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ORDINANCE CONCERNING THE CONSTRUCTION AND ACCEPTANCE OF STREETS IN THE TOWN OF BRIDGEWATER

BOARD OF SELECTMEN

ADOPTED MAY 17, 1997

EFFECTIVE JUNE 7, 1997

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ORDINANCE CONCERNING THE CONSTRUCTION AND ACCEPTANCE OF STREETS IN THE TOWN OF BRIDGEWATER

SECTION 1 - GENERAL PROVISIONS

1.1 General: This ordinance sets forth the policies, rules, procedures, standards and specifications of the Town of Bridgewater, Connecticut for the administration and enforcement of the construction and maintenance of streets.

1.2 Title: This ordinance is entitled "Ordinance Pertaining to the Construction and Acceptance of Streets" and may hereinafter be cited as the "Road Ordinance".

1.3 Definitions: Certain words used in this Ordinance are defined and explained as follows:

1.3.1 Board: "Board" shall mean the Board of Selectmen of the Town of Bridgewater.

1.3.2 Form 814: "Form 814" shall mean the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction (Form 814A) dated 1995, as amended, and are hereby made a part of this Road Ordinance and hereafter referred to as Form 814.

1.3.3 Agent: The Board of Selectmen can by resolution designate an agent or agents to be responsible for the inspection and supervision of construction as carried out under this Ordinance, who would be responsible for the issuance of permits and performance of duties under the direction of the Board.

1.3.4 Street: The term "street" shall mean a proposed public or private hishway, street or road in a subdivision or resubdivision approved by the Planning and Zoning Commission. Streets shall be classified in accordance with the standards contained in the Bridgewater Plan of Development adopted by the Commission.

1.4 Driveways: Driveways connecting to public streets shall be constructed in accordance with these Regulations and the Driveway Ordinance, Town of

Bridgewater, and only after the issuance of a driveway permit by the Board of Selectmen.

1.5 Standard Details: Drawings of Town of Bridgewater Standard Details for streets, storm sewers and other construction, which are part of these Regulations, may be procured at the office of the Board of Selectmen.

1.6 Standards, Specifications and Drawings: Where conflict occurs between or within Regulations, Standards, Specifications and Drawings, the more stringent or higher quality requirements shall be assumed to apply, except that the Board of Selectmen shall make the final decision as to which stipulation will provide the best work and will be most consistent with design intent.

SECTION 2 - APPLICATION PROCEDURE

2.1 Applicability: The provisions hereof are applicable to the construction of streets in an approved subdivision.

2.2 Maps: Maps showing rights-of-way for streets and highways and rights-of-way and easements for drainage and other improvements shall be prepared in accordance with the standards for a subdivision map specified in the Subdivision Regulations. Construction plans for streets, drainage and other improvements shall be prepared in accordance with the standards for construction plans specified in the Subdivision Regulations as the same may from time to time be amended. All maps shall be prepared by and shall bear the name, seal and signature of a land surveyor and/or engineer licensed as such by the State Board of Registration for Connecticut Engineers and Land Surveyors of the State of Connecticut and in accordance with the "Minimum Standards for Survey and Maps" dated June 21, 1996 of the Department of Consumer Protection, State of Connecticut, as amended.

2.3 Computations: Sufficient computations to permit the Board or Town Engineer to check drainage design. Such computations shall consider the entire upstream watershed and the downstream area affected by the storm water runoff and shall be accompanied by a drainage map showing upstream watershed and the downstream area affected by the storm water runoff. The design for the drainage system shall be based on the provisions of Section 3.3.2.

2.4 Applications for Road Construction Permit: Application for a Road Construction Permit shall be made in writing to the Board of Selectmen and shall include the following documents:

2.4.1 Two (2) copies of the maps and plans as specified in Section 2.2 and the computations provided for in Section 2.3.

2.4.2 A fee of $100.00; and

2.4.3 In the event that such proposed construction is within or relates to an existing Town street and/or other Town improvement, evidence of Workmen's Compensation and Contractor's Liability insurance in amounts and with carriers acceptable to the Board of Selectmen with the Town named as an insured shall be presented.

2.4.4 When a revision is made at the request of the Board or

proposed by the applicant to the maps or plans submitted under Section 2.4.1, two copies of the revised plans or maps shall be submitted to the Board of Selectmen.

2.5 Permit Procedures - Issuance: A road construction permit shall be issued in writing by the Board of Selectmen subject to:

2.5.1 The completion of plans for the construction of streets, drainage and other necessary plans requested and approved by the Board of Selectmen and which also may be required to be approved by the Planning Commission.

2.5.2 Inspection Fee: Payment to the Town of Bridgewater an inspection fee equal to 3% of the cost of streets, drainage and other improvements, based on cost estimates approved by the Board of Selectmen, but in no case shall the fee be less than $100.00

2.5.3 All road construction or reconstruction and all excavation on or under a Town highway or right-of-way and all proposed subdivision roads built within the Town of Bridgewater shall be filed with a performance guarantee in an amount equal to one hundred (100%) percent of the cost of the work. The cost of such work shall be estimated by a licensed professional engineer to be paid for by the Developer and the amount shall be specified by the Selectmen and approved by Town Counsel for any road improvements or construction of any road in the Town of Bridgewater.

2.5.4 A written agreement, in form satisfactory to Town Counsel, permitting entrance by the Town onto the land shown on the subdivision plan for the purposes of inspection and of installing the required improvements in the event of the failure of the Applicant to make such improvements or properly to maintain them until the Town has assumed responsibility for them, and such written agreements shall provide that the Developer, on demand, shall execute and deliver to the Town a warranty deed or certificate of title to the area of the street or streets and easements shown on the subdivision plan as approved, including any strips reserved for future street purposes.

2.6 Permit Procedures - Length of Permit: The Road Construction Permit shall be valid for a period of time that the Board of Selectmen deems necessary for the completion of construction. Permits may be extended for a period not to

exceed one (1) year upon written approval of the Board of Selectmen. Upon the expiration of the extended time period, the Board shall either (a) require reapplication for the uncompleted work of (b) pay for the completion of the work by calling the performance guarantee.

