

LAND DEVELOPMENT

135 Attachment 2

Borough of Haddonfield

**APPENDIX
Technical Specifications**

**Technical Specifications and Standards for Construction in the
Borough of Haddonfield Related to Utilities and Land Development**

§ 1. Curb, sidewalk, bikeway, street construction standards.

A. Curbs.

- (1) The standard curb section used shall be 10 feet in length. All concrete used for curbs shall be prepared in accordance with applicable state or other regulatory standard specifications for road construction. The twenty-eight-day compressive strength of the concrete used shall be not less than the following:

Type of Concrete	Average Strength (pounds per square inch)
Class P	6,500
Class A	5,500
Class B, B-1	5,000
Class C, C-1	4,500

- (2) Curbs and/or combination curbs and gutters shall be constructed of Class B concrete, air entrained (5,000 psi).
- (3) Where drainage inlets are constructed, but curbs are not required, curbing must be provided at least 10 feet on each side of the inlet.
- (4) Acceptable curb types are shown in Exhibit 503-1.

B. Sidewalks and graded areas.

- (1) Sidewalks shall be four inches thick except at points of vehicular crossing where they shall be at least six inches thick. At vehicular crossings, sidewalks shall be reinforced with welded wire fabric mesh or an equivalent.
- (2) Concrete sidewalks shall be Class C concrete, having a twenty-eight-day compressive strength of 4,500 psi. Other paving materials, such as gravel, crushed stone, brick, etc., may be permitted depending on the design of the development.

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- (3) Graded areas shall not have side slopes steeper than 2/3 and shall be planted with grass or treated with other suitable ground cover, and their width shall correspond to that of sidewalks.

C. Bikeways.

- (1) Bicycle paths. Dimensions and construction specifications of bicycle paths shall be determined by the number and type of users and the location and purpose of the bicycle path. A minimum eight-foot paved width should be provided for two-way bicycle traffic and a five-foot width for one-way traffic.
 - (a) Choice of surface materials, including bituminous mixes, concrete, gravel, soil cement, stabilized earth and wood planking, shall depend on use and users of path.
 - (b) Gradients of bike paths should generally not exceed a grade of 5%, except for short distances.
- (2) Bicycle lanes. Lanes shall be six feet wide, or wide enough to allow safe passage of bicycles and motorists.
- (3) Drainage grates. Bicycle safe drainage grates shall be used in the construction of all residential streets.

D. Streets.

- (1) Street grade.
 - (a) Minimum street grade permitted for all streets shall be 0.5%; but streets constructed at this grade shall be closely monitored and strict attention paid to construction techniques to avoid ponding. Where topographical conditions permit, grades in excess of 0.5% shall be used.
 - (b) Maximum street grade shall vary by road hierarchy, with flatter grades required for higher level roads but grades should not exceed 6%.
 - (c) Vertical curves. The rate of change on vertical curves shall be no more than 4% per 100 feet of road, provided that proper sight distances are maintained.
- (2) Intersections.
 - (a) Minimum intersection angle. Street intersections shall be as nearly at right angles as possible and in no case shall be less than 75°.
 - (b) Minimum center line offset of adjacent intersections. New intersections along one side of an existing street shall, if possible, coincide with any existing intersections on the opposite side of each street and in no case

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shall more than two streets cross at the same point. To avoid corner cutting when inadequate offsets exist between crossing intersections, offsets shall be at least 200 feet between center lines. When an existing street is to be intersected by a new street, the minimum distance between the center line of the intersection of the new street and the center line of any other intersection shall be as follows:

Street into Which Intersection Comes	Minimum Distance (feet)
Local service street	200
Feeder street	300
Connector street	800

- (c) Intersection approaches. Approaches to any intersection shall follow a straight course within 100 feet of the intersection.
- (d) Minimum curb radius. Intersections shall be rounded at the curblines, with the street having the highest radius requirement determining the minimum standard for all curblines. Alleys, culs-de-sac and local service streets shall have a curb radius of 10 feet and feeder and connector streets shall have a fifteen-foot curb radius.
- (e) Grade. Intersections shall be designed with a flat grade wherever practicable. Maximum grade within intersections shall be 3%.
- (f) Minimum center line radius and minimum tangent length between reverse curves shall be as follows:

