### AMENDMENT DATES

<table>
<thead>
<tr>
<th>Date</th>
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<tr>
<td>September 30, 1954</td>
<td>First Subdivision Rules &amp; Regulations of the Sandwich Planning Board</td>
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<tr>
<td>January 9, 1962</td>
<td>Amendment to Rules &amp; Regulations</td>
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<td>Newly adopted Rules &amp; Regulations</td>
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<td>July 25, 1972</td>
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<td>Revisions to Rules &amp; Regulations</td>
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<td>January 8, 1988</td>
<td>Amendments to Rules &amp; Regulations</td>
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<td>June 6, 1990</td>
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<td>March 20, 1991</td>
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SECTION 1
GENERAL INFORMATION

1.A AUTHORITY

Under the authority vested in the Planning Board of the Town of Sandwich by Section 81-Q of Chapter 41 of the General Laws, said Board hereby adopts these Rules and Regulations governing the Subdivision of land in the Town of Sandwich. Such Rules and Regulations shall supersede and replace any previously adopted Subdivision Control Law Rules and Regulations; and may be amended in accordance with the provisions of Section 81-Q of the General Laws.

1.B PURPOSE

The Subdivision Control Law has been enacted for the purposes of protecting the safety, convenience and welfare of the inhabitants of the cities and towns in which it is, or may hereafter be, put in effect by regulating the laying out and construction of ways in subdivisions providing access to the several lots therein, but which have not become public ways and ensuring sanitary conditions in subdivisions and in proper cases parks and open areas. The powers of the Planning Board and of 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 by-laws; for securing adequate provision for water, sewerage, drainage, underground utility services, fire, police, street lighting, other similar municipal equipment 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.

It is the intent of the Subdivision Control Law that any subdivision plan filed with the Planning Board shall receive the approval of such Board if said plan conforms to the recommendations of the Board of Health and to the reasonable Rules and Regulations of the Planning Board pertaining to subdivision of land; provided, however, that such board may, when appropriate, waive, as provided for in Section 81-R, such portions of the Rules and Regulations as is deemed advisable. No person shall make a subdivision 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 Board as hereinafter provided. After the approval of such plan no changes will be made without the approval of the Board.

No subdivision Plan shall be approved by the Planning Board unless all lots within the subdivision comply with the latest requirements of the Zoning By-Laws of the Town of Sandwich.

Lot lines shall be changed or modified only through the submission of a plan to the Planning Board for their approval under the appropriate sections of the Subdivision Control Law. Such changes or modifications shall be depicted on a plan, stamped by a Registered Professional Land Surveyor and be of sufficient detail and size as determined by the Planning Board.
SECTION 2
DEFINITIONS & ADMINISTRATION

2.A DEFINITIONS

AASHTO shall mean the American Association of State Highway and Transportation officials.

APPLICANT shall mean the owner, his authorized agent, representative or his assigns.

ARTERIAL STREET shall mean a street which collects or may reasonably be expected to collect, traffic from several collector and minor streets as defined in the Zoning by-laws and requiring a vote by Town Meeting action.

ASTM shall mean the latest revisions of the Standard Specifications of the American Society for Testing and Materials.

BOARD shall mean the Planning Board of the Town of Sandwich.

BOARD's ENGINEER shall mean the Town Engineer.

COLLECTOR STREET shall mean a street which collects or may reasonably be expected to collect traffic from several minor streets, or which handles traffic equivalent to that generated by 50 homes or more or which serves nonresidential abutting property.

CONSTRUCTION STANDARDS shall mean the latest revision of the Construction Standards of the Massachusetts Department of Transportation Highway Division (MassDOT).

DEFINITIVE PLAN shall mean the Plan of a subdivision as submitted to the Board for approval, to be recorded in the Registry of Deeds or Land Court when approved by the Board.

ELEVATION shall mean the height relative to the North American Vertical Datum of 1988 (NAVD88).

GENERAL LAWS shall mean the General Laws of the Commonwealth of Massachusetts as most recently amended.

LANE shall mean a street which by its locations and design, may not reasonably be expected to serve nonresidential property, or serve as a means of access to more than ten homes.

MINOR STREET shall mean a street which does not meet the qualifications of a lane, but which can be expected to handle less traffic than a collector street.

MUNICIPAL SERVICES AND UTILITIES shall mean sewers, surface water drains, water lines, gas lines, electric lines, telephone lines, TV cable lines and their respective appurtenances and other like services.

POINT OF RESTRICTION shall be defined as the last point that can be reached by vehicles traveling on separate routes over streets constructed to the requirements of the Subdivision Rules and Regulations. Where a point of restriction is at the intersection with an existing street, it shall be located at the intersection of the sideline of the existing right-of-way and the centerline of the proposed street; where it is at the intersection with a proposed street, the point of restriction shall be located at the intersection of the centerlines of the proposed streets.

PRELIMINARY PLAN shall mean a plan of a proposed subdivision submitted for discussion and consideration by the Board prior to a preparation of a Definitive Plan.

RESTRICTED ACCESS shall be defined as only one means of access by a street which is constructed to the requirements of the Subdivision Rules and Regulations.

STANDARD SPECIFICATIONS shall mean the latest revisions of the Standard Specification for Highways and Bridges of MassDOT.

SUBDIVISION shall mean the division of a tract of land into two or more lots as defined in Section 81-L, Chapter 41 of the General Laws.
SUBSTANTIAL CONSTRUCTION shall be the determination of the Sandwich Planning Board that the roadway and utilities combined are more than 50% complete in accordance with the approved subdivision plan.

TOWN ENGINEER shall be the Engineer of the Town of Sandwich, or his representative, acting as an agent of the Planning Board.

2.B ADMINISTRATION

Requirements for submission of plans shall be made in accordance with these Rules and Regulations.

2.C CERTIFICATION OF PLANS & REPRESENTATION AT MEETINGS

All plans submitted to the Board shall include a certification as to their conformance with these Rules and Regulations as to the validity of their content executed by a person registered in the Commonwealth of Massachusetts as a Land Surveyor or Professional Engineer, or both as required by the Board. The owner or his legal representative shall be represented at any meeting with the Board by the person responsible for the design of the subdivision and preparation of plans.

2.D VARIATION

The Board may waive such portions of these Rules and Regulations, when in their judgement such action is in the public interest and not inconsistent with the Subdivision Control Law.

2.E APPEALS

The Board of Appeals established pursuant to Section 1300 of the Town of Sandwich Zoning Bylaw (October 14, 1970) shall act as the Board of Appeals cited by Section 81-Z of Chapter 41 of the General Law. Other appeals are to be made to the Superior Court, as provided by Section 81-BB of Chapter 41 of the General Law.

2.F INSPECTIONS

All work required by these Rules and Regulations shall be under the inspection of and with the approval of the respective Town Departments and utilities involved hereunder.

2.G SEPARABILITY

If any section, paragraph, sentence, clause or provision of these regulations shall be adjudged not valid, the adjudication shall apply only to the material so adjudged and the remainder of these regulations shall be deemed valid and effective.

2.H AMENDMENTS

These regulations or any portion thereof may be amended, supplemented or repealed from time to time by the Board, after a public hearing held in accordance with Chapter 41, Section 81-Q of the Massachusetts General Law, on its own motion or by petition.
SECTION 3

PROCEDURE FOR THE SUBMISSION AND APPROVAL OF PLANS

3.A PLANS BELIEVED NOT TO REQUIRE APPROVAL UNDER THE SUBDIVISION CONTROL LAW

(As defined under M.G.L. Chapter 41, Section 81-P):

3. A.1 Any person wishing to record a Plan of Land, who believes that his plan does not require approval under the Subdivision Control Law shall do the following:

a. The applicant shall file, by delivery or registered mail, a notice (Form A) application with the Town Clerk. Proof of said filing shall be given to the Planning Board prior to their taking action.

b. At a regularly scheduled Planning Board meeting, the applicant shall submit the original drawing of the plan suitable for recording at the Barnstable County Registry of Deeds or Land Court, four (4) prints, a digital submission consistent with the Planning Board’s Electronic Filing policy, which can be found on the Town’s website or at the Town offices, and a Form A application to the Planning Board.

c. A filing fee made payable to the Town of Sandwich is required at the time of submission of a Form A. (Refer to Fee Schedule, which can be found on the Town’s website or at the Town offices).

3. A.2 The plan shall contain sufficient evidence necessary to enable the Board to determine that the plan does not require approval under the Subdivision Control Law. Such information on the plan shall include, but is not necessarily limited to, the following:

a. Assessors' map number, lot number and zoning district(s), including overlay district, if applicable.

b. Names of all owners abutting the land as established from the most recent tax list.

c. All existing buildings within one hundred feet (100') of any newly created boundaries, including setbacks, side and rear yard designations.

d. Names of all ways that abut the Applicant's land.

e. Locus plan at a scale sufficient to identify the location of the lot, surrounding area and adjacent ways.

f. If a new lot is being created, the plan submitted shall show the remaining area and street frontage of the lot the new parcel was created from.

g. The plan shall show adequate access to each lot over the frontage or across the front lot line. Access to each lot shown on the plan shall be gained from the frontage of said lot.

h. A statement shall be put on the plan, by the surveyor under the space provided for Planning Board signatures and date, that "the above endorsement does not constitute compliance with the Protective Zoning By-laws of the Town of Sandwich."

i. Sufficient topographic delineation, including existing streams and bodies of water shall be shown on the plan or a separate plan to allow the Board to determine if the lot(s) have adequate access.

j. A title block including:

1. The applicant's name and address.

2. Name, signature and seal of a Massachusetts Professional Land Surveyor.

3. Plan date, revised dates.
4. Plan scale.

5. Seven spaces for the signatures of the Planning Board and the date of the endorsement under the caption "Approval Under the Subdivision Control Law Not Required."

k. The plan shall be at a scale of 1" = 40'. Plan sheets shall not exceed 24" x 36". The plan shall show a north arrow.

l. Whenever applicable, a statement that lots shown on the plan are part of a subdivision and are subject to terms and conditions of its approval plus a reference to the subdivision name, approval date, and the recorded book and page numbers.

m. The plan shall show the location of public or private wells and septic systems on all abutting properties.

3. A.3 If the Planning Board determines that the plan does not require approval, it shall, within twenty-one (21) days of submission to the Town Clerk without a public hearing, endorse the plan. The Planning Board shall notify the Town Clerk of its action.

3. A.4 If the Planning Board determines that the plan does require approval under the Subdivision Control Law, it shall state so in writing to the Town Clerk within twenty-one (21) days of submission to the Town Clerk. The Planning Board shall notify the Town Clerk of its action.

3.B PRELIMINARY PLAN

3.B.1 GENERAL

A Preliminary plan of a Subdivision may be submitted by the Applicant for action by the Board. The submission of such plan will enable the Applicant, the Board and other municipal agencies to discuss and clarify the problems of such subdivision before a Definitive Plan is prepared. Six (6) copies of the plan, together with a properly executed Form B and a disk with a digital submission consistent with the Planning Board’s Electronic Filing policy, which can be found on the Town’s website or at the Town offices, shall be submitted to the Board in addition to copies to the Town Engineer, Board of Health, Conservation Commission, and the Water District, (a total of 10 copies) and written notice of such submission made to the Town Clerk by delivery or Registered Mail, accompanied by a copy of the completed application. Proof of such submission to the Town Clerk shall be submitted to the Planning Board at the time the application is delivered to the Board.

a. A filing fee made payable to the Town of Sandwich is required at the time of submission of a Form B. (Refer to Fee Schedule).

