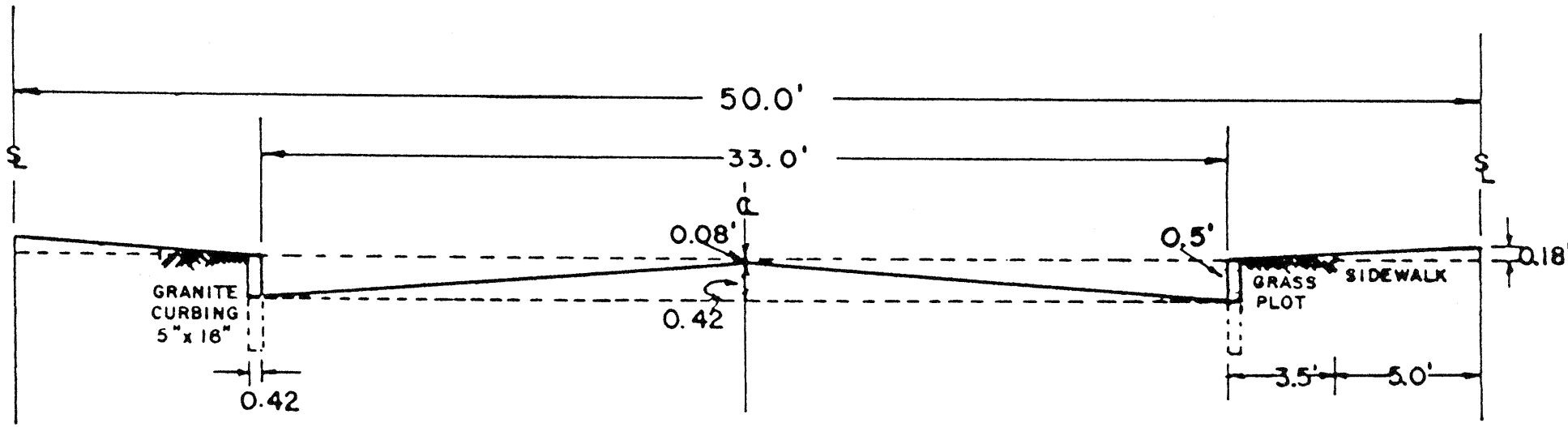
TYPICAL CROSS SECTION

BELMONT, MASS.

SCALES: HOR. 1/4 in = 1 FT.
VERT. 1/2 in = 1 FT.

OFFICE OF THE TOWN ENGINEER

FIG. 1



TYPICAL CROSS SECTION

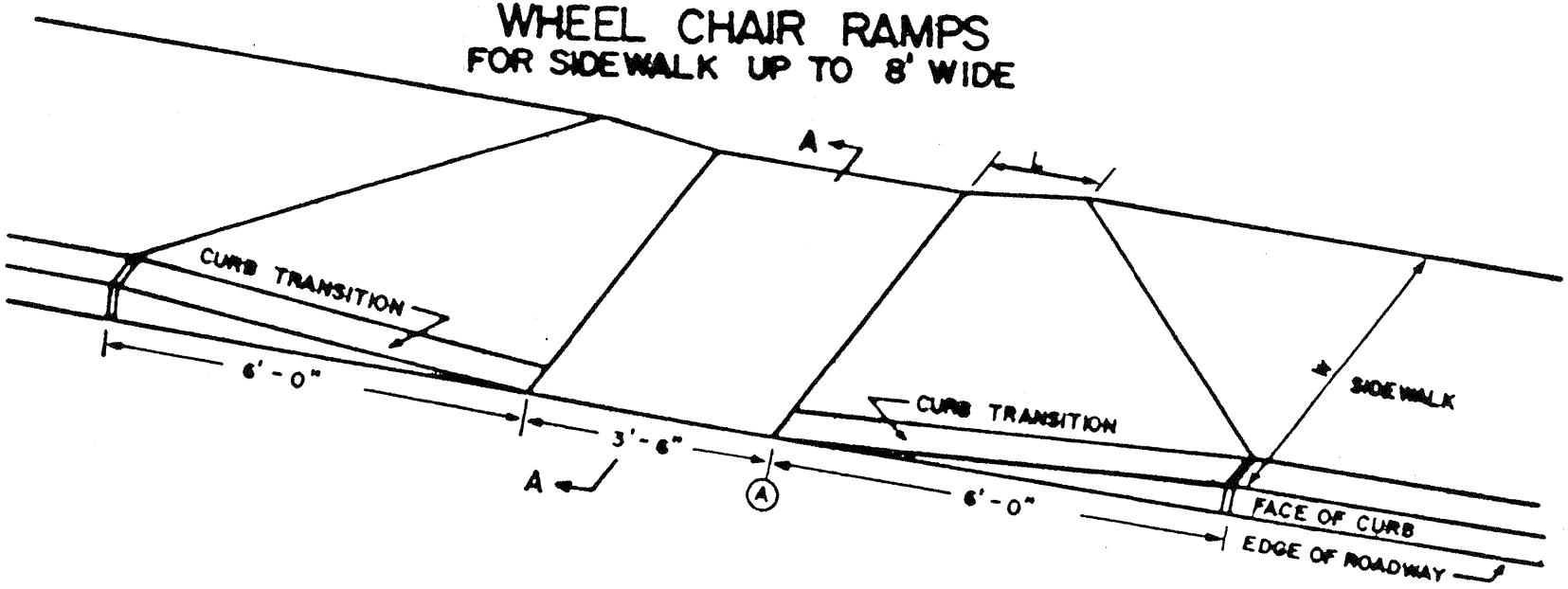
BELMONT, MASS.

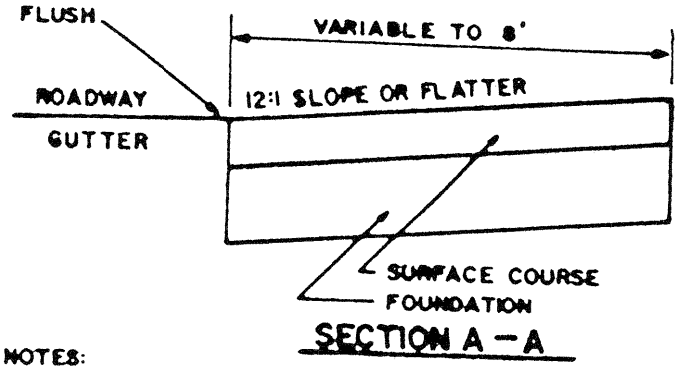
SCALES: HOR. 3/8 in = 1 FT.
VERT. 1/2 in = 1 FT.

