

## **IV. IMPROVEMENTS REQUIREMENTS**

### **A. GENERAL**

In subdivisions, the ways shall be constructed and municipal services installed in accordance with the following specific requirements. No deviation or changes from an approved Definitive Plan shall be authorized, except by written approval of such changes by a majority vote of the Planning Board. **No in the field changes shall be allowed.**

### **B. DRAINAGE**

The construction of the drainage system, including methods of construction and quality of materials used, shall be in conformity with the Definitive Plan, and unless specifically accepted by the board, the details shall conform to those of the Massachusetts Department of Public Works Specifications and Standards. In particular, all catchbasins shall be constructed of brick (either clay or concrete) or of cement concrete or of cement concrete blocks, laid in mortar, which may require plastering on the outside and standard D-frames and grates. Granite inlet stones shall be installed as required. Drainage castings shall be Massachusetts State standard.

All catchbasins shall have an inside diameter of at least 4-ft., and shall be constructed to a minimum depth of 2 ½ ft. below the invert of the outflow pipe. Joints on all drainpipes shall be sealed unless open joints are specifically approved by the Woburn Planning Board. Where the pipes are of reinforced concrete, there shall be a minimum cover of 2 ½ ft., and where not reinforced, a minimum cover of 3 ½ ft. to finished grade.

### **C. WATER**

The water system shall be installed in accordance with the Definitive Plan and shall be in conformity with the Rules and Regulations of the Planning Board and in accordance with the Supplementary Rules and Regulations of the Public Works Department for the installation of water mains, services, branch lines, etc.

### **D. SEWERAGE**

The sewerage system shall be installed in accordance with the Definitive Plan and shall be in conformity with the Rules and Regulations of the Planning Board and in accordance with the Supplementary Rules and Regulations of the Public Works Department for the installation of sewer trunks, manholes, laterals and service connections.

### **E. PUBLIC UTILITIES**

1. All public utilities, such as electric, gas, telephone, cable TV, etc., shall be installed underground in conduits. All utilities to be sized for 20-year growth.
2. All water mains and services shall be installed with 5-ft. minimum cover below the finished grade.
3. In rock or clay, trenches shall be excavated to a depth of 6-in. or more below the bottom of any water pipe, storm drain or sewer and filled with suitable base materials (select gravel or 2-in. trap rock as is found necessary). All peat shall be removed unless alternative excavation is approved by the Planning Board.
4. All water pipes, storm drains, sewers, gas mains and light and power conduits shall be installed in the

street prior to completion of the roadway foundation. This includes the installation of service pipes and conduits to the front lot line of each residential lot shown in the subdivision.

5. Prior to any back-filling of trenches or other covering of structures, all storm drains, sewers, culverts, public utility conduits, manholes, water mains, laterals, shut-off valves and hydrants shall be inspected, as hereafter provided (Sec. IV Subs-K). Following such inspection, the fill material shall be carefully placed around the structures and rammed and compacted and backfilled as to the specifications for the restoration of damaged roadways and sidewalks (refer to Supplementary Rules and Regulations attached hereto).

#### **F. STREET FOUNDATION AND CROSS SECTION**

1. The entire area of each street within the street right-of-way shall be cleared of all stumps, brush, roots, rocks or boulders and like material.
2. Within each street, the full length and width of the roadway, including any required shoulders, shall be excavated to the depth of 12-inches below the grade of the base course of bituminous for Short Cul-de-sacs, Type I and II subdivisions and 18-inches for Type III and Collector streets. If the soil is soft or yielding, or contains rocks or boulders, clay, sand pockets, peat or other material detrimental to the subgrade, such material shall be removed to such additional depth as required by the Planning Board and replaced with well-compacted material approved by the board. Where fills are very deep, the material shall be placed in layers of approximately 1-ft. and thoroughly compacted.
3. Prior to any further roadway construction, the roadway subgrade shall be inspected, as hereafter provided (Sec. IV Subs. K). However, at the election of the city this inspection may be combined with the inspection of underground services (Sec. IV Subs. 0).