	Alley (feet)	Cul-de-Sac (feet)	Local Service Street (feet)	Feeder Street (feet)	Connector Street (feet)
Minimum center line radius	100	100	100	50	300
Minimum tangent length between reverse curves	0	50	100	100	150

- (g) Sight triangles. Sight triangle easements shall required and shall include the area on each street corner that is bounded by the line which connects the sight or "connecting" points located on each of the right-of-way lines of the intersecting street. The planting of trees or other plantings or the location of structures exceeding 30 inches in height would obstruct the clear sight across the area of the easements shall be prohibited, and a public right-of-entry shall be reserved for the purpose of removing any object, material or

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otherwise that obstructs the clear sight. The distances shown in Exhibit 503-2 between the connecting points and the intersection of the right-of-way lines shall be required.

- (3) Sight distances. Clear site distance along the center lines of local service and feeder streets shall be maintained at not less than 200 feet and along connector streets at not less than 300 feet.
- (4) Surface drainage. The slope of the crown on local service and feeder streets shall be more than 2% and less than 4% or as directed by the Borough Engineer.
- (5) Pavement.
 - (a) Pavement design for streets shall follow the specifications shown in Exhibits 503-3 and 503-4.
 - (b) Subgrade categories are as per Exhibit 503-5.
 - (c) If substitutions of paving materials are proposed, the relative strength ratings will be evaluated by the Borough Engineer to ensure appropriate substitutions.

§ 2. Parking areas.

A. Parking area design standards.

- (1) Off-street parking areas shall be oriented to and within a reasonable walking distance of the buildings they are designed to serve.
- (2) Access to parking areas shall be designed so as not to obstruct free flow of traffic. There shall be adequate provision for ingress to and egress from all parking spaces to ensure ease of mobility, ample clearance, and safety of vehicles and pedestrians.
- (3) The width of all aisles providing direct access to individual parking stalls shall be in accordance with the requirements specified below. Only one-way traffic shall be permitted in aisles serving single-row parking spaces placed at an angle other than 90° unless special circumstances make alternative designs desirable.

Parking Angle	One-Way Aisle Width (feet)	Two-Row/Two-Way Aisle Width (feet)
0 (parallel)	12	18
45°	15	20
60°	18	20
75°	20	22
90°	22	24

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- (4) Where sidewalks occur in parking areas, such sidewalks shall be raised six inches above the parking area and parked vehicles shall not overhang the sidewalk unless an additional 2 1/2 feet is provided in order to accommodate such overhang.

B. Parking area paving standards.

- (1) All parking lots shall be paved to the standard of two inches of F.A.B.C. over six inches of quarry blend stone or equivalent.
- (2) All parking lots which include areas (aisles, loading, stalls) to be used by trucks shall be constructed to the standard two inches F.A.B.C. on four inches stabilized base on six inches of quarry blend stone, or equivalent.
- (3) If substitutions of paving materials are proposed, the relative strength ratings will be evaluated by the Borough Engineer to ensure appropriate substitutions.

C. Parking area landscaping standards.

- (1) Parking areas shall be suitably landscaped to minimize noise, glare, and other nuisance characteristics as well as to improve the environment of the site and surrounding area. Large parking lots shall be broken down into sections as appropriate for the type and size of the development. Sections shall be separated by landscaped dividing strips, berms, and similar elements.
- (2) Curbed islands with a minimum radius of three feet should be located at the end of each parking row and at an interval of every 10 spaces. These islands should contain one shade tree, minimum three-inch caliper, 14 to 16 inches high and shrubs not exceeding 24 inches in height, unless visual screening is necessary as contained in Subsection C(3) below.
- (3) Parking lots shall have a minimum planted buffer of six feet in width on all perimeter areas abutting lot lines or street rights-of-way. This buffer shall be a continuous visual screen which is five feet in height at the time of planting and is 50% evergreen plant material or deciduous material which is demonstratively effective for screening purposes.
- (4) In parking lots, at least 5% of the interior parking area shall be landscaped with plantings, and one tree for each 10 spaces shall be installed. Trees shall be spaced at intervals no greater than every 25 feet along the perimeter and on internal planting strips to reduce heat and glare. Planting required within the parking lot is exclusive of other planting requirements, such as for shade trees planted along the street.
- (5) Location. The landscaping should be located in protected areas, such as along walkways, in center islands, at the ends of bays, or between parking stalls and must be protected by a curb or similar abutment. All landscaping in parking areas