2.7 Performance Guarantee: The Applicant shall execute an agreement and file a performance guarantee in the form of an irrevocable letter of credit or cash with the Board, said guarantee to be in an amount and with surety and conditions satisfactory to the Board, securing to the Town of Bridgewater the actual construction, installation and completion of all improvements to the satisfaction of the Planning and Zoning Commission and Board of Selectmen including without limitation, streets, drainage and placing of monuments, within a period not to exceed two (2) years from the filing of the guarantee. Said guarantee shall be in form and amount and with a surety scceptable to the Board, the Planning and Zoning Commission and Town Counsel.

2.8 As-Built Plans: Upon the completion of any road, drainage or other improvements, that Applicant shall file with the Board the following:

a. The Applicant's land surveyor, licensed to practice in the State of Connecticut, shall certify the installation and precise location of monuments to a Class A-2 accuracy by noting such monuments and their location on the linen transparency or polyester film construction plans and by signing (original signature) and sealing (embossed seal) the plans;

b. The Applicant's land surveyor and engineer, licensed to practice in the State of Connecticut, shall certify on the linen transparency or polyester film construction plans and profiles the location and elevation of all required improvements and by signing (original signature) and sealing (embossed seal) the plans and profiles to show "as-built conditions",

c. A certification, signed and sealed by an engineer licensed to practice in the State of Connecticut, that such engineer has inspected all construction work and all improvements have been completed in accordance with plans and profiles approved by the Board and the Standards and Specifications of this Road Ordinance.

d. All mathematical and control data necessary to reproduce any and all street and easement lines on the ground and all bench mark locations and elevations.

e. One (1) linen transparency or polyester film of the as-built drawings and four (4) prints of the as-built drawings.

2.9 Reduction or Release of Performance Guarantee: Before the reduction or release of the Performance Guarantee provided for in Section 2.7 of this Ordinance:

a. The streets, street improvements and street drainage shall have been inspected and approved by the Board of Selectmen or its agent;

b. As-Built Plans shall have been filed with the Board pursuant to Section 2.8, and approved by said Board, and

c. For the release of the Performance Guarantee the Applicant shall execute an agreement and file a maintenance performance guarantee for maintenance of streets, drainage and other improvements. Said guarantee shall be in form and amount and with surety acceptable to the Planning and Zoning Commission, the Board and Town Counsel. In the case of improvements which are not to be offered for acceptance by the Town, the maintenance guarantee must be in effect for a period of twenty-four (24) months from the release of the performance guarantee. In the case of improvements which are to be offered for acceptance by the Town, the maintenance guarantee shall be in effect for a period of twenty-four (24) months from the release of the performance guarantee or until acceptance of the improvement by the Town, whichever period is lesser.

d. For the reduction of the Performance Guarantee the Applicant shall execute a new agreement as specified in Section 2.7 of this Ordinance.

2.10 Acceptance of Streets: One year after the release of the performance guarantee, a petition may be made in writing to the Board of Selectmen for the acceptance of a street by the Town meeting. Such petition shall be signed by the owner(s) of the street and shall include the following:

2.10.1 A copy of a map to be filed in the Town Clerk's office showing all street and drainage rights-of-way.

2.10.2 Warranty Deed and Certificate of Title for the rights-of-way of the street and drainage structures and of any easements in support thereof. Deed and Certificate of Title shall include:

a. A Waiver of Mechanic's Liens of title insurance insuring

against mechanic's liens.

b. Letter from the Tax Collector indicating full payment of taxes due; and

c. Any other certificates and documents required by Town Counsel.

Upon receipt of the required documents, the Board shall refer said documents to the Planning and Zoning Commission for their review under Section 8-24 of the Connecticut General Statutes, as amended, not less than thirty-five (35) days before the next regular Town meeting. The Board shall then place the petition for acceptance on the call of the next regular Town meeting provided however that all requirements of this Ordinance and, if applicable, the Subdivision Regulations have been fulfilled.

2.11 Liability Insurance: The manufacturer's and Contractor's liability insurance specified under Section 2.4.3 shall include no less than the following:

2.11.1 Public liability limits of $1,000,000/$1,000,000 aggregate

2.11.2 Property damage limits of $500,000/$500,000 aggregate including blasting and underground damage resulting from the use of mechanical equipment, on work covered by this document

2.11.3 Coverage with respect to all subcontractors doing any part of the work covered by the Permit

2.11.4 If the policy is changed or cancelled during the policy period , the policy shall provide that written notice will be given to the First Selectman of the Town of Bridgewater at least 15 days before the effective date of such change or cancellation period.

2.11.5 The Town of Bridgewater shall be named as an additional insured.

2.11.6 Such additional coverage as requested by the Board

2.12 Inspection Procedures: The Board of Selectmen or its authorized agent, and where appropriate, the Planning and Zoning Commission, shall have free access to the construction work at all times and shall be authorized to take material samples, corings and other tests as deemed necessary to determine compliance with the standards of these Regulations. They may require the

Applicant at his own expense, to have such tests made and certified by a Connecticut licensed professional engineer.

2.13 Notification: The Applicant or Contractor for the street, drainage or other subdivision improvements shall notify the Board of Selectmen in writing of his intention to start any construction project at least five (5) days prior to starting the work. Should the Applicant or such Contractor close down the construction project for a period exceeding one (1) week, due to weather conditions or other cause, the Applicant or such Contractor shall notify the Board of Selectmen in writing of such closing; he shall notify the Board in writing of his intention to resume the work. In addition, the Applicant or such Contractor shall give timely written notice to the Board of Selectmen for inspection purposes at least 48 hours before each of the following stages of work:

2.13.1 Commencement of site clearance and after the construction work has been staked out;

2.13.2 Commencement of excavation and grading of streets and installation of embankments;

2.13.3 Commencement of installation of drainage and other utilities;

2.13.4 Commencement of backfilling structures and drainage pipes, facilities and other utilities;

2.13.5 Prior to commencement of the subbase on compacted subgrade;

2.13.6 Commencement of placement of the processed aggregate on the subbase of a street;

2.13.7 Commencement of placement of the binder course of bituminous concrete on base;

2.13.8 Commence of placement of the surface course of bituminous concrete on binder course;

2.13.9 Commencement of installation of curbs;

2.13.10 Completion of installation of guard rails, signs, street lighting, street trees, topsoil, seeding and other improvements.

