TOWN OF MILLBURY *DEPARTMENT OF PLANNING & DEVELOPMENT*
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Proposed Changes to the
Millbury Rules & Regulations Governing the Subdivision of Land

May 10, 2021

Yellow highlight- Proposed by Millbury Planning Department
Green highlight- proposed by Weston & Sampson Engineers
Blue hightlight- proposed by Stantec Engineering

To see if the Planning Board will vote to amend the Rules & Regulations Governing the Subdivision of Land by adding the following underlined text and deleting the text with strikethrough:

SECTION 2: DEFINITIONS

LOW IMPACT DEVELOPMENT (LID): the use of innovative stormwater management systems that are modelled after natural hydrologic features. Rainfall is managed at the source using small, cost-effective landscape features located at the lot level.

MASSACHUSETTS STORMWATER HANDBOOK: the guidebook last revised by the Department of Environmental Protection in February 2008, and as amended, that coordinates the requirements prescribed by revisions to the Wetlands regulations, 310 CMR 10.00, and the Water Quality Regulations, 314 CMR 9.00, relating to stormwater.

MASSACHUSETTS STORMWATER STANDARDS: the standards outlined in Chapter 1, Volume 1 of the Massachusetts Stormwater Handbook.

NEW DEVELOPMENT: any construction activities or land alteration resulting in total earth disturbances equal to or greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) on an area that has not previously been developed to include impervious cover.

REDEVELOPMENT: any construction, land alteration, or improvement of impervious surfaces resulting in total earth disturbances equal to or greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) that does not meet the definition of new development (see above).

SECTION 5: PROCEDURES FOR THE SUBMISSION AND APPROVAL OF SUBDIVISION PLANS

5.1 PRELIMINARY PLAN

1. Submission Requirements

A preliminary plan of a subdivision may be submitted by the Applicant to the Planning Board for discussion and approval by the Board. The submission of such a preliminary plan will enable stakeholders to discuss and clarify issues pertaining to the proposal. A preliminary plan is optional in cases of residential subdivisions and, pursuant to M.G.L. Chapter 41, Section 81S, required in cases of non-residential subdivisions. The submission of such preliminary plan will enable the Applicant, Board, its agents, other municipal officials, and abutters to discuss and clarify the problems of such subdivision before a definitive plan is prepared. Therefore, it is strongly recommended that a preliminary plan be filed in every case.

If such review and approval are desired, the Applicant shall submit three ~~fifteen (~~3~~15)~~ full-scale prints of the preliminary plan, seven (7) reduced size prints, ~~together with~~ the original and two (2) copies of Form B (See Appendix A), an electronic version of the entire application, and the appropriate submission and professional and technical review fees (See Appendix A – Fee Schedule) to the Department of Planning and Development by delivery or by certified mail (postage prepaid, receipt required). The Applicant shall submit one (1) copy of the preliminary plan to the Board of Health and one full-scale print of the preliminary plan, one (1) copy of the Form B and one electronic version of the entire application to the Planning Board's consulting engineer. In addition, the Applicant shall provide written notice of such submission using Application Form B to the Town Clerk by delivery or by certified mail (postage prepaid, receipt required). The date of submission shall be determined as described in Section 3.7.

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Three (3) ~~Eleven~~ copies of the preliminary plan shall be on paper sized twenty-four inches by thirty-six inches (24" x 36") ~~at a scale of one inch equals forty feet (1" = 40')~~ and seven (7) ~~four~~ prints shall be reduced to eleven inches by seventeen inches (11" x 17"). Said preliminary plan shall be drawn at a scale of one inch equals forty feet (1" = 40') or other suitable scale acceptable to the Board and shall show sufficient information about the subdivision to form a clear basis for discussion of any issues, and for the preparation of the definitive plan. Such information shall include the following:

5.3 DEFINITIVE PLAN

1. Submission Requirements

Any person who desires approval of a definitive plan of a subdivision shall submit to the Planning Board the following, with the drawings consolidated onto a single sheet or on separate sheets:

a. Three (3) ~~Twelve (12)~~ prints of the definitive plan, dark line on white background, on sheets measuring twenty-four inches by thirty-six inches (24" x 36"), and seven (7) ~~five (5)~~ reduced prints on sheets measuring eleven inches by seventeen inches (11" x 17") consisting of the street plans and profiles, construction plan (See Section 5.2(5),

and erosion and sedimentation control plan (See Section 5.2(6)). The original drawing of the definitive plan will only be needed if and when signing of the plan takes place. Street plans and profiles shall be drawn at a scale of one inch equals forty feet (l" = 40'), showing location of all utilities and other elements within the street right-of-way, and typical cross sections of any altered drainage courses or off-street paths.

b. Ten (10) ~~Seventeen (17)~~ copies of a locus plan of the subdivision at one inch equals one thousand feet (l" = 1000'), showing proposed roads and their relation to the surrounding area, and the location of the zoning district or districts applicable to the site.

c. Ten (10) ~~Seventeen (17)~~ copies of an index plan at a scale of one inch equals four hundred feet (1" = 400') when multiple sheets are used.

m. Ten (10) ~~Seventeen (17)~~ copies of the Environmental Analysis, if required (See Section 5.2(4)).

r. One electronic version of the entire definitive plan submittal.

Submit to the Planning Board's consulting engineer by delivery or certified mail:

a. One full-scale print of the definitive plan and associated submittals;

b. One electronic version of the entire definitive plan submittal.

2. Contents

h. The following statement: "Street numbers are assigned by the Millbury Police Department ~~Assessor's Office~~; for further information call (508) 865-3521~~4732~~".

6. Landscape Plan

A plan showing proposed street tree locations, the planting plan for the center island within a cul-de-sac, if applicable, and any other proposed landscaping features shall be submitted. **The island shall be designed to allow for proper emergency vehicle and snow plow access around the island without requiring driving of the vehicle off the travel way.**

7. Waste Control Plan

A plan to control wastes that lists the construction and waste materials expected to be generated or stored on the construction site shall be required. These wastes include, but are not limited to, discarded building materials, concrete truck washout, chemicals, litter,

sanitary waste and material stockpiles. An applicant must also describe in narrative form the Best Management Practices that it will utilize to reduce pollutants from these materials including storage practices to minimize exposure of the materials to stormwater.

8. Operation and Maintenance Plan

An operation and maintenance (O&M) plan for the stormwater system shall be included in all applications. The maintenance plan shall be designed to ensure compliance with the MS4 permit and these Rules and Regulations, and shall demonstrate that the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, are met in all seasons and throughout the life of the system. The O&M plan shall include those elements listed in §13.15.080, Operation and maintenance plans, of the Town's Post-Construction Stormwater Management Bylaw (Millbury Municipal Code, Chapter 13.15).