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and on the street frontage shall be placed so that it will not obstruct sight distance.

- (6) Plant type shall be a mixture of hardy flowering and/or decorative evergreen and deciduous trees. The evergreens should be used along the perimeter of the lot for screening, and the deciduous trees for shade within the lot. The area between trees shall be mulched, planted with shrubs or ground cover, or covered with paving material. Any area that will be under the overhang of vehicles shall be mulched or covered with paving material.

§ 3. Lighting.

A. Walkways and public areas.

- (1) Walkways, including sidewalks and trails, should be lighted with mushroom-type standards, preferably no taller than 10 feet.
(2) Lighting of all areas frequented by the public shall be operated automatically.

B. Intensity.

- (1) An average of 0.6 maintained footcandles throughout parking lots should be provided. Pedestrian walkways and steps should have a minimum of three to five footcandles.
(2) Street illumination should be as follows:

Table with 4 columns: Type of Street, Commercial Areas, Mixed Use Areas, Residential Areas. Rows include Connector and Any other.

- (3) The intensity at property lines should not exceed 1.0 footcandle; however, adjacent to residential uses, intensity should not exceed 0.25 footcandle.

C. Height. The maximum height of standards shall be 16 feet where tractor trailers or similar vehicles will be using the lot and 13 feet in all other cases.

D. Shielding.

- (1) All lights shall be glare-shielded to restrict view of the light source. All lights shall be focused downward.
(2) Shielding shall provide proper lighting without hazard to drivers or nuisance to adjacent or nearby residences.

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- (3) Spotlights, if used, should be placed on standards pointing toward the building and positioned so as not to blind residents rather than on building and directed outwards which creates dark shadows adjacent to the buildings and which can create a nuisance for adjacent or nearby properties.

E. Design. The style of light and light fixture or standard shall be consistent with the principal building, use and surrounding area.

§ 4. Water supply.

A. Fire protection.

- (1) Fire protection shall be furnished for any development and minimum fire flows shall be based on the following:

Table with 2 columns: Distance Between Buildings* (feet) and Required Fire Flow (gallons per minute). Rows include: Over 100 (500), 31 - 100 (750 - 1,000), 11 - 30 (1,000 - 1,500), 10 or less (1,500 - 2,000).

NOTE:

* For contiguous buildings (attached dwelling units of two or more two-family units and/or multifamily units), a minimum of 2,500 gpm may be used.

- (2) Fire hydrants.
(a) Hydrants shall be spaced to provide necessary fire flow. The average area per hydrant shall not exceed 120,000 square feet. In addition, hydrants shall be spaced so that each residence shall be within 600 feet of a hydrant; however, upon recommendation of the Fire Department, such as in commercial areas, closer spacing may be required.
(b) A hydrant shall be located at all low points and at all high points with adequate means of drainage provided.
(c) Hydrants shall be located at the ends of lines, and valves of full-line size shall be provided after hydrant tees at the ends of all dead lines that may be extended in the future.
(d) Specifications for fire hydrants.

[1] Size, type and installation of hydrants shall be in accordance with local practice, and shall conform to the American Water Works

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Association for Dry Barrel Fire Hydrants (AWWA C502). Hydrants shall have at least three outlets; one outlet shall be a pumper outlet, and the other outlets shall be at least 2 1/2 inches nominal size. Street main connections should be not less than six inches in diameter. Hose threads on outlets shall conform to National Standard dimensions. A valve shall be provided on connections between hydrants and street mains. All pipe, fittings, and appurtenances supplying fire hydrants shall be AWWA or ASTM approved.

