

**RULES AND REGULATIONS  
FOR  
SUBDIVISION OF LAND  
AND  
SITE PLAN APPROVAL**

**TOWN OF NORFOLK PLANNING BOARD  
NORFOLK, MASSACHUSETTS**



RULES AND REGULATIONS  
FOR  
SUBDIVISION OF LAND  
AND  
SITE PLAN APPROVAL

TOWN OF NORFOLK PLANNING BOARD  
NORFOLK, MASSACHUSETTS

**VOLUMES I AND II**

Rules and Regulations

VOLUME I  
Sections 1-8;  
(Appendix A)  
Fee Schedule; Earth Removal;  
Bonding; Bond Reduction

VOLUME II  
(Appendix B-D)  
Forms  
Cross Sections  
Details



Regulations Most Recently Amended  
Voted August 12, 2004

Certification of Compliance with G.L. c. 41, Section 81Q

True copies of these regulations, as amended, and certified by the Town Clerk, have been transmitted and filed at the Norfolk County Registry of Deeds, in Dedham, and the Massachusetts Land Court, in Boston. Additionally, true copies of these regulations, as amended, have been placed on file and are available for public inspection at the offices of the Planning Board and the Town Clerk.

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APPENDIX B - FORMS (Volume II)	Not Numbered
APPENDIX C - TYPICAL CROSS SECTIONS (Volume II)	Not Numbered
APPENDIX D - TYPICAL DETAILS (Volume II)	Not Numbered

APPENDIX B

FORMS

FORM	DESCRIPTION
A	Application for Endorsement of Plan Believed Not To Require Approval
A-1	Determination That Subdivision Approval Is Not Required
A-2	Determination That Subdivision Approval Is Required
B	Application for Approval of A Preliminary Plan
B-1	Certificate of Approval of A Preliminary Plan
B-2	Certificate of Disapproval of A Preliminary Plan
C	Application for Approval of Definitive Subdivision Plan
C-1	Certificate of Approval of A Definitive Plan
C-2	Certificate of Approval With Modifications of A Definitive Plan
C-3	Application for Approval of Modification to Approved Definitive Subdivision Plan
C-4	Certificate of Disapproval of A Definitive Plan
D	Designer's Certificate
E	Certificate of Amendment, Modification or Rescission of Approval of Definitive Subdivision Plan
F	Covenant
G-1	Performance Secured By Deposit Of Money
G-2	Performance Secured By A Surety Company
G-3	Performance Secured By A Bank Passbook
G-4	Performance Secured By Lender's Agreement
H	Release of Lots
K	Subdivision Inspection Checklist
L	Conveyance of Easements And Utilities
M-1	Control Form and Preliminary Plan Checklist
M-2	Control Form and Definitive Plan Checklist
N	Request for Extension
O	Site Plan Approval Application and Checklist
P	Storm Drainage Flow Analysis

## APPENDIX C

### TYPICAL CROSS SECTIONS

- o 50 Foot Right of Way (See Sections 5.2.1.1. or 8.5.4.2.)
- o 60 Foot Right of Way (See Sections 5.2.1.1. or 8.5.4.2.)
- o 70 Foot Right of Way (See Sections 5.2.1.1. or 8.5.4.2.)

## APPENDIX D

### TYPICAL DETAILS/FIGURES

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All other details are in accordance with MHD Standard Specifications  
See also Board of Water Commissioners requirements/details

RULES AND REGULATIONS  
GOVERNING THE SUBDIVISION OF LAND  
NORFOLK, MASSACHUSETTS

INTRODUCTION

(Adopted under the Subdivision Control Law Section 81-K to 81-GG inclusive Chapter 41, G.L.)

**SECTION 1.0 PURPOSE AND AUTHORITY**

1.1. Purpose

These subdivision regulations are adopted under the provisions of Chapter 41 of the General Laws consistent with the purpose of protecting the safety, convenience and welfare of the inhabitants of the Town of Norfolk 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 a planning board and a board of appeal under the subdivision control law shall be exercised with due regard 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 lessening congestion in such ways and in the adjacent public ways, for reducing danger to 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 applicable zoning ordinances or bylaws; for securing adequate provision for water, sewerage, drainage and other requirements where necessary in a subdivision; and for coordinating the ways in a subdivision with each other and with the public ways in the city or town in which it is located and with the ways in neighboring subdivisions". (MGL Chapter 41, Section 81-K)

1.2. Authority

Under the authority vested in the Planning Board of the Town of Norfolk by Section 81-Q of Chapter 41 of the General Laws, said Board hereby adopts these amended rules and regulations governing the subdivision of land in the Town of Norfolk. Such rules and regulations as amended shall be effective on August 12, 2004.

## SECTION 2.0 GENERAL

### 2.1. Definitions

APPLICANT	A person (as hereinafter defined) who applies for the approval of a plan of a subdivision (Section 3) or approval of a site plan (Section 7). "Applicant" shall include an owner, or his agent or representative, or his assigns. The Applicant may or may not be the Developer.
AASHTO	American Association of State Highway and Transportation Officials.
BASE FLOOD	The 'Base Flood Elevation' shall be the level of flooding having a one percent chance of being equaled or exceeded in any given year, as designated on Flood Insurance Rate Maps (FIRM) cited in the Zoning Bylaw, or, in the absence of such designation, to be verified by the Planning Board based upon the best available information regarding flood hazards, including any available United States Geologic Survey's, Soil Conservation Service's, and Corps of Engineers studies.
BENCH MARK	A mark made in a durable non-growing object of known position and elevation as a reference point. All benchmarks shall be referenced to the National Geodetic Vertical Datum (N.G.V.D.) of 1929.
BIKEWAY	A way designed to be used principally or exclusively by a bicycle or similar unpowered vehicle.
BLOCK	An area of land enclosed on two or more sides by street right-of-way.
BOARD	The Planning Board of the Town of Norfolk.
BRIDLE PATH	A way designed to be used principally or exclusively for equestrian purposes.
CUL-DE-SAC	A street with only one outlet to a through street.
DEFINITIVE PLAN	The plan of a subdivision as duly submitted with appropriate and completed application to the Board for approval, to be recorded in the Registry of Deeds or filed with the Land Court when approved by the Board, and as distinguished from a Preliminary Plan.
DESIGNER	A Registered Professional Engineer (Civil) and/or a Registered Professional Land Surveyor licensed to practice in the Commonwealth of Massachusetts.
DEVELOP	To construct a street, install utilities, erect a house or other structure, or take other action in furtherance thereof.
DEVELOPER	A person (as hereinafter defined) who proposes to develop either a subdivision under a plan of a subdivision approved pursuant to Sec. 3 of these Rules and Regulations or a Site Plan in accordance with the provisions of Sec. 7 of these Rules and Regulations. The Developer may or may not be the Applicant.
DRAINAGE	The control of surface water within the tract of land to be subdivided or the site plan.
EASEMENT	A right acquired by public authority or other person to use or control property for a utility or other designated purpose.

ENDORSED BY	Shall mean bearing a certification or endorsement signed by a majority of the members of the Planning Board as applied to a plan or other instrument required or authorized by the Subdivision Control Law to be recorded.
FOOTPATH	See WALKWAY.
LOT	See Town of Norfolk Zoning ByLaws for definition.
LOT AREA	The horizontal area of the lot exclusive of any area in a street or recorded way open or proposed to be open to public use. For lots created subsequent to September 9, 1974, at least 75% of the lot area required for zoning compliance shall be land other than that under any body of water, including watercourses, or any bog, swamp, wet meadow, or marsh, as defined in Section 40, Chapter 131, M.G.L., to be determined by the Building Commissioner, following consultation with the Conservation Commission.
MONUMENT	A permanent marker to indicate a boundary.
MUNICIPAL SERVICES	Sanitary sewers, storm drains, water pipes, gas pipes, electrical lines, telephone lines, cable tv system, fire alarm and similar systems and their respective appurtenances. (See Private & Public Utilities)
OWNER	As applied to real estate, the person holding the record title to a parcel, tract or lot of land, as shown by the certified record in the Land Registration Office or the Registry of Deeds or Registry of Probate.
PEDESTRIAN WAY	A way providing public access for pedestrians near the right of way of an existing way, consisting of an easement of at least twenty feet, which is normally parallel to the street. Pedestrian Ways are primarily designed and intended to be used by pedestrians for convenient circulation or access to schools, playgrounds, shopping, churches, transportation, parks, conservation areas and/or other facilities. See Sec. 8 for B1 and C1 requirements.
PERSON	An individual, or two or more individuals or a group or association of individuals, a partnership, trust or corporation, or governmental agency having common or undivided interests in a tract of land.
PRELIMINARY PLAN	A plan of a proposed subdivision or resubdivision of land prepared and duly submitted in accordance with Section 3.2. in order to facilitate preparation of a Definitive Plan.
PLANNING BOARD REPRESENTATIVE/ AGENT	Town employee or private consultant authorized by the Planning Board to review subdivisions and administer the regulations.
PRIVATE UTILITIES	This term shall include telephones, cable television, electric light and power, and gas lines whether installed on, above or beneath the surface of the ground.
PUBLIC UTILITIES	This term shall include only sanitary sewers, fire alarms, storm water drains and water pipes and their appurtenances, which may become the property or responsibility of the Town.
RECORDED	Recorded shall mean recorded in the Registry of Deeds of Norfolk County, except that, as affecting registered land, it shall mean filed with the Recorder of the Land Court. (Section 81-L of Chapter 41 M.G.L).
REGISTERED MAIL	Registered or certified mail.

REGISTRY OF DEEDS	The Norfolk County Registry of Deeds and, where appropriate, shall include the Land Court of Norfolk County.
ROADWAY	That portion of a way which is designed and constructed for vehicular travel.
SIDEWALK	A paved way within the right-of-way of a street normally parallel to the street, primarily designed and intended for use by pedestrians.
STANDARD SPECIFICATIONS	"Massachusetts Highway Department (MHD)" (formerly "The Commonwealth of Massachusetts, Department of Public Works), Standard Specifications for Highways and Bridges", latest edition as amended.
STREET	See Town of Norfolk Zoning ByLaws for definition.
PRIMARY	A street which carries traffic equivalent to that generated by 50 dwelling units or more, or which serves property either used or zoned for business or industry.
SECONDARY	A street which carries traffic equivalent to that generated by more than 7 but fewer than 50 dwelling units, and which is not capable of extension to serve more than 50 dwelling units.
RESIDENTIAL	A street which carries traffic equivalent to that generated by 7 or fewer dwelling units, and which is not capable of extensions. A cul-de-sac that cannot be extended.
THROUGH	A street with an outlet to more than one paved public way.

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 two (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 so divided has a frontage on (a) public way, or a way which the Town Clerk of the Town of Norfolk 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 before March 31, 1954, 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 Bylaw. 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 one (1) of such buildings remains standing, shall not constitute a subdivision. (Section 81-L of Chapter 41, M.G.L.).
SUBDIVISION CONTROL	The power of regulating the subdivision of land granted by the Subdivision Control Law, Chapter 41, Sections 81- K through GG inclusive, as amended.
TOWN	Town of Norfolk, Massachusetts.
WALKWAY	A way near the right of way of a street consisting of a parcel or easement of at least five feet, which is normally parallel to the street. Walkways/footpaths are primarily designed and intended to be used by pedestrians for convenient circulation or access to schools, playgrounds, shopping, churches, transportation, parks, conservation areas and/or other facilities. See Sec. 8 for B1 and C1 requirements.

- 2.2. Access to Lots  
Primary access for each lot shown on a definitive plan or a plan not requiring subdivision control (81P) shall be from the street on which its frontage is measured. See Zoning Bylaws.
- 2.3. Regulation of New Subdivisions  
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 or sale of lots in a subdivision, or the construction of ways, or the installation of Municipal Services therein, unless and until a Definitive Plan of such subdivision has been submitted to and approved by the Planning Board as hereinafter provided. (Section 81-O of Chapter 41, M.G.L.)
- 2.4. Plan Preparation  
All plans submitted to the Board shall be prepared and stamped by a Massachusetts Registered Professional Engineer and/or Land Surveyor, as appropriate. Form D, Designer's Certificate, shall be completed and submitted to the Board.
- 2.5. Application, Review and Inspection Fees  
See Appendix A for applicable Application, Review and Performance/Observation Inspection Fee Schedule. Review Fee Administration shall be as follows:
- 2.5.1. General Requirements  
When reviewing an application for subdivision or site plan approval, the Board may determine that the assistance of outside consultants is warranted due to the size, scale or complexity of a proposed project or because of a project's potential impact. The Board may require that the applicant pay a "review fee" consisting of the reasonable costs incurred by the Board for the employment of outside consultants engaged by the Board to assist in the review of an application, in accordance with c. 593 of the Acts of 1989.
- 2.5.2. Eligible Consultants  
In hiring outside consultants, the Board may engage engineers, planners, lawyers, urban designers, or other appropriate professionals who can assist the Board in analyzing a project to ensure compliance with all relevant laws, bylaws and regulations.
- 2.5.3. Fund Administration  
Funds received by the Board pursuant to this section shall be deposited with the town Treasurer who shall establish a special account for this purpose. Expenditures from this special account may be made at the direction of the Board without further appropriation. Expenditures from this special account shall be made only in connection with the review of a specific project or projects for which a review fee has been or will be collected from the applicant. Failure of an applicant to pay a review fee shall be grounds for denial of the application.

If an applicant wishes to receive interest on the balance remaining in his review fee special account, a form must be completed entitled "Client Group Account, Client Account Application - Certification of Taxpayer Identification Number".

- 2.5.4. Fund Expenditures  
Review fees may only be spent for services rendered in connection with the specific project from which they were collected. Accrued interest may also be spent for this purpose. At the completion of the Board's review of a project, any excess amount in the account, including interest, attributable to a specific project, shall be repaid to the applicant or the applicant's successor in interest. For the purpose of the regulation, any person or entity claiming to be an applicant's successor in interest shall provide the Board with documentation establishing such succession in interest.
- 2.5.5. Administrative Appeal  
Any applicant may take an administrative appeal from the selection of the outside consultant to the Board of Selectmen. Such appeal must be taken within ten (10) business days of the decision by the Board to so select, and it must be made by certified mail, return receipt requested addressed to the Board of Selectmen, with a copy to the Planning Board. The date of mailing shall control. In the event such an appeal is taken, the applicant shall, at the same time, execute and deliver to the Planning Board an offer of extension to the application made under the Subdivision Control Law for a period of not less than thirty (30) days. The grounds for such an appeal shall be limited to claims that the consultant selected has a conflict of interest or does not possess the minimum required qualifications. The minimum required qualifications shall consist either of an educational degree in, or related to, the field at issue or three or more years of practice in the field at issue or a related field. The required time limit for action upon an application by the Board shall be extended by the duration of the administrative appeal. In the event that no decision is made by the Board of Selectmen within one month following the filing of the appeal, the selection made by the Planning Board shall stand.
- 2.5.6. Review Fee Retainer  
At the time of submission, the applicant shall provide payment in the amount(s) specified in the fee schedule, by check or money order payable to "Norfolk Planning Board Review Account". The applicant shall maintain a balance in such account of at least 50% of the initial payment amount. Additional retainage of higher amounts may be required in the case of extraordinary size or complexity of projects. The Planning Board may periodically bill the applicant for the purpose of maintaining the required minimum balance.
- 2.6. Pre-Submission Review  
Prior to investing in professional design efforts for subdivision plans, it will often prove useful to review the proposed development of a parcel of land with the Planning Board in order that general approaches and potential problems can be freely explored. Pencil sketches, which need not be professionally prepared, will assist the discussion, and might show some but not all of the information required on a preliminary plan. Such review shall be without prejudice to the Planning Board and the applicant for the purposes of preliminary and definitive plan review.

## SECTION 3.0 PROCEDURE FOR THE SUBMISSION AND APPROVAL OF PLANS

### 3.1. Plan Believed Not To Require Approval

#### 3.1.1. Submission of Plan

Any person wishing 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 an original reproducible copy of said plan and four (4) contact prints thereof and two (2) original copies of a properly executed Form A to the Planning Board agent, accompanied by the necessary evidence to show that the plan does not require approval and the appropriate filing fee (see Section 2.5). Said person shall file, by delivery or registered mail, a written 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 therefor.

#### 3.1.2. Contents

Said plan shall be legibly drawn in accordance with the Rules and Regulations of the Register of Deeds, Chapter 36, M.G.L. Section 13A as amended pertaining to plan size, material, lettering and related requirements. The plan scale shall be forty feet (40') to the inch and contain the following:

- 3.1.2.1. Identification of the plan by name of owner of record and location of the land in question, distance to the nearest intersection street, the scale, north point and date.
- 3.1.2.2. The statement "Approval Under Subdivision Control Law Not Required," and sufficient space for the date and the signatures of all members of the Board.
- 3.1.2.3. Zoning classification and location of any Zoning District Boundaries that may lie within the locus of the plan. The Assessor's map blocks and lot numbers of subject property shall be shown.
- 3.1.2.4. In the case of the creation of a new lot, the remaining land area and frontage of the land in the ownership of the applicant shall be shown.
- 3.1.2.5. Notice of any proceedings and copies of decisions by the Zoning Board of Appeals, including but not limited to variances and special permits (exceptions), regarding the land or any buildings thereon.
- 3.1.2.6. Names of abutters from the most recent local tax list unless the applicant has knowledge of any changes subsequent to the latest available Assessor's records.
- 3.1.2.7. Names and status (private or public) of streets, ways and easements shown on the plan, to include, but not limited to the construction materials of the way; the width of the pavement, if any; the width of the layout of the way or easement; and the book/page of record for the ways and easements.

3.1.2.8. Bearings and distances of all lines of the lot or lots shown on the plan.

- 3.1.2.9. Location of all existing buildings, including setback, side yard and rear yard designations on land under consideration.
- 3.1.2.10. Location of all bounds, fences, and walls on land under consideration.
- 3.1.2.11. All plans shall show the edge of wetlands, the edge of the 100 year flood plain, the edge of isolated areas subject to flooding, the banks of intermittent streams, the banks of perennial streams, the banks of lakes and ponds, the banks of rivers, the edge of riverfront zones, and the edge of the 100 foot wetland buffer zones as applicable. The limits of these resource areas shall be determined in accordance with applicable Massachusetts Department of Environmental Protection Regulations (310 CMR 10.00-10.60) and any Town of Norfolk Zoning Bylaw, Town Bylaw or Town Regulation relative to wetland protection, aquifer protection, and /or water resource protection.
- 3.1.2.12. One half inch (1/2") diameter circles shall be provided to indicate house numbers assigned by the Board, except that 2 one half inch (1/2") circles provided for corner lots.
- 3.1.2.13. Frontage at property and set back line, and area dimensions of each proposed lot.
- 3.1.2.14. All plans shall be annotated above the signature block with the following statement: "Planning Board endorsement is not a determination as to conformance with Zoning Bylaws".
- 3.1.3. Endorsement of Plan Not Requiring Approval  
If the Board or its authorized agent determines that the plan (Form A) does not require approval under the Subdivision Control Law, it shall without a public hearing and within twenty-one (21) days of submission endorse the plan. Planning Board endorsement is not a determination as to conformance with zoning regulations.  
  
The original plan shall be returned to the applicant, and the Board shall also notify the Town Clerk in writing of its action. However, endorsement does not signify buildable lots.
- 3.1.4. Determination That Plan Requires Approval  
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, so inform the applicant in writing and return the plan. The Board shall also notify the Town Clerk in writing of its action.
- 3.1.5. Recording  
The applicant shall file the approved plan at the Registry of Deeds, and shall notify the Board by presenting written evidence of the recording of said plan documents within thirty (30) days of approval.
- 3.2. Preliminary Plan

The applicant is responsible for/encouraged to review copies of the Regulations of other Town Departments/Boards before preparing plans and to become aware of any fees/charges of other Town of Norfolk entities.

3.2.1. Submission of a Preliminary Plan

A Preliminary Plan for a Residential Subdivision may be submitted by the applicant for discussion and approval by the Board. A Preliminary Plan for a Non-Residential Subdivision shall be submitted to the Board. The submission of such a Preliminary Plan will enable the subdivider, the Board, other municipal agencies, and owners of property abutting the subdivision to discuss and clarify the potential problems of such subdivision before a Definitive Plan is prepared. Therefore, although not mandatory for a Residential Subdivision it is strongly recommended that a Preliminary Plan be filed in every case.

Any person submitting a Preliminary Plan shall give written notice to the Town Clerk, by delivery or registered mail; such notices shall identify the tract, the date of submission, and the name and address of the owner (use Form B). The applicant shall file ten (13) prints with the Planning Board. Two prints shall be filed with the Board of Health directly. The Planning Board will distribute plans in accordance with Section 3.3.5.2.

At the time of filing of the preliminary plan, the following shall be submitted:

13 copies of plan (with one additional copy if Open Space Preservation Plan) and

2 additional copies of plan to Board of Health (submitted directly to Board of Health)

5 copies of narrative of concept of how stormwater drainage will be addressed

10 copies of narrative as to proposed scope of traffic review

Form B - Application for Approval of a Preliminary Plan

Form D - Designer's Certificate

Form M-1 - Control Form and Preliminary Plan Checklist

3 copies of Certified List of Abutters as specified in Section 3.3.5.3.

Application/Review Fee for Earth Relocation/Removal Permit

Application Fee, Review Fee

Completed Bank Tax ID Form for review fee funds

Letter regarding use of Board's consultant - See Section 2.5.

Good Standing Approval from Tax Collector's Office

3.2.2. Contents

The Preliminary Plan shall be drawn on reproducible paper at a scale of forty feet (40') to the inch (1"), and on a maximum sheet size of 24 x 36 inches (twenty-four by thirty-six inches). All plans submitted to the Board shall be prepared and stamped by a Massachusetts Registered Professional Engineer and/or Land Surveyor, as appropriate. A Form D, Designer's Certificate, shall be completed and submitted to the Board. The applicant's engineer or surveyor must certify on Form M-1 that the submission is complete. The plan shall be designated as a "Preliminary Plan" and to form a clear basis for discussion of the details of the subdivision and for preparation of the Definitive Plan, the plan shall contain the

following:

- 3.2.2.1. The subdivision name, if any; boundaries, north arrow, date, scale, legend and title "Preliminary Plan".
- 3.2.2.2. The names and addresses of the record owner of the land and the subdivider and the name, seal, and address of the designer, engineer and surveyor who made the plan, all of which shall appear in the lower right hand corner.
- 3.2.2.3. Identify abutting property owners by names and addresses, as determined from the most recent local tax list, unless the applicant shall have more recent knowledge of such abutters.
- 3.2.2.4. The locus (Scale 1"=1,000') of the land shown on the plan with sufficient information to accurately locate the proposed subdivision.

All plans shall contain a location overview plan at a scale of between one inch (1") to one hundred feet (100') and one inch (1") to four hundred feet (400') depending on the size of the subdivision. The location plan shall show the entire subdivision layout, adjacent streets, if any, or streets within a reasonable distance, sufficient to identify the location of the subdivision and its access from a public street and shall be shown on the Title Sheet.

- 3.2.2.5. The existing and proposed lines of streets, ways, easements and any public or common areas within the subdivision, in a general manner.
- 3.2.2.6. Major features of the land such as existing walls, fences, monuments, buildings, wooded areas, outcroppings, ditches, swamps, water bodies and natural waterways. Aerial photographs when available shall be provided. Location and area of dry land satisfying lot area requirements (see Zoning Bylaws) shall also be indicated.
- 3.2.2.7. A general description of the type of systems of sewage disposal, water installation and surface drainage in a general manner including adjacent existing natural waterways.
- 3.2.2.8. The approximate boundary lines of proposed lots, with lot numbers, approximate areas and dimensions. Lot numbers are to be unique along a given street including extensions.
- 3.2.2.9. The names, approximate location and widths of adjacent streets, and of streets approaching or within 500' of the subdivision. Information to demonstrate that adequate stopping sight distance can be achieved shall also be provided (see Section 4).
- 3.2.2.10. The topography of the land with a two foot (2') contour interval based on the Town Datum (National Geodetic Vertical Datum of 1929 [NGVD]). Water bodies and their maximum annual elevations shall be shown with the date of measure-

ment. The FEMA community panel number, zone designation, and base flood elevation shall be indicated on the plans.

- 3.2.2.11. Soil type based on the standards of United States Department of Agriculture, Soil Conservation Service.
- 3.2.2.12. Letter designation or names of the proposed streets.
- 3.2.2.13. Preliminary profiles of existing grades and approximate proposed finished grades of the roadway, drainage and utilities.
- 3.2.2.14. Area of contiguous land and water of the applicant not presently being subdivided, with a sketch plan showing a feasible future street layout for such contiguous land, if any.
- 3.2.2.15. The zoning classification of land shown on the plan and the location of any zoning district boundaries including any overlay zoning, flood plains and wetland districts.
- 3.2.2.16. The Assessors' Map, Block, and Lot Numbers of subject property shall be shown.
- 3.2.2.17. Easements and rights-of-way applicable to the area shown on the plan.
- 3.2.2.18. Appropriate title block and signature space shall be provided. Reference to an approved Preliminary Plan or Definitive Plan for the site shall also be indicated, if applicable.
- 3.2.2.19. All proposed waivers to be requested or a statement to the effect that no waivers are being requested shall be indicated on the plans.

3.2.3. Approval of a Preliminary Plan

The Board may give such Preliminary Plan approval, with or without modification or suggestion, after the Board's review, and at the Board's option, review with the Board of Health, the Conservation Commission, the Board's Engineer/Consultant, Highway Department, Water Commissioners and other Town agencies. Such approval does not constitute approval of the subdivision but enhances the Definitive Plan review/approval process.

Within forty-five (45) days after the proper submission of a preliminary plan, each Board (Planning and Health) shall file its findings in accordance with Section 81-S of Chapter 41, M.G.L. as amended.

The original of the Preliminary Plan will be returned to the applicant. Approval shall be effective for seven (7) months from the date of plan submittal.

3.2.4. 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 with Section 81-S of Chapter 41, M.G.L.

3.3. Definitive Plan

The applicant is responsible for/encouraged to review copies of the Regulations of other Town Departments/Boards before preparing plans and to become aware of any fees/charges of other Town of Norfolk entities.

3.3.1. Submission of a Definitive Plan

In order to maintain statutory rights under the Preliminary Plan, the Definitive Plan(s) shall conform substantially to the Preliminary Plan as approved but may constitute only that portion which is proposed to be recorded and developed at the time. The Subdivision Rules and Regulations and zoning in effect at the time of the submission of the Preliminary Plan shall govern the Definitive Plans(s) if it is duly submitted within seven months of the Preliminary Plan submittal.

Any person who submits a Definitive Plan of a subdivision to the Board for approval shall file with the Board all items required in subsections 3.3.1., 3.3.2., 3.3.3. and 3.3.4. of this Section and the appropriate filing fee (see Section 2.5) for a Definitive Plan to be "duly submitted" in accordance with these Rules and Regulations and the General Laws of Massachusetts. Such submission shall be made to the Planning Board or its agent and include the following:

- 3.3.1.1. A reproducible drawing of the Definitive Plan and the following contact prints thereof, shall be dark line on white background.

The Planning Board Agent shall distribute the prints as indicated in Section 3.3.5.2.

Where flood plain/wetlands are involved on a Definitive Plan, the applicant must file the Definitive Plan with the Norfolk Conservation Commission simultaneously with the filing of the Definitive Plan with the Planning Board. A final decision by the Planning Board will be forthcoming only after the applicant has obtained a written report from the Conservation Commission stating that the basic location of the roadway layout and drainage structures can be built without being in violation of the Wetland Protection Act, M.G.L. 131, Section 40 and Town of Norfolk Bylaws.

Also, where flood plain/wetlands are involved on a Definitive Plan, the applicant shall clearly delineate the location of same and indicate the percent of land area for each lot that is flood plain/wetlands.

Consideration may be given to lack of improvements on roads leading to the subdivision. The Applicant may be required to make necessary improvements on roads leading to the subdivision.

When the subdivision requires modification to an existing town road under the jurisdiction of the Board of Selectmen, the applicant must simultaneously file the plan with the Selectmen. A final decision by the Planning Board will be forthcoming only after the applicant has obtained approval from the Board of Selectmen to undertake the modification.