2.13.11 The Board of Selectmen or its agent reserves the right to

inspect all work at any time and without notice.

2.13.12 Depending on the individual project, the Board may require inspections at other times and the Board reserves the right to inspect the project, without notice, at any time.

The Board of Selectmen or its agent shall have two (2) working days in which to inspect the completed work in each of the above stages of the project prior to approving the work. No work shall be commenced on succeeding stages of construction until the required inspections have been made and approval given in writing by the Board of Selectmen. The Board of Selectman may issue a Stop Work Order and may suspend the road Construction Permit if, in its judgment, any construction project or any stage thereof is not being carried out in accordance with this Ordinance or if unforeseen field circumstances are encountered for which the approved plans are insufficient; the Board shall withdraw such Order and reinstate the Permit when it determines that there is compliance with this Ordinance.

2.14 Barricades and Protection: When any excavation is made within the right-of-way of any Town street, the Applicant or his Contractor shall provide a railing or suitable barricade so as to enclose such excavation material placed in the right-of-way. The railing or barricade shall be continued and maintained during the whole time such excavation is exposed or open. A sufficient number of lighted flashing warning lights approved by the Board of Selectmen shall be provided for public safety, to be affixed to some part of such railing or barricade or in such other proper manner over or near such excavation and excavated material, and so kept from the beginning of the twilight of the evening through the whole of the night, and every evening and night during the time such excavation shall be open, exposed or in state of repair. The Applicant or his Contractor shall comply with any order of the Board or its authorized agent for provision of the barricades and shall furnish a Town constable or a State Trooper in uniform when so ordered.

2.15 Rights of Safe Passage: The Applicant or his Contractor shall provide safe and convenient passage for public travel around or over any excavation in a Town street or highway and shall keep such passage free form earth, stones, trenches or any other materials which may hinder travel of pedestrians or vehicles. The Applicant of his Contractor shall comply with any order of the Board of Selectmen or its authorized agent for protection of safe passage. Street gutters ahall not be obstructed in any manner so as to prevent or retard flow of water there.

2.16 Suspension of Work: All work shall be suspended if the Contractor fails to provide such adequate directional or warning devices to control and protect

both vehicular and/or pedestrian traffic.

SECTION 3 - STANDARDS AND SPECIFICATIONS

3.1 Street Design: The following standards shall apply to the construction of streets:

3.1.1 Right-of-way: Streets shall have a minimum width of fifty (50) feet for the right-of-way for local streets and a minimum width of sixty (60) feet for the right-of-way for collector streets.

3.1.2 Turnaround: A turnaround with a minimum radius of one hundred (100) feet for the right-of-way shall be provided at the closed end of all dead-end streets. The width of the travelway, based on the classification of street specified in Section 3.1.3 hereinafter, within the turnaround shall be centered on a radius of sixty (60) feet. The circle inside the pavement shall be suitably landscaped.

3.1.3 Width of Travelway: Streets shall be designed with the following width of pavement centered between street lines and measured between curb faces:

a.	Local Street	22 feet
b.	Collector Street	26 feet
c.	Turnaround	See Section 3.1.2

The recommended travelway width means that on-street parking is prohibited on all local streets and that parking may be permitted on one side of collector.

3.1.4 Gradient: The minimum grade for all streets shall be 1.0% except that a minimum grade of from 0.5% to 1.0% may be established for 100 feet or less and at tangents of vertical curves. The maximum grade for any street shall not exceed the following:

a.	All streets:	7%
b.	Turnarounds:	3%

Grades steeper than 7% for all streets, but not to exceed 10%, may be approved by the Board of Selectmen when the topography warrants such approval in order to prevent deep cuts or fill, and the Board finds that the street will provide safe and convenient circulation and has been designed in a manner

capable of public use and maintenance by the Town of Bridgewater. Grades between 7% and 10% shall not be more than 400 feet in length between the beginning and end of successive vertical curves.

3.1.5 Vertical Curvature: Appropriate vertical curves for transition, including superelevated curves meeting acceptable engineering standards, shall be established on all streets and street intersections to insure adequate sight distance in accordance with the classification of the street. Except at intersections, vertical curves shall provide a minimum sight distance of 200 feet along the edge of pavement. Where any street approaches an intersection at a grade of 4% or more, a transition area having a maximum grade of 2% shall be provided for a minimum of 50 feet measured from the right-of-way line of the street intersection.

3.1.6 Horizontal Alignment: Connecting curves between tangents shall be provided for all deflection angles in excess of five (5) degrees. Suitable tangents shall be provided between curves, and the minimum radius of curvature at the centerline of streets shall be as follows:

a. Local street: 150 feet
b. Collector street: 300 feet

3.1.7 Intersections:

a. New road intersections shall be at least 200 feet from any existing intersection, or other proposed intersection, or shall be part of an existing or proposed intersection. Maximum intersection sight distances shall be as follows:

350′ for 30 m.p.h. design speed
425′ for 35 m.p.h. design speed
475′ for 40 m.p.h. design speed
525′ for 45 m.p.h. design speed
575′ for 50 m.p.h. design speed

Greater distances may be required if the Board of Selectmen, in its sole discretion, shall so determine.