- [2] All fire hydrants shall conform with the color code system as shown below:
 - [a] Class A: 1,000 gpm or greater and water mains of 10 inches or greater - green caps and bonnets.
 - [b] Class B: Greater than 500 gpm but less than 1,000 gpm and water mains of at least eight inches but less than 10 inches - orange caps and bonnets.
 - [c] Class C: 500 gpm or less and water mains of at least six inches but less than eight inches - red caps and bonnets.
 - [d] Barrels. All fire hydrants barrels shall be painted white and all white paint shall be traffic white.

B. System specifications.

- (1) System design and placement shall comply with all applicable state, American Water Works Association (AWWA), and Borough standards with the strictest standards governing.
- (2) Water and sewer mains shall be separated as required by State DEP regulations and shall generally be separated a distance of at least 10 feet horizontally. If such lateral separation is not possible, the pipes shall be in separate trenches with the sewer at least 18 inches below the bottom of the water main; or such other separation as approved by the state or other regulatory body shall be made. In general, the vertical separation at a crossing of water and sewer lines shall be at least 18 inches. Where this is not possible, the sewer shall be constructed of cast-iron pipe using mechanical or slip-on joints, for a distance of at least 10 feet on either side of the crossing or other suitable protection shall be provided.
- (3) Distribution mains shall be connected into loops so that the supply may be brought to the consumer from more than one direction. In balancing loops in a design, the Hardy Cross method or an equivalent method shall be used.
- (4) Valves shall be located on distribution mains so that no more than one street or block would be out of service due to a single break. They shall be located in all small branches off larger mains; and where eight-inch or larger lines intersect, a

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valve shall be located in each branch. At street intersections, valves shall be located in line with the property line for ease in finding in the event of a break, or as otherwise approved by the Borough.

- (5) Arteries and secondary feeder mains shall be valved so that not more than 1/4 of a mile would be affected by a single break. Geared valves on sixteen-inch mains or larger shall be furnished.
- (6) Dead ends shall not be allowed without permission of the Borough and, in any case, shall not be permitted in excess of 400 feet. If dead-end lines are permitted, they shall be provided with a hydrant as a means of flushing.
- (7) No pipe shall be placed on private property unless the owner of the land is to own or operate the pipe, or an easement deeded to the Borough is obtained. All easements shall be unrestricted, and a minimum of 20 feet wide or wider if necessary unless otherwise specified by utility companies.

C. House service connections.

- (1) A service connection consists of the pipe and appurtenances between the municipal street main and any customer's property line. A house service connection shall be comprised of a corporation stop at the main, a curb stop, and an inside compression stop, in that order. Meters shall be located as specified by the Borough.
 - (a) A separate water service for each unit shall be utilized for detached housing where maintenance is the responsibility of the individual homeowner.
 - (b) Common water service connections, a cost efficient design, may be allowed for multifamily housing where there is an entity (such as a homeowners' association) responsible for the maintenance of the common water laterals. Where common laterals are utilized, individual water shutoffs shall be provided for each unit.
- (2) In cases where comprehensive water systems are constructed by developers, the meter(s) shall be furnished by the applicant and to be of a manufacture and type approved by the Borough.

D. Pipe size.

- (1) Water mains shall be a minimum diameter of six inches unless another size is required for fire flow and other criteria as determined by the Hardy Cross method or other appropriate procedures.
- (2) House service connection pipe from the main to the curb stop shall be a minimum diameter of one inch unless otherwise indicated by the Hardy Cross method or other appropriate procedures.

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E. Materials.