3.B.2 CONTENTS

The Preliminary plan, so titled shall be drawn on Mylar, vellum or bond at a scale of 1" = 100' on sheets not to exceed 24" x 36". Said Preliminary plan should show sufficient information about the subdivision in order to form a clear basis for discussion of its problems and for the preparation of the Definitive plan. Such information will be as follows:

a. The proposed name of the subdivision, the boundaries, date, scale, north point, bench marks, assessor's number, a locus at a scale sufficient to identify the location of the property, present zoning, including overlay districts, the name of the owner and/or the Applicant and the designer, engineer or surveyor and the stamp and signature of the registered land surveyor and/or civil engineer.

b. In the case of a Preliminary plan of a subdivision that includes less than all of the land owned by the Applicant adjacent to or abutting the subdivision, the Preliminary plan shall be accompanied by a plan showing the location and area of all land owned by the Applicant adjacent to or abutting the subdivision and indicating the section for which approval is requested.
c. The names of all abutters as they appear in the most recent tax list and approximate intersecting boundary lines of the abutting lands.
d. The lines of existing and proposed streets, ways, easements and public or common areas within the subdivision in a general manner.
e. The approximate boundary lines of proposed lots, with approximate areas and dimensions.
f. Location, names and present widths of streets bounding, approaching or within reasonable proximity of the subdivision.
g. The proposed system of storm drainage, including adjacent existing natural waterways with computed runoff flows.
h. The location of major site features such as existing stonewalls, fences, buildings, large trees, rock ridges and outcroppings, swamps and water bodies.
i. The existing and proposed topography at a two (2) foot contour interval. Contours shall extend a sufficient distance to indicate the effect of the subdivision on abutting property.
j. Location relative to the Water Resource District shall be shown, if applicable.

3.B.3 BOARD ACTION

The Planning Board and the Board of Health shall within forty-five (45) days after submission, give such Preliminary plan its approval, with or without modification or shall disapprove such plan stating its reasons. The Town Clerk and the applicant shall be notified of both Boards’ decision in writing.

Such approval does not constitute approval of a subdivision.

3.C DEFINITIVE PLAN

3.C.1 GENERAL

Any person who submits a Definitive Plan of a subdivision for approval shall file the following at a regularly scheduled meeting:
a. The original 24” x 36” drawing of the Definitive plan and five (5) reproducible prints thereof, dark line on white background. The plans shall be marked by the applicant for the Planning Board, Town Engineer, Conservation Commission, Board of Health and the Water District. Additionally the applicant shall supply a digital submission consistent with the Planning Board’s Electronic Filing policy, which can be found on the Town’s website or at the Town offices, seven (7) 11” x 17” copies of the definitive plan and plan and profile sheets. All copies of the plans shall be delivered to the Planning and Development Office who shall be responsible for distribution.
b. Proof that written notice was given to the Town Clerk by delivery or Registered Mail, accompanied by a copy of the completed Form C Application.
c. List of abutters, dated within six months of the submission, CERTIFIED by the Board(s) of Assessors.
d. Applicant(s) shall submit two (two) sets of envelopes addressed with necessary postage affixed to each abutter.
   ▪ One set of envelopes for the hearing notice shall have Certified Mail, return receipt requested slips and green cards to be filled out for each abutter. These envelopes will require enough postage to send one ounce of mail certified return receipt requested. The Planning & Development Office will affix the return receipt requested green cards to the envelopes before they are mailed. All other postage and slips shall be affixed, the envelopes addressed and the green cards completely filled out. The return address on both the envelopes and green slips shall be:
The second set of envelopes for the decision will require one first class stamp and shall be addressed to each abutter with the return address as indicated above.

e. A filing fee made payable to the Town of Sandwich. The applicant is responsible for payment of the legal notice in the area newspaper, which is published twice.

f. The applicant shall submit calculations for the storm drainage systems. Such calculations shall be prepared by a Registered Professional Engineer.

g. The applicant shall submit boring logs and soil classifications performed by a Registered Professional Engineer of borings taken at the exact location of each proposed leaching basin to a depth of two (2) feet below the structure, but in no case less than ten (10) feet below finish grade.

h. The applicant shall furnish a Municipal Lien Certificate at the time any Form C is submitted which certifies taxes due to the Town of Sandwich on all of the land shown on the proposed plan are paid in full through the most current quarter of the fiscal year.

i. Property Owners Association documents including articles of organization and related items as necessary to establish this entity and its responsibilities regarding maintenance and repair of the subdivision streets, municipal services and utilities, common areas, landscaping and other infrastructure and facilities as the Board may require. Said documents shall provide for an adequate reserve to provide (in the opinion of the Town Engineer) for emergency repairs to such improvements.

3.C.2 CONTENTS

The Definitive Plan shall be prepared by a Civil Engineer and Land Surveyor; each registered in Massachusetts and shall be clearly and legibly drawn according to the Plan Regulations of the Registry of Deeds. A signed statement to this effect shall appear on the plan title sheet. The Plan shall be at a scale of one (1") inch equals forty (40') feet. If the plan requires more than one sheet, an index map at a scale of one (1) inch equals one hundred (100) feet will be required. Plan sheets shall not exceed 24" x 36".

The following information shall be shown on the plan:

a. Subdivision name, date, scale, north arrow, benchmarks used, grid tics referencing Massachusetts State Plane Coordinate System North American Datum 1983 in U.S. survey feet (minimum three per sheet), and a locus plan at a scale sufficient to identify the location of the property.

b. Names and addresses of the record owner and Applicant; and the names and addresses, stamps and signatures of the Registered Land Surveyor and Registered Civil Engineer.

c. If the applicant is not the owner of some or all of the land that is the subject of the Definitive plan, the applicant shall provide proof, to the satisfaction of the Planning Board, that any and all owners of the property agree to the subdivision of the property show on the plan; and further, that all owners agree through a written statement submitted to the Planning Board that the applicant or the applicant’s representative is empowered to serve as their agent. Such written statements shall be submitted by each owner of the property that is the subject of the Definitive Plan.

d. Names of all abutters as they appear in the most recent tax list and approximate intersecting boundaries of abutting lands.

e. Lines of existing and proposed streets, ways, lots, easements and public or common areas within the subdivision.
f. Sufficient data to determine the location, direction and length of every street and way line, lot line, boundary lines and easements to establish these lines on the ground.

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

h. Location, names, and present widths of streets, bounding, approaching or within reasonable proximity of the subdivision.

i. The location of major site features, such as existing stone walls, fences, buildings, large trees, rock ridges and outcroppings, swamps and water bodies.

j. Pavement grades and location of utilities within 100 feet of intersection of proposed road(s) and existing road(s).

k. Proposed road centerline stationing at points of tangency, points of curvature, and street intersections.

l. Assessor's Map number, lot number and zoning district, including minimum requirements for frontage, lot size, setbacks, etc. Location relative to the Water Resource District shall be shown, if applicable.

m. Evidence that access to each lot shown on the subdivision plan shall be gained from the frontage of said lot.

n. Plan and profile drawings of proposed streets drawn as follows:
   1. A horizontal scale of one (1) inch equals forty (40) feet.
   2. A vertical scale of one (1) inch equals four (4) feet.
   3. Existing centerline in fine solid line.
   4. Existing right sideline in fine dotted line.
   5. Existing left sideline in fine dashed line.
   6. Proposed centerline grades in heavy lines. Grade elevations shall be shown at every fifty (50') foot station, road intersections, points of tangency (PT) and points of curvature (PC). On vertical curves grades shall be shown at every twenty-five (25') foot station, points of vertical curvature (PVC) and points of vertical tangency (PVT).
   7. Proposed systems of drainage, including catch basins, leaching basins, manholes and proposed inverts, pipe sizes and materials. Catch basins and manholes shall not be located within the intersection of a driveway and street. (Amended 6/7/95).
   8. All intersecting walks and driveways.
   9. Elevations referred to the North American Vertical Datum of 1988, in feet, as established by the National Geodetic Survey.
   10. Rates of gradient shown by figures for roadways and drainage.
   11. Profile stationing referenced to the plan drawing. Profile shall be drawn along the street centerline around a cul-de-sac. (Amended 6/7/95).
   12. Size and locations of existing or proposed water mains, all other utilities and their appurtenances, including hydrants located within and adjacent to the subdivision.
   13. Location of proposed monuments and street signs in accordance with SRR Sections 5M and 5O.

o. Typical cross section of proposed streets in accordance with the applicable typical cross section showing construction and all proposed and required utilities.

p. Profiles and cross sections of any swales utilized for storm water runoff.

q. Suitable space for endorsement by the Board and for verification of no appeal by the Town Clerk.
r. Existing and proposed topography at a two (2) foot contour interval, shown on a separate plan as follows:
   1. Contours shall extend beyond boundaries of the property a sufficient distance to indicate the effect of the subdivision on abutting property as required by the Board.
   2. Show on each lot: the approximate anticipated location for the house and driveway, and suggested grading and spot elevations. This information will be used to ascertain whether each lot can comply with applicable sections of the Sandwich Zoning By-Law.

s. Proposed street names shall be approved by the Town Engineer prior to submission of the Definitive Plan.

t. The base flood elevation contour as shown on the most recent community panel published by the Federal Emergency Management Administration (FEMA) shall be clearly shown in a heavy solid line clearly differentiated from other contour lines.

u. The lengths and bearings of all existing boundaries, all proposed boundaries of lots, lot frontage on street, of all easements, all length, radii, tangents and central angles of all curves in street lines and lot lines.

v. The location of all existing trees fifteen (15") inches in caliper or greater, and all holly trees (Ilex opaca) six (6") inches in caliper or greater. Measurements shall be taken 4 feet above grade.

w. A detailed landscape plan, at a minimum scale of 1"=20', prepared by a Massachusetts Registered Landscape Architect, showing:
   1. Location, size and species of proposed street trees and other plantings.
   2. Existing trees, as described in section 3.C.2.v, which are proposed to be removed. The location of proposed tree plantings in accordance with Section 5.K.
   3. Limit of clearing for roadway layout and each house lot.
   4. Location of proposed walls, walkways, utility boxes, lighting fixtures, signs, or other structures within the road layout, easements, or community open space.
   5. Method of slope stabilization.

x. Curb cuts and driveways within proposed street layouts showing access to each lot from the lesser traveled way.

y. An erosion control plan shall include the following:
   1. Topographical contours at two foot intervals;
   2. Drainage patterns and watershed boundaries;
   3. Existing vegetation;
   4. Proposed limit if clearing;
   5. The location, identification and narrative description with detailed drawings of all temporary and permanent erosion and sediment control Best Management Practices (BMP);
   6. Temporary driveway apron to serve during all phases of site preparation and constructions that shall consist of ¾ “crushed stone 3” thick or bituminous binder 2 ½ thick.
   7. Narrative description of the construction schedule and the concurrent sequencing and timing of erosion control measures as shown on the plan.

z. A traffic impact and access study shall be required for all developments that generate 25 or more peak hour vehicle trips or 250 or more daily vehicle trips at the development access to existing roadway networks. The study shall be based on standard traffic engineering guidelines developed by the Massachusetts Environmental Protection Act (MEPA). The Planning Board may require traffic study if in their determination one is warranted because of public safety concerns.
aa. A Subdivision Maintenance Plan detailing inspection and maintenance practices for the street pavement, drainage facilities, landscaped areas, open spaces, and other common features of the subdivision.

3.C.3 PUBLIC HEARING
a. No notice of a hearing will be advertised until all requirements as called for under Section 3 of the Subdivision Rules and Regulations have been complied with and on file in the Planning Board Office.
b. Before approval of the Definitive plan is given, a public hearing shall be held by the Board. Notice of such hearing will be given by the board at the expense of the applicant at least fourteen (14) days prior thereto by advertisement in an official publication of, or in a newspaper of general circulation in the Town of Sandwich. A copy of said notice will be mailed to the applicant and to all owners of land abutting the subdivision as appearing in the most recent tax list.

3.C.4 PROCEDURE
a. After the required hearing, but within ninety (90) days of submission of the Definitive plan, if a Preliminary plan has previously been filed, or one hundred and thirty (135) days if no Preliminary plan has previously been filed, the Planning Board will take final action thereon.
b. The Planning Board may approve, approve with modification, or disapprove said plan, it will state in its vote the reasons for such action and shall so notify the applicant, and the Town Clerk.
c. If additional time is needed to resolve an application, the Applicant may request in writing to the Planning Board for an extension of the statutory time frame in which they are required to act. Any such extension agreement must be filed with the Town Clerk.

3.C.5 REVIEW OF BOARD OF HEALTH AS TO SUITABILITY OF LAND
a. The Board of Health or officer shall report to the Planning Board in writing, approval or disapproval of said plan, and in the event of disapproval shall make specific findings as to which, if any, of the lots shown on the plan cannot be used for building sites without injury to the public health and include such specific findings and the reasons therefore in such report.
b. 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 such Board or officer.
c. Such Health Board or officer shall send a copy of such report, if any, to the person who submitted said plan.