The sight distance shall be measured with the stopped driver located 20 feet behind the intersecting street edge

of pavement to the center of the proposed travelway for traffic approaching from the left and right. The sight distance shall be based on a height of eye of 3'0". No obstructions shall be located within this sight zone.

b. Roads shall intersect at 90 degree angles where feasible. Where unusual topographic conditions warrent, the Board of Selectmen may, through written approval, allow modification of this standard, but no intersection shall be at an angle of less than 60 degrees.

c. At street intersections the radii at the face of the curb shall be as follows:

1.	Local street to local street	25 feet
2.	Local street to collector street	30 feet
3.	Collector street to collector street	30 feet

The street line radius shall be a minimum of 14 feet inside the curb radius for local street intersections and 17 feet inside the curb radius for local street to collector street intersections and collector street to collector street intersections.

3.1.8 Cross Sections: Local streets and collector streets shall be designed with a cross section in accordance with drawings entitled Typical Street Cross Section Town of Bridgewater, which drawings are hereby made a part of this Ordinance.

3.1.9 Condition of Existing Town Streets: An application for Road Construction Permit must demonstrate, to the the satisfaction of the Board, that existing Town streets (a) providing access to the proposed subdivision are adequate. For the purpose of this section, an adequate Town street is one which provides safe and sufficient access and egress to the proposed lots in the proposed subdivision for the number and type of vehicles expected to utilize such access, taking into account, among other things, both existing and anticipated future traffic flow and volume in relation to the width of traveled surface, number of intersections and driveways, condition of surface and other conditions and standards for streets set forth in the Subdivision Regulations and this Ordinance pertaining to the construction and acceptance of streets in the Town of Bridgewater. Unless the Board finds that existing Town Street(s) providing access to

the proposed subdivision are adequate, it shall deny the application for a Road Construction Permit.

3.1.10 Street Improvements: A subdivision application must show all proposed work on Town street(s) providing access to the proposed subdivision to meet the requirements of the Subdivision Regulations and this Ordinance, together with a statement of the proposed method of meeting the cost of such work. Where a subdivision, in the opinion of the Board, requires expenditures to improve existing Town streets to conform to the Subdivision Regulations and the requirements of this Ordinance and the Applicant is unwilling to make such expenditures and post performance bonds secured by letters of credit or cash collateral, in form and substance satisfactory to the Board, the Board shall disapprove such subdivision unless the Board of Selectmen, the Board of Finance, and Town Meeting have approved such expenditures.

3.1.11 Conforming Existing Street Rights-of-way to Town Plan of Development: If any existing Town street right-of-way is less in width than as shown on the Plan of Development, the Subdivision shall provide not less than one-half of the added width required by such Plan of Development as measured by the centerline of the street right-of-way. The Applicant's conveyance to satisfy this subsection shall be by warranty deed, in form and substance satisfactory to Town Counsel, conveying sufficient land to the Town so that the street(s) can be widened (and/or straightened) to the width specified herein. Where the future width of street is not otherwise indicated on the Plan of Development, it shall be fifty (50) feet. The requirements of this subsection are in addition to those set forth in the Subdivision Regulations and shall not, in any way, be construed or interpreted to impose upon the Town any obligation to improve or widen any Town street.

3.1.12 Intersections with Existing Town Streets: All intersections with existing streets shall have plan, profile, and typical sections of existing roadway each side of the intersection, and the sight distances shown in accordance with Wection 3.1.7.

3.2 Street Construction: Streets shall be constructed in accordance with the following standards and provedures:

3.2.1 Survey and Field Layout: Instrument surveys shall be made,

maintained and recorded as follows:

a. A certerline survey of the street shall be run in the field and suitable construction ties established to all control points. Stations shall be established to all control points. Stations shall be established at 50 foot intervals and at all points of curvature and points of tangency. The beginning of this line shall be designated at Station 0+00 and shall be the intersection point of the proposed centerline with the centerline of the connecting street. Offset hubs shall be provided as part of the centerline survey.

b. A construction stake shall be placed perpendicular to the tangent, or radial in the case of curves, at each station on both sides of the streets and clear of all construction. The construction stake shall be marked with the station offset to centerline and cut and fill to profile grade as measured from the top of the stake.

c. A stake sheet showing the stations, profile grade, stake offsets and grades, and cuts or fills shall be prepared and presented to the Board of Selectmen before construction starts.

d. Permanent bench marks shall be established throughout the duration of the project and recorded with the Board of Selectmen throughout the length of the project at 1,000 foot intervals or as directed by the Board. The datum for bench marks shall be Town, State or U.S. datum; an assumed datum may be used only with the permission in writing from the Board.

e. Grade stakes, construction stakes and bench marks shall be protected and preserved until the construction work is approved by the Board of Selectmen.

3.2.2 Clearing and Grubbing: The entire area of the right-of-way required to be graded in accordance with the standard cross section shall be cleared of trees, stumps, brush, roots, large rocks, ledge and other unsuitable materials, except that trees suitable for street trees shall be left standing as directed by the Board of Selectmen or shown on the approved construction plans.

All large rocks, boulders, felled trees, stumps, brush and other objectional materials shall be removed form the street right-of-way and shall be deposited and suitably covered at those locations on the property shown on the approved construction plans or approved off site location. All topsoil shall be temporarily stored at those locations shown on the approved construction plans.

3.2.3 Preparation of Subgrade: The subgrade will be prepared as follows:

a. All trees and roots shall be stripped to below the base course of the pavement and for the full width of the pavement. All soft spots, peat, loam, organic material, spongy soil, boulders, ledge and other unsuitable material shall be removed and replaced by material conforming to State of Connectixcut Department of Transportation Standard Specifications Form 814, Section M.02.07. Where ledge rock is encountered, it shall be removed to a depth of 18 inches below subgrade, and the area backfilled with gravel and compacted.

b. Embankments shall be constructed of suitable fill material deposited in successive layers not exceeding 12 inches in depth after compaction; embankments to an elevation of three (3) feet above free water surface at the time of filling shall be constructed of rock and/or free draining material conforming to Form 814, Section M.02.07. No stone over five (5) inches in its greatest dimension shall be placed within 18 inches of the elevation of the subgrade.

c. The subgrade shall be compacted by the use of power rollers of at least 16 tons, or by other suitable equipment approved by the Board or its agent. The subgrade shall be brought to a uniform surface to conform to the shape of the required cross section.

d. Where rock fill is used, construction methods shall be in accordance with the provisions of Subarticle 2.02.03-5 of Form 814.

e. The finished surface shall be smooth and even and shall not vary more than one/half inch from the standard cross

section of established grade. Any deviation from this cross section or established grade shall be corrected by cutting or filling followed by repeated rollings until a well-compacted surface is obtained.

f. The Contractor shall protect the subgrade from damage. At all times the subgrade surface shall be kept in such condition that it will drain readily and correctly. The subgrade shall be checked for compliance with specifications before any remaining road construction material is placed upon it.