OFFICE OF THE TOWN ENGINEER

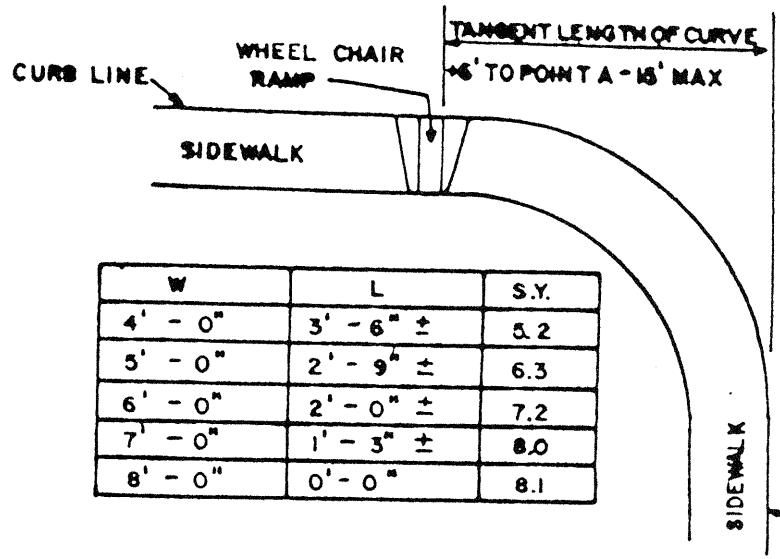
FIG. 2

WHEEL CHAIR RAMPS
FOR SIDEWALK UP TO 8' WIDE





SECTION A-A



W	L	S.Y.
4' - 0"	3' - 6" ±	5.2
5' - 0"	2' - 9" ±	6.3
6' - 0"	2' - 0" ±	7.2
7' - 0"	1' - 3" ±	8.0
8' - 0"	0' - 0"	8.1

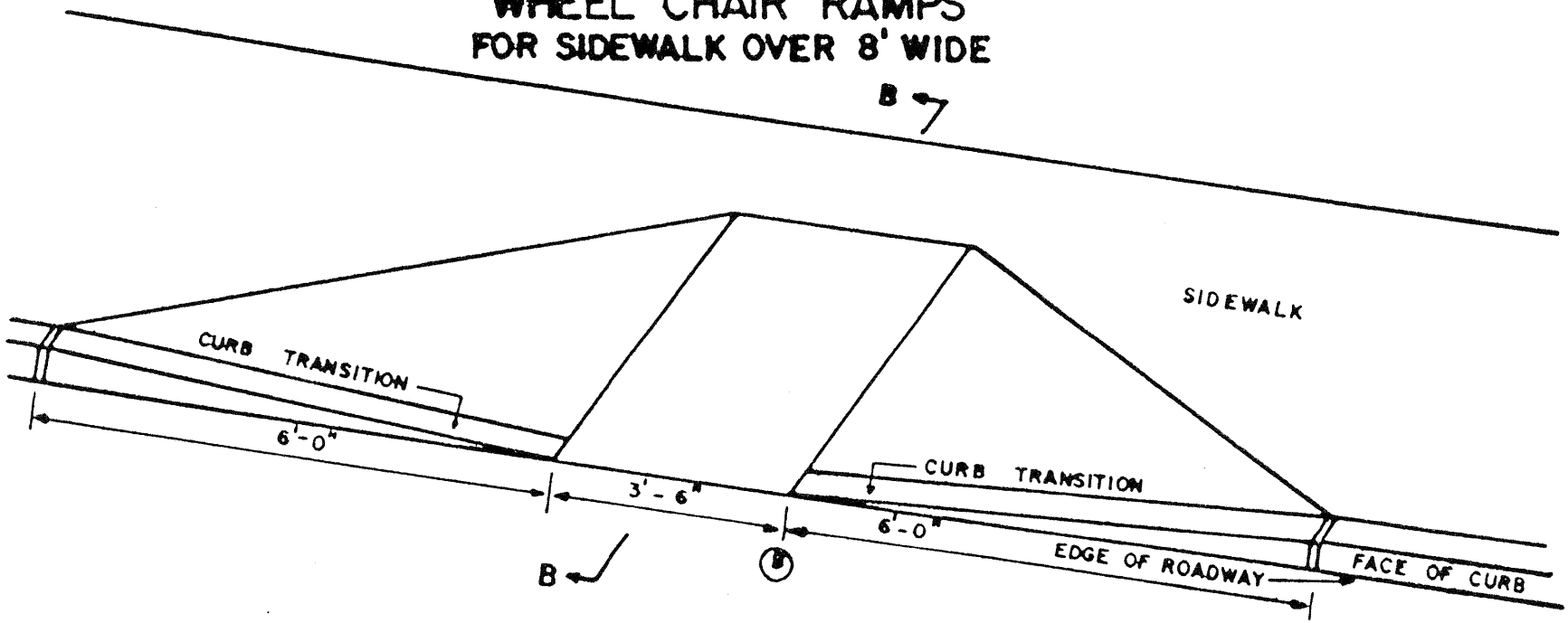
NOTES:

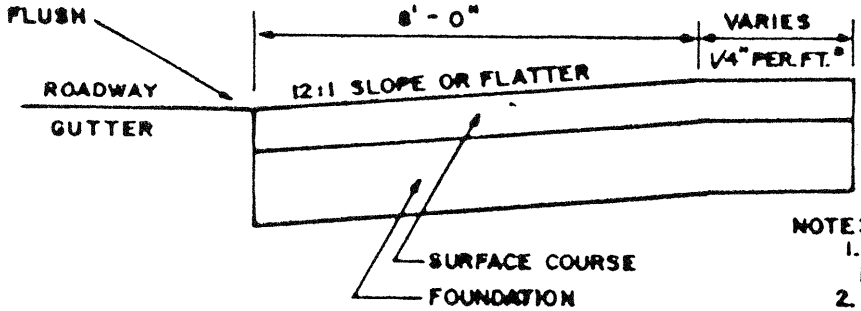
1. THE DIMENSIONS SHOWN AT ROADWAY EDGE ARE FIXED DISTANCES.
2. RAMP CROSS SECTION TO BE SAME AS ADJACENT SIDEWALK; i.e. DEPTH OF SURFACE AND FOUNDATION.
3. PORTLAND CEMENT CONCRETE RAMPS ARE TO BE TEXTURED BY BROOMING IN A DIRECTION PARALLEL TO THE LENGTH OF THE RAMP.
4. IN NO CASE ARE THE RAMPS TO BE PLACED BEHIND THE STOP LINE.
5. SIDEWALKS THAT CROSS DRIVEWAYS SHALL BE RAMPED TO MEET THE GRADE OF DRIVEWAY

THESE DIMENSIONS ARE SUBJECT TO CHANGE IN THE FIELD IF EXISTING APPURTENCES OR CONDITIONS WILL MAKE THE RAMP LOCATIONS IMPRACTICAL OR UNSAFE.

FIG 5

WHEEL CHAIR RAMPS
FOR SIDEWALK OVER 8' WIDE

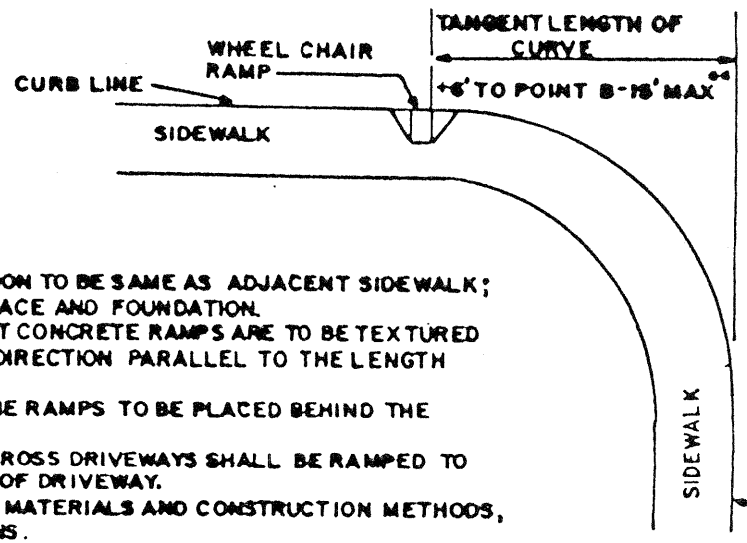




SECTION B-B

* SLOPE TO BE SAME AS ADJACENT SIDEWALK.

** THESE DIMENSIONS ARE SUBJECT TO CHANGE IN THE FIELD IF EXISTING APPURTENANCES OR CONDITIONS WILL MAKE SOME RAMP LOCATIONS IMPRACTICAL OR UNSAFE.