- (1) Pipe materials used in construction of water mains shall be cement-lined ductile iron, prestressed concrete cylinder pipe, or PVC pipe. All pipe and appurtenances shall comply with the latest applicable American Water Works Association (AWWA) standards.
- (2) Ductile iron pipe, appurtenances, and fittings shall comply with AWWA C1100 (fittings), C111 (gasket joints), C115 (flanged joints), and C151 (pipe). Thickness shall be designed in accordance with AWWA C150 and be a minimum of Class 52. They shall be cement mortar lined in accordance with AWWA C104. Joints shall conform to AWWA C111 and be equal to TYTON. In aggressive soils, ductile iron pipe wrapped in polyethylene according to AWWA C105-72 shall be used if it is a suitable system to prevent corrosion. The developer's engineer shall certify the ability of whatever pipe materials are chosen to resist all degradation caused by soil conditions. The exterior of the ductile iron pipe shall be covered with coal-tar, epoxy-type coating where such protection is necessary (i.e., in acidic soil conditions).
- (3) Prestressed concrete cylinder pipe with rubber and steel joints shall conform to AWWA C301.
- (4) No PVC pipe, appurtenances, and fittings shall be used for water mains in the Borough of Haddonfield.
- (5) Suitable adapters to flanged fittings shall be furnished where required.
- (6) Valves. Resilient wedge valves shall be used unless otherwise specified by the Haddonfield Water Department. Gate valves, when approved, shall be made with cast-iron bodies with double-disk gates, bronze mounted. Valves shall be full size, and those on sixteen-inch mains or larger shall be geared and have suitable bypasses. Valve boxes shall be of the adjustable type, with the cover marked "water" and direction of valve operation indicated.
- (7) House service connection pipe shall be Type K copper.

F. Procedure for approval to use new water main.

- (1) Below are the minimum standards required for approval by the Haddonfield Board of Health. Any other process or specific steps that is used must be approved by the Board of Health.
- (2) During construction of new water mains or replacements, the trenches should be kept dry and a tight-fitting plug provided at the end of the line to keep out foreign matter. Lengths of pipe which have soiled interiors or that have been exposed to known polluted sources should not be used.

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- (3) The first step in disinfecting a main is to flush out the line thoroughly until the water runs clear, by opening a hydrant or drain valve below the section to be treated.
- (4) Next, partially close the drain valve and, at a location slightly upstream from the new line, pump in a mixture of calcium hypochlorite 65% mixed at a rate of 1/2 pound dry weight to 10 gallons of water. Go to the drain valve on the main and sample the outfalling water until a reading of 50 ppm CL2 residual is obtained. Then close off the line.
- (5) Let the line stand charged for 24 hours. At the end of this time, open the drain line, blow off all water containing the CL2, and obtain three samples of water representative of the new main. Immediately transport the samples to an approved laboratory for processing for total coliform.
- (6) The lab reports are to be submitted to the Health Department. If the readings are negative, the main can be put into service. If the readings are positive to total coliform, repeat the above steps and resample.
- (7) If the pipeline being disinfected is known to have been exposed to polluted water, flush the line thoroughly and double the strength of the chlorine solution injected into the main. Let the heavily chlorinated water stand in the mains for at least 48 hours before flushing it out to waste. Then proceed as explained in Subsections F(5) and (6) above.
- (8) Where there are pipe breaks, flush out the isolated section of pipe and dose the section with 200 ppm chlorine. Keep before flushing out the section and returning it to service. After flushing, obtain samples for total coliform readings.
- (9) In all cases, the Haddonfield Department of Health and Haddonfield Water Department must be on location during the process of disinfection, flushing the main and obtaining the samples.

§ 5. Sanitary sewers.

A. Design and placement.

- (1) Plans for sanitary systems shall reflect applicable state and other prevailing regulations.
- (2) The most desirable location for sanitary sewer mains shall be within the Borough right-of-way at or near the center line of the paved cartway.
- (3) Curved sewers shall be approved only under special conditions. The minimum diameter shall be eight inches; the minimum radius of curvature shall be 100 feet; and manhole spacing shall not exceed 300 feet. Approval shall be limited to areas where curved streets comprise the general layout, or where the use of curved

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sewers would permit substantial savings in cost or avoid very deep cuts, rock, or obstructions of a serious nature.