- 3.3.1.2. At the time of filing of the definitive plan, the following shall be submitted:
- 13 copies of plan (one additional when open space preservation subdivision)
  - 2 additional copies of plan to Board of Health (submitted directly to Board of Health)
  - 5 copies of stormwater/drainage report
  - 10 copies of impact statement
  - 5 copies of traffic assessment (study) (with additional copies as may be requested on a case by case basis)
  - Form C - Application for Approval of a Definitive Plan
  - Form D - Designer's Certificate
  - Form M-2 - Control Form and Definitive Plan Checklist
  - 3 copies of Certified List of Abutters as specified in Section 3.3.5.3.
  - Application for Earth Removal from Board of Selectmen (where applicable)
  - Earth Relocation/Removal Application from Planning Board (where applicable)
  - Application to Highway Superintendent for Street Excavation Permit and, when applicable, Scenic Roads Act Hearing and Shade Tree Hearing
  - Application Fee, Review Fee, Earth Relocation/Removal Application and Review Fee (when applicable)
  - Completed Bank Tax ID Form for review fee funds
  - Letter regarding use of Board's consultant - See Section 2.5.
  - Good Standing Approval from Tax Collector's Office
- 3.3.1.3. The Definitive Plan shall be prepared by a Project Team which shall include a Professional Civil Engineer (PE) and a Professional Land Surveyor (RLS) registered in Massachusetts and professional personnel of other disciplines as specified in applicable sections of these Rules and Regulations. All professional personnel shall maintain current registration or certification if available for that discipline in Massachusetts.
- 3.3.1.3.1. The classification and precision of surveys shall conform to Class A or better of the most recent Land Court Manual of Instructions, 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.
- 3.3.1.3.2. The plan shall be a scale of one inch (1") equals forty feet (40') or such other scale as the Board may accept to show details clearly and adequately.
- All plans shall contain a location overview plan at a scale of between one inch (1") to one hundred feet (100') and one inch (1") to four hundred feet (400') depending on the size of the subdivision. The location plan shall show the entire subdivision layout, adjacent streets, if any, or streets within a reasonable distance, sufficient to identify the location of the subdivision and its access from a public street and shall be shown on the Title Sheet.

- 3.3.1.3.3. Sheet sizes shall be twenty-four by thirty-six inches (24" x 36") including a three-quarter inch (3/4") border.
- 3.3.1.3.4. All plans shall include a plat of the locus and a facsimile of a one (1) square mile section of the current Zoning Map at a scale of one (1") inch equals one thousand (1000') feet showing the relation of the subdivision to the highway and major streets in the Town.
- 3.3.1.3.5. All plans shall include a Title Sheet. If multiple sheets are used, they shall show each lot in its entirety on one (1) sheet and shall be accompanied by an index sheet showing the entire subdivision at a scale of one (1) inch equals two hundred (200) feet. A listing of drawings (plan sheets) and revision status, as well as a legend of symbols shall also be provided.
- 3.3.1.3.6. Appropriate title block and signature space shall be provided in accordance with the typical detail in Appendix D. The title block shall be located in the lower right-hand corner of each plan sheet and the signature space for both the Planning Board and Town Clerk shall be located on the right side of each plan sheet. Reference to an approved Preliminary Plan or Definitive Plan for the site shall also be indicated, if applicable.
- 3.3.1.3.7. All plans shall contain a location overview plan at a scale of between one inch (1") to one hundred feet (100') and one inch (1") to four hundred feet (400') depending on the size of the subdivision. The location plan shall show the entire subdivision layout, adjacent streets, if any, or streets within a reasonable distance, sufficient to identify the location and the access to the land, and shall be shown on the Title Sheet.
- 3.3.1.4. The applicant shall also file by delivery or registered mail a notice with the Town Clerk stating the date of submission to the Board for such approval accompanied by a copy of the completed Form C - Application for Approval of Definitive Plan.
- 3.3.2. Contents  
The applicant's engineer or surveyor must certify on Form M-2 that the submission is complete. The Definitive Plan shall contain the following information:
  - 3.3.2.1.1. A cover sheet, which includes an overall plan view of the subdivision lots with designations as to what page(s) of the plan those lots can be found in greater detail and a key plan indicating what can be found on each plan sheet.
  - 3.3.2.1.2. A title, appearing in the lower right-hand corner of each sheet showing the name of the subdivision, if any; the date; scale; north arrow, the names and seals of the designer, engineer and surveyor who made the plan. A revision block shall also be provided on each sheet indicating the number, date and description of all revisions.
  - 3.3.2.2. North arrow, whether true, magnetic or grid along with a benchmark and so

indicated, and the boundaries of the subdivision indicated by shading.

- 3.3.2.3. 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, so indicated, including all abutting land owned by the applicant not presently being subdivided and location and ownership of all other land within five hundred feet (500') of the boundaries of the land shown in the subdivision.
- 3.3.2.4. Major features of the land, such as: existing waterways, swamps and water bodies, natural drainage courses, walls, fences, buildings, wooded areas, outcroppings and ditches, old foundations, burial grounds, wells and other structures which exist on or near the site at the time of survey. Where available, aerial photographs may be required. Location and area of dry land satisfying the requirements for "Continuous Buildable Lot Area" of the Zoning Bylaws shall be indicated. The limits of any vegetated wetland including any swamp, wooded swamp, meadow, bog or marsh shall be established in the field by a professional botanist and shall be mapped through a field survey of the botanist's markings and shown on the plan. FEMA panel number, Zone designation, and base flood elevation shall be indicated on the plan.
- 3.3.2.5. Lines of existing and proposed streets, setback lines, ways, lots, lot numbers of each lot designated numerically in sequence, easements, and public or common areas within the subdivision. The name designation of proposed streets shall be shown in pencil. Half inch ( $\frac{1}{2}$ " ) circles are to be shown on each lot for house numbers to be assigned by the Board. (Two half inch circles for corner lots.) Lot numbers are to be unique along a given street including extensions.
- 3.3.2.6. Sufficient data to determine the location, direction and length of every street and way line, lot line and boundary line, and to establish these lines on the ground. This shall include the lengths and bearings of plan and boundary lines of all subdivision lot lines including lot frontage on the streets, of the radii, tangents, and central angles of all curves in lot lines and street line. All angle points, or intersections of tangents along the street lines shall be shown, areas of lots with lot numbers and the area and frontage on public ways as set forth in Section 81-L of Chapter 41 M.G.L. of adjoining lands of the applicant not included in the Subdivision shall be shown.
- The surveyor shall submit mathematical computations (lot closures and build factor calculations) for all lots under consideration.
- Subdivision streets shall be listed separately on the plan as parcels (ie Parcel A, Parcel B, Parcel C, etc.) with the square footage of these "parcels" included. Parcels are not subject to the application fees as lots.
- If the subdivision street is to be only partially constructed, the constructed portion and unconstructed portion are to be identified as separate parcels. Each parcel (street) is to include the length of roadway in feet and miles.
- 3.3.2.7. Location of all permanent monuments properly identified as to whether existing or

proposed. The proposed subdivision shall be tied into the nearest existing town, county, or state bound.

- 3.3.2.8. Location, names pavement widths, right-of-way widths, and designation as public or private of all streets or private ways bounding, approaching or within reasonable proximity of the subdivision.
  - 3.3.2.9. The zoning district classification of land shown on the plan and the location of any zoning district boundaries that lie within the locus of the plan and the applicable minimum lot size, frontage, front, side and rear yard setback requirements as appropriate.
  - 3.3.2.10. Assessors' Map, Block, and Lot of subject property shall be shown on the plan.
  - 3.3.2.11. Indication of all existing and proposed easements and rights-of-way applying to the land and their purposes, whether or not within the subdivision, and any decision on appeal or any variance or exceptions (special permits) made by the Zoning Board of Appeals applicable to the subdivision of the land or any buildings thereon.
  - 3.3.2.12. 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 adjoining parcels of land of the applicant.
  - 3.3.2.13. Suitable space to record the action of the Planning Board and the signatures of all members of the Board including, where appropriate, the words "Deeds of easements to be recorded herewith" or the words "Covenants to be recorded herewith." The signature space shall appear on the right side of each plan sheet and shall include space for Town Clerk.
  - 3.3.2.14. Frontage at property and set back line, and dimensions of each proposed lot.
  - 3.3.2.14.1. Base lines shall be clearly indicated on all submitted plans showing stations at all points of curvature, points of tangency, angle points, and one hundred foot stations.
- NOTE: (Items 3.3.2.15. through 3.3.2.22. shall be submitted on separate sheets of the same size and material as the plan sheet. Each sheet shall bear title block and signature block as required in paragraphs 3.3.2.1. and 3.3.2.13. above. Item 3.3.2.21. shall be submitted in text and tabular form.)
- 3.3.2.15. Plan and Profile  
Existing profiles of the street exterior and center lines drawn fine black line; dot long dash for left, short dash for right side, and solid for center-line. Proposed profile on the finished center-line drawn in heavy black solid line of proposed streets at a horizontal scale of one inch (1") equals forty feet (40') and vertical scale of one inch (1") equals four feet (4'), or such other scales acceptable to the

Board.

Existing and proposed centerline grades are to be shown on plan profile sheets. Grades are to be shown at 50 foot intervals at even stations and half stations. Elevations are also to be shown at the PVC, PVI, and PVT of vertical curves and at 25 foot intervals along the vertical curve. All existing and proposed intersections and sidewalks, curb-cut ramps, bikeways and walkways, storm drains and water lines shall be shown with all proposed grade elevations calculated. Elevations are to be referenced to the Town Datum (National Geodetic Vertical Datum of 1929, NGVD.) Gradients shall be shown by figures expressed in per cent.

3.3.2.16. Contour Plan/Grading Plan

Existing and proposed topography shall be shown at two feet (2') contour intervals. In no case shall earth removal exceed more than 10,000 cubic yards for the construction of the roadway whether in the layout or on adjacent lots. There shall also be indicated by differentiating symbols the contour line for four feet (4') above said high water mark. All lot grading must be indicated on the plans to ensure that proper lot drainage and site grading issues are addressed. All benchmarks shall be noted, as well as items required in Section 3.3.4. Existing contours shall be shown as dashed lines with all existing topography screened and proposed contours solid.

The Board may require certification of compliance with G.L. Chapter 21E, as most recently amended, with respect to the existence of contamination or threat of contamination on the site.

Removal of earth shall be performed in accordance with the requirements set forth later in Appendix A and in accordance with Town of Norfolk Bylaws (*Article VII - Land Use And Resource Protection*) as most recently amended, as specified by other agencies. The grading plan shall indicate conformance, as applicable.

3.3.2.17. Utility Plan

Size and location of existing and proposed water supply mains, hydrants, gas, electric, telephone, cable tv, fire alarm, street lighting, sanitary sewers, storm drains, and including all appurtenances and easements pertinent thereto, logs of borings and test pits, and method of carrying water to the nearest watercourse or easements for drainage as needed, whether or not within the subdivision. Location of proposed driveways shall be indicated on the plan.

If the Planning Board approves off site surface water discharge, the applicant or Developer shall clearly indicate what course the discharge will take, and shall present to the Board evidence from their Engineer that such discharge is satisfactory and permitted by public or private ownership of adjacent street or property. In general, surface water shall be contained on site.

All transformers are to be located outside the right of way on easements for individual lots.

The utility installation shall not interfere with the installation of sidewalks, trees, retaining walls, guardrails or other subdivision improvements.

The Board is to be supplied a copy of the plan prepared by the electric utility company showing the proposed location of the transformers and the Board's agent is to make a site observation of transformer pad locations prior to installation of the transformers. The final location of transformers and easements shall be approved by the Board prior to construction and shall be shown on the As-Built Plan.

3.3.2.18. Drainage Calculations

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

3.3.2.19. Tree Plan

For the area within the proposed street right-of-way and ten feet (10') beyond and parallel thereto, show the following superimposed on the contour plan:

- (a) Existing trees if in living viable condition and having a trunk in excess of twelve inches (12") in diameter measured four feet (4') above grade or if of special importance because of species or distance from other trees, or if field-marked for location by the Planning Board or its agent; in each case, indicating whether such tree is to be retained or removed.
- (b) Proposed plantings and easements in accordance with Town Bylaws and these Rules and Regulations (Sections 4 & 5).

3.3.2.20. Cross-Sections

Typical cross-sections of each street, roadway, drainage ditch and sidewalk to be constructed.

3.3.2.21. Impact Studies and Assessments

The Applicant shall inform the Planning Board of any and all impacts that the proposed development may have on the abutters, neighborhood, community and Town. These impacts include the aspects of traffic, water supply, solid waste disposal, sewerage, storm water drainage, fire/police protection and infrastructure in general, as well as environmental contamination issues of noise, water, air, etc. The Applicant shall also indicate the measures which will be implemented to mitigate the results of these impacts.

The Board may additionally require at its discretion that the Applicant prepare and submit impact studies and assessments for specific aspects that the Board believes to be of paramount concern to the health, safety and welfare of the Town. The need for a study/assessment will be based upon the Board's determination that a potential significant impact(s) exists and mitigation measures are required.

The Board may require an impact statement as to the effect of a proposed

subdivision on schools, police, fire protection, traffic, and municipal services.

The impact study shall include impact of drainage on abutting public water supply as well as impact on the public water supply in general.

The Applicant shall use appropriate professionals to perform the necessary studies/assessments and the appropriate number of copies of the results shall be presented in a written report to the Board, as required.”

3.3.2.22. Sedimentation and Erosion Control Plan

A Comprehensive Sedimentation and Erosion Control Plan shall be submitted to the Board and/or other Town Agencies showing the staging of construction and the measures to limit water borne and wind induced erosion, which shall include quick rooting vegetation, expeditious stabilization of disturbed area, hay bales, diversions, siltation fences, and sedimentation basins. The pre-development and construction stage sediment loadings in all water courses shall be calculated using the Universal Soil Loss Equation.

3.3.2.23. Traffic Congestion Control and Analysis

Maintenance of a high level of service on Town roadways is important to the preservation of safety, convenience and character of the Town of Norfolk. New development shall only be permitted when the projected traffic to be generated by the development can be accommodated either by existing roadway capacity or through proposed improvements that will ensure safety and the preservation of Norfolk's Town character.

3.3.2.23.1. Definitions:

3.3.2.23.1.1. Capital Transportation Improvements are major and generally costly tasks aimed at improving local transportation networks; including but not limited to the planning of, engineering for, acquisition of land for, and construction of roads, turn lanes, intersection improvements and signalization, but not including routine maintenance.

3.3.2.23.1.2. Level of Service (LOS) is a measurement of the adequacy of a roadway segment or intersection to handle the existing or proposed flow of traffic. LOS shall be calculated using the methodology of the most recent edition of the Transportation Research Board Highway Capacity Manual.

3.3.2.23.1.3. Peak Periods mean the times during the day and week which represent the maximum levels of traffic flow and shall be determined for the specific use proposed; generally, commuter peaks are considered to be from 7:00 a.m.-9:00 a.m. and 4:00 p.m.-6:00 p.m. Monday through Friday. Retail peaks occur on Saturdays, weekday evenings, and major holidays or seasons.

3.3.2.23.1.4. Adjacent Road Network means all primary and secondary roads located within a one-half (½) mile radius of the nearest point of the proposed development, including proposed primary and secondary roads necessitated by new land development activity which will generate traffic. The adjacent road network may

include roadways within adjacent towns.

- 3.3.2.23.1.5. Trip Generation means the addition of motor vehicle trips to area roadways as a result of any given type of land use activity or development which attracts or produces such trips. Trip generation figures shall be calculated using the numbers presented in the most recent edition of the Institute of Transportation Engineer's Trip Generation.
- 3.3.2.23.1.6. Adequate shall mean a Level of Service "B" or better for rural, scenic and residential streets, and for new streets and intersections to be created in connection with the proposed project; and "C" or better for all other streets and intersections.
- 3.3.2.23.2. Traffic Impact Analysis  
To assist the Town in reviewing the potential impacts of traffic generated by a proposed use or development of land, all applications for subdivision approval or site plan approval must be accompanied with ten (10) copies of the Traffic Impact Analysis, unless waived by the Board following a finding that traffic impacts caused by the proposed use or development of land will be insignificant, and that Level of Service (LOS) be maintained or improved as a result of the project.
- 3.3.2.23.2.1. The Traffic Impact Analysis must document the existing traffic conditions in the vicinity of the proposed project, and the potential impacts of the traffic generated by the proposed development on the adjacent road network. Any measures proposed to mitigate adverse traffic impacts shall be identified and described.
- 3.3.2.23.2.2. Any project which would result in a significant decrease (one full level or below LOS C) in Level of Service or any part of the Adjacent Road Network during peak periods shall:
- a. reduce the scale of the project to maintain the Adjacent Road Network at the existing Level of Service during Peak Periods, or
  - b. phase the project to match the availability of planned local improvements to the Adjacent Road Network which will maintain an Adequate Level of Service following construction, or
  - c. undertake the necessary Capital Improvements to improve or maintain the Adequacy of the Adjacent Road Network, or
  - d. provide an off site roadway or improvements bond for the necessary off-site capital improvements equal to the development's cost of lessening congestion that results from the proposed development as determined by the Planning Board, its agent or representative.
- 3.3.2.23.2.3. Contents of Traffic Impact Analysis

The following information shall be included in the traffic impact analysis for the Adjacent Roadway Network. The Board may waive any sections of these requirements it deems appropriate upon request and on a case-by-case basis.

- a. existing traffic conditions: average daily and peak hour volumes, average and peak speeds, accident data, LOS of intersections and street segments likely to be affected by the proposed development,
- b. projected traffic conditions for the design year of the project,
- c. projected impact of proposed development: peak hour and daily traffic to be generated by the development; sight lines at new intersections; proposed traffic controls; projected post-development LOS and volumes on affected streets.
- d. monitoring of post-development projections shall occur approximately twelve (12) months after full build out is complete. The post-development traffic report shall catalogue activity related to LOS, volumes and safe access and approval of this report shall be the basis of the final bond release,
- e. data submitted for initial approval/review shall be no more than six (6) months old at the date of application, unless due to significant recent development the Board determines there will be a significant impact on the numbers.

3.3.2.24. Curb Tie and Alignment Plan

A curb tie and alignment plan shall be submitted showing the following information:

- o Station and offset to all curbs at their point of curvature (P.C.), point of tangency (P.T.), and point of compound curvature (P.C.C.)
- o Existing and proposed bounds with a tie in to the nearest Town, County, or state bound.
- o Chart indicating all proposed bounds with north and east coordinates and station and offset.
- o Bearings, distances, and curve data for all existing and proposed base lines, curb lines, and right-of-way lines.
- o Widths of existing and proposed traveled ways, grass strips, and sidewalks.
- o Stations of all intersecting existing and proposed base lines.
- o Chart indicating the location by station of curb cut ramps along with the roadway identification.

3.3.2.25. Waivers, Construction Sequencing and Timing

The plans shall indicate all waivers requested by the applicant and approved by the Planning Board. The plans shall also show the proposed construction sequencing and timing for the subdivision.

- 3.3.2.26. Detail Plan  
A plan shall be prepared and submitted indicating all the details in plan, section, and elevation as required to fully understand and complete the proposed project in accordance with the Planning Board's Rules and Regulations. Details included in the Planning Board Rules and Regulations and required for the proposed project shall be included on the detail plan. In addition, the Planning Board may require additional details to be included with the contact plans which it believes will assist the contractor and the Town of Norfolk to fully understand the proposed project.
- 3.3.2.28. Wetland and Water Resource Protection  
The attention of the applicant is directed to provisions of Section 40 of Chapter 131, Protection of Wetlands, and to any Town of Norfolk Zoning Bylaw and Bylaw regulations relative to wetland protection, aquifer protection, and/or water resource protection.
- 3.3.3. Staking  
To facilitate review of the Definitive Plan by the appropriate authorities, 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 including intersections with existing roadways.
- 3.3.4. Soil Survey and Percolation Tests  
The Board or its agent may require soil surveys and/or test pits or borings, which are to be prepared at the expense of the applicant, in order to establish the suitability of the land for the proposed storm drainage system and proposed street construction.  
  
See also Norfolk Board of Health Regulations.
- 3.3.4.1. 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 be, in the opinion of the Board or its Agent, factors affecting the quality and service life of the street. Test pits shall be made under the supervision of an Agent of the Planning Board, and shall not be backfilled until the applicant has been notified by the Board or its Agent 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 the purpose of determining the hard bottom contours. Test pits and boring, where required, shall extend to a minimum depth of five feet (5') below the street profile grade or to bedrock, whichever is less. The applicant shall indicate on the plan a proposed layout of the subsurface exploration program complete with location, spacing, and type of exploration proposed.
- 3.3.4.2. Soil surveys, when required by the Board or its Agent, shall include a test excava-

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

- 3.3.4.3. All information concerning the test pits, borings or soundings (location, depth, soil strata, depth of water table) shall be submitted to the Board in a written report to be made, evaluated and stamped by a Registered Professional Engineer.

3.3.5. Procedure

3.3.5.1. Review by Board of Health as to Suitability of Land

At the time of filing of the Definitive Plan, the applicant shall also file with the Board of Health two (2) contact prints of the Definitive Plan, dark line on white background, together with any and all information specified in the Board of Health's Rules and Regulations which may include percolation and other tests as well as septic system details and other information 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. 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 therefor in such report, and where possible, shall make recommendations for the adjustment thereof.

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 approval by that Board. The Board of Health shall send a copy of their report, if any, to the person who submitted said plan. Every lot so located that it cannot be served by a connection to the municipal sewer system shall be provided with septic tank and drain-field satisfactory to the Board of Health and/or the Commonwealth of Massachusetts Sanitary Code minimum standards as the Board of Health shall determine. A note shall be added to all plans as follows: 'No dwelling will be constructed on any lot without first securing from the Board of Health the Disposal Works Construction Permit required by Title 5 of the State Environmental Code.' The approval of a Definitive Subdivision Plan by the Board does not absolve the developer of any other requirements of the Board of Health or other Town boards.

3.3.5.2. Review by Other Town Officials

The Planning Board Agent will transmit copies of the Definitive Plan to Town Officials other than the Board of Health as follows:

One (1) copy each to the Conservation Commission, Water Commission, Highway Department and the Police Department/Fire Department and also two (2) copies to the Planning Board's Engineer.

Before the Definitive Plan is approved, the Board will request written statements from the above officials prior to the public hearing with regard to the proposed improvements in the following respect, but not limited to:

- 3.3.5.2.1. Conservation Commission as to potential involvement with Chapter 131, Section 40, M.G.L. and the effects of the subdivision on streams, wildlife and similar considerations within the scope of the Conservation Commission.
- 3.3.5.2.2. The Board's Engineer as to the design of the street system, 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.
- 3.3.5.2.3. Fire Department as to location of hydrants and emergency access.
- 3.3.5.2.4. Police Department as to street safety, both vehicular and pedestrian, and access for emergency vehicles.
- 3.3.5.2.5. Highway Department as to the design of the street system including the feasibility of snow removal from sidewalks and roadways.
- 3.3.5.2.6. Water Commission as to the design of the water system, as applicable.
- 3.3.5.3. Public Hearing  
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 in a newspaper of general circulation in the Town of Norfolk once in each of two (2) successive weeks, the first publication to be not less than fourteen (14) days before the date of the hearing and by mailing a copy of such notice to the applicant and to all owners of land abutting the land and all owners of land within three hundred feet (300') of a property line of the land shown on the plan as indicated in the Certified List of Abutters obtained by the Applicant from the Norfolk Board of Assessors.
- 3.3.5.4. Planning Board Procedure  
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 Chapter 41, Section 81-U of the General Laws, as amended. In summary, the Board, after receiving the Plan and profiles, will review the same to determine whether they are in compliance with its adopted Rules and Regulations, Zoning Bylaws and other applicable statutes.

The Planning Board may require that a subdivision plan show a park or parks suitably located for playground or recreation purposes or for providing light and air and not unreasonable in area in relation to the area of the land being subdivided and the prospective uses of such land, and if so determined the Board shall endorse the plan to require that no building may be erected on such park or

parks for a period of not more than three years without the Board's approval.

Before approval of the plan, the Board shall establish that the street pattern is safe and convenient, that proper provision is made for street extension and that all other purposes of the General Law are met. The Board may, as a condition of granting approval under Section 81-U, impose reasonable requirements designed to promote the health, convenience, safety and general welfare of the community and to benefit the Town. In such event, the Board shall endorse such conditions on the plan to which they relate, or set forth a separate instrument attached thereto, to which reference is made on such plan and which shall, for the purpose of the Subdivision Control Law, be deemed to be a part of the plan.

3.3.5.5. Approval or Disapproval

The action of the Board with respect to such plan shall be by vote, copies of which shall be filed with the Town Clerk and sent to the applicant. If the Board modifies or disapproves such plan, it shall state in its vote the reasons for its action.

Failure of the applicant to submit revised plans and other required submittals within six (6) months of approval with modifications shall automatically rescind approval of the plan. If subdivision approval is granted by the Board, the applicant shall submit a revised plan reflecting any and all Conditions of Approval within 60-days of filing of Form C-1 "Certificate of Approval of a Definitive Plan" or Form C-2 "Certificate of Approval with Modifications of a Definitive Plan" with the Town Clerk. The Board shall rescind its disapproval if, within six (6) months of such disapproval, the applicant submits revised plans and other required submittals fully conforming to the Rules and Regulations of the Board and resolving the specific reasons for disapproval. The Planning Board on its own motion or on the petition of any interested person, shall have the power to modify, amend, or rescind its approval of a plan of a subdivision, or to require a change in a plan as a condition of its retaining the status of an approved plan. (81-W)

A note shall be added to the approved plan, adjacent to the signature block on all pages with the following words:

"Conditionally approved in accordance with MGL Chapter 41, Section 81U, as shown in covenant to be recorded herewith."

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) day appeal period has elapsed following the filing of the Board's certificate of approval or disapproval, as the case may be, with the Town Clerk and said Clerk has notified the Board that no appeal has been filed. If appeal has been made, said endorsement shall be made after the entry of the final decree of the court sustaining the approval of such. Final approval shall be subject to the construction specifications contained herein and to the rules and requirements of the Town Departments, Agencies and the Board of Health. Prior to endorsement by the Planning Board, the applicant shall submit the approved version of the plan on an electronic file format acceptable to the Planning Board, which is compatible with AutoCAD Release-14 (or any subsequent release which the Town of Norfolk adopts). After the Definitive Plan has been approved and

endorsed, the Board shall return the original to the applicant. The Board may extend the time period permitted by statute between submission of a Definitive Plan and action thereon upon written request of the applicant. Approval of the Definitive Plan does not constitute the laying out or acceptance by the Town of streets shown on the plan.

### 3.4. Implementation of Definitive Plan

#### 3.4.1. Performance Guarantee

Before endorsement of the Board's approval of any Definitive Subdivision Plan, the applicant shall agree (i) to complete (except in the case of any portion of the subdivision for which a surety company performance bond, a bank passbook, a performance bond secured by a deposit of money, or a Lenders Agreement shall have been filed pursuant to (3.4.1.1., 3.4.1.2., 3.4.1.3., and 3.4.1.4.) the required improvements for the subdivision, specified in these Rules and Regulations, within two (2) years of the date of such approval, (ii) to complete the required improvements for any portion of the subdivision, for which a surety company performance bond or a performance bond secured by a deposit of money or Lenders Agreement shall have been filed pursuant to 3.4.1.2., 3.4.1.3. and 3.4.1.4 within two (2) years of the date of the performance bond or within two (2) years of the date of the Board's approval of the Definitive Plan, whichever date shall occur the earlier, and (iii) that no building permits shall be issued until at least the binder course of the bituminous concrete, as specified in these Rules and Regulations, has been applied to the streets which serve that structure.

NOTE: There is a 25% contingency added to all bond estimates and the Board retains a minimum of 10% of the original bonding amount. This is released only after the subdivision street(s) has been accepted by a vote of Town Meeting.

The procedure for posting of a performance guarantee is presented in Appendix A.