#### **G. ROADWAY CONSTRUCTION**

Roadways shall be provided with the following:

##### **1. GRAVEL**

Short Cul-de-sacs and Type I and II streets shall have 12-in. of select gravel which shall be spread, rolled and compacted with at least a 10-ton rubber tire compactor or other approved compactors, and shall conform to the typical cross section. Type III and Collector streets shall have 18-in. of select gravel placed in two lifts of 9-in. each. Each lift shall be spread, rolled and compacted with at least a 12-ton rubber tire compactor or other approved compactors and shall conform to the typical cross section. All roads shall be constructed with a 7/8-in. slope, per linear foot, measured from the centerline to each gutter line.

Prior to any further construction, the roadway shall be inspected, as hereinafter provided, and a field density test shall be performed, at the owner's expense, by a registered professional engineer or certified testing laboratory every 500- ft. along the roadway.

##### **2. BASE COURSE**

Roadways shall be provided with a base course of Class I bituminous concrete pavement Type 1-1 base course material (Black Base). Short Cul-de-sacs and Type I and II streets shall be 2 ½ inches thick. Type III and Collector streets shall be 4-in. thick, placed in two equal layers. Each lift shall be compacted with a 15-ton roller.

### 3. SURFACE COURSE

All roadways shall be provided *with* Class I Bituminous Concrete Pavement Type I surface courses and shall be placed as follows:

1. 1 ½ in. Class I Bituminous Concrete Pavement Type I- top course material for Short Cul-de-sacs and Type I and II streets.
2. 1 ¾ in. Class I Bituminous Concrete Pavement Type I - 1 binder course material for Type III and Collector streets.
3. 1 ¾ in. Class I Bituminous Concrete Pavement Type I - 1 top course material for Type III and Collector streets.

Each lift shall be compacted with a 15-ton roller.

4. The roadway shall be paved to the full width specified on the approved cross section.
5. All materials and construction procedures shall conform to the latest Mass. D.P.W. Standard Specifications for Highways, Bridges, and Waterways.
6. Upon completion of the pavement and any shoulders, the roadway shall again be inspected, as hereinafter provided (Sec. IV Subs. K).

### 4. CURBING

- a. In all subdivisions curbing shall be installed along each edge of the roadway in all streets as shown on the Definitive Plan.
- b. Required curbing shall be vertical granite Type VA-4 of the Massachusetts Department of Public Works Standards and Specifications M 9.04.

### 5. SIDEWALKS

- a. Sidewalks, of a width required by Table I, shall be constructed in all type subdivisions on both sides of each roadway, as shown in Chapter VII - Cross Sections - of these Rules and Regulations.
- b. Sidewalks shall have a finished grade in relation to the finished grade of the roadway and shown on the applicable cross-section plan. When unusual topographic conditions exist, the board may approve the placement of a sidewalk at a greater distance from the roadway or at a higher or lower elevation in relation thereto, provided such variation is indicated on the Definitive Plan.
- c. All sidewalk construction shall consist of the following requirements:

Gravel Borrow:

Gravel required for sidewalk foundation shall consist of inert material that is hard durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. Maximum size of stone in Type B gravel borrow shall be no larger than three (3) inches in dimension. The sub-grade for the sidewalk shall be shaped parallel to the proposed surface of the walks and shall

be thoroughly compacted. All depressions occurring shall be filled with suitable material and again compacted until the surface is smooth and hard. After being compacted thoroughly, the foundation shall be at least eight (8) inches in thickness and parallel to the proposed surface of the walk.

#### Concrete Sidewalks:

The concrete used shall be 4000 lb., 6% air-entrained concrete with ½ in. to ¾ in. aggregate and placed to a depth of 4" except at all driveways, it will have a depth of 6". Expansion joints shall be ½ in. in width and placed every thirty (30) feet, a cut joint shall be made every five (5) feet and an appropriate radius made on both sides of joints and on front and back edges of sidewalks. All concrete used shall be provided by firms with quality control facilities and certification and shall be approved by the City of Woburn.

Surface of concrete shall first be stool troweled; then the final troweling shall be wood float finish or brush finish. Side forms and traverse forms for sidewalks shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed walk and of type satisfactory to the City Engineer. The forms shall be well staked and thoroughly braced and set to the established lines with their upper edge conforming to the grade of the finished walk, which shall have a ¼ inch per foot pitch to the roadside of the walk to provide for surface drainage. When completed, the walks shall be kept moist and protected from traffic and weather by the contractor for at least three (3) days or as directed by the Engineer.