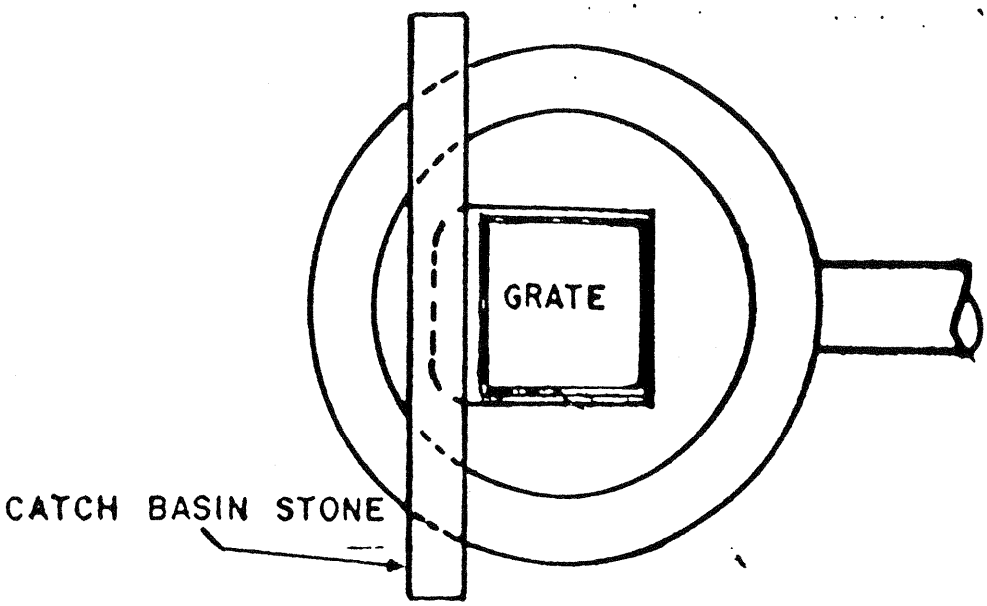


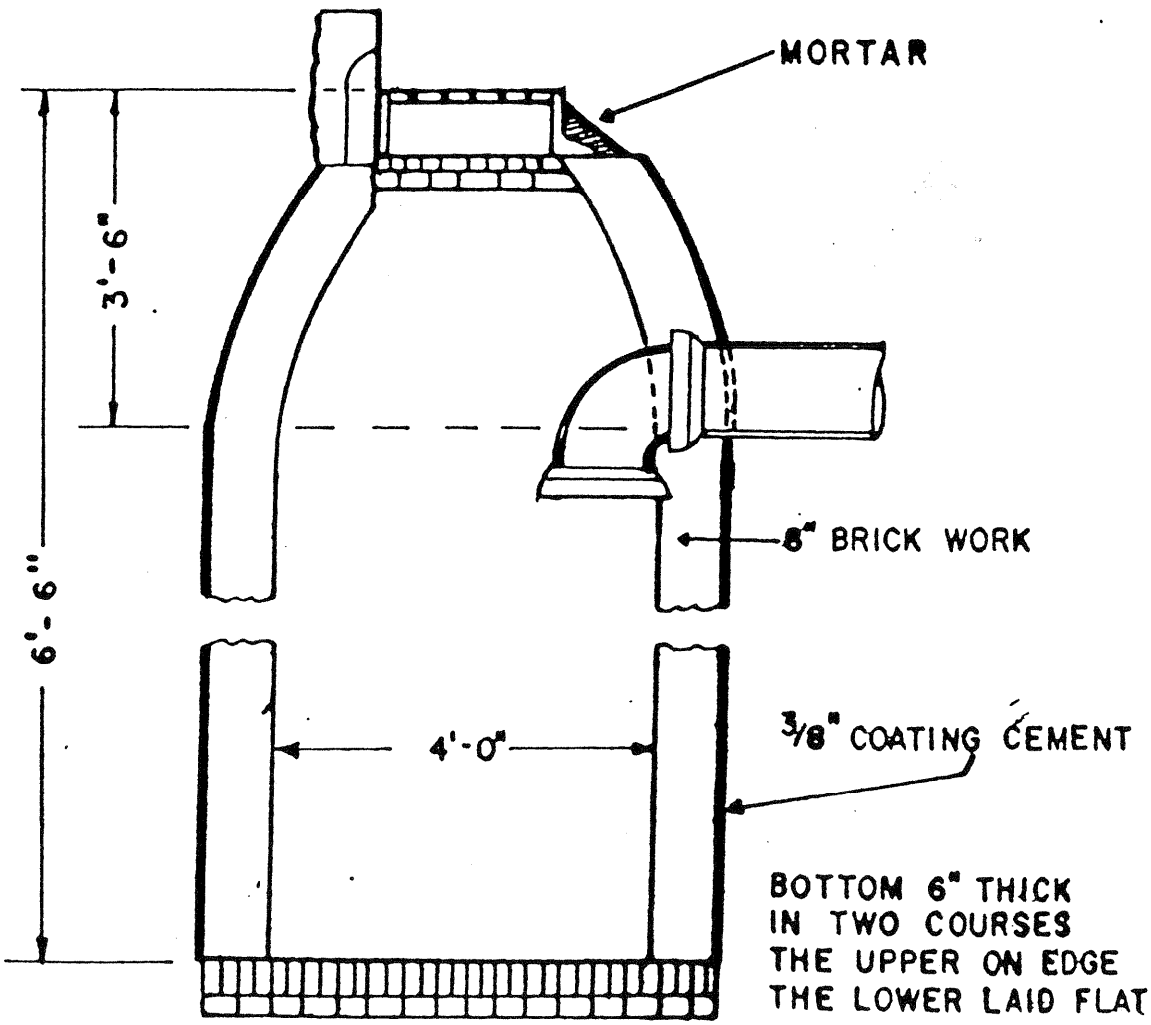
NOTE:

1. RAMP CROSS SECTION TO BE SAME AS ADJACENT SIDEWALK; i.e. DEPTH OF SURFACE AND FOUNDATION.
2. PORTLAND CEMENT CONCRETE RAMPS ARE TO BE TEXTURED BY BROOMING IN A DIRECTION PARALLEL TO THE LENGTH OF THE RAMP.
3. IN NO CASE ARE THE RAMPS TO BE PLACED BEHIND THE STOP LINE.
4. SIDEWALKS THAT CROSS DRIVEWAYS SHALL BE RAMPED TO MEET THE GRADE OF DRIVEWAY.
5. FOR DESCRIPTION, MATERIALS AND CONSTRUCTION METHODS, SEE SPECIFICATIONS.

