# RULES AND REGULATIONS GOVERNING THE SUBDIVISION OF LAND

## GRAFTON, MASSACHUSETTS

**Adopted under the Subdivision Control Law**
**Section 81-K to 81-GG inclusive, Chapter 41, ~~M.G.L.~~MGL**

**Revised and adopted February 28, 1998**
**With revisions adopted through April 27, 2009**
**as detailed in Schedule F**

**~~September 13, 1999~~**
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**~~November 22, 1999~~**
~~(§4.7.8)~~

**~~December 12, 2005~~**
~~(§3.1.1, 4.12.1.6, 4.12.1.7)~~

**~~April 27, 2009~~**
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# SECTION 1 - EFFECT, PURPOSE AND AUTHORITY

## 1.1 EFFECTIVE DATE

The following Rules and Regulation shall from and after February 28, 1998, thereof govern the subdivision of land within the Town of Grafton and no person shall subdivide land in the Town of Grafton after such effective date without complying with these Regulations and first obtaining from the Planning Board either approval of the plan for the proposed subdivision or the endorsement "Approval Under the Subdivision Control Law Not Required" upon such plan.

## 1.2 PURPOSE

These Subdivision Regulations are adopted under the provisions of Chapter 41 of the Massachusetts General Law for the purpose of protecting the safety, convenience and welfare of the inhabitants of the Town of Grafton by "...regulating the laying out and construction of ways in subdivisions providing access to the several lots therein, but which have not become public ways, and ensuring sanitary conditions in subdivisions and in proper cases parks and open areas.

"The powers of the Planning Board and of the Board of Appeals under the Subdivision Control Law shall be exercised with due regard for provisions of adequate access to all of the lots in a subdivision by ways that will be safe and convenient for travel; for lessening congestion in such ways and in the adjacent public ways; for reducing danger of life and limb in the operation of motor vehicles; for securing safety in the case of fire, flood, panic and other emergencies; for insuring compliance with the zoning bylaws; for securing adequate provision for water, sewerage, drainage, underground utility services, fire, police and other similar municipal equipment, and street lighting and other requirements where necessary in a subdivision and for coordinating ways in a subdivision with each other and with the public ways in the Town and with the ways in neighboring subdivisions".

## 1.3 AUTHORITY

Under the authority vested in the Planning Board of the Town of Grafton by Section 81-Q of Chapter 41 of the General Laws, said Board has adopted these Rules and Regulations Governing the Subdivision of Land in the Town of Grafton, on February 28, 1998.

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# SECTION 2 - GENERAL

## 2.1 DEFINITIONS

2.1.1 ..... For the purposes of these Rules and Regulations the following words or terms are defined as follows. Where a term is not herein defined, applicable definitions from the Grafton Zoning Bylaw or the General Laws of Massachusetts shall apply. In all other cases, the Planning Board shall determine the appropriate definitions and interpretations:

2.1.1.1 **Applicant**: A person (as hereinafter defined) who applies for the approval of a plan for a subdivision or a person who applies under Section 3. "Applicant" shall include an owner, or his agent or representative, or his assigns.

2.1.1.2 **Bikeway**: A way designed to be used principally or exclusively by a bicycle or similar unmotorized vehicle.

2.1.1.3 **Board**: The Planning Board of the Town of Grafton established pursuant to Massachusetts General Laws.

2.1.1.4 **Bridle Path**: A way designed to be used principally or exclusively for equestrian purposes.

2.1.1.5 **Common Driveway**: See Driveway, Common.

2.1.1.6 **Cul-de-sac:** A specific type of dead-end street or part of a dead-end street (see Section 2.1.1.28) closed at one end, intersecting another street at the other end, and having no other intersections.

2.1.1.~~6~~7 **Develop**: To construct a street, install utilities, erect a house or other structure, or in any way to prepare the lot for such improvements.

2.1.1.~~7~~8 **Developer**: A person, as hereinafter defined, who develops a subdivision under a plan of a subdivision approved pursuant to Section 3 of these Rules and Regulations.

2.1.1.~~8~~9 **Driveway, Common**: A driveway which provides access to more than one lot, each of which has at least the minimum frontage on a Town street as required by the Zoning Bylaw. A common driveway does not qualify as a street for determining frontage under MGL Chapters 40A and 41.

2.1.1.~~9~~10 **Easement**: A right acquired by public authority or other person to use or control property for a utility or other similar purpose.

2.1.1.1~~0~~0 **General Laws**: (Abbreviated MGL) See Massachusetts General Laws.

2.1.1.12~~1~~ **Intensity Area**: A neighborhood in which the majority of the structures are single family dwellings on lots containing less than forty thousand (40,000) square feet, town houses, multi-family dwellings, or an area with structures designed for business, industrial use, or any other non-residential use, or any combination thereof.

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2.1.1.131 **Lot**: An area of land in one (1) ownership with definite boundaries used, or available for use, as the site of one (1) or more buildings (MGL Ch. 41 Section § 81-L of Chapter 41 MGL).

2.1.1.142 **Massachusetts General Law** (Abbreviated MGL): The General Laws of Massachusetts and as the same may be amended. In case of re-arrangement of the General Laws, any citation of a particular section of the General Laws shall be applicable to the corresponding section(s) in the new codification.

2.1.1.154 **Monument**: A permanent marker to indicate a boundary point of other point for measurement purposes.

2.1.1.165 **Municipal Services**: Sewers, water drains, water pipes, gas pipes, cable TV, electrical lines, telephone lines, fire alarm systems, and similar systems and their respective appurtenances.

2.1.1.176 **Owner**: As applies to real estate, the person holding the ultimate fee simple title to a parcel, tract or lot of land, or control of such, as shown by the record in the Land Registration Office, Worcester County Registry of Deeds or Registry of Probate.

2.1.1.187 **Parcel**: An area of land in one ownership with definite boundaries not meeting zoning requirements nor available for use for the site of principal use buildings.

2.1.1.198 **Person**: An individual, two or more individuals, or a group or association of individuals, a partnership trust or corporation, having common or undivided interests in a tract of land.

2.1.1.2019 **Plan, Definitive**: The plan of a subdivision as duly submitted to the Board for approval, to be recorded in the Registry of Deeds and such plan when approved and recorded; all as distinguished from a Preliminary or other Plan.

2.1.1.210 **Plan, Preliminary**: A plan of a proposed subdivision or a resubdivision of land prepared in accord with Section 3 to facilitate proper preparation of a Definitive Plan (ref. MGL Ch. 41 § § 81L).

2.1.1.221 **Planning Board Agent**: Town employee or consultant authorized by the Planning Board to review subdivisions and/or administer the Regulations.

2.1.1.232 **Recorded**: Recorded in the Registry of Deeds of Worcester County, except that, as affecting registered land, it shall mean filed with the Recorder of the Land Court (MGL Ch. 41 Section § 81-L of Chapter 41 MGL).

2.1.1.243 **Registry of Deeds**: The Registry of Deeds of Worcester County, and when appropriate, shall include the Land Court (MGL Ch. 41 Section § 81-L of Chapter 41, MGL).

2.1.1.254 **Roadway**: That portion of a way which is designed and constructed for vehicular travel.

2.1.1.265 **Sidewalk**: A way within the right-of-way of a street normally parallel to the street, designed for use by pedestrians.

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2.1.1.276 **Standard Specifications**: ~~"~~"~~The~~ Commonwealth of Massachusetts, ~~Highway~~ Department of Transportation, Standard Specifications for Highways and Bridges~~"~~", ~~1995~~ 2020 Edition, as amended, References herein to the Standard Specifications have the format "MHD Section XXX" when referring to Division II (Construction Details) or "MHD Section MX.XX.X" when referring to Division III (Materials Specifications).

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2.1.1.287 **Street, Dead-End**: A cul-de-sac or other street, extension of a street, or system of streets connected to another street at one (1) point only. Any proposed street which intersects with a dead-end street shall be deemed to be an extension of the dead-end street.

2.1.1.298 **Street, Major**: A street which, in the opinion of the Board, is or will be used as a roadway within the Town of Grafton and which will connect towns, or which will carry more than fifteen hundred (1500) vehicles per day; or a street intersecting one (1) or more streets which, in the opinion of the Board, is or will be used to carry a substantial volume of traffic from such streets to another major street or community facility; normally including a principal entrance street to a shopping center, industrial park, cluster development, planned unit development, or a large subdivision, or group of subdivisions, and any principal circulation street within such developments, or a street which will connect subdivisions.

2.1.1.3029 **Street, Minor**: A street which, in the opinion of the Board, is being used or will be used primarily to provide access to abutting lots and which will not be used for through traffic.

Street, Minor - A: A residential street expected to carry less than 1500 vehicles per day.
Street, Minor - B: A residential street expected to carry less than 500 vehicles per day.
Street, Minor - C: A residential street expected to carry less than 250 vehicles per day.

2.1.1.310 **Subdivision**: The division of a tract of land into two (2) or more lots and shall include re-subdivision, and when appropriate to the context, shall relate to the process of subdivision or the land or territory subdivided; provided, however, that the division of a tract of land into (2) or more lots shall not be deemed to constitute a subdivision within the meaning of the Subdivision Control Law, if at the time when it is made, every lot within the tract divided has frontage on (a) a public way, or way which the Town Clerk of the Town of Grafton certifies is maintained and used as a public way, or (b) a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, or (c) a way in existence when the Subdivision Control Law became effective in the Town having, in the opinion of the Planning Board, sufficient width, suitable grades and adequate construction to provide for the needs of vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon. Such frontage shall be of at least such distance as is then required by the Zoning By-Law.

Conveyances or other instruments adding to, taking away from, or changing the size and shape of, lots in such a manner as not to leave any lot so affected without the frontage above set forth, or the division of a tract of land on which two (2) or more buildings were standing when the Subdivision Control Law went into effect in the Town into separate lots on each of which (1) of such buildings remains standing, shall not constitute a subdivision (MGL Ch. 41 ~~Section~~ § 81-L ~~of Chapter 41, MGL as amended~~).

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2.1.1.321 **Subdivision Control**: The power of regulating the subdivision of land granted by the Subdivision Control Law, ~~Chapter~~MGL Ch. 41~~,~~ ~~Section~~ §§ 81-K through 81GG, ~~of MGL~~ inclusive, as hereinafter amended.

2.1.1.332 **Superintendent of Streets**: The person designated by the ~~Selectmen of the Town of Grafton~~Select Board with responsibility for streets and roadways in Town.

2.1.1.343 **Town**: Town of Grafton, Massachusetts.

2.1.1.354 **Trail**: A path or track made by or reserved for the passage of persons and/or animals, usually through undeveloped land.

2.1.1.365 **Utilities, Private**: This term shall include telephone, cable television, electric light and power, and gas lines, wind and solar power systems, water and sewage systems not owned or operated by the Town, whether installed on, above or beneath the surface of the ground, located entirely within the lot being serviced and neither within nor appurtenant to utilities within a public right of way.

2.1.1.376 **Utilities, Public:** This term shall include electric light and power distribution systems, including streetlights, sewer, surface/storm water drainage, drinking water, gas, fire alarms and other utilities and their appurtenances, which are owned and operated by the Town or which may become the property or responsibility of the Town, or which are located within or appurtenant to public rights of way.

2.1.1.387 **Walkway**: A passage designed for use by pedestrians, not necessarily parallel to a street.

2.1.1.398 **Way**: A way is synonymous with the terms road, street, highway, and avenue and shall denote any such line or route for passage whether public or private, or the width and length of the strip of land laid out, designated, acquired and/or dedicated for the use of such way. Such width includes the spaces for vehicular travel, sidewalks, edgestone and planting spaces where required.

## 2.2 APPROVED PLAN REQUIRED

No person shall make a subdivision within the meaning of the Subdivision Control Law of any land within the Town, or proceed with the improvement for sale of lots in a subdivision, or the construction of ways, or preparation therefore or the installation of utilities and municipal services therein, unless and until a Definitive Plan of such subdivision has been submitted to and approved by the Board as hereinafter provided, or "“Approval under the Subdivision Control Law Not Required”" has been endorsed upon ~~said plan~~a plan showing the subdivision of land.

## 2.3 SOURCE OF INFORMATION REQUIRED

In those cases in which the land shown on the plan is abutted by land of an owner, who is not the owner of the land as shown, the Board shall require a statement from the person who prepared the plan as to the source or sources of the information about the location of boundaries. A separate form for such statement will be furnished by the Board.

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## 2.4 MORE THAN ONE BUILDING FOR DWELLING PURPOSES ON A LOT

No more than one (1) building designed or available for use for dwelling purposes shall be erected or placed, or converted to use as such, on any lot in a subdivision, without the consent of the Board. Such consent may be conditional upon the providing of adequate ways furnishing access to each site for such buildings in the same manner as otherwise required for lots within a subdivision.

## 2.5 FEES

2.5.1 ..... All application fees, and all expenses such as advertising; publication of notices; all engineering including but not limited to review of preliminary and/or definitive plans, inspection and associated office work during construction which is part of the subdivision or appurtenant thereto; recording and filing of documents; and all other expenses in connection with review and approval of subdivisions or their construction including without limitation sampling and testing all as required by the Planning Board or its agents, shall be borne solely by the applicant. All fees shall be paid by check only, payable to the Town of Grafton. No review of any application will take place until all appropriate application/filing and review fees have been submitted as required. All fees must be satisfied in order for the Board to take affirmative action on any question before it.

2.5.1.1 **Application/Filing Fee**

A minimum fee is due with the filing of any plan.

a) Approval Not Required Plans: $100 plus $50 for each new building lot created

b) Preliminary Plans: $500 plus $75 per lot, with a minimum fee of $1,000.

c) Definitive Plans

If a Preliminary Plan is filed with the proper filing fee as required above, the fee shall be one thousand dollars ($1,000.00) plus one hundred and fifty dollars ($150.00) per lot.

If no Preliminary Plan is filed, the fee shall be three thousand dollars ($3,000.00) plus two hundred and fifty dollars ($250.00) per lot.

2.5.1.2 **Review Fees**

**a) Waivers**

For each waiver requested at the time of application, or at any time during review of the application, a fee of $20 per lot shown on the entire plan shall apply, up to a maximum of $500.00 per waiver requested. Such fee shall be paid at the time such waiver is requested.

On requests for waivers made during a Preliminary Plan review where the Board declines to act, the waiver request(s) may be resubmitted during the Definitive Plan

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review stage, if such plan is filed prior to the expiration of the Preliminary Plan approval, at no additional cost.

This waiver request fee will be used to support the processing and review of each request. Staff and department reviews will be carefully considered by the Board in making its determination whether to grant or deny any request.

**b) Engineering Review**

At the time of application, a deposit for engineering review fees shall be paid by the applicant to the Town in such amount as is required by the Planning Board. Generally such initial deposit will be approximately two thousand dollars (~~-~~$2,000)~~-~~ but may be different depending on the size and/or nature of the proposal. Said deposit shall be replenished by the applicant as required by the Planning Board before the amount of expenses equals in value the amount of the deposit. Any portion of the deposit which is not used will be returned to the applicant.

2.5.1.3 **Plan Revisions**

Any increase in the number of proposed lots, or a significant change to the proposed roadway or infrastructure design, as determined by the Board, shall constitute a Plan Revision. The fee shall be one hundred dollars ($100.00) plus fifty dollars ($50.00) per lot for review of plan revisions.

2.5.1.4 **Inspection Fee Deposit**

A minimum deposit in an amount equal to two dollars (~~-~~$2.00) per linear foot of proposed roadway as shown on the plan, or one thousand dollars~~,~~ ($1,000.00), whichever is greater, shall be submitted to the Planning Board prior to any construction activity on the site. Such deposit shall be used by the Board to cover expenses incurred by the Town relating to the inspection of construction work, and other related activities within an approved subdivision. If during the course of construction of such subdivision the Board finds that the deposit as prescribed above will not be adequate to cover expenses, the Board shall reserve the right to require such additional amount as the Board may deem necessary to cover such expenses. The Board shall notify the ~~developer~~ applicant or other authorized representative in writing that such additional amount is required~~. S~~, said notice to be sent by certified mail. Any unexpended funds shall be returned to the developer upon Planning Board determination that the project is complete.

2.5.1.5 **Lot Releases**

A fee of one hundred dollars ($100.00) per lot requested for release from Planning Board restrictions regarding building and/or sale, up to a maximum of five hundred dollars ($ 500.00) per request.

**2.5.2 ..... Failure to Pay**

2.5.2.1 **Application Fees**

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In the event the application fees submitted are deemed to be insufficient as described by these Regulations, the application will be deemed incomplete and will not be scheduled for review by the Board.

2.5.2.2 **Review Fees**

In the event any review fees are deemed to be insufficient, either with regard to waivers requested or engineering reviews, the applicant shall satisfy such within seven (7) days. In the event the applicant fails to do so, the Board may cease all review and shall deny the application as presented.

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2.5.2.3 **Inspection Fees**

In the event that inspection fees are not paid by the ~~developer~~ applicant as described in the Regulations, the Board shall cease all progress inspections at the site. The Board will continue, however, to monitor the project for safety and environmental protection issues, and the applicant shall reimburse the Board for such costs incurred prior to any construction/progress inspections taking place. In the event that the developer continues construction activity without inspections as required by the Board, the developer shall provide evidence, to the satisfaction of the Board, of full compliance with these Regulations. Lacking such, the Board shall take every administrative and legal means to ensure that the site remains within the responsibility of the developer and that the Town does not accept the project nor any aspect of it.

## 2.6 COMPLIANCE WITH THESE RULES AND REGULATIONS AND WAIVERS

All plans and all procedures relating to subdivisions and plans not requiring approval shall conform in all respects to the provisions of these Rules and Regulations unless otherwise authorized by the Planning Board in writing when, in the judgment of the Board, such action is in the public interest and not inconsistent with the Subdivision Control Law.

## 2.7 COMPLIANCE WITH ZONING BY-LAW

The Planning Board shall not approve or modify and approve any plan of a subdivision of land unless all lots shown on said plan comply with the Zoning By-Law of the Town of Grafton or unless a variance from the terms thereof has been granted by the Board of Appeals, recorded in the ~~Worcester District~~ Registry of Deeds, and is noted on the plan.

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# SECTION 3 - PROCEDURE FOR THE SUBMISSION AND APPROVAL OF PLANS

## 3.1 PLAN BELIEVED NOT TO REQUIRE APPROVAL (§81P, ANR)

### 3.1.1 ..... Submission of Plan

Any person who wishes to cause to be recorded in the Registry of Deeds or to be filed with the Land Court a Plan of Land, and who believes that his plan does not require approval under the Subdivision Control Law, may submit his plan and copies thereof, with the number and size of copies as specified on a form provided by the Planning Board, ~~and four (4) contact prints thereof~~ and two (2) copies of a properly executed application form accompanied by the required fee and evidence to show that the plan does not require approval. Such submittal shall be filed with the Planning Board or its designated agent by hand delivery, registered or certified mail. After such submission, said person shall also file, by delivery or registered mail, a notice with the Town Clerk stating the date of submission to the Board for such determination accompanied by a copy of said application and describing the land to which the plan relates sufficiently for identification. If the notice is given by delivery the Town Clerk shall, if requested, give a written receipt therefore and shall notify the Planning Board in writing on the date of such receipt.

Applicants must submit in electronic form all documents required under Section 3.1, and any supplemental reports, memoranda, presentations, or other communications submitted by the applicant or its representatives unless the applicant demonstrates to the satisfaction of the Town Planner that electronic submission is not feasible. Documents created using Computer Aided Design and Drafting software shall comply with the Mass GIS ~~"~~"Standard for Digital Plan Submittal to Municipalities,~~"~~" or successor standard. Electronic submission must be contemporaneous with submissions by other means and be in formats acceptable to the Board.

### 3.1.2 ..... Plan Sheets

Said plan shall be accurately and legibly drawn in accordance with the rules and regulations of the Registry of Deeds, as amended, pertaining to plan size, material, lettering and related requirements, and shall contain all required seals and signatures required by the Registry of Deeds for the recording of said plan. The plan shall be a minimum size of nine and one-half inches by fourteen inches (9 1/2" x 14") and shall not exceed a maximum size of twenty-four by thirty-six (24" x 36"). The scale shall be forty feet (40') to the inch. The plan shall be prepared by a professional engineer or land surveyor registered in Massachusetts.

### 3.1.3 ..... Contents. The plan shall contain the following:

3.1.3.1 Identification of the plan by name of the owner of record and location of the land in question including Deed, Book and Page reference, the Assessor's~~'~~ tax map number and lot number, area, frontage in feet, the scale, north point, and date.

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3.1.3.2 The statement, "“Approval Under Subdivision Control Law Not Required"” and sufficient space for the date and the signatures of all the members of the Board.

3.1.3.3 A locus map at one thousand feet (1,000') to the inch showing the boundaries of the abutting properties.

3.1.3.4 Zoning classification and location of any zoning district boundaries that lie within the locus of the plan, including any overlay zoning districts, which include but are not limited to, the Flood Plain, Historic Districts, Water Supply Protection Overlay District, Campus Development Overlay District, etc.

3.1.3.5 Site information showing all flood plains and zones, waterways and wetland/resource areas pursuant to the Massachusetts Wetlands Protection Act and the Grafton Wetlands Protection Bylaw (on site and with within 100 feet of the property), locations of wells (on site and within 100 feet of the property), and front/side/rear building setback lines. In the event this information is not accessible by virtue of being denied access to such, the plan shall reflect what information was accessible, and shall describe any limitation encountered.

3.1.3.6 In the case of the creation of a new lot, all the remaining contiguous land area and frontage of the land in the ownership of the applicant shall be shown.

3.1.3.7 Notice of any and all decisions including but not limited to variances, special permits, etc. regarding the land or any buildings thereon, including the deed book and page numbers where such documents are recorded in the Worcester District Registry of Deeds.

3.1.3.8 Names of abutters from the most recent local tax list. If the applicant has knowledge of any changes subsequent to the latest available Assessor's's records, this information shall be indicated on the plan.

3.1.3.9 Names and status (e.g., private or public, how developed and maintained, etc.) of streets and ways shown on the plan, and covenants regarding common driveways, if any.

3.1.3.10 The names and addresses of the record owner of the land and Applicant and the name, seal, and address of the engineer or surveyor who made the plan. This information shall appear in the lower right-hand corner of the plan.

3.1.3.11 Bearings and distances of all lines of the lot or lots shown on the plan and the distance bearing to the nearest permanent monument.

3.1.3.12 Location and description of all existing buildings and structures including all septic systems, surface and sub-surface drainage.

3.1.3.13 Location and description of all bounds, fences, walls, easements and/or encumbrances, including location of existing trails and other pertinent information.

3.1.3.14 The following statement: “Compliance with zoning or other regulations is neither expressed nor implied”.

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3.1.3.15 The following statement, if the plan shows any parcel or parcels which are not intended as a building lot: "Not a building lot; no further building may occur without further approval by the Planning Board pursuant to the Subdivision Control Law".

### 3.1.4 ..... Additional Requirements

Justification/description of basis for claim to ANR endorsement, clearly noted both on the application form and on the plan (~~ie~~i.e.: required frontage on a Town accepted road, separation of lots with buildings which preexist subdivision control (including evidence) ~~etc~~etc.).

### 3.1.5 ..... Enforcement of Approval Not Required Plans

3.1.5.1 In determining whether a way in existence when the Subdivision Control Law became effective in the Town is adequate to qualify a plan as not constituting a subdivision, the Board shall take into consideration the following factors, among others:

a) whether the right-of-way is at least thirty~~-~~-three (33) feet wide and of reasonable horizontal alignment;

b) whether the existing horizontal and vertical alignment of the roadway provides safe visibility;

c) whether the roadway is at least eighteen (18) feet wide, with at least eight (8) inches of gravel, and with adequate provisions for drainage;

d) whether the road could ever service more than six (6) dwelling units. If it is determined that the road could ever serve more than 6 dwelling units then, in order to be entitled to ANR endorsement, it must be suitably paved with bituminous concrete (also known as hot mix asphalt) at no cost to the Town.

3.1.5.2 When an applicant requests the Town Clerk to certify a way as maintained and used as a public way, the Town Clerk shall submit to the Board written evidence of public maintenance under vote of the Town.

### 3.1.6 ..... Planning Board Action

3.1.6.1 **Endorsement of Plan Not Requiring Approval**

a) If the Board determines that the plan does not require approval under the Subdivision Control Law, it shall, without a public hearing, and within twenty-one (21) days of a complete submission, endorse the plan with the words ~~"~~"Approval Under the Subdivision Control Law Not Required~~",~~", or words of similar import. Such endorsement shall not be withheld unless such plan shows a subdivision.

b) The Board may add to such plan a statement of the reason approval is not required or such other information as it deems appropriate, including, but not limited to, notation as to whether the new boundaries meet requirements for a building lot.

c) In the event the Planning Board denies the request for ANR endorsement, the Board shall notify the Town Clerk in writing of its action and shall return the original plan to the Applicant.

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d) Following the endorsement by the Planning Board, the Board shall return the original to the Applicant.

3.1.6.2 **Determination that Plan Requires Approval**

a) If the Board determines that the plan does require approval under the Subdivision Control Law, it shall, within twenty-one (21) days of the submission of the plan, inform both the Applicant and the Town Clerk in writing of the determination and return the plan to the Applicant.

b) If the Board determines that the plan shows a subdivision, the Applicant may submit a plan for approval as provided by law and by these Rules and Regulations, or may appeal such determination in the manner provided by the provisions of the Subdivision Control Law.

3.1.6.3 **Failure of the Board to Act**

If the Board fails to act upon a plan submitted under this Section or fails to notify the Town Clerk and the persons submitting the plan of its action within twenty-one (21) days after its submission, it shall be deemed to have determined that approval under the Subdivision Control Law is not required, and it shall forthwith make such endorsement on said plan, and on its failure to do so forthwith, the Town Clerk shall issue a certificate to the same effect.

## 3.2 PRELIMINARY PLAN

### 3.2.1 ..... Submission of a Preliminary Plan

Any person who wishes to ~~create~~ propose a residential subdivision may submit a Preliminary Plan~~, and a~~. Any person who wishes to ~~submit~~ propose a non-residential subdivision must~~,~~ submit a Preliminary Plan. The submission of such a Preliminary Plan will enable ~~the~~ ~~subdivider~~applicant, the Planning Board, the ~~Board of Selectmen~~Select Board, the Town Clerk, the Town Engineer, the Superintendent of Streets, the Inspector of Buildings, the Board of Health, the Conservation Commission, the Recreation Commission, the Police and the Fire Departments, the Sewer Commissioners, other Town Agencies, the appropriate water utility, and the owners of property abutting the subdivision to discuss and clarify the details of such subdivision before a Definitive Plan is prepared. Therefore, it is strongly recommended that a Preliminary Plan be filed ~~in each case~~even if not required. It is also recommended that a pre-submission meeting be held between the Applicant and the Planning Board to discuss the general characteristics of the proposed subdivision and the requirements of these Rules and Regulations.

3.2.1.1 The Preliminary Plan ~~and fifteen (15) copies thereof~~, together with the minimum filing and review fees, ~~and two (2) copies of~~ a properly executed application, ~~and one (1) set of~~ reproducible reductions of the Preliminary Plan, said reductions not to exceed eleven by seventeen inches (11" x 17") in outside dimensions, and copies thereof, with the number and size of copies as specified on a form provided by the Planning Board, shall be filed with the Planning Board.

3.2.1.2 After such submission, the Applicant shall file by delivery or registered mail a notice with the Town Clerk stating the date of submission of a Preliminary Plan to the Board for such approval accompanied by a copy of said application and describing the land to which the

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plan relates sufficiently for identification. If the notice is given by delivery, The Town Clerk shall, if requested, give a written receipt therefore.

3.2.1.3 Applicants must submit in electronic form all documents required under Section 3.2, and any supplemental reports, memoranda, presentations, or other communications submitted by the applicant or its representatives unless the applicant demonstrates to the satisfaction of the Town Planner that electronic submission is not feasible. Documents created using Computer Aided Design and Drafting software shall comply with the Mass GIS "“Standard for Digital Plan Submittal to Municipalities,"” or successor standard. Electronic submission must be contemporaneous with submissions by other means and be in formats acceptable to the Board.

**3.2.2 ..... Plan Sheets**

The Preliminary Plan shall be drawn on material acceptable to the Planning Board tracing paper or other reproducible substance at a scale of forty feet (40') to the inch. If the subdivision plan requires more than two (2) sheets, a plan that is at a scale of one inch (1") equals one hundred feet (100') or as otherwise appropriate to show the subdivision on one sheet, shall also be provided to show the subdivision on one (1) sheet. Sheet sizes shall be twenty-four by thirty-six inches (24" X x 36") ") including a 3/4 inch border. The plan shall be designated as a "“Preliminary Plan"” and shall be used to form a clear basis for discussion of the details of the subdivision and for preparation of the Definitive Plan.