3.C.6 REVIEW BY OTHER OFFICIALS
a. Before the opening of the public hearing for the Definitive Plan, the Board will submit to the Engineering Department a copy of the plan. A report as to the conformity of the plan with the Subdivision Regulations and with the design standards will be filed by the Engineering Department. This report to the Planning Board shall follow the format of these Rules and Regulations and be submitted to the Planning Board office at least one week prior to the scheduled public hearing.
b. The Board will require the Applicant to notify the agencies listed below that a plan has been filed with the Planning board and is available for review. Copies of said notification shall be presented to the Board.
   1. The Chief of the Fire Department as to the location of the hydrants and other pertinent data.
   2. The Superintendent of the Water District as to the location of the water mains, including service to the fire hydrants.
   3. The Manager of the electric company as to the requirements for electrical service.
   4. The Gas Company as to the location and size of gas mains.
5. The Telephone Company as to the location of telephone lines and the location of Cable TV lines.
6. The Director of Public Works.
7. The Police Chief.
8. Other departments or officials deemed necessary.

3.C.7 TIME OF COMPLETION OF WAYS AND INSTALLATION OF MUNICIPAL SERVICES

Every applicant shall state in writing the time within which he agrees to complete the proposed ways and to install all municipal services required by the Board. The Board may decline to approve any plan unless the applicant agrees to complete the ways shown thereon and install the municipal services aforesaid within an agreed upon period after the date of his application. The applicant shall notify the Board in writing of the date that construction will begin at least seven (7) days prior to such date. (Amended 6/7/95)

In the event the work is not completed within the time set forth, or as extended, the Board may rescind its approval and require a new public hearing.

3.C.8 PERFORMANCE GUARANTEE

Before endorsement of a Definitive Plan of a subdivision, the applicant shall agree to complete the required improvements as shown on the plan and as specified in these Subdivision Rules and Regulations Section 4 and 5 for all lots in the subdivision, such construction and installation to be secured by one, or in part by one and in part by the other, of the following methods (in a form approved by the Planning Board) which may from time to time be varied at the applicant’s formal written request to the Planning Board.

a. Final Approval Cash Deposit: The applicant shall deliver a passbook in an amount determined by the Board to be sufficient to cover the cost of all or any part of the improvements as shown on the Definitive Plan and as specified in Sections 4 and 5 of these Subdivision Rules & Regulations, not covered by the covenant under "b" below. The passbook will be approved by the Town Treasurer as to form and its release shall be contingent on the completion of such improvements within a time which shall have been set by the Board, up to a maximum of twenty-four (24) months, or an agreed upon period.

b. Final Approval With Covenant: The applicant shall file a covenant acceptable to the Board, executed and duly recorded by the owner of record, running with the land, whereby such improvement as shown on the Definitive Plan and as specified in these subdivision Rules & Regulations, Sections 4 and 5, not covered by deposit under "all above, shall be provided to serve any lot before such lot may be built upon or conveyed, other than by mortgage deed. The form of the covenant may be given by Form E in the appendix.

3.C.9 CERTIFICATE OF ACTION

a. The action of the Board in respect to said plan shall be by vote, copies of which shall be certified and filed with the Town Clerk and sent by Certified mail to the applicant.

b. Upon final approval, if granted, four (4) copies of the Definitive Plan with all modifications shown (if any were made) shall be submitted to the Planning Board for endorsement.

c. The plan shall not be endorsed, however, until a statutory twenty (20) day appeal period has elapsed following the filing of the Certificate of action of the Planning Board with the Town Clerk and said Clerk has endorsed on the plan that no appeal has been filed, and surety is provided in accordance with Section 3.C.8 of these Rules & Regulations.

d. The plan shall be endorsed by the Planning Board within the six months of approval. If said endorsement is not possible due to incomplete information, the Planning Board may, upon its own motion, rescind the approval of the plan pursuant to Section 81-W of the Subdivision Control Law. (Amended 9/3/97).
e. Approval of the Definitive Plan shall not constitute the laying out or acceptance by the Town of any ways within a subdivision.

3.C.10 RECORDING OF THE PLAN AND OTHER DOCUMENTS

a. The applicant shall be responsible for recording the approved Definitive Plan and all other relevant documents as may be required in the approval, including the covenant and special permit, if applicable. (Amended 9/3/97)

b. Said documents shall be recorded in Land Court or the Registry of Deeds within sixty days of the Planning Board endorsement of the Definitive Plan. If said documents are not recorded within this time period, the Planning Board may, upon its own motion, rescind the approval of the plan pursuant to Section 81-W of the Subdivision Control Law. (Amended 9/3/97).

c. Furthermore, he shall notify the Planning Board of such recording, submitting copies of plans and covenants bearing the date and time stamp of the Registry of Deeds, and a listing of the book and page where they are recorded.

d. Upon receipt of notification of recording, the Planning Board shall file one print of the Definitive Plan with the Building Inspector, where approval with covenant is noted thereon. He shall issue no permit for the construction of a building on any lot within the subdivision except upon receipt from the Planning Board of a copy of the certificate of Performance, Form G, releasing the lot in question.

3.C.11 REVISION TO A DEFINITIVE PLAN

a. No revision or change of the Definitive Plan can be made without the prior approval of the Planning Board. This includes any revision due to field conditions or for any reason whatsoever, the applicant shall submit a print of the Definitive Plan or plans to be revised with a red pencil representing the changes he proposes to make.

b. The Board will consider such change in the same manner as the original plan, and approve, disapprove, or modify the requested change with or without a public hearing as the Board may determine.

3.C.12 REDUCTION OF SURETY

Upon written request of the applicant stating reasons, therefore, the penal sum of any such deposit held hereunder, may from time to time, be reduced at the discretion of the Board and the obligations of the parties thereto, released by said Board in part. The applicant shall be liable for the costs incurred by the Town Engineer or his representative to complete the Form I. (6/7/95).

3.C.13 RELEASE OF PERFORMANCE GUARANTEE

a. Upon the satisfactory completion of all required work, including the delivery of an original and four (4) copies of “as-built” plans and digital submission consistent with the Planning Board’s Electronic Filing policy, which can be found on the Town’s website or at the Town office, establishment of a Property Owners Association if so required, and completion of any requirements set forth by the Definitive Plan Approval and one year growth for all grass and plantings. The applicant shall send a statement by certified mail to the Planning Board and the Town Clerk that the required construction has been completed in accordance with these Rules and Regulations. The “as built” plans shall contain the following information: (amended 9/3/97).

1. The original plan shall be on 24” x 36” Mylar and shall conform to the logo and title used by the Town for street acceptance plans. It shall also include the area of taking in front of each lot. (Amended 6/7/95).

2. The plan shall be prepared at a scale of one-inch (1") equals forty (40’) feet, horizontally and one inch (1") equals four (4’) feet vertically.

3. Name of the subdivision, date, scale, name of the owner, or Applicant, name of the Engineer and Surveyor, and the benchmark used.
4. The location of the edge of the traveled way with respect to the street layout lines.
5. The location of all permanent monuments, and all other data required.
6. The location, size and invert elevations of the drainage system required to be installed.
7. The location of ground level pads, transformers, pedestals, etc., of the electric, telephone and cable companies. (Amended 6/7/95).
8. The plan shall be prepared by a Massachusetts Registered Land Surveyor and shall bear his stamp.
10. The plan shall include the following statement and shall be endorsed by the Engineer:
    “The improvements depicted herein were constructed in conformance with the Town of Sandwich Planning Board’s Subdivision Rules and Regulations and the Definite Plan approval except as noted otherwise.”

b. If the Board determines:
   1. That said improvements have been completed; and
   2. That these Rules and Regulations have been complied with; and
   3. That the "as-built" plans are satisfactory, it shall release the interest of the Town and return the cash deposit to the person who furnished the same, or release the covenant or other security by appropriate instrument (Form G) duly acknowledged, with a copy to the Building Inspector.

c. The Board may determine that a partial release of funds be granted for partial completion of work. Interim "as built" plans may be required for work partially completed.

3.C.14 FAILURE OF PERFORMANCE

Upon failure of the applicant to satisfactorily complete all required work within the time frame specified and in accordance with these Rules and Regulations, the Planning Board shall specify in notice sent by Certified Mail to the applicant and the Town Clerk, the details wherein said improvements fail to comply with its Rules and Regulations. The Planning Board shall have the right to rely upon the cash surety to the extent of the reasonable cost to the Town of completing the required construction and installation including any portion of such security necessary to cover the expenses incurred in conjunction therewith and return any amounts left after such completion to the applicant.

3.C.15 RESCISSION

In accordance with Massachusetts General Laws, Chapter 41, Section 81-W, the Board may rescind approval for non-compliance with these Rules and Regulations.

3.C.16 LONG TERM COMPLIANCE

Any subdivision that was originally under covenant at the time of endorsement and that remains entirely under covenant eight years after endorsement by the Planning Board and whose roads and utilities have not been substantially constructed shall be subject to the most current Sandwich Subdivision Rules and Regulations.
SECTION 4

DESIGN OF THE REQUIRED IMPROVEMENTS

4.A GENERAL

The proposed subdivision shall be so designed as to protect the safety, convenience and welfare of the occupants of the subdivision and the Town of Sandwich, through reasonable precautions against possible natural disasters, provisions for traffic safety and convenience, assurance of adequate sanitary conditions and consideration of amenities.

Existing contours shall be preserved insofar as it is practical. In any event no change shall be made in existing contours which adversely affects land abutting the proposed subdivision.

Due regard shall be shown for all natural features and community assets, which if preserved will add attractiveness and value to the subdivision.

All work on the ground hereinafter specified shall be performed by the Applicant in accordance with these Rules and Regulations, in conformity with approved Definitive Plan and specifications and other construction requirements of any agencies concerned and to the satisfaction of such agencies.

Any proposal for construction that is different from the approved plans, including proposed field changes, shall be submitted to the Planning Board for its approval on a plan of sufficient size and detail as determined by the Planning Board and stamped by a Registered Professional Land Survey and/or a Registered Professional Engineer.

All road design shall include all information relating to construction and performance provided by the manufacturer of any products and materials proposed to be included in the construction of the roadway.

If an applicant chooses to design streets that do not conform to the Sandwich Subdivision Rules & Regulations, the applicant shall submit to the Planning Board all design, calculations, and alternate design standards for such proposed roadway prior to the request for a waiver from the Sandwich Subdivision Rules & Regulations.

In the event that the proposed subdivision is not constructed in such a manner as to obtain release of all lots from covenant and release of all sureties prior to the expiration of 8 years from the date of approval of plan, all construction shall comply with the most current Rules and Regulations.

Unless specified otherwise herein, proposed streets, drainage, and other facilities shall conform to the engineering and construction standards of MassDOT, including the 2006 Project Development & Design Guide, Engineering Directives, Policy Directives, and other relevant publications, all as most recently revised.

Design and construction of streets and other features shall be compliant with the Town of Sandwich’s Complete Streets Policy, the Massachusetts Architectural Access Board regulations 521 CMR, and the United States Environmental Protection Agency’s National Pollution Discharge Elimination System program requirements.

4.B STREETS

4.B.1 LOCATION OF STREETS

a. The streets shall be designed and located so as, in the opinion of the Board, to be continuous and in alignment with existing streets; to provide adequate access to all lots in the subdivision by streets that are safe and convenient for travel; to lessen congestion in such streets and adjacent streets; to reduce danger from the operation of motor vehicles; to secure safety in case of fire, flood, panic and other emergency; to insure adequate provision for proper drainage, water and other municipal services; and to coordinate the
streets in the subdivision with each other and with the existing street system of the Town and the streets in the neighboring subdivisions.

b. The proposed streets shall be designed and located so as to conform to the Master Plan, if any, as adopted in whole or in part by the Board.

c. 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.

d. In case access to a subdivision crosses land in another municipality, the Board will require certification from the appropriate authorities, that such access is in accordance with the Master Plan and Subdivision requirements of such municipality and that such access is adequately improved to handle prospective traffic.

e. Streets should be so located as to preserve existing landscape features such as kettleholes and other landforms; large trees and other significant vegetation; stone walls; existing woods roads; and wetlands.

f. Streets shall be located to provide sight distances meeting or exceeding the standards established by AASHTO. In no case shall a proposed street intersect another where minimum stopping sight distances cannot be met. Any improvements necessary to establish adequate sight distances shall be the responsibility of the Applicant. If such improvements are necessary on existing roads, the improvements on those roads will be subject to the approvals of those responsible for those roads. Evidence of such approvals shall be provided to the Board as part of the Application.