Construction of ways and installation of municipal services for an approved subdivision shall be secured by one, or in part by one and in part by the other, of the following methods which may from time to time be varied by the applicant with the written consent of the Board:

- 3.4.1.1. By a proper bond, sufficient in the opinion of the Planning Board to secure performance of the construction of ways and the installation of municipal services required for lots in the subdivision shown on the plan. The Planning Board may also require that the application specify the time within which such construction shall be completed. Letters of Credit are not considered "proper bond".

The Planning Board may require that the Developer post a proper bond to secure repair and reconstruction of adjacent public ways that may be damaged from construction operations and/or utility improvements associated with the subdivision over and above typical wear and tear. In cases deemed appropriate by the Planning Board, the Board or its agent will establish baseline roadway conditions by performing a roadway condition survey and document the

condition of adjacent roadways in a report to the Planning Board with the cost borne by the applicant. The Planning Board or its agent will then establish the value of the bond. After completion of the project, the Planning Board or its agent will determine the extent of any damage present and the amount of any bonded funds to be withheld necessary to repair the affected roadways.

3.4.1.2. By a deposit of money sufficient in the opinion of the Planning Board to secure performance of the construction of ways and the installation of municipal services required for lots in the subdivision shown on the plan. The Planning Board may also require that the applicant specify the time within which such construction shall be completed.

3.4.1.3. By a covenant, executed and duly recorded by the owner of record, running with the land, whereby such ways and services shall be provided to serve any lot before such lot may be built upon or conveyed, other than by mortgage deed; provided, that a mortgagee who acquires title to the mortgaged premises by foreclosure or otherwise and any succeeding owner of such premises or part thereof may sell any such lot, subject to that portion of the covenant which provides that no lot shall be built upon until such ways and services have been provided to serve such lot; and provided, further, that nothing herein shall be deemed to prohibit a conveyance by a single deed, subject to such covenant, of either the entire parcel of land shown on the subdivision plan or of all lots not previously released by the Planning Board. A deed of any part of the subdivision in violation hereof shall be voidable by the grantee prior to the release of the covenant but not later than three (3) years from the date of such deed.

Failure to so complete the required improvements within two (2) years of the date of the Board's approval of the Definitive Plan shall automatically rescind approval of said plan.

3.4.1.4. By delivery to the Planning Board of an agreement executed after the recording of a first mortgage covering the premises shown on the plan or a portion thereof given as security for advances to be made to the applicant by the lender, which agreement shall be executed by the applicant and the lender and shall provide for the retention by the lender of funds sufficient in the opinion of the Planning Board and otherwise due the applicant, to secure the construction of ways and the installation of municipal services. Said agreement shall also provide for 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 for completion.

3.4.1.5. A note shall be added to all plans as follows: "Plans subject to covenants, conditions and restrictions set forth in a covenant(s) dated (blank) to be recorded here-with."

3.4.2. Time for Completion

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, including any extensions granted by the Board, any such bond may be enforced and any such deposit may be applied by the Planning Board for the benefit of the Town. Ways or portions thereof not completed within the time required shall thereafter be completed in accordance with the design and construction standards of the Board in effect at the time of approval upon the expiration of such time.

3.4.3.

Endorsement

No endorsement will be made until the application has paid all bills owned to the Board and all taxes, assessments, and charges owned to the Town of Norfolk have been paid and a Municipal Lien Certificate has been provided to the Planning Board.

All performance observation/inspection fees (Planning Board Consulting Engineer Observation Fee and Town Highway Department Inspection Fee) are to be paid prior to endorsement of the definitive plan and are to be placed in separate accounts. All unexpended funds are to be returned to the applicant at the time of street acceptance by the Town of Norfolk. All such accounts are to be maintained at a minimum of 50% of the (amount of the) original submittal.

Running descriptions of all roads and easements shall be provided for review and approval prior to endorsement.

Deeds to individual lots containing drainage easements within their boundaries shall contain a covenant such that the easements are to be kept clear of trees, plantings, fences, other structures, and the like to provide for accessibility by the Town to perform maintenance to drainage structures after street/easement acceptance at a Town Meeting. Copies of deeds of the lots affected by this type of easement and all other easements (sight line, turning, utility, slope both temporary and permanent etc.) are to be submitted to the Planning Board for review and approval prior to endorsement. In addition, the applicant shall provide the Town of Norfolk with easements for all those areas off the subdivision limits that contain drainage, slope (temporary and permanent) or other types of easements.

At least fifteen days prior to submittal of the plan for endorsement, all required covenants shall be provided to the Planning Board with an attorney's certification that title to the premises shown on said plan and appurtenance thereto, including any off-site easements and rights of way, are in the applicant's name and are free of all encumbrances set forth and will not preclude any required subdivision improvements.

All unconstructed portions of any right of way shall be conveyed to the Town. A running description of this property is to be submitted to the Board for review and approval prior to endorsement with the property conveyed to the Town prior to the release of any and all lots in the subdivision.

3.4.4.

Recording

The applicant shall file the approved set of Definitive Plan documents (including

details, etc.) and covenant, if any, at the Registry of Deeds, and shall notify the Board in writing presenting evidence of the recording of said plan and the covenant within thirty (30) days of approval. The applicant shall deliver to the Board one (1) copy of the approved and recorded Definitive Plans, and a copy of an affidavit filed by the owner stating that the title to the premises shown on said plan and appurtenances thereto are in the Applicant's name and are free of all encumbrances or with encumbrances as set forth.

3.4.5. Release of Lots

The applicant shall submit to the Board a completed Form H (see Appendix B, Volume II) to seek approval for the release of lots. Lots are only released after 1). the applicant submits an up to date Form K - Inspection Report; 2). all earth removal operations, if any, have been completed and affected area restored as per Earth Removal Regulations (see Appendix); 3). the bituminous binder course is in place and observation has been conducted with the Form K signed signifying approval by the Board's Consultant/Agent; guard rails, if any, have been installed and observation has been conducted and the Form K has been signed off signifying approval of the installation by the Board's Consultant/Agent. Access to all released lots shall be continually maintained.

The approved Form H shall be filed at the Registry of Deeds and written proof of filing submitted to the Board as described above (3.4.4.).

Prior to the release of any lots, all trees and brush that are required to be removed at existing Town ways shall be removed, after required Shade Tree Scenic Roads Act Hearings, and all traffic control devices installed. Deeds to land as a gift of land for future roadways shall also be provided.

3.4.5.1. The applicant shall submit all requests for the setting of bond, reductions in the amount of bond to be held, release of bond, inspection requests, as built inspections and the like to the Board in writing. Requests shall be accompanied by the most up to date Form K, Subdivision Inspection Check List.

3.4.5.2. Conveyance of Utilities and Easements to the Town

Prior to the release by the Board of a surety bond or deposit, or, in the case of a covenant, the issuance of a Release Form, the applicant shall execute a Form L, transferring to the Town, without cost, valid unencumbered title to all common utilities, sewers, storm drains, 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 right and easements to construct, inspect, repair, renew, replace, operate and forever maintain the aforesaid underground utilities, with any man-holes, 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.

3.4.6. Reduction or Release of Performance Guarantee

3.4.6.1. Reduction of Bond Surety

The penal sum of any such bond or the amount of any deposit held under clause paragraph 3.4.1.1. and 3.4.1.2, may, from time to time, be reduced by the Board and the obligations of the parties thereto released by said Board in whole or in part. If release is by reason of covenant, a new plan of the portion to be subject to the covenant may be required by the Board.

The procedure for reduction of bond surety is presented in Appendix A.

3.4.6.2. Final Release of Performance Guarantee

Upon completion of improvements required in these Rules and Regulations, security for the performance of which was given by bond, deposit or covenant, or upon the performance of any covenant with respect to any lot, the developer or owner, at his expense, will cause to be published in a newspaper of general circulation in the Town of Norfolk at least seven (7) days prior to the releasing of the performance bond or surety, an announcement that such release is contemplated. He shall also send by registered mail to the Town Clerk and the Board a written statement that the said construction or installation in connection with which such bond, deposit or covenant has been secured, has been completed in accordance with the requirements contained in these Rules and Regulations. Such statement to contain:

3.4.6.2.1. Name and address of the applicant.

3.4.6.2.2. 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 Norfolk Zoning Bylaws.

3.4.6.2.3. Copies of or reference to the requisite number of inspection Forms and Reports.

3.4.6.2.4. Copy of or reference to the As-Built Acceptance Plan approved by the Board.

3.4.6.2.5. Written evidence from the Town Highway, Water, and Building Departments, as to construction of all ways and sidewalks, installation of monuments, street signs, pavement, lighting, gutters and curbs, required grading and drainage, water mains, hydrants and appurtenances, adequate lot drainage, planting and seeding, all in accordance with the Definitive Plan.

3.4.6.2.6. Written evidence from the Board of Health as to the installation of sewage disposal facilities, if applicable, all in accordance with the Definitive Plan.

3.4.6.3. Determination of Incompleteness

If the Board determines that said construction, installation, or filing of "as-built" plans has not been completed, 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 the requirements contained in these Rules and Regulations. Upon failure of the Board to act on such application within forty-five (45) days after the 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 deposit shall be returned and any such covenant shall become void.

In the event that said forty-five (45) day period expires without such specification, or without the release and return of the deposit or release of the covenant as aforesaid, the Town Clerk shall issue a certificate to such effect, duly acknowledged, which may be recorded.

3.4.6.4. Determination of Completeness

If the Board determines that said construction, installation, or filing of "as-built" plans has been completed, it shall notify the Town Treasurer within forty-five (45) days on an executed Release Form, that it 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 it shall issue a written release of the covenant on an executed Release Form.

3.4.7. As-Built Acceptance Plans

Prior to binder installation, a red-line as-built plan indicating the location and grades of all water and drain lines, including water stub connections, shall be submitted to the Planning Board for review and approval. The plan may consist of red-line pencil markings on the Approved Definitive Plan. The red-line as-built plan must be endorsed by a Registered Land Surveyor or Professional Civil Engineer.

Prior to the final release, the developer shall file with the Board an as-built acceptance plan of completed street or streets. The plan shall show all plans and profiles corrected and certified by the Applicant's Engineer/Consultant to be actual as-built locations and profiles of all streets, ways and utilities, including those installed by others such as electric, telephone, and gas. Said plans shall be prepared in a manner suitable for recording at the Registry of Deeds. The title portion of the plan shall include the Station Numbers, the length of roadway shown on the plan in number of feet as well as the miles of roadway shown on the plan. All expenses by the Board to review accuracy of said plans will be borne by the Applicant.

3.4.7.1. The Developer shall provide the Planning Board with one (1) set of reproducible plans and four (4) sets of prints of the completed subdivision. The Plans must be prepared by a Registered Professional Engineer and Land Surveyor.

3.4.7.2. Acceptance Plan shall show both a plan and profile view of the street as constructed based upon the Definitive Plan. The plan shall be drawn at a scale of 1"=40' horizontal and 1"=4' vertical on a 24" x 36" sheet.

### 3.4.7.3.

#### Plan View

The following shall be shown as a minimum:

- o Widths, lengths, bearings, including radii, tangents, and central angles of all curves, of all boundary lines of streets and easements and curb lines.
- o Station and offset to P.O.C., P.R.C., P.C.C. and P.O.T. of all curb lines.
- o All required bounds with indication that same have been correctly set with coordinates and station and offset.
- o Name, lot, and house number of each abutting owner appearing on the most recent tax list.
- o North arrow and a minimum of two (2) bench marks referenced to the National Geodetic Vertical Datum (N.G.V.D.) of 1929. The bench marks shall not be located on growing features, such as trees.
- o Edge, width, and cross slope of traveled ways; indication as to type of edging, or curb; location of ditches, easement structures, and driveways.
- o Storm drainage and sanitary sewer systems including major structures, culverts, retention/detention systems; size, type, and class of pipe and sub-drains; manholes, catch basins, gutter inlets, flared and metal ends, field stone masonry ends, length and width of scour protection, and the location, type, size, and class of service lines to each abutter.
- o Water systems including size, type, and class of pipe; location and size of all valves, boxes, and fittings, hydrants, air release valves; and the location, type, size, and class of service lines to each abutter.
- o Gas service including size and type of pipe, location of all valves and boxes, and the location, type, and size of service lines to each abutter.
- o Electric, telephone, cable TV, and fire alarm systems including location, size and type of conduits, handholes/pullboxes, street light poles, utility poles, transformers, and the location, type, and size of service lines to each abutter.
- o Location of all retaining walls, street signs, guard rails, and curb-cut ramps.
- o Location, species, and date of installation of all trees.
- o Horizontal and vertical sight distances at all intersections in all directions.
- o Gutter line elevations shall be indicated at all fifty (50) foot stations including P.O.C.s, P.C.C.s, P.R.C.s, and P.T.s.

### 3.4.7.4.

#### Profile View

The following shall be shown as minimum:

- o Center line and easement profiles, grades, and elevations with elevations being shown at fifty (50) foot stations and at drainage structures.
- o All vertical curves, length, stopping sight distance, and elevations at twenty-five (25) foot stations and at the PVC and PVT.
- o Storm drainage and sanitary sewer systems, water system, structures, culverts, sizes, slopes, rim, and invert elevations.

3.4.7.5. Description

A running description of all ways and easements (drainage, slope both temporary and permanent, cul-de-sac, tree, utility, etc.) shall be provided. Once the running descriptions are approved by the Planning Board, a Deed for the property and a Form L (Grant of Easements) shall be submitted.

3.4.7.6. Certifications

The following notes shall appear on the acceptance plan and be endorsed by the Surveyor and Engineer.

- o I hereby certify that \_\_\_\_\_ (street) \_\_\_\_\_ has been laid out and the bounds have been set as shown on this plan.

\_\_\_\_\_ Signature

\_\_\_\_\_ Date

- o I hereby certify that this plan shows the actual as built locations, profiles and elevations of the roadways, drainage facilities and utilities based upon a field survey made during the period from \_\_\_\_\_ to \_\_\_\_\_.

Surveyor \_\_\_\_\_  
Engineer \_\_\_\_\_ Date

3.4.7.7. Signatures

Suitable space for endorsement by members of the Planning Board and Board of Selectmen shall be provided.



## SECTION 4.0 GENERAL REQUIREMENTS AND DESIGN STANDARDS

### 4.1. Basic Requirements/Design Guides

- 4.1.1. The subdivider shall observe all design standards for land subdivision as hereinafter provided. These standards shall be considered minimum standards and shall be varied from or waived, only as provided in Section 6.

All subdivisions shall be designed and improvements made by the applicant consistent with the requirements of Sections 4 and 5. *Refer also to **Section 6** of these Rules and Regulations for additional design and construction standards.*

- 4.1.2. Design and construction shall reduce, to the extent reasonably possible, the following:

- o Volume of cut and fill;
- o Area over which existing vegetation will be disturbed, especially on land within 200 feet of a river, pond, or stream, or having a slope of more than 15%;
- o Number of mature trees removed;
- o Visual prominence of man-made elements which are not necessary for safety or orientation;
- o Visibility of building sites from existing streets;
- o Blockage of vistas through new development;
- o Removal of existing stone walls;
- o Number of driveways exiting onto existing streets or collector roads;
- o Alteration in ground water or surface water levels or chemical constituents;
- o Disturbance of important wildlife habitats, outstanding botanical features, scenic or historic environs;
- o Soil loss or instability during and after construction.

- 4.1.3. Increase, to the extent reasonably possible, the following:

- o Configuration using collector streets to avoid traffic on streets providing house frontages;
- o Visual prominence of natural features of the landscape;
- o Street layout facilitation of solar orientation of houses;
- o Use of curvilinear patterns.

### 4.1.4. Referenced Standard:

A policy on Geometric Design of Highways and Streets, by the American Association of State Highway and Transportation Officials (AASHTO), latest edition, as amended.

### 4.2. Relation to Surrounding Areas

The subdivision shall be in conformity with the respective zoning requirements and the general layout shall harmonize and conform with plans for Norfolk, as adopted by the Planning Board.

- 4.3. Minimum Lot  
No lot area or width, in a subdivision, shall be less than the minimum required by the Zoning Bylaw for the District in which it is located.
- 4.4. Access Through Another Municipality  
In case access to subdivision crosses land in another municipality; the Board shall require certification, from appropriate authorities, that such access is in accordance with the Master Plan and subdivision requirements of such municipality and that a legally adequate performance bond has been duly posted or that such access is adequately improved to handle prospective traffic.
- If a proposed subdivision encompasses the Town of Norfolk and an adjoining town, at least one point of access must be provided in the Town of Norfolk.
- 4.5. Reserve Strips  
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.
- 4.6. Further Subdivisions  
In case a tract is subdivided into larger parcels than ordinary building lots or if a subdivision is adjacent to a tract capable of subdivision, such parcels and streets shall be arranged so as to allow the logical and economic extension of streets, utility easements, drainageways, and public areas into such parcels and adjacent tracts.
- 4.7. Re-subdivision  
The re-subdivision of all or part of land covered by an existing plan, shall be governed by these regulations. Such resubdivision shall show clearly that area or areas which are being replatted and shall show the file number of all previous plans of these same areas with dates of filing.
- 4.8. Blocks  
In general, block lengths shall not be less than 300 feet nor more than 2000 feet.
- 4.9. Access and Maintenance Easements  
The deeds of all lots containing easements whose purpose is access to and/or maintenance of surface or subsurface features shall clearly state that no permanent plantings or structures including but not limited to buildings, driveways, and fences, shall be installed within such easements. No barriers to the maintenance of drainage structures are allowed.
- 4.9.1. Layout  
Wherever possible, easements shall be continuous from block to block and their layout shall create as few irregularities as possible. The minimum easement width shall be 20 feet, except that tree easements, if necessary, shall not be less than 10 feet (see Section 4.9.4) and certain easements for pedestrian walkways shall not be less than 5 feet (see Section 4.10).

4.9.2.

Watercourses

Streams or watercourses shall be provided with an emergency/maintenance access easement conforming substantially with the average high water mark of its course, but in no case less than 20 feet in width centered on its midpoint. Parallel streets or pedestrian ways and/or appropriate access may be required in connection therewith. The placement of streams or watercourses into open or covered culverts shall be kept to a minimum.

4.9.3.

Utilities

Easements for utilities across lots shall generally follow lot lines or shall be centered on the rear or side lot lines and shall not be less than twenty (20) feet in width.

Easements for utilities along roads shall follow and be outside of the right-of-way lines and shall be not less than 5 feet in width.

4.9.4.

Trees

Trees shall be located within the grass strip of the street right-of-way. However, in cases where the Planning Board determines that it is preferable to locate them outside the right-of-way, tree easements shall follow and be outside of the right-of-way lines and shall be 10 feet in width. Trees shall be planted at 40 foot or lesser intervals on both sides of all streets. The applicant shall show the location and species of trees on the subdivision plan at the time of submittal.

(See also **Section 5.9.**)

4.10.

Pedestrian Ways/Walkways

Pedestrian ways or foot paths shall be required to provide convenient circulation or access to schools, playgrounds, shopping, churches, transportation, parks, conservation areas and/or other facilities. If not within a street right-of-way, such ways shall consist of an easement of at least 20 feet wide, except that walkways shall consist of an easement of at least 5 feet wide.

Walkways shall be required on the applicant's property along the entire frontage (from sideline to sideline) of all existing public ways which immediately abut the proposed subdivision as well as all proposed public ways for the purpose of assuring safe and adequate pedestrian access to, from and within the subdivision.

To facilitate review of the proposed plan by the appropriate authorities, the applicant shall stake the sideline of the proposed walkways along existing roadways at fifty foot intervals.

See also **Section 5.2.10.** for construction details.

4.11.

Open Space, Parks, and Playgrounds

The Planning Board may require that a subdivision plan show a park or parks suitably located to serve the future residents of the subdivision for playground or recreation purposes or for providing light and air and not unreasonable in area in relation to the area of the land being subdivided and the prospective uses of such land.

- 4.11.1. If such a park or parks is required, the subdivision plan shall include an appropriate endorsement requiring that no building may be erected on such site for three years without the approval of the Planning Board.
- 4.11.2. Any open space park or playground shall provide at least fifty feet of continuous frontage on a street, and pedestrian ways will normally be required to provide access from each of the surrounding streets, if any, to which the open space, park or playground has no frontage. Further, such parks and/or playgrounds shall be required to have maintenance provided for by covenants and agreements acceptable to the Board, until public acquisition by the community.
- 4.11.3. Land designated for park or playground purposes shall not include wetlands, ledge, or other lands unsuitable for recreation purposes,

4.12. Protection of Natural Features

Due regard shall be shown for all natural features such as large trees, water-courses, scenic points, historic spots and similar community assets which, if preserved, will add attractiveness and value to the subdivision.

- 4.12.1. Prior to the removal of any trees over four (4) inches in diameter in the right of way and within any tree easement and prior to grading, the developer shall mark all trees proposed for removal and the developer shall plot these marked trees on the plan. All trees except those approved for removal by the Planning Board shall be protected against construction damage. The grade below these trees shall be retained as necessary in order to ensure their preservation, including the use of tree wells, where necessary.

4.13. Water System

All buildings in a subdivision or other structures therein intended for human occupancy and all fire hydrants shall be connected to and served by the Town water supply system, as available or as extended at the expense of the developer of the subdivision.

The Definitive Plans shall indicate the existing and proposed locations of all water lines including their type, size, and class. All proposed valves and fittings shall be located on the plans and identified by its station. Proposed valves shall be located so that they line up with the edge of traveled way, gutter line, or street line. The existing nearest hydrant(s) to the development shall be located on the plans. Hydrants shall be located at all low points, and hydrants or manual air release valves shall be located at all high points of the proposed water mains.

4.14. Streets

4.14.1. Arrangement

The proposed streets shall be considered in their relation to existing and planned streets, topographic and geologic conditions, public convenience and safety, and for safe vehicular travel. Due consideration shall also be given by the developer to the attractiveness of the street layout in order to obtain the maximum amenity of the subdivision and to avoid excessive cut and fills. Long straight roadway sections should be avoided. The maximum length of a straight segment on a residential or secondary street shall be 500 feet. In addition, the proposed streets shall provide for appropriate continuation and connection of existing primary and secondary streets, and the extension of primary and secondary streets onto adjoining land.

4.14.2. Access To Primary Streets and Through Streets

Intersections of secondary and residential streets with primary streets will not be allowed with offsets between intersections of less than 350 feet whether on the same or opposite sides of the primary or through street.

Subdivisions, and extensions to subdivisions, including or capable of including 25 lots or more shall have at least two points of access to an existing through street separated by a minimum distance of 350 feet or shall have two separate passable access routes via existing primary street(s) to an existing through street where the points of access are.

4.14.3. Reconstruction of Adjacent Public Ways

In cases where the development of a subdivision may cause congestion or a danger to pedestrian or vehicular traffic on the adjacent public ways, remedial measures satisfactory to the Planning Board may be required. Such measures may include, but are not limited to, the addition of alternate access roads or reconstruction of the adjacent public ways.

4.14.4. Street Jogs

Street jogs (i.e., the continuation of a street through an intersection where the centerline of the paved surface is not aligned on both sides of the intersection) are prohibited.

4.14.5. Reverse Curves

Reverse curves on streets may be separated by a straight section of road of at least 150 feet in length if a street has a design speed of 30 m.p.h. or less. This can be addressed on a case-by-case basis during the plan review process to insure that public safety is not impacted.

4.14.6. Right-of-Way Widths and Alignments

On all classifications of streets, the characteristics as shown in the chart on the next page entitled, "Right-of-way Widths and Alignments Based on Design Speed", shall be the minimum acceptable (see also **Figures 31 to 34** in Volume II of Norfolk Rules and Regulations)

<b>Right of Way Widths and Alignments Based on Design Speed</b>			
Street Classification	Residential	Secondary	Primary
Design Speed (MPH)	20	25	30
Minimum Curb to Curb (Feet)	24	26	28
Minimum Right-of-Way (Feet)	50	60	60
Minimum Curb Radius at Intersections (Feet) [1]	20	20	25
Minimum Traveled Way Centerline Radius (Feet) No Superelevation	90	170	280
Traveled Way Coincident with Centerline	Not Required	Not Required	Required
Stopping Sight Distance (Feet) [2]	125	150	200
Intersection Sight Distance (Feet) [2]	200	340	400
Minimum Intersection Spacing Centerline to Centerline (Feet)	350	350	350
Two Way Traffic Volume ADT/DHV	<400/<200	<800/<300	<800/<400
Minimum Grade (Percent)	1	1	1
Maximum Grade (Percent) [3]	10	8	6

<b>Sight Distance Summary [2]</b>		
85 <sup>th</sup> Percentile Speed [MPH]	Stopping Sight Distance [Feet]	Corner Sight Distance [Feet]
35	225-250	390
40	275-325	445
45	325-400	500
50	400-475	555
55	450-550	610
60	525-600	665
65	650-725	720
70	625-800	775

- [1] The intersection of roads with differing design speeds shall be designed in accordance with Section 4.14.7.2.
- [2] For design purposes, sight distances shall be based on the 85<sup>th</sup> percentile speed, which is the speed below which 85 percent of the vehicles are traveling.
- [3] At intersections where the gradient exceeds 3 percent, a leveling area of not less than 100 feet is required. Refer to subsection 4.14.8.3.

4.14.7. Intersections

4.14.7.1. Rights-of-way shall be laid out so as to intersect as nearly as possible at right angles. No right-of-way shall intersect any other right-of-way at less than 75 degrees. Intersections of existing and proposed streets will not be allowed at intervals of less than 350 feet between centerlines.

4.14.7.2. Property lines at right-of-way intersections shall provide for a curb radius on the roadway as indicated in subsection 4.14.6, "Right-of-way Widths and Alignments -- Design Speed". The curb radius at the intersection shall be as required by Section 4.14.6 and shall be sufficient to accommodate "WB-50" vehicle turning movements. In instances where streets of differing design speeds intersect, the smaller curb radius requirement shall be required.

4.14.7.3. In instances where there are State roadways involved, the curb radius required by State regulations shall be provided. The State-required radius is not required to be paved, but rather, the difference in area between the State and local radii requirements shall be provided in the form of granite rubble block pavement, as indicated in **Figure 35** of Volume II of the Norfolk Rules and Regulations.

4.14.7.4. Both the horizontal and vertical sight distance and stopping sight distance at intersecting roadways within a subdivision and at subdivision roadways intersecting with existing roadways shall be provided as indicated in subsection 4.14.6, "Right-of-way Widths and Alignments -- Design Speed".

4.14.7.5. Horizontal and vertical stopping sight distances in all directions at existing and proposed intersections shall be noted on the plans.

4.14.8. Vertical Alignment

4.14.8.1. All changes in grade shall be connected by vertical curves of sufficient length to afford adequate sight distances as indicated in the following chart:

Design Speed (mph)	Stopping Sight Distance (ft)
20	125
25	150
30	200

4.14.8.2. For crest vertical curves, the length in feet shall be computed from the following formulas:

$$\text{When } S \text{ is less than } L, \quad L = \frac{AS^2}{100(\sqrt{(2h_1)} + \sqrt{(2h_2)})^2}$$

$$\text{When } S \text{ is greater than } L, \quad L = 2S - \frac{200(\sqrt{(2h_1)} + \sqrt{(2h_2)})^2}{A}$$

where: L = length of vertical curvature

S = sight distance

A = algebraic difference in grades, percent.

h<sub>1</sub> = 3.50 feet (eye of driver)

h<sub>2</sub> = 2.0 feet (height of object)

For sag vertical curves, the length in feet shall be computed from the following formulas:

$$\text{When } S \text{ is less than } L, \quad L = \frac{AS^2}{400 + 3.5S}$$

$$\text{When } S \text{ is greater than } L, \quad L = 2S - \frac{400 + 3.5S}{A}$$

where: L = length of vertical curvature

S = sight distance

A = algebraic difference in grades, percent.

Minimum length of a sag or crest vertical curve shall be 100 feet. All vertical curves shall show the following on the profiles:

- P.V.I. Station and elevation
- High point or low point station and elevation

4.14.8.3. The grade of any proposed street meeting another existing or proposed street within or adjacent to the subdivision shall not exceed two (2) percent for a distance of not less than one hundred (100) feet, measured from the nearest edge of right-of-way of the other street.

4.14.9. Cul-de-sacs

4.14.9.1. The paved portion of cul-de-sacs, whether temporary or permanent, shall not be less than 250 feet in length and not exceed 500 feet in length measured from the intersection (centerline) of the nearest intersecting through street to the farthest end of the paved turnaround, and shall not provide access to more than seven (7) lots.