The subsequent sections shall be renumbered as follows: 8. Erosion and Sediment Control Plan, 9. Review Procedures, 10. Action by Planning Board and Performance Guarantees, 11. Maintenance of Streets and Utilities, 12. Evidence of Satisfactory Performance, 13. Release of Performance Guarantee, 14. Modification, Amendment or Rescission, 15. Roadway Acceptance and As-Built Drawings.

12. Evidence of Satisfactory Performance

Before the Board will release the interest of the Town in a performance bond or deposit to an amount less than thirty percent (30%) of the original cost of construction, or $30,000, whichever is greater, or release the last lot in the case of approval with covenant:

a. The Applicant shall file with the Planning Board a certified copy of the layout (as-built) plan of each street or way and associated improvements within the subdivision, in accordance with the provisions set forth in Section 5.2, Subsection 15~~3~~ and the Town's Post-Construction Stormwater Management Bylaw (Municipal Code, Chapter 13.15).

15. Roadway Acceptance and As-built Drawings

a. Upon completion of a street in a manner fulfilling the requirements of the Board, the Applicant may request the Board to inspect it in order to give a recommendation to Town Meeting who will consider the question of laying out said street under the provisions of M.G.L Chapter 82. Street acceptances within a subdivision are the financial and legal responsibility of the Applicant.

The Applicant shall have the original plans and profiles of the definitive plan, as approved by the Board, corrected and certified by his engineer or surveyor to show the actual as-built locations and grades of all utilities, roadway profiles, location of all main buildings and any changes authorized by the Board. The Applicant shall submit to the Board one (1) mylar, three (3) ~~eleven (11)~~ prints of the As-Built Plan at the same

scale as the street plans in Section 5.2, a CD or DVD containing geographic data in accordance with the criteria specified in Section 3.8 of these Rules and Regulations, and a level III standard digital file (SDF), per MassGIS standards for digital plan submittals to municipalities. The As-Built Plan shall indicate the actual locations, distances, bearings, and complete curve data for all street sidelines. As-built centerline profile grades shall be shown in elevation on the lower portion of the sheet. Any curbing, sidewalks/bicycle paths, drainage facilities, "as-built" contours for detention and retention basins with contour intervals matching those depicted on the definitive plan, invert and top of frame elevations for drainage structures, other appurtenances as may have been required, permanent monuments, permanent easements, and underground utilities within the right-of-way and on the lots must be shown. In addition, for all sewerage collection systems the following information shall be included in plan and in profile:

1) Property line locations;
2) MH locations (ties), MH locations (stations), MH inverts
3) Wye locations;
4) Elevation (inverts) of house service lines;
5) Location of house service line;
6) Location of chimneys;
7) Elevation of chimneys;
8) Angle of pipes (at chimneys);
9) House service lines (from main to foundation);
10) Lift station (if required).

The Board shall also require the Applicant to submit the following information before making a recommendation to Town Meeting:

1) Two (2) copies of the proposed deed conveying the fee in the street plus associated easements to the Town, and legal evidence that the fee has not been inadvertently conveyed to abutting lot owners.

2) Two (2) copies of a written description, prepared by a surveyor or engineer, of the location and length of the street to be considered for acceptance.

3) A copy of recorded deeds and other instruments for any common land or public open space, park or other such parcels contained within the subdivision.

4) Written evidence from the Town Treasurer that the owner and/or Applicant is not on the list generated in conformance with Chapter 13.15~~17~~ of the Town of Millbury Municipal Code~~General Bylaws~~.

SECTION 6: DESIGN STANDARDS

6.0 GENERAL

1. The subdivision shall be designed in a manner consistent with the

guidelines set forth in Appendix C, relating to development by landscape types, which may be amended in the same manner that the Board may amend its Rules and Regulations.

2. All standards under this section shall be considered minimum standards and may be varied from or waived where the Board considers that alternative conditions will serve substantially the same objective. All waivers requested and granted by the Board shall be made in writing, with an explanation for the reasons therefore.

3. Design and construction shall minimize, to the extent possible, the following:

   a. Volume of cut and fill;

   b. Soil loss or instability during and after construction;

   c. Materials leaving the site;

   d. Areas where existing vegetation will be disturbed, especially if such vegetation is located within two-hundred feet (200') of a river, wetland, or water body, or in areas having a slope of more than fifteen percent (l5%);

   e. Number of significant trees removed having a diameter of twelve inches (l2") or more, when measured at four feet (4') above finished ground level;

   f. Removal of existing stone walls;

   g. Disturbance of important wildlife habitats, outstanding botanical features or scenic or historic environs;

   h. Extent of waterways altered or relocated;

   i. Dimensions of paved surfaces and areas (including streets), especially in aquifer recharge areas, except as necessary for safety and convenience, or to comply with the requirements of the Massachusetts Architectural Access Board;

   j. Direct access from any lot to a collector or arterial street.

4. Design shall emphasize the following:

   a. Use of collector streets to avoid traffic on streets providing house frontages;

b. Visual prominence of natural, scenic and historic features of the landscape;

6.7 STREETS AND WAYS

4. Location and Alignment

a. Design of all roadways shall be in accordance with the applicable requirements of the current edition of the American Association of State Highway and Transportation Officials (AASHTO) "A Policy on Geometric Design of Highways and Streets" and the "Massachusetts Highway Department's ~~**Highway Design Manual**~~ **Project Development and Design Guide**". Provision shall be required for the proper projection of streets, or for access to adjoining land not yet subdivided.

f.

f. The minimum centerline radii of curved streets shall be one hundred feet (l00') for an access street, one hundred fifty feet (l50') for a subcollector, and three hundred feet (300') for a collector street. **All horizontal curves shall be designed as to provide a minimum two hundred (200) feet of clear sight distance within the roadway right-of-way to drivers.**

5. Dead-End Streets

The length of a dead-end street shall never exceed one thousand five hundred feet (1,500'). For the purposes of this Section, any proposed street that intersects solely with a dead-end street shall be deemed to be an extension of the dead-end street. **The length of a dead-end street shall be measured from its intersection with the nearest through street along the road centerline for its entire length.**

Dead-end streets shall be provided at the closed end with a t-shaped turn-around or a loop turn-around having an outside roadway diameter of one hundred feet (l00') and a property line diameter of one hundred and twenty feet (l20') unless otherwise specified by the Planning Board. Looped turn-around dead-end streets shall have a circular landscaped island at the center of the turn-around. The width of the paved traveled way within the loop turn-around shall match that of the way approaching the turn-around or twenty-two feet (22'), whichever is greater. Natural vegetation shall be maintained within the landscaped island where possible; in areas that cannot retain the natural vegetation, a landscaping plan shall be provided for the cul-de-sac island. ~~The Planning Board may, at its option, allow an outside roadway diameter of one hundred sixty feet (160') and the~~

~~placement of a circular landscaped island with a radius of twenty feet (20') at the center of the turn-around, if the dead-end street is not intended to connect with another street at some future point in time.~~ Responsibility for maintenance of such a landscaped island shall lie with the owners of all lots within the subdivision.