#### 6. PLANTING STRIPS

- a. Planting strips, of a width required by Table I, shall be provided between the curb and sidewalk.
- b. The finished grade of such planting strips, in relation to the finished grade of the roadway, shall be as shown on the applicable cross-section plan. Where unusual topographic conditions exist, the Planning Board may require the construction of an irregular planting strip or sloped-in cross section. This is provided that such variation is indicated on the Definitive Plan, and that no portion of the planting strip will project above a plane sloped three-to-one (3:1) upward from the edge of the roadway or below a plane sloped three-to-one downward.

#### 7. STREET SIGNS AND REGULATORY SIGNS

Street signs, of a design, material and number approved by the Planning Board, shall be furnished and installed for each street intersection within the development by the developer. The posting of these signs and standards shall be set in a buried concrete base, 10-in. in diameter and 24- in. long, and located at the rear of the sidewalk.

Regulatory signs (stop, school zone, speed limit, etc.) shall be installed at the rear of the sidewalk.

#### 8. SHADE TREES

Where, in the opinion of the board, existing trees are inadequate, shade trees, having a caliper of at least 2-in. and of a variety suitable, in the opinion of the board, shall be planted. Such planted trees shall be spaced not more than 40-ft. apart in ½ cubic yard of topsoil and placed 10-ft. outside the right-of-way.

#### 9. FIRE ALARM SYSTEM

A fire alarm system shall be installed at the expense of the sub-divider, as requested by the Chief of the Fire Department and approved by the Planning Board.

#### 10. SIDE SLOPES

The area in the back of the sidewalk shall be graded to a point where it coincides with the finished grade of abutting lots, and in such a manner, that no portion thereof within the exterior lines of the street will project above a plane sloped three-to-one (3:1) upward from the edge of the sidewalk or grass, or below a plane sloped two-to-one downward.

#### **H. INSPECTION AND CONSTRUCTION CONTROL**

1. The Planning Board shall approve of, and the applicant shall employ, at his own expense, a registered professional engineer to set all lines and grades in a manner satisfactory to the board.
2. The construction of required improvements shall be the responsibility of the applicant. The applicant shall employ a registered professional engineer to supervise the construction of required improvements, including the approval of materials used in accordance with the Land Subdivision Rules and Regulations.

All construction specifications shall be prepared under the direct supervision of a registered professional engineer and shall bear his signature and seal; said signature and seal shall signify that the plans and specifications meet the applicable provisions of the Subdivision Rules and Regulations, all acceptable engineering practices and all applicable laws and ordinances.

3. The inspectional responsibilities of the engineer shall include the following:
  - a. Review of plans, samples and other submittals of the applicant, as required by the approved subdivision plans, and as same was approved by the Planning Board. This shall include the approval for conformance to the design standards.
  - b. Review and approval of the quality control procedures for all construction materials.
  - c. Special engineering professional inspection of critical construction components requiring controlled materials or construction procedures specified in the latest Mass. D.P.W. Standards.
4. The registered professional engineer-of-record shall submit periodically, in a form acceptable to the Planning Board, progress reports, together with pertinent comments. At completion of construction, the registered professional engineer shall submit to the Planning Board a final report as to the satisfactory completion and the readiness of the improvement requirements for final inspection by the city of Woburn.

The improvement requirements shall be the responsibility of the registered professional engineer, as identified on the approved Definitive Plan.

A written request from the Planning Board shall cause the applicant to submit a progress report within the time specified by the board.

5. The applicant shall request final inspection at least 48 hours in advance by notice to the board or its duly authorized agent.

6. To cover the cost of the final inspection, there shall be deposited with the board, prior to the inspection, a sum equal to \$500 for the first 6 lots of a subdivision; \$1,000 for subdivisions exceeding 6 lots, but no greater than 12 lots; \$1,500 for subdivisions exceeding 12 lots, but no greater than 18 lots; and \$2,000 for subdivisions exceeding 18 lots.
7. All fees and costs related to the registered professional engineer shall be borne by the applicant.
8. Sworn affidavits must be submitted with "As Built" plans from the registered land surveyor and registered professional civil engineer, who prepared said plan, indicating that all related work, as shown on the "As Built" plans, has been completed in accordance with the approved definitive plans, to the standards set forth in these Rules and Regulations and all applicable regulations set forth by the Massachusetts Department of Public Works. "As Built" plans shall be stamped as such, and the board shall only endorse said plans which meet the requirements set forth herein and within the guidelines set forth in MOL Ch. 41 Sec. 81U.