- 4.14.9.2. Cul-de-sacs, whether permanent or temporary, shall provide a turn around at the closed end(s) having a property line diameter of 120 feet; a radius at the outer edge of traveled way of 47 feet, and a landscaped island in the center having a maximum radius of 15 feet. Islands shall be designed to allow for proper emergency vehicle and snowplow access. A "Not a Through Street" sign shall be provided at the entrance to a cul-de-sac and its location shown on the subdivision plan.

In the case of a temporary turn around, the plan shall show an easement(s) to accommodate the specifications of this subsection. The frontage of lots abutting a temporary turnaround shall be measured along the permanent street right of way and not the "bulb" of the cul-de-sac. See detail (**Figure 43**). Any easement in any turnaround shown on a plan approved under the subdivision control law other than an easement appurtenant to a lot abutting the turnaround, shall terminate following **(a)** the approval and recording of a plan showing extension of the roadway, and **(b)** the recording of a certificate by the Planning Board of the construction of such extension.

4.14.9.3. Provisions for Future Through Access

All cul-de-sacs, except those determined by the Planning Board to be permanent in nature, shall include a right-of-way running from the closed end(s) of the cul-de-sac to the terminus points as described below for purposes of providing future through access. The width of said right-of-way shall be equal to the right-of-way width of the cul-de-sac street. Said right of way shall be laid out and construction plans included as part of the subdivision plan. The land in the right of way shall be turned over to the Town of Norfolk as a gift of land prior to release of any lot in the subdivision

The terminus point of the right-of-way shall be both to any adjacent Town-owned conservation land, and as follows:

- a. first, to any street which abuts the property line of the parcel being subdivided, other than the street which forms the intersection with the paved portion of the cul-de-sac;
- b. second, if (a) is not applicable, to any right of way or street easement of at least 20 feet right of way width which abuts the property line of the parcel being subdivided;
- c. third, if (a) and (b) are not applicable, to the point on the property line of the parcel being subdivided which is closest to the closed end of any cul-de-sac existing on any adjacent parcel;
- d. fourth, if (a), (b) and (c) are not applicable, to the point on the property line of the parcel being subdivided which is closest to any existing through street on any adjacent parcel, other than the street which forms the intersection with the parcel portion of the cul-de-sac;
- e. fifth, if (a), (b), (c), and (d) are not applicable, to the point on the property line of the parcel being subdivided which is closest to any adjacent "land-locked" (i.e.: without adequate frontage) parcel; and

- f. sixth, if (a), (b), (c), (d) and (e) are not applicable, to the point on the property line of the parcel being subdivided which is closest to the largest adjacent buildable parcel of land.

For purposes of this regulation, references to the point "closest" shall exclude wetlands. The easement created by this section shall, to the extent practicable, be laid out to exclude lakes, ponds, wetlands, woodlands, water courses and steep terrain.

- 4.14.9.4. An easement for access and maintenance shall also be provided from all cul-de-sacs to any adjacent Town-owned conservation land. Such easements shall have a minimum width of 20 feet.

- 4.14.9.5. The surface slope of the traveled way within the turn-a-round required under Section 4.14.9.2 shall not exceed 4 percent

- 4.14.9.6. Cul-de-sac Plantings  
The applicant shall submit a landscape plan for the central portion of a cul-de-sac. The following are permitted:

- o Trees
- o Planting with ground cover and spreading mulch between plants for weed control;
- o Planting perennial grass by either sod or seed;
- o Planting ornamental shrubs of a type acceptable to the Board;
- o Retaining existing vegetation with the approval of the Board;

The standards of the American Nurserymen Association and the specifications of the Associated Landscape Contractors of Massachusetts shall apply to landscaping subject to these regulations.

- 4.14.10. Half Streets  
A half street is a portion of a proposed street running astride a common boundary line, said portion being within a subdivision under consideration. Half streets shall be prohibited.

- 4.14.11. Sight Distances at Intersections  
Horizontal and vertical sight distances in all directions at intersections shall be noted on the plans. Sight distances at intersections shall be provided as indicated in subsection 4.14.6, "Right-of-way Widths and Alignment -- Design Speed".

- 4.14.12. Stopping Sight Distance  
Stopping sight distance is the sum of two distances: the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied and the distance required to stop the vehicle from the instant brake application begins. For all stopping site distance calculations, the height of the driver's eye is considered to be 3.5 feet above the road surface and the height of the object is considered to be 2.0 feet above the road surface in accordance with AASHTO policy. Stopping sight distances shall be provided as indicated in subsection 4.14.6, "Right-of-way Widths and Alignment -- Design Speed".

- 4.15. Slopes  
Excavated cuts shall have a maximum slope of three (3) horizontal to one (1) vertical (3:1), cut slopes greater than fifteen feet (15') in height shall be benched and approved by the Board.
- 4.16. Driveways  
Driveway locations shall be shown on the plan. All driveways shall be designed and constructed starting from the gutter line. The slope of the driveway shall be upwards toward the sidewalk to be constructed or to a point allowing for a sidewalk to be constructed in the future. Sloping driveways downward towards the right of way line is prohibited. A detail and cross section of the proposed driveway shall be indicated on the plans. See driveway detail in "Town of Norfolk Regulations for Street Excavations" as most recently amended.
- 4.17. Street Cross Sections
- 4.17.1. Cross sections shall be drawn for all proposed roadways and existing roadways to be reconstructed. They shall be drawn at fifty (50) foot stations and at all proposed culverts at a scale of eight (8) feet to the inch horizontally and vertically.
- 4.17.2. Sufficient space is to be provided between cross sections to allow the proposed roadway template to be drawn without overlapping the adjoining sections.
- 4.17.3. The following shall be shown on the sections:
- Edges of existing roads, drives, walks, bordering vegetated wetlands, lawns, etc.
  - Existing walls, poles, hydrants, mail boxes, etc.
  - All existing trees 12" and over noting the diameter, species of tree, station and offset.
  - Elevation, station, and description of wells, cesspools, and on site septic systems, and a description and elevation of sills of buildings.
  - Existing culverts shall be shown as long dashed lines.
  - Water elevations shall be shown as a dashed line with elevation and a date taken.
  - Approximate elevation of the top of rock for above and below existing grade.
  - The profile grade is to be noted on each template.
  - The template shall consist of the finished grade and the proposed sub-grade line baseline, and right of way lines
  - Stations shall be located below the cross section and increase going up the plan sheet
  - Guide vertical elevations and horizontal distances in both directions shall be shown on each cross section.
  - A summary table shall be shown with the cross sections showing the cubic yards between the stations for cut, fill, muck excavation, and rock excavation, and gravel borrow. A total for each category shall be shown along with the final amount of cubic yards of earth to be removed from the site or gravel borrow to be brought into the site.
  - Limits of rock and muck excavation.

- o Planimeter readings are to be shown to the right of each template using the abbreviations - C=Cut, F=Fill, M=Muck Excavation, R=Rock Excavation, GB=Gravel Borrow.

4.18. Walkways on Existing Roadways

Walkways shall be required on the applicant's property along all existing public ways which immediately abut the proposed subdivision for the purpose of assuring safe and adequate pedestrian access to and from the subdivision. Sidewalks shall not be interrupted by steps or abrupt changes in level greater than ½-inch.

In general, walkways on existing roadway (layouts) shall be constructed with minimum change to the natural rural appearance of the street. Walkways shall follow the natural contours of the land and preserve both trees and shrubs to the extent possible to comply with the guidelines in *Section 5.2.10*.

To facilitate review of the proposed plan by the appropriate authorities, the applicant shall stake the sideline of the proposed walkway at fifty foot intervals.

4.18.1. Width

The width of the walkway shall be 5 feet minimum. Where such a walk cannot be constructed respecting the existing contours and natural features of the land such as trees, shrubs, stone walls, etc. a minimum width of three feet shall be allowed with prior written approval of the Planning Board.

4.19. Storm Drainage Systems

Refer to the construction specifications in Section 5.3. The Board of Health has separate jurisdiction and regulations governing stormdrain systems. The applicant shall be responsible for coordinating approval requirements.

4.19.1. Stormwater Management Standards

4.19.1.1. Standards. The definitive plan shall provide drainage facilities within the subdivision for collecting, conveying, treating and disposing of stormwater in a manner which will ensure proper protection of the roadways and the areas adjacent thereto while adhering to the Stormwater Management Guidelines set forth by the Department of Environmental Protection, as most recently amended. Stormwater treatment shall include removal of at least 80% of Total Suspended Solids (TSS).

4.19.1.2. Submittal. Five (5) copies of reports must be provided that addresses both water quality (pollutants) and water quantity (flood control) by establishing the level of required controls which can be achieved through the use of site planning, nonstructural measures, and other Best Management Practices (BMPs) identified in the Stormwater Management Guidelines, as most recently amended.

4.19.1.3. Storm drains, culverts, ditches, and related installations, including manholes and catch basins, shall be designed and installed to provide adequate disposal of surface water including control of erosion, flooding and standing water from, or in, the subdivision and adjacent lands. Connections to existing drainage systems

must also be approved by the appropriate town authorities prior to endorsement.

4.19.1.4. Environmentally-sensitive design. Adequate consideration shall be given to stormwater management techniques and Best Management Practices that closely match natural processes; including but not limited to vegetated swales, filter swales, created and extended wetland systems, and other similar "green" stormwater management techniques.

4.19.2. Design Analysis

4.19.2.1. Drainage plans, profiles and computations shall be submitted with the Definitive Plan and prepared by a Registered Professional Engineer. The analysis shall clearly indicate all the computations for the storm drain including determination of pipe size, slope, velocity, length, capacity and strength, design flow and a statement concerning the disposition of flow.

4.19.2.2. All areas where the flow is discharged to the ground surface will require a drainage easement over the ground subject to flow, obtained by the applicant, and a statement to that effect shall be included with the design analysis.

4.19.2.3. The impact of drainage on abutting public water supply shall be addressed to assure that there shall be no adverse effect.

4.19.3. Design Storm

4.19.3.1. Street Drains

A rainfall having a 4% chance of being equaled or exceeded in any given year (25 year storm) has been selected for design computations unless, in the opinion of the Planning Board, a larger design storm is necessary.

Computations shall be based on full development of all tributary areas upgradient of each system. A tributary area plan shall be submitted with the computations and analysis.

- o Runoff analysis shall be calculated by using the "Rational Formula"

$$Q = CIA$$

where:

Q = peak discharge of the watershed in cfs due to 25-year storm.

C = coefficient of runoff

I = rainfall intensity in inches per hour based on the time of concentration.

A = area of watershed in acres

- o Coefficient of Runoff

A weighted coefficient of runoff "C" is to be determined for each incremented drainage area based on the following minimum values:

Industry and Business areas	0.90
Steep Grassed areas	0.70
Residential 1 30,000	0.40
Residential 2 43,560	0.35
Residential 3 55,000	0.30

- o Rainfall Intensity

For precipitation frequencies of less than an hour the following shall be used:

NOAA Technical Memorandum NWS HYDRO-35 Five to 60-Minute Precipitation Frequency for the Eastern and Central United States

For precipitation frequencies more than an hour the following shall be used:

U.S. Department of Commerce, Weather Bureau, Technical Paper No. 40

Rainfall Frequency Atlas of the United States for Durations from 30 minutes to 24 hours and Return Periods from 1 to 100 years.

- o All drains shall be sloped to provide for a minimum velocity of 2 feet per second and the maximum design velocity shall be 10 feet per second.

#### 4.19.3.2. Major Structures, Culverts, Detention Basins and Retention Basins

A rainfall having a 1% chance of being equaled or exceeded in any given year (100 year storm) has been selected for design computations. Runoff analysis shall be calculated using Technical Release No. 55, Urban Hydrology for Small Watersheds, 2nd Edition, prepared by the U.S. Soil Conservation Service. When multiple catchments areas are modeled, Technical Release 20 (TR20) shall be used rather than TR55.

Hydrologic soil group and name shall be submitted with the calculations.

Spring high ground water testing is required for all detention/retention basins.

Infiltration systems within detention/retention basins are required in the bottom of basins. Frames and grates shall be placed six inches above the basin floor to allow sediment to settle.

4.19.3.4.

Retention/Detention Systems

Retention/detention basins shall be designed with the following objectives to be considered: hydraulic function, safety, maintenance, aesthetics, and when required, water quality. The outermost edge of a surface retention/detention basin or an underground leaching facility shall be set back a minimum of 100 feet from any roadway and 25 feet from all property lines. The edge of a surface retention/detention basin shall be measured on the basin side slope at the high water line for the design (100 year) storm. The edge of an underground leaching facility shall be measured at the outer edge of the leaching structure or distribution pipe. . An access and maintenance easement shall be provided extending from the public way to and encompassing the entire retention basin. Such easement shall be at least 10 feet in width and shall encompass, at a minimum, the entire surface retention/detention basin or underground leaching facility and the vehicle accessible level berm which surrounds the surface retention/detention basin or underground leaching facility. Additional area may be needed depending on the shape of the basin, the topography of the surrounding area or other local conditions on a case by case basis.

A tree easement having a minimum width of 10 feet shall be provided around surface retention/detention basins in order to provide screening from adjacent lots and streets. The tree easement shall be located adjacent to and outside the vehicle accessible level berm, which surrounds the surface retention/detention basin. Such screening shall consist of a greenbelt of evergreen trees and shrubs not more than 15 feet apart planted in two staggered rows. Such trees or shrubs shall be not less than 8 feet in height at the time of planting.

Such trees or shrubs shall be not less than 8 feet in height at the time of planting. No retention/detention basins shall be located at street intersections.

Emergency spillways will be sized and designed to cause detention of and passage of the design inflow without causing the water level to rise above a preselected elevation. A freeboard of three (3) feet will be required between the detained water level and the top of the embankment during peak design conditions.

A vehicle accessible level berm for maintenance access shall be provided surrounding each surface retention/detention basin or underground leaching structure. The level berm shall extend for a minimum of 10 feet beyond the required freeboard line on the side slope of surface retention/detention basins and 10 feet beyond the structure or distribution piping of underground leaching basins.

Embankments shall have a 3:1 or flatter slope. The applicant shall submit to the Board for approval the proposed method (including materials) of constructing the embankments and basin, along with the necessary cross sections.

Fencing or other effective measures shall be provided to exclude people and vehicles from potentially hazardous areas. Alternative measures can include site grading, planting of thorny shrubs, or grading to assure "safety ledges" along the basin perimeter.

The plans shall include a design detail and cross section of the proposed detention/retention basin, which shall include details of inlet and outlet control structures and the infiltration system at the bottom of the basin as required under Section 4.19.3.4. The plans shall clearly show the tree planting easement and shall be noted with the species of trees, their height at the time of planting and their location.

The basin(s) shall be designed for aesthetics as well as function.

Where a proposed street is being extended past or constructed adjacent to any portion of an existing retention/detention basin, a wooden guardrail, site grading, and a green belt shall be installed or reconstructed at such basin to meet the requirements of this subsection.

4.19.4. Type of Pipe

Storm drains shall be reinforced concrete pipe with rubber gaskets within the right-of-way. Corrugated polyethylene pipe (smooth wall) may be used outside the right-of-way

Conformance: Reinforced Concrete Pipe - ASTM C76 Minimum Class III.

Packerhead type process shall not be used.

Joints and Gaskets for Reinforced Concrete Pipe - ASTM C443.

Corrugated polyethylene pipe (smooth wall) - AASHTO Type "S" or "O".

The plans shall note that detail is to Town specifications if not already noted on the detail.

4.19.5. Selection of Drain Size

The minimum size of pipe shall be 12 inches in diameter. Culverts and drains shall be large enough to pass the design storm without surcharge. At manholes, when pipe size changes, the crown of the inflow pipe shall match the crown of the outflow pipe.

Pipe capacity shall be calculated using coefficient of roughness (n) as follows:

Reinforced concrete pipe: 0.013.

High density polyethylene (HDPE) pipe with corrugated exterior and smooth interior wall: 0.012

4.19.6. Construction Details and Specifications

See Section 5.3. for drainage construction details and specifications.

- 4.19.7. Swales  
Swales shall be designed using the methodology contained in "Hydraulic Engineering Circular 15" (HEC 15) as published by the Federal Highway Administration. Soil/vegetation shear stresses shall be calculated for both temporary (during construction) and permanent conditions and submitted to the Planning Board with the drainage calculations for review.
- 4.20. Stormwater Management Standards
- 4.20.1 Stormwater management systems shall be provided within the subdivision for collecting, conveying, treating, and recharging stormwater runoff from all areas within the subdivision and from all tributary offsite-areas in a manner that ensures protection of subdivision improvements and offsite roadways and properties. For the post development case, there shall be no increase in the predevelopment peak rate of stormwater runoff and shall there shall be no increase in the predevelopment volume of stormwater runoff at the project boundary for the 1, 2, 5, 10, 25, 50, and 100 year frequency storm events.
- 4.20.2 The applicant must demonstrate that the Norfolk Board of Health and the Norfolk Conservation Commission as applicable have approved the stormwater management systems.
- 4.20.3 All components of the stormwater collection system including pipes, catchbasins, and drain manholes shall accommodate the 25 year frequency storm event without surcharge
- 4.20.4 Bridges and major cross culverts shall accommodate the 100 year frequency storm event without surcharge
- 4.20.5 Stormwater retention basins shall accommodate the 100-year frequency storm event below the required freeboard elevation. Stormwater retention basin shall be located in areas of naturally occurring permeable soil capable of recharging the 100-year frequency storm event within 72 hours following the peak rate of inflow into the basin. The bottom of the basins shall be 2 foot above spring high groundwater.
- 4.20.6 Roofwater shall be separately recharged in locations distributed throughout the subdivision. Roofwater recharge facilities shall be located in areas of naturally occurring permeable soil capable of recharging the 2 year frequency storm event within 48 hours following the peak rate of inflow into the basin
- 4.20.7 Treatment shall be provided for all stormwater runoff conforming to requirements of the Massachusetts Department of Environmental Protection's Stormwater Management Policies
- 4.21. Off-Site Stormwater Discharges
- 4.21.1 In instances where no lots can be developed within a subdivision because no naturally occurring soils within the subdivision exist which would allow recharge of stormwater within 72 hours, the applicant may petition to allow offsite discharge of stormwater.

- 4.21.2 The applicant may petition to allow discharge of stormwater to retention basins on contiguous properties that fully conform to the requirements of 4.20.1.1 provided that permanent easements are obtained encompassing all off-site stormwater management facilities. For basins on contiguous properties, the requirements that there shall be no increase in the predevelopment peak rate and volume of stormwater runoff for the post development case for the 1, 2, 5, 10, 25, 50, and 100 year frequency storm events shall be analyzed for a drainage analysis boundary that encompasses the project site and the off site parcel to a point downgradient of the basin.
- 4.21.3 The applicant may petition to allow discharge of stormwater to municipal drainage systems provided that the off site connection conforms to each of the following
  - 4.21.3.1 On-site detention basins are provided to control runoff such that the peak rate of stormwater discharge to the municipal system is less for the post developed condition than for the pre-developed condition.
  - 4.21.3.2 Any increase in the volume of stormwater runoff discharged to the municipal storm drain system will not cause erosion or increase ponded water surfaces in a manner that would damage developed properties or natural resources.
  - 4.21.3.3 All offsite components of the municipal stormdrain system shall accommodate runoff from all off-site tributary areas at full build out plus the discharge from the subdivision for the 100-year frequency storm event without surcharging.

## SECTION 5.0 - REQUIRED IMPROVEMENTS FOR SUBDIVISIONS

### 5.1. Basic Requirements

5.1.1. The subdivider shall install all of the improvements itemized herein unless waived in writing by the Board. All work done under this section shall be done under the direction of the Planning Board.

5.1.2. No aforementioned Bond or Covenant shall be released until full approval in writing of all work done under this section is received by the Planning Board from its designated Inspector/Observer.

### 5.1.3. Referenced Standards

The Massachusetts Highway Department Standard Specifications for Highways and Bridges, latest edition, as amended; and the Supplemental Specifications to the Standard Specifications for Highways and Bridges, latest edition, as amended.

The Massachusetts Highway Department, Construction Standards, Latest Edition, as amended.

Typical Cross Sections (Appendix C) and Typical Details (Appendix D) of these Subdivision Rules and Regulations.

See also the Regulations of other Town of Norfolk Boards, Commissions, Committees, and Departments.

### 5.1.4 Staking Prior to Construction

Prior to the start of construction of any subdivision, the property shall be staked along both sides of the street right-of-way (or at an appropriate offset distance) at 50' intervals. Finish grades shall be indicated on the stakes. Lot corners and any easements across lots that terminate at the street right-of-way shall also be staked. The Planning Board shall be given written notice that staking is complete at least one week prior to the start of construction.

### 5.2. Streets and Roadways

#### 5.2.1. Minimum Widths and Depths

The following minimum improvement standards shall be required (see typical cross sections):

5.2.1.1. Minimum Width Requirements (in feet)

Street Classification	Right-of-Way	Paved Traveled Way	Grass Strip***	Sidewalks on Outside of Grass Strip
Residential Street	40*/50**	14*/24**	1 @ 8 1 @ 13	1 @ 5
Secondary Street	50*/60**	16*/26**	2 @ 7	2 @ 5
Primary Street	50*/60**	16*/28**	2 @ 11	2 @ 5

Cross slope for traveled way, grass strips, and sidewalks shall be 1/4-inch per foot.

\* Based on one-way street with no on-street parking.

\*\* Based on two-way street with no on-street parking.

\*\*\* Includes berm, edging or curb.

5.2.1.2. Minimum Depth Requirements (in inches)

Roadways

Street Classification	Processed Gravel	Dense Graded Crushed Stone for Base	Binder Course	Finish Course
Residential Street	12	4	2 1/2	1 1/2
Secondary Street	15	4	2 1/2	2
Primary Street	18	4	3	2

Sidewalks

Street Classification	Processed Gravel	Binder Course	Finish Course
Residential Street	12	1 1/2	1
Secondary Street	12	1 1/2	1
Primary Street	12	1 1/2	1

5.2.2. Clearing and Grubbing

5.2.2.1. Clearing and grubbing shall be done in accordance with the relevant provisions of Section 101 of the M.H.D. Standard Specifications and Town of Norfolk Bylaws. (See also Appendix A - Earth Relocation/Removal.)

5.2.2.2. All excavation and embankment areas shall be first cleared of all stumps, brush,

roots, boulders, debris, and like materials and disposed of off site. All loam and topsoil within the excavation/embankment areas shall be removed and stockpiled for reuse within the subdivision.

Brush and stump disposal shall be in accordance with the most recent Board of Health and DEP policy and/or regulations.

5.2.3. Excavations

Excavations shall be done in accordance with the relevant provisions of Section 120, Excavation, of the M.H.D. Standard Specifications and Town of Norfolk Bylaws. When 500 cubic yards or more of earth materials are to be removed from the site or relocated within the site, an Earth Relocation/Removal Permit is required. (See also Appendix A - Earth Relocation/Removal for requirements and instructions)

5.2.4. Embankments

5.2.4.1. Construction of all embankment fill shall be done in accordance with the relevant provisions of Sections 120, 150, and 170 of the M.H.D. Standard Specifications and Town of Norfolk Bylaws and in accordance with the procedures described herein.

5.2.4.2. Fill material shall be approved suitable existing material obtained from on site excavations and shall consist of solid, sound mineral aggregate. It shall be free from deleterious, organic, elastic or foreign matter and shall be adequately graded for satisfactory compaction into a stabilized soil structure.

5.2.4.3. Embankments shall not be constructed with material from rock or boulder excavations.

5.2.4.4. Off site fill material shall be gravel borrow conforming to M.H.D. Material Specification M1.03.0, Type b. A certificate of compliance indicating the gradation and source of material shall be submitted and approved prior to delivery of any material to the site.

5.2.4.5. Fill for embankments shall be placed in uniform layers not exceeding 12 inches in loose measurement depth and compacted to not less than 95 percent of the maximum dry density as determined by the Standard AASHTO Test Designation T99 compaction test Method C at optimum moisture content. No fill material shall be placed, spread or compacted while the ground fill material is frozen, thawing, or during inclement weather conditions. Fill material having excessive moisture content shall not be compacted until the material has been aerated by grading, harrowing or other methods to remove excessive moisture.

5.2.5. Gravel Base

5.2.5.1. The sub-grade shall be brought to proper grade and compacted as shown on the profiles and in accordance with the approved cross section. No gravel base shall be placed until all earthwork and utility installation work has been completed.

5.2.5.2. Gravel for roadway base and sidewalk base shall be spread and compacted in

layers not exceeding 6 inches in compacted measurement depth and in accordance with the approved cross section. Material shall be compacted to not less than 95 percent of the maximum dry density as determined by the Standard AASHTO Test Designation T99 compaction test Method C at optimum moisture content.

- 5.2.5.3. Construction of gravel base and binder courses shall be done in accordance with the relevant provisions of Sections 401 and 405 of the M.H.D. Standard Specifications except the gravel base shall be placed in layers whose compacted thickness shall not exceed 6 inches.
- 5.2.5.4. The standard for a suitable 1 foot gravel base beneath the bituminous concrete shall be M.H.D. Material Specification M1.03.0., Type C which has a gradation of 2 inch minus. A certificate of compliance indicating the gradation and source of material shall be submitted and approved prior to delivery of any material to the site. A sieve test of the materials shall be conducted with results provided prior to installation of same.
- 5.2.6. Dense Graded Crushed Stone For Roadway Base
- 5.2.6.1. Construction of all dense graded crushed stone for roadway base shall be done in accordance with the relevant provisions of Section 402, of the M.H.D. Standard Specifications and in accordance with the procedures described herein.
- 5.2.6.2. Processed gravel for base shall conform to M.H.D. Material Specification M2.01.7. A certificate of compliance indicating the gradation and source of material shall be submitted and approved prior to delivery of any material to the site.
- 5.2.6.3. A plan showing as-built surface grades of the completed dense graded crushed stone layer shall be submitted to the Board for approval prior to installation of the bituminous concrete binder course. This survey shall consist of obtaining centerline and both gutter elevations at fifty (50) foot stations. In areas where the roadway gradient and cross-slope do not agree with what is shown on the contact plans, the applicant shall reconstruct and resurvey those areas until the proper gradient and/or cross-slope is placed and compacted until written authorization has been obtained from the Planning Board or its engineer on the Form K.
- 5.2.7. Bituminous Concrete Pavement, Temporary Berm, Sidewalks, and Driveways  
Materials and construction methods of the bituminous concrete pavement, tack coat, sidewalks, and driveways shall conform with the relevant provisions of Sections 460 and 701 of the M.H.D. Standard Specifications and in accordance with the procedures described herein. Pavement shall be placed and compacted in two courses, binder and finish. All driveways and curb cut ramps shall slope toward the roadway and end at the roadway gutter line (See driveway detail in "Town of Norfolk Regulations for Street Excavations" as most recently amended). Driveways shall commence their downward slope to the roadway from the right of way/street line and the ramps from the sidewalk. No driveways or ramps, which slope away from the roadway, will be accepted. Edging or curb (as applicable) shall be continued into the driveway/ramp cut to prevent erosion at the cut. A tack coat of bituminous material shall be applied by

mechanical means immediately prior to installation of top course of pavement.

A temporary berm shall be constructed on the roadway binder course to direct stormwater runoff to the closed drainage system until a permanent curb/berm is installed. The temporary berm shall be a bituminous concrete dribble berm. At steep grades (greater than 4%) and at low points, a temporary cape cod berm shall be used.

5.2.8. Slant Granite Edging

Sloped granite edging shall be required on both sides of all traveled ways and shall be set after the binder course is placed and before the top course is placed.

A dribble berm and/or temporary cape cod berm, as appropriate, shall be installed at the time of binder course installation and shall be continuously maintained in working order until the final course of bituminous concrete is installed. Materials and construction methods shall conform to the relevant provisions of M.H.D. Standard Specifications M9.04.2 and in accordance with the procedures described herein. Certificates of Compliance shall be required in accordance with Subsection 5.17.