3.2.4 Subbase: The subbase shall be constructed as follows:

a. The subbase material shall be crushed gravel or crusher-run stone in accordance with Article M.02.02 and M.02.06 of Form 814.

b. Construction methods shall be in accordance with Section 2.12 of Form 814. The compacted thickness of the subbase shall be twelve (12) inches after compaction. All drainage and utilities buried within the paved area shall be installed and tested to insure proper functioning prior to installation of the subbase.

c. All compacting shall be done with a power roller weighing not less than 10 tons or equivalent vibratory roller or compactor.

Rolling shall proceed in a longitudinal direction beginning at the gutter line and proceeding toward the center. Sufficient overlap with the inside roller wheel shall be maintained to avoid any unrolled areas. Rolling shall be continued until the material is well keyed and does not creep ahead of the roller.

d. The final surface shall not vary more than 3/8 inch from the established grade and standard cross-section.

e. The subbase shall not be constructed during freezing weather or in a wet or frozen subgrade.

f. Should the subgrade beneath the subbase become churned up and mixed with subbase material at any time,

the Contractor shall remove the mixture and replace it with new subbase material to the required thickness shown on the plans or as previously required by the Board of Selectmen. Such replaced subbase material shall be compacted to the required minimum density.

g. The subbase chall be checked for general compliance with the specifications before any remaining road construction material is placed upon it.

3.2.5 Processed Base: The processed base shall be constructed as follows:

a. The base material shall conform to the requirements of Subarticle M.05.01-1, M.05.01-2 and M.05.01-3, Form 814.

b. Construction methods shall be in accordance with Section 3.04 of Form 814. The aggregate shall be spread uniformly upon the prepared subbase directly from approved spreaders or stone boxes to a depth of not less than 4 inches after final compaction. Power graders shall not be permitted to spread the aggregate base except with the permission of the Board of Selectmen. After the aggregate is spread, it shall then be thoroughly compacted; and during the compacting, water shall be applied from an approved watering device by a vertical spray delivering a flushing stream. The compacting and wetting shall be continued until the voids in the aggregates have been reduced to a minimum obtainable. The compacting shall be continued until the course is thoroughly compacted to a firm and uniform surface satisfactory to the Board of Selectmen. Should any irregularities of surface develop during or after the compacting of the course, it shall be remedied by loosening the material already in place and removing or adding coarse aggregate as required after which the entire area, including the surrounding surface, shall be compacted, broomed and wetted and the compacting continued until it is compacted satisfactorily to a uniform surface.

c. All compacting shall be done with a power roller weighing not less than 10 tons or an equivalent vibratory roller or

compactor. The compacting shall begin at the sides, overlapping the shoulders for a distance of not less than 6 inches and progress toward the center, parallel with the centerline of the pavement, uniformly lapping each preceding tract and covering thoroughly the entire surface. Areas of superelevation and special cross slope shall be compacted beginning at the low edge and proceeding toward the high edge or as directed by the Board of Selectmen.

d. The final surface shall not vary more than 1/2 inch from the established grade and standard cross section.

e. The processed base shall be checked for general compliance with the specifications before any remaining road construction material is placed upon it.

3.2.6 Pavement: On the prepared and approved processed base there shall be constructed two courses of bituminous concrete as follows:

a. The binder course shall conform to the requirements of Class 1, Section M.04 of Form 814; and the surface course shall conform to the requirements of Class 1, Section M.04 of Form 814.

b. No bituminous surfacing work shall be performed between October 15th and April 15th, except with the written consent of the Board of Selectmen.

c. All roadway pavements shall be laid using an approved, self propelled paving machine. Pavement shall be compacted using a steel-wheeled roller weighing not less than 10 tons.

d. Permanent paving shall be placed only when the underlying surface is dry, when the atmospheric temperature in the shade is above 40 degrees F., and when the weather is not foggy or rainy, provided however, that the Board of Selectmen may permit, in case of sudden rain, the placing of mixture then in transit from the plant if laid at proper temperature and if the roadbed is free from pools of water. Such permission shall in no way relax the requirements for quality of the

pavement and smoothness of surface. No material shall be laid upon a frozen base course or when wind conditions are such that rapid cooling will prevent satisfactory compaction. No load shall be sent out so late in the day that spreading and compaction cannot be completed during daylight.

e. Before placing the permanent surfacing, the exposed edges of the existing pavement shall be completely cleaned of all surface dirt and debris.

f. The Contractor shall check all manholes, catch basins or other appurtenant structures for proper alignment and elevation before placing any pavement and after paving has been completed.

g. The contact surfaces of manholes, catch basins or other appurtenant structures in the pavement and the exposed edges of the existing pavement shall be painted thoroughly with a thin uniform coat of bituminous material immediately before any bituminous concrete is placed against them.

h. It is the intent of the Board of Selectmen that the existing Town roads shall be restored to a condition equal to this Ordinance or better than that in which they were prior to construction, whichever is the most restrictive.

The work to be performed on existing roads shall be done after a suitable period has elapsed for settlement of the backfilled trenches and when approved by the Board of Selectmen.

Where directed by the Board of Selectmen, existing roadway pavement which cannot be used in the restoration of the road shall be scarified, removed and disposed of by the Contractor.

All manhole covers, catch basin frames, valve boxes, or similar structures shall be raised to final grade prior to placing the binder course.