**3.2.3 ..... Contents.** The Plan shall contain the following:

3.2.3.1 The subdivision name, if any, boundaries, north point, date, scale, legend and title "“Preliminary Plan".”.

3.2.3.2 The name of the record owner of the land and the Applicant, and the name, seal, and address of the designer, engineer or surveyor who made the plan. This information shall appear in the lower right-hand corner of the plan.

3.2.3.3 The names of all abutters, as determined from the most recent Assessor's records

3.2.3.4 The existing and proposed lines of streets, ways, easements and any public or common areas within the subdivision, in a general manner.

3.2.3.5 A description of the proposed and any known existing surface drainage in a general manner within and outside of the area shown on the plan.

3.2.3.6 The approximate boundary lines of proposed lots, with approximate areas and dimensions.

3.2.3.7 The names, approximate location and widths of adjacent streets

3.2.3.8 The topography of the land in a general manner

**3.2.4 ..... Additional Submittal Requirements**

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3.2.4.1 Additional Plan information, including the following:

a) If more than one page, each page must contain in the lower right-hand corner, the subdivision name, the page number, the date of plan preparation, and, when applicable, provisions for recording any and all revision dates, and space for Planning Board action. In addition, the first page shall contain an index of all pages supplied. Said index shall indicate what information is to be found on each page of the plan.

b) The locus of the land shown on the plan, at a scale of 1000 feet (1000') to the inch.

c) Major features of the land including existing walls, fences, trails, monuments, buildings, large trees or wooded areas, rock ridges and outcroppings, ditches. Where available, aerial photographs may be required. Indication of all site features to be retained, demolished or moved shall be so noted.

d) Site information showing all flood plains and zones, waterways and wetland resources areas pursuant to the Massachusetts Wetlands Protection Act and the Grafton Wetlands Protection Bylaw (on site and within 100 feet of the property), locations of wells (on site and within 100 feet of the property) and front/side/rear building setback lines. In the event this information is not accessible by virtue of being denied access to such, the plan shall reflect what information was accessible, and shall describe any limitation encountered.

e) Location and description of all bounds, fences, walls, easements and/or encumbrances, including location of existing trails and other pertinent information.

f) A general description of the proposed and any known existing sewage disposal system, water installation and surface drainage in a general manner within and outside of the area shown on the plan as required by the Planning Board, including adjacent existing natural waterways intended to receive drainage discharge. If connection to public sewage or water is proposed, then a general description of the connection from the point of the existing sewage collection or public water system to the property line of the proposed subdivision, including sewer or water lines, pump stations, force mains, etc. shall be provided.

g) The names, approximate location and widths of adjacent streets, and of streets within reasonable proximity of the subdivision, shown within 1000 feet on the locus, and as possible on the plan sheets.

h) The topography of the land with no more than a five-foot (5') contour interval based on the Town Datum (United States Coast and Geodetic Survey). Water bodies and their elevations shall be shown with date of measurement.

i) Soil types based on the latest applicable report of the United States Department of Agriculture, Natural Resources Conservation Service.

j) Letter designation of the proposed streets in lieu of names.

k) The profiles of existing grades and approximate proposed finished grades of the roadway and underground utilities.

l) A cross section of any open channel streams.

m) Area(s) of contiguous land and water of the Applicant not presently being subdivided, with a sketch plan showing a feasible future street layout for such.

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n) Easements and rights-of-way applicable to the area shown on the plan, including widths, lengths and purposes of same.

o) Notice of any and all decisions including, but not limited to, variances, special permits, etc., regarding the land or buildings thereon, including the Deed Book and Page numbers where such documents are recorded in the ~~Worcester District~~ Registry of Deeds.

p) Zoning classification and location of any zoning district boundaries that lie within the locus of the plan, including any overlay zoning districts, which include but are not limited to, the Flood Plain, Historic Districts, Water Supply Protection Overlay District, Campus Development Overlay District, etc., and any local historic district.

q) Areas of land within any historic district, on official Scenic Roads, and the location of historic monuments and buildings or distinctive geographic features worthy of preservation.

r) Deed, book and page references, and Assessor's Map and lot numbers.

3.2.4.2 A Project Information Summary containing information to provide a basis for general conclusions about the effect of the proposed plan on the environment and on the community.

3.2.4.3 Any waivers from the requirements of these Rules and Regulations, including, but not limited to, plan contents (Section 3.2) and design requirements (Section 4), which are sought by the applicant, including the citation from the Regulations and a description of the requirements, a justification for each requested waiver, and a thorough description of the harm to be suffered by compliance with these Regulations, and of the benefit(s) to be realized by allowing such waiver(s).

3.2.4.4 In the event the ~~developer~~ applicant proposes not to connect to the Town's municipal sewer system, information shall be submitted to demonstrate the soil limitations of the entire project, as described by the map titled "Soil Limitations for Septic Tank Sewage Disposal, Town of Grafton, Worcester County, Massachusetts" developed by the US Department of Agriculture, Soil Conservation Service in cooperation with the Worcester Conservation District, 1973, or its successors.

3.2.4.5 An Environmental and Community Impact Analysis (ECIA) meeting the requirements of Section 3.3.4.1 of these Regulations.

### 3.2.5 ..... Acceptance of Application

3.2.5.1 Upon the original submittal of an application to the Town Clerk and the Planning Board, the application shall be considered to be conditionally accepted pending review of its contents. Within 14 days of the original submittal of the application, the Planning Board or its agent shall determine whether the application is complete. An application which does not contain ~~any~~ all of the material described in Section 3.2 that is applicable to that application, shall be considered incomplete, shall not be considered to have been filed and shall not be accepted for processing. If an application is determined to be incomplete, the Planning Board shall notify the Town Clerk and the applicant in writing that the application



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has been determined to be incomplete setting forth the reasons for that determination and that the application is not considered to have been filed.

3.2.5.2 If the application is considered to be complete, or if the applicant and the Town Clerk are not notified that the application is incomplete within 14 days, the application shall be considered to be complete as of the date originally submitted.

3.2.5.3 If a revised application is submitted, it shall be considered to be a new application and shall be subject to the same procedures and determinations as to completeness as are set forth above.

3.2.5.4 The time periods set forth in these Subdivision Rules and Regulations and ~~Chapter~~MGL Ch. 41~~, M.G.L.~~, during which the Planning Board shall issue a decision shall apply only to an application that is considered to be complete and shall start on the date the application was submitted (see Sections 3.2.5.1 and 3.2.5.2)~~will not start until the application is complete~~.

### 3.2.6 ..... Planning Board Action

3.2.6.1 **Approval of a Preliminary Plan**

a) The Board may give Preliminary Plan approval with or without modification or suggestion, after the Board~~'s~~'s review, and at the Board~~'s~~'s option, after review with other Town Boards and Departments. Such approval does not constitute approval of the subdivision, but facilitates the preparation of the Definitive Plan by possibly identifying major deficiencies or problems.

b) The original of the Preliminary Plan, properly endorsed, will be returned to the applicant. Notice of the action taken shall be given the Applicant and Town Clerk in writing within forty-five (45) days of the submission of the plan, as provided in the General Laws, unless an extension has been requested by the Applicant in the same manner as provided for a Definitive Plan. Any Definitive Plan evolved from such preliminary plan shall be governed by the Rules and Regulations relative to subdivision control in effect at the time of the submission of the preliminary plan, provided that the Definitive Plan is duly submitted within seven (7) months from the date on which the preliminary plan was properly submitted.

3.2.6.2 **Disapproval of a Preliminary Plan**

In the event of disapproval of a Preliminary Plan, the Board shall state the reasons for its disapproval in accordance ~~MGL Ch~~MGL Ch. 41 § 81S.

3.2.6.3 **Failure of the Board to Act**

If the Board fails to act upon a plan submitted under this Section or fails to notify the Town Clerk and the persons submitting the plan of its action within forty-five (45) days (or such other mutually agreed upon time) after its submission, the plan shall be deemed to have Preliminary Plan approval under the Subdivision Control Law.

## 3.3 DEFINITIVE PLAN



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### 3.3.1 ..... Submission of a Definitive Plan

Any person who submits a Definitive Plan of a subdivision to the Board for approval shall file with the Board all items required in Section 3.3 of these Regulations and the minimum filing and review fees for a Definitive Plan to be duly submitted in accordance with the Rules and Regulations and the MGL. Such submission shall be made with the Planning Board by hand delivery, registered or certified mail. Such submission must contain the following:

3.3.1.1 a) A reproducible drawing of the Definitive Plan and ~~six (6) full size sets and twenty two (22) sets of 11"x17" contact prints thereof, dark line on white background, for distribution to the Board of Health and Town officials for review, together with one (1) unbound set of reproducible reductions of said plans, the reductions not to exceed eleven by seventeen inches (11" x 17") in outside dimensions~~copies thereof, with the number and size of copies as specified on a form provided by the Planning Board. The reproducible drawings will be returned to the applicant after approval or disapproval, which in the case of approval and following endorsement are to be recorded in the ~~Worcester~~ Registry of Deeds.

b) Properly executed forms including Application for approval of a Definitive Plan; Engineers Certificate, or Land Surveyor~~'s~~'s Certificate; Certified List of Abutters; Verification of Proposed Street Names, and Area Within a Subdivision and properly addressed envelopes to each abutter affixed with the required postage for mailing of same.

3.3.1.2 After such submission, the Applicant shall file by delivery or registered mail a notice with the Town Clerk stating the date of submission of a Definitive Plan to the Board for such approval accompanied by a copy of said application and describing the land to which the plan relates sufficiently for identification. If the notice is given by delivery, The Town Clerk shall, if requested, give a written receipt therefore.

3.3.1.3 A site plan prepared in accordance with the Zoning By-Law.

3.3.1.4 Applicants must submit in electronic form all documents required under Section 3.3, and any supplemental reports, memoranda, presentations, or other communications submitted by the applicant or its representatives unless the applicant demonstrates to the satisfaction of the Town Planner that electronic submission is not feasible. Documents created using Computer Aided Design and Drafting software shall comply with the Mass GIS ~~"~~"Standard for Digital Plan Submittal to Municipalities,~~"~~" or successor standard. Electronic submission must be contemporaneous with submissions by other means and in formats acceptable to the Board.

### 3.3.2 ..... Plan Sheets

3.3.2.1 The plan shall be at a scale of one inch (1") equals forty feet (40'). If the plan requires more than two (2) sheets, a plan that is at a scale of one inch (1") equals one hundred feet (100') or as appropriate, shall also be provided to show the subdivision on one (1) sheet. Sheets sizes shall be ~~twenty four~~twenty-four by thirty-six inches (24" x 36") including a three-quarter inch (3/4") border.

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3.3.2.2 The Definitive Plan shall be prepared by a professional engineer or a land surveyor registered in Massachusetts. All pages shall be clearly and legibly drawn in accordance with the Rules and Regulations of the Registry of Deeds, as amended, pertaining to plan size, material, lettering and related requirements and shall be designated as "“Definitive Plan". ”.

3.3.2.3 The classification and precision of surveys shall conform to Class A or better of the most recent Land Court Manual of Instruction, Commonwealth of Massachusetts. It is recommended that all other survey and Definitive Plan preparation, where not herein specified, be guided by the Manual of Instructions.

**3.3.3 ..... Contents.** The Definitive Plan shall contain the following:

3.3.3.1 The boundaries of the subdivision.

3.3.3.2 Deed, book and page references, and Assessor's Map and lot numbers.

3.3.3.3 If more than one page, each page must contain in the lower right-hand corner, the subdivision name, the page number, the date of plan preparation, and, when applicable, provisions for recording any and all revision dates, and space for Planning Board action. In addition, the first page shall contain an index of all pages supplied. Said index shall indicate what information is to be found on each page of the plan and shall be located in the upper left-hand corner of the page.

3.3.3.4 Location and ownership of abutting property as it appears on the Certified List of Abutters unless the applicant shall have more recent knowledge of such abutters, including all abutting land owned by the applicant not presently being subdivided, and all other land within five hundred feet (500') of the boundaries of the land shown in the subdivision.

3.3.3.5 All plans shall be accompanied by a locus map at a scale of one inch (1") equals one thousand feet (1000') showing the relationship of the subdivision to highways and streets in the Town. The map shall show the entire subdivision layout, remaining land of the applicant which is not presently being subdivided, adjacent streets, if any, or streets within 1000 feet, sufficient to identify the location and the access to the land. All pages in the subdivision submission shall be indexed or keyed on this plan.

3.3.3.6 North point, and whether true, magnetic, or grid, or reference to appropriate plan book and plan bearing system, on each sheet.

3.3.3.7 Major features of the land, such as existing waterways, swamps and water bodies, natural drainage courses, all as pursuant to the Wetlands Protection Act and the Grafton Wetlands Bylaw; , walls, fences, and trails; , buildings, and; large trees or wooded areas, rock, outcroppings, and ditches, which exist on or near the site at the time of survey. Where available, aerial photographs may be required. All features to be retained, demolished or moved shall be so noted.

3.3.3.8 Lines of existing and proposed streets, ways, lots, lot numbers of each lot designated in accordance with the street numbering system, or other designation of proposed streets shall be shown in pencil in lieu of street names, and a list of proposed street names together with

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a listing with the street letter designation shall be provided to the Planning Board for review and/or tentative approval.

3.3.3.9 Sufficient data to determine the location, direction and length of every street and way line, and boundary line, and to establish these lines on the ground, which shall include the subdivision lot lines including lot frontage on the street, the boundary lines of all streets and easements and the length, the radii, tangents and central angles of all curves in lot lines and street lines; all angle points or intersections of tangents along the street lines; areas of lots with lot numbers; and the area and frontage on public ways, of adjoining lands of the applicant not included in the subdivision. The mathematical computations shall be submitted for a matter of record. Traverse computations shall be placed on a separate or subsequent sheet.

3.3.3.10 Location of all permanent monuments properly identified as to whether existing or proposed.

3.3.3.11 Location, names and present widths of streets or private ways bounding, approaching or within 600 feet of the subdivision, showing both pavement widths and right-of-way widths.

3.3.3.12 The zoning classification and location of any zoning district boundaries that lie within the locus of the plan, including any overlay zoning districts including but not limited to the Flood Plain, Water Supply Protection Overlay District, Campus Development Overlay, etc., and any local Historic districts

3.3.3.13 Notice of any and all decisions including but not limited to variances, special permits, etc. regarding the land or any buildings thereon, including the deed book and page numbers where such documents are recorded in the ~~Worcester District~~ Registry of Deeds.

3.3.3.14 If the property that comprises the subdivision or any part or boundary thereof has been examined, approved and confirmed by the Massachusetts Land Court, such information shall be noted on the plan with case numbers and other pertinent references to Land Court Procedure, and the same requirement shall apply to any parcels of land of the applicant.

3.3.3.15 Suitable space to record the action of the Board and the signatures of all members of the Board including, where appropriate, the words, ~~"~~"Deeds of Easements to be recorded herewith~~", ~~”, at the same location on all pages of the subdivision submission.

3.3.3.16 **Plan and Profile, on sheet(s) dedicated to such**

a) Existing profiles of the exterior lines and profile of existing grades at the proposed roadway centerline, left sideline and right sideline, and profile of the finished center line drawn in fine black solid line of proposed streets at a horizontal scale of one inch (1") equals forty feet (40').

b) Profile centerline of existing and proposed grade elevations, shown at every ~~fifty foot~~fifty-foot (50') station except in vertical curves, which shall be at every twenty-five foot (25') station.

c) All existing and proposed intersections and sidewalks, trails, bikeways and walkways shall be shown with all proposed grade elevations calculated.

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d) A suitable number of benchmarks shall be set on the property. Elevations shall be based on the ~~National Geodetic Vertical Datum of 1929 (ie USGS)~~North American Vertical Datum of 1988 (NAVD88).

e) Gradients, shown by figures expressed in percent.

3.3.3.17 **Contour Plan, on sheet(s) dedicated to such**

a) Existing and proposed topography at ~~two feet~~two-foot (2') contour intervals and by symbols the highest known high water mark of the last one hundred (100) years. All benchmarks will be noted, as well as all existing and proposed monuments.

b) Where zone boundaries shown on the most recent approved Federal Emergency Management Agency Flood Insurance Rate Maps lie within the locus of the plan, they shall be indicated, as well.

3.3.3.18 **Utility Plan and Profile, on sheet(s) dedicated to such**

Whenever possible, for the purpose of clarity, the utility plan and profile should be on separate pages, and shall show:

a) Size and location of existing and proposed water supply mains and their appurtenances, hydrants, sewer pipes and their appurtenances and/or sewage disposal systems, storm drains and their appurtenances and easements pertinent thereto, the 100 year high surface water mark, curbs and curb dimensions, data on borings and soil test pits or percolation tests made, and method of carrying water to the nearest watercourse or easements for drainage as needed, whether or not within the subdivision.

b) A clear indication of what course the discharge will take accompanied by evidence from the Superintendent of Streets and the owners of adjacent property that if surface water drains will discharge onto adjacent existing streets or onto adjacent properties not owned by the applicant such discharge is satisfactory and permitted by public or private ownership of adjacent street or property.

c) All other utilities. (See Section 4)

3.3.3.19 **Stormwater Management**

a) A stormwater management hydrological study, including all calculations, shall be submitted by the applicant which satisfies the Design requirements of Section 4 of these Regulations, as well as the Regulations of the Grafton Conservation Commission.

b) The analysis and design of stormwater management systems shall be based, at a minimum, on the methods contained in the United States Soil Conservation Service URBAN HYDROLOGY for SMALL WATERSHEDS, Technical Release Number 55. The design shall describe the impacts of the 2 year, 10 year, and 100 year 24-hour rainfalls. The maximum length which is to be used for sheet flow shall be ~~75~~ 50 feet, unless otherwise justified.

c) Drainage calculations and design shall be prepared by a registered professional engineer.

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d) All stormwater management designs shall be in conformance with the Town's Stormwater By-Law and its regulations, as amended.

3.3.3.20 **Tree Plan**

Location and species of all proposed street trees, and location of all existing trees with trunks over twelve inches (12") in diameter measured four feet (4') above the finished ground level within the minimum front setback distance. A list of recommended street trees and shrubs suitable for this area and available at local nurseries~~, is available from the Board~~ is shown in Schedule D. This list may be used as a guide but is not determinative. The Tree Plan shall be prepared by a certified arborist and shall include, at a minimum, the following components for all proposed planting(s): placement, surrounding grades and conditions, soil conditions, details and methods as appropriate, and a maintenance plan. The arborist shall also submit a plan to preserve the integrity of existing vegetation.

3.3.3.21 Cross Sections and Details, on sheet(s) dedicated to such

a) Typical roadway cross-sections of each street. (See examples in Schedule~~s~~ A~~showing standard cross sections in these Regulations~~.)

b) All details necessary to facilitate construction including, but not limited to, manholes, catch basins, headwalls, pipe trench, rip rap, retaining walls, hydrants, drainage swales, curbing, etc.

3.3.3.22 Open Space

The location and proposed design of all open spaces as required by Section 4 of these Regulations and by the Grafton Zoning Bylaw, as appropriate.

3.3.3.23 All easements in draft form.

**3.3.4 ..... Additional Submittal Requirements**

3.3.4.1 **Environmental and Community Impact Analysis (ECIA)**

a) Any subdivision submission shall be accompanied by ~~nine (9) copies of~~ an Environmental and Community Impact Analysis. The ECIA shall clearly and methodically assess the relationship of the proposed development to the natural and man-made environment of Grafton. This report shall be prepared by an interdisciplinary team of professionals qualified, experienced, and, where applicable, licensed, in their fields. Such team shall typically consist of Registered Professional Engineers, Traffic Engineers, Architects, Landscape Architects, Land-Use Planners, Hydrogeologists, Hydrologists, Biologists and other environmental professionals.

b) It is intended that the report be a guide to the Planning Board in its deliberations and will build into the ~~board~~Board~~'s~~'s decision-making process an appropriate and careful consideration of the environmental and community impacts of the proposed development.

c) For each of the components of the ECIA listed under paragraph 3.3.4.1e~~d~~ below, each of the following concerns must be separately addressed:

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(1) The Environmental and Community Impacts of the Proposed Development - All primary and secondary environmental and community impacts, both beneficial and adverse, which can be anticipated as a result of the proposed development. This section shall include all impacts resulting from the construction phase as well as those resulting from the project's completion.

(2) Adverse Impacts which cannot be avoided should the proposed development be implemented - The report shall describe the kinds and magnitudes of adverse impacts which cannot be reduced in severity or which can be reduced in severity, but which cannot be eliminated.

(3) Alternatives to the proposed development - The report shall objectively develop, describe, and weigh alternatives to the proposed development and shall address their consistency with the Zoning By-Law.

(4) Measures to be used to minimize adverse environmental and community impacts - Corrective and protective measures which will be taken to minimize adverse impacts shall be described in detail. Such measures may include design issues, management practices, alternative approaches, etc.

d) If a Preliminary Plan is filed with an accompanying ECIA, the applicant may submit an updated version of said ECIA with the Definitive Plan Application.

e) The ECIA shall evaluate all of the following topics or explain why such topics are inapplicable to the application:

(1) Natural Environment

i. Air and Noise Pollution - The impact on local air quality (including traffic generated from the development) and noise from the proposed development (including traffic generated from the development), both during and after construction, shall be evaluated. For developments over 100 dwelling units, the Planning Board may require detailed technical reports of such impacts.

ii. Storm Water - The impact of storm water run-off on adjacent and downgradient/downstream land, surface water bodies and sub-surface ground water. Dangers of flooding as a result of increased downstream runoff; especially peak runoff. The impact of the proposed project on water table levels.

iii. Land - Compatibility of the proposed development with existing soils; the impact of any soils or other materials to be removed from the site; The potential dangers and impacts of erosion and sedimentation caused by the proposed development.

iv. Plants & Wildlife - The impact that the proposed project may have on wildlife habitat and on any rare or endangered plant or animal species known to exist in the area.

v. Water Supply - The average and peak daily demand and the impact of such demand on ground water aquifers and the public water distribution system.

vi. Sewage Disposal - The average and peak daily disposal and the impact of such disposal on ground water aquifers, surface water and the municipal sewage system.

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(2) Man-Made Environment

i. Existing Neighborhood Land Use - Compatibility with adjacent or nearby existing land uses, or approved private development plans, if known, for adjacent or nearby land use changes to occur during the anticipated construction period, to completion, of the proposed development. If not compatible, reasons therefore shall be detailed. Consultation with the Planning Board is strongly recommended.

ii. Zoning - Compatibility of the proposed development with the purposes of the Zoning By-Law and the Zoning district and with surrounding properties.

iii. Architecture - The anticipated style of architecture of the buildings; its relation to prevailing types of architecture for similar buildings; and its compatibility with the function of the building and to the architecture of adjacent buildings. Sketches, photos, elevations and renderings are encouraged to illustrate architectural appropriateness as well as innovation.

(3) Public Services

i. Schools - The expected impact on the school system both elementary and secondary levels; the expected number of students; projected school bus routing changes; projections of future school building needs resulting from the proposed project.

ii. Police - The expected impact on police services, time and manpower needed to protect the proposed development and service improvements necessitated by the proposed development.

iii. Fire - Expected fire protection needs; on-site fire fighting capabilities; on-site alarm or other warning devices; fire-flow water needs, source and delivery system and other needs. Fire department service improvements necessitated as a result of the proposed project shall also be discussed.

iv. Recreation - On-site recreation provisions shall be detailed and off-site recreation demands shall be estimated. Provision for public open space, either dedicated to the Town or available to its residents, shall be described. Open space available primarily or exclusively for residents or employees shall also be described.

v. Solid Waste Disposal - Analysis of the projected volume and type of solid waste to be generated by the proposed development; methods of removal.

vi. Traffic - Analysis as required by Section 3.3.4.~~6~~ 7 (Traffic Study Required) of these Subdivision Rules and Regulations.

vii. Highway - Projected need, responsibility and costs to the Town of roadway maintenance and stormwater management facility maintenance. Impacts of construction equipment on area roadways. Service improvements necessary as a result of the proposed project.

(4) Aesthetics

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i. Lighting - The type, design, location, function and intensity of all street lighting facilities. Attention given to safety, privacy, security, glare, and daytime and nighttime appearance shall be detailed.

ii. Landscaping - Provisions for landscaping including type, location and function of all plantings and materials.

iii. Visual - attention given to views into the site and from the site. Included shall be long-distance views as well as views to and from adjacent properties.

(5) Planning

Analyze the compatibility of the proposed development and its alternatives with the goals and objectives of the most recent Grafton Comprehensive/Master Plan and the most recent Open Space Plan and any components of either Plan.

(6) Cost/Benefit Analysis

Municipal benefit/cost analysis, following standard and usual procedures for measuring both the benefits to be derived and costs to be incurred by the Town of Grafton as a result of the proposed development. This element should also estimate and discuss net benefits and costs of non-quantifiable environmental impacts.

~~e~~f) The applicant shall submit a completed Project Information Summary.

3.3.4.2 Any waivers from the requirements of these Rules and Regulations, including, but not limited to, plan contents (Section 3.3) and design requirements (Section 4), which are sought by the applicant, including the citation from the Regulations and a description of the requirements, a justification for each requested waiver, and a thorough description of the harm to be suffered by compliance with these Regulations, and of the benefit(s) to be realized by allowing such waiver(s).

3.3.4.3 **Staking**

At the time of filing of the Definitive Plan the Applicant shall stake the center line of all proposed streets at a minimum of every one hundred feet (100') with the center line stations and the cut or fill dimensions to finish grade marked on the stakes, and also the lot corners, with lot numbers. Such staking shall be maintained by the applicant throughout the Definitive Plan review process.

3.3.4.4 **Soil Survey and Percolation Tests**

a) General. Soil surveys and/or test pits and/or borings shall be submitted, at the expense of the Applicant, to establish the suitability of the land for the proposed sewage system, drainage system and proposed street construction. All tests shall be witnessed by the designated agent of the Planning Board. All information concerning the test pits, borings or soundings (location, depth, soil stratas, depth of water table) shall be submitted to the Board in a written report made, evaluated and stamped by a registered professional engineer, at the time of the Definitive Plan application is filed. The Applicant shall file with the Conservation Commission as appropriate for any testing

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within areas protected under the Wetlands Protection Act and the Grafton Wetland Protection By-Law prior to such testing.

b) Roads

(1) Test pits, borings or soundings shall be taken along the center line of each street shown on the plan at intervals of at least every two hundred feet (200') and at locations such as cut sections and areas of questionable foundation material, where the subsurface conditions may, in the opinion of the Board, be factors affecting the quality, integrity and service life of the street.

(2) Test pits shall not be back-filled until the Applicant has been notified by the Planning Board that all necessary inspection and sampling has been completed. Where borings are used, samples shall be taken at five-foot (5') intervals and at each change in strata. Soundings shall be taken in areas of unsuitable material for purpose of determining the unsuitable material and for the purpose of determining the hard bottom contours. Test pits and borings shall extend to a minimum depth of ten feet (10') below the street profile grade, five feet (5') below the invert of the proposed sewer and/or drain, whichever is greatest, or to bedrock if encountered.

(3) The Applicant shall indicate on the plan a proposed layout of the subsurface exploration program including location, spacing, and type of exploration proposed.

(4) Failure to inspect within fourteen (14) days of the Applicant's's written request for inspection shall be deemed approval.

c) Lots

Soil surveys shall include a test excavation not less than seven feet (7') below finished grade at a frequency of one (1) per every four (4) lots, the locations of which shall be shown on the contour plan, and a report thereon. Percolation tests shall be in accordance with Title 5 of the Commonwealth of Massachusetts State Environmental Code.

3.3.4.5 In the event the developer applicant proposes not to connect to the Town's municipal sewer system, the Definitive Plan shall indicate the soil limitations of the entire project, as described by the map titled "Soil Limitations for Septic Tank Sewage Disposal, Town of Grafton, Worcester County, Massachusetts" developed by the US Department of Agriculture, Soil Conservation Service in cooperation with the Worcester Conservation District, 1973, or its successors.

3.3.4.6 Written consent of the Grafton Police Department with regard to each proposed street name, to ensure there is no conflict or confusion with existing approved names, particularly in terms of the Town's Enhanced emergency 911 System.

3.3.4.7 **Traffic Study Required**

a) A traffic study shall be submitted with each application for a non -residential subdivision or for a residential subdivision of greater than 20 dwelling units, unless waived by a four-fifths (4/5) vote of the Planning Board, or where required by the Planning Board.