5.2.9. Curb and Edging

- 5.2.9.1. Sloped granite edging shall be installed in four-foot minimum lengths, except where shorter lengths are dictated to form a required radius. It shall be set on a compacted gravel bedding at an angle providing a 4 inch reveal. The nose of the granite shall be set in a concrete base approximately six (6) inches square, which shall abut against the binder course. The top course of paving shall cover the concrete and key the granite in place. Joints shall be mortared.

Installation of the sloped granite edging shall precede the installation of the bituminous concrete binder course.

- 5.2.9.2. Materials and construction methods shall conform with the relevant provisions of Section 501 of the M.H.D. Standard Specifications and in accordance with the procedures described herein.

5.2.10. Walkways

5.2.10.1. Width

The width of the walkway shall be four feet. Where such a walk cannot be constructed respecting the existing contours and natural features of the land such as trees, shrubs, stone walls, etc. a minimum width of three feet shall be allowed with prior written approval of the Planning Board.

5.2.10.2. Clearing and Grubbing

All excavation areas shall first be cleared of stumps, brush, roots, boulders, debris and like materials, which should then be disposed of off site. All loam and topsoil within the excavation area shall be removed and stockpiled for reuse.

The removal of all trees shall be in compliance with the Shade Tree Act and the

Scenic Roads Act where applicable. Trees not protected under these Acts, if in living, viable condition and having a trunk in excess of 12 inches in diameter measured four feet above grade, shall be retained wherever possible. In addition, trees of special importance because of species or distance from other trees shall be field marked by the Planning Board or its agent indicating in each case whether the tree should be removed or preserved.

5.2.10.3. Bituminous Paving

Bituminous concrete pavement for sidewalks and driveways shall be installed to conform with the relevant provisions of Sections 460 and 701 of the M.H.D. Standard Specifications and in accordance with procedures described therein. Two courses of bituminous concrete pavement for walkways shall be installed to conform with generally accepted engineering practice.

5.2.10.4. Grass Strip

A grass strip separating the walkway from the road shall be installed wherever possible, consistent with the walkway design procedures described herein.

5.2.10.5. Drainage

The paved surface shall be pitched a minimum of 1/4 inch per foot in the direction of existing drainage facilities to provide adequate disposal of surface water including control of erosion, flooding, and standing water on adjacent lands.

5.3. Stormwater Drainage System Construction Specifications

Refer also to all Board of Health Regulations pertaining to drainage, and drainage design details in Section 4.19.

Materials and construction methods for the installation of the storm drainage system shall be in accordance with the relevant provisions of Sections 201, 220, 230, 260, and 280 of the M.H.D. Standard Specifications, except as modified herein.

To provide for proper drainage during the construction of all roadways, parking areas and maneuvering aisles, all utility frames (i.e. manholes, catch basins and service boxes) shall be temporarily set to the binder course surface grade. All utility frames shall be reset to finish grade just prior to the placement of the finish course of pavement. Any bituminous concrete removed to facilitate resetting shall be replaced with cement concrete. Where leaching/percolation galleys are used, a collection system with a single discharge point shall be utilized.]

5.3.1. Frames, Grates and Covers

Ductile iron, ASTM A536: Manhole frames and covers shall be LeBaron Foundry Co. Catalog No. LK 110 with the word "DRAIN" on the cover, or "Sewer" for sanitary sewer systems, or an approved equal. Standard Catch basin frames and grates shall be LeBaron Foundry Co. Catalog No. LF 248-2 or an equal approved by the Planning Board prior to installation but in all cases the frames and covers must be manufactured in the United States of America. Cascade catch basin frames and grates shall be LeBaron Foundry Co. Catalog No. LK120D or LK121D or an equal approved by the Planning Board prior to installation but in all cases the frames

and covers must be manufactured in the United States of America. Cement concrete collars shall be placed around the castings after the final setting and as directed. Bricks for adjusting frames shall conform to ASTM C32. Said bricks shall mean "Boston Bricks" (Red Tops). The plans shall note that the detail is to Town specifications if not already noted on the detail.

5.3.2. Manholes

Drainage and sanitary sewer manholes shall be precast, reinforced concrete conforming to ASTM C478, minimum 4 foot inside diameter, and coated outside with bitumastic in accordance with the manufacturer's recommendations. Joints and lifting holes to be mastic gasket. Manholes to service pipes larger than 30 inches in diameter shall require a special manhole in accordance with the M.H.D. standards. Manholes will be required at every change in direction, slope or diameter in the drainpipes and at intervals not to exceed 400 feet. Manhole steps shall be steel-reinforced polypropylene plastic and formed invert shall be cement concrete for storm drains and brick for sanitary sewers. When inverts in manholes differ more than 2.75 feet, drop manholes shall be installed. All pipe to manhole connections shall be by a resilient connector conforming to ASTM C923, latest edition. Storm drain manholes shall be provided with a weep hole where warranted by high ground water.

5.3.3. Catch Basins

5.3.3.1. Catch basins shall be precast reinforced concrete conforming to ASTM C478, minimum 5 foot inside diameter with a 4 foot sump, and coated outside with bitumastic in accordance with the manufacturers recommendations. All catch basins, manholes, and frames shall be set on "Boston Bricks" commonly referred to as red tops. Hoods shall be installed in all catch basins and shall be LeBaron Foundry Co. Catalog No. L202 or an approved equal. Standard catch basin frames and grates are required on all catch basins where the slope is not greater than 4%. Cascade catch basin frames and grates are required where the slope is greater than 4%. Joints shall be mastic gasket.

5.3.3.2. Catch basins shall be installed on both sides of the roadway on continuous grades at intervals not to exceed 250 feet, at low points and sags in the roadway, and near the corners of intersecting streets. Catch basins shall be provided with inlet stones. Catch basin to catch basin connections will not be allowed. Drains must enter a catch basin type structure prior to entering a manhole. Catch basins shall also be provided on all upgradient legs of intersections prior to the PC or PT of the intersection curb returns. Storm gutter inlets shall be required at every catch basin with a granite transition from vertical to sloped curb pieces/sections. (See 5.3.3.4.)

5.3.3.3. Curb Inlet Stones

Curb inlet stones shall be provided at all catch basins located within the roadway. Curb inlet stones and transition curbs are to be installed at the time the granite curbing is installed. See M.H.D. 9.04.1 for materials.

5.3.3.4. Transition Curbs

Granite transition curbs shall be provided for all curb inlet stones located in roadways that have sloped granite edging or bituminous concrete slab.

Transition curbs are to be installed at the time the granite curbing is installed. See M.H.D. 9.04.1 for materials.

5.3.4. Flared and Metal Ends

Discharge ends of storm drains shall be provided with flared/metal ends conforming to M.H.D. standards. Backfill shall be placed and thoroughly compacted around the flared/metal ends. End walls may be used when approved by the Planning Board.

5.3.5. Field Stone Masonry Ends

Culverts shall be provided at both ends with field stone masonry ends. Materials and construction methods for masonry ends in cement mortar shall conform to the relevant provisions of Section 685 of the M.H.D. Standard Specifications.

5.3.6. Security Bars

Removable security bars shall be provided at the entrance and outface of all culverts or open pipe drains. Bars shall be constructed of a design approved by the Planning Board or its agent, and the grate shall be installed in a manner approved by the Planning Board or its agent. A suitable drawing of the grate and method of installation shall be submitted for approval with the plans for the drains and appurtenances.

5.3.7. Scour Protection

The discharge ends of all drains and culverts shall be protected with a riprap apron of a width not less than five feet plus the outside diameter of the pipe. The length of the apron shall be a minimum of twenty feet measured from the end wall or flared/metal end. Riprap shall conform to M.H.D. Material Specification M2.02.0. Stone for pipe ends will not be allowed.

5.3.8. Sub-drains

When it is determined that the water table will destabilize the proposed roadway, or sometimes to control erosion in cut slopes, installation of sub-drains will be required. Materials and construction methods shall conform to Section 260 of the M.H.D. Standard Specifications.

5.3.9. Trench Excavation

Trench excavation shall conform with the relevant provisions of Section 140 of the M.H.D. Standard Specifications and in accordance with the procedures described herein.

5.3.10. Pipe Bedding

The pipe shall be bedded in well compacted granular material placed on a flat trench bottom. The granular bedding shall have a minimum thickness of one fourth (1/4) the outside pipe diameter, 4 in. minimum, and shall extend halfway up the pipe barrel at the sides. The remainder of the side fills and a minimum depth of 12 inches over the top of the pipe shall be filled with carefully compacted gravel borrow conforming to M.H.D. Material Specification M 1.03.0, Type C or an approved backfill material. The granular bedding material shall conform to M.H.D. Material Specification M2.01.4.

5.3.11. Pipe Installation and Backfilling

5.3.11.1. Pipe shall be installed and backfilled in accordance with the relevant provisions of Section 230 of the M.H.D. Standard Specifications and in accordance with the procedures described herein.

5.3.11.2. Pipe laying shall begin at the downstream end of the installation with the bell or groove end of the first section upstream. The pipe shall be laid to the lines and grades specified with the pipe sections closely jointed. When bell and spigot pipes are used, bell holes shall be dug in the bedding to accommodate the bells. They shall be deep enough to insure that the bell does not bear on the bottom of the hole but shall not be excessively wide in the longitudinal direction of the installation.

5.3.11.3. When the pipe sections are laid, the barrel of each section shall be in contact with the quadrant shaped bedding throughout its full length exclusive of the bell. Where lift holes in the pipe have been provided, such holes shall be refilled with an acceptable grade of concrete after laying and the concrete shall be thoroughly cured before backfill material is placed.

5.3.12. Leaching Pit or Basin

5.3.12.1. Pits shall be located a minimum of 100 feet from any source of water supply, 50 feet from buildings, and 20 feet from existing property lines adjacent to the subdivision perimeter. The bottom of the leaching pit shall be at least 2 feet above groundwater and 5 feet above rock. Clear distance between two pits shall be at least three times the outside diameter of the larger pit. Leaching pits will not be located in clay soils or where there is less than 10 feet of soil above a rock formation. Overflow provisions shall be provided at each leaching pit or cluster of leaching pits to the satisfaction of the Planning Board.

5.3.12.2. Soil-percolation tests shall be conducted at the proposed location of each pit by a Registered Professional Engineer at half the depth and at the full estimated depth of the leaching pit. The required wall area or effective absorption area shall be determined from the soil-percolation test. The applicant shall submit to the Planning Board the results of the soil-percolation tests and the design of the leaching pits for review and approval.

5.3.12.3. Leaching pits shall be precast, reinforced concrete conforming to ASTM C478. Watertight ductile iron manhole frames and covers shall be LeBaron Foundry Co. Catalog No. LBW 268-1 with the word "Drain" on the cover or an approved equal. Double washed crushed stone conforming to M.H.D. Material Specification M2.01.2 shall be placed in the bottom of the pit to a minimum depth of 6 inches and around the pit to a minimum thickness of 12 inches. Leaching structures shall be preceded by acceptable pretreatment to allow the settlement of solids and separation of oil/grease from the collected stormwater.

5.4. Water Systems

5.4.1. Materials and construction methods shall conform to the relevant provisions of

Section 301 of the M.H.D. Standard Specifications and Norfolk Water Department, and in accordance with the procedures described herein.

- 5.4.2. Hydrants shall be located at all low points, and hydrants or manual air release valves shall be located at all high points of the proposed water mains. Cement concrete collars shall be installed around all valve boxes.
- 5.4.3. Curb stops and boxes shall be located only within the proposed roadway right of way.
- 5.5. Sanitary Sewers  
Materials and construction methods shall conform to the relevant provisions of Sections 201 and 230 of the M.H.D. Standard Specifications, Norfolk Board of Health, and in accordance with the procedures described herein. A low pressure air test shall be performed on all installed sanitary sewers in accordance with ASTM C828, latest edition.
  - 5.5.1. Sanitary sewer pipe and fittings shall be polyvinyl chloride (PVC), SDR 35, conforming to ASTM D3034, latest edition. Large diameter PVC gravity sewer pipe and fittings shall conform to ASTM F679, latest edition.
  - 5.5.2. Joints for PVC pipe and fittings shall conform to the relevant ASTM as stated in 5.5.1.
  - 5.5.3. The pipe shall be bedded as described in subsection 5.3.10.
  - 5.5.4. The pipe shall be installed and backfilled as described in subsection 5.3.11.
  - 5.5.5. All pipe to manhole connections shall be by a flexible manhole sleeve of high quality synthetic rubber. This sleeve will allow for lateral and angular alignment as the pipe connection is made and shall conform to ASTM C923, latest edition.
- 5.6. Private Utilities  
All private cable utilities including telephone, electric power, fire alarm, and cable communications lines shall be placed underground. All private cable utilities shall be installed using conduits, manholes, handholes and appurtenances required by each utility company. These private cable utilities along with gas distribution lines shall be installed with a minimum cover of 36 inches.
- 5.7. Retaining Walls  
Retaining walls shall be installed where required and deemed necessary by the Planning Board. They shall be cemented stone masonry conforming to the relevant provisions of Section 685 of the M.H.D. Standard Specifications, Construction Standards, and in accordance with the procedures described herein. Maximum visible height of retaining walls shall be four (4) feet.
- 5.8. Fire Alarm System  
The fire alarm system, if any, shall be installed in accordance with the recommended practices of the National Fire Protection Association. The number,

type, and location of fire alarm boxes shall be established by the Norfolk Fire Department.

5.9. Street Trees

Trees shall be planted within the grass strip (or, if determined necessary by the Planning Board, in tree easements) at 35 foot or lesser intervals, on both sides of all streets, They shall be at least 12 feet in height and 3 inches in caliper at the time of planting. All trees shall be planted no later than one month after installation of the first course of bituminous concrete, and shall be guaranteed for one year after street acceptance. A written copy of said guarantee shall be provided to the Planning Board prior to street acceptance.

5.9.1. Tree Species

The species of street trees shall be chosen from the following species:

- Acer pseudoplatanus - Sycamore Maple
- Acer rubrum - Red Maple and varieties
- Acer saccharum - Sugar Maple and varieties
- Carpinus betulus - European Hornbeam
- Cercidiphyllum japonicum - Katsuratree
- Ginkgo biloba - Ginkgo variety
- Liquidambar styraciflua - Sweetgum var.
- Quercus palustris - Pin Oak
- Quercus rubra - Red Oak
- Zelkova serrata - Japanese Zelkova
- Sophora japonica - Japanese Pagodatree
- Fraxinus pennsylvanica - Green Ash var.
- Pyrus calleryana - Respire Callery Pear
- Gleditsia triacanthos inermis - Thornless Honeylocust var.
- Platanus acerifolia - Bloodgood London Planetree
- Tilia cordata - Littleleaf Linden and varieties
- Tilia tomentosa - Silver Linden

or such other tree variety, as appropriate, and as may be approved by the Planning Board.

5.9.2. There shall be at least three species of trees planted per street. No species of tree planted adjacent to any other tree shall be the same species as that tree.

5.9.3. The grass strip/tree easement areas shall be surfaced with not less than six (6) inches of topsoil which shall be seeded and rolled or otherwise vegetated to the satisfaction of the Planning Board.

5.9.4. Tree wells are required for the protection of existing trees where deemed necessary by the Tree Warden. Materials and planting methods shall conform to the relevant provisions of Section 771 of the M.H.D. Standard Specifications (including but not limited to staking and wiring of all trees). Prior to installation of the trees, the planting method shall be submitted to the Planning Board.

5.10. Loaming and Seeding

The removal of topsoil from the development area will not be allowed. Not less than six inches of good quality loam shall be placed within the right-of-way, cut and fill areas, easements, lots, etc. Materials and construction methods for loam borrow and topsoil shall conform to the relevant provisions of Section 751 of the M.H.D. Standard Specifications and in accordance with the procedures described herein. Materials and construction methods for seeding shall conform to the relevant provisions of Section 765 of the M.H.D. Standard Specifications and in accordance with the procedures described herein. Seed for the grass strips shall conform to M.H.D. Material Specification M6.03.0, Grassplots and Islands. After loam and seed has been placed in retention/detention basins and at slopes equal to or steeper than 3:1, a jute mesh matting, or an approved equal, shall be installed in accordance with the manufacturer's recommendations for slope stabilization. All loaming and seeding shall be installed no later than one month after installation of the first course of bituminous concrete.

5.11. Street Signs

The applicant shall furnish and erect necessary streets signs to designate the name of each street (and, in the case of cul-de-sacs, the designation "Not A Through Street") in the development prior to the occupancy of any house on the street. Signs shall conform to those used by the Town and approved by the Highway Superintendent.

5.12. Street Lights

The applicant shall be responsible for paying fees established by the Town of Norfolk to defray the cost of installation and initial operation of streetlights at locations approved by the Planning Board. In determining required locations, the Planning Board may consult with the Board of Selectmen and the Norfolk Highway Department. Street light fixtures and standards shall conform to fixtures and standards as most recently installed in the Town of Norfolk at the time of application.

5.13. Guard Rails

5.13.1. Guardrails shall be required along roadways in at least the following areas:

- o Culvert crossings
- o Where side slopes are steeper than 3 horizontal to 1 vertical
- o Where, in the opinion of Planning Board, it is necessary for public safety

5.13.2. Materials and construction methods shall conform to the relevant provisions of Section 601 of the M.H.D. Standard Specifications and in accordance with the procedures described herein. Posts shall be pressure treated wood, rectangular in section 6" x 8", chamfered on top, and at least 6' 3" long with flat tops and butts, conforming to M.H.D. Material Specification M8.07.0B.2. Rail elements shall conform to AASHTO -M180, class A, Type 4 - Beams of corrosion resistant steel. Guardrail shall not be ramped. A guardrail detail shall be provided for approval.

5.13.3. Wood Posts and Rails

5.13.3.1. Wood posts and rails are to be used only on very low speed roads having a design speed of 15 and 20 m.p.h. and parking areas and are to be pressure

treated. Prior Planning Board approval is required for use of this type of barrier.

5.13.3.2. Wood posts shall conform to the materials and construction as described in subsection 5.13.2. Spacing of posts shall be a maximum of 6' 3" center to center. See Detail in Volume II.

5.13.3.3. Wood rails shall be 4" x 8" and of a length where joints are to be located only at the posts. Rails shall be of the same species and stress grade as the wood posts. Rails shall be treated in accordance with M.H.D. Specifications - Material Specification M8.07.0B.2. Two - 5/8 inch carriage bolts shall be used to fasten the rail to the post and countersunk. Nuts shall be installed so that they cannot be backed off. The number of rails, either one or two, to be used for the wood guardrail shall be determined by the Planning Board.

5.14. Bounds

5.14.1. Materials and construction methods shall conform to the relevant provisions of Section 710 of the M.H.D. Standard Specifications and in accordance with the procedures described herein.

5.14.2. Bounds shall be set on both street lines at all angle points, at the beginning and end of curves, and at all intersections.

5.14.3. Certification, in writing, shall be made by the Registered Land Surveyor for the developer to the Planning Board that, as determined, by a survey after completion of construction, the bounds have been properly set in accordance with the approved plan and Rules and Regulations of the Planning Board. Tie sketches to Bound Points shall be furnished to the Planning Board and to the Highway Superintendent on 8-1/2 x 11" sheets of paper with a suitable Title Block.

5.14.4. Iron pipe monumentation driven at least three and a half feet (3' 6") into the ground with a minimum of six inches (6") exposed and with a diameter of 3/4 inches (3/4") is required for all easement corners.

Bounds are to be installed at the time the sidewalk top course is installed.

5.15. Curb-Cut Ramps

All ramps must comply with the Americans with Disabilities Act Regulations and with Architectural Access Board Regulations (521 CMR S 1-47) in force and effective on the date of street acceptance.

5.15.1. Curb-cut ramps must be provided in curbed areas that have sidewalks. The location of the curb-cut opening and ramp must be carefully coordinated with respect to the pedestrian crosswalk lines, if any. This planning must ensure that the ramp opening (at the fully depressed curb) is situated within the parallel boundaries of the crosswalk markings.

5.15.2. Ramps for the handicapped are not limited to intersections and marked crosswalks, and ramps should also be provided at other appropriate or designated points of pedestrian concentration, such as loading islands, mid-block pedestrian

crossings, and locations where pedestrians could not otherwise recognize the proper place to cross the roadway. Because non-intersection pedestrian crossings are generally unexpected by the motorist, warning signs should be installed and adequate visibility provided by prohibiting parking.

5.15.3. Ramps for the handicapped should have a textured nonskid surface. This texture not only provides a measure of safety for the user but also warns a blind person of the presence of the ramp.

5.16. Final Cleanup

5.16.1. Upon completion of all the work in the subdivision, the applicant shall remove from the right of way and all adjoining properties all temporary structures, rubbish and debris, surplus material, other objectionable materials, and shall leave the area(s) in a neat and orderly condition.

5.16.2. All storm drainage and sanitary sewer pipes and structures shall be cleaned and flushed, at the applicants expense, prior to final inspection and acceptance.

5.17. Certificates of Compliance

Certificates of compliance shall be submitted to the appropriate, responsible agency as indicated on the Form K, Subdivision Inspection Checklist, for approval of all materials being used in accordance with the relevant provisions of Section 6.00 of the M.H.D. Standard Specifications.

5.18. Maintenance

All roads and utilities, including basin cleaning and snow removal, shall be maintained by the applicant until final inspection and acceptance by the Town. Annual work such as cleaning catch basins, repairing curbing, pothole repair and snow removal/sanding must be completed by the developer. If released from restrictions with regard to sale of lots or buildings on lots by the posting of a Bond, the Subdivider shall maintain the roads for the vehicular travel in a manner satisfactory to the Planning Board. Further, the Subdivider shall guarantee the maintenance of the roads in a subdivision in a condition which meets all the requirements of these Rules and Regulations to the satisfaction of the Planning Board, by posting a bond with two or more sureties approved by the Board or by a surety company authorized to do business in the Commonwealth, in a penal sum as required by the Board to secure the maintenance as herein provided, or by a deposit of money or negotiable securities sufficient in amount, in the opinion of the Board, to secure the aforesaid maintenance. Such bond shall be held until the streets are accepted by the Town.

The bond shall be subject to forfeiture as liquidated damages upon failure of the developer to perform the required roadway maintenance within a reasonable time upon notice by the Town of Norfolk.

5.19. Stop Work Orders

At any time during the course of construction the Board may issue an order to cease some or all work within the subdivision or to undertake corrective or remedial work whenever the applicant has violated these rules and regulations, plan specifications, or conditions of approval. The applicant shall comply with all

such orders and failure to do so shall entitle the Board to rescind or amend plan approval or to take, at applicant's expense, any corrective or remedial action.

## SECTION 6.0 - ADMINISTRATION

### 6.1. Authority

- 6.1.1. The Planning Board shall be the administrative agency of these regulations and shall have all the powers assigned them by Section 81A to Section 81GG of Chapter 41 of the Massachusetts General Laws.
- 6.1.2. The Planning Board may assign as their agents appropriate town agencies or officials and may hire professional assistance to review plans and inspect/observe improvements, at the cost of the Applicant.
- 6.1.3. The Board, on its own motion or on the petition of any interested person, shall have the power to modify, amend, or rescind its approval of a plan of a subdivision, or to require a change in a plan as a condition of its retaining the status of an approved plan, in accordance with Section 81W or Chapter 41, M.G.L.

### 6.2. Variation

#### 6.2.1. Waiver of Compliance

- 6.2.1.1. Strict compliance with the requirements of these Rules and Regulations may be waived only when, in the judgment of the Board, such action is in the public interest and not inconsistent with the Subdivision Control Law. In waiving strict compliance the Board may require such alternative conditions as will serve substantially the same object as the standards or regulations waived.

#### 6.2.1.2. Request for Waivers from Planning Board

Waiver requests shall be submitted with and stated on the definitive plan or contained in a separate instrument attached thereto and referred to on said plan. All such requests for waivers shall be heard at the public hearing for the definitive plan.

#### 6.2.2. Planned Development

The Planning Board will give consideration to suggestions offered by the Developer that will tend to provide for the most efficient use of land in harmony with its natural features.

### 6.3. References

For matters that may arise during subdivision procedures that are not covered by these Regulations, the following are accepted as standards in their applicable portions: "Sections 81K to 81GG" of Chapter 41 of the Massachusetts General Laws; "Suggested Land Subdivision Regulations" H.H.F.A.; "A Policy on Geometric Design of Highways and Streets", American Association of State Highway and Transportation Officials, Latest Edition, as amended; "Standard Specifications for Highways and Bridges", Massachusetts Highway Department (formerly The Commonwealth of Massachusetts, Department of Public Works), Latest Edition, as amended; "Construction Standards", Massachusetts Highway Department

(formerly The Commonwealth of Massachusetts, Department of Public Works), Latest Edition, as amended.

Compaction testing for installation of water and other lines shall be in accordance with Mass. Highway Department specifications, the Town of Norfolk Highway Department, or the Town of Norfolk Water Department whichever is the most stringent.

6.4. Validity

If any section, paragraph, sentence, clause, or provision of these regulations shall be proved to be invalid for any reason, the invalidity shall apply only to the material so affected and the remainder of these regulations shall be deemed valid and effective.

6.5. Amendments

These regulations or any portion thereof may be amended, supplemented or repealed from time to time by the Board after a public hearing on its own motion or by petition, in accordance with Section 81Q of Chapter 41, M.G.L.

6.6. Inspection/Observation of Improvements

See Appendix A for Fee Schedule relative to Observation/observation of improvements. Applicants are to pay a fee for the Observation/observation of improvements. This fee is in two parts and is to be paid at the time of endorsement of the plan by the Planning Board. The Planning Board Consulting Engineer Observation Fee and Town Highway Department Observation Fee are payable at the time of endorsement of the definitive plan. All unexpended funds are to be returned to the applicant at the time of street acceptance by the Town of Norfolk. Town Highway Department Observation Fees are authorized under Chapter 44, Section 53E-1/2. The rate paid is for Observations made by Town of Norfolk employees at the hourly pay rate of employees who are authorized to make Observations for the Norfolk Planning Board.

The proper inspecting/observation Town Official and/or Agent shall indicate on Form K1, Subdivision Observation Checklist, presented in Appendix B, the date of Observation and the approval signature and shall file such form, and an Observation report, if any, with the Board subsequent to each Observation.

The Planning Board or its agent, Highway Superintendent or his agent, Health Department, Tree Warden, Water Department, Police Department, and Fire Department, shall be separately notified, in writing, at least forty-eight (48) hours prior to the commencement of any of the work.

If any of the designated work below is commenced without proper notification being given as specified, such work shall be performed at the risk of the developer or owner. Sufficient lines and grades shall be provided by the developer or owner for the purpose of verifying that installation is in accordance with the definitive plans.

6.6.1. Erosion and Sedimentation Controls

Prior to work commencing within the subdivision, the installation of all erosion and sedimentation controls required by the subdivision approval are to be observed.

Observation #1 - Erosion and Sedimentation Controls

6.6.2. Clearing and Grubbing of Right of Way

The entire area between excavation/embankment areas shall be cleared, except trees of aesthetic value and those over four (4) inch caliper may be allowed to remain provided that they are located at least five (5) feet outside the street line, and are approved by the Tree Warden and the Planning Board. Loam and topsoil shall be removed and stacked.

Observation #2 - Clearing and Grubbing of Right of Way

6.6.3. Excavation

Earth shall be excavated to the lines and grades shown on the plans. Earth removal shall be performed as per the requirements of Appendix A and in accordance with Town of Norfolk Bylaws (Article VII - Land Use And Resource Protection) as most recently amended. Muck, rock, clay, boulders, and other unstable material shall be removed to a depth as directed by the Inspector/Observer.

Inspection #3 - Excavation

6.6.4. Embankments

Embankments shall be constructed of approved materials as specified with appropriate compaction test results provided.

Observation #4 - Embankment Construction

6.6.5. Staking

Roadways are to be staked at 50 foot intervals at their centerline and at right of way line prior to work commencing on the storm drainage system.

Observation #5 - Staking

6.6.6. Storm Drainage System

Storm drainage system shall be installed in conformity with the definitive plan and Water Department requirements with appropriate compaction test results provided prior to backfilling. These shall include all drains, catch basins, manholes, culverts, retention/detention basins, and sub-drains called for in such plan. In no case shall any drain pipe or culvert be within two feet of the sub-grade plane. All drainage installation shall be inspected prior to backfilling.