Prior to paving over trenches, the Contractor shall cut the existing pavement back in two neat parallel lines on

either side of the trench so as to expose 12 inches of undisturbed subgrade. He shall then pave over the backfilled trench and the two cut-back areas.

i. Any part of the pavement damaged by traffic or other causes occurring prior to its final acceptance shall be repaired or replaced in a manner satisfactory to the Board of Selectmen. The Contractor shall protect the pavement against both public traffic and the traffic caused by his own employees and agents.

3.2.7 Curbs: Bituminous concrete curbs shall be constructed on the outer edge of the completed pavement, except as specified hereinafter. Curbs shall be machine formed, having a cross section approved by the Board of Selectmen, a height of six (6) inches and a base width of 9 inches. The curb material shall conform to Section M.04, Class 3 of Form 814, and construction shall conform to Section 8.15 of Form 814. Where driveways exist or are planned, depressed curbing must be installed. The surface of the pavement where the curbing is to be constructed shall be cleared of all loose and foreign material, shall be dry and shall be coated with an R.C.-2 or other bitumen just before placing the material. The material shall be properly compacted to the required cross section by use of a suitable machine specifically designed for the purpose. After completion of the curbing, traffic shall be kept at a safe distance for a period of not less than 24 hours and until the curbing has set sufficiently to prevent injury to the work. The requirements of Connecticut General Statutes 7-188a shall apply wherever applicable.

At all intersections stone curbing shall be installed conforming to Section 8.13 of Form 814 from the point of curvature to the point of tangency. Material for stone curbing shall conform to Article M.12.06.

3.2.8 Slopes: Cut or fill slopes beyond the shoulder area or street line shall not exceed one (1) foot of rise or fall for each three (3) feet of horizontal distance; but the Board of Selectmen may require a variation in the degree of slope to whatever extent is necessary to maintain the stability of the bank under the particular conditions. All areas which fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such areas shall be seeded repeatedly until all areas are

covered with a satisfactory growth of grass. All earth surfaces of slopes, and areas that have been disturbed in any way due to grading and construction of the streets, shall be covered with a minimum of four (4) inches of topsoil and suitably seeded or planted to prevent soil erosion. The Board of Selectmen may require the removal or lowering of embankments adjacent to street intersections in order to assure adequate sight distance at the intersection. No cut or fill sections beyond the right-of-way shall extend into property outside the subdivision or property not owned by the Applicant, unless appropriate slope rights are obtained for the Town; in the absence of such slope rights, appropriate retaining walls shall be constructed within the subdivision to prevent encroachment upon adjoining property.

3.2.9 Guide Posts: Guide posts shall be installed along all streets where there will be an embankment with a depth of four (4) feet or more within 20 feet of the proposed pavement. Posts shall conform to Form 814, Section M.10.02 and shall be installed in accordance with Form 814, Section 9.10 spaced six (6) feet on center with a minimum tip diameter of six (6) inches and a minimum length of seven (7) feet with 3-1/2 feet set in the ground.

3.3 Storm Drainage Design: Storm drainage for streets shall be planned and designed in accordance with the following standards:

3.3.1 General: Sufficient pipe shall be installed to carry existing water courses in the street right-of-way and to drain both the proposed street or streets and extensions thereof or other streets which, based on topography, will be served by the same drainage system. No open ditches or channels shall be provided in the street right-of-way unless (a) sufficient additional right-of-way, in excess of the minimum standard width, is provided so as to maintain the standard cross section and (b) proper provision is made for protective guide posts or rails. Street drainage systems shall take into account the effects upon downstream systems, shall be coordinated with general drainage requirements for the use and development of the abutting land and shall provide for the following:

a. Use and protection, and improvement if needed, of the natural drainage system;

b. Interception of channel drainage coming from any

adjoining property or street;

c. Protection of locations in use or proposed, necessary for on-site sewage disposal and water supply facilities and

d. Prevention of flooding and soil erosion.

3.3.2 Runoff Calculations: The method to be used in determining runoff for drainage areas is the S.C.S. (Soil Conservation Service) TR #55 and/or TR #20. All computations shall include the TR-55 Curve Number Computations, Tc and Tt thru Subarea Computations, Graphical Discharge Method, Tabular Discharge Method for each drainage and subdrainage area and the Storm Volume for Detention Basins when applicable. All storm drainage facilities shall be designed based on the following storm return frequency criteria.

a. Drainage System: All drainage systems, within the subdivision and which are not part of an established drainage course, shall be designed for a storm return frequency of 25 years.

b. Cross Culverts: All culverts not part of an established drainage course crossing any street shall be designed for a storm return frequency of 50 years.

c. Minor Streams less than 1,000 acres): All minor streams shall be designed for a storm return frequency of 100 years.

d. Major Streams (more than 1,000 acres): All major streams shall be designed for a storm return frequency of 100 years.

The Applicant's consultant shall provide the Commission with drainage computations and drainage map, specified in Section 2.3 to determine the adequacy of storm water systems, including the spacing of catch basins and the need for double basins in roadway sags.

3.3.3 Pipe Design: Pipes shall be sized so that the headwater depth divided by the diameter of the pipe shall be 1.2 or less at peak flow. The minimum grade for storm drains shall be 1 percent unless otherwise permitted by the Board. The minimum pipe

size shall be 15 inches. The minimum cover over pipe shall be four (4) feet from the invert, but in no case shall be less than two (2) feet over the top of pipe. Culverts under streets shall extend to the edge of the right-of-way.

3.3.4 Point of Discharge: The discharge of all storm water that has been collected or otherwise artificially channeled shall be into suitable natural streams or into Town or State drainage systems with adequate capacity to carry the discharge. Otherwise there shall be no discharge onto or over private property within or adjoining the subdivision unless (a) proper easements and discharge rights have been secured by the Applicant, (b) such easements and rights are transferable to the Town and (c) there will be adequate safeguards against soil erosion and flood danger. No storm water shall be diverted from one watershed to another. Discharge shall be made in a manner that protects streams, ponds, swamps and wetlands from pollution.