4.B.2 WIDTH, ALIGNMENT, AND GRADES OF STREETS

a. The criteria contained in the appendix shall be met in the design of streets. In certain cases, the Board may require additional provisions, such as paved shoulders or that the traveled way be separated by a median strip with a width to be determined by the Board. In this case the traveled way shall consist of two roadways, each with a minimum width of 18 feet or such greater width as the Board may specify.

b. Street jogs with centerline offsets of less than one hundred twenty-five (125) feet shall not be permitted.

c. Property lines at street intersections shall be rounded or cut back to provide for curb radius of not less than thirty (30) feet at intersections with a collector street and twenty (20) feet for intersections involving only minor streets and lanes.

d. Streets shall be laid out so as to intersect as nearly as possible at right angles. No street shall intersect any other street less than sixty (60) degrees.

e. Where the angle of intersection between two streets varies more than ten (10) degrees from a right angle, the radius of the curve at the curb line at the obtuse angle shall not be less than twenty-five (25) feet at the intersections with a collector street and fifteen (15) feet at intersections with minor streets or lanes.

f. The radius of the curve at the curb line at the acute angle shall not be less than thirty-five (35) feet for intersections with a collector street and twenty-five (25) feet at intersections with minor streets and lanes.

g. The minimum centerline radius of a curve in streets shall not be less than one hundred (100) feet for a lane, one hundred fifty (150) feet for minor streets and five hundred (500) feet for collector streets.

h. All reverse curves on collector streets shall be separated by a centerline tangent of at least one hundred (100) feet in length.

i. There shall be access to all lots via streets and portions of streets, no part of which shall be less than 100 year flood elevation as determined by F.E.M.A.

j. The width of street rights-of-way shall not be less than fifty (50) feet for minor streets and lanes, sixty-eight (68) feet for collector streets. Greater width shall be required by the Board when deemed necessary for present and future pedestrian safety and vehicular traffic. (Amended 10/2/96).
k. The grade of any street shall never be less than one percent (1%). Grades shall never exceed six percent (6%) for collector streets, ten percent (10%) for minor streets or twelve percent (12%) for lanes.

l. All changes in grade exceeding two (2%) percent shall be connected by vertical curves of sufficient length to afford the following sight distances: Two hundred (200) feet for minor streets and lanes; three hundred (300') feet on collector streets.

m. No street shall intersect another street at gradient in excess of two (2%) percent for a distance of at least fifty (50) feet when intersecting a minor street or lane, or seventy-five (75) feet when intersecting a collector street.

n. No centerline gradient is to exceed six (6%) percent on any curve whose radius is less than three hundred (300) feet.

o. No centerline gradient is to exceed six (6%) percent within five hundred (500) feet of a dead end. Grades along the street centerline around a cul-de-sac shall not exceed 3%. (Amended 6/7/95).

p. Way lines shall be parallel with and set back uniformly from the road centerline unless otherwise specified by the Planning Board.

q. No proposed arterial street shall connect at any street other than another arterial street. No collector street shall connect to a minor street.

r. Any applicant that proposes to connect an arterial street to an existing arterial street shall be responsible for improvements and upgrading the existing arterial street in accordance with the most current Planning Board standards for arterial street.

s. Any applicant that connects a collector street to another collector street or arterial street shall be responsible for improvements and upgrading the existing collector or arterial street in accordance with the most current Planning Board standards for collector and arterial streets.

4.B.3 DEAD END STREETS

a. Where a condition of restricted access exists, street lengths may not exceed that which would require vehicular travel of 500 feet beyond a point of restriction to the furthest-most point on the street or street network.

b. Lengths of streets shall be measured along the centerlines of the proposed streets from the street origin point to the street end point. Where an origin point is at the intersection with an existing street, it shall be located at the intersection of the sideline of the existing right-of-way and the centerline of the proposed street; where it is at the intersection with a proposed street, the origin point shall be located at the intersection of the centerlines of the proposed streets. Where the proposed street terminates at a proposed cul-de-sac, the end point shall be the radius point of the proposed cul-de-sac; where the proposed street terminates at an intersection, the end point shall be the intersection of the street centerlines.

c. Two separate lanes of pavement within the same layout will not constitute separate means of access. Separate layouts must be separated by at least the minimum frontage requirement for the zoning district.

d. Dead end streets shall be provided at the closed end with a cul-de-sac having an outside roadway diameter of at least one hundred (100') feet and a property line diameter of at least one hundred twenty (120') feet. (Amended 9/3/97).

e. Upon construction of an extension of a dead end street the easement for the existing turn around or cul-de-sac shall terminate in accordance with the provision of Chapter 41, of the Massachusetts General Law. (amended 9/3/97)

f. A cul-de-sac shall have a central island sixty (60) feet in diameter and shall be graded such that it slopes uniformly from the center to the road. A central island may slope toward the center if suitable provisions for drainage and landscaping are made and documented with calculations and plan details. If existing
vegetation is disturbed, the island shall be re-vegetated with low maintenance trees, shrubs, or other landscape treatment deemed appropriate by the Planning Board. (Amended 9/3/97).

g. The Board may waive the maximum restricted access street length requirement if actual emergency access is provided and proposed design is determined to be suitable by the Board and the Town Engineer. The emergency access shall meet the requirements of Section 5.S Minimum Road Construction Standards.

4.C DRAINAGE

4.C.1 GENERAL

a. All drainage systems associated with the subdivision shall be designed in accordance with the Massachusetts Stormwater Handbook and Mass DOT procedures.

b. Calculations shall be made from the source of drainage runoff using adequate topographic maps for the entire drainage area, including those areas outside the subdivision affecting it. Plans depicting catchment areas, time of concentration flow lines, and all relevant features shall be submitted with the calculations.

c. All drainage calculations shall include any information relating to construction and performance provided by the manufacturer of any products and materials proposed to be included in the construction of the drainage facilities that have been used in the drainage calculations.

d. Drainage systems shall be designed to responsibly manage runoff based on the 100-year event frequency.

e. Soil permeability tests may be required at proposed infiltration locations at the discretion of the Board.

4.C.2 STORM DRAINAGE SYSTEM

a. Complete storm drainage system shall be designed for each street in the subdivision. It shall be of sufficient size to permit unimpeded flow of all natural runoff; to provide adequate drainage for all streets, to intercept runoff from the adjacent lots of the subdivision and to eliminate ponding of storm runoff except in designated areas. Leaching catch basins are prohibited.

b. All runoff shall be designed to utilize natural drainage areas and these areas shall be protected from development. In the event that a natural drainage area is eliminated by a street, compensatory drainage area must be provided. In areas where the natural drainage area is determined to be insufficient in size, additional drainage areas will be required. Any drainage area that is constructed shall not have sides with slopes steeper than three (3) horizontal to one (1) vertical. In such cases as it is deemed necessary and acceptable by the Board and its engineer, surface water may be disposed of by a leaching system of the proper design and size. Calculations for a design of such system shall be submitted with the other drainage calculations under the same provisions. (Amended 6/7/95).

c. Provision shall be made for the disposal of surface water intercepted or collected by the system in such a way that no flow is conveyed over or under the land of others unless a drainage easement is obtained. No flow shall be conveyed over or under town ways. All drainage easements shall conform to the requirements of Section 4.D of these Rules and Regulations. (Amended 6/7/95).

d. Catch basins shall be located on each side of the roadway, at all low points or sag curves in the roadway, at intervals of no more than three hundred (300') feet on continuous grades of the roadway, and at or near corners of the roadway at intersecting streets. Catch basins may be omitted at the discretion of the Board at locations where suitable alternate drainage facilities are provided, e.g. swales.

e. Manholes shall be located at all changes in direction either horizontally or vertically, of a drain line or so located that no drain line greater than three hundred (300') feet in length would exist without either a catch basin or manhole.

f. The calculations necessary to determine the size of any culvert shall be submitted to the Planning Board for review. All culverts shall have a headwall or flared end section at each end and any additional slope protection deemed necessary.
g. All drain lines shall be a minimum of twelve (12”) inches in diameter and shall be laid on slope of not less than one-half of one (0.5%) percent. The minimum design velocity shall be three (3’) feet per second and maximum design velocity shall be ten (10’) feet per second. Drain line alignments between drainage structures shall be straight and uniform.

h. A headwall or flared end section shall be provided at the outfall end of all drains where required.

i. Catch basins at all sag points be equipped with curb inlets.

4.C.3 SUB-SURFACE DRAINAGE

In areas where an unusually high water table exists, or in other areas as deemed by the Board, a system of sub-drains shall be designed. The sub-drain system shall discharge into the storm drainage system or disposed of in a manner acceptable to the Board.

4.D EASEMENTS

4. D.1 Easements for municipal services shall be provided and recorded as required and centered on lot lines where practical and shall be at least twenty (20’) feet wide.

4. D.2 All easements shall have sufficient data to determine the location, direction, length and width and to establish these lines on the ground.

4.D.3 Where a subdivision is traversed by a water course, drainage way, wetland, channel or stream, the Board may require that there be provided a storm water easement or drainage easement of a minimum width of twenty (20’) feet to conform substantially to the lines of water courses, drainage way, drainage pipe, or construction, maintenance or other necessary purposes. (Amended 9/3/97).

4. D.4 No permanent structures, other than drainage facilities, shall be constructed within the limits of any drainage easement. (Amended 9/3/97).

4. D.5 Slope easements shall be provided where cut and fill slopes cannot be contained within the street layout. (Amended 9/3/97).

4. D.6 Driveway easements may be required where deemed necessary. Where possible, driveways should enter onto lanes or minor streets, rather than collector or arterial streets.

4.E PEDESTRIAN WAYS

4. E.1 Wherever in the opinion of the Board, proximity to public land or recreational facilities, or continuation of abutting pathways reasonably requires them, rights-of-way not in excess of eight (8) feet for pedestrian travel shall be provided.

4. E.2 Community walkway systems linking open spaces and roads are encouraged where appropriate.

4.F SIDEWALKS

4. F.1 Sidewalks shall be located on one or both sides of a collector street and on one side of a minor street and at any other locations where, in the judgement of the Planning Board, their installation is appropriate for pedestrian safety.

4.F.2 The Planning Board may also require that at other locations, the grading of the right of way be so executed as to make sidewalks possible in the future without major re-grading.
4. F.3 Sidewalks shall not be less than four (4) feet in width, constructed of either bituminous concrete or Portland cement concrete and shall be so aligned as to avoid cuts and fills, removal of trees and shrubs or long tangents.

4. G BERMS AND CURBS
4. G.1 Bituminous concrete berms shall be installed on both sides of all streets except where omission is necessary to support drainage and as approved by the Board. (Amended 6/7/95).
4. G.2 The Board shall have the discretion to require vertical curbs on one or both sides of any street in place of berms. (Amended 6/7/95)

4. H OPEN SPACES
Before approval of a Plan, the Board may in proper cases require the plan to show a park or parks, suitably located for playground or recreation purposes for providing light and air. The park or parks shall not be unreasonable in area in relation to the land being subdivided and to the prospective uses of such land. The Board may by appropriate endorsement on the plan require that no building be erected upon such park or parks for a period of three (3) years without its approval.

4. I 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. Destruction of trees, stone walls, woods roads, and other landscape features should be minimized by siting lot lines on or near such elements.

4. J RETAINING WALLS
Wherever retaining walls may be required, such retaining walls shall not be proposed nor constructed within the street layout. The Planning Board shall not approve easements for retaining walls.

4. K WATER SUPPLY AND SANITARY DISPOSAL
4. K.1 No definitive plan shall be approved by the Planning Board unless all lots are to be served by a public water supply or evidence satisfactory to the Board is presented that an adequate supply of water can be provided to each lot in the subdivision which is to be built upon.
4. K.2 No water supply subject to interruption or contamination in the event of coastal flooding according to F.E.M.A. maps shall be considered adequate.
4. K.3 No Definitive plan shall be approved by the Planning Board if its sanitary disposal arrangements have been disapproved by the Board of Health and no plan shall be approved unless each building lot in the subdivision is served by a sanitary disposal system not subject to inundation in the event of coastal flooding.