FIG 4

TYPICAL CATCH BASIN





TYPICAL PRECAST CATCH BASIN

(NOT TO SCALE)

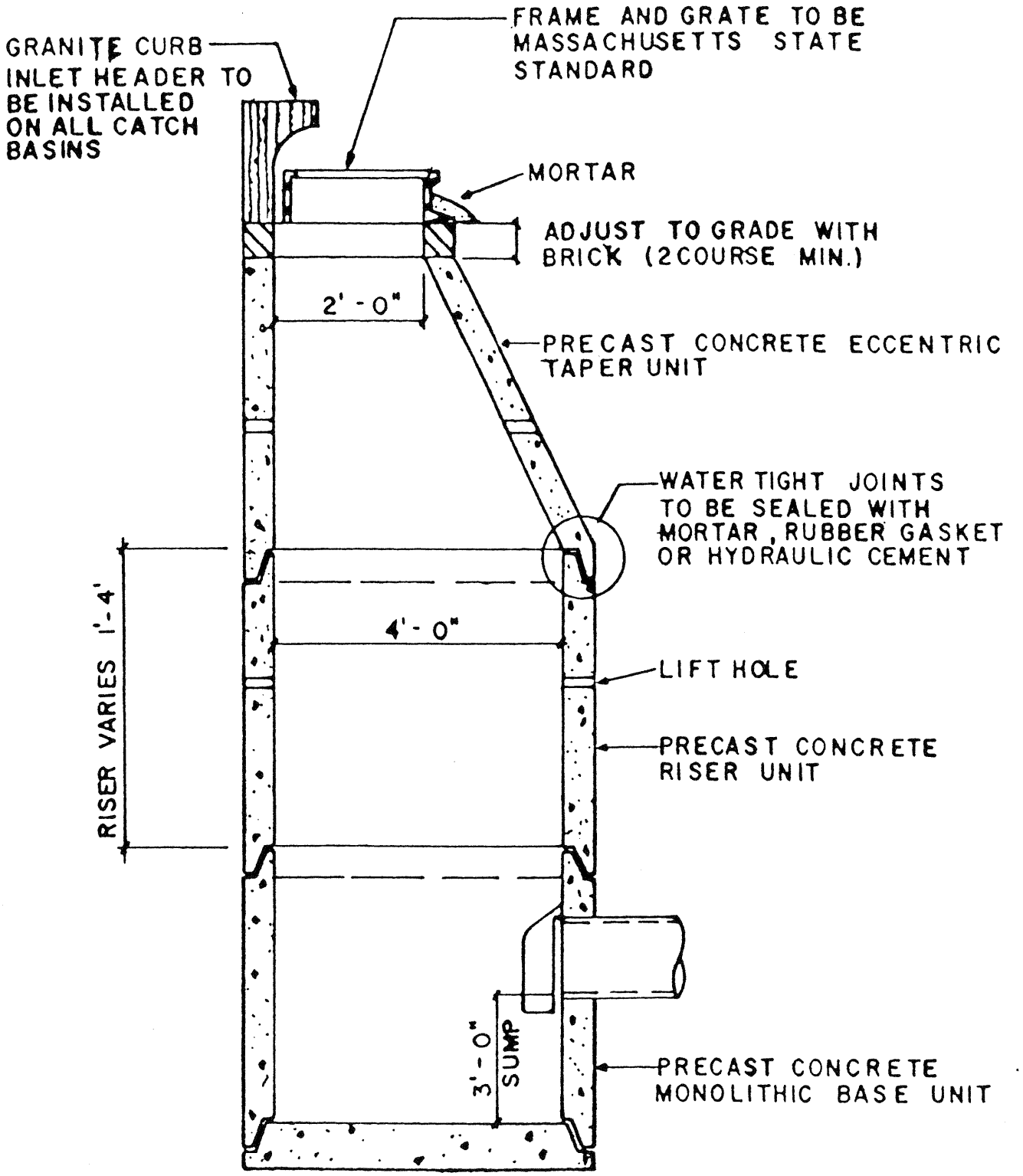


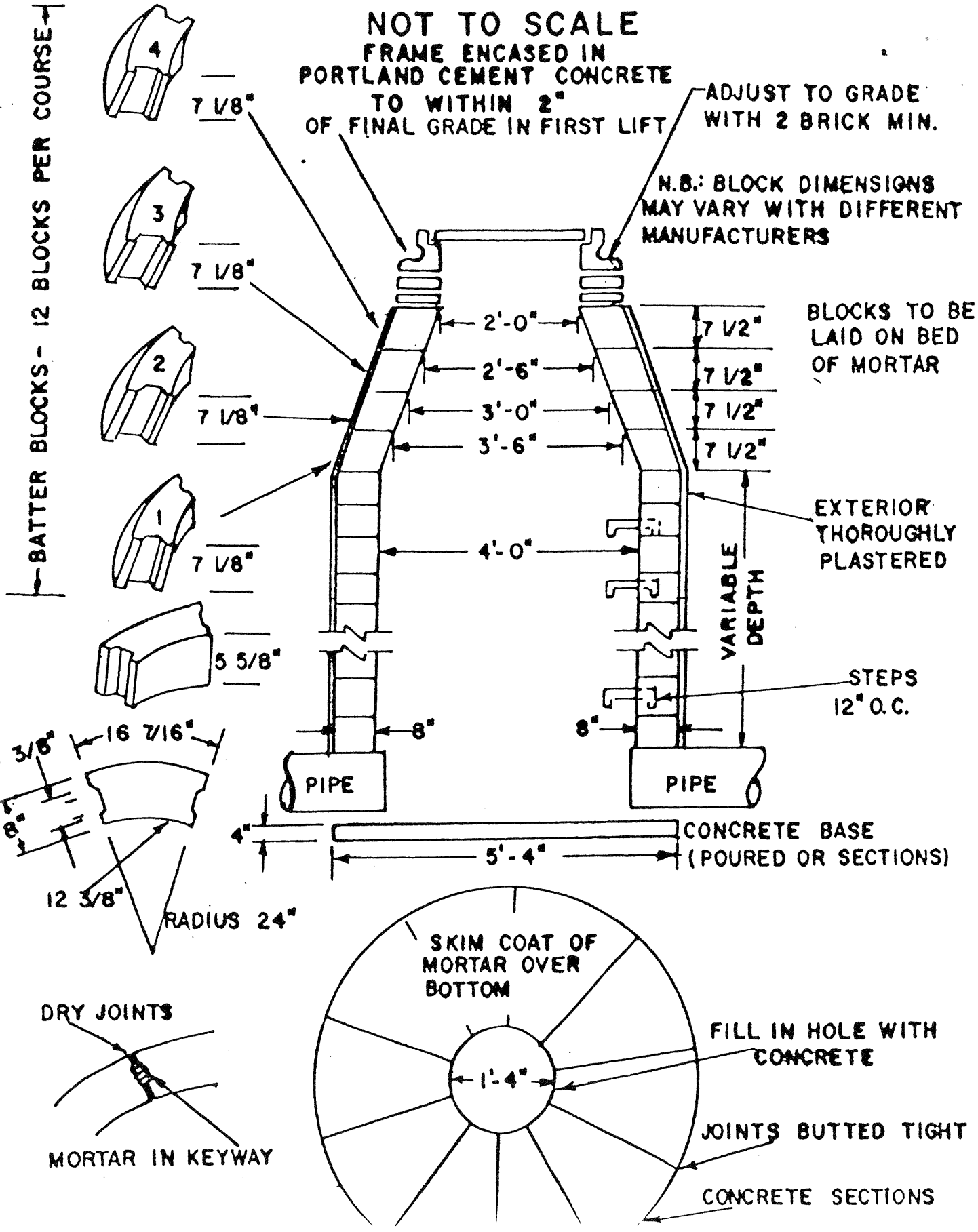
FIG. 5A

TYPICAL DRAIN MANHOLE

(CONCRETE BLOCK UNITS)