3.3.5 Discharge into Public Street: Any and all discharge of water into a public street from private lands, including waters directed to a street by virtue of changes in grades on the private lands, is subject to the review and approval of the Board prior to the initiation of construction. Minor drainage of storm water or seepage, including roof drains, foundation drains, water from sump pumps, driveway drains, etc., shall be connected to any existing storm drains in the street. Where storm drains do not exist in the street, the landowner shall solicit the advice of the Board as to how the drainage must be treated to avoid public nuisance. The Board may require that the property owner submit plans prepared by an engineer licensed to practice in the State of Connecticut.

3.3.6 Drainage Structures: Catch basins, manholes and other drainage structures shall be provided at all changes in horizontal and vertical alignment. The length of pipes shall not exceed 300 feet between structures; and catch basins shall be provided in order that surface water will travel without interception not more than 300 feet.

3.3.7 Access to Drainage Structures: Access shall be provided, based on the standards in the Driveway Ordinance, to all drainage structures not located within a public street but located within an easement specified by Section 3.4.4. The Board of Selectmen may require such other improvements it

deems necessary to prevent unauthorized use of the access drive.

3.4 Drainage Construction: Storm drainage shall be constructed in accordance with the following standards:

3.4.1 Pipe: Pipe shall be generally laid in straight lines between structures. All storm drainage pipe shall be reinforced concrete Class IV in accordance with the requirements of Article M.08.01-6 of Form 814, except when fill heights require Class V. In general, underdrains shall be installed on the uphill side of the road. Asphalt coated corrugated metal pipe with paved inverts may be approved by the Board where clearance is limited by existing utilities or where uneven support has been verified.

3.4.2 Methods: Storm drainage pipe shall be laid in accordance with the following procedures:

a. Prior to laying pipe, the trench shall be excavated to the required depth, the bottom of which shall be graded to afford a uniformly firm bearing for the pipe throughout its length. Where rock is encountered, it shall be excavated to not less than 6" below the bottom of the trench; and this depth shall be refilled with crushed stone and thoroughly tamped and shaped. Where the nature of the foundation material is poor, it shall be removed and backfilled with gravel or crushed stone approved by the Board of Selectmen, or its agent. A minimum of a 6 inch thick layer of compacted crushed stone, not larger than 3 inches, shall be provided under the storm drainage pipe and up the side of the pipe to a depth of 12 inches in the trench before additional backfill is added.

b. All pipe shall be carefully laid, true to the lines and grades given, hubs upgrade and with the ends fully entered into adjacent hubs. Construction must be accomplished in dry conditions.

c. Line and grade stakes shall be set by a Connecticut licensed land surveyor or professional engineer and shall be maintained in good order until the work has been inspected and approved by the Board of Selectmen. Where necesaary, three (3) batter boards shall be

maintained in place at all times when laying pipe and shall not be spaced more that 30 feet apart.

d. In sandy, silty or other soil in which there is a danger of washing or cave-ins, the joints of concrete pipe shall be thoroughly wetted and caulked.

e. The interior of all pipe shall be cleaned of dirt and other deleterious materials, and kept clean as the next section of pipe is laid. During the progress of work, the exposed ends of the pipe shall be provided with an approved temporary watertight cover fitted to the pipe so as to exclude undesirable matter. Covers shall be kept in place except when pipe is being installed.

f. All reinforced concrete pipe joints shall be sealed with a cold-applied bituminous sealer approved by the Board.

g. The backfill around the pipe and to a depth of at least eight (8) inches on top of pipe shall consist of crushed stone where the drainage pipe is necessary to serve as an underdrain for the street or to control the water table; the remainder of the trench may be backfilled with bank run gravel upon approval of the Board of Selectmen. Trenching, backfill and compaction shall conform to Section 2.05 of Form 814.

h. "Riprap" conforming to the requirements of Form 814, Section 7.03 and M.12.02, shall be placed at inlets, outlets, in channel beds at bends or curves as required to prevent scouring, erosion and/or siltation of streams and culverts. Computations shall be submitted for sizing riprap.

i. The inlets and outlets of all exposed drainage culverts shall be protected by concrete or mortared stone headwalls, endwalls, and, where necessary, appurtenant wingwalls. All endwalls shall conform to the requirements of Form 814, Section 5.06.

j. Catch basins, manholes, drop inlets, endwalls and other related drainage structures shall be constructed in accordance with Form 814, Section 5.07.

3.4.3 Tributary Drainage to a State System: Where drainage is tributary to a portion of a Connecticut Department of Transportation drainage system, the holder of the road permit shall obtain the approval of the Connecticut Department of Transportation for such drainage and shall submit the approval to the Planning and Zoning Commission with the other required documents.

3.4.4 Easements: Permanent easements, of a nature acceptable to the Town Counsel, shall be deeded to the Town in all cases where drainage pipes of ditches cross or abut lands other than a street right-of-way. A minimum width of twenty (20) feet shall be required and said easements shall be clearly defined on the final subdivision plan placed on file in the land records.

3.4.5 Right to Drain Required: Where drainage waters are discharged directly or indirectly onto adjacent landowners, the holder of the road premit shall secure and deed to the Town a right to drain, acceptable to the Town Counsel, of said landowner.

3.4.6 House and Foundation Drains: House and foundation drains in no case shall be permitted to discharge onto the highway. Such drains shall be connected to catch basins or beyond the limits of the right-of-way prior to construction of the bituminous concrete.

3.5 Sidewalks: Where sidewalks are to be installed, as determined by the Board of Selectmen and the Planning Commission, they shall be constructed of portland cement concrete or bituminous concrete as follows:

3.5.1 Width and Location: Sidewalks shall be a minimum of four (4) feet in width and shall be located within the street lines with one edge abutting the property line. The requirements of Connecticut General Statute 7-118a shall apply whenever applicable.

3.5.2 Bituminous Sidewalks: Bituminous concrete sidewalks shall be laid on a six (6) inch gravel base, tamped and rolled, and three (3) inches thick after compaction. The bituminous materials used shall conform to Form 814, Section M.04 Class 2, and the construction shall conform to Section 9.22.