Observation #6 - Below Grade Storm Drain Installation

Observation #22 - At Surface Storm Drains

Observation #39 - Retention/Detention Basins and Appurtenances

6.6.7.

Sanitary Sewer System

All sanitary sewer mains, manholes, laterals, testing, and associated equipment shall be installed in conformity with the definitive plan and as required. All sewer installation and low pressure air testing shall be inspected and completed prior to backfilling.

Observation #7 - Below Grade Sanitary Sewer Installation

Observation #8 - Sanitary Sewer Laterals Installation

Observation #9 - Sanitary Sewer Testing

Observation #23 - At Surface Sanitary Sewers

6.6.8.

Water System

All water mains, laterals, hydrants, and associated equipment shall be installed in conformity with the definitive plan. Installation and testing, including but not limited to compaction testing shall be inspected. Prior to acceptance the following shall be accomplished:

Observation #10 - Below Grade Water Main Installation

Observation #11 - Water Main Testing and Disinfection

Observation #12 - Water Main Laterals Installation

Observation #24 - At Surface Valve Boxes

Observation #25 - At Surface Curb Boxes

Observation #31 - Hydrants - Finish Grade

6.6.9.

Sub-grade of Right of Way

Sub-grade shall be brought to the proper grade and cross section, and fine graded and compacted in accordance with the specifications and to the satisfaction of the Inspector/Observer.

Observation #13 - Fine Grade and Compact Sub-grade

6.6.10.

Processed Gravel Base and Base

The gravel for the roadway base and driveway, sidewalk, and curb-cut ramp bases shall be installed in layers not exceeding 6 inches in compacted depth and as specified.

Observation #14 - Gravel Base for Roadway - First Course of 6" Compacted Processed Gravel

Observation #14A - Gravel Base for Roadway - Second Course of 6" Compacted Processed Gravel

Observation #14B - Gravel Base for Roadway - Third Course of 6" Compacted Processed Gravel

Observation #15 - Dense Graded Crushed Stone Base - Final Course

Observation #16 - Processed Gravel Base for Sidewalks - First Course of 6" Compacted Processed Gravel

Observation #17 - Processed Gravel for Sidewalks - Final Course

6.6.11.

Dense Graded Crushed Stone Base

The dense graded crushed stone for base shall be installed as specified.

Observation #18 - Dense Graded Crushed Stone for Roadway Base  
Observation #18A - Survey of Center Line and Both Gutter Lines

6.6.12. Bituminous Concrete Pavement

The bituminous concrete pavement for roadways, sidewalks, driveways, and curb-cut ramps shall be installed as specified in two courses, binder and finish, and drive-ways constructed starting at the gutter line and sloping up towards the right of way.

A tack coat of bituminous material shall be applied by mechanical means immediately prior to installation of top course of pavement."

Observation #19 - Roadway Binder Course/Temporary Berm  
Observation #21 - Sidewalk Binder Course  
Observation #26 - Roadway Tack Coat  
Observation #26A - Roadway Finish Course  
Observation #27 - Sidewalk Tack Coat  
Observation #27A - Sidewalk Finish Course

6.6.13. Curb and Edging

Curb and Edging shall be installed as specified.

Observation #20 - Curb/Edging Installation  
Observation #20A - Curb Inlet Stone Installation  
Observation #20B - Transition Curb Installation

6.6.14. Curb-Cut Ramps and Transformer Pads

Transformer Pad location to be approved by Planning Board or its agent and constructed pad observed by Planning Board Agent.

Observation #28 - Curb-cut Ramps  
Observation #28A - Transformer Pads

6.6.15. Loam and Seed

Loam and seed shall be installed in all grass strips and on embankment/excavation slopes as specified and to the satisfaction of the Inspector/Observer.

Observation #30 - Loam and Seed

6.6.16. Retaining Walls

Retaining walls shall be installed as specified.

Observation #32 - Retaining Walls

6.6.17. Guard Rails

Guard rails shall be installed as specified.

Observation #33 - Guard Rails

- 6.6.18. Street Trees and Plantings  
Street trees and plantings shall be installed as specified.

Observation #34 - Trees and Planting (Developer to provide documentation of tree warranty.)

- 6.6.19. Street Signs and Bounds  
Street signs and bounds shall be installed as specified.

Observation #35 - Bounds and Monuments

Observation #37 - Street Signs

- 6.6.20. Fire Alarm System  
Fire alarm systems shall be installed as specified.

Observation #36 - Fire Alarm Installation

- 6.6.21. Street Lights  
Street lights shall be installed as specified.

Observation #38 - Street Lights

- 6.6.22. Final Cleanup  
Final cleanup shall be accomplished to the satisfaction of the Inspector.

Observation #40 - Final Cleanup Observation

- 6.6.23. Maintenance  
Streets and appurtenances shall be maintained as specified to the satisfaction of the Inspector/Observer.

Observation #41 - Maintenance

- 6.6.24. As Built/Acceptance Plan/Running Description of Roadway and Easements  
See Section 3.4.7. for additional steps to finalize completion of Form K, Observation Report, and acceptance by the Town of subdivision roadways.

Observation #42 - Acceptance Plans/Running Descriptions

- 6.6.25. Deed/Easement Submittal  
Proper deed for street right of way and proper easements to the benefit of the Town of Norfolk.

Observation #43 - Deeds/Easements

- 6.6.26. Other  
Special conditions of approval or other items that may have been required within

the approval conditions.

Observation #44 - Miscellaneous other items.

NOTE: See Section 3.4.7. for additional steps to finalize completion of Form K and acceptance by the Town of Norfolk subdivision roadways.

## **SECTION 7.0 SITE PLAN APPROVAL: ADMINISTRATIVE REQUIREMENTS**

### 7.1. AUTHORITY

7.1.1. The administrative requirements herein are authorized by the Town of Norfolk Zoning Bylaws, Site Plan Approval and references to Special Permit Granting Authority.

### 7.2. PRECEDENCE

7.2.1. In case of conflict with the enabling statute, the zoning bylaw, and these regulations, the order of precedence shall be:

1. Statute; 2. Bylaw; then 3. these regulations.

### 7.3. APPLICABILITY

7.3.1. In all districts no building shall be constructed or externally enlarged and no use shall be expanded in ground area or established in an existing building except in conformity with a site plan bearing an endorsement of approval by the Planning Board. This provision shall not apply to single family homes, including additions or enlargements, which are permitted in the district in which the property is located as a matter of right. (See Norfolk Zoning Bylaws - Site Plan Approval)

### 7.4. REQUIREMENTS

#### 7.4.1. Pre-Submission Review

The applicant is encouraged to follow the procedure outlined for preliminary plans as noted in Section 2.6. of these Rules and Regulations.

7.4.1.1. The applicant is encouraged to review copies of the Regulations of other Town Departments/Boards before preparing plans and to become aware of any fees/charges of other Town of Norfolk entities.

7.4.2. The Site Plan shall be drawn on a reproducible mylar at a scale of 20' to the inch, and on a maximum sheet size of 24" X 36", all existing (dash line) and proposed (solid line) in compliance with the requirements of Site Plan Approval of the Zoning Bylaws. Site plans shall be drawn to meet requirements of the Registry of Deeds for the recording of same.

Separate sheets shall be used to retain plan legibility.

- 7.4.2.1. The name and address of the developer and/or applicant (if different from the owner) and interest of applicant if not the owner or developer.
- 7.4.2.2. All of the provisions of Sections 4 and 5 shall apply to projects submitted for site plan approval, substituting the words "site" for "subdivision" and "applicant" for "subdivider".
- See also Section 8 for items that may pertain to Site Plans.
- 7.4.3. Contents  
The Site Plan shall contain, at a minimum, the following information to assist the Planning Board in evaluating the site plan:
- 7.4.3.1. The names and addresses of the record owner of the land and the name, seal, and address of the designer, engineer, and surveyor who made the plan, all of which shall appear in the lower right hand corner.
- 7.4.3.2. A Signature Block located on the right side of each drawing with suitable space to record the action of the Planning Board and the signatures of the members of the Board.
- 7.4.3.3. A locus plan drawn to a scale of 1" = 1000' showing the general location of the site in relation to all adjacent and nearby roads, railroads, waterways, and utility easements. Name of development, scale and north arrow, date of plan and legend.
- 7.4.3.4. The lot shall be tied into the nearest town, county, and state bound. Bearings and curve data distances of all lot lines. Locations of driveways, parking and service areas, names of all parties of interest including abutters, owners of land directly opposite on any public or private street or way, and abutters to the abutters within three hundred feet of the property line as they appear on the most recent applicable tax list including those in other cities or towns. The plan shall also show the location of easements, rights of way, public or private ways, and other reservations existing, planned or proposed, on, adjacent to, or intersecting the subject site.
- 7.4.3.5. Assessor's Map, Block, and Lot numbers of subject property.
- 7.4.3.6. Zoning district(s) and any boundary of zoning districts within the lot, along any lot line, or within any adjoining property.
- 7.4.3.7. Topography for the entire site shall be shown in two-foot intervals except where the Board requires that a one-foot contour interval be used. Contours and elevations of existing and proposed features shall be based on the National Geodetic Vertical Datum of 1929 (NGVD).
- Existing contours are to be shown as dashed lines and proposed contours are to be shown as solid lines. A note shall be added to the plans that states, "Grading is as indicated on the approved site plan".
- 7.4.3.8. The location and dimensions (including height) of all existing and proposed buildings and structures, including ground coverage, gross floor area, and

breakdown of indoor and outdoor floor area. Open area uses and other uses and improvements. All doorways and their way of opening shall be shown for all existing and proposed buildings. Location of buildings existing on the tract to be developed and on adjacent tracts within a distance of 100 feet from the property line, indicating whether existing buildings on the tract are to be retained, modified, or removed. Existing soil conditions and soil suitability test results.

A statement of the amount of area of land involved in the site, the percentage of the site proposed to be covered by buildings and parking areas, the number of square feet of gross floor area, the area to be proposed to be devoted to open space, the area proposed to be paved for parking, driveways, loading space, and sidewalks, the total number of parking spaces proposed and required by the Zoning Bylaws for the uses proposed, the number of employees expected per shift, and the total floor area of proposed commercial, industrial, office or other use.

Where the zoning bylaws set requirements related to the above figures, those requirements also shall be listed in a manner that permits comparison of the required vs. the proposed quantities.

7.4.3.9. Existing and proposed front, side, and rear yard dimensions. Proposed dimensions shall be in accordance with the Town of Norfolk Zoning Bylaws as most recently revised.

7.4.3.10. Parking lots; showing driveway entrances and exits designed for safe ingress and egress, curb cuts, layout of parking spaces, aisles, pedestrian walks, necessary ramps, and representative cross sections of all proposed service and parking areas and driveways. All of the above shall be in accordance with the applicable sections of the Town of Norfolk Zoning Bylaws as most recently revised. All parking and access shall comply with the Architectural Access Board and Americans with Disabilities Act regulations. The applicant shall indicate the basis for determining the number of parking spaces. No parking is allowed in front of buildings serving common exterior walkways. Parking lots shall not be located within three (3) feet of any property line, except in the B-1 and C-1 zoning districts.

The plan for any new retail building shall include an access for fire equipment on at least two sides of the building, such access to be approved by the Fire Chief on the plans prior to construction of the building. Access to present buildings shall be kept clear of hazardous substances and obstacles which may, in the opinion of the fire department, impede the proper placement of fire apparatus and personnel in case of fire.

Proposed traffic circulation systems, including the volume and proposed direction of projected traffic flows into, out of, and within the site for both vehicles and pedestrians for an average day and for peak hours.

Parking lots and off-street loading facilities showing driveway entrances and exits designed for safe ingress and egress, curb cuts, layout of parking spaces and aisles, off-street loading facilities, pedestrian walks, necessary ramps, and representative cross sections of all proposed parking areas and driveways. Also show curb stops.

See Section 8 for further details regarding requirements for development of commercial/business properties.

- 7.4.3.11. All existing and proposed landscape features such as fences, walls, planting areas, and walks. Planting details in buffer zones and green belts shall include species, height of species, spacing of plantings and shall be shown at sufficient scale to illustrate clearly the landscaping design. (See those Sections of the Norfolk Zoning Bylaw, as most recently amended, pertaining to landscaping, buffers, greenbelts and all other applicable Sections.) Plans for walks, walls, and fences shall include dimensions and finishes.
- 7.4.3.12. All plans shall show the edge of wetlands, the edge of the 100 year (FEMA) flood plain, the edge of isolated areas subject to flooding, the banks of intermittent streams, the banks of perennial streams, the banks of lakes and ponds, the banks of rivers, the edge of riverfront zones, and the edge of the 100 foot wetland buffer zones. The limits of these resource areas shall be determined in accordance with applicable Massachusetts Department of Environmental Protection Regulations (310 CMR 10.00-10.60) and any Town of Norfolk Zoning Bylaw, Town Bylaw or Town Regulation relative to wetland protection, aquifer protection, and /or water resource protection. . FEMA panel number, zone designation, and base flood elevation shall be indicated on the plan. Wetland boundaries shall be identified according to the requirements of the Conservation Commission as to criteria and time of year analyzed.
- 7.4.3.13. All facilities for water supply and distribution, fire protection, lighting, and facilities for the prevention of air pollution and protection of the groundwater. All utilities are to be installed underground.
- 7.4.3.13.1. The following site lighting information shall be provided: type, height, wattage, foot candle output directly under the light source, and footcandle output at the property line and a photometric layout/diagram showing direction and intensity of outdoor lighting. Lighting fixtures shall be of "cut-off" design, and not floodlight design, unless otherwise approved by the Planning Board. All lighting is to be placed at the perimeter of parking lots. Foot candle output directly under the light source shall not exceed five (5) and shall not exceed .25 at the property line. Lighting (poles and fixtures combined) shall not exceed 15' in height.
- 7.4.3.13.2. A duplicate site plan showing a photometric diagram/layout to establish the boundaries of the illumination shall be provided. The duplicate site plan need not show the detail of the actual site plan, but shall show the lot, building(s) on the lot, light standard location, and perimeter of the illumination of each light.
- 7.4.3.14. Location and dimensions (including height) of all storage facilities for equipment, material, and other like items.
- 7.4.3.15. Location and dimensions (including height) of facilities for garbage, rubbish, and other waste collection and disposal. Description and plan of capacity and location of means of sewage disposal together with approval of the Board of Health and evidence of soil suitability for such disposal (test pit locations shall be shown on the plans).
- 7.4.3.16. All facilities for accommodating storm-water drainage and snow-melt runoff from

all buildings, driveways, parking areas, and service areas on the site. The site plan shall be accompanied by a storm drainage study based on the design criteria of a 25-year storm, certified by a professional engineer and a proposed drainage system plan, both surface and subsurface, showing measures proposed to prevent pollution of surface or ground water, soil erosion, increased run-off, changes in ground water level and flooding. All storm water drainage shall be contained on site unless otherwise approved by the Planning Board. Major structures, culverts, , detention basins, and retention basins shall accommodate the 100 year frequency storm event. Leaching pits, basins, and galleys shall be installed and shall conform to Subsection 5.3.12.

Soil Percolation tests shall be conducted in accordance with Subsection 5.3.12.2. All facilities for accommodating storm water drainage shall comply with the relevant paragraphs of Regulation 5.3. Runoff from all structures shall be accommodated into leaching basins unless otherwise approved by the Planning Board. All runoff from parking areas, driveways and service areas on the site shall be directed into a dedicated oil-water separator. Roof runoff shall be discharged into drywells.

- 7.4.3.17. A plan for the control of erosion, siltation, and dust before and during construction including appropriate ground cover and street sweeping of adjacent public ways as required by the Board. The Board may require seeding.
- 7.4.3.18. Location and dimensions (including height) of existing and/or proposed free standing signs and the manner of their external illumination.
- 7.4.3.19. All private wells within 200' of the property.
- 7.4.3.20. All public or community water supply wells within 1000' of the property.
- 7.4.3.21. Removal of earth shall be performed in accordance with the requirements set forth in Appendix A in accordance with the Town of Norfolk Bylaws and as specified by other agencies. The applicant shall also indicate on the plan the cubic yards of gravel borrow that will be trucked onto the site. The Board may require certification of compliance with G.L. c. 21E, as most recently amended, with respect to the existence of contamination or threat of contamination on the site.
- 7.4.3.22. The maximum size vehicle, including trailers, expected to use the site after construction shall be identified by length, width, height, and AASHTO designation.
- 7.4.3.23. All existing and proposed structures shall have indicated on the plans their garage and pedestrian entrances and exits and their openings.
- 7.4.3.24. All existing and proposed public and private utilities, above and below grade, along with their type, size, and class, shall be shown on the plan. All proposed and existing public and private utilities on site shall be located underground.
- 7.4.3.25. All waivers proposed by the Applicant and approved by the Planning Board or a statement to the effect that no waivers are being requested shall be indicated on the plan.

- 7.4.3.26. There shall be no impact of drainage on abutting public water supply.
- 7.4.3.27. The construction requirements of parking lots and driveways shall be the same as that for Secondary Streets.
- As may be specifically allowed under the Norfolk Zoning Bylaws, parking lots may be other than bituminous pavement as follows:
- 7.4.3.27.1. Parking areas serving municipal open spaces shall be classified as being in one of two use categories: Conservation-Passive Uses for which vehicle use is infrequent (trips/day) and of low capacity (parking less than 20 cars) and Recreation-Active uses for which vehicle use is frequent (trips/day) and of high capacity (parking above 20 cars).
- 7.4.3.27.2. Drainage for both Conservation-Passive and Recreation-Active parking areas shall be designed such that there is no increased runoff impact from the built condition as compared to the existing condition. All drainage design shall be under the direction of a licensed professional as is required for any site plan documents. The site design shall strive to mitigate existing land deficiencies that create an undesirable impact off-site.
- 7.4.3.27.3. Parking area design shall establish that there is satisfactory sub-surface soil material to structurally support the proposed vehicle use. The sub-grade shall meet design standards required for local roadway design of residential subdivisions. There shall be a minimum of eight (8) inch thickness of graded, crushed stone base meeting the installation and stone material standards of a local residential subdivision street. There shall be a 4" thick dense graded crushed stone layer and 4" thick bituminous concrete pavement corresponding to the standards for a local residential subdivision roadway.
- 7.4.3.27.4. Conservation-Passive parking area surfaces may be one of the following surfacing options:
- Pavers and grass at 1-1/2" minimum paver thickness;
  - Natural or synthetic honeycomb pavers a minimum of 6" deep and bearing on fully compacted base material and filled/surrounded with porous granular materials;
  - A 2" thickness of graded crushed stone with aggregate at 3/4" plus 1" size.
- 7.4.3.27.5. Recreation-Active area surfaces may be one of the following surfacing options:
- 2-1/2" thick asphalt binder course
  - 2-1/2" thick permeable asphalt
  - 2-1/2" of compacted stone dust
- 7.4.3.27.6. Parking spaces are to be adequately denoted by permanent measures as approved by the Planning Board.
- 7.4.3.27.7. Maintenance Covenant: All municipal parking areas built for Conservation or Recreation uses under a Special Permit shall be subject to a periodic site review by a licensed highway design professional for permit/use reinstatement. A report

prepared by a licensed highway design professional on parking area conditions (complete with photographs) shall be submitted at least once every 36 months after construction completion.

- 7.4.3.27.8. Public access and public safety conditions shall be a condition of any such parking lot use. Such conditions as safe access from a public way, lighting and traffic controls, lane and parking stall markings, parking area travel way, etc. shall be in conformance with the regulations for normal Site Plan Approval.
- 7.4.3.27.9. All other aspects and criteria listed in the Zoning Bylaws for granting of any Special Permit shall be applicable for these Conservation and Recreation Parking Area Special Permits.
- 7.4.3.28. Parking stalls shall be painted according to M.H.D. specs, as most recently amended. Lines shall be at the head of and along the sides of parking stalls. Lines shall be a minimum of 4" wide and shall be one consistent color, either yellow or white. Stalls are measured from inside edge of lines. All pavement markings shall be painted with reflectorized paint.
- 7.4.3.29. Any additional details that may be pertinent.
- 7.4.3.30. The applicant shall provide a written statement describing how the proposed site plan application meets the general conditions of approval of Norfolk Zoning Bylaw Section F.11.c.

## 7.5. SUBMISSION

### 7.5.1. General

The following shall be submitted to the Planning Board Office:

- 16 copies of the Site Plan
- 16 copies of the application form "Site Plan Approval Application"
- 16 copies of the site plan approval checklist
- Application Fee (See Fee Schedule for amount of fee.)
- Review Fee (See Fee Schedule for amount of fee.)
- 3 copies Certified List of Abutters from Assessors' Office
- Application to Design Review Board
- Copy of any decisions for subject property from Zoning Board of Appeals
- 5 copies of stormwater drainage report
- 10 copies of traffic assessment (study)
- Completed Bank Tax ID Form for review fee funds
- Letter regarding use of Board's consultant - See Section 2.5.
- Good Standing Approval from Tax Collector's Office"

Note: Please also contact the Board of Health office for its Site Plan fee.

The Planning Board shall distribute, within five (5) business days of acceptance by the Board, one (1) copy each to the Building Commissioner, Board of Health, Conservation Commission, Water Commissioners, Police Chief, Fire Chief, and Highway Superintendent. The agencies receiving these copies shall have up to 21 days to make recommendations to the Planning Board. Should these reviews and that of the Planning Board reveal omissions of required information or instances of non-compliance with Town Bylaws, and/or Rules and Regulations, the site plan

may be returned to the applicant with a list of the discrepancies noted for correction and re-submittal no later than 45 days from the date of the original filing of the Site Plan.

- 7.5.1.1. The application must be accompanied by three (3) copies of a certified list, from the Board of Assessors, of the names and addresses of all abutters and abutters to abutters within 300' of the subject property taken from the most recent tax list.
- 7.5.1.2. If the property was previously granted a Special Permit or Variance from the Zoning Board of Appeals, a copy of the decision and the site plan reviewed by the Board of Appeals must also accompany the application. If the property is before the Board of Appeals for a Special Permit at the time of application to the Planning Board for Site Plan Approval, a copy of the application form submitted to the Zoning Board of Appeals shall also be submitted to the Planning Board.
- 7.5.1.3. The site plan shall be prepared by a Professional Engineer (PE) and a Registered Land Surveyor licensed to practice in the Commonwealth of Massachusetts as appropriate, and certified by same with their seal, stamp and signature. The proposed use(s) and site development shall conform to the requirements set forth in the Town of Norfolk Zoning Bylaws and other regulations as applicable. The plan shall conform to the administrative requirements set forth herein.
- 7.5.1.4. Technical data, as deemed by the Planning Board to be necessary, shall be provided to support the site plan and resulting findings.
- 7.5.2. Traffic Congestion Control and Analysis  
The provisions of subdivision regulation 3.3.2.23.1.-3 shall apply to projects submitted for site plan review, substituting the word "applicant" for the word "subdivider" therein.
- 7.5.3. Waivers  
Upon request of the applicant, the Planning Board may waive the requirement to provide any of the planning information listed under Section 7.4. which it deems not relevant to the proposed development.
- 7.6. SITE PLAN SUBMITTAL FEE
- 7.6.1. See Planning Board Fee Schedule (Appendix A, Volume I).  
  
NOTE: Contact the Board of Health regarding its Site Plan Fee(s).
- 7.7. HEARING
- 7.7.1. Notice
- 7.7.1.1. Notice of hearings shall be advertised as required by the provisions of General Laws, Chapter 40A, Section 11.
- 7.7.1.2. The public hearing shall be held within 65 days from the date of the proper filing of the application.

The public hearing shall be conducted in accordance with the rules and proce-

dures prescribed by the Planning Board as required by the Zoning Act of Massachusetts General Laws and shall be open to the public and in accordance with Mass. G.L. Ch. 39, Sec. 23 a, b, & c, as amended. ("Open Meeting Law")

7.7.3. Representation and Absence

An applicant may appear in his own behalf, and/or be represented by an agent or attorney. In the absence of any appearance without due cause on behalf of an applicant, the board may decide on the matter using the information it has otherwise received.

7.8. DECISION

7.8.1. Time

Within 90 days from the conclusion of the public hearing, the Planning Board shall vote on Site Plan Approval.

7.8.2. Modification/Amendment/Endorsement

The Planning Board shall have the power to modify or amend its approval of a site plan on application of the person owning or leasing the premises, or upon its own motion in the event of changes in physical conditions sufficient to justify such action within the intent of the Zoning Bylaws. All of the provisions applicable to approval shall, where apt, be applicable to such modification or amendment.

7.8.3. Voting Requirement

7.8.3.1. The concurring vote of at least four (4) members of the Board shall be necessary to grant Site Plan Approval. Any amendments or conditions proposed to an original motion to grant Site Plan Approval shall be declared passed, based on a simple majority vote.

7.8.3.2. The record shall show the vote of each member upon each question or, if failing to vote, indicate reasons for its decision.

7.8.4. Written Notification of Decision/Detailed Record

7.8.4.1. The Planning Board shall issue a written decision to the applicant giving the reasons for its decision.

7.8.4.2. A detailed record of proceedings, including the vote on each question shall be filed with the Town Clerk.

7.8.4.3. If site plan approval is granted by the Board, the applicant shall submit a revised plan reflecting any and all Conditions of Approval within 60-days of filing of the Board's decision with the Town Clerk.

7.9. GENERAL

7.9.1. Application

Prior to acceptance, all applications shall be reviewed by the Planning Board or its agent. If the Planning Board decides that an application is incomplete, it shall be deemed invalid and the fee returned. If desired, the applicant may resubmit a completed application, which shall be treated as a new application.

7.9.2. Withdrawal  
An application may be withdrawn, without prejudice, by notice in writing to the Board at any time prior to the hearing by the Planning Board. After an advertisement, withdrawal, without prejudice, only by Planning Board Approval.

7.9.3. Re-application  
Deleted December 14, 1995

7.10. ONE-YEAR LIMITATION OF GRANTS; EXTENSIONS

7.10.1. If an approval is granted by the Planning Board, all permits necessary for the prosecution of the work shall be obtained and construction shall be commenced within one year from the date of filing of the Planning Board's decision in the office of the Town Clerk.

7.10.2. It is recommended that requests for extensions be submitted in writing to the Planning Board at least 60 days prior to the expiration date of Site Plan Approval.

7.10.3. Reasonable extension of said time may be granted by the Board for good cause shown.

7.10.4. The Planning Board is herein authorized to assess observation fees and require applicants to have site plan improvements observed during the construction phase of the project as per Section 6.6.1. (where applicable) and "Form K2 - Observation of Site Plan Improvements". See applicable portions of Sections 3, 4, 5, 6)

7.11. APPEAL OF DECISION

7.11.1. Any appeal of the decision of the Planning Board to any order or decision relative to Site Plan Approval shall be made in conformance with the conditions set out by the Zoning Act. All such appeals shall be conducted in accordance with the Zoning Act. (MGL Ch. 40A, Section 17)

## **SECTION 8.0. REGULATIONS FOR NON-RESIDENTIAL AND MIXED USE DEVELOPMENTS IN THE BUSINESS AND COMMERCIAL ZONING DISTRICTS**

INTRODUCTION (Adopted under the Subdivision Control Law, Sections 81-K to 81GG inclusive, Chapter 41, *Massachusetts General Laws*)

- 8.1. Purpose  
These subdivision regulations are adopted under the provisions of Chapter 41 of the *Massachusetts General Laws* consistent with the purpose of protecting the safety, convenience and welfare of the inhabitants of the Town of Norfolk 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 a planning board ... under the subdivision control law shall be exercised with due regard 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 lessening congestion in such ways and in the adjacent public ways, for reducing danger to 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 applicable Zoning ordinances or Bylaws; for securing adequate provisions 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 the ways in a subdivision with each other and with the public ways in the city or town in which it is located and with the ways in neighboring subdivisions". (Mass. General Laws, Chapter 41, Section 81K)

To accomplish this purpose, this Section provides design standards for non-residential and mixed use (commercial/residential) developments and redevelopments within the Business and Commercial zoning districts of the Town.

For instance, in the B-1 District (Town Center), the regulations provide design standards for redevelopment and new development which promote and enhance the traditional New England "small town" atmosphere (e.g., where buildings are located close to the street). In the C-1 District (Routes 1A/115), the regulations provide design standards for redevelopment and new development which cater to vehicular traffic, rather than pedestrian-oriented uses.