4. L MUNICIPAL SERVICES AND UTILITIES
4. L.1 The Board may require that the plan show municipal services and utilities of the kinds existing in the public ways nearest to the subdivision, or which in the opinion of the Board are likely to be laid in such public ways within the reasonable near future and which will be necessary for the health, safety or convenience of the prospective occupants of the subdivision.
4. L.2 The design of the water system and provision for hydrant service shall be as directed or approved by the Sandwich Water District, in accordance with the "Typical Road Cross Sections". In the case where
sidewalks are to be constructed on one side of the roadway, the water and hydrants shall be on the opposite side of the roadway.

4. L.3 The design of the electrical power system shall be as directed by the electric company.

4. L.4 The applicant shall consult with the local telephone, cable, and data service companies relative to the installation of their facilities.

4. L.5 All electrical, telephone and other utility wires shall be placed underground unless the board determines that such installation is not feasible or is not in the best interest of the Town. Such utilities shall be constructed in accordance with the information contained on the typical road cross section. The Board may allow all or any part of the wiring, cables and other appurtenances to be placed above ground within appropriate easements.

4. L.6 All service connections for utilities shall be clearly marked at the lot line and shall be installed such that wired services are located near the lot line perpendicular to the street and the gas service is located near the alternative lot line and said service connection shall be installed prior to the completion of the fill. The locations of the services and related equipment shall not conflict with lot corner monuments.

4. L.7 All public utilities and facilities such as sewer, gas, electrical and water systems shall be located and constructed to minimize or eliminate flood damage.

4.M ACCESS TO LOTS

Lots with frontage on more than one way shall maintain a driveway on the lesser-traveled way.
SECTION 5

SPECIFICATIONS FOR CONSTRUCTION OF THE REQUIRED IMPROVEMENTS

5.A GENERAL

5. A.1 All improvements specified or implied on the Definitive plan shall be constructed or installed by the applicant in accordance with the provisions of this section of the Rules and Regulations, or as directed by the Board. The applicant at his own expense shall furnish all necessary materials, labor and equipment which may be required to complete the work called for or implied on the Definitive Plan. Items not specifically mentioned herein shall be constructed in accordance with the latest revision of the Standard Specification for Highway and Bridges of the Massachusetts Highway Department (herein after referred to as the "Standard Specifications"), unless specifically directed otherwise by the Board.

5. A.2 All work performed by the applicant as a consequence of these rules and regulations will be subject to the review and acceptance or approval of the Board. The Town Engineer will act as agent for the Board for the inspection of the work. In order that the Town Engineer may properly inspect the work as it progresses, the applicant will keep the Town Engineer informed of the progress of the work and shall at any time, provide safe and convenient access to all parts of the work for inspection by members of the Board or the Town Engineer, or such persons as the Board may designate. No work will be approved which has been covered, prior to inspection, by subsequent work.

5.B SUBDIVISION LAYOUT

5. B.1 The subdivision, including all way and lot lines and all drain lines and municipal services shall be laid out as to line and grade by a Registered Land Surveyor and/or Engineer. Stakes for line and grade clearly marked with the proper station shall be maintained throughout construction. Immediately subsequent to the applicant's surveyor laying out the road with grade stakes, drain lines and municipal services and prior to any construction, the applicant shall submit a letter to the Planning Board from a Registered Professional Land Surveyor certifying that the road layout, drain lines and municipal services are laid out on the ground as shown on the approved definitive plan or other roadway plan duly approved by the Planning Board.

5. B.2 If the Board determines that any work does not conform to the required specifications, or the plan, the applicant shall pay all costs, which the Board incurs as a consequence of checking the work which has been incorrectly laid out.

5. B.3 All improvements specified or implied on the Definitive plan shall be shown on the Definitive plan within the right-of-way and clearly distinguished by lines labeled "limit of clearing" which shall be subject to approval by the Planning Board. No areas within the right-of-way, outside of the "limit of clearing", shall be disturbed. In no case shall the entire right-of-way be cleared. The Planning Board shall require complete restoration of any areas outside of the "limit of clearing" that are disturbed. The entire area within the "limit of clearing" shall be cleared of all trees, stumps, brush, roots, rocks, or boulders and all unsuitable materials. No loam suitable for reuse shall be removed from the subdivision unless adequate loam will remain or is otherwise assured to provide all disturbed areas within the subdivision with a loam depth of at least six (6) inches. All streets from which loam is being removed shall be brought to sub-grade with the approved foundation materials within six (6) months.

5. B.4 The entire area to be occupied by the roadway and an additional eight (8') feet wider than the paved width or extending outward to the top of the slopes in fill areas, shall be excavated a minimum of fifteen (15") inches below finish grade in cut sections or as necessary to remove the topsoil in fill sections. The Town Engineer or his representative may require greater depths of excavation if soft or yielding material detrimental to the sub-grade is encountered. All fill or undisturbed material shall be non-frost-susceptible for a minimum depth of three (3') feet below the finished road grade.
An inspection of this phase of the work will be made when completed in accordance with Section 6.

5.C DRAINAGE SYSTEM

5. C.1 The construction of the drainage system, including methods and quality of materials, shall conform to the Standard Specifications, or modification hereafter, or as directed by the Board's Engineer. All catch basins shall be constructed of pre-cast concrete with an approved standard square frame and grate, with square holes.

5. C.2 All catch basins shall have minimum diameter of at least forty-eight (48") inches and shall be constructed with a minimum sump depth of three (3’) feet below the invert of the out flow pipe. (See Appendix)

5. C.3 For curb inlet detail, see Appendix.

5. C.4 All storm drainage pipe shall be reinforced concrete pipe, or a type approved by the Board's Engineer and shall be laid with the minimum cover of three (3’) feet.

5. C.5 Catch basin outlet pipes shall be fitted with vented hoods or tees that extend a minimum of 6 inches below the waterline.

5. C.6 In cases where a subsurface leaching system for surface water disposal has been approved by the Board, standard pre-cast concrete leaching basins, as shown in the appendix, may be used. Drainage areas that have been designed to utilize a leaching field must be approved by the Board's Engineer. The applicant's Engineer must submit a construction plan of such area to be approved. The Sub-surface drainage system, if necessary, shall be constructed according to the latest revision of the Construction Standards.

5. C.7 All drainage pipe shall end in a headwall or approved end section with sizes, materials and construction according to the construction standards.

5. C.8 All trench backfill for the storm drains and other backfill within the limits of the way shall consist of an approved suitable material thoroughly compacted.

5.D MUNICIPAL SERVICES & UTILITIES

5. D.1 The applicant shall provide and install all necessary materials, appurtenances and equipment to complete the municipal services as may be required on the Definitive Plan in a manner acceptable to the officials or agencies having jurisdiction of each service as previously mentioned.

5. D.2 For Subdivisions within the Sandwich Water District, water mains, related equipment, such as hydrants and main shut-off valves, shall be constructed to serve all lots on each street in the subdivision in conformity with the specifications of the Sandwich Water District. An easement shall be granted giving the Water District access to the entire parcel. No other utilities shall be placed within the same trench with the water mains. Hydrants shall be placed within five hundred (500’) feet of each potential dwelling and shall be centered on lot sidelines.

5. D.3 All municipal services shall be located as shown on the typical road cross sections in the appendix.

5. D.4 All work in connection with the municipal services shall be left uncovered until such time as the Town Engineer permits the backfill to be placed.

5. D.5 All trench backfill material for municipal services within the way limits shall consist of an approved suitable material thoroughly compacted.
5. D.6 All utilities located under the limits of the paved roadway and berms shall be installed prior to constructing the bituminous concrete binder course.

5. D.7 All utilities shall be installed prior to constructing bituminous concrete top course.

5.E FILL

5. E.1 All material which may be required within the exterior lines of the way, up to the twelve (12") inch gravel foundation, shall be of clean gravel or other suitable material as approved by the Town Engineer and properly compacted.

5. E.2 All municipal services shall be installed prior to all the fill being added. This shall include the installation of each service pipe, sleeve, or conduit to the front of the lot line of each lot in the subdivision. Upon completion of the fill and the backfill of all service trenches, the work will be inspected by the Town Engineer. Subsequent work shall not be commenced until the Town Engineer has approved the fill as acceptable for the application of the roadway foundation material.

5.F ROADWAY FOUNDATION

5. F.1 A minimum of twelve (12") inches of clean gravel, approved by the Town Engineer, shall be deposited for the full width of the traveled way and shoulders, so as to form a roadway centerline grade, allowing for the pavement thickness, below the proposed finished grade at all points.

5. F.2 The gravel shall be compacted to ninety-five (95%) percent of the maximum dry density as determined by the Modified Proctor Test in accordance with ASTM 1557, Method "D".

5. F.3 Gravel shall consist of the following as set forth in the Standard Specifications or as modified below:

a. **Processed Gravel.** Processed gravel for roadway foundation shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

The gradation shall meet the following requirements:

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3”</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>70-85</td>
</tr>
<tr>
<td>¾”</td>
<td>50-75</td>
</tr>
<tr>
<td>#4</td>
<td>30-50</td>
</tr>
<tr>
<td>#200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

The approved source of bank run gravel shall be processed by mechanical means. The equipment for producing crushed gravel shall be of adequate size and with sufficient adjustments to produce the desired materials. The processed material shall be stockpiled in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles.

b. **Reclaimed Pavement.** Reclaimed pavement material for roadway foundation shall consist of crushed asphalt pavement (less than 50% by volume), crushed cement concrete, and gravel borrow (meeting M1.03.0) free from loam, clay and deleterious materials such as brick, reinforcing steel, glass, wood, paper, plaster, lathing, and building rubble, etc.
The coarse aggregate shall have a percentage of wear, by Los Angeles Abrasion Test, of not more than 50.

The gradation shall meet the following requirements:

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3”</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>70-100</td>
</tr>
<tr>
<td>¾”</td>
<td>50-85</td>
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<tr>
<td>#4</td>
<td>30-60</td>
</tr>
<tr>
<td>#50</td>
<td>8-24</td>
</tr>
<tr>
<td>#200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

The approved source of reclaimed pavement material shall be processed by mechanical means. The equipment for producing crushed material shall be of adequate size and with sufficient adjustments to produce the desired materials. The processed material shall be stockpiled in such a manner as to minimize segregation of particle sizes. All reclaimed pavement material shall come from approved stockpiles.

c. Dense-graded crushed stone. This specification covers the quality and gradation requirements for roadway foundation gravel combining crusher-run coarse aggregates of crushed stone or gravel and fine aggregates of natural sand or stone screenings uniformly mixed with a pre-determined quantity of water.

Coarse aggregate shall consist of hard durable particles or fragments of stone or gravel. Materials that break up when alternately frozen and thawed or wetted and dried shall not be used.

Coarse aggregate shall have a percentage of wear by the Los Angeles Test, of not more than 42.

Fine aggregate shall consist of natural or crushed sand.

The composite material shall be free from clay, loam or other plastic material and shall conform to the following grading requirements:

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>70-100</td>
</tr>
<tr>
<td>¾”</td>
<td>50-85</td>
</tr>
<tr>
<td>#4</td>
<td>30-55</td>
</tr>
<tr>
<td>#50</td>
<td>8-24</td>
</tr>
<tr>
<td>#200</td>
<td>3-10</td>
</tr>
</tbody>
</table>

Sampling and testing shall be in accordance with the following standard ASHTO methods:

- Sieve Analysis    T 27
- Passing No. 200 Sieve T 11

d. All sieve analyses must be submitted to the Planning Board from samples of the gravel after it is brought on site. Sieve analyses can be performed by the applicant at his option before the gravel is brought on site.
5.G ROADWAY SURFACE

5. G.1 All roadways shall be paved to conform with the finished grade and width as specified, with Hot Mix Asphalt (HMA) paving in accordance with the Standard Specifications and subject to the approval of the Town Engineer. The applicant shall submit a specification job mix formula to the Town Engineer for approval prior to starting the work.