3.5.3 Concrete Sidewalks: Portland cement concrete sidewalks shall be laid on a six (6) inch bank run gravel base, tamped and

rolled; and shall be constructed of concrete four (4) inches in thickness. Materials shall conform to Form 814, Section M.03.01 for Class "C" concrete and shall be constructed in accordance with Form 814, Section 9.21.

3.6 Erosion Control: Soil erosion and sediment control measures shall be installed and maintained in accordance with any approved plans or permit and with the following standards:

3.6.1 Erosion and siltation control requirements are applicable to all construction work which causes disturbance to the existing ground surface. All control measures shall be constructed and maintained during construction in accordance with the standard details, drawings, this Section and the Erosion & Sediment Control Handbook, latest edition, Soil Conservation Service, U.S. Depoartment of Agriculture.

3.6.2 All embankments shall be mulched with hay as soon as practical after formation. The embankment formation operation shall not proceed more than 500 feet in front of the mulching operation unless approved by the Board of Selectmen. The initial application of hay shall be at a rate equal to 110 bales per acre. Subsequent applications as necessary or ordered shall be at sufficient rate to minimize erosion of the previously formed embankments.

3.6.3 All streams and wetlands within 50 feet of a proposed construction activity shall be protected with a continuous filter fence or closely butted row of hay bales prior to commencing work in those areas.

3.6.4 All runoff from disturbed areas is to be controlled and filtered. Hay bales or broken stone filters are to be installed at discharge locations shown on the drawings. Additional hay bales and/or mulch may be required during construction as site conditions dictate, or as ordered.

3.6.5 Erosion controls are to be installed and operational as soon as possible in a given section of roadway before proceeding on to another.

3.6.6 In the event that the Contractor shall schedule construction such that storm sewers are installed prior to constructing the downstream facilities they are tributary to, the Contractor shall

provide an energy dissipator at each discharge end of the pipe. The energy dissipator shall be a mat of intermediate rirrap approximately 10 feet wide by 10 feet long.

3.6.7 When crossing streams, flow is to be carried through or around construction in temporary pipes or properly prepared rip-rapped channels. Culverts indicated in contract drawings are to be installed as soon as possible.

3.6.8 The collection and conveyance of runoff at the top of the embankments shall be provided for as the work progresses. Methods include, but are not limited to: temporary piping, broken stone lined swales, installation of permanent drainage structure as work progresses.

3.6.9 During construction of a road, the road bed is to be graded to form interception dikes as shown or ordered and to route flow in a gutter where indicated on drawings or as directed. Interceptors are to be maintained in good working order throughout the construction period.

3.6.10 Accumulated sediment is to be periodically removed and disposed of in a manner approved by the Board of Selectmen.

3.6.11 All catch basins or drop inlets are to be protected with hay bales.

3.6.12 As needed or as ordered, a broken stone chute shall be installed to convey collected stormwater down cut and fill slopes to avoid erosion of these slopes. Hay bales and stone filters shall be installed at the bottom of these chutes to filter and disperse the flow.

3.6.13 Riprap or energy dissipators are to be placed as shown on the construction drawings, or as directed.

3.6.14 If changes in construction methods or schedules occur which would, in the opinion of the Board of Selectmen, adversely affect the designed erosion controls, construction shall not proceed until such revised erosion control plans have been approved by the appropriate Town commissions and the Board of Selectmen.

3.6.15 All equipment shall be operated and all construction activities

performed so as to minimize pollution. Any operations which would increase erosion during rain storms shall cease unless proper erosion and sedimentation controls have been installed and approved by the Board of Selectmen.

3.6.16 The Board of Selectmen shall be given sufficient notice of impending shutdowns to enable them to examine the project so that the Contractor can install additional erosion and sedimentation protection as directed by the Board of Selectmen.

3.7 Miscellaneous:

3.7.1 Street Signs: Street name signs shall be installed at all street intersections in locations approved by the Board of Selectmen. Such signs shall be of a design and material approved by the Board of Selectmen.

3.7.2 Monuments and Pins: Monuments shall be provided on both street right-of-way lines at the beginning and termination of each street and at each deflection or tangent point in between. Monuments shall be made of prestressed concrete or granite and shall be not less than five (5) inches square by 30 inches in length with a suitably marked top. Each monument shall be set in place after all street construction is completed with the marked point set on the point of reference and shall be installed in a manner conforming to standards of the Connecticut Association of Land Surveyors.

In addition to required monuments, iron pins, not less than 3/4 inch in diameter and 36 inches in length consisting of a suitable rod or pipe, shall be placed (a) at each point of intersection of a lot line and the right-of-way line of a street and (b) at all other lot corners; and shall be installed in a manner conforming to standards of the Connecticut Association of Land Surveyors. Monuments may be substituted for iron pins. Pins, however, are not required at each change in direction of an irregular lot line, such as along a stream or stone wall.

3.7.3 Underground Utilities: The Contractor's attention is directed to the underground utilities which may be in the vicinity of the work of the project. He must cooperate with the utility company in protecting these utilities.

3.7.4 Dust Control: The Contractor shall spread the calcium chloride

in accordance with the manufacturer's instructions. Under dry conditions the road surface shall first be moistened. The Contractor shall remove all excess materials from the site at the end of each working day.

3.7.5 Clean Up: General clean up, grading, sweeping, picking up of surplus materials, etc., shall not be delayed until the end of the project. The Contractor shall schedule his work in such a manner as to allow sufficient time in each work day to accomplish this work. Roadway surfaces are to be swept by hand or by machine to alleviate dust problems. The use of power sweepers or drag brooms shall be carefully controlled. Where heavy concentrations of material exist on the road surfaces, the Contractor shall clean by hand or by machine such material in advance of sweeping.

3.7.6 Utility Warning Tape: A warning tape, not less than 4 inches in width, identifying each buried utility, shall be placed not less than two feet above each utility during backfilling of the trench.