- (4) Easements, which shall be in a form approved by the Borough Engineer and Attorney, shall be required for all sanitary sewer lines which are not within a public right-of-way. Easements shall be a minimum of 20 feet wide for sanitary sewers up to 15 feet deep; for sewers more than 15 feet deep, easements shall be 30 feet wide. (Depth of sewer shall be measured from the design invert of the pipe to the surface of the proposed final grading.)
- (5) As with waterlines, common sanitary sewer service, a cost-efficient design, may be permitted for multifamily housing where there is an entity, such as a homeowners' association, responsible for the maintenance of the common laterals.
- (6) Minimum slope.
 - (a) All sewers shall be designed to meet minimum slope standard as shown in Exhibit 503-8.
 - (b) All sewers shall be designed to flow with a minimum velocity of two feet per second and a maximum velocity of 10 feet per second at full flow based on Manning's formula with $n = 0.013$. When PVC pipe is used, an n -factor of 0.010 may be used. Inverted siphons shall be designed for minimum velocity of six feet per second.
 - (c) All sanitary sewers, including outfalls, shall be designed to carry at least twice the estimated design flow when flowing half full.

B. Pipe materials.

- (1) The applicant shall submit for approval details of the planned pipes, joints, fittings, etc. Specifications referred to below, such as ASA, ASTM, AWWA, etc., shall be the latest revision.
- (2) Materials used in the construction of sewers, force mains, and outfalls shall be as follows: Gravity sewers shall be constructed of reinforced concrete, ductile iron, epoxy-coated polyvinyl chloride (PVC), or acrylonitrile/butadiene/styrene (ABS), plastic pipe. Reinforced concrete pipe shall be used only in sizes 24 inches and larger. Inverted siphons, force mains, and outfalls shall be constructed of epoxy-lined ductile iron pipe unless otherwise permitted by the Borough. Inverted siphons shall consist of two pipes with provisions for flushing. Flow control gates shall be provided in the chambers.
- (3) Any sewer within 100 feet of a water supply well or a below-grade reservoir shall be of steel, reinforced concrete, cast iron, or other suitable material; shall be properly protected by completely watertight construction; and shall be tested for watertightness after installation.

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- (4) Reinforced concrete pipe shall meet all the requirements of ASTM C 76. All pipes should be Class IV strength except where stronger pipe is required.
 - (a) For depths less than three feet measured from the top of the pipe, installed under traffic areas, Marston Class V pipe shall be required.
 - (b) The trench depths shown in Exhibit 503-9 shall be maximum for the pipe classes noted, installed when site conditions allow with Class C, Ordinary Bedding.
 - (c) The existence of clay soils and other unusual loading conditions should be given special consideration.
- (5) Polyvinyl chloride sewer pipe (PVC) shall have bell-and-spigot ends and O-ring rubber gasket joints. PVC pipe and fittings shall conform to ASTM D3034, with a wall thickness designation of SDR 35 (minimum).
 - (a) The plastic material from which the pipe and fittings are extruded shall be impact types of PVC, unplasticized, having high mechanical strength and maximum chemical resistance conforming to Type 1, Grade 1, of the specification for rigid polyvinyl chloride compounds, ASTM D 1784.
 - (b) Pipe shall be free from defects, bubbles, and other imperfections in accordance with accepted commercial practice. The adequacy of the pipe shall be demonstrated, if required by a test at the manufacturing plant in accordance with ASTM D 2444 for impact and ASTM C 2412 for Deflection and Pipe Stiffness, latest revisions.
 - (c) Joints on sewer mains shall conform to ASTM D 3212. Rubber ring gaskets shall be the sole element depended upon to make the joint watertight.
 - (d) The pipe shall be installed as specified in ASTM D 2321. In no case shall less than a Class VI material be used for bedding and hunching material unless approved in writing by the Borough Engineer. Particular attention shall be given to the special requirements for installing pipe in unstable soil or excessive groundwater. Any additional cost for materials used under these trench conditions shall be borne by the applicant.
 - (e) Plastic riser pipe for cleanouts shall be polyvinyl chloride sewer pipe (PVC) as above specified.
- (6) Ductile iron pipe shall be centrifugally cast in metal or sand-lined molds to AWWA C151. The joint shall be of a type that employs a single elongated grooved gasket to effect the joint seal, such as United States Cast Iron Pipe Company's Tyton Joint, James B. Clow and Sons, Inc., "Bell-Tite," or approved equal. Pipe should be furnished with flanges where connections to flange fittings

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are required. Pipe shall be Class 52 (minimum). The outside of the pipe shall be coated with a uniform thickness of hot applied coal-tar coating and the inside shall be epoxy lined. Ductile iron pipe shall be installed with Class C Ordinary Bedding when site conditions allow.