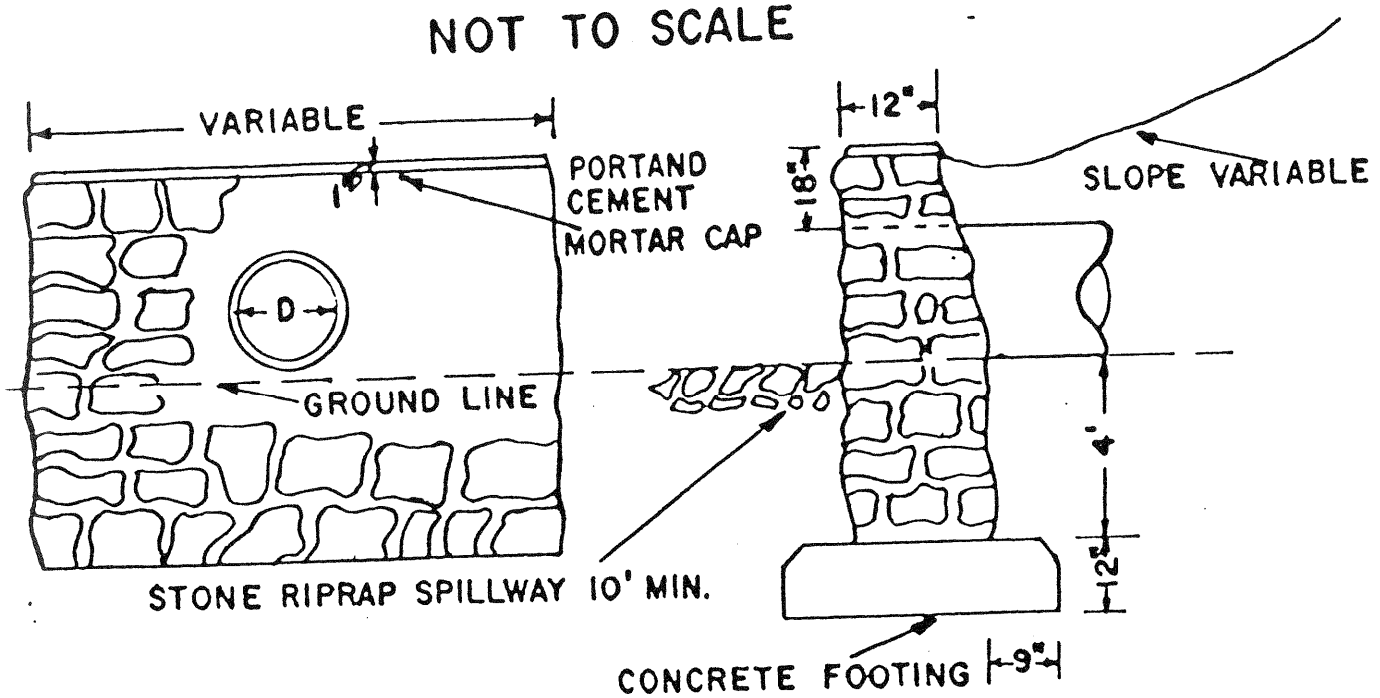
TO BE USED ONLY WITH AUTHORIZATION OF TOWN ENGINEER

NOT TO SCALE



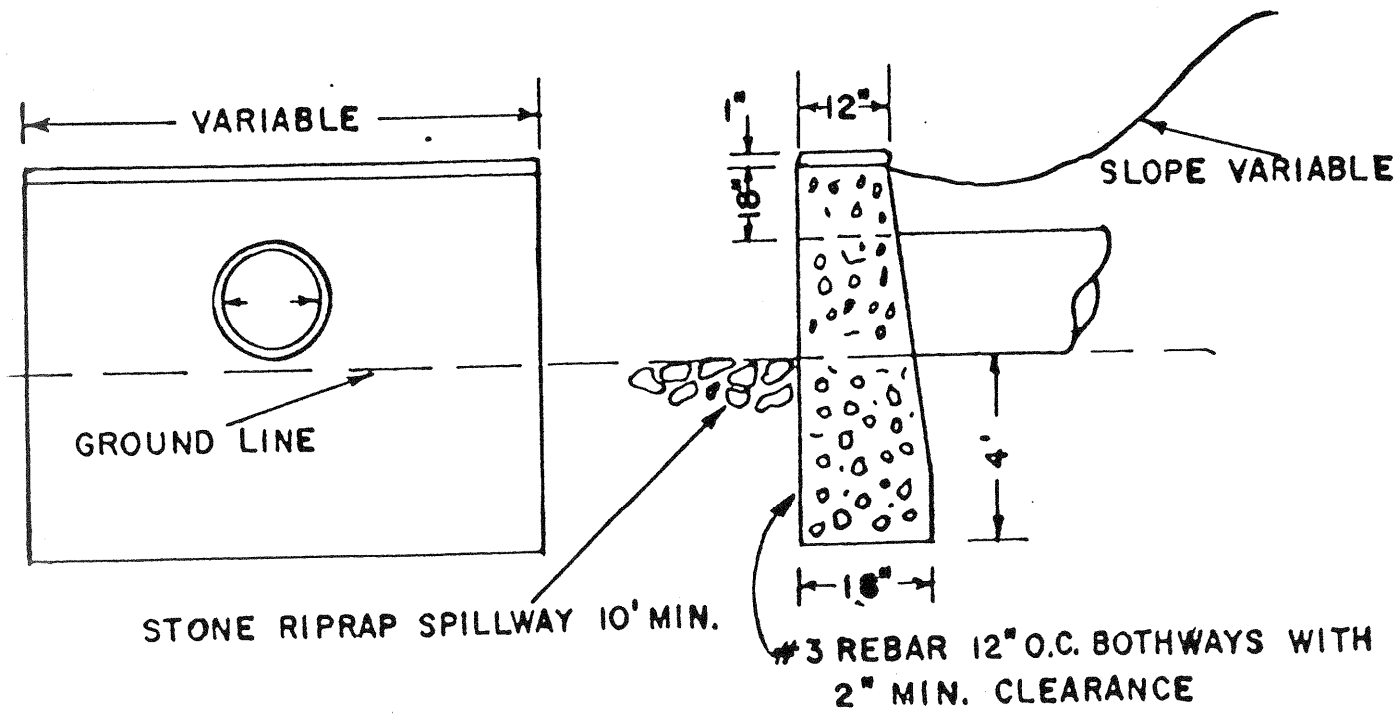
MORTAR AND STONE MASONRY HEADWALL