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b) The traffic study shall be conducted by a traffic engineer who will certify that he/she is a member of the Institute of ~~Traffic~~ Transportation Engineers.

c) For the purposes of this analysis, the terms below shall have the meaning indicated. The morning and evening ~~"~~"peak period~~"~~" shall usually be the two hours between 7 A.M. and 9 A.M. and between 4 P.M. and 6 P.M. respectively. The morning and evening peak hour shall be that consecutive ~~60 minute~~60-minute segment within the ~~"~~"peak period~~"~~" in which the highest traffic count occurs as determined by traffic counts of the peak period divided into 15-minute segments. For uses which have an exceptional hourly, daily, or seasonal peak period, the Planning Board may require that the analysis be conducted for that extraordinary peak period.

A street or intersection ~~"~~"likely to be affected by the development~~"~~" is one which has an Average Daily Traffic (ADT) of ~~1,500~~2,000 vehicles or more ~~as well as one which~~and either: 1) carries 10 percent or more of the estimated trips generated by the development or 2) in the case of an intersection, traffic from the proposed development will add 5 percent or more to the approach volumes~~, and others as the Board deems appropriate~~.

d) The traffic study shall include:

(1) An estimate of trip generation for the proposed development showing the projected inbound and outbound vehicle trips for the morning and evening peak periods and a typical one hour not in the peak period. Where there is existing development of the same type of use on the site, actual counts of trip generation shall be substituted. Trip generation rates may be based on: 1) the ~~"~~"Trip Generation Manual, Third Edition~~"~~" (or more recent editions as they become available) prepared by the Institute of Transportation Engineers, and, if applicable, 2) data about similar developments in Massachusetts or 3) data from professional planning or transportation publications, provided the methodology and relevance of the ~~date~~ data from 2) and 3) is documented.

(2) An estimate of the directional distribution of new trips by approach streets and an explanation of the basis of that estimate. Where there is existing development of the same type of use on the site, actual counts of trip directional distribution shall be submitted.

(3) An assignment of the new trips to be generated by the proposed development to the segments of the Town street network, which shall include state highways in Grafton, which are likely to be affected by the proposed development.

(4) Average Daily Traffic (ADT) on the streets likely to be affected by the development, counted for a ~~24 hour~~24-hour period.

(5) Intersection turning movement counts of the morning and evening peak periods at the intersections likely to be affected by the proposed development. In special circumstances where the peak traffic impacts are likely to occur at times other than the usual morning and evening peak periods, the Planning Board may require counts for those other peak periods.

(6) An inventory of the roadway characteristics of the principal approach streets adjacent to the development site and of the streets in the intersections at which turning movement counts are taken showing the width of the right of way and of the traveled way, traffic control devices, obstructions to adequate sight

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distance, the location of driveways or access drives within ~~1000~~ 500 feet of the entrance to the site for uses that are substantial trip generators, and the presence or absence of sidewalks and their condition.

(7) In the case of a development in an abutting city or town, which will have a traffic impact on a street or intersection in Grafton which is likely to be affected by the proposed development for which the traffic study is being prepared, the traffic impact of the development in the abutting city or town shall be included in the traffic study provided: 1) that traffic impact is equal to or greater than that set forth in the test above; 2) the development has been approved by official action of that abutting city or town but is not operating at full capacity prior to the date that the traffic counts required by this section were taken, and 3) data on the traffic impact of that development, comparable to that required by this section, is available.

(8) An analysis of the effect on the capacity of those intersections in Grafton street system likely to be affected by the development during peak periods of: 1) the additional traffic generated by the development, and 2) additional traffic from other developments previously approved by the Town of Grafton for which a traffic study was required, or by an abutting city or town as provided above, is not operating at full capacity prior to the date that the traffic counts required by this section were taken. Analysis of the capacity of intersections shall be based on traffic ~~"~~"levels of service~~"~~" as described in the ~~"~~"Highway Capacity Manual, 1985 Edition~~"~~" published by the Transportation Research Board. This analysis may include an intersection of an access drive serving a development and a segment of the Grafton street system.

(9) Where mitigating measures or trip reduction programs are proposed, they shall be included in the traffic study at the time of filing of the application. Where the proposed mitigating measure is the construction of a traffic engineering improvement, evidence, such as letters of support, or commitment, or approval, or the award of a contract, may be submitted to show that construction of the traffic improvement is likely to occur.

(10) An estimate of the time and amount of peak accumulation of off-street parking.

(11) Estimates of the ~~"~~"level of service~~"~~" of affected intersections in five years from the date of application without the development built and with it built.

e) The counts referred to above shall have been taken within the 12 months prior to the filing of the complete Definitive Plan application, unless otherwise waived by the Board. The traffic engineer shall furnish an explanation of the methodology of the traffic study and additional data, upon request by the Board.

3.3.4.8 A plan for the disposal of all stumps, limbs, brush and other deleterious material. If the plan includes disposal (or burning) of such within the boundaries of the property affected by the Definitive Plan, such locations(s) shall be noted on the Definitive Plan filed at application and appropriate covenants shall be recorded on the deed(s) of the affected lot/lots/property prior to release for building or sale. In no case, however, shall any deleterious material be buried within any easements or rights of way~~s~~.

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### 3.3.5 ..... Acceptance of Application

3.3.5.1 **Determination of Completeness**

a) Upon the original submittal of an application to the Town Clerk and the Planning Board, the application shall be considered to be conditionally accepted pending review of its contents. Within 14 days of the original submittal of the application, the Planning Board or its agent shall determine whether the application is complete. An application which does not contain all of the material described in Section 3.3 that is applicable to that application shall not be considered to have been filed and shall not be accepted for processing. If an application is determined to be incomplete, the Planning Board shall notify the Town Clerk and the applicant in writing that the application has been determined to be incomplete setting forth the reasons for that determination and that the application is not considered to have been filed.

b) If the application is considered to be complete, or if the applicant and the Town Clerk are not notified that the application is incomplete within 14 days, the application shall be considered to be complete as of the date originally submitted.

c) If a revised application is submitted, it shall be considered to be a new application and shall be subject to the same procedures and determinations as to completeness as are set forth above.

3.3.5.2 The time periods set forth in these Subdivision Rules and Regulations and ~~Chapter~~MGL Ch. 41~~, M.G.L.~~, during which the Planning Board shall notify parties in interest, hold a public hearing, and issue a decision, shall apply only to an application that is considered to be complete and shall start on the date the application was submitted (see Sections 3.3.5.1. a) and 3.3.5.1 b))~~will not start until all material required by these Regulations has been submitted~~.

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3.3.5.3 **Review by Town Officials**

a) Review by Board of Health as to Suitability of Land

(1) At the time of filing of the Definitive Plan, the Applicant shall also file with the Board of Health ~~two (2) contact prints~~copies of the Definitive Plan, ~~dark line on white background~~in a form and quantity acceptable to the Board of Health, together with such information on percolation tests and deep test holes as the Board of Health may require. The Board of Health shall, within forty-five (45) days after filing of the plan, report to the Planning Board in writing its approval or disapproval of said plan. Failure of the Board of Health to report within forty-five (45) days shall be deemed approval.

(2) If the Board of Health disapproves said plan, it shall make specific findings as to which, if any, of the lots shown on such plan cannot be used for building sites without injury to the public health, and include such specific findings and the reasons therefore in such report, and where possible, shall make recommendations for the adjustment thereof. The Board of Health shall send a copy of such report, if any, to the person who submitted said plan.

(3) Every lot shall be provided with connection to municipal sewer system or an on-site sewage disposal system satisfactory to the Board of Health and/or the

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Commonwealth of Massachusetts Sanitary Code minimum standards as the Board of Health shall determine.

b) The Planning Board will transmit copies of the Definitive Plan to Town Officials (and others) other than the Board of Health requesting their written statements regarding the following aspects of the proposed improvements at a minimum, as well as any pertinent information they may provide.

(1) The ~~Board of Selectmen~~Select Board as to the design of the street system, the provisions for the safety of the future inhabitants and the public, the number and placement of street lights, and compliance with the Earth Removal By-Law.

(2) The Conservation Commission as to potential involvement with ~~MGL Chapter~~MGL Ch. 131~~,~~ ~~Section~~ § 40, and the Grafton Wetland Protection Bylaw, the effects of the subdivision on rivers, streams, wildlife and similar considerations within the scope of the Conservation Commission, and the proposals for demolishing, retaining or moving site features; and as to stormwater regulations administered by the Conservation Commission.

(3) The Superintendent of Streets as to the design of the street system, sidewalks, curbs, location of easements, monuments, drainage system, water system, and if applicable, a sewage system, and their appurtenances, and relationship to existing water and drainage systems.

(4) The Fire Department as to location of hydrants, installation of the alarm system, if any, and emergency access, and the naming of the streets.

(5) The Police Department as to street safety, both vehicular and pedestrian, access for emergency vehicles and naming of streets.

(6) The appropriate water utility as to the arrangements for water supply, the design of the water system and its appurtenances and relationship to existing water systems.

(7) The Inspector of Buildings for compliance with the Grafton Zoning By-Law.

(8) The Board of Assessors for information on any possible lot line conflicts, and for proper recording of known easements and/or encumbrances on the land.

(9) The Tree Warden as to the location of shade trees within the subdivision and as to the proper protection of such shade trees as in his judgment should be retained.

(10) The Town Counsel as to the form of all agreements, easements, covenants and performance guarantees.

(11) The Historic District Commission as to the effect of the proposed development on the District.

(12) The Sewer Commissioners as to the design of the sewage system.

(13) The Police and Fire Departments as to provisions for the safety of the future inhabitants, and the public.

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(14) The Planning Board Engineer, for compliance with these Regulations, review of technical components, review and comment on plan, data and requested waivers.

c) Except as otherwise noted, the Planning Board may assume that the respective officials have no comment if no report is received within thirty (30) days.

d) Before approval of the Plan, the Board shall submit the Plan to such professional service(s) as it deems appropriate for review, at the Applicant~~'s~~'s expense~~s~~. After this review, the Board shall establish whether the purposes of the Subdivision Control Law are met.

### 3.3.6 ..... Planning Board Action

Before taking any action to approve, modify and approve or disapprove a Definitive Plan, the Board shall hold a hearing at which parties in interest shall have an opportunity to be heard in person or by agent or attorney. Notice of the time and place of such hearing and of the subject matter sufficient for identification shall be published on the Town of Grafton website and in a newspaper of general circulation in the Town of Grafton once in each of two (2) successive weeks, the first publication to be not less than fourteen (14) days, the second publication to be not less than seven (7) days, before the date of the hearing, and by mailing a copy of such advertisement to the Applicant and all owners of land abutting upon the land included in such plan, as shown on the most recent tax list, at the expense of the Applicant. If for any reason such a newspaper is not being published, notice shall be by posting in a conspicuous place in the Town Hall and by mailing as described above.

If site plan or other Planning Board approval is required under the Zoning By-Law, the Board may consolidate the required hearings with ~~and~~ the hearing for the Definitive Plan.

3.3.6.1 The procedure that the Board will follow with regard to approval, disapproval, or modification of the Definitive Plan submitted by the Applicant will be that as set forth in ~~MGL Chapter~~MGL Ch. 41~~,~~ ~~Section~~ § 81-U, as amended. In summary, the Board, after receiving the Plan and all required supporting documents, will review the same to determine whether they are in compliance with its adopted Rules and Regulations.

3.3.6.2 Before approval of the plan, the Applicant shall establish that the lots on the Definitive Plan are in conformity with the Grafton Zoning By-Laws and failure of the lots to so comply will be adequate grounds for disapproval of the Definitive Plan.

3.3.6.3 The time periods for action on a Definitive Plan may be extended upon written request of the persons submitting the plan and approval of the request by the Board. In such case, the statutory time period within which action by the Board is required shall be similarly extended.

a) The Board shall approve or disapprove a Definitive Plan based upon a properly submitted Preliminary Plan upon which the Board has acted or forty-five (45) days have elapsed without action by the Board upon said Preliminary Plan, within (90) days of the submission of said Definitive Plan to a regularly scheduled meeting of the Board or a mutually agreed upon time.

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b) The Board shall approve or disapprove a Definitive Plan for which no Preliminary Plan has been filed and acted upon, or if filed, forty-five (45) days have not elapsed between the submission of the Preliminary Plan and the submission of the Definitive Plan, within one hundred and thirty-five (135) days of its submission to a regularly scheduled meeting of the Board, or a mutually agreed upon time.

c) The action of the Board in respect to such plan shall be by vote, copies of which shall be filed with the Town Clerk and sent to the Applicant return receipt requested, by delivery or registered mail. If the Board modifies or disapproves such a plan, it shall state in its vote the reasons for its action and shall revoke such disapproval when the plan has been amended to conform to the Rules and Regulations of the Board, and to the recommendations of the Board of Health.

~~[there is no 3.3.6.4]~~

3.3.6.4 [RESERVED]

3.3.6.5 In the event of disapproval of a Definitive Plan, the Board shall state the reasons for its disapproval.

3.3.6.6 If the Board fails to act upon a Definitive Plan of a subdivision submitted under this section within the time constraints as provided by statute, or the Board fails to notify the Town Clerk and the applicant of its action on the Definitive Plan, it shall be deemed to have approval under the Subdivision Control Law, and the Planning Board shall forthwith make such endorsement on said plan, and on its failure to do so, the Town Clerk shall issue a certificate to the same effect.

**3.3.7 ..... Plan Endorsement**

After the expiration of twenty (20) days without notice of appeal of a Certificate of Approval to the Superior Court, or if appeal has been taken, after the entry of a final decree of the Court sustaining approval of the Plan, the Board shall give its final approval by endorsing the plan.

3.3.7.1 Before endorsement, the following conditions must be satisfied:

a) ~~Before endorsement of the Plan the~~The applicant shall comply with all reasonable regulations and rules of the Town Officials and agencies referred to in Section 3.3.5.3 above not otherwise covered by these Rules and Regulations.

b) All anticipated/proposed stormwater management systems shall be approved by the Conservation Commission~~ prior to endorsement of the plan~~.

c) ~~all~~All necessary permits from the Massachusetts Department of Public Works under ~~MGL Ch~~MGL Ch.~~,~~ 85~~,~~ ~~S~~§ 2 shall be obtained. Final approval may be conditioned on approval under ~~MGL Ch~~MGL Ch.~~,~~ 131 ~~S~~§ 40.

d) The applicant shall submit acceptable construction and maintenance schedule documents. In the case where the applicant desires phasing, the applicant shall submit detailed phasing plans and schedule, which at no time results in a dead end street more than five hundred feet (500') in length except as otherwise approved by the Board, for the Board's consideration. The Board may require modifications to

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any and all of said proposals. Endorsement may be withheld at the Board's discretion until such proposals are deemed by the Board to be acceptable.

3.3.7.2 **[RESERVED]**~~Before endorsement, all necessary permits from the Massachusetts Department of Public Works under MGL Ch. 85, S 2 shall be obtained. Final approval may be conditioned on approval under MGL Ch. 131 S 40.~~

3.3.7.3 **[RESERVED]**~~Before endorsement, the applicant shall submit acceptable construction and maintenance schedule documents. In the case where the developer desires phasing, he shall submit detailed phasing plans and schedule, which at no time results in a dead end street more than five hundred feet (500') in length except as otherwise approved by the Board, for the Board's consideration. The Board may require modifications to any and all of said proposals. Endorsement may be withheld at the Board's discretion until such proposals are deemed by the Board to be acceptable.~~

3.3.7.4 **[RESERVED]**

3.3.7.5 Final approval, if granted, shall be endorsed on the original drawing of the Definitive Plan by the signatures of a majority of the Planning Board but not until the statutory twenty (20) days appeal period has elapsed following the filing of the Board~~'s~~'s Certificate of Approval~~, as the case may be,~~ with the Town Clerk and said Clerk has notified the Board that no appeal has been filed, or if an appeal has been filed, after resolution of the appeal.

a~~d~~) The Applicant shall submit the approved plan for endorsement no later than six months following the Board~~'s~~'s Certificate of Approval if no appeal has been filed~~. I~~, or if an appeal has been filed, ~~the plan shall be submitted~~ within six months ~~from the~~following resolution of the appeal.

~~a) After the Definitive Plan has been approved and endorsed, and the appeal period has elapsed, with no appeal being made, the Planning Board shall return the original to the Applicant.~~

b) Said endorsement shall be subject to the construction specifications contained herein, and to the Rules and Regulations of the Board of Health, and all other appropriate Town Boards.

c) Approval of all plans shall be upon the condition that all ways shown thereon, and public utilities required by the Board, shall be completed and installed within the time so specified in Section 3.3.~~8~~13.

d~~a~~) After the Definitive Plan has been approved and endorsed~~, and the appeal period has elapsed, with no appeal being made,~~ , the Planning Board shall return the original to the Applicant.

~~d) The Applicant shall submit the approved plan for endorsement no later than six months following the Board's Certificate of Approval if no appeal has been filed. If an appeal has been filed the plan shall be submitted within six months from the resolution of the appeal.~~

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**3.3.8 ..... Performance Guarantee**

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Before endorsement of the Board's's approval or conditional approval of any Definitive Subdivision Plan, the applicant shall agree both to meet the conditions and to complete the required improvements specified in Section 5 for all lots in the subdivision. Construction and installation within the site property shall be secured by one, or in part by one and part by another, of the following methods which may from time to time be varied by the Applicant. Said security shall be posted and approved by the Planning Board prior to any construction, installation or sale of lots. Construction and installation within existing street right-of-waysrights-of-way shall be secured by surety as required under the Street Opening and/or other Permit(s).

3.3.8.1 **Approval with Bonds or Surety**

a) The Applicant shall file a duly executed surety company performance bond in an amount determined by the Board to be sufficient to cover the cost of all the improvements specified in Section 5 not covered by a covenant under 3.3.8.3 2 hereof.

b) Surety company performance bond shall also be approved as to form and manner of execution, by the Town Counsel.

c) Such bond or security, if filed or deposited, shall be accompanied by an appropriate and properly executed agreement, and shall be contingent on the completion of such improvements before the date so specified.

3.3.8.2 **Approval with Covenant**

The Applicant shall file a duly executed Covenant, which provides that no lot may be built upon or sold until the ways and municipal services necessary to serve adequately such lot have been constructed and installed. Such covenant shall be approved as to form and manner of execution by Town Counsel and shall be recorded in the Registry of Deeds by the owner of record and shall run with the land, whereby such ways and services as specified in Section 5 not covered by bond or deposit hereof, or a tripartite agreement, shall be provided to any lot before such lot may be built upon or conveyed. (MGL Ch. MGL Ch. 41, S § 81-U)

3.3.8.3 **Approval with Tri-Partite Agreement**

a) A tri-partite agreement satisfactory to the Planning Board shall be filed in the case of a surety, which shall be held by a bank chartered by the Commonwealth of Massachusetts. Portions of this surety may be released by the Board upon satisfactory completion if of portions of the work as specified in the Agreement and in accordance with these Regulations.

b) Said agreement shall provide a schedule of disbursements which may be made to the Applicant upon completion of various stages of the work, and shall further provide that in the event the work is not completed within the time set forth by the Applicant, any funds remaining undisbursed shall be available to the Town for completion.

3.3.8.4 **Approval with Negotiable Securities**

a) In the case of performance secured by negotiable securities, such security shall be of an amount determined by the Board to be sufficient to cover the cost of all the improvements specified in Section 5 not covered by other surety.

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b) Such negotiable securities shall also be approved by the Town Treasurer.

### 3.3.9 ..... Recording

3.3.9.1 Within ten (10) days of the recording of all pages of the approved Definitive Plan and Covenant, if any, at the Registry of Deeds, the Applicant shall notify the Board in writing, presenting evidence of the recording of the plan and the covenant.

3.3.9.2 Before any building permits in the subdivision may be issued, the Applicant shall deliver to the Board twelve (12) copies of the approved and recorded Definitive Plans, one (1) set of reproducible reductions of the plans not to exceed eleven by seventeen inches (11" x 17") in outside dimensions and a copy of a Certificate of Title duly searched and executed by an attorney or Title Company stating that the premises shown on said plan and appurtenances thereto are in the name of the Applicant and are free of any encumbrances or with encumbrances as set forth. Upon receipt of such notification, the Planning Board shall file one (1) copy of the approved and recorded Definitive Plan each with the ~~Board of Selectmen~~Select Board, Board of Health, Conservation Commission, Town Engineer, Superintendent of Streets, Building Inspector, Assessor~~'s~~'s Office, Fire Department, Police Department, Recreation Commission and Sewer Commissioners.

### 3.3.10 ..... Conveyance of Utilities and Easements to the Town

Prior to the reduction or release by the Board of a surety bond or deposit, or, in the case of a covenant, prior to the release of any lots, the developer shall execute an instrument on a Form approved by the Board transferring to the Town, without cost, valid unencumbered title to the electric power system and to all sewerage, storm drains and water mains, and appurtenances thereto, constructed and installed in the subdivision or portion thereto to be approved, and conveying to the Town without cost and free of all liens and encumbrances perpetual rights and easements to construct, inspect, repair, renew, replace, operate and forever maintain the aforesaid above ground and underground utilities, with any poles, manholes, pipes, conduits and other appurtenances, and to do all acts incidental thereto, in, through and under the whole of all streets in the subdivision or portion thereof to be approved and if any such utilities have been constructed and installed in land not within such streets, then in, through, and under an easement as shown on the Definitive Plan.

### 3.3.11 ..... Completion

3.3.11.1 **Time for Completion/General**

If the ways in any subdivision are not completed and the utilities aforesaid are not installed within the time so agreed to by the Applicant, or so required by the Board, any such surety may be enforced and applied by the Planning Board for the benefit of the Town.

3.3.11.2 Upon completion of improvements required under Section 5, the Developer or owner at his expense shall, within fourteen (14) days of submitting a Request for Determination of Completeness, cause to be published in a newspaper of general circulation in the Town of Grafton announcement that such Determination of Completeness has been requested and shall request the Town Clerk to post such notice on the Town of Grafton website. In the event that the newspaper is not being published, the Developer or owner shall request the Town Clerk to post such a notice in a conspicuous place in the Town Hall. Such Request

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for Determination of Completeness shall be sent by registered mail to the Town Clerk and the Planning Board and shall include a written statement and documentation that the said construction or installation in connection with which such surety or covenant has been secured, has been completed in accordance with the requirements contained under Section 5. Such material shall include, at a minimum:

a) Name and address of ~~Applicant~~Developer and/or Owner, if different.

b) A compliance certificate signed under oath by the Developer and his Engineer that the development has been completed according to the Rules and Regulations of the Planning Board and the Town of Grafton's Zoning By-Laws.

c) Copies of or reference to the requisite Inspection Forms and Reports.

d) Written evidence of compliance with the Definitive Plan from the following:

(1) Planning Board and Superintendent of Streets as to construction of all ways and sidewalks, and installation of street signs, traffic signs, street lighting and appurtenances, pavement, gutters and curbs, monuments, required grading and drainage, lot drainage, planting and seeding.

(2) The appropriate water utility as to all water mains, hydrants and appurtenances.

(3) The Board of Health as to the installation of sewage disposal facilities, if applicable, or the Board of Sewer Commissioners, if applicable.

(4) The Fire Department as to the installation of the fire alarm system, if any.

e) As-built plan of completed street or streets, drawn on ~~tracing cloth or other~~ material ~~suitable~~ acceptable to the Planning Board, and showing all plans and profiles corrected and certified by the developer's engineer to be actual as-built locations and profiles of all streets, ways and utilities, including those installed by others, such as gas, electric, telephone, cable TV, and other companies, the location of all lines and the assigned house number for each dwelling, together with ~~one (1) set of reproducible drawings of said as-built plan~~copies, the number and size of which are specified on a form provided by the Planning Board.

f) Written request for final inspections by the Planning Board; and

g) Written request for a Determination of Completeness.

### 3.3.11.3 Determination of Completeness

The Planning Board shall review the request, including all material submitted, inspection reports, etc. If the Board determines the subdivision to be complete, and the request properly made, the Board shall send notice of such Determination of Completeness to the developer by certified mail, and to the Town Clerk within forth-five (45) days of receipt of all items required.

### 3.3.11.4 Determination of Incompleteness

a) If the Board determines that said construction, installation, or filing of "“as-built”" plans has not been completed in accordance with the requirements of these regulations, it shall specify to the Town Clerk and to the Developer, in writing by registered mail, the details wherein said construction and installation shall have failed to comply with requirements contained under Section 5. Upon failure of the Board to

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act on such application within forty-five (45) days after receipt of the application by the Town Clerk and the Board, all obligations under the bond shall cease and terminate by operation of law, and any such covenant shall become void.

b) In the event that said forty-five (45) day period expires without such Determination, the Town Clerk shall issue a certificate to such effect, duly acknowledged, which may be recorded.

### 3.3.12 ..... Reduction or Release of Performance Guarantee

#### 3.3.12.1 Release of Covenant, Release of Lots

a) Individual lots under covenant may, from time to time, be released ~~—~~by the Board. Notwithstanding any releases or other action authorized by the Planning Board, the ~~applicant~~ developer is not thereby released from their own responsibility to ensure buildability of the lot(s); other permits or approvals may be required, including but not limited to those required through the Conservation Commission.

b). Notwithstanding any other issues regarding surety for completion or maintenance of the site, no lot shall be released unless and until an amount equal to not less than 20% of the anticipated cost to construct the project, for maintenance of streets and municipal services, is deposited with the Board. The Board may, if it believes it necessary, and for specified purposes, require a greater amount.

#### 3.3.12.2 Reduction of Surety

a) The sum of any such surety or the amount of any deposit held under Section 3.3.8 may from time to time be reduced by the Board in whole or in part. If release is by reasons of covenant, a new plan of the portion to be subject to the covenant may be required by the Board.

b) If the Planning Board determines that said construction has been completed, the Planning Board shall notify the Town Treasurer within forty-five (45) days that the Planning Board releases the interest of the Town in such bond or deposit and that it shall be returned to the person or persons who furnished same, or in the case of covenant, the Planning Board shall issue a written release of the covenant.

c) Notwithstanding the above, however, a minimum of twenty percent (20%) of the cost to construct the entire project shall be held by the Town, for the maintenance of streets and municipal services until the streets are accepted by the Town, after which date the Town shall return the remainder of the amount to the person or persons who furnished same. The Board may, if it believes it necessary and for specified purposes, require a greater amount.

d) Notwithstanding any reduction in surety, however, the Planning Board reserves the right to require corrective work at any time, until the roadways and municipal services have been accepted or similarly approved by the Town.

#### 3.3.12.3 Final Release of Performance Guarantee/Acceptance

a) The Board may withhold final release of the surety or covenant until satisfied as to the integrity and suitability of all aspects of the subdivision for a period of at least

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18 months following the Board's Determination of Completeness of the subdivision. Items to be evaluated include, but are not limited to, the following:

(1) Pavement integrity, including sidewalks, curbing/berm, etc.

(2) Permanent type grass on all seeded areas.

(3) Establishment of vegetation on sloped areas.

(4) Shoulders and embankments.

(5) Functional integrity of all parts of the drainage system.

(6) Installation of utilities.

(7) Satisfactory completion of any other items, including conditions of covenants, which are the responsibility of the Developer.

(8) The quality of workmanship and materials in the construction of sewer pipes, manholes, force mains, pump stations, and all other appurtenances after functioning for a minimum of two (2) years.

b) At the written request of the developer, approximately sixty (60) days before the expiration of the minimum of eighteen (18) months after the Board's Determination that the project is complete, or other such time period as specified by the Planning Board, the Planning Board shall request the Superintendent of Streets and Town Engineer to make an inspection of said street or way or portion thereof and all other improvements to determine whether or not defects have developed therein, determine whether or not they are functioning adequately and appropriately, and determine whether or not it should recommend to the ~~Board of Selectmen~~Select Board the laying out of said street or way or portion thereof as a public way. The Planning Board shall at the same time cause to be published on the Town of Grafton website and in a newspaper of general circulation in the Town of Grafton an announcement that such inspection will be made and that the release of the Town~~'s~~'s interest in the surety is contemplated. If the recommendation is in the affirmative, the Board shall so advise the ~~Board of Selectmen~~Select Board forthwith.

c) Prior to considering any request for final release, The Developer shall file with the Planning Board a final Acceptance plan on material acceptable to the Planning Board ~~tracing cloth~~ of completed street or streets, utilities and easements together with proper legal descriptions for initiating an article in the Town Warrant pursuant to the acceptance of the ways by the Town Meeting and shall grant a deed to the Town of the streets, utilities and easements, as contained in the plan. Such plan and easements and deeds shall be suitable for recording by the Town upon acceptance of the streets by Town Meeting vote. If the recommendation made in paragraph b) above is in the affirmative, the Board shall so advise the ~~Board of Selectmen~~Select Board forthwith and the developer shall properly prepare and submit a petition or petitions sufficient to effect Town Meeting acceptance of the road and utilities. Such determination and recommendation shall be issued by the Board within forty-five (45) days of a properly made request.

d) Upon acceptance of the road and utilities by Town Meeting vote, any monies held by the Board for the maintenance of said way(s) shall be returned forthwith to the developer.