5. G.2 Finished pavement thickness (minimum)

<table>
<thead>
<tr>
<th>Type of Street</th>
<th>Binder Course</th>
<th>Top Course</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Street, Lane</td>
<td>2”</td>
<td>1”</td>
<td>3”</td>
</tr>
<tr>
<td>Collector</td>
<td>2-1/2”</td>
<td>1”</td>
<td>3-1/2”</td>
</tr>
<tr>
<td>Commercial &amp; Industrial</td>
<td>2-1/2”</td>
<td>1-1/2”</td>
<td>4”</td>
</tr>
</tbody>
</table>

5. G.3 Town Engineer inspection of the paving operation is required in accordance with Section 6.

5.H SIDEWALKS

5. H.1 Sidewalks shall be constructed of bituminous or Portland Cement concrete. The gravel foundation shall be a minimum of eight (8”) inches and conform to the requirements of the roadway foundation.

5. H.2 Bituminous concrete sidewalks shall consist of one and a half (1 1/2") inches of HMA binder course and one (1") inch of HMA top course. Portland Cement concrete sidewalks shall be four (4") inches thick and have a scored section every four and one half (4 1/2') feet. After each four (4) scored sections there shall be an expansion joint consisting of a preformed joint filler.

5. H.3 The Portland Cement concrete shall meet the mix specifications as set forth in the Standard Specifications.

5. H.4 All concrete sidewalks shall be constructed in accordance with the latest revisions of the construction manuals of the American Concrete Institute.

5.I BERMS

5. I.1 Berm shall consist of HMA, and shall conform to the requirements for either top course or dense mix. Berm shall be constructed in conformity with the typical section shown in the appendix.

5.J GRASS AREAS

5. J.1 A grassy area shall be provided on each side of all roadways with widths and grades as shown in the typical cross sections in the appendix.

5.J.2 The top six (6”) inches shall be a good quality loam, approved by the Town Engineer and shall be raked and rolled to the satisfaction of the Town Engineer.

5. J.3 Grass seed shall be as specified in section M6.03.0 of the Massachusetts Standard Specifications.

5. J.4 The loam shall be seeded with grass in sufficient quantity to assure adequate coverage and establish growth. The Applicant, his heirs or assigns shall be responsible for maintenance of grass areas until such time as the Town accepts the roads.

5. J.5 The Planning Board may require the planting of blueberry sod in place of grass.
5.K STREET TREES

5. K.1 Where existing trees will be removed, or are deemed inadequate by the Board, street trees at least 2.5 inches in caliper shall be planted. Trees shall be located within the road layout or easements as described below. Each lot shall be provided one tree for every fifty (50') feet of frontage. Trees may be clustered; however, they may not be planted closer than fifteen (15) feet on center. (Refer to Section 3.C.2.v) (Amended 9/3/97).

5. K.2 Species of trees shall be approved by the Board; a list of suggested species is found in the Appendix. At the discretion of the Board, an easement outside the exterior right-of-way line may be required for the planting of trees. (Refer to Section 3.C.2.v)

5.L SIDE SLOPES

Areas outside street sidelines shall be sloped not to exceed one (1') foot vertical to three (3') feet horizontal in fill and one (1') foot to two (2') feet in cut. Slopes steeper than 3:1 shall be immediately stabilized with erosion control blankets or other means approved by the Town Engineer. Slope easements or retaining walls, approved by the Town Engineer, shall be employed where slopes cannot be contained within street sidelines. Slopes must be carried until they intersect the finished grade of the abutting lots. Grass areas and driveway entrances shall be so graded as to prevent surface water on the streets from draining onto private land, except designed ponding areas. All such slopes shall be loamed, seeded and kept stabilized as previously required for grassy areas. In some cases the Planning Board may require the planting of blueberry sod.

5.M MONUMENTS

5. M.1 Granite or reinforced concrete bounds shall be set at all street intersections, at all points of change in direction or curvature of streets and at other points, where in the opinion of the Board, permanent monuments are necessary, but in no case more than five hundred (500') feet apart.

5. M.2 Monuments shall be at least six by six (6” X 6”) inches by thirty-six (36”) inches. The top of each bound shall be dressed and have a one-half (1/2") drill hole.

5. M.3 The Applicant will be responsible for furnishing the Board a letter from a Registered Land Surveyor certifying that all monuments have been precisely placed as indicated on the Definitive plan.

5.N CORNER LOT BOUNDS

All lot corners shall be bounded with permanent marker bounds. The front lot corner bounds shall be granite or reinforced concrete.

5.O STREET SIGNS

5. O.1 Street signs, conforming to signs used by the Town and current MUTCD standards, shall be erected at each intersection within the subdivision.

5. O.2 Alternative types of signs of equivalent legibility may be used, but only with prior approval from the Board.

5.P CLEANING UP

5. P.1 Before release of covenant, the Applicant shall clean up any debris or objectionable material to the satisfaction of the Town Engineer.

5. P.2 Final clean up shall be completed prior to the request for final inspection per Section 6.
5.Q FEE TO STREETS

5. Q.1 The Applicant, shall retain title to the fee of each street, roadway or walkway in the subdivision, and shall convey to the Town said fee without encumbrance and upon layout of the street by the Selectmen.

5. Q.2 The Applicant shall also convey to the Town any easement right within or appurtenant to the subdivision upon request by the Selectmen. Notation that this is to be done shall be placed upon the Definitive Plan. However, all of the above may be waived in cases where the Board finds that conditions particular to that subdivision render it in public interest that the streets therein be maintained as private not public, ways and shall be so noted on the Definitive Plan.

5. Q.3 Should the layout and acceptance of the streets by the Town be declined or delayed, the Applicant may, with the Board’s consent, convey the fee to the streets and easement rights to the Property Owners Association.

5.R MAINTENANCE

If released from restrictions with regard to sale of lots by posting a Performance Bond, the Applicant, his heirs or assigns shall maintain the roadway, drainage structures, easements, landscaping, open spaces, and other improvements in a manner which meets all the requirements of these regulations to the satisfaction of the Town Engineer until acceptance of the road and related structures by the Town. This shall include winter maintenance activities unless the Town agrees to provide these services upon petition of the Applicant.

5.S MINIMUM ROAD CONSTRUCTION REQUIREMENTS

5. S.1 Minimum 18' wide gravel road with 8" thick gravel surface with the following specifications:

   a. All topsoil, subsoil, roots or other deleterious material shall be removed below the proposed gravel road.

   b. If required, road to be brought to sub-grade with clean fill free of organic soils, stones greater than 6" diameter and construction debris, compacted to 95% dry density (modified Proctor).

   c. Gravel surface shall be crowned to provide a 1/4" per foot minimum cross slope.

   d. Gravel shall conform to Section 5.F. (amended 6/7/95)

5. S.2 Roadway shall be properly drained by use of drainage swales off each side of the roadway dispersing to undeveloped areas in a manner that will not cause ponding or erosion. Riprap channels, inlets or other design methods may be required by the Town Engineer. In no case shall the drainage be directed toward abutting property.

5. S.3 Cross culverts, if required, shall be designed to insure no flooding or wash out of gravel allowing a minimum 1-foot of freeboard from the top of the culvert to the surface of the road.

5. S.4 Prior to start of construction, a plan shall be submitted to the Planning Board and Town Engineer for approval showing existing and proposed grades, right-of-way lines and methods of handling drainage.

5. S.5 Centerline of proposed road shall be staked for line and grade prior to construction.

5. S.6 All dead ends shall be constructed with a cul-de-sac having a minimum centerline radius of 40 feet or other configuration satisfactory to the Planning Board. The inside island shall remain natural as much as practical.

5. S.7 Written approval of the Fire Chief and Police Chief required prior to construction.
5. S.8 Construction inspections shall be performed in accordance with the subdivision Rules and Regulations.

5. S.9 In cases of existing cart paths or ancient ways being improved to provide minimum access, proof shall be submitted to the Board that all parties with ownership in the way consent to the proposed widening and construction within their ownership.

5. S.10 Where a proposed gravel road intersects an existing paved road, a bituminous concrete apron having a minimum length of 20’ and a width equal to the width of the gravel road and curb radii of 20’ are required.

5.T EROSION

Erosion shall be controlled as approved by the Planning Board in accordance with Section 3.C.2.x of these Rules & Regulations. All material from the lot shall be contained on the lot. All applicable Zoning and Town By-laws regarding erosion control shall be complied with.
SECTION 6

INSPECTION

6.A GENERAL

All necessary materials shall be submitted to the Town Engineer's office no later than 12:00 noon on the Wednesday before a Tuesday Planning Board Meeting. If said materials are not submitted or are unsatisfactory to the Engineering Department, no inspection will be performed. Additionally, no inspections shall be performed if any violation of the Subdivision Rules & Regulations exists.

6. A.1 All work performed as a consequence of these Rules and Regulations shall be subject to the review of the Board which shall approve and accept or disapprove and reject each phase or portion of such work and at completion shall recommend the acceptance of all work or disapproval of the work with reasons therefore.

6. A.2 The Town Engineer, or his representative, will act as agent for the Board in the inspection of the work to insure compliance with those Rules and Regulations and to report to the Board his recommendations as to approval or disapproval of the work. As Engineer for the Board, he, or his representative, shall have the authority to enforce all Subdivision Rules and Regulations of the Town.

6. A.3 The Board, its Engineer, and such other persons as the Board may designate shall have the right to inspect the work at any time.

6. A.4 All work which has been disapproved or is not acceptable to the Board shall be removed and replaced or otherwise corrected to the point of complying with the requirements of the Board for acceptance. Any work which has been covered by subsequent work prior to acceptance or is otherwise not available or obscured to the point of rendering inspection of the work difficult shall be considered unacceptable to the Board.

6. A.5 Such subsequent work shall be removed as directed by the Town Engineer to insure availability of the work to be inspected as required herein. The release of the Performance Guarantee shall depend upon the acceptance of all work prescribed herein and on the Definitive Plan and as directed by the Board.

6. A.6 At points indicated in Section 5 and as further described hereinafter, the construction of the required improvements may be inspected by the Town Engineer, or authorized agent, and unless approval of the work completed, including approval of the materials used, to reach such point has been given in writing, no further work shall be commenced. Such inspections may include the "taking" of certain samples; in such cases the applicant shall insure that the Town Engineer is in no way hindered or obstructed in the course of obtaining such samples.

6. A.7 Where such samples are removed from the completed work, the applicant shall replace and restore such work to the satisfaction of the Town Engineer, to its condition prior to the taking of the sample.

6. A.8 The Town Engineer may require certified copies of delivery receipts or bills of lading, or other certification as to the description of the materials used or incorporated in the work.

6. A.9 The Town Engineer may also require a sample of any materials or supplies which may be incorporated in the work. Such samples shall be furnished at the expense of the applicant, and the applicant shall be liable for all costs and fees incurred by the Board as a result of transporting and testing such materials.

6.A.10 The applicant shall keep the Town Engineer fully informed as to the status and progress of the work and shall notify the Town Engineer at least one (1) working day in advance that the work has progressed to a stage that an inspection is required.
6. A.11 In the event the Town Engineer makes an inspection of the work at the time designated and finds such work is not at the proper stage of completion, or that the work has been covered or otherwise obscured; the Town Engineer shall notify the applicant and the Board as to the additional steps the applicant shall take to complete the work to the point required, or to the extent the work shall be uncovered or exposed to full view. The applicant shall notify the Town Engineer again when the work is ready as prescribed in Section 6.A.10.

6. A.12 The applicant shall be liable for all fees incurred for any inspection or the taking and testing of samples.

6.B LINES AND GRADES

6. B.1 The Town Engineer will advise the Board at any time during the construction, if in his opinion, he believes that the work has not been laid out to the lines and grades as shown on the Definitive Plan. In such cases, the Board will proceed as described in section 5.B.

6. B.2 Any costs, which in the opinion of the Board are the responsibilities of the applicant as noted in Section 5.B, shall be in addition to the fees required elsewhere herein.

6.C INSPECTION OF REQUIRED IMPROVEMENTS

The following inspections of the required improvements will be made by the Town Engineer. These inspections may be made in addition to any other inspections the Board may make or cause to be made.

Survey stakes shall be present for all inspections as described in Section 5. Installation and confirmation of survey stakes are required prior to the start of construction as described in Section 5.

6. C.1 First Inspection: An inspection will be made of the work upon completion of all clearing, grubbing and excavation and all work incidental thereto as may be required or implied in section 5.C. No fill shall have been placed at the time of this inspection.

6. C.2 Second Inspection: An inspection will be made of the completed drainage system (without backfill) as required or implied herein or on the Definitive Plan. At the same time, or such other time as the work may be available, an inspection will be made of the completed municipal services (without backfill), as required on the Definitive Plan. The inspection of the required municipal services will be made by the agency responsible for the particular service.