NOT TO SCALE



REINFORCED CONCRETE HEADWALL

NOT TO SCALE



SEWER TRENCH EXCAVATION
TYPICAL SECTION
NOT TO SCALE

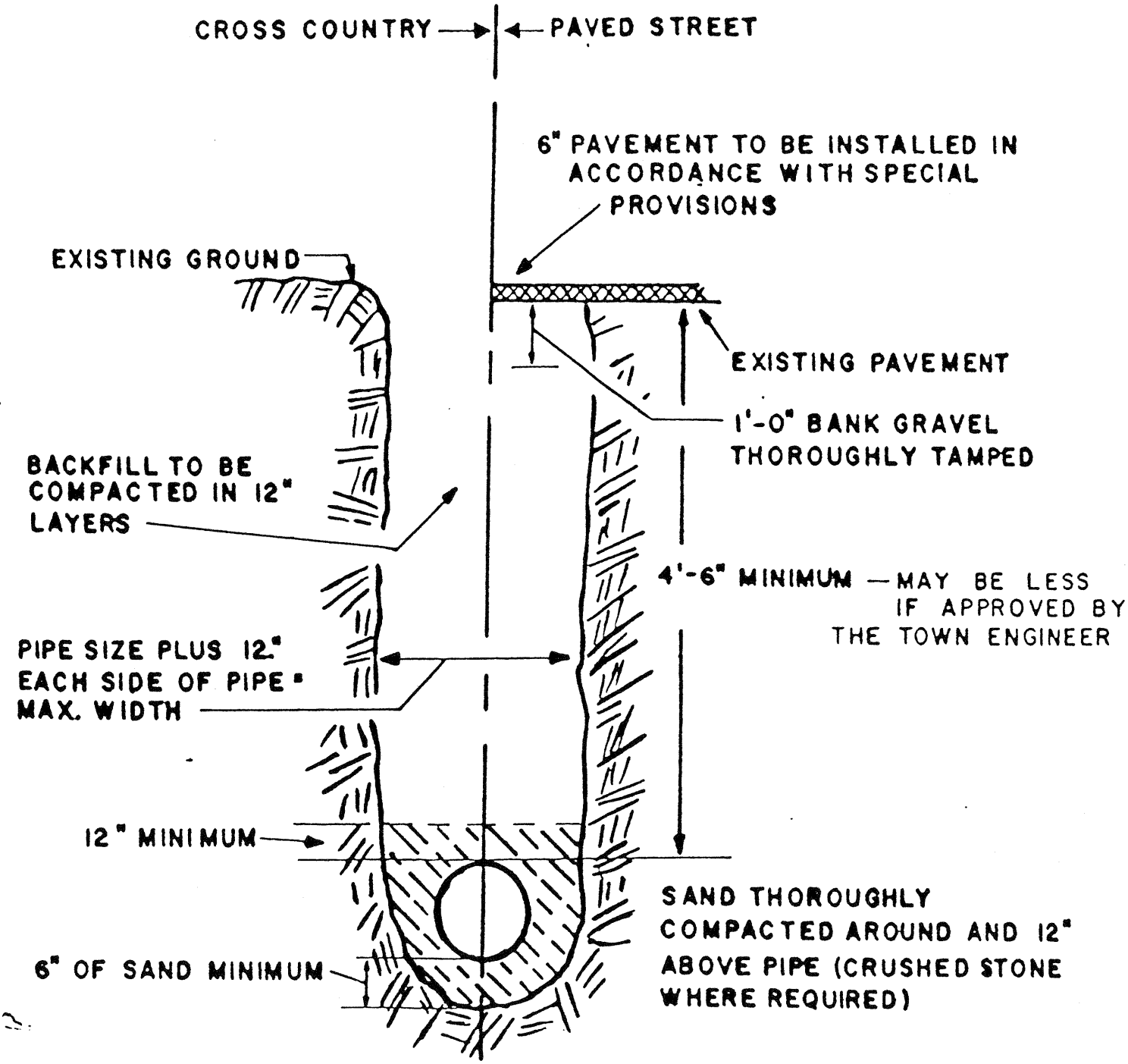
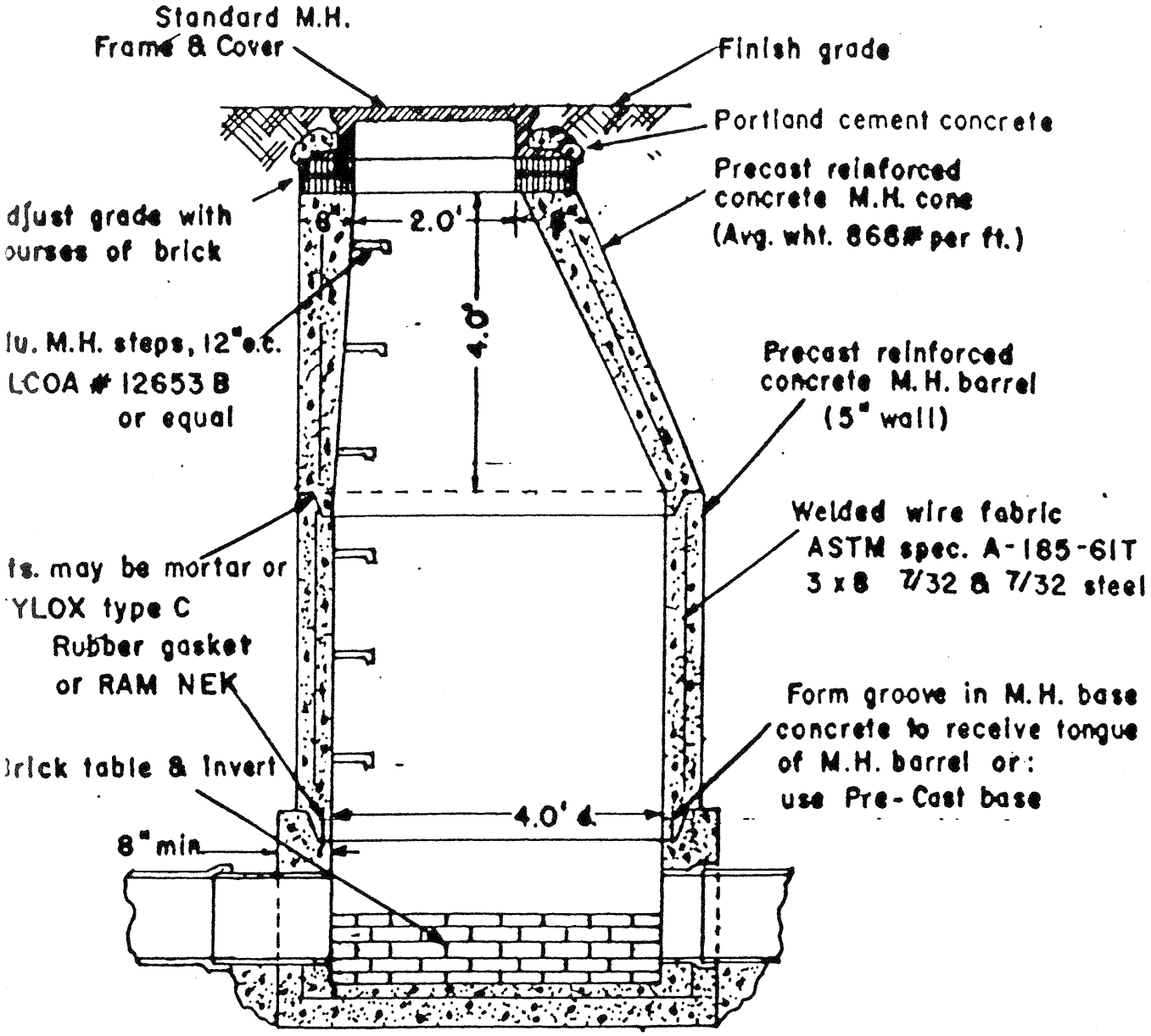