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### 3.3.13..... Expiration of Endorsement and Extensions

The endorsement of the plan approval by the Board shall be valid for the time period specified by these Regulations or by the Board. Prior to the expiration of the approval period, the developer and/or owner may request in writing to the Board an extension of time, if necessary. Expiration of the approval period without an Extension or Modified approval being approved by the Board and recorded at the Registry of Deeds and which extends such time period, shall result in automatic rescission of all Planning Board approvals; no additional lot releases or building permits will be authorized. The request for an extension shall state the reasons for the requested extension and also the length of time requested. The extension shall not exceed ~~one~~ three (~~1~~3) years.

Additional extensions after the first shall be applied for between 60 and 120 days before the expiration of the extension in effect.

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# SECTION 4 - DESIGN REQUIREMENTS

## 4.1 STREETS

### 4.1.1..... General

#### 4.1.1.1 Classification of Streets

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Each subdivision way shall be classified as a major or minor street or as a common driveway as defined in Section 2 for the purpose of establishing applicable design and construction standards. The Board shall determine the classification of all ways.

#### 4.1.1.2 References

Refer to the "Massachusetts Highway Department Project Development & Design Guide" (2006, as may be amended) for all design criteria not specified herein.

### 4.1.2 ..... Location

#### 4.1.2.1 General

a) All streets in the subdivision shall be designed so that, in the opinion of the Board, they will provide safe vehicular and pedestrian travel and an attractive street pattern through curvilinear street layout whenever possible, and they will obtain the maximum safety and amenity for the subdivision. The minimum design speed shall be 30 miles per hour, except that a design speed of 25 miles per hour may be used for a street classified as Minor B or Minor C in a flexible development.

b) The proposed streets in the subdivision shall be so designed as to minimize cut and fill. Cuts or fills greater than four (4) feet are considered significant and, in addition to the specific provisions of these Regulations, additional design and/or construction provisions may be required by the Board. Proposed grades within the right-of-way, including any cul-de-sac, shall not be more than six feet (~~6'~~6') above or below existing grade unless specifically authorized by the Planning Board in unusual topographic circumstances.

c) The proposed streets and sidewalks shall conform in location to any existing and proposed plans of the Board, including the Master/ Comprehensive Plan as adopted in whole or in part by the Planning Board, and, where required by the Board, to the existing, proposed and anticipated street system.

d) Provision satisfactory to the Board shall be made for the proper projection of streets or for access to adjoining property, whether or not subdivided.

e) Reserve strips prohibiting access to streets or adjoining property shall not be permitted except where, in the opinion of the Board, such strips shall be in the public interest.

#### 4.1.2.2 Access from Public Ways

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a) All streets and/or common driveways in a subdivision wholly or partially within the Town of Grafton must be able to be reached directly (without leaving the Town of Grafton) from a public way or ways in the Town of Grafton.

b) Where the street system within the proposed subdivision does not intersect with or have, in the opinion of the Planning Board, adequate access from an existing public way, the Board may require, as a condition of approval, that such adequate access be provided by the Applicant, and/or that the Applicant make physical improvements to and within such existing or proposed way of access in accord with the design and construction requirements of these Rules and Regulations, from an appropriate street within a subdivision to the nearest public way most suitable in terms of width, grade and construction.

c) Where the physical condition or width of a public way from which a subdivision has its access is considered by the Board to be inadequate to carry the traffic expected to be generated by such subdivision, the Board may require the ~~subdivider~~ applicant to dedicate a strip of land for the purpose of widening the abutting public way to a width a least commensurate with that required within the subdivision, and to make physical improvements to and within such public way to the same standards required within the subdivision. Any such dedication of land for purpose of way and any such work performed within such public way shall be made only with permission of the governmental agency having jurisdiction over such way, and all costs of any such widening or construction shall be borne by the subdivider.

**4.1.3 ..... Alignment**

4.1.3.1 Intersections shall not be disjointed, or separated.

4.1.3.2 The minimum centerline radii of curved streets shall be as follows:

Major Streets:.....four hundred feet (400')

Minor Streets: .....one hundred feet (100')

Greater radii may be required at the discretion of the Planning Board.

4.1.3.3 A tangent at least one hundred and fifty feet (150') in length shall separate all reverse curves on all streets except where at least one (1) radius is five hundred feet (500') or more or where the radius of curvature of both the curves is in excess of two (2) times the minimum specified in Section 4.1.3.2

4.1.3.4 a) Intersections involving Major Streets shall be at right angles. Intersections of Minor Streets shall be laid out as nearly as possible at right angles, but in no case shall minor streets intersect at less than 60 degrees from the tangent.

b) When the intersection of two (2) streets varies more than ten (10) degrees from a right angle, the radius of the curve at the obtuse angle may be less than thirty feet (~~30'~~30') and of the acute angle may be greater than thirty feet (30') to the extent approved or required by the Planning Board.

4.1.3.5 Property lines at street intersections shall be rounded or cut back to provide for a radius of not less than thirty feet (30'). The edge of pavement at street intersections shall be rounded or cut back with a radius of thirty feet (30') if the intersection includes only minor streets, or

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a radius greater than or equal to thirty feet (30') if the intersection includes at least one major street.

4.1.3.6 Streets entering opposite sides of another street shall be directly opposite one another or shall have an opposite-side offset of at least 150 feet between their centerlines. Streets entering the same side of another street shall have a minimum same-side separation between their rights of way of twice the minimum frontage for the applicable zoning district or 250 feet, whichever is greater. Notwithstanding the foregoing, intersections on a Major Street shall be separated by a minimum of 500 feet between their centerlines. (See Figure 4-1.)~~Streets shall be laid out so as to intersect with adjacent streets or adjacent unsubdivided land at intervals of from six hundred feet (600') to twelve hundred feet (1200').~~ In cases where constraints imposed by existing development or property lines, topography, wetlands, or other unusual site conditions make it infeasible to satisfy the minimum separation between two streets and no feasible alternative designs are possible, the Planning Board may waive the minimum separation requirement, provided that the centerlines of the two streets are separated by at least the minimum opposite-side offset and that the Planning Board finds that the reduced separation will not have an adverse impact on traffic safety or on the land between the two streets. In special instances the Planning Board may approve a right-of-way for a future street to remain in fee ownership of the applicant, in lieu of actual construction of a cross street.

4.1.3.7 Roadway centerlines shall be colinear with the centerline of the roadway right of way.~~ The distance between edge of pavement and edge of right of way shall remain constant.~~

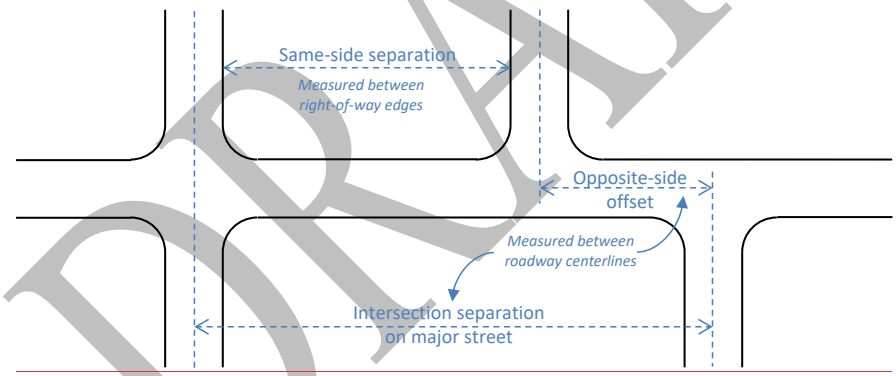


*Figure 4-1 – Intersection Separation*

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### 4.1.4 ..... Width

#### 4.1.4.1 Right of Way Width

a) The minimum width of right-of-way shall be as follows:

Major Streets:.....sixty feet (60')

Minor Streets: .....fifty feet (50')

b) When a minor street will provide the only access for lots fronting on a length in excess of five hundred feet (500') or where, in the opinion of the Board it is appropriate, the

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Board may require a greater right-of-way than that specified above and/or may require a divided roadway.

4.1.4.2 **Pavement Width**

a) Minor Street - C .....twenty-~~two~~ four (~~22~~24) feet minimum

b) Minor Street - B .....twenty-six (26) feet minimum

c) Minor Street - A .....thirty (30) feet ~~four (4) inches~~ minimum

d) Major Streets.....thirty-eight (38) feet minimum

4.1.4.3 The edge of right of way, between the pavement and the right of way lines, shall be graded such that surface runoff cannot enter, nor exit, the right of way.

**Commented [SN1]:** FYI increasing the minimum width requirement for Minor Street C goes against MS4 Permit goals to decrease impervious cover, but we understand that safety probably takes precedent over stormwater in this scenario.

**Commented [SN2]:** When revising these requirements for MS4 purposes, we may want to revise this language to allow grading that directs sheet flow into green infrastructure such as infiltration swales, etc.

### 4.1.5 ..... Grade

4.1.5.1 The centerline grade for any street shall be not less than eight-tenths of one percent (0.8%).

4.1.5.2 The maximum centerline grade for streets shall be as follows:

| | Single Family Area | Multi Family and Non-Residential Area |
|---|---|---|
| Major Street | Five percent (5%) on straightaways; Three percent (3%) on curves | Three percent (3%) |
| Minor Street | Eight percent (8%) | Four percent (4%) |
| Common Drive | Ten percent (10%) | |

4.1.5.3 **Vertical Curves**

Where changes in grade exceed one-half of one percent (0.5%), vertical curves will be provided. The minimum length ~~(k value)~~ of vertical curves shall be designed in accordance with the following:

L = K × ~~(G1 – G2)~~ΔG

ΔG ~~G~~ = ~~Grade~~ The difference between the two grades, in percent, expressed as a positive number

L = ~~Length~~ Minimum length, in feet

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The values for K are listed below:

| | Crests | Sags |
|---|---|---|
| Major streets, in an Intensity Area, or as determined by the Planning Board | 55 | 55 |

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Minor Streets.....28 ..... ~~35~~37

A vertical curve within a required leveling area shall not have a tangent exceeding the maximum grade specified in Section 4.1.5.6 for that leveling area and shall not have an adverse impact on sight lines for the intersection~~Vertical curves will not be included within any required leveling area~~.

4.1.5.4 **Cross Pitch**

Roadways shall have a cross slope of two percent (2%) or one-quarter inch (1/4) per foot.

4.1.5.5 **Super Elevation**

Where curves and grades combine to create potentially dangerous driving conditions, the Board may require a suitable amount of super elevation of the curves or other protection.

4.1.5.6 **Leveling Areas**

a) All Minor Streets shall have a leveling zone which extends at least one hundred (100) feet from the intersection of street right of way lines, with a maximum road grade of three (3) percent.

b) All Major streets shall have a leveling zone which extends at least two hundred (200) feet from the intersection of street right of way lines, with a maximum road grade of two (2) percent.

**4.1.6 ..... Dead End Streets**

4.1.6.1 Dead end streets shall be discouraged by the Board, except where such streets create frontage for lots in excess of minimum area requirements of the Zoning By-Law and which are served by minor streets or common driveways.

4.1.6.2 ~~The length of dead end streets shall be measured from the right-of-way line of the intersecting street to the center of the turnaround.~~The length of a dead end street shall be measured as the maximum distance from the right-of-way line of the intersecting street to any point on the centerline of the dead end street, measured along the centerline. For a cul-de-sac, the length shall be measured to the center of the turnaround. Where a point on the dead end street can be reached via more than one path from the intersection, the measurement shall use the shortest such path. See Figure 4-2 for examples of dead-end street configurations and length measurements.

4.1.6.3 However, if they are necessary for subdivisions with minor streets or common driveways, dead end streets and their extensions or segments, if any, shall not be shorter than one hundred fifty feet (~~150'~~150'), nor longer than five hundred feet (500').

4.1.6.4 In the unusual event that topography or other site conditions justify a dead end street longer than five hundred feet (~~500'~~500'), and where there is a substantial public or conservation benefit to be achieved, the Planning Board may relax these standards. Any waiver request regarding this provision shall require the Board to specify the particular public and/or conservation benefit to be realized, and shall be referred by the applicant to the Police

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Chief, Fire Chief, Director of Public Works and Conservation Commission for their review and comment on this specific issue prior to the Board's action on such request.

4.1.6.5 If a dead end street is allowed, provision for access to adjoining property pursuant to section 4.1.2.1d shall include at least one roadway easement extending from the dead end street to adjoining property, provided that it is possible to create such an easement that can be demonstrated to be reasonably developable in accordance with these regulations. Where possible, such an easement should be extended from a cul-de-sac turnaround.~~In the event a dead end street is allowed, the plans shall show a roadway easement from the end of the dead end street to adjacent property. Such easement shall be demonstrated to be reasonably developable in accordance with these regulations.~~ Documentation establishing the easement shall be recorded at the Registry of Deeds.

4.1.6.6 If a ~~dead end street~~cul-de-sac is subsequently extended beyond the required turn-around, any easement other than land required for the extension of the roadway may be relinquished to the adjacent properties. Until such extension is constructed, no land lying in the easement may be used in determining the area or frontage of any lot to determine conformity with the minimum requirements under the Zoning By-Law of the Town.

4.1.6.7 ~~Dead end streets~~A cul-de-sac shall be provided at the closed end with a turnaround having an outside right of way diameter of one hundred feet (~~100'~~100') unless a greater diameter is required by the Board. To ensure access for fire apparatus, the radius of the paved portion of the turnaround shall be no less than forty feet (40') and there shall be no obstructions (e.g., fire hydrants, utility boxes, light poles) within a radius of forty-two feet (42'). The turn-around or stub shall be located at the property line.

4.1.6.8 A snow easement and associated curb cut shall be provided along the outside of the turnaround and clearly marked on site at the end of ~~the dead end streets~~a cul-de-sac. When the contours of the land make the outside impractical, the snow easement shall be located elsewhere as directed by the Planning Board, with the advice of the Superintendent of Streets. The minimum size of the snow easement shall be fifteen feet (15') deep by thirty feet (30') wide.

4.1.6.9 If provision is made pursuant to section 4.1.6.5 for extending a roadway easement from a cul-de-sac turnaround, the plan shall show, to the satisfaction of the Planning Board, that if the roadway is extended, each lot with at least some of its frontage on the turnaround can have frontage on the extended roadway conforming with the minimum requirements under the Zoning By-Law of the Town, identifying any lot boundary changes that may be necessary for that purpose and any easements or other provisions that may be required to ensure that such changes can be made.

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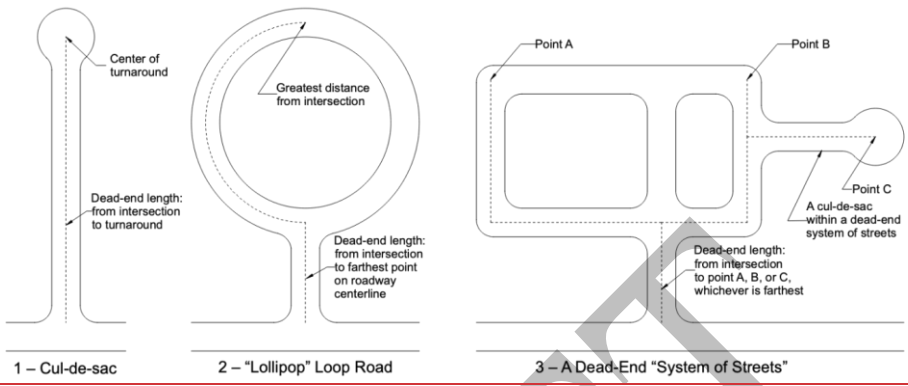


Figure 4-2 – Dead-End Street Examples

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### 4.1.7 ..... Street Names

Proposed street names and walkway names shall be approved by the Police Department and shall satisfy emergency service requirements, at the time of submission for Planning Board consideration.

### 4.1.8 ..... Streets in More Than One Town

4.1.8.1 Each lot in a subdivision must be served by an approved way lying within the Town bounds.

4.1.8.2 If a subdivision is divided by a Town boundary, the Planning Board shall condition approval of the Definitive Plan on approval of the remaining portion of the plan by the Planning Board of the City or Town in which it is located.

## 4.2 CURBS AND BERMS

### 4.2.1 ..... Granite Curb

Unless otherwise specified by the Planning Board, granite curbs of the dimensions given for Type VA4 vertical granite curbs (MHD Section M~~.~~9.04.1) or Type SA or SB sloped granite curbs (edging) (MHD Section M9.04.2) may be provided in any location where curbs are required and ~~Type VA4~~ shall be provided in the following locations:

4.2.1.1 Streets in a non-residential subdivision, and all Major Streets: Along each edge of the roadway for the full length of the street.

**Commented [SN3]:** When revising these requirements for MS4 purposes, we will want to rethink where granite curb is required. Curb often directs stormwater straight to storm drains and the nearest waterbody, whereas without curb, there is more opportunity for stormwater infiltration through adjacent pervious surfaces (reducing stormwater volumes and pollutant loads).

4.2.1.2 All Other Streets

a) At intersections along the paving edge the distance of arcs of the curves plus a straight section of eight feet (8') at each end of said arcs.

b) Along each edge of the roadway where the grade exceeds ~~two~~ five percent (5~~2~~%)

**Commented [LC4]:** This change will require curbs less often so this aligns with MS4 initiatives

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c) Along each edge of the roadway on all curves with a radius of less than two hundred and fifty feet (250').

**4.2.2 ..... Bituminous Curb**

Except where granite curbing has been required or provided, the edges of a street shall be provided with a hot mix asphalt (bituminous concrete) -low profile modified "Cape Cod" berm along both edges of the roadway for the full length of the roadway.

**Commented [SN5]:** As mentioned in the granite curb section above, when revising these requirements for MS4 purposes, we will want to rethink where bituminous curb is required. Curb often directs stormwater straight to storm drains and the nearest waterbody, whereas without curb, there is more opportunity for stormwater infiltration through adjacent pervious surfaces (reducing stormwater volumes and pollutant loads).

## 4.3 CURB CUTS AND DRIVEWAY OPENINGS

4.3.1 Driveways in subdivisions containing one (1) and/or two (2) family dwellings only shall be at least twelve feet (12') wide, have a curb return at the roadway of two feet (2') in radius, and shall have an opening of at least sixteen feet (16') at the gutter line.

**Commented [SN6]:** When reviewing these requirements for MS4 purposes, we will want to ensure minimum driveway widths are reasonable and that we're not unnecessarily increasing impervious surface.

4.3.2 Driveways for multiple dwellings and all non-residential uses shall be at least sixteen feet (16') wide, have a curb return at the roadway of two feet (2') in radius, and shall have an opening of at least twenty feet (20') at the gutter line.

4.3.3 There shall be at least 50 feet between the side right of way lines of intersecting ways (as measured from the outer edge of the radius) and a driveway as measured along the frontage.

4.3.4 Driveway openings shall not contain catch basins.

4.3.5 Driveways or other curb cut openings shall be designed so that surface runoff can neither enter nor leave the road right of way.

**Commented [SN7]:** When reviewing these requirements for MS4 purposes, this provision should be revised to permit curb cuts that are specifically designed to allow surface runoff to leave the road right of way and directed to stormwater treatment measures (e.g., rain gardens, bioretention swales, etc.)

4.3.6 All curb cuts and Driveway Openings shall be designed and constructed in conformance with the Town of Grafton Driveway Regulations, as may be amended.

## 4.4 OPEN SPACES (~~MGL Ch~~MGL Ch. 41 § 81U)

4.4.1 Before approval of a plan, the Board may also require the plan to show a park or parks suitably located for playground or recreation purposes or for providing light and air, pursuant to ~~MGL Ch~~MGL Ch. 41 ~~S.~~§ 81U. The park or parks shall not be unreasonable in area in relation to the land being subdivided and to the prospective uses of such land, and shall be at least equal to one (1) acre of land for each twenty (20) single family dwelling units or fraction thereof or one thousand five hundred (1500) square feet for each other dwelling unit shown on the plan, and for all non-residential subdivisions at least equal to ten percent (10%) of the land area. The Board may, by appropriate endorsement of the plan, require that no building be erected upon such park or parks without its approval for a period of three (3) years.

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4.4.2 Each area reserved for such purpose shall be of suitable area, dimensions and topography for use as a natural playground. The area or areas shall be so located as to serve adequately all parts of the subdivision as approved by the Board.

4.4.3 The Board may require that the area or areas reserved shall be located and laid out so as to be used in conjunction with public and semi-public open spaces or with similar areas of adjoining subdivisions or of probable subdivisions. Any land so reserved shall be graded to dispose properly of surface water and shall be left in condition for the purpose intended, as required by the Board.

4.4.4 The Town shall have the right to acquire ownership of same as provided in ~~MGL Ch~~MGL Ch.~~.~~ 41 ~~Section~~ § 81~~-~~Q.

4.4.4.1 Any applicant with a Definitive Plan on which open space areas are to be transferred to the Town shall provide the Town with clear title to such land, in the form of a quitclaim deed and a title certificate upon approval of such Definitive Plan by the Planning Board.

4.4.4.2 In areas designated as open spaces in a Definitive Plan, if such areas have been environmentally damaged prior to the completion of the development as a result of soil removal, harvesting of trees or other natural features, refuse disposal or any other activity deemed inappropriate with proposed uses of the open space, the developer shall restore or improve the condition and appearance of the open space area. The Planning Board shall require the posting of a bond or other appropriate form of performance guarantee to ensure such restoration or improvement.

## 4.5 PROTECTION OF NATURAL FEATURES

4.5.1 Due regard shall be shown for all natural features, such as trees, wooded areas, water courses, scenic points, historic spots, and similar community assets, which, if preserved, will add attractiveness and value to the subdivision. Any clearing, backfilling, cutting, thinning or other disturbance to trees twelve inches (12") or over in diameter measured four feet (4') above finished ground level located within the street right of way and the minimum front setback distance or other natural vegetation shall be prohibited unless deemed both proper by the Board and not in conflict or contradiction to the intent of Section 4.9.1. Any such proposed clearing shall be shown on the plan and written reasons therefore may be requested by the Board.

4.5.2 Tree wells or retaining walls should be installed when and as requested by the Superintendent of Streets for suitable grading around trees. Tree wells or retaining walls shall be of such design as to meet the standards as set forth in the Tree Experts Manual or some similar publication acceptable to the Board.

## 4.6 LOT DRAINAGE

4.6.1 Lots shall be prepared and graded in such a manner that development of one lot shall not cause detrimental drainage on another lot (either within or outside the subdivision) or onto streets either during construction or upon completion.~~.~~ Any necessary drainage easements shall be a minimum width of twenty~~-~~-five feet (25').

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## 4.7 UTILITIES

### 4.7.1 ..... General

4.7.1.1 All required utilities exclusive of transformers shall be placed underground, as illustrated in Schedule A, at the time of initial construction ~~in accordance with Schedules A and B~~. Required utilities include water, sewer, storm drainage, telephone, electricity, gas, wiring for street lights, fire alarm systems ~~and~~, cable ~~TV~~ television, and data service unless otherwise specified by the Board.

4.7.1.2 Where adjacent 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 utility system by continuing the mains the full length of streets and to the exterior limits of the subdivision at such grade and size which will, in the opinion of the Board, permit their proper extension at a later date in conformance with all regulations governing the design and installation of such utility.

4.7.1.3 Location and Placement (MHD Section 201, 220, 230)
All drain, sewer, gas, water pipes, telephone, electricity, fire alarm systems, cable TV and other underground utilities and other structures shall be installed to a point a minimum of two (2) feet outside the back edge of the sidewalk, or, if there is none, the line which would otherwise be the required back edge at the property line, before the placing of the sub-base, gravel base course, sidewalks or pavement.

4.7.1.4 Connections for drain, water, gas, sewer, electric, cable TV, telephone and other underground utility service from the primary utility structure in the way to the exterior line of the way shall be constructed for each lot whether or not there is a building thereon, except that the Board may waive such requirement, in whole, or in part, in the case of a lot to be permanently used for a park, playground or for any other purpose for which, in the opinion of the Board, such connections shall not be required.

4.7.1.5 Unless otherwise specified in this section or by the Planning Board, underground utility lines shall be installed under the grass plot in the right of way, but not under a sidewalk, and in accordance with all requirements and specifications of the respective utility. Placement of underground utilities shall consider locations of proposed street trees where possible, to minimize impacts of future maintenance activities on the trees' root systems.

### 4.7.2 ..... Sewerage

Connection to public sewer is required, at the expense of the applicant, in the following cases. In all cases, the design and installation of sewers shall be in conformance with the rules and regulations of, and conditional upon approval by the Board of Sewer Commissioners. In all cases, the distance measurement shall be in a straight, horizontal line ("as the crow flies") from the nearest public sewer to the nearest point of the subdivision as shown on the Definitive Plan and as determined by the Planning Board.

4.7.2.1 If a public sewage system is located within two thousand feet (2000') of a subdivision, all lots shall be connected to the public sewage system by the developer.

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4.7.2.2 If a public sewage system is planned to be installed within two thousand feet (~~2000'~~2000') of any subdivision within five (5) years of the date of submission of the Definitive Plan as indicated by prior Town Meeting action, the sewer laterals shall be installed by the developer to the property line and to every lot, to be connected later to the public ~~sewerage~~ sewage system.

4.7.2.3 If a public sewage system can be connected to any point of the subdivision using a gravity flow, and in other cases where the Board deems it appropriate, then all lots within the subdivision shall be so connected.

4.7.2.4 ~~—~~Should the Board of Sewer Commissioners require larger mains with the capacity to serve the entire developable drainage basin, or if the Town master sewerage plan shows larger mains to be installed in the future than are required to serve the proposed subdivision, or shows other improvements or extensions within the limits of the subdivision not required to service said subdivision, the developer shall install, at his own cost, such mains or other improvements according to such plan.

4.7.2.5 Sewer Plans ~~(linen or Mylar)~~ shall be submitted to the Board of Sewer Commissioners, on material acceptable to that Board, for its signatures, and a copy of the approved plan shall be filed with the Planning Board prior to endorsement of the Definitive Plans. If the installation of the sewerage is not in accordance with the requirements and standards of the ~~Grafton~~ Board of Sewer Commissioners, the work shall be stopped until the unacceptable sewerage is removed and replaced in a manner acceptable to the Town.

4.7.2.6 In the event the applicant seeks permission to use an on-site sewage disposal system rather than the municipal sewer system as required by these Regulations, the Planning Board will rely heavily on the input of the Board of Sewer Commissioners and the Board of Health. However, in the event the ~~on site~~on-site sewage disposal system may be located in an area designated as "severely limited" on the map entitled "Soil Limitations for Septic Tank Sewage Disposal, Town of Grafton, Worcester County, Massachusetts" developed by the US Department of Agriculture, Soil Conservation Service in cooperation with the Worcester Conservation District, February 1973, or its successors, additional subdivision and or infrastructure design and/or construction measures may be required by the Planning Board.

4.7.2.7 If public sewerage connections are not required according to the above, or if the planned public ~~sewerage~~ sewage system will not have been installed to within the required distance of the proposed subdivision, private on-lot ~~sewerage~~ sewage systems as approved by the ~~Grafton~~ Board of Health shall be installed. The on-lot facility shall be located in the front yard wherever practical to facilitate connections to the eventual public sewage ~~sewerage~~ system. Due consideration shall be given to surface and subsurface soil conditions, drainage and topography in the location of such on-lot facilities.

**4.7.3 ..... Water**

4.7.3.1 Every structure shall be connected to and serviced by operating facilities of a municipal water supplier, or of a public utility franchised to furnish water to the district within which



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the subdivision is located, or a source approved by the Town Board of Health and the Fire Department.

4.7.3.2 If lots will be served by a private well or private water system, the requirements of the Board of Health shall govern the design of the well or system. Where private wells are not used, water mains as described in this Section shall be installed.

4.7.3.3 If a public water system is located within two thousand feet (2000') of the subdivision, or other cases where the Board deems it appropriate, all lots shall be connected to the ~~public water system~~appropriate water utility by the developer unless the water ~~district or appropriate utility~~utility specifies otherwise. Design and installation of water systems shall be in conformance with the rules and regulations of the ~~appropriate water utility~~water utility. The distance measurement shall be in a straight, horizontal line ("as the crow flies") from the nearest public water to the nearest point of the subdivision as shown on the Definitive Plan and as determined by the Planning Board.

**4.7.4 ..... Gas**

Mains may be installed, if gas connection is available, ~~under the sidewalk or~~ under the grass ~~strip~~ plot with three feet (3') of cover or as required by the appropriate utility.