A T-shaped turn-around may be used for cul-de-sacs of up to five hundred feet (500') and serving up to four (4) ~~six (6)~~ dwelling units and shall be constructed as follows:

a. One leg of the turn-around shall be located to the left of the street and positioned perpendicular to the other leg and to the street approaching the turn-around.

b. Pavement of the turn-around legs shall be of the same width as in the remainder of the cul-de-sac.

c. The turn-around legs shall be straight, and shall be seventy-four feet (~~70~~ 74') long measured along the intersection of the right-of-way of the legs to the end of legs right-of-way and shall have a traveled way width of twenty feet (20').

d. The street approaching the turn-around shall be straight for a minimum distance of sixty feet (60').

e. There shall be no driveways off the ends of the turn-around legs, within twenty feet (20') from the end of pavement, or in the intersection roundings. These driveway- restricted areas shall extend for a depth of ten feet (10') off the pavement edge.

f. A "No Parking" restriction shall be posted within the t-shaped or looped turn-around.

Temporary dead-end streets shall similarly provide for a turn-around, which may be located in part on easements over lots so long as contractual assurance is provided that upon extension of the street the terminated turn-around will be removed and replaced with loam and appropriate planting, curb, sidewalks, and trees shall be installed in accordance with the requirements stated herein.

6.8 STREET NAMES AND STREET SIGNS

Street names should be in keeping with the character of the Town and should reflect existing natural features and historical events related to the specific location of the subdivision in the Town of Millbury or veterans who gave their lives fighting on behalf of the United States. Street names shall be acceptable to the Planning Board after consultation with the Police Department and the Fire

Chief. Street names that may result in confusion with existing names within the Town shall not be permitted.

Street name signs shall be furnished and installed at each street intersection at diagonally opposite corners and shall bear the names of both intersecting streets. Street signs shall be of a design conforming to street signs used by the Town. Street signs shall not be placed on telephone poles, or on any pole containing any other sign. Street signs shall be installed as specified in the latest edition of the Manual on Uniform Traffic Control Devices by the U.S. Department of Transportation **and Massachusetts Amendments**. No occupancy permits shall be issued on a street until the street sign has been properly installed.

From the time of rough grading until such time as a street is accepted by the Town as a public street, the signposts at the intersection of such street with any other street shall have affixed thereto a sign designating such street as a private street.

Safety and traffic control signage, including "STOP" signs and any other signs deemed to be required by the Board, in consultation with Town public safety personnel, shall be provided and installed by the Applicant.

6.9 MONUMENTS AND BOUNDARY MARKERS

Granite monuments not less than six inches square (6") and four feet (4') long with a three- eighth inch (3/8") drill hole in the center are to be furnished and set on both sidelines of all points of curvature of streets where the sideline changes direction and points of tangency. Concrete bounds not less than five inches square (5") and three feet (3') long with a steel reinforced rebar shall be set at the intersections of lot lines and street rights-of-way, intersections of lot lines and permanent easements and at all points of change of direction of boundary lines of each lot in the subdivision. In instances where a retaining wall, stone wall or ledge interferes with an Applicant's ability to install a granite monument or reinforced concrete bound, a drill hole may be substituted. In no case shall monuments be spaced more than five hundred feet (500') apart. (rev. 1/22/07)

No permanent monument shall be installed until all construction which could destroy or disturb the monument is completed. Monument locations shall be staked prior to roadway construction and maintained. Concrete bounds shall be installed prior to the issuance of an occupancy permit. Granite monuments and concrete bounds shall be accurately set in the ground with the top flush with the finish grade of the surface of the ground adjacent to the location in which they are to be placed, unless otherwise specified by the Board. The developer shall excavate a hole sufficiently large to properly place the monuments or bounds and thoroughly tamp around them sufficient material to hold them securely in position. If the material is not satisfactory for backfill, in the opinion of the Town Planner or the Planning Board's agent, then said holes shall be filled with gravel.

The Applicant's surveyor shall furnish the Board with a letter certifying that monuments and bounds have been placed precisely as indicated on the definitive plan. **The location of all bounds set shall be shown on the as-built plan.**

6.10 CURBING

Curbing shall be installed on all streets in all districts as follows:

1. Along the entire perimeter of all cul-de-sacs.
2. Along all curves of street intersections.
3. All sections of a street having a grade of three (3) percent or more shall have curbing. This curbing shall be continued from the end of the three (3) percent grade to the location of the next set of catch basins on the downhill side of such grade.
4. Along any other street where, in the opinion of the Board, curbs are necessary to handle run-off for that section of roadway or curbs are necessary for the maintenance of the pavement and the prevention of pavement edge raveling.

Curbing shall be constructed of granite, unless, in the opinion of the Board, other material will be satisfactory. In most locations, the Planning Board requires the use of Type VA4, or equivalent, vertical granite curbing as defined in Section M9.04.1 of the Massachusetts **Department of Transportation** Standard Specifications for Highways and Bridges:

Minimum length:	6 feet
Width at top:	6 inches
Width at bottom:	4 inches (for 2/3 length)
Depth:	17-19 inch minimum

At curb cuts, vertical granite curbing shall have a bull-nose piece (two-foot (2') radius one-quarter (1/4) curve) and the sloped granite curbing shall consist of a straight piece with the top tapered to be flush with the ground.

Sloped granite curbs shall be Type SA as defined in Section M9.04.2 of the Massachusetts **Department of Transportation** Standard Specifications for Highways and Bridges, or equivalent and shall be required as follows: at intersections with existing streets and at intersections within the subdivision for the distance of the arcs of the intersection radii; surrounding any islands or chokers within the street including landscaped islands in loop turnarounds of cul-de- sac streets; throughout the T-shape turnaround of a cul-de-sac street except for the straight curb line on the right side.

Curbing that connects to an existing street that has no curb or berm, has a different type or shape of curb or berm, or has curb with a lesser reveal, shall have a tapered end piece providing a smooth transition.

Curbing shall be sealed to the road pavement.

The need for curbing may be eliminated along certain roadways, when drainage is provided in swales, which are designed to reduce the rate of runoff, and restore or supply needed water to vegetation in the street right-of-way.

6.12 DRIVEWAYS~~STREET ENTRANCES~~

~~All street entrances (driveways) shall be in accordance with the Rules and Regulations of the Director of Public Works. In no case shall the entrance be constructed until a driveway permit has been issued.~~ Driveway cuts shall not be allowed within sixty (60) feet of the intersection of the center line of intersecting streets. In no instances shall catch basins be located along a driveway curb opening. Driveway openings, including a detail and cross section, shall be shown on the definitive plan.