6. C.3 Each agency involved will notify the Town Engineer in writing of the approval of such work.

6. C.4 Backfill of any portion of the drainage system or municipal services shall not be made until after notification of approval of acceptance by the Town Engineer or agency responsible.

6. C.5 The inspection of the construction of the ways shall include the inspection of the backfilling and compaction of all utility trenches as may be installed by utility companies and such work shall be performed in the manner as required by these Rules and Regulations.

6. C.6 If in the opinion of the Board, the backfilling and compaction of utility trenches has not been performed in accordance with these Rules and Regulations, the Planning Board may not release the Bond or Covenant applicable until such work has been performed to the satisfaction of the Planning Board.

6. C.7 Third Inspection: An inspection will be made of the compacted fill as specified in Section 5.F and as may be required to bring the roadways to their proposed grades. The applicant shall notify the Town Engineer as to his source of gravel for fill as soon as such information is known, so that samples may be taken and
analyzed by the Town Engineer. The applicant is advised not to proceed with the filling operation until such time as the Town Engineer notifies the applicant that the gravel proposed for the fill is acceptable.

6. C.8 If the applicant proceeds with the fill prior to such notice, he does so at his own risk. The applicant shall not use a gravel source, other than the one designated, without prior notice to the Town Engineer.

6. C.9 Fourth Inspection: An inspection will be made of the compacted roadway foundation as specified in Section 5-G. A gravel sample or samples may be taken at the option of the Town Engineer, in the same manner as prescribed for the third inspection.

6. C.10 Prior to any paving the applicant will show proof that all utilities have been installed, so that there will be no trench cut for that purpose after paving.

6. C.11 Fifth Inspection: Inspections will be made during the application of the HMA binder course and top course. Samples of the mix may be taken by the Town Engineer for purposes of performing an extraction test in order to compare the sample with the job mix formula previously submitted. The Applicant shall provide engineering inspection of the paving operation to monitor installation parameters and furnish a report of findings to the Town Engineer upon completion of paving.

6. C.12 Core samples for the purpose of checking depths of pavement may be taken at the discretion of the Town Engineer.

6. C.13 Sixth Inspection: An inspection will be made of all work as required on sidewalks, curbing, grass plots, side slopes, monuments and street signs.

6. C.14 Seventh Inspection: A final inspection will be made of all subsequent work as required herein, or on the Definitive Plan to include the final clean up.
SECTION 7

SPECIAL ACCOUNT FOR CONSULTANT’S FEES

7.A GENERAL

Pursuant to Massachusetts General Law Chapter 44, Section 53G, the Planning Board imposes on all applicants, when it determines that it is necessary, reasonable fees for the employment of outside consultants, including without limitation engineers, architects, surveyors, accountants, lawyers and other professionals, to review subdivision plans and/or special permit applications under all sections of the Town of Sandwich Zoning Bylaws and these Rules and Regulations, and to assist the Planning Board with its review of such plans and applications.

7.A.1 The Planning Board, when it determines that it is necessary, shall require any applicant to establish a special account with the Town Treasurer equal to an amount determined by the Planning Board to be sufficient to hire outside consultants to review and report on applications under this section.

7.A.2 All funds deposited with the Town Treasurer may be expended by the Planning Board, without Town Meeting appropriation, for consulting fees only. Any principal and interest remaining in the account upon approval or disapproval of the plan or permit shall be repaid to the applicant at the conclusion of the planning process.

7.A.3 The Town Accountant shall submit an annual report to the Board of Selectmen and the Town Executive Secretary for review. Each account under this section shall be published in the annual report and be provided by the Town Treasurer to the Bureau of Accounts.

7.A.4 The applicant may appeal to the selection of any particular consultant to the Board of Selectmen on grounds of a conflict of interest or that the consultant does not possess minimum required qualifications.

1. Minimum required qualifications shall consist 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.

2. The Board of Selectmen may act on any appeal under this section within 28 days of the filing of an appeal.

3. In the event that no decision is made by the Board of Selectmen within 28 days of the filing of an appeal, the selection made by the Planning Board shall stand.
Example shown: A 300' flow over an average grass surface at a slope of 2% would equal a time of concentration of 20 minutes.
Example shown: A 17 minute Time of Concentration would equal 1.7 inches per hour.

Rainfall Intensity for the Duration

Figure 2
COLLECTOR STREETS  68'  PAVEMENT  24"  3 1/2" BIT. CONCRETE
MINOR STREETS & LANES  50'  PAVEMENT  20'  3 " BIT CONCRETE
commercial & industrial  80'  pavement  30"  thickness to be determined
                           based on use.

*The Planning Board may require that the travelled way be
separated by a raised median strip with a width to be
determined by the Board.

TYPICAL ROAD CROSS SECTION

FOR REQUIREMENTS OF "LIMIT OF CLEARING" NOT SHOWN ABOVE, REFER TO
SECTIONS 5.B.3 AND 5.B.4 IN THE SUBDIVISION RULES AND REGULATIONS.
PRECAST CONCRETE OR CONCRETE BLOCK MANHOLE

AT LEAST ONE COURSE OF BRICK SHALL BE USED FOR GRADE ADJUSTMENTS. FRAMES TO BE SET IN A FULL BED OF MORTAR.

1. MORTAR ALL JOINTS
2. BASE TO BE SOLID SECTION
3. PIPE MORTARED INSIDE AND OUT
4. FRAMES AND COVERS MUST BE OF AN APPROVED TYPE.
PRECAST CONCRETE OR CONCRETE BLOCK
CATCH BASIN

AT LEAST ONE COURSE OF BRICK SHALL BE USED FOR GRADE ADJUSTMENTS. FRAMES TO BE SET IN A FULL BED OF MORTAR.

18" - 24" TAPERED SECTION

6'6" (STANDARD DEPTH)

24"

8" MIN

48" DIAMETER

3'MIN.

6" MIN. (BLOCK)
5" MIN. (PRECAST)

5" PRECAST OR 4" SECTIONAL PLATES

1. WEEPHOLES AS REQUIRED BY FIELD INSPECTION
2. MORTAR ALL JOINTS.
3. BASE TO BE SOLID FILL SECTION
4. PIPE MORTARED INSIDE AND OUT
5. FRAMES AND GRATES MUST BE OF AN APPROVED TYPE
NOTE: Variations in this design must be approved by the Engineering Department.

STANDARD PRECAST LEACHING BASIN
METHODS FOR SETTING BITUMINOUS CONCRETE BERM AND CURB

BITUMINOUS CONCRETE CURB

BITUMINOUS CONCRETE BERM, CURB, AND METHODS FOR SETTING
## DESIGN STANDARDS

<table>
<thead>
<tr>
<th>TYPE OF STREET</th>
<th>COMMERCIAL &amp; INDUSTRIAL</th>
<th>COLLECTOR</th>
<th>MINOR</th>
<th>LANE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIDTH OF RIGHT OF WAY</td>
<td>80'</td>
<td>68'</td>
<td>50'</td>
<td>50'</td>
</tr>
<tr>
<td>WIDTH OF ROADWAY</td>
<td>30' *</td>
<td>24' *</td>
<td>20'</td>
<td>20'</td>
</tr>
<tr>
<td>MINIMUM CENTERLINE RADII</td>
<td>500'</td>
<td>500'</td>
<td>150'</td>
<td>100'</td>
</tr>
<tr>
<td>MINIMUM CENTERLINE GRADE</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>MAXIMUM CENTERLINE GRADE</td>
<td>6%</td>
<td>6%</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>MINIMUM CURB RADIUS @ INTERSECTION (90 DEGREES)</td>
<td>30'</td>
<td>30'</td>
<td>20'</td>
<td>20'</td>
</tr>
<tr>
<td>MINIMUM INTERSECTION ANGLE</td>
<td>80°</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
</tr>
<tr>
<td>MINIMUM CURB RADIUS @ INTERSECTIONS ACUTE ANGLE SIDE</td>
<td>35'</td>
<td>35'</td>
<td>25'</td>
<td>25'</td>
</tr>
<tr>
<td>MINIMUM CURB RADIUS @ INTERSECTIONS OBTUSE ANGLE SIDE</td>
<td>30'</td>
<td>25'</td>
<td>15'</td>
<td>15'</td>
</tr>
<tr>
<td>MINIMUM CENTERLINE TANGENT REVERSE CURVE</td>
<td>100'</td>
<td>100'</td>
<td>0'</td>
<td>0'</td>
</tr>
</tbody>
</table>
SECTION THRU CENTERLINE OF FRAME AND GRATE
TYPICAL CATCH BASIN(S) AT LOW POINTS

NOTES:
1. MATERIALS AND DIMENSIONS FOR CONCRETE CURBING SHALL CONFORM TO COMPL. OF MATT. DW Specification Sections 500 and 44.03.00
2. CURB INLET SHALL BE SET IN A FULL BED OF MORTAR, FULLY SUPPORTED BY THE CATCH BASIN.
RESTRICTED ACCESS DIAGRAM 1
REFERENCE SECTION 4.8.3, DEAD END STREETS. FOR ILLUSTRATIVE PURPOSES ONLY. CONSULT WITH TOWN ENGINEER FOR OPINION ON SPECIFIC APPLICATIONS.

EXAMPLE A, COMPLIANT NOT TO SCALE

EXAMPLE B, COMPLIANT NOT TO SCALE

EXAMPLE C, COMPLIANT NOT TO SCALE

EXAMPLE D, NON-COMPLIANT NOT TO SCALE
RESTRICTED ACCESS DIAGRAM 2
REFERENCE SECTION 4.B.3, DEAD END STREETS. FOR ILLUSTRATIVE PURPOSES ONLY. CONSULT WITH TOWN ENGINEER FOR OPINION ON SPECIFIC APPLICATIONS.

EXAMPLE E
NOT TO SCALE

RESTRICTED ACCESS END POINT
AT CUL-DE-SAC RADIUS POINT

EXAMPLE F
NOT TO SCALE

PROPOSED STREET "B"

EXAMPLE G
NOT TO SCALE

EXISTING STREET "A"

PROPOSED STREET "B"

RESTRICTED ACCESS POINT OF ORIGIN
FOR STREET "B"