**4.7.5 ..... Electricity**

The Board may permit transformers, switches, and other such equipment to be placed on the ground in approved locations, screened from view with evergreen shrubbery.

**4.7.6 ..... Lighting**

Street lighting shall be located where required by the Planning Board, taking into consideration any recommendation by the Select Board pursuant to review as specified in Section 3.3.5.3b(1), or in the absence of any such direction~~at a minimum~~, at intersections and every 300 feet, and shall be in accordance with all requirements of the ~~Board of Selectmen~~Select Board and utility provider and as required by the Planning Board.

**4.7.7 ..... Fire Hydrants**

4.7.7.1 Hydrants shall be provided every five hundred running feet (500') or portion thereof on one (1) side of each street, as follows, or as specified by the Fire Department.

a) A hydrant shall in all cases be installed at the terminal end of each water main.

b) A hydrant shall be located on each new main within five hundred feet (500') of the nearest supply main or, if no hydrants exist, within two hundred feet (200') of the connecting point and, where practical, at all road intersections.

4.7.7.2 Each hydrant shall be served directly from the water main by a lateral connection with not less than a six inch (6") inside diameter.



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4.7.7.3 Hydrant type, size and make, direction and pitch of threads shall be approved by the Fire Department.

4.7.7.4 Hydrants shall be located no more than ten feet (10') from the edge of pavement.

4.7.7.5 Hydrant locations shall be approved by the Fire Department.

**4.7.8 ..... Stormwater Management**

In addition to the following sections, all stormwater management calculations and designs shall be in accordance with the most recent version of the Massachusetts Stormwater ~~Management Guidelines~~Handbook and Stormwater Standards issued by the Massachusetts Department of Environmental Protection (MassDEP) and regulations, guidance documents and policies promulgated ~~in accordance with those Guidelines~~by MassDEP. This applies to all facilities, regardless of their proximity to areas regulated by the Wetland Protection Act. Any deviations from the ~~Guidelines~~ standards or Handbook shall require the express approval of the Planning Board.

**Commented [SN8]:** When revising requirements for MS4 purposes, consider adding something like the following to encourage green infrastructure and low impact development:

Low Impact Development and Green Infrastructure site design strategies shall be utilized to preserve existing natural features of the site, minimize the creation of impervious surfaces and manage stormwater in a decentralized fashion, to the maximum extent feasible.

4.7.8.1 Storm drains, culverts, ditches and related installations, including catch basins, gutters and manholes shall be installed as needed, in the opinion of the Board, to provide adequate disposal of surface and subsurface water, including control of erosion, subsurface water, flooding, and standing water from or in the subdivision and adjacent land. ~~The drainage system shall be designed by methods based on the Rational Formula and methods contained in the United States Soil Conservation Service URBAN HYDROLOGY FOR SMALL WATERSHEDS, Technical Release Number 55. The Board may require a more intense design storm frequency to be used in any situation which in its judgment requires that a greater degree of protection should be afforded to public or private property.~~

4.7.8.2 The drainage system shall be designed by methods based on the Rational Formula and methods contained in the United States Soil Conservation Service URBAN HYDROLOGY FOR SMALL WATERSHEDS, Technical Release Number 55. Systems for infiltration, detention or attenuation of storms shall be designed for 100 year frequency storm and shall not cause water to be discharged within 10 feet of the perimeter of the subdivision. All other drainage facilities shall be designed for a ~~10~~ 25 year frequency storm, at a minimum. The Board may require a more intense design storm frequency to be used in any situation which in its judgment requires that a greater degree of protection should be afforded to public or private property.

4.7.8.3 Catch basins, curb inlets and manholes shall be located as required to maintain the drainage area free of temporarily ponded runoff and to avoid excessive accumulations of surface flow on or adjacent to public ways or off existing ways onto the proposed way. In no instance shall catch basins be located along a driveway cut. Manholes shall be spaced not over three hundred (300') apart on straight runs and at all changes in alignment or grade. Where desirable in the opinion of the Board because of special features of the terrain, curved alignment of pipe between manholes may be allowed. It is not to be interpreted that provision for curved alignment constitutes general acceptance of such methods of construction and every effort must be made in the design to avoid such installations.

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4.7.8.4 Proper connections shall be made with any existing drains in adjacent streets or easements. Where property adjacent to the subdivision has not been subdivided, drains installed within the subdivision shall be of such design as to make feasible their connection with drains installed in such adjacent property when subdivided.

4.7.8.5 Drainage Layer. Any road constructed in an area known to be wet, or where groundwater is or has been within two (2) feet of finish grade, or in an area of four (4) feet or greater cut depth, or any area where the Planning Board determines it to be appropriate, shall have a drainage layer below the gravel subbase in accordance with Section 5 of these Regulations.

4.7.8.6 Subdrains. Where a drainage layer is required, or at any location where a groundwater condition may exist, subdrains shall be installed in accordance with Section 5 of these Regulations.

## 4.8 MONUMENTS (BOUNDS)

4.8.1 Granite bounds shall be set to locate the sidelines of both sides of rights-of-way, at all street intersections, at all points of change in direction of curvature of sideline points, and of designated open space areas and of municipal easements (such as access, drainage, future street or utility, etc.) and of reserved rights of way and other points as determined by the Planning Board. Intermittent bounds shall be set on all tangents and curves of a length exceeding eight hundred feet (800').

4.8.2 Sight lines between bounds shall not be obscured; utility poles shall not be set on a right-of-way sideline. A clearance of at least three feet (3') from a bound point shall be provided to permit free use of the bound both laterally and along sidelines.

## 4.9 SIDEWALKS, GRASS PLOTS, TREES

4.9.1 Sidewalks, grass plots and trees shall be provided for the full length of each street. Sidewalks shall be provided on one side (preferably north, west sides) of Minor Streets and on both sides of Major Streets. Sidewalks shall be at least four (4) feet wide, shall conform to all Access codes, and shall be located as shown on the plans and profiles required by these Regulations.

**Commented [SN9]:** Missing a period here.

4.9.2 Trees, shrubs, fences and other items shall not be located so as to obstruct vision at intersections.

4.9.3 In areas where ledge is encountered in road cuts, a strip at least five feet (~~5'~~5') wide with a slope of one-quarter inch (1/4~~")~~ ") per foot towards the road shall be provided for the length of the ledge. Such strip shall be located outside, and immediately adjacent to, the road right of way. The purpose of this strip is to prevent falling pieces of ledge from injuring anyone or anything within the street right-of-way.

4.9.4 Street trees shall be located outside of the right-of-way or, at the discretion of the Board, within the unpaved portion of the right-of-way, as ~~shown~~ illustrated in ~~the profile and Standard Cross Sections,~~ Schedule~~s~~ A ~~and B~~, approximately at forty ~~-~~ foot (40') intervals. They shall be at least twelve feet (12') in height and two inches (2") in diameter measured

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four feet (4') above the approved grade, unless otherwise required by the Tree Warden and/or Planning Board, and be not closer than five feet (5') nor more than ten feet (10') from said right-of-way line unless otherwise approved by the Board.

## 4.10 TRAILS, BIKEWAYS AND WALKWAYS

4.10.1 Trails, public bikeways or pedestrian walkways may be required by the Board to provide circulation or access to schools, playgrounds, parks, shopping, transportation, open space and/or community facilities or for such other reason as the Board may determine. These may or may not be part of normal sidewalk provisions, but they shall not be a part of any lot in the subdivision.

4.10.2 The minimum right-of-way width shall be twenty-five feet (25') unless sufficient planting, fencing, or other buffering between the way and adjacent property is provided so that, in the opinion of the Board, the right-of-way may be reduced to a minimum of fifteen feet (15').

4.10.3 The minimum width of the finished surface shall be six feet (6').

4.10.4 The maximum gradient shall be eight percent (8%) for segments less than one hundred feet (100') in length; five percent (5%) elsewhere.

4.10.5 The minimum centerline radius shall be twenty-five feet (25').

## 4.11 EASEMENTS

4.11.1 Where utilities cross lots or are parallel to rear or side lot lines, easements shall be provided at a width of at least twenty-five feet (25').

4.11.2 Where a subdivision is traversed by a water course, drainage way, channel or stream, the Board shall require a storm water easement or drainage right-of-way of adequate width and proper side slope as determined by the Planning Board to conform substantially to the lines of such water course, drainage way, channel or stream and to provide for construction or other necessary purposes. In no case shall the width be less than twenty feet (20') or the side slope be steeper than two (2) horizontal to one (1) vertical.

4.11.3 Access easements shall be provided, if required by the Board, for use by emergency vehicles and for the benefit of the Town. They shall have a minimum width of ~~twenty five~~twenty-five feet (~~25'~~25').

4.11.4 Bridle paths, footpath easements and access easements (e.g., to conservation areas) may be required by the Planning Board. They shall be at least twenty feet (20') in width.

4.11.5 Wherever possible easements along rear lot lines shall be continuous to the street at the end of the block to connect with the adjoining blocks in the shortest direct line.

## 4.12 COMMON DRIVEWAYS

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**4.12.1 ..... Common driveways shall meet the following standards:**

4.12.1.1 Minimum Width: ..... Eighteen feet (18')

4.12.1.2 Maximum Grade:..... Ten percent (10%)

4.12.1.3 Maximum Length: ..... Five Hundred Feet (500')

4.12.1.4 Curb Cut: Not nearer than fifty feet (~~50'~~50') from the side right of way lines of intersecting ways (as measured from the outer edge of the radius) and the Common Drive, as measured along the frontage

4.12.1.5 In addition, the design shall, in the opinion of the Planning Board, assure adequate safety for emergency vehicles, water service and hydrants and shall provide for adequate drainage of surface waters. Additional constructed width, curbing, drainage, reduced grades or other design and construction provisions may therefore be required. This will be particularly applicable in the case where the Common Driveway, if allowed, is proposed to serve any use(s) other than single family residences.

4.12.1.6 For residential uses, a common driveway shall not serve more than three (3) lots for detached one-family dwellings, or four (4) dwelling units for detached two-family dwellings.

4.12.1.7 Common driveways, including all associated easements, shall be located entirely within the boundaries of the lots to be served by such driveway.

**4.12.2 ..... Covenant Concerning a Common Driveway**

4.12.2.1 Before the Board shall approve any Definitive Plan or a Subdivision whereon there is shown any way classified as a common driveway, it shall have first obtained from the ~~subdivider~~ applicant a covenant or agreement satisfactory to the Planning Board that the common driveway shall remain a private way and be maintained by the abutters, unless it is both redesigned and improved, at no cost to the Town, in accordance with the minimum standards herein prescribed for a major or minor street, is reclassified by the Planning Board and is accepted by the Town as provided by law.

4.12.2.2 In the event water lines are installed in a common driveway, the covenant or agreement in regard to the street and/or driveway shall provide that the owner or owners of the common driveway shall be solely responsible for the maintenance of the water installation for the first five years after which the water system may be conveyed to the appropriate water utility together with a twenty (20) foot wide utility easement if the Water Utility will accept responsibility for maintenance of the system.

4.12.2.3 Owners of land abutting on a common driveway shall maintain and plow said driveway and shall provide all rubbish collection at their own expense.

4.12.3 A declaration of covenants, easements and restrictions for the use and maintenance of said common drives must be approved by the Planning Board, and shall include arrangements

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satisfactory to the Board for maintenance and snow plowing. All such covenants run with the land, in perpetuity.

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# SECTION 5 - CONSTRUCTION REQUIREMENTS

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## 5.1 GENERAL

**5.1.1** ..... It is the intent of these Regulations that no street or way through private property shall be accepted by the Town unless the same be previously constructed and completed in accordance with the ~~Standard Cross Section (See Appendix, Schedules A and B), Street Layout Plan, Profiles~~street layout plan and profile in an approved Definitive Plan and the following specifications.

**5.1.2** ..... To insure high quality and uniformity of construction and unless otherwise specified, all the work and the materials used in the work to be done shall conform to the requirements of the ~~"~~"Commonwealth of Massachusetts, Highway Department, Standard Specifications for Highways and Bridges, ~~1995~~ 2020 Edition~~",~~", as from time to time amended, hereinafter referred to as the ~~"~~"Standard Specifications~~",~~", and the special provisions included hereinafter. Appropriate illustrations are found in ~~"~~"Massachusetts Department of Transportation Highway Division Construction Standard Details, October 2017~~Commonwealth of Massachusetts, Highway Department, Construction Manual, Part 3, 1995"~~" as from time to time amended, hereinafter referred to as the "Construction Standard Details".

**5.1.3 ..... Supplemental Specifications**

5.1.3.1 Supplementing the aforesaid Standard Specifications, certain specifications or special provisions shall apply particularly to the work to be done hereunder. References in the following specifications, unless otherwise stated, are to the aforesaid Standard Specifications, amendments or addenda. When the requirements of these Rules and Regulations are stricter than the provisions of the Standard Specifications, the Rules and Regulations shall govern.

5.1.3.2 All references in the Standard Specifications, amendments or addenda to Commission, Department, Department of Public Works, Engineer, party of the First Part, etc., shall be construed to mean the Planning Board of the Town of Grafton or its duly authorized representative.

**5.1.4 .....** To facilitate reference where appropriate, each section in these specifications is noted with the paragraph number of the particular section as contained in the Standard Specifications. Where appropriate, references are also made to the Construction Manual. No departure from these regulations will be permitted without the approval of the Planning Board, working in conjunction with the Department Head involved.

**5.1.5 .....** Wherever in the documents referred to in 5.1.2 above, the following terms, or pronouns in place of them are used, the intent and meaning shall be interpreted by substitution as follows:

~~"~~"Commonwealth~~"~~" ..... Commonwealth of Massachusetts

"Town" ..... Town of Grafton

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"“Department"” ..... Department of Public Works; Town of Grafton

"“Engineer"” ..... The Town Engineer of Grafton acting directly through an authorized representative acting within the scope of the particular duties entrusted to him.

**5.1.6 .....** The extent of work required shall be completed as shown upon approved plans~~, and shall be in compliance with the Standard Cross Section~~.

5.1.6.1 Offset stakes shall be set under the direction of a Registered Land Surveyor at twenty-five-foot (25') intervals and at each sewage and drainage structure and at each hydrant to indicate the location and the exact amount of cut, fill or grade. The use of laser equipment for line and grade of sewers and drains is recommended.

5.1.6.2 Improvements to minimize adverse environmental impact, if required, shall be installed in accordance with all details as shown on the approved Definitive Plan, and all possible measures shall be taken during construction to minimize dust and/or erosion.

5.1.6.3 No earth shall be removed from the area shown on a Definitive Plan except in accordance with the approved plan.

**5.1.7 ..... Construction Approval**

As each construction operation is completed, it shall be approved by the proper Town authority and/or utility company and the Planning Board or its agent prior to starting work on the succeeding operation.

**5.1.8 .....** The developer shall have the approved plans and profiles that are on file in the Planning Board office corrected and certified by his Engineer to show the actual as-built locations and profiles of all streets, ways and utilities and any changes authorized by the Planning Board. A minimum of three (3) swing ties from permanent structures shall be used to locate all manholes and catch basins, gates, ends of unconnected building connections and other appurtenances that may be buried or covered.

**5.1.9 .....** The developer shall have obtained the necessary approvals from the ~~Board of Selectmen~~Select Board under Article 13 (Earth Removal) of the By-Laws of the Town of Grafton.

**5.1.10 .....** The developer shall obtain prior to the commencement of any construction all applicable permits including but not limited to: Zoning Permit, Conservation Commission Order of Conditions, Road Opening Permit, Sewer Connection Permit Special Permit, etc.

## 5.2 STREETS AND ROADWAYS

**5.2.1 ..... Grading and Preparation for Pavement**

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5.2.1.1 **Clearing and Grubbing (MHD Section 101)**

The entire area of each street or way shall be cleared and grubbed to remove all trees not intended for preservation, stumps, brush, roots, peat, organic matter, rocks or boulders and like material which may exist upon the surface.

5.2.1.2 **Excavation (MHD Section 120)**

The entire area of the roadway shall be excavated to remove all materials encountered within the right-of-way down to the true surface of the subgrade, or to suitable material in the areas where unsuitable material exists, in preparation for foundation of roadway, sidewalks, driveways and berms. Approved materials obtained from the excavation may be used in fills as required if, in the opinion of the Planning Board, they are suitable.

5.2.1.3 **Embankment (MHD Section 150)**

a) When, in the opinion of the Planning Board, suitable material is not available within the limits of the roadway location to form the subgrade or sub-base, the Developer shall obtain suitable additional material from other sources and as may be approved by the Planning Board.

b) Embankments within or adjoining the right-of-way shall be evenly graded and pitched at a slope of not greater than two (2) horizontal to one (1) vertical in fill. All such slopes shall be stabilized in accordance with the Standard Specifications for the area between the roadway and sidewalk or roadway and boundary of the right-of-way. Where cuts are made in ledge, other slopes may be determined with the approval of the Superintendent of Streets and the Planning Board. Where terrain necessitates greater slopes, retaining walls, terracing, fencing or rip-rap may be used either alone or in combination to provide safety and freedom from Town maintenance, but must be done in accordance with plans filed with and approved by the Planning Board. The Town shall be responsible for maintenance (after Town Meeting acceptance) of only those slopes, retaining walls, terracing, fencing, rip-rap, etc., which lie within the respective layout lines.

5.2.1.4 **Grading (MHD Section 170)**

a) The subgrade surface, fifteen inches (15") below the finished surface grade in minor streets in residential subdivisions, twenty-four inches (24~~")~~ ") below the finished surface grade in major streets in residential subdivisions and in all streets in non-residential subdivisions shall be prepared true to the lines, grades and cross-sections given and properly rolled with not less than a ten (10) ton roller. All soft or spongy material below the subgrade surface shall be removed to depth determined by the Planning Board Engineer, and the space thus made shall be filled with special Gravel Borrow (MHD Section M-1.03.0 Type ~~a~~b), containing no stones ~~over six~~greater than three inches (~~6~~3") in their largest diameter.

b) The subgrade surface shall be transversely sloped to produce a crown of 1/4 inch per foot.

5.2.1.5 **Drainage Layer**

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Any drainage layer shall be a 6 inch layer of crushed stone, 3/4 inch gradation, placed under the gravel sub-base, which extends from edge to edge of pavement on both sides of the road. At each side, the drainage layer shall terminate at a subdrain. The drainage layer shall include, above it and below it, a synthetic, non-woven geotextile fabric with geotextile opening size of 0.21 mm, or as appropriate for that soil. (See Drainage Layer Details in Schedule B.)

5.2.1.6 **Gravel Sub-Base (MHD Section 401)**

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a) Gravel sub-base or foundation containing no stones having any dimensions greater than three -inches (3") shall be spread on the surface of the sub-grade to a minimum depth of twelve inches (12") in conformity with the requirements of MHD Section M-1.03.0 Type ba of the Standard Specifications for furnishing gravel borrow.

b) Prior to placing gravel, results of gradation testing shall be submitted to the Planning Board for review and approval. Maximum dry density shall be as determined by the Modified Proctor method (AASHTO test method T99).

c) Gravel sub-base or foundation shall be spread in two (2) layers, except on minor streets in a residential subdivision, on the surface of the sub-grade. The lower layer containing no stones greater than six inches (6") in greatest dimension shall be to a depth of twelve inches (12") on major streets. The upper layer containing no stones greater than two and one-half inches (2 1/2") in greatest dimension shall be to a depth of six inches (6").

d) A single layer containing no stones greater than four inches (4") in greatest dimension shall be to a minimum depth of twelve inches (12") on minor streets in a residential subdivision.

e) Each layer shall be rolled with not less than a ten (10) ton roller, and compacted true to line and grade, to 95% of maximum dry density. Any depressions that appear during and after rolling shall be filled with additional gravel and re-rolled until the surface is true.

f) At the time of paving, gravel shall be at optimum moisture content, and shall be at least 95% of maximum dry density.

g) Final grading, rolling, and finishing including the shaping, trimming, rolling, and finishing of the surface of the sub-base prior to application of gravel for surfacing of the roadway and base courses for walks and berms shall be in accordance with this section and as directed by the Planning Board and the Superintendent of Streets.

h) Gravel subbase surface shall be transversely sloped to produce a crown of 1/4 inch per foot.

i) At the conclusion of this step, the roadway shall be staked in all locations where permanent monuments are to be installed as provided in Section 5.11 Monuments.

**5.2.2 ..... Pavement**

5.2.2.1 **Pavement Materials**

Pavement materials for all roadways in a subdivision shall be Class I, Bituminous Concrete, Base Course Type I-1Hot Mix Asphalt for Local Streets (MHD Section 460).

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"Cape Cod" (low profile) berms, where applicable, shall be constructed of Surface Course material. The material and construction methods for laying pavement shall conform to the Standard Specifications.

5.2.2.2 **Placing Pavement**

a) Pavement of major streets shall be plant mixed and laid hot to a finished depth of six inches (6") as follows: two (2) two-inch (2~~")~~ ") courses of binder mix, then two (2) one-inch (1~~")~~ ") courses of finish mix. Each course shall be compacted with no less than a ten (10) ton roller.

b) Pavement of minor streets in a residential subdivision shall be plant mixed and laid hot to a finished depth of four-and-one-quarter inches (4 1/4") laid in two (2) courses consisting of two-and-three-quarter inches (2 3/4~~")~~ ") of binder mix, then one-and-one-half inches (1 1/2~~")~~ ") of finish mix. Each course shall be compacted with no less than a ten (10) ton roller.

c) Sediment basins shall be constructed where necessary to detain runoff and to trap sediment during construction.

d) Safe off-site disposal of runoff shall be provided, including the increased runoff resulting from construction.

e) Permanent vegetation and erosion control structures, where necessary, shall be installed as soon as possible.

f) The construction of the wearing or top surface of any street shall not proceed until the structural foundations for buildings on each lot to be served by that street have been completed.

g) Paving shall occur only between March 30 and November 15 of any year.

h) Asphalt shall not be placed on material which the Town determines to be frozen, frosted, saturated, or otherwise unsuitable.

i) Paving shall occur only under suitable conditions. Air temperature shall be at least 34° F. Paving shall not take place while rain, snow, sleet or any other precipitation is falling, or immediately following any such precipitation.

j) Any pavement surface exposed for more than nine (9) months, except for finish course deemed acceptable by the Town, shall require a tack coat of asphalt emulsion prior to placing any additional asphalt layer(s). Tack coat shall be ~~bituminous~~ asphalt emulsion formulated in accordance with MHD Section M3.03.0, at a rate of ~~.02~~0.05 gallons per square yard.

k) Any exposed asphalt surface subject to placement of a further course of asphalt, except for finish course deemed acceptable by the Town, shall receive a coating of liquid bituminous sand seal coat, no less than annually, until finish course pavement acceptable to the Town has been placed. Such coating shall consist of liquid bituminous asphalt applied at a rate of 0.25 to 0.3 gallons per square yard, with a sand cover of fine granular material composed of hard, durable particles, clean of organic matter, applied at a rate of 20 to 25 pounds per square yard. Such coating shall be applied only when air temperature is at least 40° F.

l) If the binder or finish pavement is removed, excavated or damaged, the trench shall be covered with a poured reinforced concrete slab to the lines, grades and dimensions

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approved by the Superintendent of Streets. Pavement repair shall be by sealing all patch areas with an asphaltic sealer; application of a non-woven adhesive polymer asphalt membrane over joints in the "binder", placed with wearing side up; the pavement shall then be treated with asphalt emulsion prior to placing asphalt on it.

## 5.3 UTILITIES

### 5.3.1 ..... General

5.3.1.1 All materials and installation methods used shall conform to the standards of the appropriate utility company or to these Regulations, whichever is stricter. All underground services shall be installed, and individual lot services carried to the front lot lines/edge of right of way prior to completing pavement foundation/gravel sub-base work.

5.3.1.2 **Excavation for Structures (MHD Section 140)**

Excavation for structures, including foundations for drains, sewers, gas and water pipes, walls and other structures shall be made to the depth indicated on the Definitive Plan or established by appropriate utility. Rocks (to a point five feet (5') beyond the edge of the pipe at the property lines) and encountered in trench excavation determined to be Class B shall be removed as directed by the Superintendent of Streets.

5.3.1.3 **Backfilling for Structures and Pipes**

a) All backfilling shall consist of granular mineral soil material (excluding organic matter, building rubble, solid waste, boulders larger than 18 inch in any dimension, or any other deleterious material) uniformly distributed and thoroughly compacted. When suitable backfilling materials cannot be obtained from excavation, the material shall consist of satisfactory borrow.

b) Mechanical tampers shall be used in compacting backfill for trenches, and in hard to reach areas around masonry.

c) No backfill whatever shall be placed on or against structures, pipes, or other masonry, until permitted by the Planning Board. Fill shall be formed of successive layers not more than six inches (6") in depth, uniformly distributed and each layer thoroughly compacted.

d) No load greater than eight (8) tons shall be moved over any pipe until a fully compacted backfill of at least two feet (2') has been placed over the top of the pipe. Compliance with this requirement is not to be construed as relieving the Contractor of any responsibility concerning damage to the pipe.

e) Material used for backfilling to a point two feet (2') over the pipe shall contain no stones larger than three inches (3') in greatest dimension.

f) Backfill below the haunches shall be placed in six inch (6") layers and compacted simultaneously on both sides of the pipe with railroad tampers or approved mechanical rammers which shall not come in contact with the pipe. Backfill above

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the haunches shall be placed in six inch (6") layers and compacted as directed. Backfill material shall be moist prior to and during compaction.

g) Backfill material for the pipe bedding shall consist of gravel borrow, screened gravel, or crushed stone no greater than one--and-a-half-inch (1 1/2~~")~~ ") gradation to twelve inches (12") over the crown of the pipe. The material excavated from the trench may be used for the pipe bedding if it is of acceptable grade gravel and approved by the Planning Board. If directed by the Planning Board, backfill material above the pipe bedding shall consist of gravel borrow. Backfill material for sewer pipe bedding shall consist of screened gravel to twelve inches (12") over the crown of the pipe, as required by the Board of Sewer Commissioners.

h) In all cases the filling material shall be thoroughly compacted. Puddling the backfill will not be permitted.

**5.3.2 ..... Sewerage**

Sewers shall be installed in the center of the street as nearly as practicable at a minimum depth of seven feet six inches (7' 6") of cover in the traveled way.

~~On site~~On-site sewage disposal facilities shall be installed and constructed in conformity with the Rules, Regulations and Requirements of the Board of Health. Due consideration should be given to surface and subsurface soil conditions, drainage and topography in the location of such on-site facilities.

**5.3.3 ..... Water**

5.3.3.1 The rules and regulations of the appropriate water utility shall be consulted for detailed requirements (including pipe, fittings, hydrants, gas valves, service connections) and handling, storage, installation, inspection, testing and connection with existing installations.

5.3.3.1 The Developer shall make main and service connections, complete with all the required appurtenances thereto, and, prior to acceptance of the road by the town, shall maintain the installation in accordance with the regulations of the appropriate water utility.

**5.3.4 ..... Gas**

If gas is to be installed within a subdivision, the appropriate utility shall be notified by the Developer upon approval of the Definitive Plan so that installation of gas mains may be completed without undue delay. All construction shall be in accordance with the requirements of the utility company.

**5.3.5 ..... Electric**

Electric lines shall be installed underground as specified by the Planning Board in accord with regulations of the appropriate utility. Service shall be supplied to each lot and each street light before the subgrade is prepared.

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**5.3.6 ..... Telephone**

~~Telephone lines shall be installed in underground conduits in conformity with MHD Sections 801 and 813~~(Refer to Section 5.3.7)~~.~~

**5.3.7 ..... ~~Other~~ Telephone, Cable Television, Internet Service, and Other Utilities**

5.3.7.1 Telephone, cable television, data service, fire alarm system, and other comparable utilities, whether utilizing twisted pair cables, coaxial cables, fiber optic cables, or other comparable technology, ~~Other utilities~~ shall be installed in underground conduits in accordance with MHD Sections 801 and 813 or as required by the utility ~~company or department~~provider. ~~Telephone, and, if any, cable television and the fire alarm system shall be installed underground and~~Such utilities may be in the same trench with vertical and/or horizontal separation as approved by the Planning Board or required by the utility provider. Service shall be provided to each lot before the subgrade is prepared.

5.3.7.2 With the approval of the Planning Board, and as allowed by the respective utility providers, these ~~other~~ utilities may be located in the same trench with the electric power wiring.

## 5.4 DRAINAGE (MHD Section 200)/STORMWATER MANAGEMENT

Adequate disposal of surface and sub-surface water shall be provided.

**5.4.1 ..... Basins, Manholes and Inlets (MHD Section 201)**

5.4.1.1 The s~~S~~tandard depth of catch basins shall be four feet (4') below the invert of the lowest drain. Manholes shall be constructed to the required depth at each junction point and shall be as shown on the plan. Basin and inlet grates shall be of a type approved by the Superintendent of Streets.