Driveways shall be paved. That portion of all driveways within the street right-of-way limits shall contain eight inch (8") gravel subbase, binder at two and one-half (2 ½) inches after compaction and top coat at one and one-half (1 ½) inches after compaction. Sidewalk grades shall be continuous across driveway openings with a maximum cross slope of two percent (2%). Transition in grade of no more than two (2) inches will be allowed.

Driveways shall be at least twelve (12) feet wide and shall have an opening of at least sixteen (16) feet in the curb at the gutter line.

At all driveways the grade at the back of the sidewalk shall be at least six (6) inches higher than the grade at the gutter line.

The junction of sidewalks, driveways and roadways shall be constructed in such a manner as to prevent recessed areas where puddling may form.

Driveways serving the premises shall provide access through the required frontage of the serviced lot, except in the case of a common driveway.

6.13 SIDEWALKS AND BICYCLE PATHS

Sidewalks shall be placed generally parallel to roadways as follows:

1. On both sides of streets providing direct access to commercial and retail facilities.
2. On both sides of streets providing direct access to schools.
3. On both sides of streets providing direct access to public recreational facilities.
4. On both sides of streets in a Business District.
5. On both sides of streets on a collector or sub-collector.
6. On one side of the street on an access street.

Where sidewalks are required on both sides of a street, one of the sidewalks may be eliminated where, in the opinion of the Planning Board, one sidewalk will provide adequate pedestrian circulation.

Sidewalks shall be installed in accordance with the requirements of the Massachusetts Architectural Access Board (521 CMR) in effect at the time of application, **including minimum clear path, curb openings and ramps at intersections, detectible warning panels, catch basin locations and tree clearance over sidewalks.**

Sidewalk design, including but not limited to, cross-slope, thickness, joints and material composition shall be approved by the Planning Board.

Sidewalk design shall be varied in horizontal layout and location to minimize disturbance of vegetation and to achieve maximum aesthetic value.

When located within the street right-of-way, sidewalks shall be located no closer than six inches (6") from the outside of the layout, with a maximum of pedestrian-vehicular separation. Where sidewalks are located outside of the right-of-way, the Applicant shall reserve suitable easements therefore.

Walkways connecting existing trails should be created whenever reasonable, and developed in new locations when possible.

Sidewalks shall be at least five feet (5') wide **and provide an unobstructed accessible width of at least three feet (3')**.

Public bicycle paths may be required by the Board to provide circulation or access to schools, recreational areas, retail facilities, transportation and community facilities, or where, in the opinion of the Planning Board, bicycle travel in the streets would be dangerous. These paths may, or may not, be part of the normal sidewalk provisions.

Bicycle paths shall be designed in accordance with the current edition of AASHTO's Guide for the Development of Bicycle Facilities. The minimum right-of-way of a bicycle path shall accommodate an eight to ten (8-10) foot paved width with two (2) foot graded shoulders on each side. Bicycle paths are to be designed with a minimum centerline radius of fifty (50) feet. Grades shall not exceed five percent (5%) except in those instances where, because of the characteristics of existing terrain, the Planning Board authorizes grades of up to eight percent (8%) for distances of less than one hundred (100) feet.

Provisions to ensure the safe and convenient use of bicycles may include, but may not be limited to, the following: warning or information signs along the bike route, bikeway pavement stencils, a special line on a roadway marked off by a painted line.

6.1 WATER SYSTEM

When any portion of a subdivision lying outside of the Aquifer and Watershed Protection Overlay District is within one thousand feet (1,000') of a public water supply that is accessible by the borders of the property, or if the Fire Chief and/or Board of Health determines that available water is inadequate to provide safe

potable water or fire protection, then the subdivision shall be required to extend public water to the development. Any such extension shall be accomplished in accordance with the requirements of the purveyor of public water, and shall include any appurtenances necessary to ensure adequate water pressure.

Water pipes shall be placed in a trench with a cover of not less than six feet (6'). The piping shall be of cement-lined ductile iron, or other suitable material approved by the Aquarion Water Company or its successor in interest. Gates shall be placed along mains and in accordance with the requirements of the Water Company, but in any case, spaced not more than one-thousand feet (l,000') apart. The size of the mains shall conform to the requirements of the Water Company and approved by the Board, but, in any event, not less than eight (8") inches in diameter.

Commented [GD1]: Aquarion Water Company ?

Pursuant to Section 6.14, where property is not subdivided or where all the property of the Applicant is not being subdivided at the same time, provision shall be made for the extension of the water system by continuing the mains the full length of the streets and to the exterior limits of the subdivision at such grade and size that will, in the opinion of the Board, permit their proper extension at a later date.

All costs associated with the installation and inspection of water lines and appurtenances, including the resurfacing of the entire width of the affected roadway, shall be borne by the Applicant.

Where public water is not available, the Applicant shall provide evidence that available groundwater can adequately serve the subdivision.

6.17 STORMWATER MANAGEMENT

1. General Approach

Lots shall be prepared and graded consistent with drainage into the subdivision, and in such a manner that development of one lot shall not cause detrimental drainage on another lot, or on areas outside the subdivision, to the extent permitted by law.

Any man-made **stormwater management system**~~**pond or swale**~~ constructed for **mitigation of post development peak discharge rates, to provide water quality treatment and/or groundwater recharge**~~**stormwater detention or retention**~~ shall be located on a separate lot, to be owned in common by the owners of all lots within the subdivision. Written provision shall be made to ensure that any such facility is properly maintained at no cost to the Town.

Storm drains, culverts, and related facilities shall be designed to permit the unimpeded flow of all natural water courses, to ensure adequate drainage at all low points along streets, to control erosion, and to intercept

storm water run-off along streets at intervals reasonably related to the extent and grade of the area being drained.

To the maximum extent feasible, ground water recharge shall be maximized and ground water quality shall be protected. Various techniques shall be used to maximize recharge and create a hydrologically functional lot or site, including the following: vegetated open channel systems along roads, rain gardens, buffer strips, use of amended soils that will store, filter and infiltrate runoff, and/or bioretention areas~~, and use of permeable pavement~~. In addition, reduction of impervious surfaces where possible, reduction of heat island effects, and use of water quality units such as grease traps or gas/oil separators will be encouraged. (rev. 1/22/07)

~~Where the water table is not too high and where the soil is reasonably permeable, t~~Low impact development best management practices are encouraged such that the sit's natural features and environmentally sensitive areas, such as wetlands, native vegetation, mature trees, slopes, natural drainage courses, permeable soils, floodplains, woodlands, and soils are preserved. Use of stormwater management components that provide filtration, treatment and infiltration such as vegetated areas that slow down runoff, minimize disturbed areas, maximize infiltration and reduce contact with paved surfaces are ~~are strongly encouraged~~shall be used unless infeasible[1] Applications not incorporating Low Impact Development components shall indicate why they are infeasible at the site.