RESTRICTED ACCESS POINT OF ORIGIN
FOR STREET "B"
## Small Street Trees

<table>
<thead>
<tr>
<th>English Name</th>
<th>Latin Name</th>
<th>Mature Height in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hedge Maple</td>
<td>Acer campestre</td>
<td>25</td>
</tr>
<tr>
<td>Paperbark Maple</td>
<td>Acer griseum</td>
<td>25</td>
</tr>
<tr>
<td>Japanese Maple</td>
<td>Acer palmatum</td>
<td>25</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>Amelanchier x grandiflora</td>
<td>25</td>
</tr>
<tr>
<td>American Hornbeam</td>
<td>Carpinus caroliniana</td>
<td>30</td>
</tr>
<tr>
<td>Eastern Redbud</td>
<td>Cercis canadensis</td>
<td>30</td>
</tr>
<tr>
<td>White Fringetree</td>
<td>Chionanthus virginicus</td>
<td>30</td>
</tr>
<tr>
<td>Kousa Dogwood</td>
<td>Cornus kousa *</td>
<td>30</td>
</tr>
<tr>
<td>Cornelian Cherry</td>
<td>Cornus Mas *</td>
<td>24</td>
</tr>
<tr>
<td>Arnold Hawthorn</td>
<td>Crataegus arbolesiana *</td>
<td>30</td>
</tr>
<tr>
<td>Crimson Cloud Hawthorn</td>
<td>Crataegus laevigata 'Crimson Cloud'</td>
<td>30</td>
</tr>
<tr>
<td>Upright Single Seed Hawthorn</td>
<td>Crataegus monogyna 'Stricta'</td>
<td>30</td>
</tr>
<tr>
<td>Wintering Hawthorn</td>
<td>Crataegus viridis 'Winterking'</td>
<td>30</td>
</tr>
<tr>
<td>Lavalle Hawthorn</td>
<td>Crataegus x lavallei 21</td>
<td>30</td>
</tr>
<tr>
<td>English Hawthorn</td>
<td>Crataegus oxyacantha *</td>
<td>15</td>
</tr>
<tr>
<td>Washington Hawthorn</td>
<td>Crataegus pheanoporum *</td>
<td>30</td>
</tr>
<tr>
<td>Golden Rain Tree</td>
<td>Koelreuteria paniculata</td>
<td>30</td>
</tr>
<tr>
<td>Amur Maackia</td>
<td>Maackia amurnensis</td>
<td>30</td>
</tr>
<tr>
<td>Saucer Magnolia</td>
<td>Magnolia x soulangiana</td>
<td>30</td>
</tr>
<tr>
<td>Donald Wyman Crabapple</td>
<td>Malus 'Donald Wyman'</td>
<td>25</td>
</tr>
<tr>
<td>Japanese Crabapple</td>
<td>Malus floribunda *</td>
<td>30</td>
</tr>
<tr>
<td>Indian Magic Crabapple</td>
<td>Malus 'Indian Magic'</td>
<td>20</td>
</tr>
<tr>
<td>Red Jade Weeping Crabapple</td>
<td>Malus 'Red Jade' 15</td>
<td>15</td>
</tr>
<tr>
<td>Sourwood</td>
<td>Oxydendrum arboreum</td>
<td>30</td>
</tr>
<tr>
<td>Purple Leaved Cherry Plum</td>
<td>Prunus cerasifera 'Atropurpura'</td>
<td>25</td>
</tr>
<tr>
<td>Upright Japanese Flowering Cherry</td>
<td>Prunus serrulata 'Amanogawa'</td>
<td>20</td>
</tr>
<tr>
<td>Weeping Higan Cherry</td>
<td>Prunus subhirtella 'Pendula'</td>
<td>25</td>
</tr>
<tr>
<td>Autumn Higan Cherry</td>
<td>Prunus subhirtella 'Autumnalis'</td>
<td>30</td>
</tr>
<tr>
<td>Japanese Stewartia</td>
<td>Stewartia pseudocamellia</td>
<td>30</td>
</tr>
<tr>
<td>Japanese Snowbell</td>
<td>Saborin japonicus</td>
<td>30</td>
</tr>
<tr>
<td>Japanese Tree Lilac</td>
<td>Syringa reticulata</td>
<td>30</td>
</tr>
<tr>
<td>American Arborvitae</td>
<td>Thuja Occidentalis</td>
<td>30</td>
</tr>
<tr>
<td>Nannyberry viburnum</td>
<td>Viburnum lentago *</td>
<td>20</td>
</tr>
<tr>
<td>Blackaw Viburnum</td>
<td>Viburnum prunifolium *</td>
<td>15</td>
</tr>
<tr>
<td>Siebold Viburnum</td>
<td>Viburnum sieboldii *</td>
<td>30</td>
</tr>
</tbody>
</table>

* Indicates species that provide food for birds.
### Medium Street Trees

<table>
<thead>
<tr>
<th>English Name</th>
<th>Latin Name</th>
<th>Mature Height in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Hornbeam</td>
<td>Carpinus carolinus</td>
<td>36</td>
</tr>
<tr>
<td>Flowering Dogwood</td>
<td>Cornus florida</td>
<td>40</td>
</tr>
<tr>
<td>Cockspur Hawthorn</td>
<td>Crataegus crus-galli</td>
<td>36</td>
</tr>
<tr>
<td>Columnar European Beech</td>
<td>Fagus sylvatica ‘Dawyckii’</td>
<td>50</td>
</tr>
<tr>
<td>Carolina Silverbell</td>
<td>Halesia carolina</td>
<td>40</td>
</tr>
<tr>
<td>American Holly</td>
<td>Ilex opaca *</td>
<td>35</td>
</tr>
<tr>
<td>Eastern Red Cedar</td>
<td>Juniperus virginiana *</td>
<td>35</td>
</tr>
<tr>
<td>Sargent Cherry</td>
<td>Prunus sargentii</td>
<td>40</td>
</tr>
<tr>
<td>Chanticlere Flowering Pear</td>
<td>Pyrus calleryana ‘Chanticlere’</td>
<td>35</td>
</tr>
<tr>
<td>Regent Scholar Tree</td>
<td>Sophora japonica ‘Regent’</td>
<td>50</td>
</tr>
</tbody>
</table>

### Tall Street Trees

<table>
<thead>
<tr>
<th>English Name</th>
<th>Latin Name</th>
<th>Mature Height in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Fir</td>
<td>Abies Concolor</td>
<td>80</td>
</tr>
<tr>
<td>Heritage River Birch</td>
<td>Betula nigra ‘Heritage’</td>
<td>70</td>
</tr>
<tr>
<td>Paper Birch</td>
<td>Betula papyrifera *</td>
<td>75</td>
</tr>
<tr>
<td>European Hornbeam</td>
<td>Carpinus betulus</td>
<td>60</td>
</tr>
<tr>
<td>Katsura Tree</td>
<td>Cercidiphyllum japonicum</td>
<td>60</td>
</tr>
<tr>
<td>Pin Oak</td>
<td>Quercus palustris</td>
<td>80</td>
</tr>
<tr>
<td>Giant Arborvitae</td>
<td>Thuja plicata</td>
<td>75</td>
</tr>
<tr>
<td>Little Leaf Linden</td>
<td>Tilia cordata ‘Greenspire’</td>
<td>70</td>
</tr>
<tr>
<td>Japanese Zelkova</td>
<td>Zelkova serrata</td>
<td>70</td>
</tr>
</tbody>
</table>

* Indicates species that provide food for birds.
RECOMMENDATIONS FOR PLANTING AND MAINTAINING TREES AND SHRUBS

When considering the planting and maintenance procedures of woody plants, many of the established cultural guidelines practiced by landscape professionals have undergone closer scrutiny in recent years. Based on research findings and field observations, many of these practices have been modified or changed in order to improve overall plant health in a landscape setting.

SITE EVALUATION

Before choosing and planting trees and shrubs, consideration and careful attention should be given to the site itself. Each site should be evaluated for the following:

- slope
- soil type
- amount of light
- space or size
- hardiness zone
- exposure
- drainage
- soil pH

PLANT SELECTION

After site evaluation, choose plant material that will adapt well to that location. Match the needs of a plant to the site. When choosing plant material it is also important to know growth habit and ultimate size, maintenance needs, pest resistance and function.

Currently there is great debate on the preferred use of "native" plants over "introduced" or "exotic" species. Where appropriate, choose the best plant for a given location. This choice may not be a "native". Most urban landscape sites have been so modified and the microclimate so changed through buildings, underground wires, pavement, traffic, soil compaction, and so on, that the native plants may not perform as well as other non-native plants. Do not choose plant material based solely on the merit of it's being a native.

SITE PREPARATION

Since the fibrous or absorbing roots of most woody ornamentals are within the top 10" to 12" of the soil, it is recommended that the planting hole be dug no deeper than the root ball as measured from the trunk flare to the bottom of the ball. Holes dug deeper than the root ball often result in settling of the plant to a point above the trunk flare. As root development often extends beyond the canopy or dripline, it is now recommended that the planting area be loosened and aerated at least three to five times the diameter of the root ball.
STAKING

While there are many opinions on the method and value of staking trees at planting time, most experts agree that staking is not necessary for all trees. Trunk strength, size of the canopy, wind direction and site traffic problems should all be considered before staking a tree. Research has shown that staked trees may develop a smaller root system and decreased trunk taper. Trees with strong trunks may only need staking to prevent mower damage. Dr. Alex Shigo, a researcher formerly with the U.S. Forest Service, has found that small trees that are stable in the soil when swaying do not need to be staked. If the root ball is not stable in the soil, the trunk should be braced as low as possible to keep the root ball stable while allowing the trunk to sway slightly. In most instances, stakes should be removed after one growing season.

MULCHING

Mulching is a cultural practice that can be of benefit in the landscape when done correctly. Mulching will reduce weeds, moderate soil temperatures, conserve soil moisture in the root zone and add an aesthetic quality to the landscape. Improper mulching can impair plant health and lead to decline of the plant material. Mulch should be placed in a wide band, approximately 3 to 4 times the diameter of the root ball, over the root zone and no more than 2 to 4" deep; tapering to but not touching the trunk. Mulch piled up against the trunk may cause rotting of the bark and can create entry points for insects or disease organisms. Field mice may also inhabit deep mulch and feed on the bark undisturbed.

PRUNING

After planting, prune only broken or damaged branches. Top pruning to compensate for root loss is no longer recommended. It is important to leave as much foliage on the tree as possible because sugars and other carbohydrates produced by photosynthesis in the leaves are necessary for root system development.

TREE WRAPPING

The bark on a tree or shrub is as important as skin to an animal. It acts as a barrier to exclude insects and disease organisms from the vascular system which lies directly under the bark. Some bark injuries may occur as a result of damage from the sun (sunsclad) or temperature extremes (frost cracks). For many years nurserymen and landscape professionals have used tree wrap on newly planted or thin-barked trees in an effort to reduce sun or temperature damage to the bark. Recent research has found that some tree wraps may not be providing the protection that was intended. In experiments using plastic tree guards on dogwoods, large numbers of dogwood borers were found under the guards while few were found in trees without guards. In addition, some tree wraps were found to retain excess moisture beneath the wrap; this may encourage fungal or bacterial growth, especially if there were pre-existing wounds in the trunk. If tree wrap is to be used, it is recommended that approved material be selected, checked frequently, and the wrap removed during periods of active growth.
PLANTING PROCEDURES

Research conducted by a large national tree firm showed that too deep or improper planting techniques to be the major cause of tree mortality in maintained landscapes. While most landscape professionals follow the rule of planting the tree or shrub at the same depth at which it grew at the nursery, plant material that is balled and burlapped (B&B) may inadvertently be planted too deeply. During the B&B process, soil may be brought up and over that point on the trunk where the trunk flare begins, covering a good portion of the trunk. If planted like this, the roots and trunk may be set too deeply. This can deprive roots of oxygen which they require and also lead to trunk decay.

To properly plant B&B material at the correct depth, remove the twine and burlap at the top of the root ball. Remove soil from the top of the ball and around the trunk until the juncture is found where the trunk flare begins. Measure the distance from the trunk flare to the bottom of the root ball and dig the planting hole based on that measurement. The tree or shrub should then be set in the planting hole so that trunk flare is level with the surrounding grade. Once the plant is set in the hole, remove all twine and rope and as much of the burlap. Synthetic burlap or other non-degradable materials should be completely removed. Although still subject to debate, it is recommended that the top 8 to 16" of a wire basket be removed once the root ball is stable in the planting hole. According to current research, backfilling with soil dug from the planting hole is preferable to mixing the soil with large amounts of organic soil amendments such as peat moss, compost, etc. The addition of an organic soil amendment may be called for if the existing soil is of very poor quality, i.e. excessively sandy, heavy clay or undesirable fill material. Alternatively, quality topsoil, similar in texture to the existing soil, may be brought in and used for backfill. During the backfill process, tamp the soil lightly to avoid leaving air pockets. However, do not "pack" the soil so firmly as to drive out all the fine air spaces needed for a well-aerated soil. An alternative to avoid packing the soil too firmly is to water the soil halfway through the backfill process and allow it to drain. Resume backfilling and water again thoroughly. After planting, apply an organic mulch 2 to 4 inches deep over the planting area. The mulch should not be touching the trunk of the tree.

WATERING

Water is a critical factor to the successful establishment of landscape plants. Excess or insufficient water will impede the formation and/or elongation of new roots. After planting, water the planting area deeply. Newly planted trees must receive adequate irrigation weekly during the first growing season to become established.

FERTILIZING

Fertilize according to a soil test report. Avoid placing water soluble nitrogen fertilizer directly in the planting hole to avoid injury to roots. If needed, a slow release or organic fertilizer could be used in the planting area. Alternatively, fertilizer could be applied on the surface around the tree basin according to recommendations.
It is hoped that these guidelines, together with the selection of appropriate and healthy plant material, will be of help in promoting improved plant health in the landscape.

References:

Appleton, Bonnie Lee, Ph.D., Questioning Tradition, American Nurserymen, Sept. 1, 1993.


Shigo, Alex L., Ph.D., Modern Arboriculture, National Arbor Day Foundation Bulletin No. 12, 4 Denbow Road, Durham, NY 03824-3105

Whitcomb, Carl E., Ph.D., Establishment and Maintenance of Landscape Plants, Lacebark, Inc., Stillwater, OK; LCC#87-50632