5.4.1.2 Catch basins, curb inlets and manhole structures shall be constructed of precast reinforced concrete. The top section of any such structure shall be eccentric, with eccentricity perpendicular to the direction of flow.

5.4.1.3 Manhole covers shall have the word ~~"~~"Drain~~"~~" in three inch (3") letters cast across the center and, at no time shall any such cover be raised above the pavement level.

5.4.1.4 A leveling course of sewer brick shall be installed under the frame on precast manholes and catch basins. The leveling course shall consist of a minimum of two (2) layers of clay brick meeting ASTM C32 and a maximum of twelve inches (12"). The frame shall be sloped to match the slope of the finished road surface.

5.4.1.5 Steps shall be installed in manholes and be spaced twelve inches (12") on center or sixteen inches (16") on center if radial concrete blocks are used. Steps shall be steel reinforced copolymer polypropylene plastic. Copolymer polypropylene shall be Type II, grade 16906 meeting ASTM designation D2146-78. Steel reinforcing shall be three eighths of an inch (3/8") diameter, grade 60 conforming to ASTM Specification A-615-79 and shall be

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continuous throughout the rung. The portion of the legs to be imbedded in the precast section shall have fins and be tapered to insure a secure bond.

5.4.1.6 A concrete or brick masonry invert shelf with channel shall be installed to a height of eight-tenths (0.8) the diameter of the largest pipe.

5.4.1.7 Modifications to precast structures shall be made by coring.

5.4.1.8 Corbels of manholes shall be eccentric, not concentric.

5.4.1.9 Size of manhole opening shall be a minimum of twenty-four inches (24").

**5.4.2 ..... Culverts, Storm Drains and Sewer Pipes (MHD Section 230)**

5.4.2.1 All drain and culvert pipes shall be reinforced concrete pipe at least twelve inches (12") inside diameter.

5.4.2.2 At least four feet (4') of cover will be required over drain pipes. Where special conditions of topography and/or hydrology are deemed to justify the Board's approval of pipe with less than four feet (4') of cover, the Board may require other materials or methods of construction to meet such conditions.

5.4.2.3 Sewer pipes and appurtenances shall be designed, installed and of materials as required by the Sewer Commissioner.

**5.4.3 ..... Sub-Drains (MHD Section 260)**

5.4.3.1 Subdrains shall be 6 inch perforated SDR 35 PVC or SCH 40 PVC pipe, ~~bedded in~~over a 6 inch bed of crushed stone, of 3/4 inch gradation, in a two (2) foot wide drain trench filled with such crushed stone. Crushed stone shall extend horizontally and vertically to meet either the drainage layer or the gravel sub-base of the road (see Drainage Layer Details and Subdrain Details, respectively, in Schedule B). Crushed stone shall be wrapped in a synthetic, non-woven geotextile fabric, with geotextile opening size of 0.21 mm or as appropriate for the soil type. Subdrains shall be 48 inches below finish grade as measured at the invert of the pipe, and shall be located outside the edge of pavement (but within the road right of way) on both sides of the road.

5.4.3.2 Cleanouts shall be located not more than 150 feet from each receiving structure, and shall have cast iron covers set to finish grade.

## 5.5 SIDEWALKS

Sidewalks shall be constructed of concrete (such as Portland Cement) conforming to MHD ~~specification~~ Section M4.02.00, and in accordance with the requirements of Sidewalks, Wheelchair Ramps and Driveways (MHD Section 701). The cross slope shall be one-fourth of an inch (1/4") per foot of width to provide for proper drainage.

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## 5.6 TRAILS, BIKEWAYS AND WALKWAYS

5.6.1 Where bikeways and walkways are required they shall be constructed in accordance with the specifications for sidewalks above~~,~~ (MHD Section 701) except for the design standard requirement of Section 4 above. Where bikeways and walkways intersect with sidewalks, leveling areas shall be shown in detail on the Definitive Plan for the subdivision.

5.6.2 For the full length of each bikeway and walkway there shall be a crown equivalent to one-quarter inch (1/4") per foot of width to provide for proper drainage. Leveling areas at intersections with sidewalks shall be shown in details.

5.6.3 Existing trails shall be used, wherever possible. New trails or relocated trails shall be constructed with surface and drainage characteristics which, in the opinion of the Board, shall be satisfactory for horseback riding.

## 5.7 CURBS AND BERMS

5.7.1 Granite curbs shall be installed in accordance with the construction methods outlined under Curb, Curb Inlets, Curb Corners and Edging (MHD Section 501) and Drawings E.106.3.0 and E.106.5.0 of the Construction Standard Details.

5.7.2 Hot mix asphalt (bituminous concrete) berm shall be low profile modified "Cape Cod" berm~~Bituminous concrete berm shall be Type I, low profile "Cape Cod" berm or Type II~~, as designated by the Planning Board, and shall be installed in accordance with the construction methods outlined under Curb, Curb Inlets, Curb Corners ~~requirements of Curb~~ and Edging (MHD Section 500) and ~~Figure~~Drawing E.106.1.0 ~~112.10~~ of the Construction Standard Details (modified as to width).

## 5.8 HIGHWAY GUARD FENCES AND WALLS

Guard fences, rails and walls shall be installed wherever determined necessary by the Planning Board and/or the Superintendent of Streets to provide needed protection to the public. When provided, they shall be constructed in accordance with the relevant portions of Highway Guard Fences and Walls (MHD Section 600) of the Standard Specifications. Construction details of all fences, rails and walls will be shown on the Definitive Plan for the subdivision.

## 5.9 GRASS PLOTS

**5.9.1** ..... Grass shall be used unless other ground cover is approved by the Planning Board.

**5.9.2 ..... Seeding**

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5.9.2.1 The areas to be seeded shall be covered with loam to a depth of four inches (4") in accordance with Loam Borrow ~~Processed Planting Material or~~and Topsoil~~,~~ Rehandled and Spread (MHD Section 751).

5.9.2.2 Grass seed conforming to **Long Term Seed Mixes for Lawns and Slopes** ~~Seed~~ (MHD Section M6.03.0) shall be placed in accordance with Seeding (MHD Section 765) at the rate of four (4) pounds per one thousand (1000) square feet over the area to be grassed.

**5.9.3 ..... Drainage**

5.9.3.1 The slope of the grass plot shall be one-fourth of an inch (1/4") per foot of width to provide for proper drainage~~as shown on the profiles and standard cross sections, Schedules A and B~~.

5.9.3.2 There shall be a gravel base of at least six inches (6") underneath the loam, to allow water to filter through the loam.

## 5.10 TREES, SHRUBS AND GROUND COVER

5.10.1 Street trees of nursery stock conforming to the standards of the American Association of Nurserymen of the species approved by the Grafton Tree Warden shall be planted on each side of every ~~and/or each~~ street in a subdivision, except where the Definitive Plan shows trees to be retained which are healthy and adequate.

A list of recommended street trees and shrubs is available in Schedule D. The list provides suggested street trees and shrubs that are suitable for this area and available at local nurseries.

5.10.2 Except as otherwise provided, all cut bankings shall be planted with low growing shrubs or vine and wood chipped to a minimum depth of six inches (6") or seeded with a deep rooted perennial grass to prevent erosion.

5.10.3 Planting methods, including wrapping, staking and guying shall be in accordance with Planting Trees, Shrubs and Ground Cover (MHD Section 771)

5.10.4 Tree wells, if necessary, shall be designed and constructed in accordance with ~~Plate~~ Drawing E.502.1.0 of the Construction ~~Manual~~Standard Details.

5.10.5 All deciduous street trees shall be clear of any branches from the approved grade level to a point seven feet (7') above ground level.

5.10.6 All reasonable care shall be exercised to preserve the trees in the subdivision.

5.10.7 The Developer will be liable for all trees so planted as to their erectness and good health after planting and until the release of all guarantees.

## 5.11 MONUMENTS

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5.11.1 Monuments shall be a standard permanent granite of not less than five feet (5') in length and not less than six inches (6") in width and breadth and a one-half inch (1/2") diameter hole one and one-half inches (1 1/2") deep shall be drilled in the center of the top surface and filled securely with a lead plug. (Section 710).

5.11.2 Said monuments shall be installed at the time of final grading with the top flush with the top final graded surface. (~~Plates~~ Drawing ~~506.1.0 and~~ E.506.2.0 of the Construction ~~Manual~~Standard Details).

5.11.3 Notwithstanding Sections 5.11.1 and 5.11.2 above, monumentation for designated open space areas, and easements (access, drainage, open space, etc.) on individual lots, shall be set at least 4 feet ~~6 inches~~ into the ground and shall ~~extend at least 3 feet 6 inches above finish grade~~be flush with the finish grade in lawns and shall extend 6 to 9 inches above the finish grade in wooded areas.

5.11.4 No permanent monuments shall be installed until all road construction which would destroy or disturb the monuments is completed.

## 5.12 STREET SIGNS

5.12.1 From the time of rough grading until such time as each street is accepted by the Town as a public way, the sign posts at the intersection of such street with any other street shall have affixed thereto a sign of design, materials and construction satisfactory to the Planning Board, designating such street, or portion thereof, as a private way.

5.12.2 Street signs, of a design approved by the Planning Board, shall be installed at all intersections.

5.12.3 No street sign, temporary or permanent, shall be installed showing a name or in a manner other than as approved by the ~~Grafton~~ Planning Board.

## 5.13 STREET LIGHTS

5.13.1 Street and pedestrian lights shall be installed to conform to the type and style specified by the Planning Board and the ~~Board of Selectmen~~Select Board.

5.13.2 Street and pedestrian light stanchions shall be of a type specified by the ~~Board of Selectmen~~Select Board and the Planning Board and shall be located in the grass plot or median

5.13.3 Prior to the issuance of a Certificate of Occupancy (CO) for any lot within the subdivision, a certification shall be submitted to the Building Inspector that all approved streetlights have been installed and energized from the nearest intersection of any subdivision way and an existing street providing access to the subdivision on said subdivision way up to, and within three hundred feet (~~300'~~300') beyond, said lot(s).

## 5.14 COMMON DRIVEWAYS

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Common driveways shall be graded, and a one inch (1~~")~~ ") course of binder and a one inch (1"~~"~~) course of wearing surface applied, in accordance with Section 5.2 of these Regulations to at least the minimum required width.

## 5.15 CLEANUP

5.15.1 No later than October 31 of each calendar year, the developer shall stabilize all exposed soils and other vulnerable or sensitive areas in a manner acceptable to the Conservation Commission and the Planning Board. No additional disruption may occur except in accordance with the approved construction plan.

5.15.2 No lot shall be considered complete until all stumps, brush, roots and like material and all trees, rocks, and boulders not intended for preservation by the ~~Subdivider~~ developer shall have been removed and disposed of in a manner and place satisfactory to the Planning Board. Any fire hazard shall be removed promptly to the satisfaction of the Fire Chief. This paragraph does not authorize the removal, including severing and stripping, of soil loam, sand, or gravel on such lot.

## 5.16 MAINTENANCE OF IMPROVEMENTS

5.16.1 For the purpose of protecting the safety, convenience and welfare of the Town~~'s~~'s inhabitants, for the provision of adequate access to all of the lots in a subdivision by ways that will be safe and convenient for travel, for reducing the danger to life and limb in the operation of motor vehicles, for securing safety in the case of fire, flood, panic and other emergencies, under the authority of ~~MGL Ch~~MGL Ch.~~.~~ 41~~,~~ ~~Section~~ § 81~~-~~M as amended, the ~~Applicant~~ developer or his successor shall provide for the proper maintenance and repair of improvements during the period of construction, and until the Town votes to accept such improvements. In conformance with the requirements of MGL Ch. 41 ~~Section~~ § 81Q, the Board shall require that the ~~applicant~~ developer guarantee the maintenance of the streets and appurtenances in the subdivision by posting with the Town a maintenance security in a form and in an amount sufficient, in the determination of the Board, to secure said maintenance until the subdivision is accepted by the Town. Such maintenance shall include all services typically provided by the Town on public ways.

5.16.2 Such maintenance shall include snow removal beginning from the time of occupancy of an individual owner or tenant other than the Developer until such time as the Town agrees to remove snow or accepts the way.

5.16.3 The Applicant shall provide the Town an easement over the right-of-way of all streets, which will run until the acceptance of streets as a public way, which easement shall be for the maintenance, repair and operation of public utilities. The easement shall be accompanied by a conveyance of a right of ownership to the Town of all appropriate utilities within the boundaries of the easement.

## 5.17 PROVISION FOR COMPETENT SUPERVISION

5.17.1 The Developer shall provide competent full-time supervision during the development of the subdivision. If at any time it becomes apparent to the Planning Board that the supervision

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is not satisfactory, the Board may order the discontinuance of the development until competent supervision is provided.

5.17.2 Dependent on the work schedule and the scope of the work, the Planning Board may require that the Developer shall provide a full-time Clerk of the Works on site during the critical construction phases, such as laying pipe, compacting, backfilling, laying finish surfaces and other operations determined by the Planning Board. The Clerk of the Works shall be hired by the Planning Board and paid for by the Developer in accord with Section 2.5.

## 5.18 SCHEDULE OF PROJECTED WORK

The developer shall submit a schedule of the projected work, by major categories of work, to the Planning Board for review and approval four (4) weeks prior to the start of construction. The schedule shall be by calendar weeks and address each category in Section 5, Construction Requirements. The Schedule shall be adjusted periodically to reflect the actual work progress and related modifications to the schedule.

## 5.19 TRAFFIC SIGNS

Prior to any lot development, the developer shall install, and thereafter maintain, traffic signs such as STOP signs of the type and in locations as approved by the ~~Board of Selectmen~~Select Board and the Massachusetts Highway Department until acceptance of the road by the Town.

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# SECTION 6 - ADMINISTRATION

## 6.1 VARIATION

### 6.1.1 Waivers

a) Strict compliance with the requirements of these Rules and Regulations may be waived when in the judgment of the Board such action is in the public interest and not inconsistent with the Subdivision Control Law (~~MGL Ch~~MGL Ch. 41 § 81M) and with the purpose(s) and intent(s) of these Regulations.

b) Any such waiver must be made in writing by the Board as a part of its approval or amendment thereof; otherwise all requirements contained herein are deemed applicable.

### 6.1.2 Other Variations

Additional design, construction or other measures may be required when, in the opinion of the Board, site, design or other conditions so warrant them. When additional measures are required by the Board, such measures shall be clearly set forth in the Approval, on the plan, or by some other appropriate form or instrument.

## 6.2 REFERENCE

For matters not covered by these Rules and Regulations, reference is made to MGL Ch. 41 ~~Sections~~ §§ 81-K to 81-GG, inclusive, and the Town of Grafton Zoning Bylaw.

## 6.3 COORDINATION

The ~~developer~~ applicant or developer, as appropriate, shall be responsible for coordinating all reviews, permits, construction, inspections, etc. In the event any permit or approval contains any requirement which conflicts with the requirement of any other permit or approval, the ~~developer~~ applicant shall be responsible for resolving such conflicts pursuant to the regulations of all agencies/boards/-departments/etc. which could be affected.

## 6.4 INSPECTIONS

### 6.4.1 ..... Required

Inspections shall be arranged by the developer with the Superintendent of Streets and Planning Board as appropriate prior to the construction of streets and the installation of utilities and during construction and as specified herein at each significant construction stage and as otherwise required by the Board. At a minimum, inspections shall be conducted in accordance with Schedule E.

### 6.4.2 ..... Requests for Inspections

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Inspection shall be requested of the Board by the developer at least two business days in advance of the inspection of any stage of the construction.

**6.4.3 ..... Progression**

The Board may establish the order of the required inspections and may require satisfactory completion of one (1) step before the developer proceeds to the next. The Board may require tests to be done by the developer at his expense as a condition for approval when, in the opinion of the Board, it is advisable.

**6.4.4 ..... Inspection Reports**

a) It shall be the responsibility of the Developer to ensure that all required forms are properly filled out, properly signed, and returned to the Planning Board subsequent to each inspection.

b) The proper Town Official shall indicate the date of inspection and the approval and shall file such form, and an inspection report, if any, with the Planning Board subsequent to each inspection.

**6.4.5 ..... Failure to Comply**

Failure to comply with the inspection procedure may necessitate removal of improvements at the expense of the Developer or rescission of the approval of the plan in accord with ~~MGL Ch~~MGL Ch. 41~~,~~ ~~Section~~ § 81-W.

## 6.5 BUILDING PERMIT

**6.5.1 ..... Lot Release Required**

No building shall be erected on any lot within a subdivision without separate written permission for each lot. This permission is in addition to any other permits required for building, such as a permit from the Inspector of Buildings required by other Town By-Laws.

6.5.1.1 The developer shall submit a written request for lot releases to the Board. Such request(s) shall include the Definitive Plan Book and Plan number(s), the Deed Book and Page number(s) of the Approval, subdivision lot number(s) requested for release, and the Assessor's Map and Lot number(s) of the lot(s) requested for release.

6.5.1.2 Upon receipt of such properly submitted request(s) for release, the Board shall schedule such request(s) for the next available regular Board meeting.

6.5.1.3 The Board shall review the request in terms of progress of the developer (generally, and in terms of the construction schedule), condition of the site, compliance with applicable regulations and requirements, and surety posted with the Board.

**6.5.2 ..... Additional Requirements**

The Inspector of Buildings shall not issue any permit for the erection of a building until he is first satisfied that:

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a) All fees and expenses are paid in full by the Developer.

b) Any condition endorsed on the plan has been satisfied or waived by the Board; and that

c) In the event that more than one (1) building for dwelling purposes be erected or placed or converted to use as such on any lot, the Inspector of Buildings is satisfied that consent has been obtained from the Board in accord with Section 2.4 of these Rules and Regulations, and ~~Chapter~~MGL Ch. 41~~,~~ ~~Section~~ § 81-Y and amendments thereto.

**6.5.3** The Building Inspector shall not issue any Certificate of Occupancy until satisfied that the requirements for streetlights under Section 5.13.3 have been met.

## 6.6 VALIDITY

If, in any respect, any provision of these Rules and Regulations, in whole or in part, shall prove to be invalid for any reason, such invalidity shall only affect the part of such provision which shall be invalid and in all other respects these Rules and Regulations shall stand as if such invalid provision had not been made and they shall fail to the extent, and only to the extent, of such invalid provision, and no other provision of these Rules and Regulations shall be invalidated, impaired or affected thereby.

## 6.7 EFFECTIVE DATE

These regulations become effective after approval by the Board, certification by the Town Clerk, and filing with the Registry of Deeds and the Recorder of the Land Court, on which date they supersede the present ~~"~~"Rules and Regulations Governing the Subdivision of Land~~",~~", which became effective on January 19 1955, May 12 1958, September 1977, April 1 1985, October 16 1987, April 25 1988, November 14 1988, February 12 1990, April 29 1992 and June 22 1992, April 28 1997, May 22 1997, February 28 1998 and April 27, 2009.

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# ~~SCHEDULES A & B –~~

# ~~CROSS SECTIONS AND DETAILS~~

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# SCHEDULE A – TYPICAL CROSS SECTIONS

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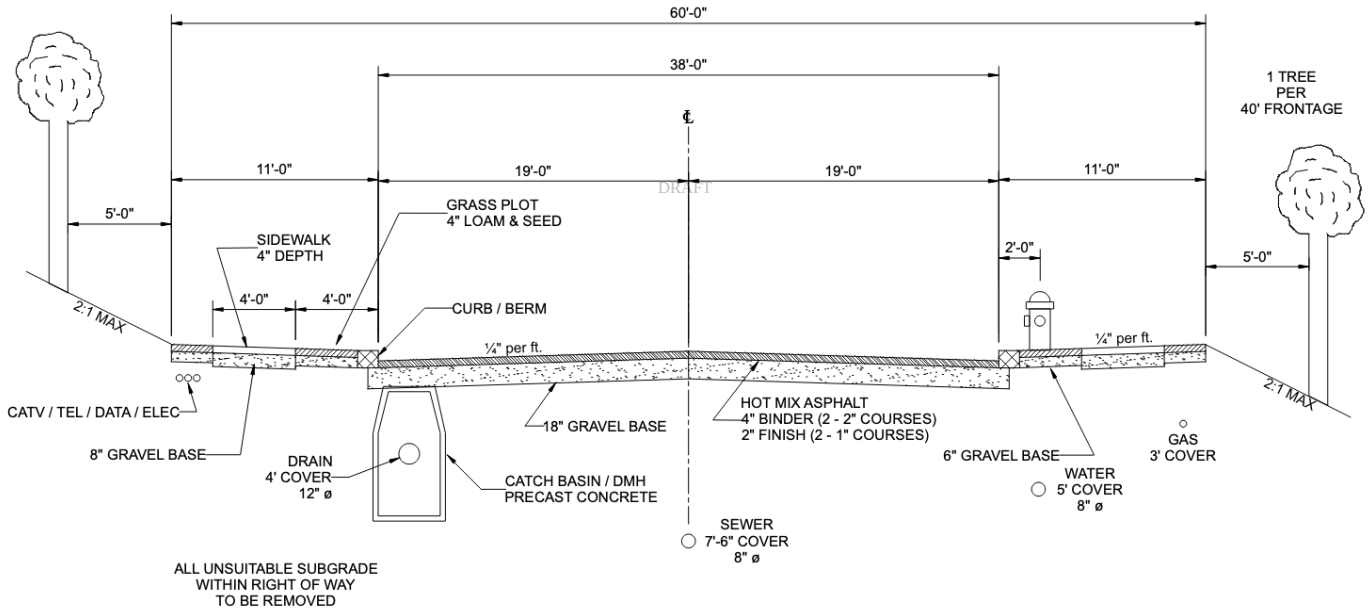


TYPICAL CROSS SECTION
MAJOR STREET
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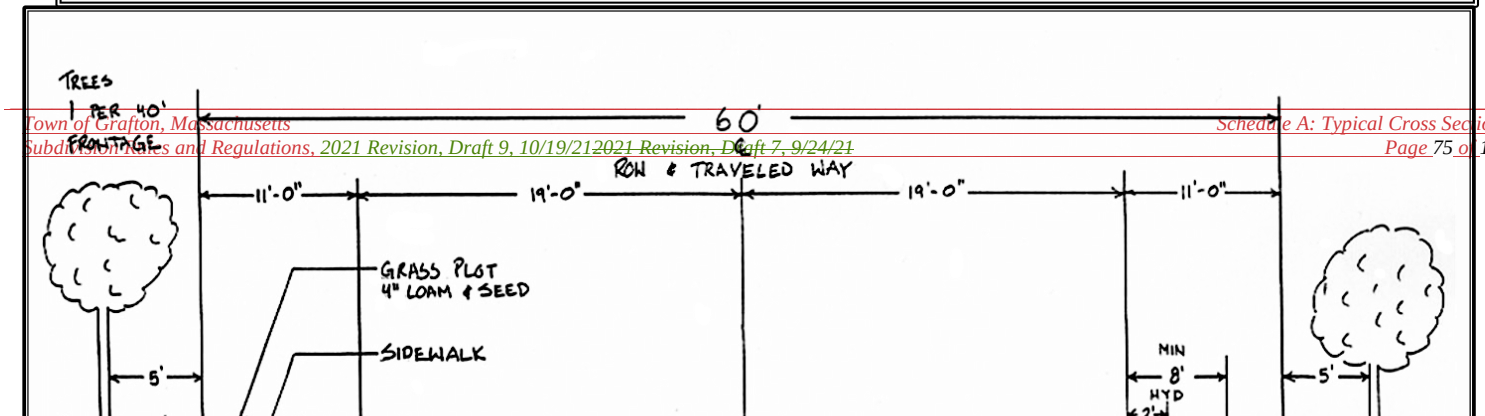




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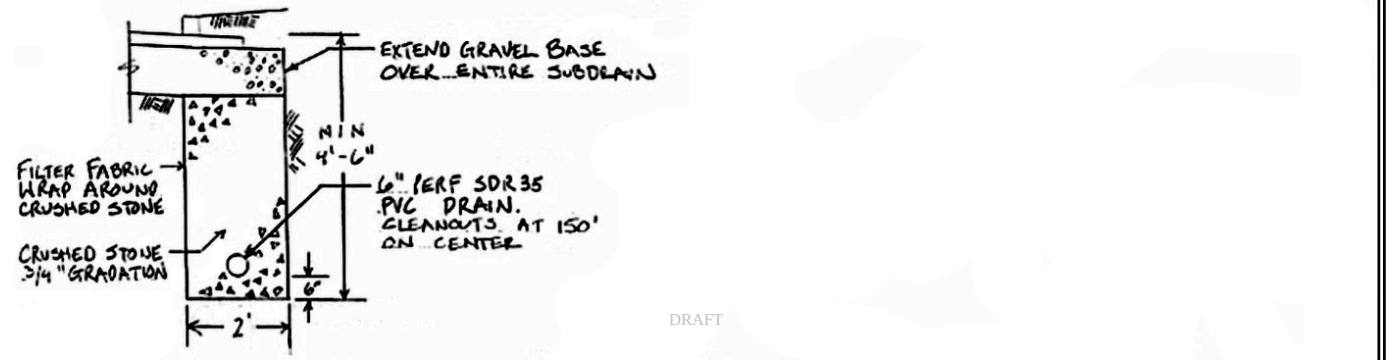


SUBDRAIN DETAIL

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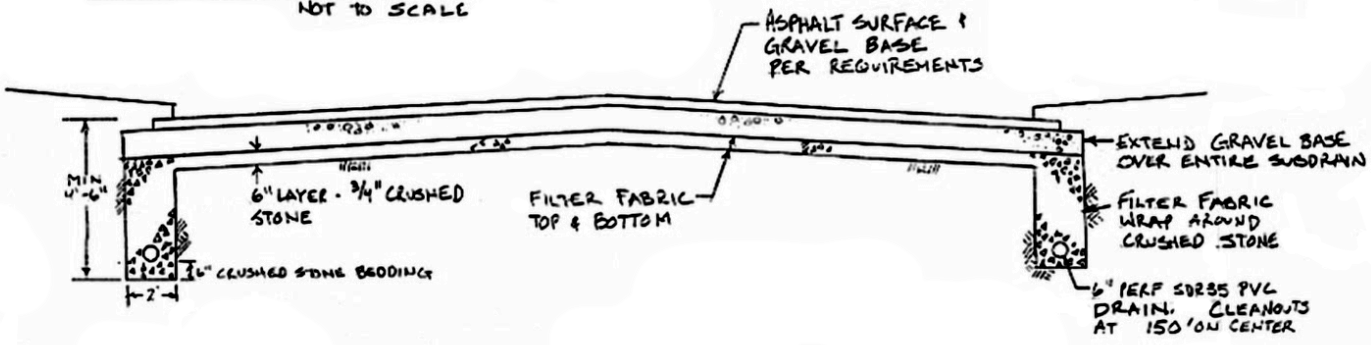


DRAINAGE LAYER DETAIL

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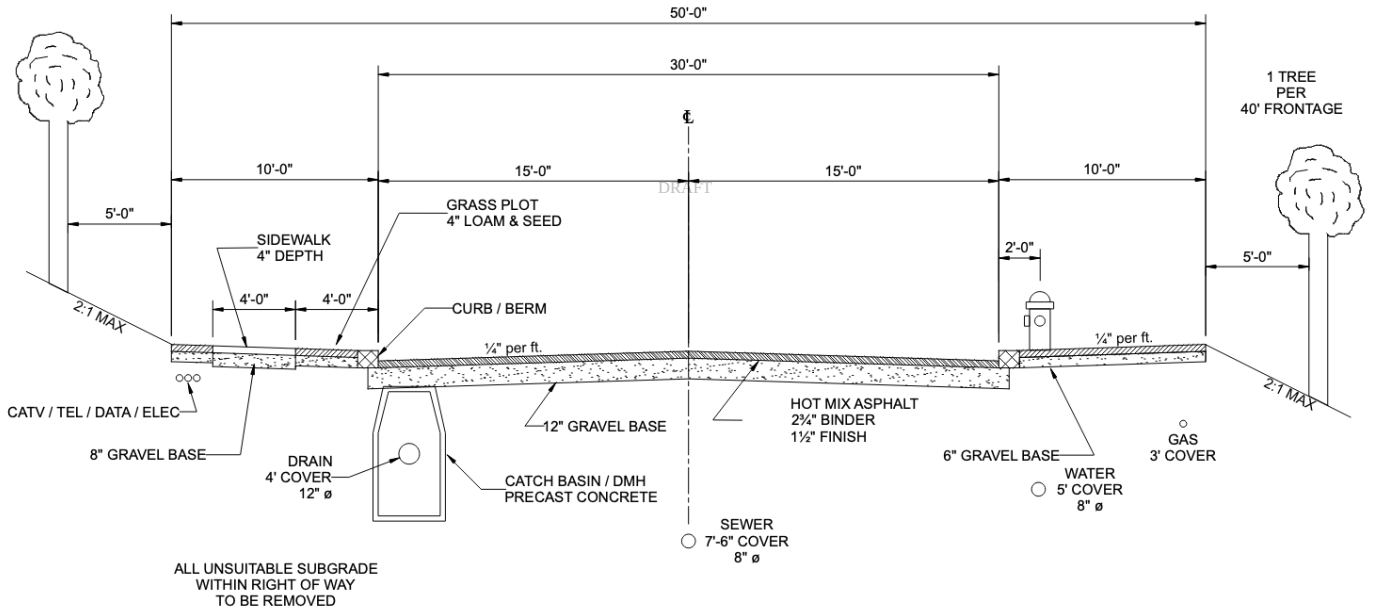