- (7) Acrylonitrile/butadiene/styrene (ABS) pipe and fittings shall conform to ASTM D 2751 and be installed in accordance with ASTM D 2321 as herein modified. All joints shall be made in accordance with ASTM D 3212 using flexible rubber gaskets conforming to ASTM F 477.
- C. Pipe bedding. Pipe bedding shall be provided as specified in Design and Construction of Sanitary and Storm Sewers, ASCE Manuals and Reports on Emergency Practice No. 37, prepared by a Joint Committee of the American Society of Civil Engineers and the Water Pollution Control Federation, New York 1969.
- D. Manholes.
- (1) Manholes shall be provided at ends of sewer lines, at intersections, and at changes of grade or alignment.
 - (2) Spacing intervals between manholes shall not exceed 300 feet.
 - (3) Where sewers enter manholes and the difference in crown elevation between the incoming and outgoing pipes is equal to or greater than two feet, drop pipes shall be provided and drop manholes should be built.
 - (4) Manholes shall be precast concrete, brick or concrete block coated with two coats of portland cement mortar and a seal coating of an acceptable waterproofing tar, asphalt or polyplastic alloy, with enough time allowed for proper bond between seal coats.
 - (5) If precast manhole barrels and cones are used, they shall conform to ASTM C 478, with round rubber gasketed joints, conforming to ASTM C 923. Maximum absorption shall be 9% in accordance with ASTM C 478, Method A. The entire outside surface of the manhole shall be coated with a bituminous waterproofing material acceptable to the Borough Engineer. Cracked manholes shall not be used. The top riser section of precast manholes shall terminate less than one foot below the finished grade to provide for proper adjustment.
 - (6) Manhole frames and covers shall be of cast iron conforming to specification ASTM A 48 Class 30 and be suitable for H2O loading capacity matching catalogue #1255A with drop handles. All manhole covers in rights-of-way or in remote areas shall be provided with a locking device if requested by the Borough Sewer Department. The word "SEWER" shall be cast integrally in each cover.
 - (7) Watertight and low-profile frames and covers shall be utilized where applicable and should conform to the pertinent ASTM specifications.

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- (8) Manholes shall be supplied with suitable adapters (inserts or gaskets) for the various pipe materials used.

E. Laterals/cleanouts.

- (1) The house connection or lateral from the street main to the cleanout shall be considered an integral part of the sanitary sewer system. The type of material used for the house connection shall be the material used for the main line sewer construction and may be as follows:
 - (a) Four-inch cast-iron soil pipe, extra heavy.
 - (b) Four-inch PVC plastic pipe, Schedule 40.
- (2) Unless connection is made to an existing sewer main utilizing a saddle, the connections shall be the same as the material used at the junction of the house connection and the sewer main.
- (3) Bends in house connection lines shall be made using standard fittings. A riser with a cleanout at grade shall be used at the point terminating Borough jurisdiction. This inspection cleanout or observation tee shall be fitted with a metallic cap placed two feet from the outside face of the curb between the curb and sidewalk if installed. If curbs are not required, the cleanout shall be placed one foot beyond the property line in the Borough right-of-way.
- (4) Connections beyond the cleanout are under the jurisdiction of the Board of Health through its Plumbing Inspector, and the pipe size and specifications shall be under the regulations and requirements of the Board of Health.¹

¹ Editor's Note: Former § 6, Stormwater management, which immediately followed this subsection, was repealed 3-28-2006 by Ord. No. 2006-06. See now § 135-92.