Peak stream flows and run-off at the boundaries of the development in a two (2) year, ten (10) year, twenty-five (25) year and one hundred (100) year frequency storm shall be no higher following development than prior to development. (rev. 1/22/07)

2. Design Basis

All subdivision applications, regardless of whether the project is subject to the State's Wetlands Protection Act, shall design the stormwater management system in compliance with the goals and objectives of the Massachusetts Department of Environmental Protection's **(DEP)** Stormwater **Management Standards and accompanying Stormwater** Management ~~Policy (DEP SMP)~~ Handbook and any applicable local and federal regulations, with the ~~SMP's nine~~ ten Stormwater Management Standards, as most recently amended. These apply to industrial, commercial, institutional, and residential subdivision and roadway projects, including site preparation, construction, redevelopment, and ongoing operation. The applicant shall also provide calculations

[1] Infeasible means not technologically possible, or not economically practicable and achievable in light of best industry practices.

indicating compliance with each standard. Refer to the ~~DEP SMP~~ the Massachusetts **DEP** Stormwater Management Handbook and its referenced sources for specific application of these stormwater management categories.

The design shall include the size, quality, and type of pipe; inlets, manholes, ~~storm~~ water **quality** treatment and **stormwater basin** ~~detention~~ areas; and the percent of grade. The applicable design criterion shall be a zero percent (0%) increase in the peak rate for the two (2), ten (10), twenty-five (25), and one hundred (100) year storm event.

Storm sewer **pipes and swales** ~~and retention basins~~ shall be designed to convey peak discharge of the twenty-five (25) year frequency storm, and culverts shall be designed to convey the peak discharge of the one-hundred (100) year frequency storm.

Drainage computations shall be based on full development of all tributary areas upgradient of each system. Runoff analyses shall be calculated by using the "Rational Method". All drains shall be sloped to provide for a minimum velocity of two (2) feet per second and a maximum design velocity of ten (10) feet per second.

Computations shall be submitted in a suitable form along with amplifying plans outlining drainage areas within and affecting the subdivision. A plan shall also be submitted showing the route followed by all drainage discharging from the subdivision to the primary receiving water course, other large body of water or on-site disposal.

Stormwater basins ~~Detention ponds~~ shall be designed to provide no increase in peak discharge to any off-site area in the two (2) year, ten (10) year, twenty-five (25) year and one-hundred (100) year storm event.

The rainfall amounts used in **stormwater basin**~~s~~ calculations shall be based on the 1998 Cornell University Study, NOAA Atlas 14 Volume 10 Point Precipitation Frequency Estimates for Millbury, or other studies approved by the Massachusetts Department of Environmental Protection:

VALUES TO BE USED FOR 24-HOUR RAINFALL CALCULATIONS (CORNELL, 1998)	
STORM FREQUENCY	24 HOUR RAINFALL
2 yr. storm	3.2 inches
10 yr. storm	4.9 inches
25 yr. storm	6.1 inches
50 yr. storm	7.3 inches
100 yr. storm	8.5 inches

3. Design Method

Stormwater basin drainage calculations shall be based upon the modified soil cover complex method with Storm Drainage design based upon the objectives, principles and design considerations set forth in **the** Massachusetts Stormwater Management Handbook and the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Area: A Guide for Planners, Designers, and Municipal Officials, both maintained by MassDEP. ~~Residential Storm Water Management, published jointly by the Urban Land Institute, the American Society of Civil Engineers and the National Association of Home Builders, 1975 and upon the guidelines for Soil and Water Conservation in Urbanized Areas of Massachusetts, published by the USDA, Soil Conservation Service, 1975.~~ These publications are hereby incorporated as a part of these Rules and Regulations.

The sediment forebay at the inlet of a **stormwater** ~~**detention**~~ basin shall be sized for a minimum of one year sediment volume and shall be at least ten feet (10') long. The sediment forebay shall have a maintenance access of ten feet (10') or wider, with a maximum slope of fifteen percent (15%) and a maximum cross slope of three percent (3%). A **stormwater**~~**detention**~~ basin shall be sized to store one inch (1") of rainfall times the impervious area below the primary spillway. The basin shall have a long flow path rather than a low flow channel, with a length twice as long as it is wide. The **stormwater**~~**detention**~~ basin shall have maximum side slopes of 4:1, and a minimum of six inches (6") topsoil and six percent (6%) organic content. (rev. 1/22/07)

The outermost edge of stormwater basins shall be located a minimum of twenty-five (25) feet from any house, roadway or property line, and shall be screened from adjacent lots and streets by a greenbelt of trees and shrubs not more than fifteen (15) feet apart planted in two staggered rows. Such trees or shrubs shall be not less than eight (8) feet in height at the time of planting. No basin shall be located at street intersections.

Emergency spillways will be sized and designed to cause detention of and passage of the design inflow without causing the water level to rise above a preselected elevation. A freeboard of one (1) foot will be required between the detained water level and the top of the embankment during peak design conditions.

The plans shall include a design detail and cross section of the proposed stormwater basin, infiltration basin or rain garden which shall include details of any invert construction at both the inlet and discharge.

Stormwater management basin(s) shall be designed for aesthetics, as well as function.

~~**Water velocities in pipes and gutters shall be not less than two feet (2') per second, and not more than ten feet (10') per second, and not more than five feet (5') per second on ground surfaces.**~~

Stormwater management systems for projects on new development sites shall be designed to meet an average annual pollutant removal equivalent to ninety percent (90%) of the average annual load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND sixty percent (60%) of the average annual load of Total Phosphorus (TP) related to the total post-construction impervious surface area on the site[2].

a. Average annual pollutant removal requirements are achieved through one of the following methods:
    1. installing Best Management Practices (BMPs) that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016)[3] or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., the MA Stormwater Management Handbook)[4] may be used to calculate BMP performance; or
    2. retaining the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the new development site; or
    3. meeting a combination of retention and treatment that achieves the above standards.; or
    4. utilizing offsite mitigation that meets the above standards within the same USGS HUC12 at the new development site.

Stormwater management systems for projects on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to eighty percent (80%) of the average annual post-construction load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND fifty percent (50%)

[2] Pollutant removal is calculated based on average annual loading and not on the basis of any individual storm event.
[3] https://www.epa.gov/tmdl/opti-tool-epa-region-1s-stormwater-management-optimization-tool
[4] https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards

of the average annual load of Total Phosphorus (TP) related to the total post-construction impervious surface area on the site[5].

a. Average annual pollutant removal requirements are achieved through one of the follow methods:

1. installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016)[6] or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., the MA Stormwater Management Handbook)[7] may be used to calculate BMP performance; or
2. retaining the volume of runoff equivalent to, or greater than, 0.80) inch multiplied by the total post-construction impervious surface area on the new development site; or
3. meeting a combination of retention and treatment that achieves the above standards; or
4. utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the redevelopment site.