- 8.2. Authority  
Under the authority vested in the Planning Board of the Town of Norfolk by Section 81-Q of Chapter 41 of the *Massachusetts General Laws*, the Board hereby adopts these amended Rules and Regulations governing the subdivision of land in the Town of Norfolk.
- 8.3. Basic Requirements  
This section, Section 8, contains specific regulations for non-residential and mixed use developments. The following sections of Volume I of the Norfolk Rules and Regulations also remain applicable for non-residential and mixed use

developments:

- 4.2. Relation to Surrounding Areas
- 4.3. Minimum Lot
- 4.4. Access Through Another Municipality
- 4.5. Reserve Strips
- 4.6. Further Subdivisions
- 4.7. Re-subdivision
- 4.11. Open Space, Parks, and Playgrounds
- 4.12. Protection of Natural Resources
- 4.15. Slopes
- 4.16. Driveways
- 4.19. Storm Drainage Systems
- 5.2.2. Clearing and Grubbing
- 5.3. Stormwater Drainage System Construction Specifications
- 5.4. Water Systems
- 5.5. Sanitary Sewers
- 5.6. Private Utilities
- 5.8. Fire Alarm Systems
- 5.11. Street Signs
- 5.14. Bounds
- 5.16. Final Cleanup
- 5.17. Certificates of Compliance
- 5.18. Maintenance
- 5.19. Stop Work Orders

8.4. Design Guidelines for Streets, Roadways and Utilities

- 8.4.1. The subdivider shall observe all design standards for land subdivision as hereinafter provided. These standards shall be considered minimum standards and shall be varied from or waived only as provided in Section 6, "Administration".

All subdivisions shall be designed and improvements made by the applicant consistent with the requirements of Section 8.4.

Subdivisions within the B-1 District (Town Center) shall, where practicable, create or encourage land use and street design which is compatible with and encourages pedestrian traffic. Building placement, as close to the street as possible, in conjunction with display windows to the front, further enhances the pedestrian orientation of the area. In addition, shade trees shall be located to frame the streets and roadways, when mature, creating a canopy effect. Street furniture, such as benches, decorative street lighting and trash receptacles, will help to create an enhanced pedestrian environment.

Within the C-1 District (Routes 1A/115), the land use and street design shall, where

practicable, be more oriented toward the automobile rather than toward the pedestrian. Adequate landscaping and pedestrian access within the site boundaries of the non-residential and mixed use developments shall be provided.

8.4.2. Design and construction shall reduce, to the extent reasonably possible, the following:

- Volume of cut and fill;
- Area over which existing vegetation will be disturbed, especially on land within 200 feet of a river, pond, or stream, or having a slope of more than 15%;
- Number of mature trees removed;
- Visual prominence of man-made elements which are not necessary for safety or orientation;
- Blockage of vistas through new development;
- Removal of existing stone walls;
- Number of driveways exiting onto existing streets;
- Alteration in ground water or surface water levels or chemical constituents;
- Disturbance of important wildlife habitats, outstanding botanical features, scenic or historic environs;
- Soil loss or instability during and after construction; and,
- Within the B-1 District (Town Center), the area devoted to motor vehicle travel.

8.4.3. Design and construction shall increase, to the extent reasonably possible, the following:

- Configuration using collector/major arterial streets to avoid traffic congestion on primary streets providing building frontages;
- Visual prominence of natural features of the landscape;
- Street layout facilitation of solar orientation of buildings;
- Use of curvilinear patterns;
- Within the B-1 District (Town Center), improve the view of, and the view from, buildings and other prominent vistas;
- Within the B-1 District (Town Center), promote active pedestrian way design so that it is generally more convenient and pleasant for most of the community to walk short distances than to drive; and,
- Within the B-1 District (Town Center), promote the creation of vista terminations.

8.4.4. Referenced Standard

*A Policy on Geometric Design of Highways and Streets*, by the American Association of State Highway and Transportation Officials (AASHTO), latest edition, as amended. The design guidelines herein further amend AASHTO standards insofar as they apply to the Town of Norfolk.

8.4.5. Blocks

In general, the maximum perimeter of blocks formed by streets shall not be less

than 300 feet nor more than 2,000 feet. However, in the B-1 District (Town Center), the following regulation shall apply specifically to blocks:

- 8.4.5.1. The maximum perimeter of the blocks formed by streets shall not exceed 2,000 feet. Average perimeter of all the blocks within the subdivision, shall be 1,000 to 1,600 feet. Average block depth, within the subdivision, shall be no less than 200 feet.
- 8.4.6. Access and Maintenance Easements
- 8.4.6.1. Layout

Wherever possible, easements shall be continuous from block to block and their layout shall create as few irregularities as possible. The minimum easement width shall be 20 feet, except as otherwise required in the B-1 District (Town Center), "Within the Business Core", wherein the minimum easement width shall be 13 feet (refer to **Figures 28 and 29** of Volume II of Norfolk Rules and Regulations).
- 8.4.6.2. Watercourses

Streams or watercourses shall be provided with an emergency/maintenance access easement conforming substantially with the line of its course, but not less than 20 feet in width centered on its midpoint. Streets or pedestrian ways, parallel to the streams or watercourses, and/or appropriate accesses may be required in connection therewith. The placement of streams or watercourses into open or covered culverts shall be kept to a minimum.
- 8.4.6.3. Utilities

Easements for utilities across lots shall generally follow lot lines or shall be centered on the rear or side lot lines and shall not be less than 20 feet in width, except as otherwise required in the B-1 District (Town Center), "Within the Business Core", wherein the minimum easement width shall be 5 feet or greater, in order to reduce right-of-way widths (refer to **Figure 28** of Volume II of Norfolk Rules and Regulations). In this instance, the utilities may be permitted by the Planning Board to be placed in the 2-foot grassed area between the paved way and the property line, and the 3-foot tree easement immediately abutting the right-of-way. Utilities may also be permitted to be located under parking areas within the right-of-way and pedestrian ways abutting the right-of-way.
- 8.4.6.4. Trees

Tree easements, if necessary, shall follow and be outside of the right-of-way lines and shall be 10 feet in width and grassed, except as otherwise required in the B-1 District (Town Center), "Within the Business Core", wherein the minimum easement width shall be 3 feet and grassed (refer to **Figures 28 and 29** of Volume II of Norfolk Rules and Regulations). See Norfolk Zoning Bylaws for "Pedestrian Ways and Street Trees (B1) and Street Trees (C1)".
- 8.4.7. Pedestrian Ways/Sidewalks

Pedestrian ways or foot paths shall be required to provide convenient circulation or access to schools, playgrounds, shopping, churches, transportation, parks, conservation areas and/or other facilities. Such ways shall consist of an easement

of at least 20 feet, including sidewalks of at least 5 feet in width (refer to **Figure 29** of Volume II of Norfolk Rules and Regulations).

In the B-1 District (Town Center), "Within the Business Core", such ways shall consist of an easement of at least 11 feet immediately abutting the right-of-way, including sidewalks of at least 8 feet in width (refer to **Figure 28** of Volume II of Norfolk Rules and Regulations).

In the C-1 District (Routes 1A/115), for lots fronting on Routes 1A/115 in the "On Highway" area, such ways shall consist of an easement and setback of at least 70 feet in width immediately abutting the right-of-way in order to accommodate a 5-foot wide sidewalk immediately adjacent to the head-in parking area of the frontage road, on the building side (refer to **Figure 36** of Volume II of Norfolk Rules and Regulations). See Norfolk Zoning Bylaws for "Pedestrian Ways and Street Trees (B1)".

Pedestrian ways within the B-1 District (Town Center) are required to include cement concrete sidewalks, trees and grass strips abutting the right-of-way, street furniture (benches and trash receptacles), and decorative street lighting. Trees within the sidewalk shall have tree grates and tree guards. Refer to **Figure 30** in Volume II of Norfolk Rules and Regulations.

All sidewalks within the B1 District (Town Center) shall be constructed of a minimum of four inches of cement concrete constructed over twelve (12) inches of processed gravel with expansion joints at thirty-two (32) foot intervals on center and control joints at four feet on center spacing. The width of sidewalk is to be a minimum of eight feet. (See M.H.D. Section 701).

#### 8.4.8 Streets

##### 8.4.8.1. Arrangement

The proposed streets shall be considered in their relation to existing and planned streets, topographic and geologic conditions, public convenience and safety, and for safe vehicular travel. Due consideration shall also be given by the Developer to the attractiveness of the street layout in order to obtain the maximum amenity of the subdivision and to avoid excessive cut and fills.

Long straight roadway sections shall be avoided on streets having a design speed of 30 m.p.h. or greater. The maximum length of a straight street in this instance would be 2,200 feet. Further, in the Town Center, straight roadway sections shall be terminated by a "vista termination" (i.e., a lot, building--church with spire, government building, monument/statue site, fountain) located at an intersection or at the end of streets or pedestrian ways. This vista termination shall be prominently visible from one or more streets, or ways, approaching said site.

In addition, the proposed streets shall provide for appropriate continuation of existing streets of similar design speed, and the extension of streets into adjoining land.

8.4.8.2. Access To Feeder Streets

Subdivisions, and extensions of subdivisions, serving or capable of serving 25 lots or more shall have at least two points of access to an existing through street separated by a minimum distance of 350 feet or shall have two separate passable access routes via existing primary street(s) to an existing through street where the points of access are separated by a minimum distance of 350 feet..

8.4.8.3. Reconstruction

Provision, satisfactory to the Planning Board, shall be made for the reconstruction of adjacent public ways or the addition of alternate access roads or other remedial steps in cases where the development of the subdivision may cause congestion or a danger to pedestrian or vehicular traffic on the adjacent public ways.

8.4.8.4. Street Jogs

Street jogs (i.e., the continuation of a street through an intersection where the centerline of the paved surface is not aligned on both sides of the intersection) are prohibited.

8.4.8.5. Reverse Curves

Reverse curves on streets may be separated by a straight section of road of at least 150 feet in length if a street has a design speed of 30 m.p.h. or less. This can be addressed on a case-by-case basis during the plan review process to insure that public safety is not impacted.

8.4.8.6. Level of Service

In addition to the requirements of section 3.3.2.23, "Traffic Congestion Control and Analysis", the following information shall be considered when determining "Level of Service" (LOS) flows for traffic analysis.

LOS is an expression of the quality of traffic flow. It is a commonly used measure of the effectiveness of peak hour traffic conditions, taking into account such factors as automobile and truck volumes, roadway capacity, roadway speed, grades, parking restrictions, pedestrian activity, the progression of traffic flow along an arterial, roadway types and widths, as well as anticipated delays.

LOS is designated in a range from Level "A", which is the optimal condition where roadway operating conditions are at their best, to Level "F", indicating traffic jam conditions. For instance, LOS "A" represents free-flowing conditions without stopping. LOS "B", "C" and "D" represent increasing levels of delay in approaching intersections, as indicated in the following charts (8.4.8.6.1. and 8.4.8.6.2.). Towns generally strive for operating conditions at LOS "C" or better, however, during peak flows this is not always possible. LOS "D" is generally considered as the boundary between acceptable and unacceptable traffic congestions. LOS "E" and "F" are generally associated with very long traffic congestion and should be avoided. At these low levels of service, a driver may have to wait for two or more light changes at a signalized intersection, or over a minute to enter and cross another street at an unsignalized intersection. Often it is necessary to design for

LOS "E" conditions in heavily traveled or congested areas.

8.4.8.6.1

Signalized Intersections

LOS for signalized intersections is defined in terms of the average stopped delay in seconds per vehicle approaching the intersection for the peak 15-minute analysis period of a peak hour.

Level of Service Criteria for Signalized Intersections

Level of Service	Expected Delay (seconds)
A	0 to 5.0
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.1 to 60.0
F	60.0 +

Source: *Highway Capacity Manual, Special Report #209, 1985*

8.4.8.6.2.

Un-signalized Intersections

Traffic operations at un-signalized intersections are given LOS rankings on the basis of major street turning movements into minor cross streets and the minor cross-street traffic flows. Except for turning movements blocking traffic at constricted locations, typically, major street traffic is minimally affected by minor street flows. The LOS ranking of an un-signalized intersection is determined by calculating the reserve capacity of traffic movements to and from the minor street. "Reserve capacity" is defined as the number of additional vehicles which can be safely accommodated at an un-signalized intersection for a particular traffic movement. Negative reserve capacities indicate that vehicles are (or would be) accepting gaps in traffic that are considered to be less than safe under prevailing conditions. These prevailing conditions are principally affected by the type of control (stop or yield sign), traffic speeds, and sight distances at an un-signalized intersection. Based on available gaps between vehicles on the major street, the reserve capacity of the left turns from the major street and traffic movements from the minor street approach(es) can be determined.

Level of Service Criteria for Un-signalized Intersections

Reserve Capacity (vehicles per hour)	Level of Service	Expected Delay
400 +	A	Little or no delay
300 to 399	B	Short traffic delays
200 to 299	C	Average traffic delays
100 to 199	D	Long traffic delays
1 to 99	E	Very long traffic delays
0	F	Extreme delays/congestion

Source: *Highway Capacity Manual, Special Report #209, 1985*

8.4.8.7.

Right-of-Way Widths and Alignments - Design Speed

On all classifications of streets, the following characteristics as shown in the chart on the next page entitled, "Right-of-way Widths and Alignments based on Design Speed", shall be the minimum acceptable (see also **Figures 31 to 34** in Volume II of Norfolk Rules and Regulations):

*(COMMENT: In the following chart, the minimum traveled centerline radius was calculated without superelevation (a superelevation of 0.04 is commonly used). This is supported by AASHTO, as noted in A Policy on Geometric Design of Highways and Streets, page 210:*

*Although super-elevation is advantageous for traffic operations, various factors often combine to make its use impractical in many built-up areas. Such factors include wide pavement areas, need to meet the grade of adjacent property, surface drainage considerations, and frequency of cross streets, alleys and driveways. Therefore, horizontal curves on low speed streets in urban areas are frequently designed without superelevation, counteracting the centrifugal force solely with side friction.*

*Therefore, it is recognized that in areas where there will be cross streets, alleys, driveways and pedestrians, these factors are not well accommodated by super-elevated streets.*

<b>Right of Way Widths and Alignments Based on Design Speed</b>				
Street Classification	Drive	Residential	Secondary	Primary
Design Speed (MPH)	15	20	25	30
Minimum Curb to Curb (Ft)				
Two Way No Parking	24	24	26	28
Two Way Parking 1 Side [1]	32	32	34	35
Two Way Parking 2 Sides [1]	40	40	42	42
Minimum Right-of-Way (Ft) [2]	50	50	60	60
+Minimum Curb Radius at Intersections (Ft) [3]	20	20	20	25
Minimum Traveled Way Centerline Radius (Ft) No Superelevation	50	90	170	280
Traveled Way Coincident with Centerline	Not Required	Not Required	Not Required	Required
Stopping Sight Distance (Ft) [4]	90	125	150	200
Intersection Sight Distance (Ft) [4]	N/A	200	340	400
Minimum Intersection Spacing Centerline to Centerline (Ft)	N/A	350	350	350
Two Way Traffic Volume ADT/DHV	<400/<200	<400/<200	<800/<300	<800/<400

Minimum Grade (Percent)	1	1	1	1
Maximum Grade (Percent) [5]	10	10	8	6

<b>Sight Distance Summary</b>		
85 <sup>th</sup> Percentile Speed [MPH]	Stopping Sight Distance [Feet]	Corner Sight Distance [Feet]
35	225-250	390
40	275-325	445
45	325-400	500
50	400-475	555
55	450-550	610
60	525-600	665
65	650-725	720
70	625-800	775

- [1] On-street parking is required in the B-1 District (Town Center) or as noted in subsection 8.5.4.13 and in all cases shall be 9 ft in width in lieu of a shoulder 1 foot in width and shall be parallel to the street.
- [2] The right-of-way may be reduced by the Planning Board to accommodate a reduction in the utility easement to a minimum of 2 feet in width. Refer to Figure 29, Volume II of the Norfolk Rules & Regulations
- [3] The intersection of roads with differing design speeds shall be designed in accordance with Section 8.4.9.2.
- [4] For design purposes, sight distances shall be based on the 85<sup>th</sup> percentile speed, which is the speed below which 85 percent of the vehicles are traveling.
- [5] At intersections where the gradient exceeds 3 percent, a leveling area of not less than 100 feet is required. Refer to subsection 8.4.10.3.

8.4.8.7.1. Street design speeds shall be identified on the plans. Posted speed limits shall not exceed design speeds. To facilitate the balance of pedestrians and vehicles in the B-1 District (Town Center), 20 m.p.h. design speeds are encouraged. In other areas, the following criteria shall assist in determining the appropriate design speed to be required:

- the length of the street, the number of lots being served, and the distance between buildings;
- the layout and safety concerns of the street--whether straight, curved, sloped, flat; whether paved or gravel; proximity of street light poles, stone walls or fences to the paved way;
- the design speeds of adjoining and surrounding streets;
- the number of street intersections existing and proposed in the area, including existing hidden intersections;
- the present and estimated future traffic volumes, the number of parked cars or other obstructions on the street;
- the amount of pedestrian activity in the area;
- land use interface (e.g., commercial abutting residential);
- the driver's scenic and/or historic view of existing street characteristics and

amenities; e.g., existing stone walls, mature canopy trees, wetlands, historic buildings/monuments and sites of importance, rock outcroppings; etc.

- proximity to school sites, hospitals, fire and police stations and other public use buildings; and
- crosswalks, train level crossings as well as farm crossings (e.g., for equipment and animals).

8.4.9. Intersections

8.4.9.1. Rights-of-way shall be laid out so as to intersect as nearly as possible at right angles. No right-of-way shall intersect any other right-of-way at less than 75 degrees. Intersections of existing and proposed streets will not be allowed at intervals of less than 350 feet between centerlines.

8.4.9.2. Property lines at right-of-way intersections shall be cut back to provide for a curb radius on the roadway as indicated in subsection 8.4.8.7, "Right-of-way Widths and Alignments -- Design Speed". The minimum curb radius at the intersection shall be 20 feet or greater depending on Design Speed, and road configuration shall be sufficient to accommodate "WB-50" vehicle turning movements. In instances where streets of differing design speeds intersect, the smaller curb radius requirement shall be required.

8.4.9.3. Both the horizontal and vertical sight distance and stopping sight distance at intersecting roadways within a subdivision and at subdivision roadways intersecting with existing roadways shall be provided as indicated in subsection 8.4.8.7, "Right-of-way Widths and Alignments -- Design Speed".

8.4.9.4. Horizontal and vertical stopping sight distances in all directions at existing and proposed intersections shall be noted on the plans.

8.4.10. Vertical Alignment

8.4.10.1. All changes in grade shall be connected by vertical curves of sufficient length to afford adequate sight distances as indicated in the following chart:

Design Speed (mph)	Stopping Sight Distance (ft)
15	90
20	125
25	150
30	200

8.4.10.2. For crest vertical curves, the length in feet shall be computed from the following formulas:

$$\text{When } S \text{ is less than } L, \quad L = \frac{AS^2}{100(\sqrt{(2h_1)} + \sqrt{(2h_2)})^2}$$

$$\text{When } S \text{ is greater than } L, \quad L = 2S - \frac{200(\sqrt{(2h_1)} + \sqrt{(2h_2)})^2}{A}$$

where: L = length of vertical curvature  
 S = sight distance  
 A = algebraic difference in grades, percent.  
 h<sub>1</sub> = 3.50 feet (eye of driver)  
 h<sub>2</sub> = 2.0 feet (height of object)

For sag vertical curves, the length in feet shall be computed from the following formulas:

$$\text{When } S \text{ is less than } L, \quad L = \frac{AS^2}{400 + 3.5S}$$

$$\text{When } S \text{ is greater than } L, \quad L = 2S - \frac{400 + 3.5S}{A}$$

where: L = length of vertical curvature  
 S = sight distance  
 A = algebraic difference in grades, percent.

Minimum length of a sag or crest vertical curve shall be 100 feet. All vertical curves shall show the following on the profiles:

- P.V.I. Station and elevation
- High point or low point station and elevation

8.4.10.3. Where the proposed grade of any street meeting another existing or proposed street, whether said other street is within or adjacent to the subdivision, exceeds 3%, a leveling area shall be provided for a distance of not less than 100 feet, measured from the edge of right of way of the other street. The grade of the centerline or of any vertical curve tangent shall not exceed a negative 1%.

8.4.11. Cul-de-sacs  
 Cul-de-sacs should be created to accommodate a WB-50 vehicle as specified by AASHTO. A cul-de-sac pavement shall have a minimum outer radius of 47' and a maximum inner radius of 20'.

8.4.11.1. The paved portion of cul-de-sacs, whether temporary or permanent, shall not be less

8.4.11.2. than 250 feet in length and not exceed 500 feet in length measured from the farthest end of the paved turnaround to the intersection (centerline) of the nearest intersecting through street.

8.4.11.2.1. Any easement in any turnaround shown on a plan approved under the Subdivision Control Law other than an easement appurtenant to a lot abutting

the turnaround, shall terminate upon the approval and recording of a plan showing extension, and the recording of a certificate by the Planning Board of the construction of such extension.

- 8.4.11.2.2. Cul-de-sacs, whether permanent or temporary, shall provide a turn around at the closed end(s) having a property line diameter of 120 feet; a radius at the outer edge of traveled way of 47 feet, and a landscaped island in the center. Islands shall be designed to allow for proper emergency vehicle and snowplow access. A "Not a Through Street" sign shall be provided at the entrance to a cul-de-sac and its location shown on the subdivision plan.

In the case of a temporary turn around, the plan shall show an easement(s) to accommodate the specifications of this subsection. The frontage of lots abutting a temporary turnaround shall be measured along the permanent street right of way and not the "bulb" of the cul-de-sac. See detail (**Figure 43**). Any easement in any turnaround shown on a plan approved under the subdivision control law other than an easement appurtenant to a lot abutting the turnaround, shall terminate following **(a)** the approval and recording of a plan showing extension of the roadway, and **(b)** the recording of a certificate by the Planning Board of the construction of such extension.

- 8.4.11.2.3. Provisions for Future Through Access

All cul-de-sacs, except those determined by the Planning Board to be permanent in nature, shall include a right-of-way running from the closed end(s) of the cul-de-sac to the terminus points as described below for purposes of providing future through access. The width of said right-of-way shall be equal to the right-of-way width of the cul-de-sac street. Said right of way shall be laid out and construction plans included as part of the subdivision plan. The land in the right of way shall be turned over to the Town of Norfolk as a gift of land prior to release of any lot in the subdivision.

The terminus point of the right-of-way shall be both to any adjacent Town-owned conservation land, and as follows:

- a. first, to any street which abuts the property line of the parcel being subdivided, other than the street which forms the intersection with the paved portion of the cul-de-sac;
- b. second, if (a) is not applicable, to any right of way or street easement of at least 20 feet right of way width which abuts the property line of the parcel being subdivided;
- c. third, if (a) and (b) are not applicable, to the point on the property line of the parcel being subdivided which is closest to the closed end of any cul-de-sac existing on any adjacent parcel;
- d. fourth, if (a), (b) and (c) are not applicable, to the point on the property line of the parcel being subdivided which is closest to any existing through street on any adjacent parcel, other than the street which forms the inter-

section with the parcel portion of the cul-de-sac;

- e. fifth, if (a), (b), (c), and (d) are not applicable, to the point on the property line of the parcel being subdivided which is closest to any adjacent "land-locked" (i.e., without adequate frontage) parcel; and
- f. sixth, if (a), (b), (c), (d) and (e) are not applicable, to the point on the property line of the parcel being subdivided which is closest to the largest adjacent buildable parcel of land.

For purposes of this regulation, references to the point "closest" shall exclude wetlands. The easement created by this section shall, to the extent practicable, be laid out to exclude lakes, ponds, wetlands, woodlands, water courses and steep terrain.

8.4.11.2.4. An easement for access and maintenance shall also be provided from all cul-de-sacs to any adjacent Town-owned conservation land. Such easements shall have a minimum width of 20 feet.

8.4.11.2.5. Cul-de-sacs shall not have a grade of greater than 4% for the last 100 feet at the closed end.

8.4.11.2.6. Cul-de-sac Plantings  
The applicant shall submit a landscape plan for the central portion of a cul-de-sac. The following are permitted:

- o Trees
- o Planting with ground cover and spreading mulch between plants for weed control;
- o Planting perennial grass by either sod or seed;
- o Planting ornamental shrubs of a type acceptable to the Board;
- o Retaining existing vegetation with the approval of the Board;

The standards of the American Nurserymen Association and the specifications of the Associated Landscape Contractors of Massachusetts shall apply to landscaping subject to these regulations.

8.4.11.3.1. Standards and Specifications  
The standards of the American Nurserymen Association and the specifications of the Associated Landscape Contractors of Massachusetts shall apply to landscaping subject to these regulations.

8.4.11.4. Provisions for Future Through Access (Easements)  
An easement shall be provided from the cul-de-sac to the terminus points as described below for purposes of providing future through access. The width of said easement shall be equal to the right-of-way width of the cul-de-sac street, but in no event less than 20 feet wide. Easements serving Town Conservation Land shall be 20 feet wide.

8.4.11.4.1. The terminus point of the easement(s) shall be both to any adjacent Town-owned conservation land, and as follows:

- (a) first, to any street which abuts the property line of the parcel being subdivided, other than the street which forms the intersection with the paved portion of the cul-de-sac;
- (b) second, if (a) is not applicable, to any right-of-way or street easement of at least 20 feet right-of-way width which abuts the property line of the parcel being subdivided;
- (c) third, if (a) and (b) are not applicable, to the point on the property line of the parcel being subdivided which is closest to the closed end of any cul-de-sac existing on any adjacent parcel;
- (d) fourth, if (a), (b) and (c) are not applicable, to the point on the property line of the parcel being subdivided which is closest to any existing through street on any adjacent parcel, other than the street which forms the intersection with the parcel portion of the cul-de-sac;
- (e) fifth, if (a), (b), (c) and (d) are not applicable, to the point on the property line of the parcel being subdivided which is closest to any adjacent "land-locked" (i.e., without adequate frontage) parcel; and
- (f) sixth, if (a), (b), (c), (d) and (e) are not applicable, to the point on the property line of the parcel being subdivided which is closest to the largest adjacent buildable parcel of land.

For purposes of this regulation, references to the point "closest" shall exclude wetlands. The easement created by this section shall, to the extent practicable, be laid out to exclude lakes, ponds, wetlands, woodlands, water courses and steep terrain.

8.4.12. Half Streets

8.4.12.1. A half street is a portion of a proposed street running astride a common boundary line, said portion being within a subdivision under consideration.

8.4.12.2. Half streets shall be prohibited.

8.4.13. Sight Distances at Intersections

Horizontal and vertical sight distances in all directions at intersections shall be noted on the plans. Sight distances at intersections shall be provided as indicated in subsection 8.4.8.7, "Right-of-way Widths and Alignment -- Design Speed". Refer also to the "Visual Corner Clearance" requirement in the Norfolk Zoning Bylaw section pertaining to the B1 District (Town Center).