FIG. 8

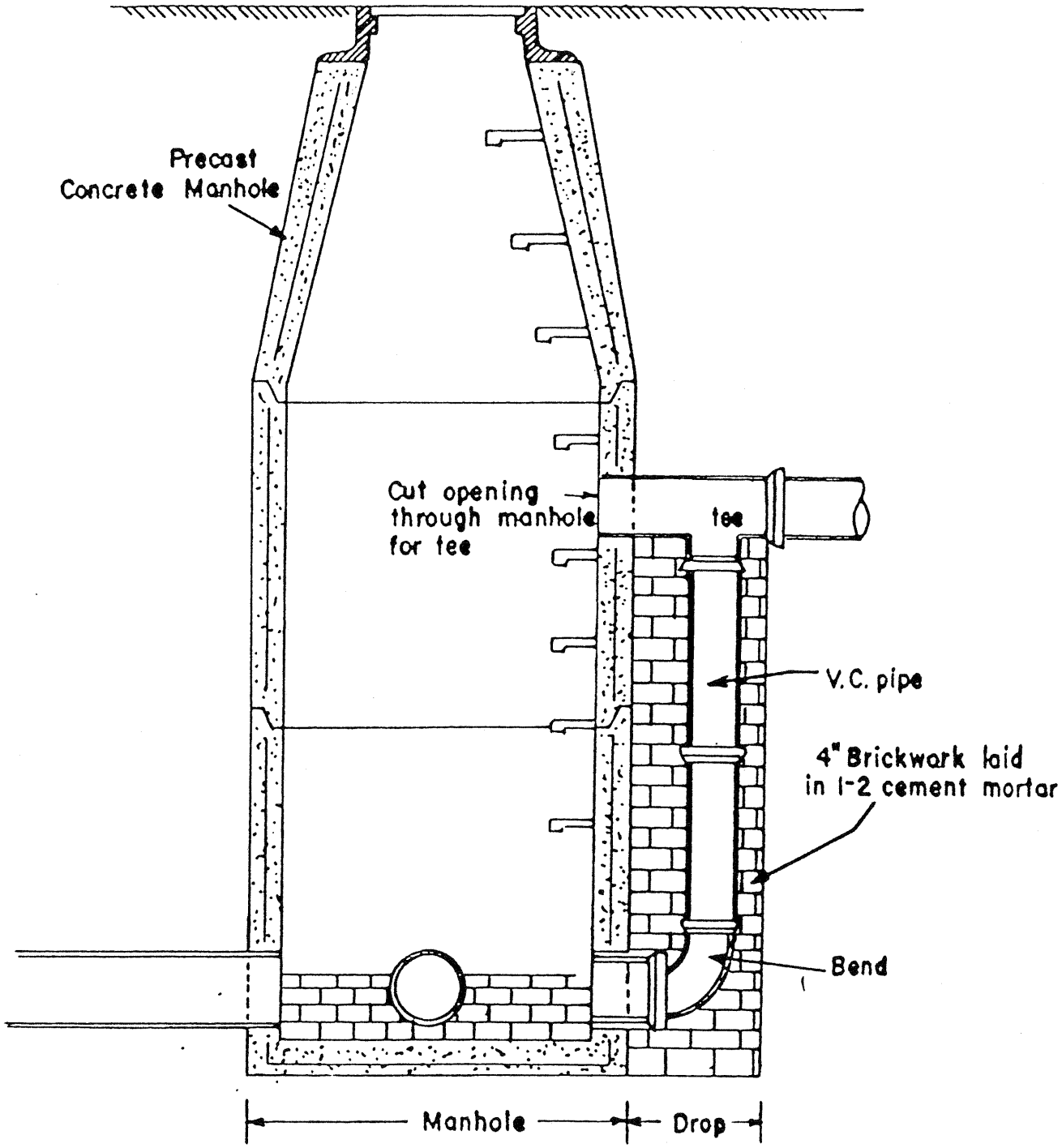


TYPICAL CONCRETE MANHOLE

BELMONT, MASS.

OFFICE OF THE TOWN ENGINEER

FIG. 9



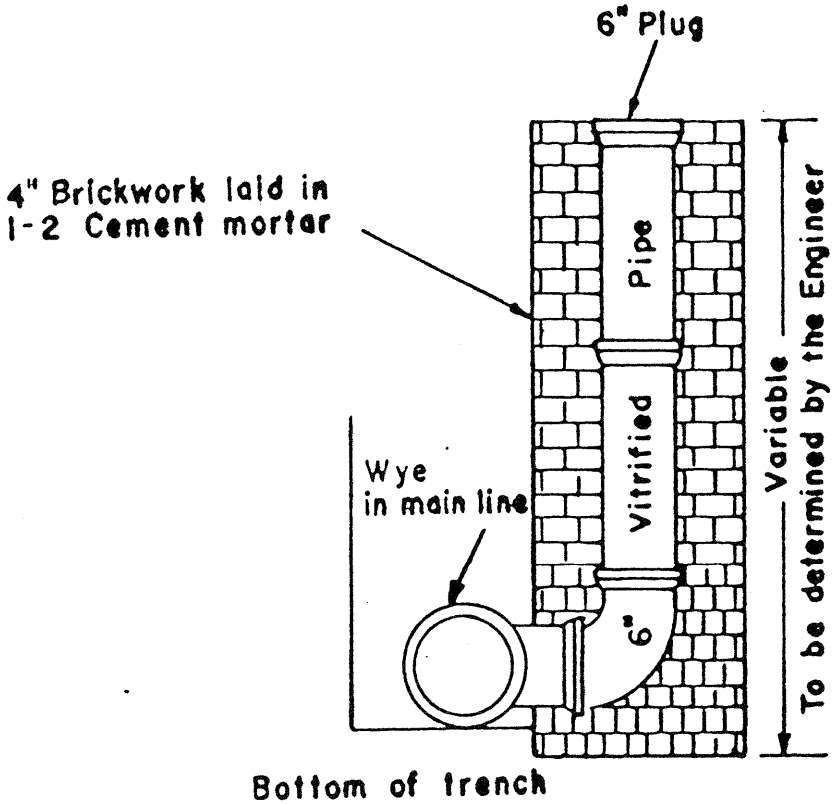
TYPICAL DROP MANHOLE

BELMONT, MASS.

SCALE 1/2" = 1 FT

OFFICE OF THE TOWN ENGINEER

FIG. 10



TYPICAL CHIMNEY

BELMONT, MASS.

SCALE 3/4" = 1 FT.