All stormwater management best management practices employed within a watershed for a water body impaired for phosphorus shall be shown to be optimized for phosphorus removal by the standards set forth by the MA Stormwater Management Handbook or the approved TMDL, if it exists, whichever is more strict. Infiltration BMPs, bioretention areas, constructed stormwater wetlands, and filter systems are recommended tools for reducing the concentration of nutrients in stormwater discharges.

To support compliance with the Town's MS4 Permit, all new development and redevelopment stormwater management BMPs located on commercial or industrial land must incorporate designs that allow for shutdown and containment to isolate the drainage system in the event of an emergency spill or other unexpected event.

For determination of the extent of development, all undeveloped tributary areas shall be assumed to be fully developed in accordance with the Millbury Zoning Bylaw.

[5] Pollutant removal is calculated based on average annual loading and not on the basis of any individual storm event.
[6] https://www.epa.gov/tmdl/opti-tool-epa-region-1s-stormwater-management-optimization-tool
[7] https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards

4. Storm Drainage Structures

a. Piping

All drain pipes shall be at least twelve inches (12") inside diameter, made of High Density Corrugated Polyethylene (HDPE) Smooth Lined Pipe conforming to Massachusetts ~~**Highway Department (MHD)**~~ **Department of Transportation (MassDOT)** requirements as identified in the Standard Specifications for Highways and Bridges, as last updated. Castings shall be manufactured in the United States or Canada, and conform to ~~**MHD**~~**MassDOT** specifications.
Unless otherwise specified herein, thermoplastic pipe and joint fittings shall conform to the following:

1. High Density Polyethylene (HDPE) Corrugated and Smooth Lined Pipe & Fittings shall be manufactured in accordance with requirements of ASTM F 2306, latest editions.
2. High Density Polyethylene (HDPE) Corrugated and Smooth Lined Pipe shall be manufactured from virgin PE compounds which conform with the requirements of cell class 335400C as defined and described in ASTM D 3350.

Installation shall be in accordance with ASTM D 2321, "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications".

Thermoplastic pipe shall be unloaded and handled with reasonable care. Pipe shall be placed in the bed starting at the downstream end. Trenches must be excavated in such a manner as to insure that the sides will be stable under all working conditions. Trench walls shall be sloped or supported in conformance with all standards of safety. Only as much trench as can be safely maintained shall be opened. All trenches shall be backfilled as soon as practicable, but no later than the end of each working day.

Trench width shall be sufficient to ensure working room to properly and safely place and compact haunching and other backfill materials. Minimum trench width shall not be less than 1.25 times the pipe outside diameter plus twelve inches (12"). (1.25 x O.D. + 12") Note: On multiple pipe barrel runs the clear distance between pipes is as follows:

12"-24" Diameters: Clear span =12"
24" & Greater Diameter: Clear span = ½ x Diameter

Foundation and bedding shall meet the requirements of AASHTO M 145, A-1, A-2-4, A-2-5, or A-3. A stable and uniform bedding shall

be provided for the pipe and any protruding features of its joint and / or fittings. The middle of the bedding equal to one-third (1/3) of the pipe O.D. may be loosely placed, while the remainder shall be compacted to a minimum ninety percent (90%) of maximum density per AASHTO T99. A minimum of four inches (4") of bedding shall be provided prior to placement of the pipe, unless an unyielding material (rock cuts) is present in the trench bottom, then a six inch (6") cushion of bedding is recommended. Bedding material size shall be one and one-half inch (1
½") maximum granular material.

Structural backfill shall also meet the requirements of AASHTO M 145, A-1, A- 2-4, A-2-5, or A-3. Structural backfill shall be placed and compacted in layers eight inch (8") loose lift thickness and brought up evenly and simultaneously on both sides of the pipe to an elevation not less than one foot (1') above the top of the pipe. Structural backfill must be worked into the haunch area and compacted by hand. Structural backfill shall be one and one-half inch (1 ½") maximum granular size and a minimum compaction level of ninety percent (90%) Standard Proctor Density per AASHTO T99 shall be achieved.

The minimum cover is one foot (1.0') for HS-25 Live Loads (12"-48" Diameters) and two feet (2.0') for larger diameter structures (60" Diameters). However, care should be taken when heavy construction equipment loads cross the pipe trench during construction. If the passage of construction equipment over an installed pipeline is necessary during project construction, compacted fill in the form of a ramp shall be constructed to a minimum elevation of three (3.0') feet over the top of the pipe. Any damaged pipe shall be replaced at the contractor's expense.

b. Catch Basins and Manholes

A catch basin to manhole drain configuration shall be used. Generally, catch basins will be required on both sides of roadway on continuous grade at intervals of not more than two hundred fifty feet (250'). Any catch basins and manholes used shall be at least six feet (6') deep and four feet (4') diameter (inside measurements), with a four foot (4') or greater sump below pipe invert and shall be constructed of concrete blocks or precast concrete units. Manhole covers and grates shall be in conformance with Massachusetts **Department of Transportation (MassDOT)** ~~**Highway Department**~~ specifications, designed and placed so as to cause no hazard to bicycles. All materials used shall be of a type and manufacture approved by the Director of Public Works.

6.19 STREET LIGHTING

~~Lighting shall be cast downward to prevent light from shining into residences or the eyes of pedestrians or drivers.~~ At a minimum, lighting fixtures shall be placed at all street intersections and in the area of fire hydrants when applicable. Additional lighting fixtures shall be placed at a maximum of three hundred (300') feet apart, on curves or other hazardous locations as determined by the Planning Board, and in the vicinity of fire hydrants. Lighting fixtures shall have a maximum height of twenty (20) feet.

All lighting fixtures must be energy-efficient (i.e. LED) and compatible with Town-owned ~~National Grid Company owned~~equipment. ~~And be constructed in accordance with National Grid Company specifications, so as to assure equipment eligibility for National Grid Company service under Street Lighting Rate S-3 Option B or the most recently effective equivalent rate. Other types of luminaries and/or poles desired by the Applicant may be used if approved by the Planning Board and National Grid Company (or its successor). (rev. 12/13/10)~~ Lighting shall be arranged to ensure safety, security and utility; prevent, to the extent possible, glare onto abutting properties, public ways, pedestrians, drivers, and the sky. Lighting fixtures shall be International Dark Sky Association approved for the purposes of reducing light pollution by directing light towards the ground and away from abutting properties, public ways, pedestrians, drivers, and the sky.

The Applicant shall purchase and install all streetlights in accordance with the approved street lighting plan. The Applicant shall dedicate the street lights to a homeowner's association, or to the Town of Millbury at the time of conveyance of ownership of the roadways. ~~Acceptance of the streets as public ways.~~ The Applicant shall provide electrical power to street lights, and shall be responsible for their operation and maintenance until such time as ownership of the streets and ways within the subdivision are conveyed to a homeowner's association or ~~accepted by~~the Town.