TYPICAL CROSS SECTION
MINOR STREET A
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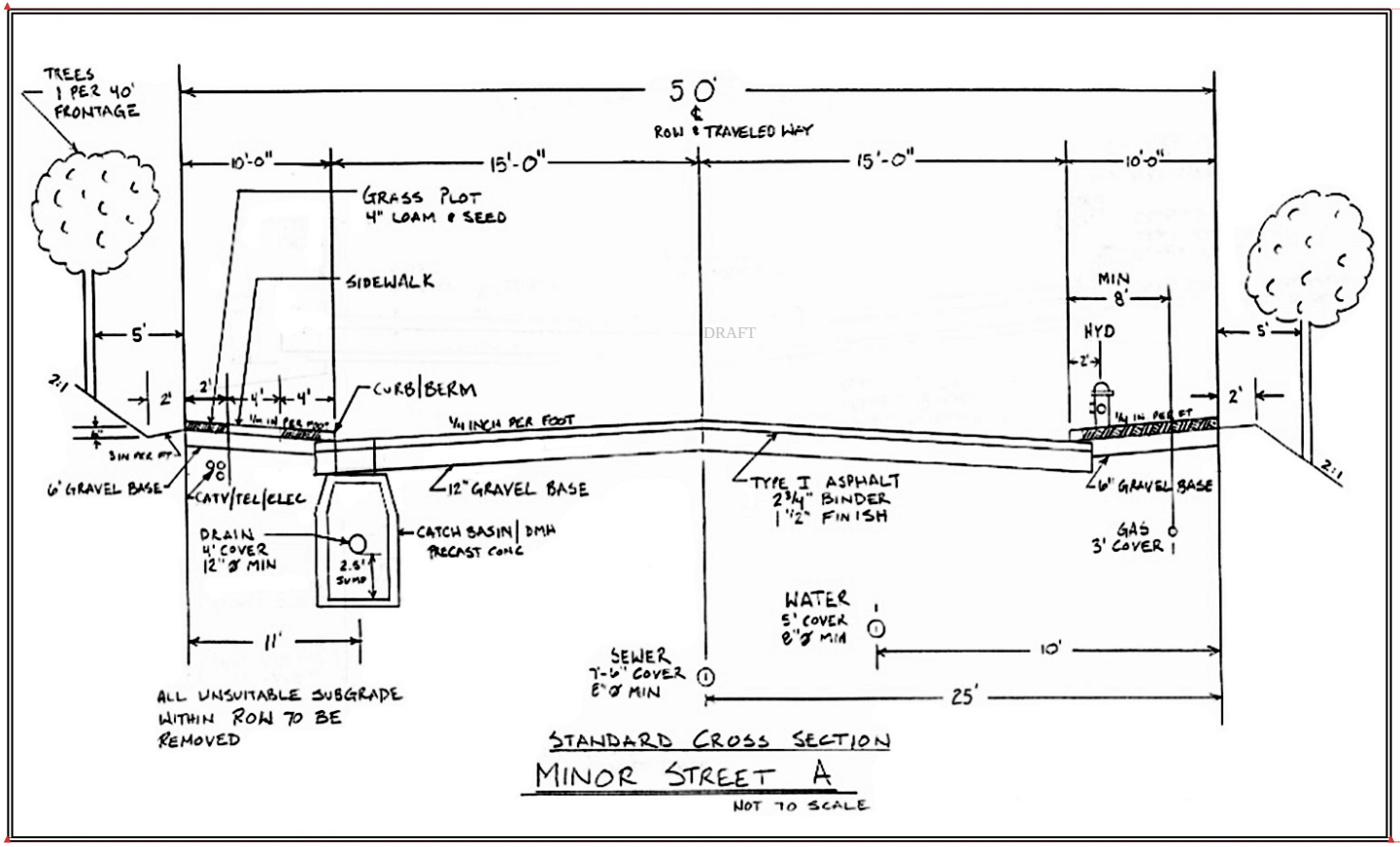


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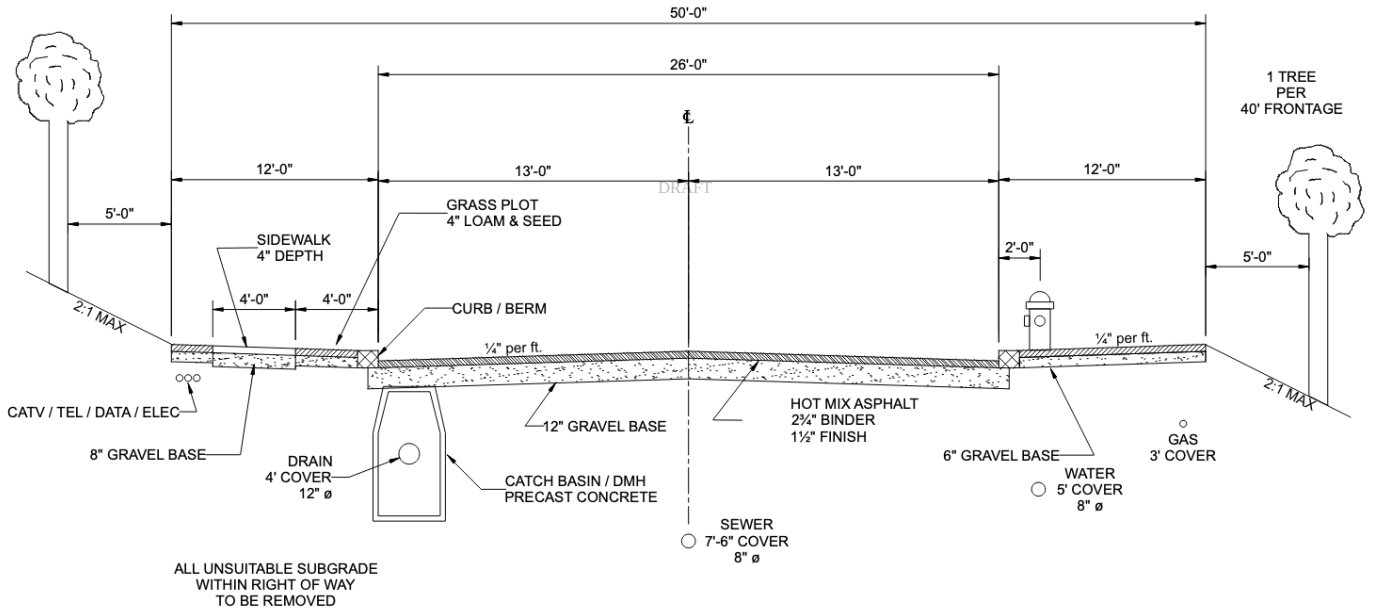


TYPICAL CROSS SECTION
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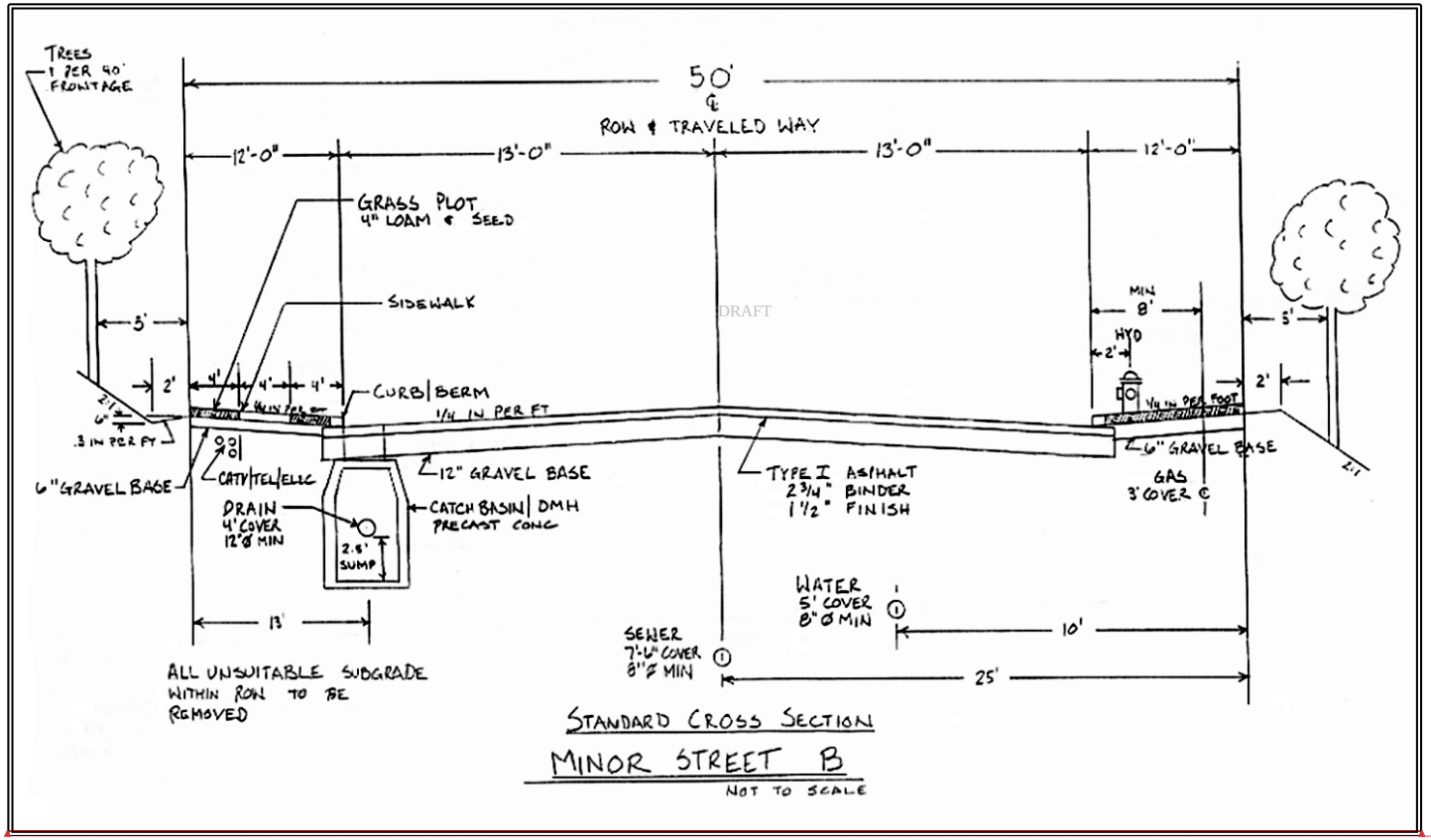


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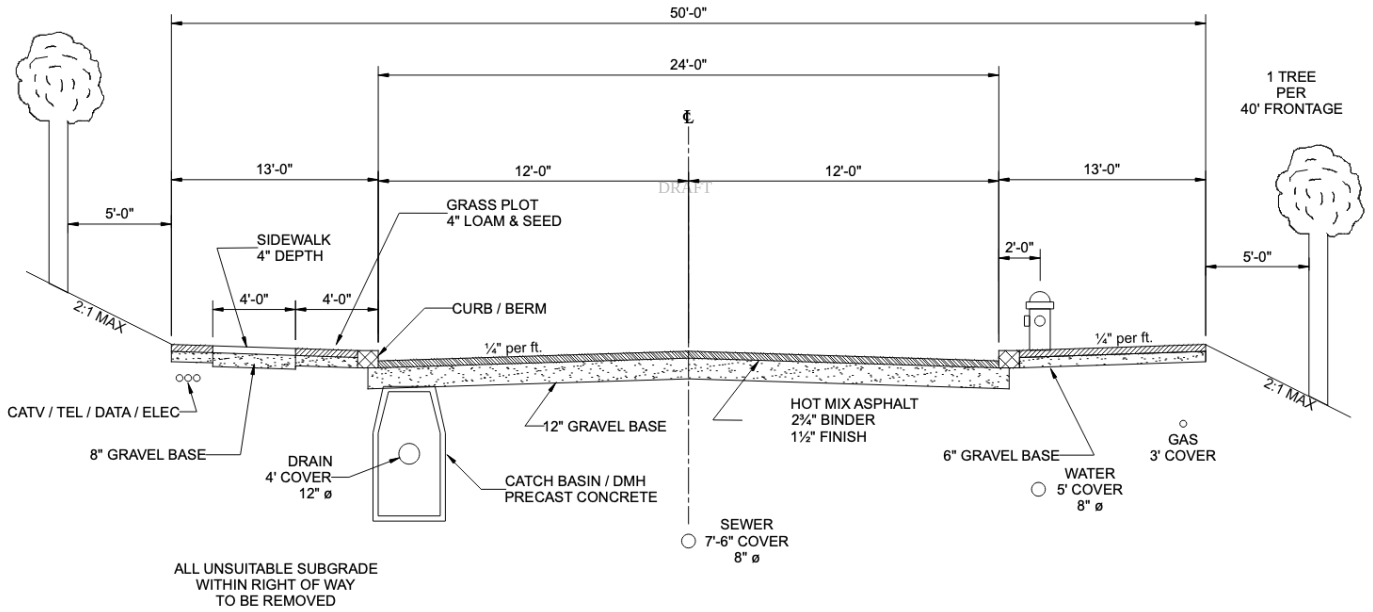


TYPICAL CROSS SECTION
MINOR STREET C
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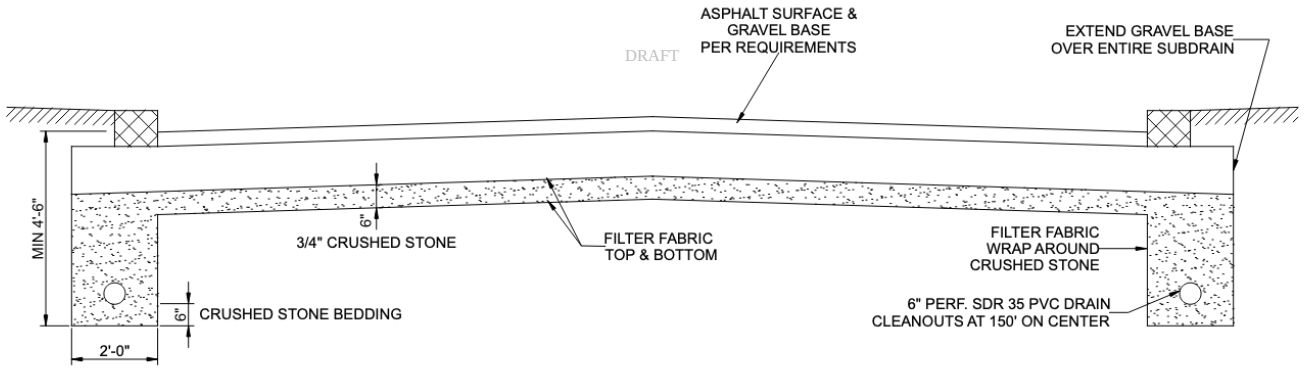
# SCHEDULE B – DETAILS




DRAINAGE LAYER DETAIL
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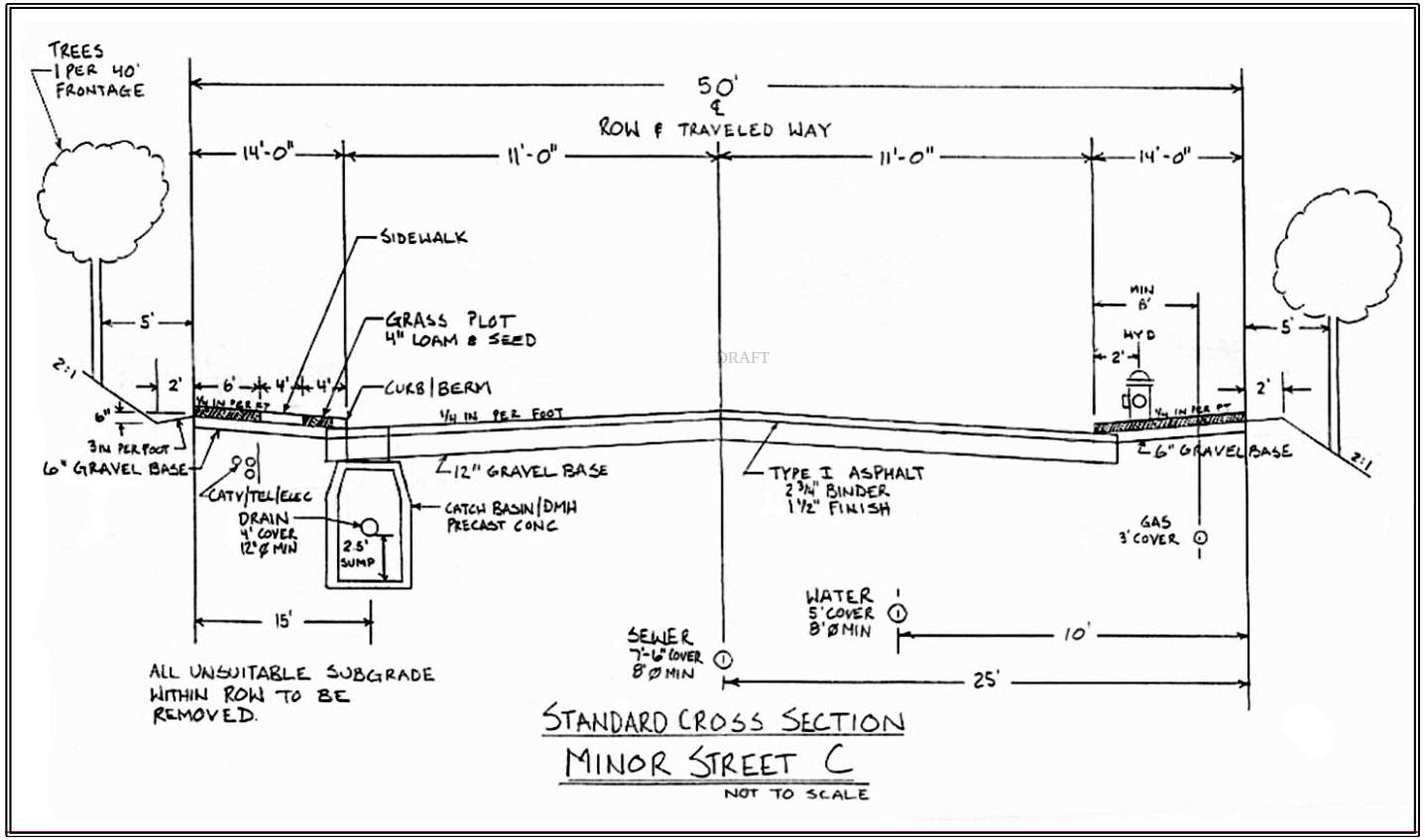


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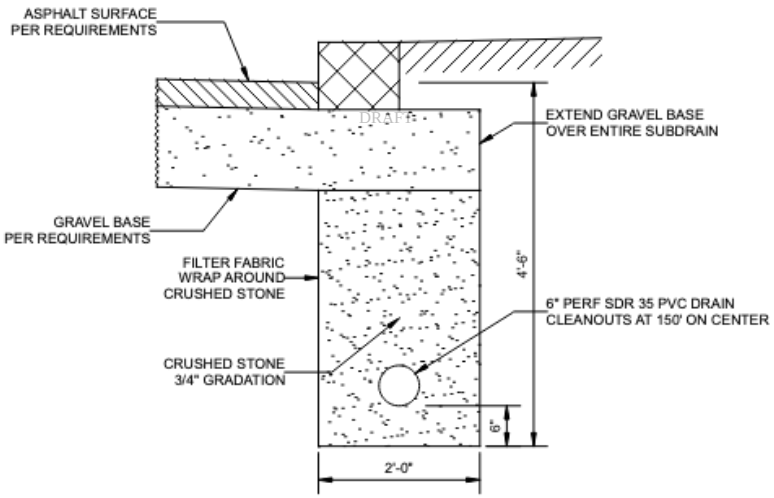


SUBDRAIN DETAIL
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# SCHEDULE C - BOARD OF HEALTH REVIEW
# (For Reference Only)

**Review by the Board of Health as to Suitability of the Land**

At the time of filing of the DEFINITIVE Plan, the Planning Board shall file with the Board of Health ~~two (2) contact prints of the Definitive Plan,~~ copies of the Definitive Plan, in a form and quantity acceptable to that Board~~dark line on white background~~, together with the following information:

a. If the disposal system is to be connect to the Grafton sewer system, a written indication of the anticipated volume and composition of the waste to be discharged.

b. If the disposal system is to be on site, the applicant must comply with all the provisions of the State Environmental Code, Title 5 or any subsequent regulations as well as amendments adopted by the Board of Health. Arrangements at the applicant's cost shall be made to conduct said tests in accordance with said regulation in the presence of the Board of Health or duly authorized representative. The applicant must file a written report signed by a registered professional engineer or registered sanitarian with the Board of Health within thirty (30) days of filing of the Definitive Plan, which indicates exactly the procedure used and test results and a conclusion based upon the test results concerning whether the soil conditions on each lot are suitable for the sewage disposal purposes intended. ~~(General Laws C.111, Sec.127 M)~~

   Sewage to be disposed in excess of 2000 gallons per day must be approved by the Massachusetts Department of Public Health. (~~General Laws C~~MGL Ch. ~~.~~111~~, See~~ § ~~.~~17)

c. The Board of Health reserves the right to make further and additional requirements as in its judgment it may determine to be necessary in a particular case.

d. Failure to comply with this procedure may result in the Board of Health's disapproval of said land. (~~General Laws C~~MGL Ch. ~~.~~41~~, See~~§ ~~.~~81-U)

e. The Board of Health shall, within forty-five (45) days after filing of the plan, report to the Planning Board in writing, approval, approval with modification, or disapproval of said plan. It shall make specific findings as to which, if any, of the lots shown on such plan cannot be used for building site without injury to the public health, and include such specific findings and the reasons therefore in such report, and where possible, shall make recommendations for the adjustment thereof, provided, however, if a municipal sewerage system will service the proposed subdivision, then failure of the Board of Health to make such a report within forty-five (45) days after the plan is filed with their office shall be deemed approved by such Board. The Board of Health shall send a copy of such report, if any, to the person who submitted said plan.

f. Every lot so located that it cannot be served by a connection to a municipal sewerage system shall be provided with a septic tank and drain field satisfactory to the Board of

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Health and/or Commonwealth of Massachusetts Sanitary Code minimum standards as the Board of Health shall determine.

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# SCHEDULE D - GUIDE TO SELECTION OF TREES

**A GUIDE TO SELECTION OF TREES, SHRUBS AND GROUND COVERS FOR THE PUBLIC DOMAIN IN GRAFTON, MASSACHUSETTS**

## Sources


Arnold Arboretum, Harvard University. Street Trees for Home and Municipal Landscapes**.** Reprinted from Arnoldia, Volume 39, no 3, May/June 1979.

Dirr, Michael A. Manual of Woody Landscape Plants. Third Edition, revised 1983. Stipes Publishing Company.

Hightshoe, Gary. Native Trees, Shrubs and Vines for Urban and Rural America. A Planting Design Manual for Environmental Designers. Van Nostrand. Rheinhold, 1988.

Massachusetts Horticultural Society, with the Parks and Recreation Department, City of Boston. Trees for Urban Landscapes.

Wyman, Donald. Shrubs and Vines for American Gardens. Revised and enlarged edition. MacMillan Publishing Company.

_____. Trees for American Gardens. Third edition, 1990. MacMillan Publishing Company.


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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | SHADE TREES | KNOWN FOR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diff. - Site | Salt | Soil PH | Pollution | Drought | Wet Soil | Sun | Shade | Name<br>Size/Shape<br>**Native Species in Bold** | Fruit | Flower | Fall Color | Bark | Wildlife | Fast Grow | **Additional Comments** | **Siting Consideration** |
| x | x | | x | | | x | x | **RED OAK**<br>(Quercus rubra) 60-75 ft rounded | | | x | | x | x | needs well drained, acid soil; good sun for best fall leaf color; easily transplanted; long lived | Excellent for street, boulevard, parkway, but needs room |
| | | | | | | x | | **LAUREL OAK (also called Shingle Oak)**<br>(Quercus imbricaria) shade tree 30-60ft; symmetrical in form | | | x | | x | | transplants well; somewhat tolerant of city conditions; accepts pruning well as hedge | Lawn, park, golf course; needs large area |
| x | x | | x | x | x | x | | **PIN OAK**<br>(Quercus palustris) shade 50-80ft; spread 25-40ft; strongly pyramidal, central leader | | | x | | x | x | easily transplanted; superior performer in urban situations; tolerates wetness | excellent tree for residential and commercial streets, lawns, park; limb up for street use |
| x | | x | x | x | x | x | x | PLANETREE<br>(Plantanus x acerifolia) shade tree 75-100ft; pyramidal in youth, open, spreading in maturity 'Bloodgood' | x | | | x | | x | overplanting has brought diseases but this tree tolerates urban stress, is fast growing and quite beautiful<br><br>more resistant to anthracnose than the species; good tolerance for soil compaction, heat and drought | good street tree as long as there is room; also parks, campuses, golf courses<br><br>This tree is BIG! Can only be used where there is room |
| x | x | x | x | | | x | | MAIDENHAIR TREE<br>(Gingko biloba) 50-80ft; becomes wide in old age<br>'Sentry'<br><br>'Autumn Gold' | | | x | | | | do not plant pistillate varieties, needs well drained soil; ungainly when young; free of pests; slow growing; beautiful clear yellow color in fall<br>upright staminate variety; effective in restrictive places;<br>broad, spreading habit | Valuable for urban street situations, but not for small streets because eventually they get very broad<br><br>('Sentry' is an exception) |
| x | x | x | x | x | x | x | | **HONEY LOCUST**<br>(Gleditsia Triacanthosinermis) (thornless) light shade 30-70ft by same in spread<br>'Skyline' 'Moraine'<br>'Shade-master' are good species | | | x | | | x | use seedless varieties; well adapted to containers; limited root space; easily transplanted; ferny leaves cast light shade; no cleanup in Autumn | most popular tree for street, parks, malls |
| x | x | x | x | x | | x | | ZELKOVA<br>(Z. serrata) 50-60ft; vase shaped; short trunk<br>'Village Green' | | | x | x | | x | resistant to Dutch Elm disease | decent tree for residential streets |

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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | SHADE TREES | KNOWN FOR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diff. - Site | Salt | Soil PH | Pollution | Drought | Wet Soil | Sun | Shade | Name<br>Size/Shape<br>**Native Species in Bold** | Fruit | Flower | Fall Color | Bark | Wildlife | Fast Grow | **Additional Comments** | **Siting Consideration** |
| x | | x | x | x | | x | x | CHINESE ELM<br>Also called **LACEBARK ELM**<br>(Ulmus parviflora) 40-50ft by 40 wide; rounded or vase shapes | | | | x | | x | good resistance to Dutch Elm disease; adaptable to poor soils; DO NOT confuse with Ulmus pumila (siberian elm) | good tolerance for parking lot environments and many other urban situations |
| | | | | | x | x | | **SWEET GUM**<br>(Liquidambar styraciflua) 60-100ft; rounded | x | | x | | | x | spring plant only; needs a lot of root space | lawn or parks; wet places; good for streets if enough room |
| | | | | | x | x | | **RIVER BIRCH** (Betula nigra) specimen or clump 40-70ft; open habit | | | | x | x | x | multistemmed specimens are most handsome; prone to leaf spot; resistant to birch borer; not a small tree but a small canopy | a tree for the floodplain; handsome on campuses along streams |
| | | x | x | x | | x | | JAPANESE PAGODA TREE<br>(Sophora japonica) specimen 50-75ft with equal spread<br>'Regent'' | x | x | | | | x | flowers in August; tends to be messy as it drops petals, fruits, leaves, twigs for much of the growing season. A bit tender until it gets established<br><br>fast growing cultivar with uniform habit; flowers at a young age | well suited for park or large area; it needs room; good tree for city conditions; good for poor soil areas |
| x | | x | | x | | x | | AMUR CORKTREE<br>(Phellodendron amerense) specimen 30-50ft and as wide; very open; casts a light shade | | x | x | x | | | gorgeous bark in older age; ungainly when young; this is a wide, squat tree; good fall color but leaves drop quickly; pest free | good in parks and other large open spaces; not bad on good sized residential lawns |
| | x | | x | x | | x | x | **AMERICAN HOLLY**<br>(Ilex opaca) <30ft; densest in full sun; more open with age | x | | | | | | dioecious; evergreen medium-slow grow; try Ilex pedunculosa also, it's hardier, but not as tall growing | evergreen for hedge, but there are prettier and hardier hollies |
| x | x | x | x | x | | x | | **AUSTRIAN PINE**<br>Pinus nigra) 50ft by 20-40ft | | | | x | | | adjusts well to windy, exposed sites | tough evergreen that is good as a background plant along highways, parks or areas subject to pollution; also good screen or windbreak |
| | | | | | | x | x | **HEMLOCK**<br>(Tsuga Canadensis) evergreen 40-70ft | | | | | | | takes pruning well; intolerant of flooding | any situation EXCEPT city conditions; ideal for screening |