- 8.4.14. Stopping Sight Distance  
Stopping sight distance is the sum of two distances: the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied and the distance required to stop the vehicle from the instant brake application begins. For all stopping site distance calculations, the height of the driver's eye is considered to be 3.5 feet above the road surface and the height of the object is considered to be 2.0 feet above the road surface in accordance with AASHTO policy. Stopping sight distances shall be provided as indicated in subsection 8.4.8.7, "Right-of-way Widths and Alignment -- Design Speed".
- 8.4.15. Frontage Road Design and Location  
A Frontage Road, 24 feet in width, shall be constructed on all lots in the "On Highway Area" of the C-1 District (Routes 1A/115), in accordance with the requirements of the Zoning Bylaw and the construction standards for a primary street as noted in subsection 8.5.4.3, "Minimum Depth Requirements". Refer to **Figure 36** of Volume II of Norfolk Rules and Regulations. The location of drives and streets on the same and opposite sides of a highway shall be in accordance with the applicable sections of the Norfolk Zoning Bylaw, "Location of Drives and Streets on Same Side of Highway" and "Alignment of Drives and Streets on Opposite Sides of Highway", of the Zoning Bylaw.
- 8.4.15.1. Cross-easements  
Cross-easements shall be required by abutting landowners to permit traffic to traverse from one property to another.
- 8.4.15.2. Maintenance  
It shall be the responsibility of the property owners to maintain frontage roads and pedestrian ways for safe vehicular and pedestrian travel at all times and in all weather conditions. If, in the opinion of the Police Chief, a hazard to public safety exists for failure to perform such maintenance, the Town reserves the right to undertake such maintenance and backcharge the owner reasonable costs thereof.
- 8.4.15.2.1. Signage  
Stop signs shall be provided at all points of egress, drives and major entrances to the highway areas. Additional traffic signs may be required as deemed necessary by the Board for public safety.
- 8.4.16. Street Layout in the B-1 District (Town Center)  
Streets shall be laid out within the Town Center District so that no occupied lot is more than 1,500 feet from a primary street, or more than 450 feet from a secondary street, as measured along the street frontage. Street layouts shall be generally rectilinear with "deformations" as may be physically proper to adapt streets to topographic or other natural conditions, and to generally ensure vista terminations at street intersections.
- 8.5. Street, Roadway and Utility Construction Standards
- 8.5.1. Basic Requirements

The subdivider shall install all of the improvements itemized herein unless waived in writing by the Board. All work done under this section shall be done under the direction of the Planning Board.

8.5.2. No aforementioned Bond or Covenant shall be released until full approval in writing of all work done under this section is received by the Planning Board from its designated Inspector/Agent. (See also Section 3.4.)

8.5.3. Referenced Standards

The Commonwealth of Massachusetts, Massachusetts Highway Department (formerly Department of Public Works), *Standard Specifications for Highways and Bridges*, latest edition, as amended; and the *Supplemental Specifications to the Standard Specifications for Highways and Bridges*, latest edition, as amended. The Commonwealth of Massachusetts, Massachusetts Highway Department (formerly Department of Public Works), *Construction Standards, Latest Edition*, as amended.

Typical Cross Sections (Appendix C) and Typical Details (Appendix D) of these Subdivision Rules and Regulations.

8.5.4. Streets and Roadways

8.5.4.1. Minimum Widths and Depths

The following minimum improvement standards shall be required (see typical cross sections).

8.5.4.2. Minimum Width Requirements (in feet)

Street Classification	Right-of-Way	Paved Traveled Way	Grass Strip <sup>***</sup>	Sidewalks in Grass Strip <sup>****</sup>
Drive	50*/60**	13*/24**	2 @ 9	1 @ 5
Local Street	50*/60**	14*/26**	2 @ 8	1 @ 5
Secondary Street	50*/60**	16*/26**	2 @ 9	2 @ 5
Primary Street	50*/60**	16*/28**	2 @ 9	2 @ 5

Cross slope for traveled way, grass strips, and sidewalks shall be 1/4-inch per foot.

\* Based on one-way street with no on-street parking.

\*\* Based on two-way street with no on-street parking.

\*\*\* Includes berm, edging or curb. Grass strips in the Town Center may be reduced to a 2-foot minimum by the Planning Board in order to reduce right-of-way widths.

\*\*\*\* In the Town Center, "Within the Business Core", sidewalks are

required to be a minimum 8 feet in width and outside of the right-of-way, within the pedestrian way/walkway.

8.5.4.3. Minimum Depth Requirements (in inches)

Roadways

Street Classification	Processed Gravel	Dense Graded Crushed Stone for Base	Binder Course	Finish Course
Drive	8	--	2	1 1/2
Local Street	12	4	2 1/2	1 1/2
Secondary Street	15	4	2 1/2	2
Primary Street	18	4	3	2

Sidewalks

Street Classification	Processed Gravel	Binder Course	Finish Course
Drive	12	1 1/2	1
Local Street	12	1 1/2	1
Secondary Street	12	1 1/2	1
Primary Street	12	1 1/2	1

At accessways/driveways to all commercial and industrial sites, provide an 18-inch gravel base with 3 inches of binder and 1-1/2 inches finish course from the traveled way to the property line. A tack coat of bituminous material shall be applied by mechanical means immediately prior to installation of the top course of pavement.

Parking lots shall be constructed with a 12-inch gravel base, and with 2 inches each of binder and finish courses. There shall be a minimum 24-foot wide paved accessway/driveway connecting linked parking areas.

8.5.4.4. Clearing and Grubbing

- 8.5.4.4.1. Clearing and grubbing shall be done in accordance with the relevant provisions of Section 101 of the M.H.D. Standard Specifications and Town of Norfolk Bylaws.
- 8.5.4.4.2. All excavation and embankment areas shall be first cleared of all stumps, brush, roots, boulders, debris, and like materials and disposed of off site. All loam and topsoil within the excavation/embankment areas shall be removed and stockpiled for reuse within the subdivision. Stump and brush removal shall be in accordance with most recent Board of Health and DEP regulation and/or policy.
- 8.5.4.4.3. Excavations  
Excavations shall be done in accordance with the relevant provisions of Section 120, Excavation, of the M.H.D. Standard Specifications and *Article VIII - Land Use and Resource Protection* of the Town of Norfolk Bylaws.  
  
When 500 cubic yards or more of materials are to be removed from the site or relocated within the site, an Earth Relocation/Removal Permit is required. See also Appendix A - Earth Relocation/Removal for requirements and instructions.
- 8.5.4.5. Embankments
- 8.5.4.5.1. Construction of all embankment fill shall be done in accordance with the relevant provisions of Sections 120, 150, and 170 of the M.H.D. Standard Specifications and Town of Norfolk Bylaws and in accordance with the procedures described herein.
- 8.5.4.5.2. Fill material shall be approved suitable existing material obtained from on site excavations and shall consist of solid, sound mineral aggregate. It shall be free from deleterious, organic, elastic or foreign matter and shall be adequately graded for satisfactory compaction into a stabilized soil structure.
- 8.5.4.5.3. Embankments shall not be constructed with material from rock or boulder excavations.
- 8.5.4.5.4. Off site fill material shall be gravel borrow conforming to M.H.D. Material Specification M1.03.0, Type b. A certificate of compliance indicating the gradation and source of material shall be submitted and approved prior to delivery of any material to the site.
- 8.5.4.5.5. Fill for embankments shall be placed in uniform layers not exceeding 12 inches in loose measurement depth and compacted to not less than 95% of the maximum dry density as determined by the Standard AASHTO Test Designation T99 compaction test Method C at optimum moisture content. No fill material shall be placed, spread or compacted while the ground or fill material is frozen, thawing, or during inclement weather conditions. Fill material having excessive moisture content shall not be compacted until the material has been aerated by grading, harrowing or other methods to remove excessive moisture.
- 8.5.4.6. Gravel Base

- 8.5.4.6.1. The sub-grade shall be brought to proper grade and compacted as shown on the profiles and in accordance with the approved cross section. No gravel base shall be placed until all earthwork and utility installation work has been completed.
- 8.5.4.6.2. Gravel for roadway base and sidewalk base shall be spread and compacted in layers not exceeding 6 inches in compacted measurement depth and in accordance with the approved cross section. Material shall be compacted to not less than 95% of the maximum dry density as determined by the Standard AASHTO Test Designation T99 compaction test Method C at optimum moisture content.
- 8.5.4.6.3. Construction of gravel base and binder courses shall be done in accordance with the relevant provisions of Sections 401 and 405 of the M.H.D. Standard Specifications except the compacted gravel base layers should be placed in lifts not exceeding 6 inches in thickness..
- 8.5.4.6.4. Graded gravel for roadway sub-base and sidewalk base shall conform to M.H.D. Material Specification M1.03.1. A certificate of compliance indicating the gradation and source of material shall be submitted and approved prior to delivery of any material to the site.
- 8.5.4.7. Dense Graded Crushed Stone For Roadway Base
- 8.5.4.7.1. Construction of all dense graded crushed stone for roadway base shall be done in accordance with the relevant provisions of Section 402, of the M.H.D. Standard Specifications and in accordance with the procedures described herein.
- 8.5.4.7.2. Processed gravel for base shall conform to M.H.D. Material Specification M.01.7. A certificate of compliance indicating the gradation and source of material shall be submitted and approved prior to delivery of any material to the site.
- 8.5.4.7.3. The applicant shall provide as-built survey grades prior to installation of finished binder course. This survey shall consist of obtaining center line and both gutter elevations at 50-foot stations. In areas where the roadway gradient and cross-slope do not agree with what is shown on the approved plans, the applicant shall reconstruct and resurvey those areas until the proper gradient and/or cross-slope has been obtained. No bituminous concrete shall be placed and compacted until written authorization has been obtained from the Planning Board or its engineer on the Form K.
- 8.5.4.8. Bituminous Concrete Pavement, Temporary Berm, Sidewalks, and Driveways  
Materials and construction methods of the bituminous concrete pavement, tack coat, sidewalks, and driveways shall conform with the relevant provisions of Sections 460 and 701 of the M.H.D. Standard Specifications and in accordance with the procedures described herein; however, sidewalks in the B-1 District (Town Center) shall be constructed of cement concrete as described in Section 8.4.7. A tack coat of bituminous material shall be applied by mechanical means immediately prior to installation of top course of pavement.

Pavement shall be placed and compacted in two courses, binder and finish. All driveways and curb cut ramps shall slope toward the roadway and end at the roadway gutter line. Driveways shall commence their downward slope to the roadway from the right-of-way/street line and the ramps from the sidewalk. No driveways or ramps which slope away from the roadway will be accepted. Edging or curb (as applicable) shall be continued into the driveway/ramp cut to prevent erosion at the cut. See driveway detail in Town of Norfolk Regulations for Street Excavations as most recently amended. In the B1 District (Town Center) the driveway entrances from the street shall be constructed of bituminous concrete to the edge of sidewalk. That portion of the driveway over the sidewalk shall be constructed of cement concrete as described in Section 8.4.7.

A temporary berm shall be constructed on the roadway binder course to direct stormwater runoff to the closed drainage system until a permanent curb/berm is installed. The temporary berm shall be a temporary cape cod berm.

- 8.5.4.9. Sloped Granite Edging and Vertical Granite Curbing  
Sloped granite edging shall be required on both sides of all traveled ways, except in the B-1 District (Town Center), where vertical granite curbing shall be required. Materials and construction methods shall conform with the relevant provisions of M.H.D. Standard Specification M9.04.1 and M9.04.2 and in accordance with the procedures described herein. Certificates of Compliance shall be required in accordance with subsection 5.17, "Certificates of Compliance".
- 8.5.4.10. Curbing and Edging
- 8.5.4.10.1.1.1. Sloped granite edging shall be 4-foot minimum lengths, except where shorter length is dictated by radius. It shall be set after the binder course is placed and before the top course is placed on a compacted gravel bedding at a 45-degree angle with a 7-inch reveal. The nose of the granite shall be set in a concrete base approximately 6 inches square which shall abut against the binder course. The top course of paving shall cover the concrete and key the granite in place. Joints shall be mortared. A temporary cape cod berm shall be installed at the time of binder course installation and shall be continuously maintained in working order until the final course of bituminous concrete is installed.
- 8.5.4.10.2. Vertical granite curbing shall be upright 4-foot minimum lengths, except where shorter length is dictated by radius. The finished side shall face the traveled way, with a reveal of 6 inches. Installation of the vertical granite curbing shall precede the installation of the bituminous concrete binder course.
- 8.5.4.10.3. Materials and construction methods shall conform with the relevant provisions of Section 501 of the M.H.D. Standard Specifications and in accordance with the procedures described herein.
- 8.5.4.11. Cross Sections

- 8.5.4.11.1. Cross sections shall be drawn for all proposed roadways and existing roadways to be reconstructed. They shall be drawn at 50-foot stations and at all proposed culverts at a scale of 8 feet to the inch horizontally and vertically.
- 8.5.4.11.2. Sufficient space is to be provided between cross sections to allow the proposed roadway template to be drawn without overlapping the adjoining sections.
- 8.5.4.11.3. The following shall be shown on the sections:
- Edges of existing roads, drives, walks, swamps, lawns, etc.
  - Existing walls, poles, hydrants, mail boxes, etc.
  - All existing trees 12 inches and over noting the diameter, species of tree, station and offset.
  - Indicate elevation, station, and description of wells, cesspools, and on site septic systems, and a description and elevation of sills of buildings.
  - Existing culverts shall be shown as long dash lines.
  - Water elevations shall be shown as a dashed line with elevation and a date taken.
  - Approximate elevation of the top of rock for above and below existing grade.
  - The profile grade and right-of-way lines are to be noted on each template.
  - The template shall consist of the finished grade and the proposed subgrade lines.
  - Stations shall be located below the cross section and increase going up the plan sheet.
  - Guide vertical elevations and horizontal distances in both directions shall be shown on each cross section.
  - A summary table shall be shown with the cross sections showing the cubic yards between the stations for cut, fill, muck, and rock excavation, and gravel borrow. A total for each category shall be shown along with the final amount of cubic yards of earth to be removed from the site or gravel borrow to be brought into the site.
  - Limits of rock and muck excavation.
  - Planimeter readings are to be shown to the right of each template using the abbreviations: C = Cut, F = Fill, M = Muck Excavation, R = Rock Excavation, GB = Gravel Borrow.

8.5.4.12. Sidewalks on Existing Roadways

Sidewalks shall be required in the applicant's property along all existing public ways which immediately abut the proposed subdivision for the purpose of ensuring safe and adequate pedestrian access to and from the subdivision. Sidewalks shall not be interrupted by steps or abrupt changes in level greater than ½-inch. All sidewalk surfaces shall be non-slip.

In general, sidewalks on existing roadways shall be constructed with minimal change to the natural rural appearance of the street. Sidewalks shall follow the natural contours of the land and preserve both trees and shrubs to the extent possible to comply with the following guidelines.

To facilitate review of the proposed development by the appropriate authorities, the applicant shall stake the sideline of the proposed walkway at 50-foot intervals.

8.5.4.12.1. Width

The width of the sidewalk shall be 5 feet in the C-1 District (Routes 1A/115), however, within the B-1 District (Town Center), "Within the Business Core", the walkway width shall be a minimum of 8 feet.

8.5.4.12.2. Clearing and Grubbing

All excavation areas shall first be cleared of stumps, brush, roots, boulders, debris and like materials which shall then be disposed of off site. All loam and topsoil within the excavation area shall be removed and stockpiled for reuse.

See also Earth Removal Regulations - Appendix A.

The removal of all trees shall be in compliance with the *Shade Tree Act* and the *Scenic Roads Act* where applicable. Trees not protected under these acts if in living viable condition and having a trunk in excess of 12 inches in diameter measured 4 feet above grade, shall be retained wherever possible. In addition, trees of special importance because of species or distance from other trees shall be field marked by the Planning Board or its agent indicating in each case whether the tree should be removed or preserved.

8.5.4.12.3. Bituminous Paving

Bituminous concrete pavement for sidewalks and driveways shall be installed to conform with the relevant provisions of Sections 460 and 701 of the M.H.D. standard specifications and in accordance with procedures described therein; however, sidewalks in the B-1 District (Town Center) shall be constructed of bituminous concrete cement. At least one course of bituminous concrete pavement for sidewalks shall be installed to conform with generally accepted engineering practice. Whenever there is an intersection of sidewalks with streets, public ways, driveways or parking lots, each shall blend to a common level.

8.5.4.12.4. Grass Strip

A 25-foot grass strip separating the sidewalk from the road shall be installed wherever possible consistent with the walkway design procedures described herein (refer to **Figure 29** of Volume II of Norfolk Rules and Regulations). However, grass strips "Within the Business Core" of the B-1 District (Town Center) are required to be parallel and along the frontage line for a width of 3 feet, as noted in **Figure 30** of Volume II of Norfolk Rules and Regulations. Refer to Section 8.5.6, "Street Trees", which describes the placement of street trees.

8.5.4.12.5. Drainage

The paved surface shall be pitched a minimum of 1/4-inch per foot in the direction of existing drainage facilities to provide adequate disposal of surface water including control of erosion, flooding, and standing water on adjacent lands.

8.5.4.13. On-Street Parking Regulations

On-street parking shall be required in the B-1 District (Town Center), "Within the Business Core", unless otherwise prohibited in specific areas by the Board of Selectmen or Chief of Police. On-street parking may be permitted elsewhere at the applicant's discretion subject to Planning Board approval. The specifications for parallel parking, including handicapped parking, in this area are to be in accordance with Section 8.4.8.7., "Right-of-Way Widths and Alignments", and **Figure 37** of Volume II of the Norfolk Rules and Regulations. On-street parking spaces shall not be permitted over crosswalks. In the area of crosswalks, the pedestrian way/sidewalk and associated curb ramp shall extend the width of the adjacent parking spaces (referred to as a "neckdown") such that the parking spaces appear "receded" from the traveled portion of the street (refer to **Figure 37** as noted above, and also to subsection 8.5.9.5).

8.5.5. Retaining Walls

Retaining walls shall be installed where required and deemed necessary by the Planning Board. They shall be cemented stone masonry conforming to the relevant provisions of Section 685 of the M.H.D. Standard Specifications, Construction Standards, and in accordance with the procedures described herein. Maximum visible height of retaining walls shall be 4 feet, unless waived by the Planning Board in the event that terracing, plantings and other decorative elements have been incorporated within the design of the retaining wall. Further, terracing, plantings and other decorative elements are encouraged to be incorporated within the design of the retaining wall.

8.5.6. Street Trees

Trees shall be planted at 35-foot intervals on both sides of all streets within the subdivision and on the one side of the adjacent existing public way that is contiguous with the subdivision. Trees shall be located within the existing right of way, except in the B-1 District, where they shall be planted within the tree easement. Tree placement shall also be coordinated with street light placement in the 3-foot wide tree easement in the B-1 District (Town Center), "Within the Business Core", as shown in Figure 38 of Volume II of Norfolk Rules and Regulations. Trees shall also be permitted within the pedestrian way easement within the sidewalk, and must be accompanied with tree grates and tree guards as approved by the Planning Board, and as shown in Figure 39 of Volume II of Norfolk Rules and Regulations.

Shade trees reinforce the rural character of the Town, and provide relief of parking areas and architectural mass. In order for shade trees to achieve "stately proportions", they shall be at least 12 feet in height and 3 inches in calliper when planted, and must reach a minimum mature height of 25 to 35 feet. In the B-1 District (Town Center), the lowest branches shall be at least 6 feet above ground level in order to accommodate pedestrian activity. All trees shall be planted no later than one month after installation of the first course of bituminous concrete, and shall be guaranteed for one year after street acceptance. A written copy of said guarantee shall be provided to the Planning Board prior to street acceptance. The species of trees to be used must be approved by the Norfolk Tree Warden with written verification submitted to the Planning Board and are to

be selected from the following tree list:

- *Acer pseudoplatanus* - Sycamore Maple
- *Acer rubrum* - Red Maple and varieties
- *Acer saccharum* - Sugar Maple and varieties
- *Carpinus betulus* - European Hornbeam
- *Cercidiphyllum japonicum* - Katsuratree
- *Ginkgo biloba* - Ginkgo variety
- *Liquidambar styraciflua* - Sweetgum var.
- *Quercus palustris* - Pin Oak
- *Quercus rubra* - Red Oak
- *Zelkova serrata* - Japanese Zelkova
- *Sophora japonica* - Japanese Pagodatree
- *Fraxinus pennsylvanica* - Green Ash var.
- *Pyrus calleryana* - Redspire Callery Pear
- *Gleditsia triacanthos inermis* - Thornless Honeylocust var.
- *Platanus acerifolia* - Bloodgood London Planetree
- *Tilia cordata* - Littleleaf Linden and varieties
- *Tilia tomentosa* - Silver Linden

or such other tree variety, as appropriate, and as may be approved by the Planning Board.

There shall be at least three species of tree planted on each street. At all street or driveway intersections, trees (and shrubs) shall be set back a sufficient distance from the intersection so that they do not present a sight distance/safety hazard. This regulation shall be considered in conjunction with 8.5.4.12.4, "Grass Strip".

Tree wells shall be required for the protection of existing trees where deemed necessary by the Tree Warden. Materials and planting methods shall conform to the relevant provisions of Section 771 of the M.H.D. Standard Specifications (including but not limited to staking and wiring of all trees), the Norfolk Tree Warden and in accordance with the procedures described herein. The applicant shall provide written verification to the Planning Board that the Norfolk Tree Warden has reviewed and approved the street tree planting plan.

Shrubs, as approved by the Board and the Tree Warden, shall also be chosen and located within the tree easement to fulfil a specific function of screening and ground cover. Consideration shall be given to the effects of sun exposure or shade, snow plowing and winter salt spray. Shrubs shall be no smaller than 18 to 24 inches in height for woody types. The species of shrubs shall be chosen from the following species, unless otherwise specified in writing by the Tree Warden:

- *Taxus* spp. - Yew, various
- *Rhododendron* spp. Rhododendron, various
- *Vaccinium corymbosum* - Highbush Blueberry
- *Amelanchier canadensis* - Shadbush
- *Viburnum* spp. - Viburnum, various
- *Ligustrum* spp. - Privet, various

- Juniperus spp. - Juniper, various
- Forsythia spp. - Forsythia, various
- Rosa spp. - Rose, various
- Spiraea spp. - Spirea, various

or other shrub varieties, as appropriate, and as may be approved by the Planning Board.

8.5.7. Loaming and Seeding

The removal of topsoil from the development area will not be allowed. Not less than 6 inches of good quality loam shall be placed within the right-of-way, cut and fill areas, easements, lots, etc. Materials and construction methods for loam borrow and topsoil shall conform to the relevant provisions of Section 751 of the M.H.D. Standard Specifications and in accordance with the procedures described herein. Materials and construction methods for seeding shall conform to the relevant provisions of Section 765 of the M.H.D. Standard Specifications and in accordance with the procedures described herein. Seed for the grass strips shall conform to M.H.D. Material Specification M6.03.0, Grassplots and Islands. After loam and seed has been placed in retention/detention basins and slopes equal to or steeper than 3:1, a jute mesh matting or an approved equal shall be installed in accordance with the manufacturer's recommendations for slope stabilization. All loaming and seeding shall be installed no later than one month after installation of the first course of bituminous concrete.

8.5.8. Street Lights

The applicant shall be responsible for furnishing and erecting street lights at locations approved by the Planning Board (refer also to subsection 8.5.8.1, "Location of Decorative Street Lights"). Street light fixtures and standards shall conform to fixtures and standards as most recently installed in the Town of Norfolk at the time of application, except within the B-1 District (Town Center), "Within the Business Core", wherein the applicant shall install the decorative street light as identified in Figure 40 of Volume II of the Norfolk Rules and Regulations.

8.5.8.1. Location of Decorative Street Lights

Decorative street lights within the B-1 District (Town Center), "Within the Business Core", shall be located within the 3-foot tree easement at 75-foot intervals, as approved by the Planning Board. Placement shall be coordinated with abutting properties to ensure the 75-foot interval is maintained, and with street trees "Within the Business Core" as noted in **Figure 38** of Volume II of Norfolk Rules and Regulations.

Metal Halide (MH) lamps and fixtures shall be used as they offer the best balance between ideal color, energy efficiency and cost. A light source of 100 watts (for the pole height of 10 feet), shall be required.

8.5.9. Guard Rails

8.5.9.1. Guard rails shall be required along roadways as per AASHTO's Guide for Selecting, Locating, and Designing Traffic Barriers, 1977, and where, in the opinion of Plan-

ning Board, it is necessary for public safety.

8.5.9.2. Materials and construction methods shall conform to the relevant provisions of Section 601 of the M.H.D. Standard Specifications and in accordance with the procedures described herein. Posts shall be pressure treated wood, rectangular in sections 6 inches by 8 inches, chamfered on top, and at least 6 feet 3 inches long with flat tops and butts, conforming to M.H.D. Material Specification M8.07.0B.2. Wooden rail elements shall conform to AASHTO and M.H.D. specifications, and as noted below. Guard rails shall not be ramped. "Weathering steel" guard rails conforming to M.H.D. and AASHTO standards shall also be permitted for streets.

8.5.9.3. Wood Posts and Rails

8.5.9.3.1. Wood posts and rails are to be used only on very low speed roads and parking areas, and within the B-1 District (Town Center) on streets having a design speed of 15 and 20 m.p.h., and are to be pressure treated. Prior Planning Board approval is required for use of this type of barrier.

8.5.9.3.2. Wood posts shall conform to the materials and construction methods as described in subsection 8.5.9.2. Spacing of posts shall be a maximum of 6 feet 3 inches center to center.

8.5.9.3.3. Wood rails shall be 4 inches by 8 inches and of a length where joints are to be located only at the posts. Rails shall be of the same species and stress grade as the wood posts. Rails shall be treated in accordance with M.H.D. Material Specification M8.07.0B.2. Two 5/8-inch carriage bolts shall be used to fasten the rail to the post and counter sunk. Nuts shall be installed so that they cannot be backed off. The number of rails, either one or two, to be used for the wood guard rail shall be determined by the Planning Board.

8.5.9.4. Curb cut Ramps

Curb cut ramps must be provided in curbed areas that have sidewalks. The location of the curb cut opening and ramp must be carefully coordinated with respect to the pedestrian crosswalk lines, if any. This planning must ensure that the ramp opening (at the fully depressed curb) is situated within the parallel boundaries of the crosswalk markings.

All ramps must comply with the Americans with Disabilities Act Regulations as most recently revised.

8.5.9.4.1. Ramps for the handicapped are not limited to intersections and marked crosswalks, and ramps shall also be provided at other appropriate or designated points of pedestrian concentration, such as loading islands, midblock pedestrian crossings, and locations where pedestrians could not otherwise recognize the proper place to cross the roadway. Because non-intersection pedestrian crossings are generally unexpected by the motorist, warning signs shall be installed and adequate visibility provided by prohibiting parking.

- 8.5.9.4.2. Ramps for the handicapped, including sloping sides, shall have a textured non-skid surface. The textured surface shall be roughened in the direction of the slope. This texture not only provides a measure of safety for the user but also warns a blind person of the presence of the ramp.
- 8.5.9.4.3. Ramps shall be designed in accordance with Volume II of Norfolk Rules and Regulations. Slope of the ramp shall not exceed 1:12 and shall blend to meet the roadway gutter with a ½-inch maximum lip for drainage. Where sidewalks are too narrow to install a straight-line curb cut at a slope of 1:12, the sides of the curb cut shall slope at 1:12.
- 8.5.9.4.4. The width of curb cuts shall be no less than 3 feet, not including sloped sides. Sides of curb cuts shall extend not less than 24 inches at the curb. There shall be no vertical curbing at the side of the curb cut.
- 8.5.9.5. Crosswalks  
Street and pedestrian way design shall minimize pedestrian crossings on primary streets. Crosswalks shall be required on all sides of all street intersections, and along streets as required by the Board. In the B-1 District (Town Center), "Within the Business Core", crosswalks shall be coordinated with on-street parking areas, and spaced every 10 parking spaces (or approximately 218 feet as measured to the center of "neckdowns"), as shown in **Figure 37** of Volume II of Norfolk Rules and Regulations, and as described in subsection 8.5.4.13.
- 8.5.9.5.1. Crosswalks at intersections of streets and along streets shall be 4 feet in width and shall be painted with yellow reflectorized vertical striping as shown in Figure 41 of Volume II of the Norfolk Rules and Regulations.
- 8.5.9.5.2. Any raised islands in the traveled path of a crosswalk shall be cut through level with the street, or shall have curb cuts at both sides, and a level area at least 4 feet in width in the part of the island intersected by the crosswalk.
- 8.5.10. Street Furniture  
Benches and garbage receptacles shall be required within the pedestrian way/walkway as approved by the Planning Board. In the B-1 District (Town Center), "Within the Business Core", one decorative bench per 75 feet of frontage, or portion thereof, shall be required, and coordinated with abutting properties. Garbage receptacles shall be required adjacent to every-other decorative street light, as noted in **Figures 42 and 30** of Volume II of Norfolk Rules and Regulations. Benches and garbage receptacles shall be permanently mounted.
- 8.6. Reference to Additional Local Standards  
Refer to Norfolk Zoning Bylaw Sections pertaining to zoning for the B1 and C1 Districts for additional local standards.