6.20 FIRE PROTECTION

Where a public water supply will be installed within the subdivision, no hydrant shall be placed more than five hundred feet (500') from a dwelling. Hydrant location shall be subject to the approval of the Fire Chief and a flow test shall be conducted on all hydrants to determine water availability for fire protection before any building permits are issued~~construction is allowed to begin~~. All gates, valves and hydrants shall conform to the requirements of the Fire Chief and the Water Company.

Where no public water supply is available, an adequate water supply shall be provided in accordance with the Fire Chief's and Planning Board's recommendations. If required, fire cisterns shall have a capacity of 30,000 gallons, minimum, and conform to the Millbury Fire Department's Cistern

Requirements, as most recently updated. Fire cisterns shall be operational and inspected by the Fire Chief prior to issuance of any building permits.

SECTION 7: CONSTRUCTION STANDARDS

Unless otherwise specified herein, all streets within a subdivision shall be constructed in conformance with the current edition of the "**Commonwealth of** Massachusetts ~~Highway~~Department of Transportation Standard Specifications for Highways, Bridges and Waterways", as amended.

7.1 PROCEDURE

It is assumed that under normal conditions work will proceed in accordance with the following construction schedule. Major shifts in the schedule must be approved by the Town Planner.

1. Installation of erosion and sediment controls.
~~1.~~2. Clearing and cleaning; including excavating or stripping poor material.
~~2.~~3. Preparation of ~~**sub-base**~~**subgrade**, including necessary cuts and fills.
~~3.~~4. Installation of sewer mains.
~~4.~~5. Installation of water mains and hydrants (if applicable).
~~5.~~6. Installation of drainage facilities.
~~6.~~7. Installation of other underground utilities.
~~7.~~8. Application of material sub-base.
~~8.~~9. Installation of sewer services.
~~9.~~10. Installation of water services.
~~10.~~11. Application of **dense-graded base**~~**gravel**~~ in or above sub-base.
~~11.~~12. Application of **hot mix asphalt intermediate binder course** ~~**bituminous concrete base**~~ for roadway.
~~12.~~13. Installation of street signs.
~~13.~~14. Installation of street lights.
~~14.~~15. Installation of granite curb.
~~15.~~16. Application of **hot mix asphalt wearing surface** ~~**bituminous concrete top**~~ course for roadway.
~~16.~~17. Application of gravel in sidewalks.
~~17.~~18. Installation of concrete sidewalks.
~~18.~~19. Removal or application of material for slopes.
~~19.~~20. Installation of street trees.
~~20.~~21. Application of loam for lawns, grass strips and slopes.
~~21.~~22. Installation of monuments and bounds.
~~22.~~23. Final clean up.
~~23.~~24. Submission of As-Built and Acceptance Plans.

7.2 PREPARATION AND SURFACING OF STREETS AND WAYS

1. The right of way shall be cleared of all stumps, brush, roots, boulders, like material and trees, prior to any other work; except that trees of aesthetic value and over four (4) inch caliper measured four feet (4') above finished ground level may be allowed to remain, provided that they are located at least four (4) feet from the proposed side line of the finished roadway for a collector and subcollector, and at least two (2) feet from the proposed side line of the finished roadway for an access Street, and provided that such trees are approved by the Tree Warden and the Town Planner. No stumps shall be buried on site. The developer shall dispose of stumps in a manner approved by the Planning Board. Said method may include excavate and remove off-site in accordance with applicable regulations, grind in place, or excavate and grind on-site. The developer shall provide certified and notarized proof that the proposed method of stump removal and disposal was executed.

2. Grade stakes shall be set and maintained at fifty foot (50') intervals on each side of the right-of- way.

3. All loam and other yielding material not suitable for foundation material shall be stripped from the roadway area of each street or way to depth of four (4) feet below the finished sub-grade, or to a greater depth as may be required by the Town Planner or the Planning Board's agent and replaced with an approved material. No loam, peat, silt, organic matter, or other soft material shall be used below sub-grade, and the sub-grade shall be thoroughly compacted before applying the gravel surface. Ledge and large boulders occurring anywhere in the full cross- section of the roadway shall be cleared to a minimum depth of eighteen inches (l8") below the finish surface.

4. The roadway shall be provided with a gravel base consisting of at least fifteen (l5") inches compacted thickness of binding gravel matter that is clean and free of organic matter. The gravel shall be spread in two layers, the Gravel Base and the Processed Gravel Subbase, as defined in the Massachusetts ~~**Highway**~~ Department **of Transportation** Standard Specifications for Highways and Bridges, as may be amended. Each layer shall be thoroughly watered, and sorted true to line and grade to conform with the typical sheet cross section and the street profiles.

    a. ~~**Gravel**~~ **Dense Graded** Base. The **processed** dense graded ~~**gravel**~~ base shall be at least four ~~**five**~~ inches (~~4~~5") compacted thickness and shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, and deleterious materials. The ~~**maximum size of stone in gravel shall conform to that specified under M1.03.0 Type b (three inches largest dimension)**~~ **dense graded material shall meet M2.01.7-1** in the Standard Specifications referenced above.

    b. ~~**Processed**~~ Gravel for Sub-base. The ~~**processed**~~ gravel sub-base shall be at least ten inches (10") compacted thickness and shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, and deleterious materials. **The gravel shall conform to M1.03.0 Type b in the Standard Specifications.**

    ~~**c. The approved source of bank-run gravel material shall be processed by mechanical means. The equipment for producing crushed gravel shall be of**~~

~~adequate size and with sufficient adjustments to produce the desired materials. The processed material shall be stockpiled in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles. The maximum size of stone in gravel shall conform to that specified under M1.03.1 six inches ((6") largest dimension) in the Standard Specifications referenced above.~~

d. Before the **processed** gravel is spread, the **sub-grade** roadbed shall be shaped to a true surface conforming to the proposed cross-section of the road. Rolling shall be with an approved two-wheel vibratory roller or equal. All layers shall be compacted to not less than ninety-five percent (95%) of the maximum dry density of the material as determined by Standard AASHTO. Test Designation T99 compaction test Method Ch. at optimum moisture content. Any depressions that occur, either during or after rolling, must be filled with additional gravel and re-rolled until the surface is true and even. When required by the Planning Board or their agent, samples of the **dense graded base and** gravel **sub-base** to be used shall be tested for gradation by a sieve analysis and the compacted **~~gravel~~ materials** shall be tested for compaction. All tests are at the expense of the developer **and shall be conducted at five hundred (500) foot intervals**. The Planning Board may require streets to be re-excavated if the gravel base is placed prior to plan approval, or prior to an inspection and approval of the ~~base~~sub-grade.