OFFICE OF THE TOWN ENGINEER

FIG. 11

STREET SIGN

NOT TO SCALE

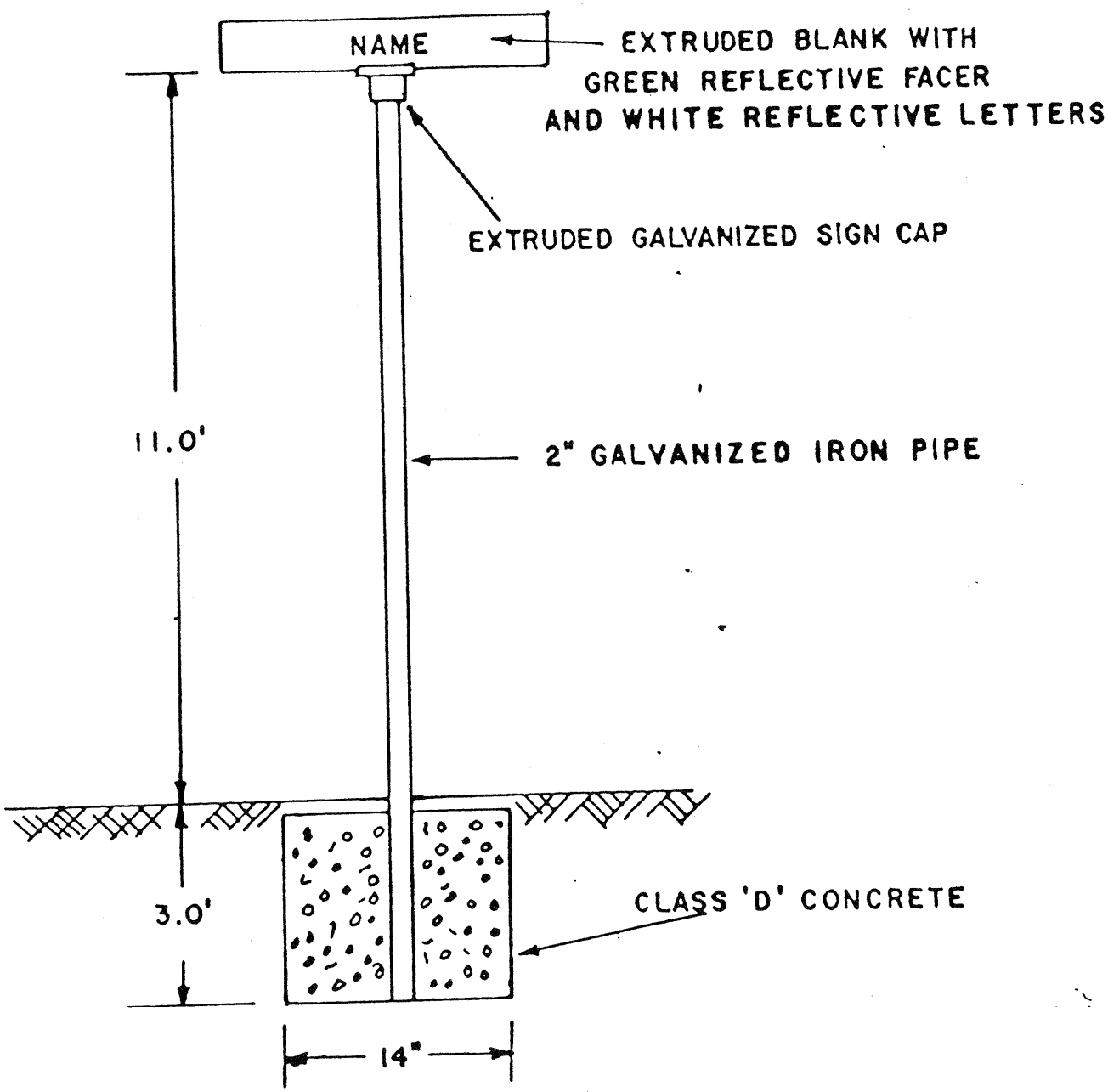


FIG. 12

CHAIN LINK FENCE

NOT TO SCALE

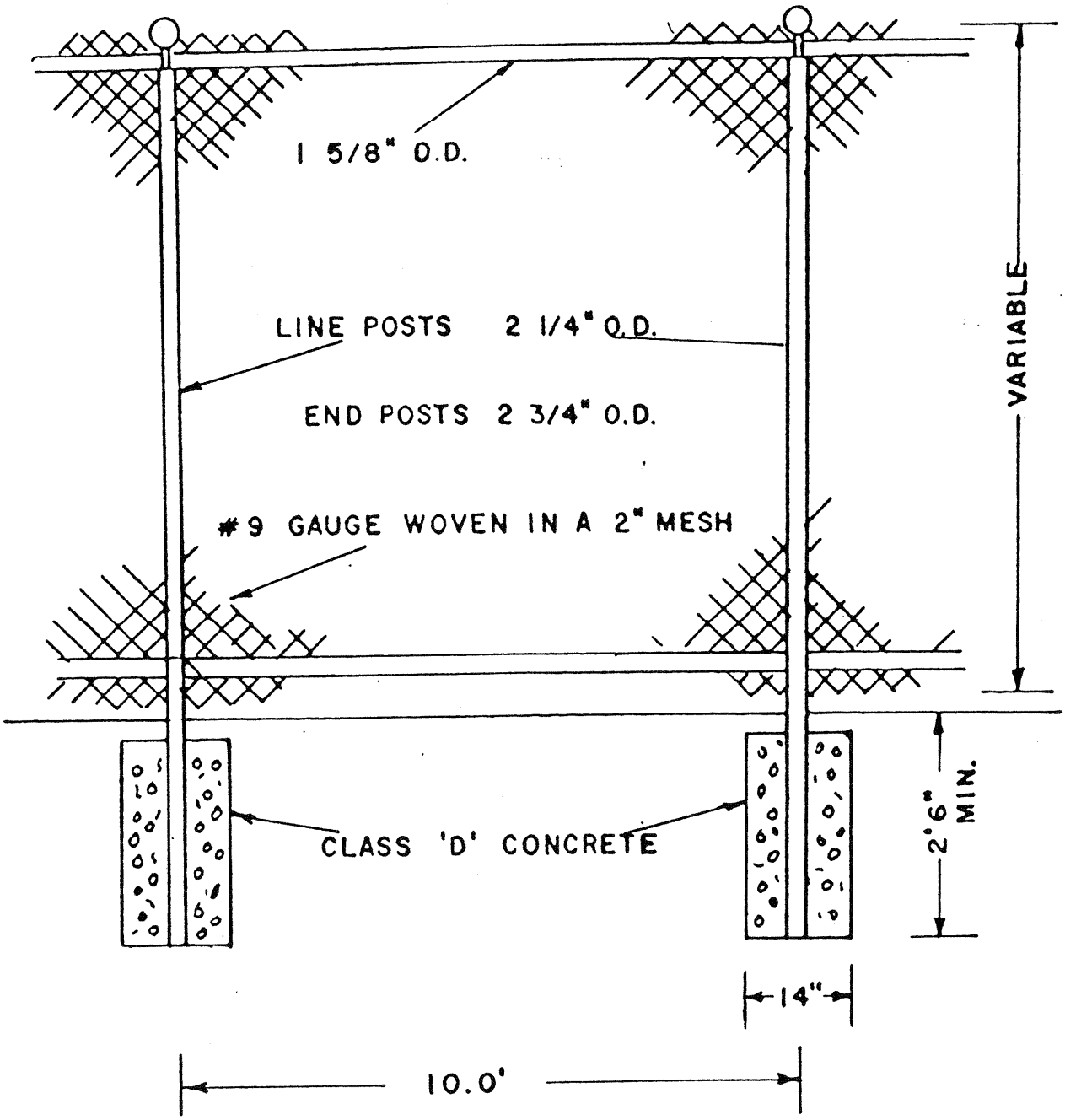


FIG 13

TOWN OF BELMONT
BOARD OF SURVEY
455 CONCORD AVENUE
BELMONT, MASSACHUSETTS

APPLICATION FORM FOR BOARD OF SURVEY

Date Submitted: _____

Location of Proposed Road: _____

Owner(s) Name: _____

Connecting Road: _____

Length of Proposed Road: _____

Width of Proposed Road: _____

Sanitary Sewer _____

Storm Sewer _____

Address and Telephone where Owner can be reached: _____

_____

Engineer's Name, Telephone: _____

_____

_____

For Office Use Only

APPROVED BY:

Planning _____ Police _____

Conservation _____ Fire _____

Historic _____ Engineering _____

Highway _____ Executive Secretary _____

Water _____ BOARD OF SURVEY:

Light _____ _____

_____

_____

FIGURE 14

TELEPHONE
484-4051

Town of Belmont

Water Department

ROBERT O. ANDERSON, SUPT.

35 WOODLAND STREET

BELMONT, MASS. 02178

APPLICATION FOR WATER MAIN PIPE EXTENSIONS

Belmont, Ma.

_____

To The Board of Water Commissioners,
of the Town of Belmont.

Gentlemen,

I
We, the undersigned, owner of premises shown in the accompanying plan, respectfully apply to the said Board for water main pipe extension, or extensions, located as follows:

_____

_____

_____

I
In the event of this application being granted, we, hereby agree to comply with and be governed by any and all regulations of the said Board affecting the extension of water main pipes, copy of which my regulations being hereby acknowledged as duly received into our hand - in connection with this application.

_____

_____

THIS APPLICATION IS TO BE SIGNED BY
THE PROPERTY OWNER AND RETURNED TO

TOWN OF BELMONT — WATER DEPARTMENT
35 WOODLAND STREET, BELMONT, MASS. 02178

Application for Water Service and Supply

Account No. .....

Service No. ..... Date .....

To The Board of Water Commissioners
Belmont, Mass. 02178

The undersigned hereby applies for a Water Service and Supply at No. ..... Street to be used for ..... purposes, and hereby agrees to pay for the same, and to comply with and be governed by any and all provisions of the Town By-laws applicable thereto, together with any and all rules and regulations of the Board of Water Commissioners, and any and all amendments thereof and additions thereto, now in full force and effect and/or which are hereafter adopted.

Owner's Signature .....

Owner's Full Name .....
Print the same

Address .....

Date Title to Property was acquired .....

THIS SPACE FOR DEPARTMENT'S USE ONLY

Date Recorded By Whom

Stencil Meter Book Ledger Index

Remarks:

Please sign and return promptly