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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | SHADE TREES | KNOWN FOR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diff. - Site | Salt | Soil PH | Pollution | Drought | Wet Soil | Sun | Shade | Name<br>Size/Shape<br>**Native Species in Bold** | Fruit | Flower | Fall Color | Bark | Wildlife | Fast Grow | **Additional Comments** | **Siting Consideration** |
| x | | | x | x | x | x | x | **RED MAPLE**<br>(Acer rubrum) shade tree >50ft; pyramidical in youth; round to avoid crown in maturity<br>'Scanlon'<br>'October Glory' | x | | x | x | x | x | tendency to brittleness but quite adaptable to a variety of urban situations; tolerates both wet and dry soils<br><br>compact conical crown, rich red fall color | street, lawn, park; effective in groves;<br><br>'Red Sunset' is hardiest and may be best all around cultivar |
| x | | x | x | x | | x | | LITTLELEAF LINDEN<br>(Tilia cordata)<br>50-75ft, not as wide; pyramidal, rounded, dense<br>'Greenspire' | | x | | | | | fragrant flowers attract bees; maintenance includes clipping basal sucker growth<br><br>one of best cultivars; does well under difficult city conditions | top of the street tree list; compact form; excellent where lateral space is limited; avenue planting; containers; can be clipped for hedge |
| x | | x | x | | | x | | SILVER LINDEN<br>(Tilia tomentosa) 50-60ft by 25-45ft; 'Fastigiata' | | x | | | | | similar to Littleleaf Linden; choose named varieties eg 'Princeton' narrower than the species | excellent for street use; tolerates heat and drought well |
| x | | x | | x | | x | x | EUROPEAN HORNBEAM<br>(Carpinus betulus) shade tree 40-60ft by 30-40ft spread | | | | x | | | no serious insects or diseases; fairly tolerant of pollution; transplant when young; best in sun; may not be as drought tolerant as some | well adapted to city use, particularly in parks, alleys, in containers. 'Columnans' the narrowest, and 'Fastigiata' work well on street if limbed up |
| | | x | | x<br>? | | x | | WHITE ASH<br>(Fraxinus Americana) shade tree 50-100ft; pyramidal in youth; develops open round crown as it ages | | | x | | | x | susceptible to diseases but vigorous when grown well; easily transplanted; dioecious; select staminate varieties to avoid seeds | handsome native for park and large areas; prettier than green ash but not as adaptable; good varieties include 'Autumn Purple' 'Rose Hill' |
| x | x | x | x | x | x | x | | GREEN ASH<br>(Fraxinus pennsylvanica) shade 50-80 ft by 30-40 ft; uniform pyramidal shape<br>'Marshall's Seedless' | | | x | | | x | avoid seedling grown plants – stay with staminate varieties; borers and scale particularly prevalent diseases; susceptible to storm damage;<br><br>glossy leaves, more vigorous than the species; beautiful yellow in the fall | excellent for difficult urban sites; also tolerates wind overplanted |
| ~~x~~ | ~~x~~ | ~~x~~ | ~~x~~ | ~~x~~ | | ~~x~~ | | ~~CALLERY PEAR (pyrus calleryana 'Bradford') small shade tree 30-50 ft; moderately pyramidal in shape~~ | ~~x~~ | ~~x~~ | ~~x~~ | | | | ~~'Bradford' variety tends to split at crotch in later years; try more relaxed varieties like 'Faurieri' and 'Redspire'~~ | ~~fine street tree for restricted places (commercial areas) but OVERPLANTED; also good in containers and effective as screens in parking lots~~ |

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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | SHADE TREES | KNOWN FOR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diff. - Site | Salt | Soil PH | Pollution | Drought | Wet Soil | Sun | Shade | Name<br>Size/Shape<br>**Native Species in Bold** | Fruit | Flower | Fall Color | Bark | Wildlife | Fast Grow | **Additional Comments** | **Siting Consideration** |
| x | | x | x | x | | x | x light | HEDGE MAPLE<br>(Acer campestre) 25-35ft (50ft), same spread; rounded and dense | | | x | | | | excellent tree for small spaces; pest free; tends to be low branched – prune up for street use; withstands severe pruning | tough urban street tree for narrow streets; excellent where utility wires are a problem |
| x | x | x | x | x | | x | x | NORWAY MAPLE<br>(Acer plantanoides) >50ft; round, symmetrical crown<br><br>'Crimson King'<br>'Summer Shade'<br><br>'Emerald Queen' | | x | x | | | x | increasing disease susceptibility due to overplanting, but fairly pest free; tolerates pollution, urban conditions; intolerant of 2, 4-D herbicide leaves are dark red heat resistant; upright in habit; excellent cultivar good cultivar for urban planting | lawn, park, street tree; shallow roots can damage sidewalk |
| | | x | | | | x | x | **SUGAR MAPLE**<br>(Acer saccharum) shade tree 60-75ft<br><br>'Columnare',<br>'Green Mountain' | | | x | x | x | | Crayola red-orange in fall; being struck by disease all over NR; needs well drained soil<br><br>very narrow; ungainly heat tolerant; does better in dry restricted areas than other varieties | not a good choice for streets or urban landscapes but a beautiful shade tree for lawns, parks, golf courses |

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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | SHRUBS | KNOWN FOR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diff. – Site | Salt | Soil PH | Pollution | Drought | Wet Soil | Sun | Shade | Name<br>Size/Shape<br>**Native Species in Bold** | Fruit | Flower | Fall Color | Evergreen | Fast Grow | **Additional Comments** | **Siting Consideration** |
| x | | x | x | | | x | | BORDER FORSYTHIA<br>(f. x intermedia)<br>8-10ft by 10-12 ft | | x | | | | do not shear into stiff shapes; renew by taking out old canes and shortening remaining stems or cut to ground after flowering | the low variety 'Arnold Dwarf' is good for bank planting; otherwise use for massings; screening |
| x | | x | x | | | x | x semi | **CORNELIAN CHERRY**<br>(Cornus mas) 15-25ft by 15-20ft spread | x | x | | | | early yellow flowers; red fruit in mid-late summer; a very pest free plant; prefers well drained soil but fairly adaptable | hedge, screen, foundation planting around large buildings; if lower branches removed it makes an excellent small street tree |
| x | x | x | | x | | x | x semi | **NORTHERN BAYBERRY**<br>(Myrica pensylvanica) variable from 5-12ft; upright rounded, fairly dense shrub | x | | x | | | aromatic; deciduous to semi-evergreen; thrives in poor sterile soils and heavy clayey ones; fixes atmospheric nitrogen so it actually improves soil; need males and females for good fruit production; bronze fall foliage | good shrub for derelict lands; good potential for highway planting and other sites where salt presents a problem |
| | | x | | | x | x | x | **VERNAL WITCH HAZEL**<br>(Hamamelis vernalis) 5-10ft by same spread; dense rounded shrub | x | x | x | | | flowers in February and March – a great sight in Winter; lovely yellow color in Fall; transplant balled and burlapped | good screen; unpruned hedge; in heavy wet soils such as inundated banks |
| | | | x | | x | x | x | **COMMON WITCH HAZEL**<br>(Hamamelis virginiana) 20-30ft by same spread | | x | x | | | avoid extremely dry conditions but somewhat tolerant of dry soils; flowers October-December, but flowers are obscured by fall color | valuable for naturalized areas; near large buildings in shaded areas |
| | | x | | | | x | x semi | WINTER HONEYSUCKLE<br>(Lonicera fragrantissima) 6-10ft by same spread | x | x | | | x | a number of insects bother this plant; fragrant flowers; when overgrown cut plants to ground, they will develop new shoots | good hedge or screen plant |
| | | | | | | x | | DOUBLEFILE VIBURNUM<br>(V. plicatum var. tomentosum) 8-10ft, wider than tall | x | x | x | | | needs well drained soil; no serious insects or pests; very horizontal structure; one if the most elegant of the flowing shrubs | specimen; massing; screen; nice specimen near brick buildings |
| | | | | | | x | x | JUDD'S VIBURNUM<br>(V. x juddii) 6-8ft by same; dense rounded shrub | | X | | | | fragrant flowers; resistant to disease; full sun to partial shade; needs evenly moist soil | |

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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | SHRUBS | KNOWN FOR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diff. – Site | Salt | Soil PH | Pollution | Drought | Wet Soil | Sun | Shade | Name<br>Size/Shape<br>**Native Species in Bold** | Fruit | Flower | Fall Color | Evergreen | Fast Grow | **Additional Comments** | **Siting Consideration** |
| | | | | | | | x | WINTERGREEN BARBERRY (Barberis julianae) 6-8ft mound/dense | x | x | | x | | hardiest of the evergreen barberries; spiny | excellent barrier or hedge |
| | | | | | | | x | THREESPINE BARBARRY (Berberis tricanthophora) 4-5ft; more open habit | | | | x | | spiny also | can be used as a low hedge |
| | | | | | x | x | x | AZALEAS & RHODODENDRONS all sizes and colors; **some native** | | x | x | x | | some of the small leafed varieties turn bronze in winter; deciduous species turn other colors | too many to discuss; all require acid soil and moisture |
| | | | | | x | x | x | **MOUNTAIN LAUREL** (Kalmia latifolia) variable size, 7-15ft, similar spread | | x | | x | | beautiful and graceful; becomes more open with age; needs cool acid soil | excellent plant for shady situations |
| | | | | | x | x | x | **DROOPING LEUCOTHOE** (Leucothoe fontanesiana) 3-6ft, same spread; fountain habit | | x | | x | | needs acid moist soil; leaf spot can be a problem | nice covering for shady bank |
| x | x | x | x | | | x | | PFITZER JUNIPER (Juniper chinensis 'Pfitzeriana') 5ft by 10ft wide | x | | | x | | more handsome in youth than in maturity; usually dioecious | excellent evergreen plant for banks, slopes and large area plantings |
| | | x | x | | | x | x | JAPANESE YEW (Taxus cuspidate) from 10ft to 40ft; dwarf forms also | x | | | x | | dioecious – need both sexes to get berries; needs excellent drainage; takes any amount of pruning | hedges, screens, good for bank covers |
| | | x | | | | x | x | WINGED EUONYMOUS (Euonymous alatus) 10-20ft by similar spread | | | x | | | corky winged branches are very effective in the winter landscape; avoid extremely wet or extremely dry soils but generally does well | excellent foundation plant because of horizontal lines; beautiful in fall near water; good for screening and massing |
| x | | x | x | x | | x | x semi | AMUR PRIVET (Ligustrum amurense) 12-15ft, 10ft spread; upright and dense | | x | | | x | withstands pruning; withstands city conditions | hedge |

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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | GROUND COVERS | KNOWN FOR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Diff - Site** | **Salt** | **Soil PH** | **Pollution** | **Drought** | **Wet Soil** | **Sun** | **Shade** | Name<br>Size/Shape<br>**Native Species in Bold** | **Fruit** | **Flower** | **Color** | **Evergreen** | **Fast Grow** | **Additional Comments** | **Siting Consideration** |
| x | | x | | x | | x | x | WINTERCREEPER (Euonymous fortunei) 4-6 in; some varieties can grow quite large | x | | | x | x | the variety 'Coloratys' turns purple in winter; thrips and scales can be a problem; might need winter cover in very exposed locations | can be used as a ground cover, low hedge, vine, wall cover; easy to transplant |
| | | | x | x | | x | x | BALTIC IVY (Hedera helix 'Baltica') 6-8in | | | | x | x | mites and leaf spots can be serious; 'Bulgaria' is even hardier than 'Baltica' | ground cover for surfaces, trees, buildings, always looks rich |
| x | x | x | x | x | x | x | | **GROUND JUNIPER** | | | x | x | | Phomopsis blight can be a serious disease; 'Wiltoni' (Blue Rug) is fast growing cultivar | ground cover for hot, dry sunny locations, slopes; very popular |
| x | x | x | | x | | x | | **BEARBERRY** (Arctostaphylos uvaursi) 6-12 in high | x | x | x | x | | likes acid soils but is also found on limestone; withstands salt; transplant in containers or in large mats | pretty, sturdy groundcover of year round interest for sunny, dry spots |
| | | | | | | | x | JAPANESE SPURGE (Pachysandra terminalis) 6-in ground cover | | x | | x | | useful but common; cannot tolerate too much wind; easy to transplant | best ground cover for deep shade |

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## SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued

| TOLERATION FOR | | | | | | | | ORNAMENTAL TREES | KNOWN FOR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Diff - Site** | **Salt** | **Soil PH** | **Pollution** | **Drought** | **Wet Soil** | **Sun** | **Shade** | Name<br>Size/Shape<br><br>**Native Species in Bold** | **Fruit** | **Flower** | **Fall Color** | **Bark** | **Wildlife** | **Fast Grow** | **Additional Comments** | **Siting Consideration** |
| | | | | | | x | x | FLOWERING DOGWOOD<br>(Cornus kousa)<br>specimen <30ft; vase shaped in youth, more horizontal with age | x | x | x | x | | | more tolerant of drought than C. florida | ornamental; good near tall buildings but not where soil is limited, as on street |
| x | | x | x | x | | x | | **WASHINGTON HAWTHORN**<br>(Caetagus phaenopyrum) <30ft; broadly oval to rounded; dense | x | x | x | | x | | large thorns; may hamper maintenance operation<br><br>fruit persists in Winter | good for groves, hedges, highway strips, as a specimen; withstands urban conditions; NOT for use in high foot traffic or children's areas |
| x | | | | x | | x | x<br>l<br>i<br>g<br>h<br>t | CRABAPPLES<br>(Malus ssp) (**some native**) specimen <30ft; vase shape; most are broad<br>'Arnold'<br>'Katherine'<br>'Hope Red' (Hopa)<br>M. sieboldii 'Zumi' | x | x | | | x | x | there are disease resistant varieties; try 'Donald Wyman'; for smaller areas: Malus sargentii (8-10ft)<br><br>highly susceptible to scab resistant to fire blight and scab<br>disease susceptibility moderately susceptible to scab | parks, malls, containers, in groves and alleys, along parkways where planting strip is wide; plants are gorgeous but need some attention; maintenance in the form of periodic removal of suckers and watersprouts |
| | | | | | | x | | SARGENT CHERRY<br>(Prunus sargentii)<br>specimen 30-50ft | x | x | x | x | x | | best of the larger cherries for landscape use; 'Colmnaris' has narrow 'beer glass' shape | can be utilized as a street tree where poor soils and stress are minimal; it can grow quite large |

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**SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued**

**APPROPRIATE TREES FOR FUNCTIONAL CATEGORIES OF STREETS**
(NATIVES IN **BOLD** TYPEFACE)

## I MAJOR STREETS

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### A. Thoroughfares and boulevards (heavy traffic; subject to road deicing)

- Norway Maple
- London Planetree
- Zelkova
- Littleleaf Linden
- **Red Oak**
- **Pin Oak** (particularly good for low lying areas)
- **Green Ash**
- Austrian Pine (if evergreen desired)

### B. Collector streets

Depending on site conditions any of the above; also:

- Silver Linden
- European Hornbeam
- Red Maple
- Chinese or Lacebark Elm

### C. Commercial streets (where set backs from roadway are restricted and there is a great deal of foot traffic)

- ~~Callery Pear~~
- **Honey Locust** (thornless)
- European Hornbeam ('Columnaris')
- Silver Linden ('Fastigiata')
- Gingko (upright variety)
- Hedge Maple

## II MINOR STREETS

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- Red Maple (good for low lying areas)
- Norway Maple
- **Red Oak**
- **Green Ash**
- Littleleaf Linden
- Silver Linden
- Hedge Maple
- Zelkova
- Chinese or Lacebark Elm

## III RIVERFRONT PARKS AND SETTLEMENTS

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These withstand wet conditions:

- **Sweetgum**
- **River Birch**
- **Red Maple**
- **Pin Oak**
- **Green Ash**

## IV PARKS AND CAMPUSES

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### Large Trees

- Japanese Pagoda Tree
- **White Ash**
- Maidenhair (Gingko)
- Amur Corktree
- **Sugar Maple**
- **Sweet Gum**
- Plane Tree
- Laurel Oak

### Ornamentals

- Washington Hawthorne (industrial not recreational parks)
- Crabapples (groves especially)
- Kousa Dogwood
- Sargent Cherry

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**SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued**

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**SCHEDULE D – GUIDE TO SELECTION OF TREES - Continued**

## SOME THINGS TO THINK ABOUT

- DON'T think that small streets can only use small trees. The most memorable New England roads are often narrow and equally often flanked by large, majestic shade trees that have been happily growing for years. Many of the largest shade trees do very well under tough urban conditions.

- DON'T be afraid to space trees quite closely. Young trees planted 40 feet apart won't fill a space for 40 years, and not even then if they aren't large growing trees to begin with. Trees that tolerate urban conditions often tend to adapt well to having their growing room restricted.

- DON'T be afraid to use the same species within an area. While it is possible to overdo the use of a species over an entire town and it is wise to be aware of the dangers of monocultures, the repetition of one variety along a street or series of streets enhances visual coherence and provides spatial definition.

- DO consider the architectural setting and visual needs of the area. Then consider the effect of the mature height and spread of the proposed species. Decide whether you want an open or closed canopy effect on the site when determining proper tree spacing.

- DO evaluate the physical constraints of the site, particularly the placement of underground and overhead utilities.

- DO consider long term maintenance requirements and whether they can be met

- DO encourage the planting of public trees on private property.

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# TOWN OF GRAFTON

GRAFTON MEMORIAL MUNICIPAL CENTER
30 PROVIDENCE ROAD
GRAFTON, MASSACHUSETTS 01519
(508) 839-5335 ext. 145 • FAX (508) 839-4602
www.town.grafton.ma.us

**PLANNING BOARD**


# SCHEDULE E -

## MINIMUM PLANNING BOARD INSPECTION SCHEDULE

- The responsible agency **and** the Planning Board shall be notified in writing at least two (2) business days before each required inspection as listed.
- No inspection may be waived except by joint approval of the Planning Board and responsible agency.

**Date:** _____

**Observations by:** _____

**Subdivision:** _____

**Road Name:** _____

**Location (by Station)** _____

_____ 1. **Right of Way Clearance**

_____ 2. **Excavation**: Material, Presence of Groundwater

_____ 3. **Utility installation**: (circle as appropriate)

Backfill/Compaction  Sewer/Water Mains/Laterals  Drainage

_____ 4. **Subgrade**: All utility crossings
Material
Crown ~~(¼"~~ (¼" per foot)
Compaction

_____ 5. **Drainage System** (in addition to #3 above):
Gravel/fabric connectivity of road base to any subdrain system

_____ 6. **Subbase/Gravel Road Base**: Material/Gradations/Sieve analysis
Crown ~~(¼"~~ (¼" per foot)
Compaction Testing (especially along centerline and at structures)

_____ 7. **Binder Pavement**

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**SCHEDULE E: MINIMUM PLANNING BOARD INSPECTION SCHEDULE**
**PAGE 2**

_____ 8. **Curbing**, inlet stones: Installed, concrete, mortar

_____ 9. **Sidewalks**

Subgrade -- material
Base – material, depth, compaction
Binder paving
Top course paving

_____ 10. **Right of Way: Final grading**

Embankment
Side slopes
Compaction
4~~"~~ " loam
Stabilization, seeding, mixture/fertilizer/maintenance

_____ 11. **Final course pavement**

_____ 12. **Trail, Walkway, etc**: **Construction**

_____ 13. **Street Trees, Plantings, etc.**

_____ 14. **Street lighting** – installed and operating

_____ 15. **Monuments**

_____ 16. **Street Signs**

_____ 17. **Final Clean Up**

_____ 18. **Maintenance**

COMMENTS: _____

_____

_____

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_____

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~~PLANNING BOARD~~

# SCHEDULE F – REVISION HISTORY

## Revised and adopted February 28, 1998

## September 13, 1999

Revised §§ 3.3.3.20, 3.3.4.8

## November 22, 1999

Revised § 4.7.8

## December 12, 2005

Revised §§ 3.1.1, 4.12.1.6, 4.12.1.7

## April 27, 2009

Revised §§ 2.5, 2.5.1.1, 2.5.1.2, 2.5.1.4, 3.1.1, 3.1.5.1, 3.2.1.2, 3.2.4.5, 3.3.1.1, 3.3.1.4, 3.3.3.19, 3.3.4.1, 3.3.7.4, 4.1.2.1, 4.3, 5.2.1.6(a), 5.4.1.1, 5.13.3, 5.16, 6.4.1, 6.5.3

Added Schedule E

## October 2021

General Editorial Changes

- Corrected punctuation, spelling, formatting, and similar nits.
- Revised to resolve issues with inconsistent, outdated, or unclear terminology.
- Made clarifications where the wording did not clearly say what was intended.

Administrative Details (§§ 3, 4, Schedule D)

- Replaced outdated language specifying the number, size, format, and material of copies to be submitted to the Planning Board with language referring to forms provided by the Board, as was done in the Zoning By-Law, or material acceptable to the Board (§§ 3.1.1, 3.2.1.1, 3.2.2, 3.3.1.1, 3.3.11.2, 3.3.12.3) or to quantity and format acceptable to the receiving Board (for other Boards) (§§ 3.3.5.3, 4.7.2.5, Schedule D).
- Added language to § 3.3.6 (public hearing for definitive subdivision plan), § 3.3.11.2 (determination of completeness), and § 3.3.12.3 (inspection in preparation for road acceptance) to require the notice to be published on the "Town of Grafton website" in

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addition to publication in a "newspaper of general circulation in the Town of Grafton."

- Include sidewalks and curbs as details to be reviewed by Superintendent of Streets. (§ 3.3.5.4b(3))
- Revised to allow an extension of up to three years, rather than requiring extensions one year at a time. (§ 3.3.13)

Alignment with Zoning By-Law and regulations of other boards (§§ 3, 4)

- Revised to align with current stormwater management standards and regulations. (§§ 3.3.19, 3.3.5.3b(2), 4.7.8)
- Revised traffic study requirements to be consistent with the Zoning By-Law. (§ 3.3.4.7)
- Revised street light requirements to align with the Select Board's role in determining street light placement. (§ 4.7.6)

Alignment with current MassDOT Highway Division (MHD) standards and guidelines (§§ 2, 4, 5)

- Standard Specifications: references updated to align with current section names and terminology (most notably, MHD now uses "hot mix asphalt" to refer to what is traditionally known as "bituminous concrete"). (§§ 2.1.1.27, 5.1.2, 5.2.2.1, 5.2.2.2j), 5.7.2, 5.9.2)
- Construction Standard Details: updated references that were to the 1966 version. (§§ 5.1.2, 5.7.2)
- Added a reference to the Massachusetts Highway Department Project Development & Design Guide (PDDG) for design criteria not specified in the SRR. (§ 4.1.1.2).
- Revised minor street sag vertical curve minimum K from 35 to 37, for consistency with PDDG. (§ 4.1.5.3)

Design Speed (§ 4.1.2.1)

- Added a requirement to use a minimum design speed of 30 mph in general, with a 25 mph design speed for flexible development roads classified as Minor B and Minor C, reflecting one of the recommendations in ZBL § 5.3.14.

Intersection Corner Radius (§ 4.1.3.5)

- Added a requirement that the radius at the edge of pavement be 30' or greater, for intersections involving a major street, or exactly 30', for intersections involving only minor streets, to make it clear that a pavement edge radius of less than 30' is prohibited and that a radius of greater than 30' is acceptable for an intersection involving a major street.

Intersection Separation (§ 4.1.3.6)

- For streets entering a minor street on opposite sides, require them to be directly opposite or else offset at the centerlines by at least 150 feet. The purpose is to avoid traffic conflicts between vehicles entering a street from opposite sides.
- For streets entering a minor street on the same side, require the distance between their rights of way to be 250 feet or twice the minimum frontage for the zoning district,

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whichever is greater. The purpose is to ensure traffic safety and to ensure that there is sufficient space for at least two lots of minimum frontage between any two streets.

- Require a minimum separation of 500' between the centerlines of intersections on a Major Street. The purpose is to limit congestion on busy streets.
- Added language to explain conditions under which the Planning Board can consider a waiver of the minimum separation distances.
- Added a diagram illustrating intersection separations.

Pavement Edge and Edge of Right of Way (§ 4.1.3.7)

- Removed the requirement that the distance between edge of pavement and edge of right of way be constant. The requirement is unnecessary, because the requirement that centerlines of the roadway and the right of way be colinear has the desired effect anyway, and in some cases, such as at intersections where the pavement and right of way both have a 30' radius, a constant distance cannot be achieved.

Street Width (§ 4.1.4.2 and Schedule A)

- Changed minimum width of Minor Street A from 30' 4" to 30', there being no discernible reason for that 4".
- Increased minimum width of Minor Street C to 24 feet, to meet Fire Department requirements.

Dead End Streets (§§ 2, 4)

- To reduce potential confusion about dead end streets, added a definition for *cul-de-sac* (§ 2.1.1.6) to mean a single road with one closed end and an intersection at the other end, and used that term in rules that apply only to that configuration.
- Expanded the rule for measuring the length of dead end streets, to explicitly state the rule that the Board has consistently, but informally, used over the years. (§ 4.1.6.2)
- Revised the rule for reserving an easement to extend a dead end street to adjacent property, making it conditional on access to adjacent property being required per § 4.1.2.1d, expressing a preference for connecting from a cul-de-sac as opposed to some other part of a dead end street system, and making it conditional on it being possible to create such an easement (recognizing that site conditions such as wetlands may make such an easement impossible).
- Added a rule requiring that the plan show how, when a dead end street is extended from a turnaround, the lots on the turnaround will have compliant frontage when the turnaround is eliminated.

Additional Fire Department requirements

- Required sufficient pavement radius and obstruction-free area to ensure fire apparatus access to cul-de-sac turnarounds. (§ 4.1.6.7)
- Required hydrants to be no more than 10' from the edge of pavement, and to be approved by the Fire Department. (§§ 4.7.7.4, 4.7.7.5)

Curb Requirements (§§ 4.2, 5.7)

- Allow both vertical and sloped granite curbing.
- Allow granite where formerly only bituminous was allowed.
- Allow bituminous curbing only in the form of modified Cape Cod berm.

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- Change from 2% to 5% the grade at which granite curbing is required (consistent with most other municipalities that have such a requirement).

Changed or added detail regarding the placement of underground utilities (§ 4.7)

- Added language requiring underground utilities to be placed under the grass plot and not under a sidewalk (to avoid digging up a sidewalk for utility repairs), except for those whose placement is covered by more specific regulations (e.g., sewer). (§ 4.7.1.5)
- Deleted language allowing gas main under sidewalk. (§ 4.7.4)

Spelled out requirements that were shown only in the cross-section illustrations (§ 5)

- Subdrain on a 6" bed of crushed stone, reflecting the opinion of DPW. (§ 5.4.3.1)
- A 6" gravel base under the grass plot, reflecting the opinion of DPW. (§ 5.9.3.2)

Modernized requirements for underground utilities (e.g., telephone, cable television, data service) (§§ 5.3.6, 5.3.7)

Schedules A & B

- Separated the combined "Schedules A and B" section into two sections: Schedule A with the four typical street cross sections and Schedule B with the two drainage detail drawings.
- Re-drafted street cross-section and drainage detail drawings.
- Changed title of street cross sections from "Standard Cross Section" to "Typical Cross Section" to make it clear that the diagrams are illustrative and not prescriptive.
- Updated Major Street cross section to show the required sidewalks on both sides.
- Updated street cross sections to show the required 8" gravel base under the sidewalk.
- Added references in the text to drainage layer and subdrain detail diagrams. (§§ 5.2.1.5, 5.4.3.1)

Schedule D

- Removed pear trees from the list of recommended street trees, as they are especially susceptible to winter damage.

Added Schedule F (revision history)

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