5. The pavement ~~wearing surface~~ of roadways and driveways within the right-of-way shall be a two course **Hot Mix Asphalt (HMA) ~~type I Bituminous Concrete Pavement~~**, applied with a **three inch (3") intermediate binder ~~two and one-half inch (2 1/2") base~~** course, after compaction, and a one and one-half inch (1 1/2") **~~finish~~ wearing surface** course, after compaction, in accordance with the **~~Mass Highway Department (MHD)~~ Massachusetts Department of Transportation (MassDOT)** Standard Specifications for Highways and Bridges Section 460.

   The **~~base~~ intermediate binder** course shall be applied after the treated roadway has been sufficiently compacted, as approved by the Planning Board's agent. **~~The finish course shall be applied only after the base course has weathered at least one winter.~~** No lot may be sold and/or any Certificate of Occupancy issued until the **~~base~~ intermediate binder** course is in place.

6. Catch basin rims shall be set at base course level upon application of the wearing surface. During the period of time following installation of **intermediate** binder pavement and prior to installation of curb, stormwater flow shall be directed to catch basins using **filter tubes~~haybales~~**. The catch basin rims shall be raised to finish grade level just prior to final **wearing surface ~~coat~~** paving. (rev. 1/22/07) (rev. 12/13/10)

~~6.~~7. The placement of hot mix asphalt ~~bituminous concrete~~ pavement shall terminate November 15 and shall not be resumed prior to April 1 except as determined and directed, in writing, by the Board or its designee depending upon the necessity and emergency of attendant conditions, weather conditions and location of the project.

7.3 SIDEWALKS

1. Sidewalks shall be designed pursuant to Section 6.13 of these regulations.

2. Preparation of the base shall be accomplished by removing material to a depth of ~~ten~~**twelve** inches ~~**(10")**~~**(12")** below finished grade**, fine graded and compacted**. Any organic or yielding material shall be removed and replaced with eight inches (8") compacted thickness of binding gravel of the same specifications as that to be used for the gravel base on the roadway.

3. Forms shall be set to grade, and one four inch (4") layer of Portland Cement Concrete Pavement (3000 p.s.i.) shall be placed. The surface shall be broom-finished. The sidewalk shall have scored contraction joints every four feet (4').

4. If the Planning Board approves the installation of bituminous concrete sidewalks, two (2) courses shall be laid to a depth after rolling of four inches (4"). The bottom course shall be a binder course, two and a half inches (2 ½") after rolling and the finish course shall be one and a half inches (1 ½") after rolling. Compaction shall be done with a self-propelled tandem roller weighing not less than one and a half (1 ½) tons and not more than five (5) tons. The courses shall be constructed in accordance with ~~**MassHighway**~~**MassDOT** Specs, Section ~~**472**~~ 700**,** or latest version.

5. The sidewalk shall have a transverse slope of ~~**one forth of an inch (1/4") per foot**~~ **1.5%,** sloping towards the street.

6. Driveway aprons shall be constructed to the same specifications as sidewalks and meet the proposed sidewalk grades **including cross slope**.

Commented [MF2]: Driveways and sidewalks have been moved to Section 700 Incidental Construction.

Commented [MF3]: Consistent with MassDOT practice of allowing some construction tolerances to keep constructed slope below 2%.

7.8 EROSION AND SEDIMENT CONTROL

The developer shall control erosion and sedimentation during construction according to the objectives, principles and design considerations set forth in ~~Residential Erosion and Sediment Control, published jointly by the Urban Land Institute, the American Society of Civil Engineers and the National Association of Home Builders, 1978 and according to the guidelines for Soil and Water Conservation in Urbanized Areas of Massachusetts published by the USDA, Soil Conservation Service, Amherst, 1975.~~the latest edition of the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials, published and maintained by MassDEP **and Stormwater Management Standards and Handbook as per MassDEP**. These publications or any succeeding editions of these publications are hereby incorporated as part of these Regulations.

In addition to the requirements and objectives stated therein the following must also be achieved:

1. Erosion control measures shall be installed prior to any construction activity and maintained until all disturbed land surfaces are stabilized.
2. A construction entrance (anti-tracking pad) shall be used to minimize off-site movement

of soil by vehicles. All construction access points shall be maintained to prevent tracking or flow of sediment onto roadways.

3. Street sweeping shall be conducted weekly (at a minimum) during construction until surfaces are stabilized.
4. An absolute minimum of existing vegetative cover shall be disturbed during construction in conformance with the Erosion and Sediment Control Plan. (rev. 12/13/10)
5. Only the smallest practical area of land shall be exposed at any one time during development. Disturbed areas shall be stabilized within fourteen (14) days of the last disturbance unless construction activities will resume on that portion of the site within two (2) days. Areas disturbed for more than fourteen (14) days shall have temporary retention areas built for the run off to filter through. These retention areas shall consist of coconut logs at the beginning and end with a minimum of two polymer flock logs in the retention area. The retention area must be able to retain up to three inches (3") of storm water.
6. When land is exposed during development, the exposure shall not exceed ninety (90) days unless an alternative schedule was approved by the Planning Board during the Definitive Plan approval process. (rev. 12/13/10)
7. Where necessary, as determined by the Town Planner, temporary vegetation and/or mulching shall be used to protect areas exposed during development.
8. All disturbed areas shall be properly and neatly graded and shaped as soon as possible. Final grading shall include removal of all large rocks, stumps, debris, and all other deleterious materials from the finished surface.
9. At the toe of all cut and fill slopes in excess of ten feet (l0') in height, baled hay or straw erosion checks shall be installed.
10. All disturbed areas shall be protected from potentially erosive runoff from up-slope areas by means of diversions, benches, or other acceptable means.
11. Hay bales and sil~~t~~**k** screen fence shall be placed around all catch basins **and silt sacks installed** until areas which they service are stabilized.
12. All stock piles shall have silkscreen fences around the perimeter.
13. All roof drains shall discharge to an undisturbed area. If the area around the structure's foundation is disturbed, roof drain discharge shall be piped to a stabilized area.
14. Cut and fills shall not endanger adjoining property.
15. Fill shall be placed and compacted so as to minimize sliding or erosion of the soil.
16. Grading shall not be done in such a way so as to divert water onto or pond water on the property of another landowner without the written consent of that landowner.
17. Fills shall not encroach on natural watercourses or constructed channels.
18. Permanent stabilization of disturbed areas shall be accomplished by building, paving, seeding, mulching, and/or landscaping. Slopes steeper than 3:1 shall be stabilized by the use of erosion control blankets over a surface prepared by hydroseeding. If any disturbed area is to be seeded, four inches (4") of loam shall be applied on top of the subsoil prior to seeding; six inches (6") of loam shall be applied on top of rock/gravel prior to seeding. (rev. 1/22/07)
19. During construction, necessary measures for dust control shall be exercised including watering and/or dust palliative.
20. Erosion and sedimentation control measures shall be maintained until final stabilization of disturbed areas has been accomplished and a certificate of compliance has been issued by the Millbury Conservation Commission.